

Grade 12 World Geography: A Human Perspective (40S)

A Course for Independent Study

Field Validation Version



GRADE 12 WORLD
GEOGRAPHY: A HUMAN
PERSPECTIVE (40S)

A Course for Independent Study

Field Validation Version

Manitoba Education Cataloguing in Publication Data

Grade 12 world geography : a human perspective (40S) : a course for independent study—Field validation version

This resource is available in print and electronic formats.

Includes bibliographical references.

ISBN: 978-0-7711-6172-8 (print)

ISBN: 978-0-7711-6173-5 (pdf)

1. Geography—Study and teaching (Secondary).
 2. Geography—Study and teaching (Secondary)—Manitoba.
 3. Human geography—Study and teaching (Secondary).
 4. Geography—Programmed instruction.
 5. Distance education—Manitoba.
 6. Correspondence schools and courses—Manitoba.
- I. Manitoba. Manitoba Education.
910

Copyright © 2015, 2020, the Government of Manitoba, represented by the Minister of Education.

Manitoba Education
Winnipeg, Manitoba, Canada

Every effort has been made to acknowledge original sources and to comply with copyright law. If cases are identified where this has not been done, please notify Manitoba Education. Errors or omissions will be corrected in a future edition. Sincere thanks to the authors, artists, and publishers who allowed their original material to be used.

All images found in this resource are copyright protected and should not be extracted, accessed, or reproduced for any purpose other than for their intended educational use in this resource.

Any websites referenced in this resource are subject to change.

This resource was published in 2015 and updated in 2020.

Available in alternate formats upon request.

CONTENTS

Acknowledgements	vii
-------------------------	-----

Introduction	1
Overview	3
What Will You Learn in This Course?	3
How Is This Course Organized	4
What Resources Will You Need for This Course?	5
Who Can Help You with This Course?	6
How Will You Know How Well You Are Learning?	8
How Much Time Will You Need to Complete This Course?	10
When and How Will You Submit Completed Assignments?	12
What Are the Guide Graphics For?	14
Module Cover Sheets	15

Module 1: World Geography Overview	1
Introduction	3
Lesson 1: The Origins and Growth of Geography	7
Lesson 2: The World's Physical Geography	19
Lesson 3: The World's Human Geography	35
Lesson 4: The Developed and Developing Countries	53
Module 1 Summary	91
Module 1 Learning Activity Answer Key	1

Module 2: World Population: Characteristics, Distribution, and Growth	1
Introduction	3
Lesson 1: Demographics and Geography	7
Lesson 2: World Population Distribution	39
Lesson 3: Contemporary Challenges	73
Module 2 Summary	105
Module 2 Learning Activity Answer Key	1

Module 3: World Food Supply: Production and Distribution	1
Introduction	3
Lesson 1: Agriculture	7
Lesson 2: Agricultural Challenges	33
Lesson 3: Food from Water	63
Lesson 4: Technology, Present and Future Challenges	87
Module 3 Summary	103
Module 3 Learning Activity Answer Key	1

Module 4: World Resources, Energy, and the Environment	1
Introduction	3
Lesson 1: Resource Distribution	7
Lesson 2: Water	25
Lesson 3: Resource Demands	35
Lesson 4: World Energy	73
Module 4 Summary	111
Module 4 Learning Activity Answer Key	1

Module 5: World Industrialization and Urbanization	1
Introduction	3
Lesson 1: Industrialization	5
Lesson 2: Urbanization	43
Lesson 3: Present and Future Challenges	63
Module 5 Summary	87
Module 5 Learning Activity Answer Key	1

Module 6: World Interdependence	1
Introduction	3
Lesson 1: Global Interdependence	5
Module 6 Summary	43
Module 6 Learning Activity Answer Key	1

References	1
-------------------	----------

Glossary	1
-----------------	----------

Appendices	1
Appendix A: Map of North America	3
Appendix B: Map of Manitoba	5
Appendix C: Map of the World	7
Appendix D: 2011 Census Questions	9
Appendix E: How to Cite References	17

ACKNOWLEDGEMENTS

Manitoba Education gratefully acknowledges the contributions of the following individuals in the development of *Grade 12 World Geography: A Human Perspective (40S): A Course for Independent Study, Field Validation Version*.

Course Writer: 2015 Version	Diana Mae Boychuk	Independent Consultant
Course Writer: 2002 Version	David McDowell	Independent Consultant
Content Reviewer	Kamal Dhillon Instructional Design Assistant	Development Unit Instruction, Curriculum and Assessment Branch
Manitoba Education Staff	Louise Boissonneault Coordinator	Document Production Services Unit Instruction, Curriculum and Assessment Branch
	Linda Connor Project Leader	Development Unit Instruction, Curriculum and Assessment Branch
	Diane Courcelles Publications Editor	Document Production Services Unit Instruction, Curriculum and Assessment Branch
	Lynn Harrison Desktop Publisher	Document Production Services Unit Instruction, Curriculum and Assessment Branch
	Myrna Klassen Acting Coordinator (as of Spring 2015)	Distance Learning Unit Instruction, Curriculum and Assessment Branch
	Gilles Landry Project Manager	Development Unit Instruction, Curriculum and Assessment Branch
	Susan Lee Coordinator (until Spring 2015)	Distance Learning Unit Instruction, Curriculum and Assessment Branch
	Linda Mlodzinski Consultant (until May 2014)	Development Unit Instruction, Curriculum and Assessment Branch



GRADE 12 WORLD
GEOGRAPHY: A HUMAN
PERSPECTIVE (40S)

Introduction

INTRODUCTION

Overview

Welcome to *Grade 12 World Geography: A Human Perspective (40S): A Course for Independent Study, Field Validation Version*.

What is “a human perspective” with regard to world geography? The short answer is that it is the study of the relationship between people and their physical surroundings. The long answer is that it is an in-depth study of humankind’s relationship (past and present) with Earth and how human activities (past and present) impact Earth and the challenges now faced in dealing with the aftermath of those activities.

Since the 1960s, the world has been seen as interconnected. What happens in one area of the world impacts other areas. Population, resources, food, industrialization, and urbanization are issues with which each country must cope. At the forefront of those challenges is the environment, and how we can protect the environment while still solving the world’s problems: the increasing world population, the declining world resources, maintaining an adequate world food supply, and the side effects of world urbanization and industrialization trends.

As a student enrolled in a distance learning course, you have taken on a dual role—that of a student and a teacher. As a student, you are responsible for mastering the lessons and completing the learning activities and assignments. As a teacher, you are responsible for checking your work carefully, noting areas in which you need to improve, and motivating yourself to succeed.

What Will You Learn in This Course?

This course outlines the challenges facing the world today. Module 1 begins with an overview of world geography. Modules 2 to 5 each explore a specific aspect of world geography from a human perspective and how that aspect is connected on a global level. Module 2 looks at world population, Module 3 puts the spotlight on world food supply, Module 4 studies world resources, and Module 5 focuses on industrialization and urbanization. In Module 6, the underlying theme of world interdependence that runs through each module is brought to the forefront to show the “big picture.”

The course reviews the major world challenges and demonstrates how those challenges are connected, not only globally in a physical sense, but also to each other, and how they are all connected to, and have an impact on, the environment. It is all about connections.

How Is This Course Organized?

The *Grade 12 World Geography: A Human Perspective* course consists of the following six modules:

- Module 1: World Geography Overview
- Module 2: World Population: Characteristics, Distribution, and Growth
- Module 3: World Food Supply: Production and Distribution
- Module 4: World Resources, Energy, and the Environment
- Module 5: World Industrialization and Urbanization
- Module 6: World Interdependence

Each module in this course consists of several lessons, which contain the following components:

- **Lesson Focus:** The Lesson Focus at the beginning of each lesson identifies one or more specific goals that are addressed in the lesson. The goals identify the knowledge and skills you should have achieved by the end of the lesson.
- **Introduction:** Each lesson begins with an explanation of what you will be learning in that lesson.
- **Lesson:** The main body of the lesson is made up of the content that you need to learn. It contains explanations, diagrams, and maps.
- **Learning Activities:** Most lessons include one or more learning activities that will help you learn about the lesson topics and prepare you for the assignments, the midterm examination, and the final examination. Once you complete a learning activity, check your responses against those provided in the Learning Activity Answer Key found at the end of each applicable module. You will not submit the completed learning activities to the Distance Learning Unit.
- **Assignments:** Assignments are found throughout each module within this course. At the end of each module, you will mail or electronically submit all your completed assignments from that module to the Distance Learning Unit for assessment. All assignments combined will be worth a total of 50 percent of your final mark in this course.
- **Glossary Terms:** This list identifies the important words that are used in the lesson. The glossary terms are highlighted in bold within the text. They are defined in the Glossary at the end of the course.
- **Summary:** Each lesson ends with a brief review of what you just learned.

This course also includes the following sections:

- **Glossary:** The Glossary at the end of the course provides definitions for an alphabetical list of the terms identified in **bold** throughout the course. You can use the Glossary to review terms used in the course.
- **Appendices:** At the end of the course, you will find five appendices, which contain maps, a sample census, and instructions on how to cite references.
- **References:** At the end of the course, you will also find a list of references used to develop this course.

What Resources Will You Need for This Course?

You do not need a textbook for this course, but it would be beneficial if you had **access to a current atlas**. All the content is provided directly within the course. There are some lessons where website links are offered as sources of information or for supplementary reference and reading; however, if you do not have access to the Internet, you can still complete the course. You will need a notebook to answer questions for the learning activities where insufficient space has been provided for the answers.

You will require access to an email account if you plan to

- communicate with your tutor/marker by email
- use the learning management system (LMS) to submit your completed assignments



Note: This course contains a number of images that are best viewed in colour. Colour versions of these images in PDF format are available in the learning management system (LMS). Students are issued a username and password at the time of registration. If Internet access is unavailable, a CD with these images is available upon request from the Distance Learning Unit.

Optional Resources

It would be helpful if you had access to the following resources:

- **Photocopier/scanner:** With access to a photocopier/scanner, you could make a copy of your assignments before submitting them so that if your tutor/marker wants to discuss an assignment with you over the phone, each of you will have a copy. It would also allow you to continue studying or to complete further lessons while your original work is with the tutor/marker. Photocopying or scanning your assignments will also ensure that you keep a copy in case the originals are lost.

- **Resource people:** Access to local resource people, such as teachers, school counsellors, and librarians, would help you complete the course.
- **A computer with word processing software:** Access to word processing software (e.g., Microsoft Word) and presentation and slide software (e.g., Microsoft PowerPoint) would help you complete some assignments.
- **A computer with Internet access:** Some lessons suggest website links as sources of information or for supplementary reference and reading. If you do not have Internet access, you will still be able to complete the course, but you will need to find different ways of accessing information.

Internet Safety

If you choose to use the Internet to do research, be safe. The Internet is a valuable source of information and should be used responsibly. Talk to your parents/guardians about Internet safety, and use the following guidelines when going online:

- Choose a user name that does not tell your name, gender, age, or other personal details.
- Never give anyone private information.
- Do not answer emails from strangers.
- If someone asks you to keep your relationship with him or her a secret, stop talking to the person and immediately tell your parent/guardian.
- Do not email or post pictures or files to anyone.

The above is **not** a complete list because no list can possibly cover all dangerous situations. Use your common sense and be careful.

Who Can Help You with This Course?

Taking an independent study course is different from taking a course in a classroom. Instead of relying on the teacher to tell you to complete a learning activity or an assignment, you must tell yourself to be responsible for your learning and for meeting deadlines. There are, however, two people who can help you be successful in your course: your tutor/marker and your learning partner.

Your Tutor/Marker



Tutor/markers are experienced educators who tutor Independent Study Option (ISO) students and mark assignments and examinations. When you are having difficulty with something in this course, be sure to contact your tutor/marker, who is there to help you. Your tutor/marker's name and contact information were sent to you with this course. You can also obtain this information in the learning management system (LMS).

Your Learning Partner



A learning partner is someone **you choose** who will help you learn. It may be someone who knows something about geography, but it doesn't have to be. A learning partner could be someone else who is taking this course, a teacher, a parent or guardian, a sibling, a friend, or anybody else who can help you. Most importantly, a learning partner should be someone with whom you feel comfortable, and who will support you as you work through this course.

Your learning partner can help you keep on schedule with your course work, read the course with you, check your work, look at and respond to your learning activities, or help you make sense of assignments. You may even study for your examinations with your learning partner. If you and your learning partner are taking the same course, however, your assignment work should not be identical.

Plagiarism

Plagiarism IS a big deal with serious consequences, so it's important that you understand what it is and how to avoid it.

What is plagiarism?

In brief, plagiarism is taking someone's ideas or words and presenting them as if they are your own.

How can you avoid plagiarism?

- Begin early. Research takes time. Allow enough time to search for, evaluate, and read sources, and to get help if you need it. Always document your sources immediately.
- Present your research by quoting and paraphrasing.
 - When you use a quote, you use the exact same words with quotation marks, and you indicate exactly where it came from.
 - When you paraphrase, you rewrite an author's idea using your own words and you do not use quotation marks (but you also make sure to state clearly whose idea it is).
- Learn how to use different citation styles. Refer to Appendix E for information on how to cite references.
- Give credit where credit is due. Never pretend someone else's idea is your own.

How Will You Know How Well You Are Learning?

You will know how well you are learning in this course by how well you complete the learning activities, assignments, and examinations.

Learning Activities



The learning activities in this course will help you to review and practise what you have learned in the lessons. You will not submit the completed learning activities to the Distance Learning Unit. Instead, you will complete the learning activities and compare your responses to those provided in the Learning Activity Answer Key found at the end of each module.

Make sure you complete the learning activities. Doing so will not only help you to practise what you have learned, but will also prepare you to complete your assignments and the examination(s) successfully. Many of the questions on the examination(s) will be similar to the questions in the learning activities. Remember that you **will not submit learning activities to the Distance Learning Unit**.

Assignments



Each module in this course contains assignments, which you will complete and submit to the Distance Learning Unit for assessment. The assignments are worth a total of 50 percent of your final course mark.

The tutor/marker will mark your assignments and return them to you. Remember to keep all marked assignments until you have finished the course so that you can use them to study for your examinations.

Midterm and Final Examinations



This course contains a midterm examination and a final examination.

- The **midterm examination** is based on Modules 1, 2, and 3 and is worth 25 percent of your final mark in this course. You will write the midterm examination when you have completed Module 3.
- The **final examination** is based on Modules 4, 5, and 6, and is worth 25 percent of your final mark in this course. You will write the final examination when you have completed Module 6.

The two examinations are worth a total of 50 percent of your final course mark. You will write both examinations under supervision.

To do well on each examination, you should review all the work you have completed from the modules, including all learning activities and assignments.

Requesting Your Examination(s)

You are responsible for making arrangements to have the examinations sent to your proctor from the Distance Learning Unit. Please make arrangements before you finish Module 3 to write the midterm examination. Likewise, you should begin arranging for your final examination before you finish Module 6.

To write your examinations, you need to make the following arrangements:

- **If you are attending school**, your examination will be sent to your school as soon as all the applicable assignments have been submitted. You should make arrangements with your school's Independent Study Option (ISO) school facilitator to determine a date, time, and location to write the examination.
- **If you are not attending school**, check the **Examination Request Form** for options available to you. Examination Request Forms can be found on the Distance Learning Unit's website, or look for information in the learning management system (LMS). **Two weeks before** you are ready to write the examination, fill in the Examination Request Form and mail, fax, or email it to

Distance Learning Unit
500-555 Main Street
P.O. Box 2020
Winkler, MB R6W 4B8
Fax: 204-325-1719
Toll-Free Telephone: 1-800-465-9915
Email: distance.learning@gov.mb.ca

How Much Time Will You Need to Complete This Course?

Learning through independent study has several advantages over learning in the classroom. You are in charge of how you learn and you can choose how quickly you will complete the course. You can read as many lessons as you wish in a single session. You do not have to wait for your teacher or classmates.

From the date of your registration, you have a maximum of **12 months** to complete this course, but the pace at which you proceed is up to you. Read the following charts for suggestions on how to pace yourself.

Chart A: Semester 1

If you want to start the course in September and complete it in January, you can follow the timeline suggested below.

Module	Completion Date
Module 1	Middle of September
Module 2	End of September
Module 3	Middle of October
Midterm Examination	Middle of November
Module 4	Beginning of December
Module 5	Middle of December
Module 6	Beginning of January
Final Examination	Middle of January

Chart B: Semester 2

If you want to start the course in February and complete it in May, you can follow the timeline suggested below.

Module	Completion Date
Module 1	Middle of February
Module 2	Beginning of March
Module 3	Middle of March
Midterm Examination	End of March
Module 4	Middle of April
Module 5	End of April
Module 6	Middle of May
Final Examination	Middle of May

Chart C: Full School Year (Not Semestered)

If you want to start the course in September and complete it in May, you can follow the timeline suggested below.

Module	Completion Date
Module 1	End of September
Module 2	End of October
Module 3	End of November
Midterm Examination	Beginning of January
Module 4	End of February
Module 5	End of March
Module 6	End of April
Final Examination	Middle of May

Timelines

Do not wait until the last minute to complete your work, since your tutor/marker may not be available to mark it immediately. It may take a few weeks for your tutor/marker to assess your work and return it to you.



If you need this course to graduate this school year, all coursework must be received by the Distance Learning Unit on or before the first Friday in May, and all examinations must be received by the Distance Learning Unit on or before the last Friday in May. Any coursework or examinations received after these deadlines may not be processed in time for a June graduation. Assignments or examinations submitted after these recommended deadlines will be processed and marked as they are received.

When and How Will You Submit Completed Assignments?

When to Submit Assignments

While working on this course, you will submit completed assignments to the Distance Learning Unit six times. The following chart shows you exactly what assignments you will be submitting at the end of each module.

Submission of Assignments	
Submission	Assignments You Will Submit
1	Module 1: World Geography Overview Module 1 Cover Sheet Assignment 1.1: Introduction to Geography Assignment 1.2: Cultural Study Assignment 1.3: Development Case Study
2	Module 2: World Population: Characteristics, Distribution, and Growth Module 2 Cover Sheet Assignment 2.1: Investigating Population Assignment 2.2: Case Study in Current Events Assignment 2.3: Present Challenges
3	Module 3: World Food Supply: Production and Distribution Module 3 Cover Sheet Assignment 3.1: Global Agricultural Production Assignment 3.2: Food Security Investigation Assignment 3.3: Article Analysis
4	Module 4: World Resources, Energy, and the Environment Module 4 Cover Sheet Assignment 4.1: Resources and Standard of Living Assignment 4.2: Blood Diamonds and International Trade Assignment 4.3: Energy Demand, Supply, and Consumption
5	Module 5: World Industrialization and Urbanization Module 5 Cover Sheet Assignment 5.1: Industrialization Assignment 5.2: Urban Planning for a City Assignment 5.3: Value Judgments
6	Module 6: World Interdependence Module 6 Cover Sheet Assignment 6.1: Research Paper

How to Submit Assignments

In this course, you have the choice of submitting your assignments either by mail or electronically.

- **Mail:** Each time you **mail** something, you must include the print version of the applicable Cover Sheet (found at the end of this Introduction). Complete the information at the top of each Cover Sheet before submitting it along with your assignments.
- **Electronic submission:** You do not need to include a cover sheet when submitting assignments electronically.

Submitting Your Assignments by Mail



If you choose to mail your completed assignments, please photocopy all the materials first so that you will have a copy of your work in case your package goes missing. You will need to place the applicable module Cover Sheet and assignment(s) in an envelope, and address it to

Distance Learning Unit
500-555 Main Street
P.O. Box 2020
Winkler MB R6W 4B8

Your tutor/marker will mark your work and return it to you by mail.

Submitting Your Assignments Electronically

Assignment submission options vary by course. Sometimes assignments can be submitted electronically and sometimes they must be submitted by mail. Specific instructions on how to submit assignments were sent to you with this course. In addition, this information is available in the learning management system (LMS).

If you are submitting assignments electronically, make sure you have saved copies of them before you send them. That way, you can refer to your assignments when you discuss them with your tutor/marker. Also, if the original hand-in assignments are lost, you are able to resubmit them.

Your tutor/marker will mark your work and return it to you electronically.



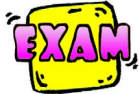
The Distance Learning Unit does not provide technical support for hardware-related issues. If troubleshooting is required, consult a professional computer technician.

What Are the Guide Graphics For?

Guide graphics are used throughout this course to identify and guide you in specific tasks. Each graphic has a specific purpose, as described below.



Assignment: Complete an assignment. You will submit your completed assignments to the Distance Learning Unit for assessment at the end of every module.



Examination: Write your midterm or final examination at this time.



Internet: Use the Internet, if you have access to it, to obtain more information. Internet access is optional for this course.



Check Your Work: Check your responses against those provided in the Learning Activity Answer Key found at the end of the applicable module.



Key Word: Note that a new important term is being explained. The term is defined in the Glossary.



Learning Activity: Complete a learning activity. This will help you to review or practise what you have learned and to prepare for an assignment or an examination. You will not submit learning activities to the Distance Learning Unit. Instead, you will compare your responses to the Learning Activity Answer Keys found at the end of the applicable module.



Learning Partner: Ask your learning partner to help you with this task.



Mail or Electronic Submission: Mail or electronically submit your completed assignment(s) to the Distance Learning Unit for assessment at this time.



Note: Take note of and remember this important information or reminder.



Phone or Email: Telephone or email your tutor/marker.

Remember: If you have questions or need help at any point during this course, contact your tutor/marker or ask your learning partner for help.

Good luck with the course!

GRADE 12 WORLD GEOGRAPHY: A HUMAN PERSPECTIVE (40S)

Module 1 Cover Sheet

Please complete this sheet and place it on top of your assignments to assist in proper recording of your work. Submit the package to:

Drop-off/Courier Address

Distance Learning Unit
555 Main Street
Winkler MB R6W 1C4

Mailing Address

Distance Learning Unit
500-555 Main Street
PO Box 2020
Winkler MB R6W 4B8

Contact Information

Legal Name: _____ Preferred Name: _____

Phone: _____ Email: _____

Mailing Address: _____

City/Town: _____ Postal Code: _____

Attending School: No Yes

School Name: _____

Has your contact information changed since you registered for this course? No Yes

Note: Please keep a copy of your assignments so that you can refer to them when you discuss them with your tutor/marker.

For Student Use	For Office Use Only	
<p>Module 1 Assignments</p> <p>Which of the following are completed and enclosed? Please check (✓) all applicable boxes below.</p> <p><input type="checkbox"/> Assignment 1.1: Introduction to Geography</p> <p><input type="checkbox"/> Assignment 1.2: Cultural Study</p> <p><input type="checkbox"/> Assignment 1.3: Development Case Study</p>	<p>Attempt 1</p> <hr/> <p>Date Received</p> <p>_____ /10</p> <p>_____ /42</p> <p>_____ /51</p> <p>Total: ____ /103</p>	<p>Attempt 2</p> <hr/> <p>Date Received</p> <p>_____ /10</p> <p>_____ /42</p> <p>_____ /51</p> <p>Total: ____ /103</p>
For Tutor/Marker Use		
<p>Remarks:</p> 		

Marking Rubric for Assignment 1.1		
	Possible Marks	Marks Given
Reasoning ■ Three reasons that geographers are needed are clearly listed in full sentences.	3 marks 1 mark for reason (x 3)	
Description ■ Brief but accurate descriptions are given for three different occupations.	3 marks 1 mark for description (x 3)	
Graphics ■ Three clear graphic illustrations that relate to the occupations are appropriately placed.	3 marks 1 mark for an appropriate graphic (x 3)	
Neatness ■ The pamphlet is neat, legible, and done in colour.	1 mark	
		Total Score: ____ /10

Marking Rubric for Assignment 1.2		
	Possible Marks	Marks Given
Organization ■ Provides a minimum of four clearly explained references to the challenges of adapting to the new location	8 marks 2 marks for each reference that directly relates to a challenge (x 4)	
Development Theme ■ Ethnocentrism is defined and discussed in relation to the story ■ At least one example is provided that relates to the theme	2 marks 1 mark for defining ethnocentrism	
Style ■ Use of strong language, good sentence structure, and highly appropriate word choices ■ Few grammar or spelling mistakes ■ References are relevant and explained in context	2 marks	
		Total Score: ____ /12

GRADE 12 WORLD GEOGRAPHY: A HUMAN PERSPECTIVE (40S)

Module 2 Cover Sheet

Please complete this sheet and place it on top of your assignments to assist in proper recording of your work. Submit the package to:

Drop-off/Courier Address

Distance Learning Unit
555 Main Street
Winkler MB R6W 1C4

Mailing Address

Distance Learning Unit
500-555 Main Street
PO Box 2020
Winkler MB R6W 4B8

Contact Information

Legal Name: _____ Preferred Name: _____

Phone: _____ Email: _____

Mailing Address: _____

City/Town: _____ Postal Code: _____

Attending School: No Yes

School Name: _____

Has your contact information changed since you registered for this course? No Yes

Note: Please keep a copy of your assignments so that you can refer to them when you discuss them with your tutor/marker.

For Student Use	For Office Use Only	
Module 2 Assignments Which of the following are completed and enclosed? Please check (✓) all applicable boxes below. <input type="checkbox"/> Assignment 2.1: Investigating Population <input type="checkbox"/> Assignment 2.2: Case Study in Current Events <input type="checkbox"/> Assignment 2.3: Present Challenges	Attempt 1 _____ Date Received _____/19 _____/40 _____/55 Total: ____ /114	Attempt 2 _____ Date Received _____/19 _____/40 _____/55 Total: ____ /114
For Tutor/Marker Use		
Remarks: 		

Marking Rubric for Assignment 2.1		
	Possible Marks	Marks Given
Choice of country <ul style="list-style-type: none"> Identify the country and continent. 	2 marks	
Geography <ul style="list-style-type: none"> Provide one strong example of the influence of physical geography on population. Provide two strong examples of the influence of human geography on population. 	3 marks 1 mark for the physical geography example 1 mark for each of the human geography examples (2 marks)	
Recent demographic transitions <ul style="list-style-type: none"> Identify which stage of the demographic transition model the country is in. Describe two transitions that have influenced changes in population levels and why. 	5 marks 1 mark for identifying stage 1 mark for describing the transition (x 2) 1 mark for explaining why the transition influenced population (x 2)	
Government population control policies <ul style="list-style-type: none"> Explain what change the government wants to see in the population. Identify and explain the policy or campaign. 	3 marks 1 mark for explaining what change the government wants to see 2 marks for identifying and explaining the policy	
Style <ul style="list-style-type: none"> Appropriate use of language. Use of vocabulary suitable for a Grade 12 audience. Balance of complex and simple sentence structure. Contains few spelling and grammar errors, which do not distract from the report. 	3 marks	
Format <ul style="list-style-type: none"> All criteria for the format of the presentation are met. 	3 marks	
		Total Score: ____ /19

Marking Rubric for Assignment 2.2		
	Possible Marks	Marks Given
Question 1: Country <ul style="list-style-type: none"> ■ Identify a developing country ■ Indicate the country's HDI in the current/past year 	1 mark Identify a developing country (1/2 mark) Indicate the country's HDI in the current/past year (1/2 mark)	
Question 2: Government <ul style="list-style-type: none"> ■ Identify the type of government ■ Identify the ruler of the government ■ Identify how long the ruler has been in power ■ Describe of how the ruler is chosen ■ Describe the structure of the government ■ Describe the taxation policies 	6 marks Type of government (1 mark) Ruler of the government (1 mark) How the ruler is chosen (1 mark) How long the ruler has been in power (1 mark) Structure of the government (1 mark) Taxation overview (1 mark)	
Question 3(a): Population Map <ul style="list-style-type: none"> ■ 5 cities are clearly indicated on the map ■ Population statistics for each city are clearly indicated 	5 marks 1/2 x 5 marks for indication of cities 1/2 x 5 marks for current population statistics	
Question 3(b): Topographic Map <ul style="list-style-type: none"> ■ 5 topographic landmarks are clearly indicated 	5 marks 1 mark per landscape	
Question 3(c): Infrastructure Map <ul style="list-style-type: none"> ■ 10 infrastructural landmarks are clearly indicated 	5 marks 1/2 mark per landmark (x 10)	
Question 4: HDI <ul style="list-style-type: none"> ■ Health ■ Education ■ Income 	6 marks 2 marks per factor (x 3)	

continued

Marking Rubric for Assignment 2.2 (continued)

	Possible Marks	Marks Given
<p>Question 5: Description of Issue</p> <ul style="list-style-type: none"> ■ Clearly identify and describe a health/education/income issue ■ Identify a government/NGO solution ■ Clearly explain the program's strategy 	<p>5 marks</p> <p>1 mark for the description of issue</p> <p>1 mark for the identification of a government/NGO solution</p> <p>3 marks for the explanation of the strategy</p>	
<p>Question 6: State of the Economy</p> <ul style="list-style-type: none"> ■ Clear description of an economic trend ■ Clear description of the largest employee sector ■ Discussion of wealth disparity 	<p>3 marks</p> <p>1 mark for the description of the economic trend</p> <p>1 mark for the description of the employee sector</p> <p>1 mark for the discussion of wealth disparity</p>	
<p>Question 7: Environmental Plans</p> <ul style="list-style-type: none"> ■ One well thought out and explained short-term goal ■ One well thought out and explained long-term goal 	<p>4 marks</p> <p>2 marks per goal (x 2)</p>	
		Total Score: ____ /40

GRADE 12 WORLD GEOGRAPHY: A HUMAN PERSPECTIVE (40S)

Module 3 Cover Sheet

Please complete this sheet and place it on top of your assignments to assist in proper recording of your work. Submit the package to:

Drop-off/Courier Address

Distance Learning Unit
555 Main Street
Winkler MB R6W 1C4

Mailing Address

Distance Learning Unit
500-555 Main Street
PO Box 2020
Winkler MB R6W 4B8

Contact Information

Legal Name: _____ Preferred Name: _____

Phone: _____ Email: _____

Mailing Address: _____

City/Town: _____ Postal Code: _____

Attending School: No Yes

School Name: _____

Has your contact information changed since you registered for this course? No Yes

Note: Please keep a copy of your assignments so that you can refer to them when you discuss them with your tutor/marker.

For Student Use	For Office Use Only	
<p>Module 3 Assignments</p> <p>Which of the following are completed and enclosed? Please check (✓) all applicable boxes below.</p> <p><input type="checkbox"/> Assignment 3.1: Global Agricultural Production</p> <p><input type="checkbox"/> Assignment 3.2: Food Security Investigation</p> <p><input type="checkbox"/> Assignment 3.3: Article Analysis</p>	<p>Attempt 1</p> <hr/> <p>Date Received</p> <p>_____ /34</p> <p>_____ /35</p> <p>_____ /20</p> <p>Total: ____ /89</p>	<p>Attempt 2</p> <hr/> <p>Date Received</p> <p>_____ /34</p> <p>_____ /35</p> <p>_____ /20</p> <p>Total: ____ /89</p>
For Tutor/Marker Use		
<p>Remarks:</p>		

Marking Rubric for Assignment 3.1 (Part C)

	Possible Marks	Marks Given
<p>Introduction</p> <ul style="list-style-type: none"> ■ Clearly states position of the essay ■ Centres around a well-developed thesis statement 	<p>2 marks</p> <p>1 mark for a clear and interesting introduction</p> <p>1 mark for a proper thesis statement</p>	
<p>Body of Essay</p> <ul style="list-style-type: none"> ■ Has at least two well-developed paragraphs, which directly support the thesis statement ■ At least two relevant examples are provided that relate to the topic 	<p>4 marks</p> <p>1 mark for two paragraphs</p> <p>1 mark for connections to the thesis statement</p> <p>1 mark for each example (x 2)</p>	
<p>Conclusion</p> <ul style="list-style-type: none"> ■ Restates the main argument ■ Summarizes the points and offers final comments ■ Has an effective concluding statement 	<p>2 marks</p> <p>1 mark for an effective summary</p> <p>1 mark for the concluding statement</p>	
<p>Style</p> <ul style="list-style-type: none"> ■ Use of strong language, good sentence structure, and highly appropriate word choices ■ Few grammar or spelling mistakes ■ References are relevant and explained in context 	<p>2 marks</p>	
		Total Score: ____ /10

Marking Rubric for Assignment 3.2		
	Possible Marks	Marks Given
Description of Factors <ul style="list-style-type: none"> ■ Brief but accurate descriptions ■ A relevant example is provided per factor 	6 marks 1 mark for the description (x 3) 1 mark for the example (x 3)	
Negative Consequences <ul style="list-style-type: none"> ■ Identification of a negative consequence ■ A strong connection is made between the consequence and the impact on food security ■ Refers to course content as well as to independent research for examples 	9 marks 1 mark for identifying a consequence (x 3) 1 mark for explaining the impact on food security (x 3) 1 mark for providing a relevant example (x 3)	
Scenarios <ul style="list-style-type: none"> ■ Each scenario addresses who, what, and how ■ Scenarios are plausible and well thought out 	12 marks 3 marks for identifying the who, what, and how (x 3) 1 mark for plausibility (x 3)	
Results <ul style="list-style-type: none"> ■ Identify the change in the factor ■ Explain the resulting improvement in food security 	6 marks 1 mark for identifying the change (x 3) 1 mark for explaining the result (x 3)	
Style <ul style="list-style-type: none"> ■ Use of strong language, good sentence structure, and highly appropriate word choices ■ Few grammar or spelling mistakes ■ References are relevant and explained in context 	2 marks	
		Total Score: ____ /35

GRADE 12 WORLD GEOGRAPHY: A HUMAN PERSPECTIVE (40S)

Module 4 Cover Sheet

Please complete this sheet and place it on top of your assignments to assist in proper recording of your work. Submit the package to:

Drop-off/Courier Address

Distance Learning Unit
555 Main Street
Winkler MB R6W 1C4

Mailing Address

Distance Learning Unit
500-555 Main Street
PO Box 2020
Winkler MB R6W 4B8

Contact Information

Legal Name: _____ Preferred Name: _____

Phone: _____ Email: _____

Mailing Address: _____

City/Town: _____ Postal Code: _____

Attending School: No Yes

School Name: _____

Has your contact information changed since you registered for this course? No Yes

Note: Please keep a copy of your assignments so that you can refer to them when you discuss them with your tutor/marker.

For Student Use	For Office Use Only	
<p>Module 4 Assignments</p> <p>Which of the following are completed and enclosed? Please check (✓) all applicable boxes below.</p> <p><input type="checkbox"/> Assignment 4.1: Resources and Standard of Living</p> <p><input type="checkbox"/> Assignment 4.2: Blood Diamonds and International Trade</p> <p><input type="checkbox"/> Assignment 4.3: Energy Demand, Supply, and Consumption</p>	<p>Attempt 1</p> <hr/> <p>Date Received</p> <p>_____ /21</p> <p>_____ /37</p> <p>_____ /49</p> <p>Total: ____ /107</p>	<p>Attempt 2</p> <hr/> <p>Date Received</p> <p>_____ /21</p> <p>_____ /37</p> <p>_____ /49</p> <p>Total: ____ /107</p>
For Tutor/Marker Use		
<p>Remarks:</p>		

GRADE 12 WORLD GEOGRAPHY: A HUMAN PERSPECTIVE (40S)

Module 5 Cover Sheet

Please complete this sheet and place it on top of your assignments to assist in proper recording of your work. Submit the package to:

Drop-off/Courier Address

Distance Learning Unit
555 Main Street
Winkler MB R6W 1C4

Mailing Address

Distance Learning Unit
500-555 Main Street
PO Box 2020
Winkler MB R6W 4B8

Contact Information

Legal Name: _____ Preferred Name: _____

Phone: _____ Email: _____

Mailing Address: _____

City/Town: _____ Postal Code: _____

Attending School: No Yes

School Name: _____

Has your contact information changed since you registered for this course? No Yes

Note: Please keep a copy of your assignments so that you can refer to them when you discuss them with your tutor/marker.

For Student Use	For Office Use Only	
Module 5 Assignments Which of the following are completed and enclosed? Please check (✓) all applicable boxes below.	Attempt 1	Attempt 2
<input type="checkbox"/> Assignment 5.1: Industrialization	_____ /42	_____ /42
<input type="checkbox"/> Assignment 5.2: Urban Planning for a City	_____ /36	_____ /36
<input type="checkbox"/> Assignment 5.3: Value Judgments	_____ /32	_____ /32
	Total: ____ /110	Total: ____ /110
For Tutor/Marker Use		
Remarks: 		

Marking Rubric for Assignment 5.3 (Question 5)

	Possible Marks	Marks Given
<p>Introduction</p> <ul style="list-style-type: none"> ■ Letter to the editor: clearly states what issue or problem you will address that was in the article you read ■ Editorial: clearly states the issue or problem of the recent event/situation that you will discuss ■ In both cases your personal opinion on the topic should be logical and clear. 	2	
<p>Body of Letter/Editorial</p> <ul style="list-style-type: none"> ■ Second paragraph proposes at least 2 opposing points of view ■ Third paragraph develops your personal opinion argument ■ Fourth paragraph offers possible solutions to the problem ■ Relevant facts and/or examples are provided which relate to the topic and support your argument 	8	
<p>Conclusion</p> <ul style="list-style-type: none"> ■ Restates the main argument ■ Summarizes the points and offers final comments ■ Has an effective concluding statement 	2	
<p>Style</p> <ul style="list-style-type: none"> ■ Use of strong language, good sentence structure, and highly appropriate word choices ■ Few grammar or spelling mistakes ■ References are relevant and explained in context 	3	
		/ 15

Marking Rubric for Assignment 6.1: Research Paper

	0	1	2	3	_____ x 1
KWL chart/ Idea Web	KWL chart or Web not attempted.	KWL chart or Web is not well developed and is missing several topics and subtopics. Chart or Web is not clear, organized, readable, or neat.	KWL chart or Web is well developed and includes some topics and subtopics. Chart or Web is clear, organized, readable, and neat.	KWL chart or Web is well developed and includes all topics and subtopics. Chart or Web is clear, organized, readable, and neat.	
	0-2	3-4	5-6	7-8	_____ x 1
Purpose/ Quality of Information	The purpose or argument is generally unclear. Information has little or nothing to do with the main topic.	The central purpose or argument is not consistently clear throughout the paper. Information does not clearly relate to the main topic. No details and/or examples are given.	The writing has a clear purpose or argument, but may sometimes digress from it. Information clearly relates to the main topic. It provides 1-2 supporting details and/or examples.	Writer's central purpose or argument is readily apparent to the reader. Information clearly relates to the main topic. Includes several supporting details and/or examples.	
	0-2	3-4	5-6	7-8	_____ x 1
Content	Central purpose or argument is not clearly identified. Analysis is vague or not evident. Reader is confused or may be misinformed.	Information supports a central purpose or argument at times. Analysis is basic or general. Reader gains few insights.	Information provides reasonable support for a central purpose or argument and displays evidence of a basic analysis of a significant topic. Reader gains some insights.	Balanced presentation of relevant and legitimate information that clearly supports a central purpose or argument and shows a thoughtful, in-depth analysis of a significant topic. Reader gains important insights.	

Marking Rubric for Assignment 6.1: Research Paper (continued)					
	0-2	3-4	5-6	7-8	_____ x 1
Organization	There is no clear introduction of the topics/ structure of the paper. Many details are not in logical/expected order. There is little sense that the writing is organized. The transitions between ideas are unclear or non-existent. The reader cannot identify a line of reasoning and loses interest. The conclusion is incomplete and/ or unfocused.	The introduction states the main topic, but does not adequately preview the structure of the paper nor is it particularly inviting to the reader. Some details are not in logical or expected order and this distracts the reader. Some transitions work well but connections between other ideas occasionally fail to make sense. The reader is fairly clear about what the writer intends. The conclusion does not adequately restate the learning.	The introduction is inviting, states the main topic, and previews the structure of the paper, but is not particularly inviting to the reader. Details are placed in a logical order, but the way in which they are presented/ introduced sometimes makes the writing less interesting. Transitions are usually clearly linked to each other. For the most part, the reader can follow the line of reasoning. Conclusion restates the learning.	The introduction is inviting, states the main topic, and previews the structure of the paper. Details are placed in a logical order and the way they are presented effectively keeps the interest of the reader. A variety of thoughtful transitions are used and clearly show how the ideas are connected. The reader can follow the line of reasoning. Conclusion is engaging and restates personal learning.	
	1	2	3	4	_____ x 1
In-text Citations	Many sources are suspect (not credible) AND/ OR not cited correctly. Many sources are not linked to the bibliography.	Most sources used for quotes, statistics, and facts are credible and cited correctly and/or linked to the bibliography.	All sources used for quotes, statistics, and facts are credible and most are cited correctly and/ or linked to the bibliography.	All sources used for quotes, statistics, and facts are credible, cited correctly, and linked to the bibliography.	

Marking Rubric for Assignment 6.1: Research Paper (continued)

	1	2	3	4	_____ x 1
Format and Composition	Author makes more than 4 errors in grammar or spelling that distract the reader from the content. Few format requirements are followed.	Author makes 3–4 errors in grammar or spelling that distract the reader from the content. Some format requirements are followed.	Author makes 1–2 errors in grammar or spelling that distract the reader from the content. Most format requirements are followed.	Author makes no errors in grammar or spelling that distract the reader from the content. All format requirements are followed.	
	1	2	3	4	_____ x 1
Illustrations, Pictures, Statistical Graphs	Text is not supported by illustrations, pictures, and statistical graphs, or evidence and examples are NOT relevant AND/OR are not explained.	Text is supported by one illustration, picture, or statistical graph, which is labelled and referred to in the text of the paper. The illustration, picture, or statistical graph is cited properly. The evidence and example is relevant and has an explanation that shows how the piece of evidence supports the author’s position.	Text is supported by two illustrations, pictures, or statistical graphs, which are labelled and referred to in the text of the paper. The illustrations, pictures, or statistical graphs are cited properly. Most of the evidence and examples are specific and relevant, and explanations are given that show how each piece of evidence supports the author’s position.	Text is supported by a minimum of three illustrations, pictures, or statistical graphs, which are labelled and referred to in the text of the paper. All illustrations, pictures, and statistical graphs are cited properly. All of the evidence and examples are specific and relevant, and explanations are given that show how each piece of evidence supports the author’s position.	
	1	2	3	4	_____ x 1
Works Cited	Done in incorrect format and/or has many errors. Includes less than 3 entries and no variety in sources.	Done in correct format with some errors. Includes less than 3 entries or no variety in sources.	Done in correct form with few errors. Includes 3–4 entries from sources which vary slightly.	Done in correct format with no errors. Includes 3–4 entries from a variety of sources.	

Total: _____ / 43

Released 2020



Printed in Canada
Imprimé au Canada

GRADE 12 WORLD GEOGRAPHY: A HUMAN PERSPECTIVE (40S)

Module 1 World Geography Overview



Note: Module 1 contains a number of images that are best viewed in colour. Colour versions of these images in PDF format are available in the learning management system (LMS). Students are issued a username and password at the time of registration. If Internet access is unavailable, a CD with these images is available upon request from the Distance Learning Unit.

MODULE 1: WORLD GEOGRAPHY OVERVIEW

Introduction

Module 1 is divided into four lessons that cover topics such as the history of geography, the general role of geography as an academic discipline, the concepts of geography, the physical geography of the planet as a whole (including climate), human geography, and the differences between developed and developing countries.

The study of geography dates back to the days when people were nomadic hunters and gatherers who drew maps for themselves on stone tablets. Although these maps were little more than rough sketches, they are proof that people were aware of the need to understand the topography of the land to aid in their search for food and shelter. Since that time, geographic methods have evolved through three main stages and the discipline of geography itself has become much more formal and technically advanced.

Presently, geography can be defined as the study of Earth's physical features, climate, resources, and population. This is a very broad definition and it is important to remember that each of these geographic concepts should be studied in greater detail.

This module compares Earth's physical and human geography using a variety of different research methods. These methods provide us with different information in terms of population, physical characteristics, the causes of natural disasters, the impact of natural disasters, and the composition of the social and cultural environment. All of this information falls under the umbrella of geography. As you can see, geography is a web of interconnected ideas and concepts that, together, form the core of the discipline.

Lastly, this module explores the political process that drives development throughout the world. It will help you to understand why such disparity exists between countries and how geography plays a role in determining the wealth and prosperity of some areas of the world relative to other areas. Geographical studies are a critical first step to being able to close the ever widening gap between the rich and the poor on a global level.

The main focus questions for this module are

Lesson 1	Lesson 2	Lesson 3	Lesson 4
1. What is geography?	1. What are the significant concepts related to physical geography?	1. What is meant by the term <i>culture</i> and what are its characteristics?	1. What is the difference between a nation and a country?
2. What are the important concepts of geography?	2. What are the major physical features of the world and where are they located?	2. How does a <i>sense of place</i> influence and shape our identities?	2. How can countries be grouped? What are the advantages and disadvantages of grouping countries?
3. How is physical geography different from human geography?	3. Which physical landscapes are hospitable to human settlement? Which are not as hospitable? Why?	3. What are the dangers involved in adopting an ethnocentric attitude?	3. What is meant by the terms developed countries and developing countries? What are some characteristics of either group?
4. What techniques are used to collect, organize, analyze, and display geographic data?	4. What are some generalizations that can be made about the world climates and climatic regions? About world vegetation zones? About world soils?		4. How and why did developed and developing countries evolve? What are some significant issues facing these countries? What are the interrelationships between developed and developing countries?

Reminders

- Let the computer graphics in the margins guide you through the module.
- Whenever you encounter difficulties, contact your tutor/marker. Do not let a roadblock keep you from working towards the completion of the course.

Assignments in Module 1

When you have completed the assignments for Module 1, submit your completed assignments to the Distance Learning Unit either by mail or electronically through the learning management system (LMS). The staff will forward your work to your tutor/marker.

Lesson	Assignment	Marks
1	Assignment 1.1: Introduction to Geography	10
3	Assignment 1.2: Cultural Study	42
4	Assignment 1.3: Development Case Study	51

Notes

LESSON 1: THE ORIGINS AND GROWTH OF GEOGRAPHY

Lesson Focus

- Learn about the growth and development of geography throughout history as well as be able to answer the question “What is geography?”
- Learn general concepts including the difference between physical and human geography, as well as other types of geography.
- Get an idea of important concepts, including the types of work in which geographers might choose to specialize and, consequently, start to understand why geography is worth learning.
- Be introduced to techniques that are used to collect, organize, analyze, and display information.

Introduction

Lesson 1 looks at human history and summarizes the three general development phases of modern geography. You will also begin to understand the range of topics involved in the modern study of and business industry of geography—nearly all facets of human activity have some kind of geographical component to them.

A Brief History



The lessons in Module 1 will expose you to a variety of tasks such as investigations, readings, and map work—all tasks that geographers perform. Lesson 1, however, takes a brief look back in history to get an idea of how the **discipline** of geography has evolved into what it is today.

Human beings have always been curious about Earth’s land and resources. There is so much to explore and so many ways in which geographical elements can be used to better the lives of humans. People have sought to better their circumstances through the pursuit of better hunting or grazing land, and through the use and exploitation of natural resources. Curiosity also partly explains the early desire of humans to trade with people from different areas of the world, but a more convincing explanation might be the attraction of a quest to discover new land in order to gain control of its potential resource riches.

According to written records, the earliest map is from the Middle East—it was drawn in the 9th century BCE on a clay tablet by **Babylonian** scholars in Mesopotamia (the land between the Tigris and Euphrates rivers). The best known map from that era is the *Imago Mundi* of 600 BCE.

Between the 6th and 1st centuries BCE, the **Greeks** compiled much geographic information. It may be surprising to learn that Pythagoras (Yes, you've heard his name in mathematics: $a^2 + b^2 = c^2$ is the Pythagorean theorem.) was the first to propose that the world was round. Just over 200 years later, through keen observation of the stars and the angle of shadows at various locations, Eratosthenes (276–195 BCE) calculated the circumference of the planet. The expansion of the Roman Empire over the next several hundred years added to this treasure of geographical knowledge.



Meanwhile, in **China**, between about 500 BCE and 1100 AD, more complex forms of **mapping** were being developed through the use of grids. Records as far back as the first century AD were being kept that detailed information such as land forms, population, and land use. It is interesting to note that on early maps south appeared at the top of the map.

Between the 7th and 14th centuries, the medieval **Islamic** world contributed much to the development of geography. Besides collecting information about land forms, population, and climate, trade routes were greatly expanded. Maps were created that indicated flat projections of a spherical Earth and trigonometry was used to calculate measurements with greater accuracy.

In early **Medieval Europe** (600–1000 AD), there was very little development in any of the academic disciplines. A lot of information was lost or forgotten and it became common to believe that the world was flat.

Fortunately, that era was followed by the **Age of Discovery** (1400–1800) where, following the inspirational journeys of Marco Polo (1254–1324), a renewed interest in exploration prompted expeditions by Portugal in the 15th century and by the Low Countries (Holland and Belgium) in the 16th century. The Dutch were noted as great map-makers (**cartographers**).



The following are the **three general phases** of geographic study:

1. isolated research by individual scholars
2. research organized by groups and societies
3. the coordination of research information by national and international organizations

The *first period of growth* often involved rich sponsors who encouraged scholars to pursue their research as a way of investing in the improvement of their own social and economic status.

The *second period of growth* involved the organized sharing of geographic research beginning in the early 1800s. One of the earliest activities was the founding of societies to promote and encourage common interests in geographical research.

The *third period of growth* saw the establishment of a geography department at most major universities. Often, issues would lead to the creation of institutes and centres for specialist studies such as, for example, studies on Arctic climate change. The last International Polar Year began in 2007 and continued until 2009. It resulted in Canada's most successful polar research project to date.

What Is Geography?

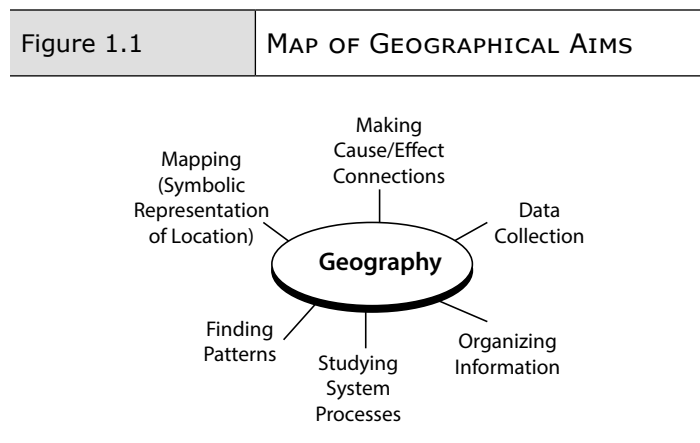


Geography has been defined as the study of Earth's physical features, resources, and climate, as well as the study of the physical aspects of its population. This information can be drawn from direct observation or borrowed from the work of specialized sciences, such as geology, meteorology, biology, remote sensing, and anthropology.

Physical geography is the study of Earth's physical features, climate, and resources. Physical elements include studying Earth's topography, soil and minerals, surface and underground water, weather and climate, and native plants and animals.

Human geography is the study of Earth's population in terms of demography, culture, and the interaction of humans with their environment. Cultural elements include politics, religion, demographics, infrastructure, agricultural practices, and settlement patterns.

The following diagram illustrates the general aims of geography:



The subdivisions that are recognized in geographical research include the following:

Physical Geography	Human Geography
<p>Mathematical geography deals with the shape, size, and movements of Earth and, more recently, it has also included quantitative geography—the mathematical probability and statistical analysis of any quantity of items (resources) found throughout the world.</p> <p>Physiography usually includes the study of topography (the lay of the land), climates, natural vegetation, and oceanography.</p> <p>Biogeography is the study of the distribution of species and the ecological aspect of these distributions—especially as indicators of environmental problems.</p>	<p>Anthropogeography studies the distribution and interaction of humans in relation to the physical geography.</p> <p>Political geography is concerned primarily with the world’s political divisions and how political events affect human geography.</p> <p>Economic or commercial geography is concerned with how issues relating to resource use, and industry and trade affect physical geography.</p> <p>Historical geography is the comparison of the geography of the past and its legacy to the geography of the present.</p>



Generally speaking, geography considers physical and cultural elements and may study both, either systematically or regionally, with the intent of showing how things are connected.

1. Physical elements

- topography
- soil and minerals
- surface and underground water
- weather and climate
- native plants and animals

2. The **cultural elements** deal with the *human occupancy* (human geography) of Earth and its interaction with the physical elements.

- politics
- religion
- demographics
- infrastructure (buildings, roads, factories, mines)
- agricultural practices (farms and arable land patterns)
- rural and urban settlement

3. The **systematic or topical approach** concerns the study of a set of elements over a whole area or a restricted area.
 - manufacturing geography
 - biogeography: the study of ecosystems, plants, animals, and their relationships to humans
4. **Regional geography** is concerned with the interrelated characteristics of a particular area or region, such as the geography of Manitoba or of North America.

What Do Geographers Do?

One way to improve your understanding of geography is to look at a list of employment positions occupied by students who have graduated from university level geography studies. Many geographers become planners for resource management or development within a city, province, or country. Others teach at schools and universities. As well, some work at coordinating transportation networks, while some are environmental workers.

Top 10 Reasons to Study Geography

Source: Canadian Council for Geographic Education. *Ten Reasons Why Every Student Should Study Geography*. www.ccge.org/programs/geoliteracy/docs/GeoLiteracy_letter.pdf. Used in accordance with fair dealing guidelines.

1. To understand basic, physical systems that affect everyday life (e.g., Earth–Sun relationships, water cycles, wind, and ocean currents).
2. To learn the location of places and the physical and cultural characteristics of those places in order to function more effectively in our increasingly interdependent world.
3. To understand the geography of past times and how geography has played important roles in the evolution of people, their ideas, places, and environments.
4. To develop a mental map of your community, province or territory, country, and the world so that you can understand the “where” of places and events.
5. To explain how the processes of human and physical systems have arranged and sometimes changed the surface of Earth.
6. To understand the spatial organization of society and see order in what often appears to be random scattering of people and places.
7. To recognize spatial distributions at all scales—local and worldwide—in order to understand the complex connectivity of people and places.
8. To be able to make sensible judgments about matters involving relationships between the physical environment and society.

9. To appreciate Earth as the homeland of humankind and provide insight for wise management decisions about how the planet's resources should be used.
10. To understand global interdependence and to become a better global citizen.

How Is Information Collected and Used?

The sources of information that geographers use are just as varied as the types of jobs they occupy. Sources fall into three general categories:

- **primary sources:** raw or first-hand data (e.g., field notes or photos)
- **secondary sources:** constructed from first-hand information (e.g., maps)
- **tertiary sources:** compiled from secondary sources (e.g., textbooks)

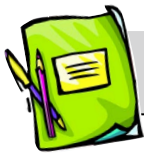
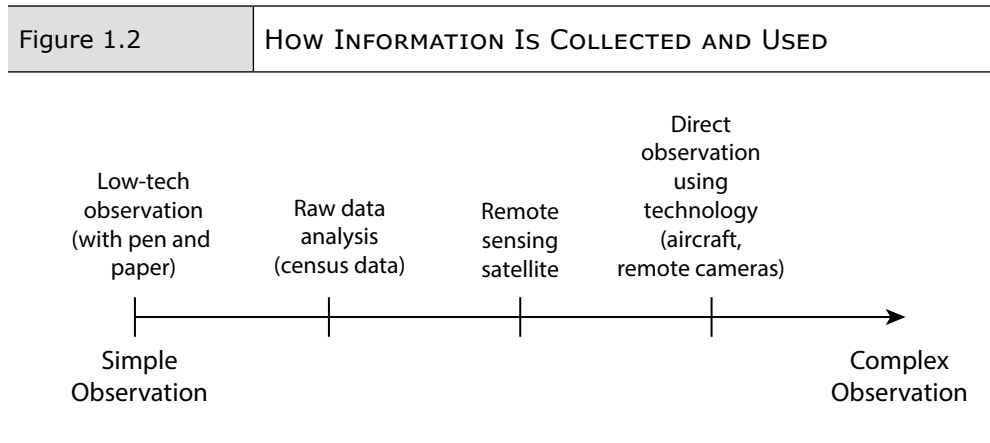
Methods can be as simple as the act of observing, recording, and sketching information with a paper and pencil, and as complex as using global satellite data combined with intense climate modelling software to create user-friendly, multi-media presentations.

There is a wide range of tool usage and data collection in the study of geography. An elementary student in Peonan Point, Manitoba, can record and chart the daily temperature and weather information on a calendar using a simple thermometer. On the other hand, a Ph.D. researcher in Churchill, Manitoba, can use a much more complicated apparatus and record complex methane off-gassing of tundra wetlands as part of a study on climate change.

Further examples include government workers who use the most recent census results to create both paper and digital maps that show the changing distribution patterns of agricultural or recreational land use within Manitoba. Forestry workers near Swan River use satellite imaging data combined with Geographic Information Software (GIS) to show wildlife and plant distribution and to determine a harvesting plan with the least harmful impact on the environment.

These examples demonstrate that geography is important to many different people and relevant to various fields of study. You don't have to be a geographer to appreciate or understand basic geographical data or phenomena.

The following diagram illustrates the general sources of information and their varying levels of complexity.



Learning Activity 1.1

The Origins and Growth of Geography



To help you assess your understanding of the origins of geography, you will now complete Learning Activity 1.1. If you have difficulty with this learning activity, ask your learning partner for help or contact your tutor/marker.

1. Imagine that you were talking to someone new to Earth. Explain geography to them.
2. What do you think are the top three most important goals of geography? Why?
3. What do you think would be the best way to collect information on the number of people in a specific area or region? Why is this done? What would be the best way of first organizing that information and then sharing it with other people?
4. Look at the list Top 10 Reasons to Study Geography, pick two reasons that are most interesting to you, and explain why (focus on awareness of geographical concepts).



Remember to check your responses in the Learning Activity Answer Key found at the end of this module.

Lesson Summary

You should now have a good sense of the growth and development of geography throughout history, and you should also be able to answer the question, “What is geography?”

Hopefully, the differences between physical and human geography are becoming clear to you and you have an idea of the different areas in which geographers might specialize. The more you learn about geography, the more it will become apparent that geography is worth learning.

Finally, you now have some insight into the diverse and dynamic nature of collecting and using geographic data.

It is now time to complete Assignment 1.1.



Assignment 1.1

Introduction to Geography (10 marks)

You have a **choice** between question 1 and 2. Answer only **one** question.

1. As an introduction to general geography, you are going to create a personal geographic map. This activity has two goals: it will get you thinking about symbolism (how you are already connected to the geographic concepts you will learn about in this course) **and** it will allow your tutor/marker to get to know you as a student. (10 marks – 2 marks for each step)
 - a) Using a fine-tipped pencil, the map of North America (found in Appendix A), and an atlas as a reference, draw in the provincial and territorial boundaries of Canada.
 - b) Colour each province and/or territory a different colour and include the capital cities of each province. Be sure to include a legend.
 - c) Find the map of Manitoba (found in Appendix B) and add the following:
 - i) a red circle around the dot if you live in a city (a community large enough for a traffic light)
 - ii) a green circle around the dot if you live in a rural area
 - iii) a blue circle around the dot if you live in a town
 - iv) a dark purple dot for the city, town, or settlement you live in (label it as well)
 - d) Think about your preferred learning style (e.g., listening to someone, watching or looking at graphics or videos, making or doing things). Draw a 2 to 3 centimetre wide shape (as described below) around your location dot in black (Appendix B), indicating your preferred learning style.
 - i) Draw a triangle if you prefer to listen to information and/or instructions.
 - ii) Draw a square if you prefer to watch information and/or instructions.
 - iii) Draw a circle if you prefer to make and/or do things.
 - e) Colour in the rest of the provincial map as follows:
 - i) yellow if you like to get out and interact with nature on a regular basis
 - ii) orange if you prefer life in the city
 - iii) light purple if you enjoy spending time both in a city and in the rural areas

continued

Assignment 1.1: Introduction to Geography (continued)

2. After reviewing the job list below and any other related sources you have access to, prepare a pamphlet that would answer the question, “Are geographers needed in society?” Refer to the marking rubric for the breakdown of marks. (10 marks)

Jobs in the private sector

- urban planner in a consulting firm
- ecologist in a consulting firm
- development planner in a bank
- industrial development planner
- travel agent manager
- rehabilitation planner in a sand and gravel company
- computer programmer
- air photo interpreter
- cartographer
- real-estate appraiser
- market analyst for a commercial firm
- location analyst for a commercial firm
- legal assistant for a law firm specializing in environmental law

Jobs in the government sector

- social planner
- land use planner
- parks planner
- urban/regional planner
- resource manager
- human resources planner
- pits and quarries rehabilitation planner
- wildlife manager
- parks superintendent
- water resources researcher
- socio-economics analyst for a transportation department
- computer operator systems coordinator
- cartographer
- remote sensing specialist
- army officer-military intelligence

continued

Source: Canadian Council for Geographic Education. *Geography Jobs*.
www.cgeducation.ca/resources/why_geography_jobs.asp.

Assignment 1.1: Introduction to Geography (continued)

Marking Rubric for Assignment 1.1		
	Possible Marks	Marks Given
Reasoning ■ Three reasons that geographers are needed are clearly listed in full sentences.	3 marks 1 mark for reason (x 3)	
Description ■ Brief but accurate descriptions are given for three different occupations.	3 marks 1 mark for description (x 3)	
Graphics ■ Three clear graphic illustrations that relate to the occupations are appropriately placed.	3 marks 1 mark for an appropriate graphic (x 3)	
Neatness ■ The pamphlet is neat, legible, and one in colour.	1 mark	
		Total Score: _____ /10

For further information on careers in geography, visit the Canadian Council for Geographic Education website at www.ccge.org.

Notes

LESSON 2: THE WORLD'S PHYSICAL GEOGRAPHY

Lesson Focus

- Review the significant concepts of geography (with a focus on physical geography) and gain a more detailed understanding of these concepts.
- Learn about the major physical features of the world and be able to identify where they are located.
- Understand which physical landscapes are hospitable to human settlement and why.
- Learn what generalizations can be made about world climates and climatic regions, vegetation zones, and soils when considering hospitable landscapes.

Introduction

When people think of geography, maps are usually the first thing that comes to mind. In Lesson 2, you will review the significant concepts of geography and the standards that are essential to creating a common understanding of what maps (among other tools) demonstrate. You will also review the physical features of the world, including climate, vegetation, and soils. Finally, Lesson 2 looks at how the physical landscape influences human settlement.

Concepts of Physical Geography

Geography as a whole is a part of the larger discipline of Earth sciences, which also includes geology and ecology. Geography is generally divided into two disciplines: human geography and physical geography. Most people assume that physical geography focuses on the creation and study of maps; however, that is only partially correct.

Prior to 1950, most physical geographers focused on collecting facts about the world. Since then, the focus has shifted to determining *why* things are the way they are. This shift in focus is even more important today because of our growing need to understand how we are changing the world in which we live.

The following table demonstrates the different topics studied within the disciplines of physical geography and human geography.

Physical Geography	Human Geography
Rocks and Minerals (geology)	Population Demographics
Landforms (geomorphology)	Settlements
Soils (pedology)	Economic Activities
Animals (biogeography)	Transportation
Plants (biogeography)	Recreational Activities
Water (hydrology)	Religion
Atmosphere (meteorology)	Political Systems
Rivers and Other Water Bodies (hydrology)	Social Traditions
Environment (ecology)	Human Migration
Climate and Weather (climatology)	Agricultural Systems
Oceans (oceanography)	Urban Systems

Source: Pidwirny, Michael. "Elements of Geography." *Fundamentals of Physical Geography*, 2nd Edition. 2006. www.physicalgeography.net/fundamentals/1b.html. Reproduced in accordance with fair dealing guidelines.



Human geography is the study of the interaction between humans and their environment; consequently, a geographer must know **where** the area being described is located in the world. This **spatial** component of geography that relates space, placement, and relative location of objects and places is crucial to the study of human geography and is one reason why physical geography is so important.

The first part of this lesson asks you to become more familiar with the "where." It takes you through several of the different types of maps as well as the related vocabulary. The goal is for you to become comfortable using this important geographic tool.



A **map** is a representation of the real world used to show information about the physical characteristics of an area. It analyzes, stores, and communicates spatially organized information both on paper and in electronic form (Geographic Information Systems or GIS). Human geographic information can also be shown (see above table).



Map analysis is often the search for **patterns** created when data (facts and figures) are shaded on a map. The visual representation is generally better at establishing relationships between items, as opposed to a column of figures. For example, when looking at temperature patterns, it can be easily observed that the interior of continents have greater ranges between seasonal highs and lows than the exterior areas. This analysis often raises questions, such as “What are the possible causes, if any, of the relationship between these extreme temperature variations and their location?”



A distribution map can also bring to light **anomalies** or differences (something that does not fit the pattern). While detecting an anomaly is the first step, understanding why and how it exists is also important. An example would be noting that interior continental areas next to large lakes have less extreme daily temperature variations, and then understanding that this occurs because the body of water regulates the humidity and temperature.



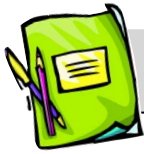
Two or more maps can also be used to study relationships or **correlations**. For example, a look at temperature variations on one map could be compared to the physical elevation in the landscape as shown on a **topographic map**. The questions then become whether and why the two factors are related.

Map Rules (Please Follow Them)

Since maps are scale representations of the world, it is important to follow the conventional ways of representing the world on any map. Each map should include all the map basics so that it can be easily read by someone else.

Map basics include the following:

1. **Title**—Titles make users aware of the nature of the map.
2. **Legend**—This is a set of symbols that define what the shapes, patterns, and colours used on the map represent. The legend is usually located below the title in a suitable box.
3. **Scale**—A divided line or statement that explains the ratio between map distance and the actual real-world distance.
4. **Direction**—The presence of an arrow or a compass rose shows direction. If one is not present, assume that North is at the top of the map.
5. **Date**—This indicates the date of the data used or the date when the map was made.



Learning Activity 1.2

Exploring Maps



To help you assess your understanding of maps, you will now complete Learning Activity 1.2. If you have difficulty with this learning activity, ask your learning partner for help or contact your tutor/marker.



1. Take a look at any kind of geographical map in an atlas or find one online. Identify what kind of map it is and answer the following questions:
 - a) What is the title of the map? What is the purpose of the map?
 - b) When was the map published? Is the information on this map subject to change? If yes, how long do you think it will take for the map to be outdated and no longer accurate?
 - c) What scale is the map using? Is it the most appropriate scale or would it be more effective to use an alternate ratio?
 - d) Is there a legend? What sorts of symbols are used in the legend? Are they clear and easy to locate?
 - e) How is the map oriented? Does it include a direction?
 - f) Is this map clear? Is it easy to find all of the relevant information you are looking for and is it useful?
-

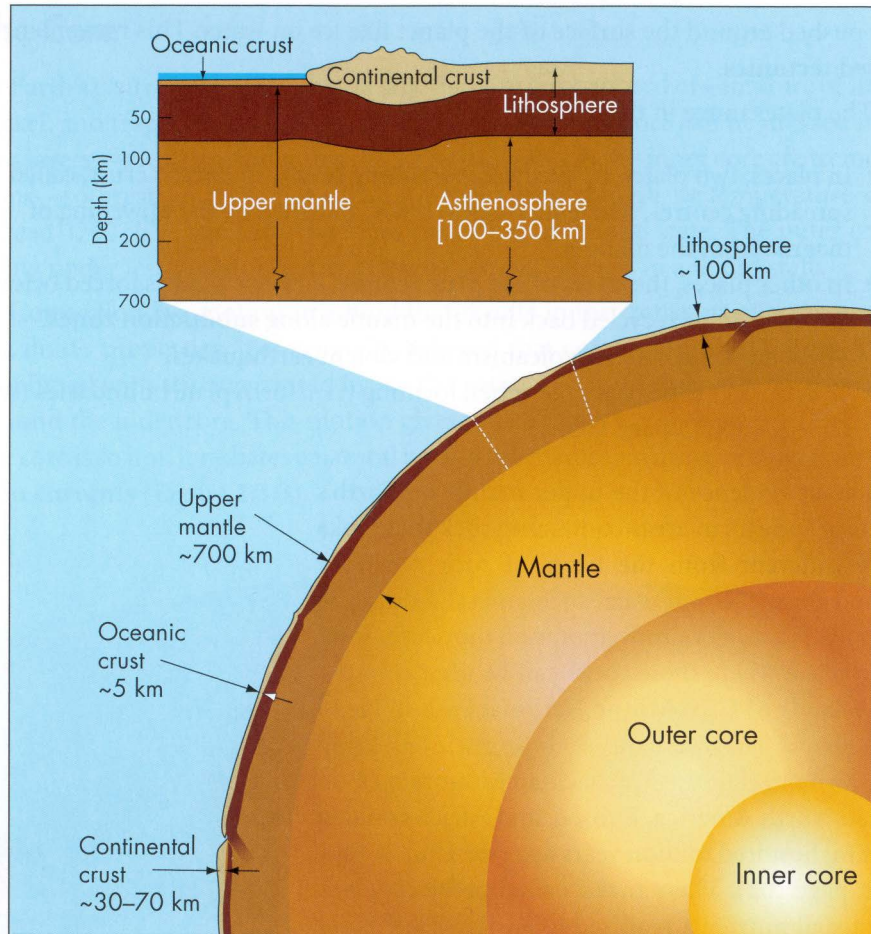
Major Physical Features of the World

The Physical World

Figure 1.3: Earth's Structure

Earth, the third planet from the Sun, is a large sphere of rock and water with a unique atmosphere.

Figure 1.3	THE STRUCTURE OF PLANET EARTH
------------	-------------------------------



Source: Vanzant, Paul, et al. *This Earth: Physical Geography and the Environment*. Toronto, ON: Emond Montgomery Publications, 2010. p. 32. Reproduced in accordance with fair dealing guidelines.

Figure 1.4: Topographic Map of the World

The surface features (topography or shape of the land) include areas of great elevation (the world mountain chains), and areas of relatively low elevation (the lowlands).



There are areas of relatively level, low-lying land called **plains**; areas of level land at higher elevations called **plateaus**; and areas that have a mixture of all these features.

Figure 1.4

TOPOGRAPHY MAP OF THE WORLD



Source: Vanzant, Paul, et al. *This Earth: Physical Geography and the Environment*. Toronto, ON: Emond Montgomery Publications, 2010. p. 464. Reproduced in accordance with fair dealing guidelines.

Figure 1.4

TOPOGRAPHY MAP OF THE WORLD (CONTINUED)



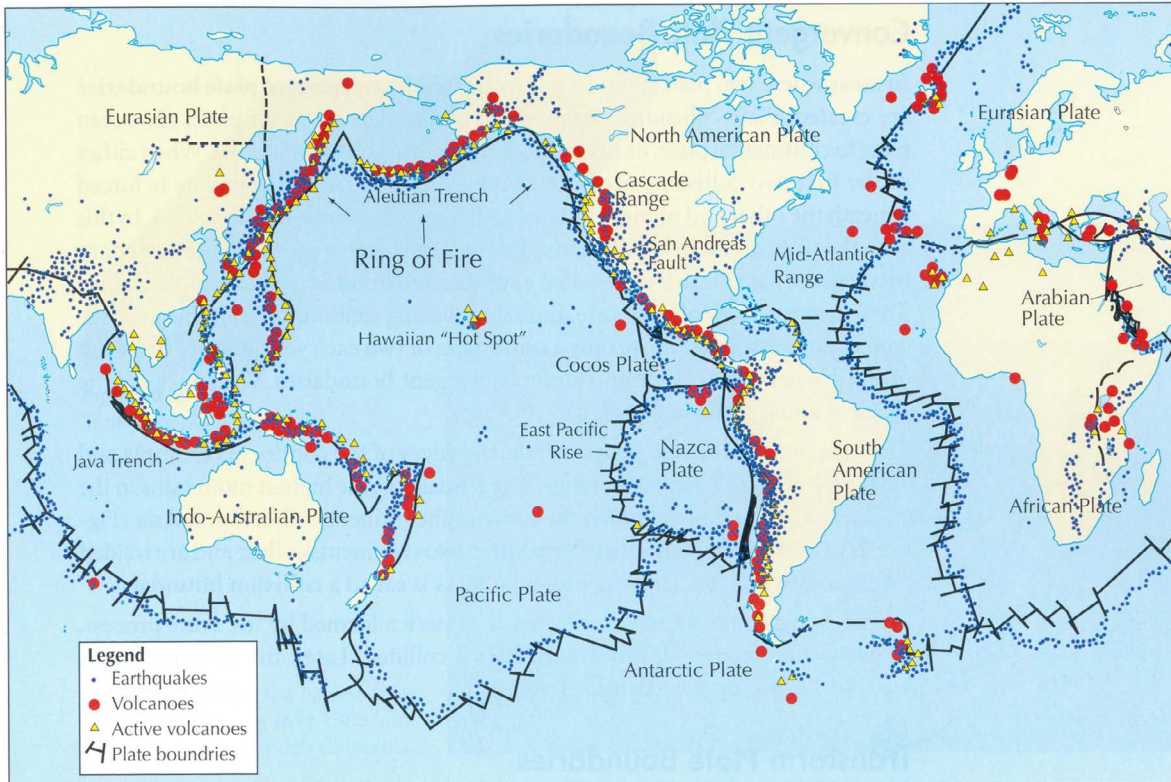
Source: Vanzant, Paul, et al. *This Earth: Physical Geography and the Environment*. Toronto, ON: Emond Montgomery Publications, 2010. p. 464. Reproduced in accordance with fair dealing guidelines.

Figure 1.5: Tectonic Plate Boundaries and the “Ring of Fire”

Many of Earth’s unstable zones are located along the outer edges of the continents. These areas are prone to earthquakes, volcanoes, and tsunamis.

Figure 1.5

TECTONIC PLATE BOUNDARIES AND THE “RING OF FIRE”



Source: Vanzant, Paul, et al. *This Earth: Physical Geography and the Environment*. Toronto, ON: Emond Montgomery Publications, 2010. p. 101. Reproduced in accordance with fair dealing guidelines.

At the other end of the spectrum are shields or cratons, areas of great stability, usually located in the centre of the continents. These long-established, mineral-rich zones of Earth’s surface can be seen on many “Physical Relief” type maps in atlases.



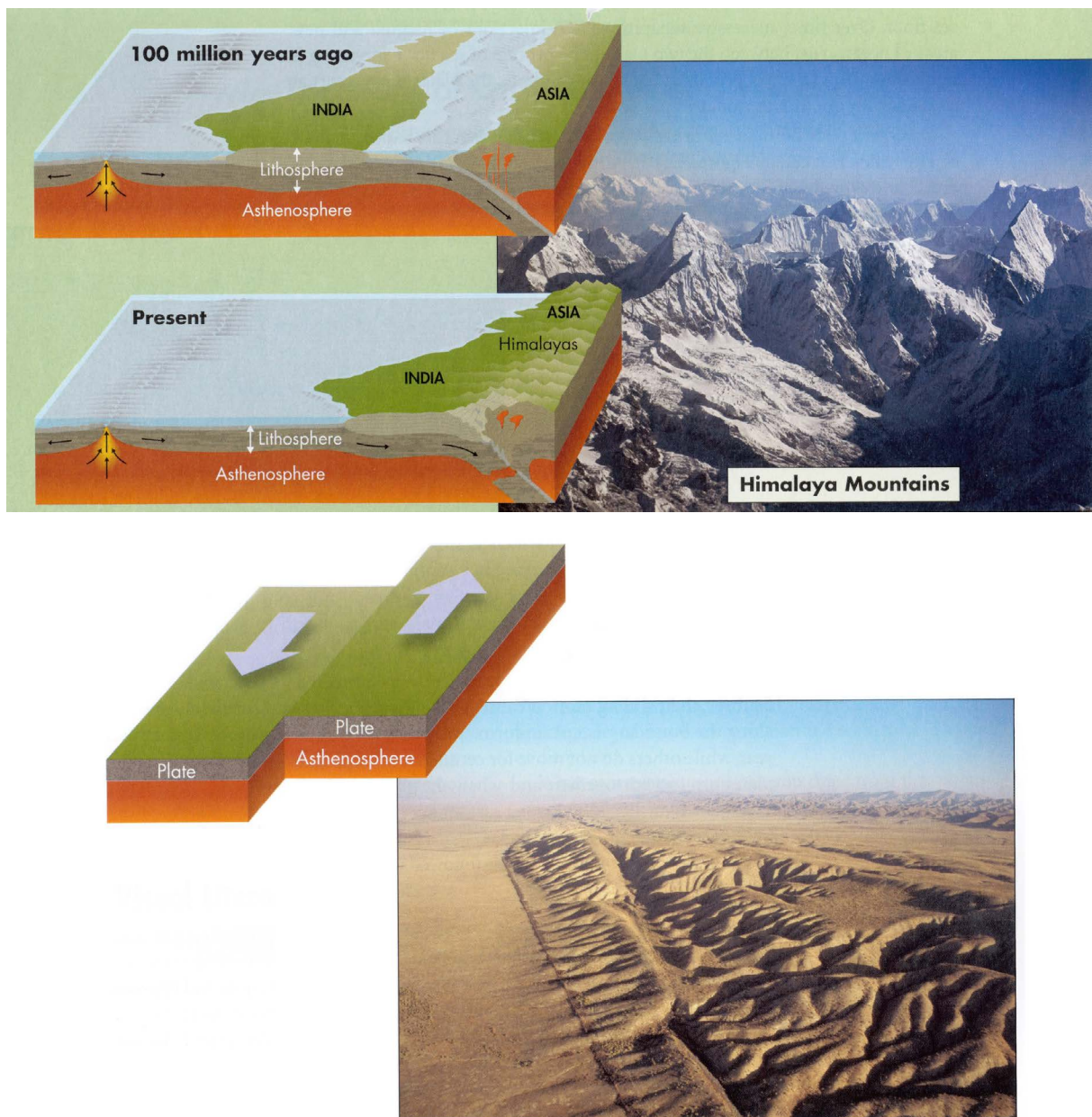
The current arrangement of the land masses is the result of **plate tectonics**. The slowly moving plates of continental and oceanic crust slide along the plastic-like upper mantle (asthenosphere) and, when they collide, the resulting vibrations and shocks are known as earthquakes. The moving plates also create volcanoes and mountain ranges, and form new continental and oceanic crust.

Figure 1.6: How Tectonic Plates Move

Occasionally, the friction of two plates sliding against each other may result in the formation of molten rock. When oceanic crust is being pushed underneath continental crust, this molten rock or magma occasionally breaks through the crust. These eruptions are known as volcanoes.

Figure 1.6

HOW TECTONIC PLATES MOVE

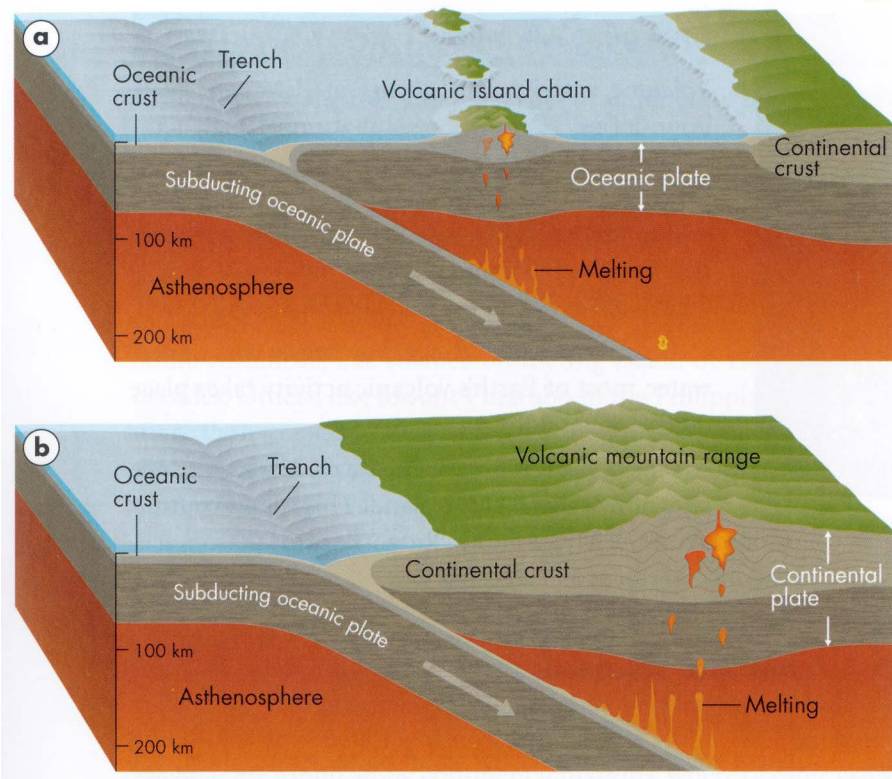


Source: Vanzant, Paul, et al. *This Earth: Physical Geography and the Environment*. Toronto, ON: Emond Montgomery Publications, 2010. pp. 102–103. Reproduced in accordance with fair dealing guidelines.

Figure 1.7: Subduction, Mountain Building, and Volcanoes

Natural disasters, such as earthquakes, often occur only once or twice in a lifetime for a given area and, as a result, people have learned to live with these catastrophic events. The earthquake in San Francisco in October 1989, the earthquake in Iran in 1990, the earthquake in Turkey in 2000, the earthquake in Seattle in February 2001, the earthquake and resulting tsunami in Indonesia in 2004, the earthquake in Haiti in 2010, the earthquake in Japan in 2011, and the earthquake in Nepal in 2015 are recent examples of where people, in spite of great adversity, have gone on to rebuild their lives.

Figure 1.7	SUBDUCTION, MOUNTAIN BUILDING, AND VOLCANOES
------------	--



Source: Vanzant, Paul, et al. *This Earth: Physical Geography and the Environment*. Toronto, ON: Emond Montgomery Publications, 2010. p. 109. Reproduced in accordance with fair dealing guidelines.

Hospitable and Inhospitable Landscapes



Although humans are the most adaptable species on Earth, we still have preferences. We prefer landscapes that are **hospitable**. In other words, landscapes that allow us to live comfortably, with secure sources of food, water, and shelter, as well as moderate climates, and stability of land that allows for easy transportation, and space to expand as the population grows.

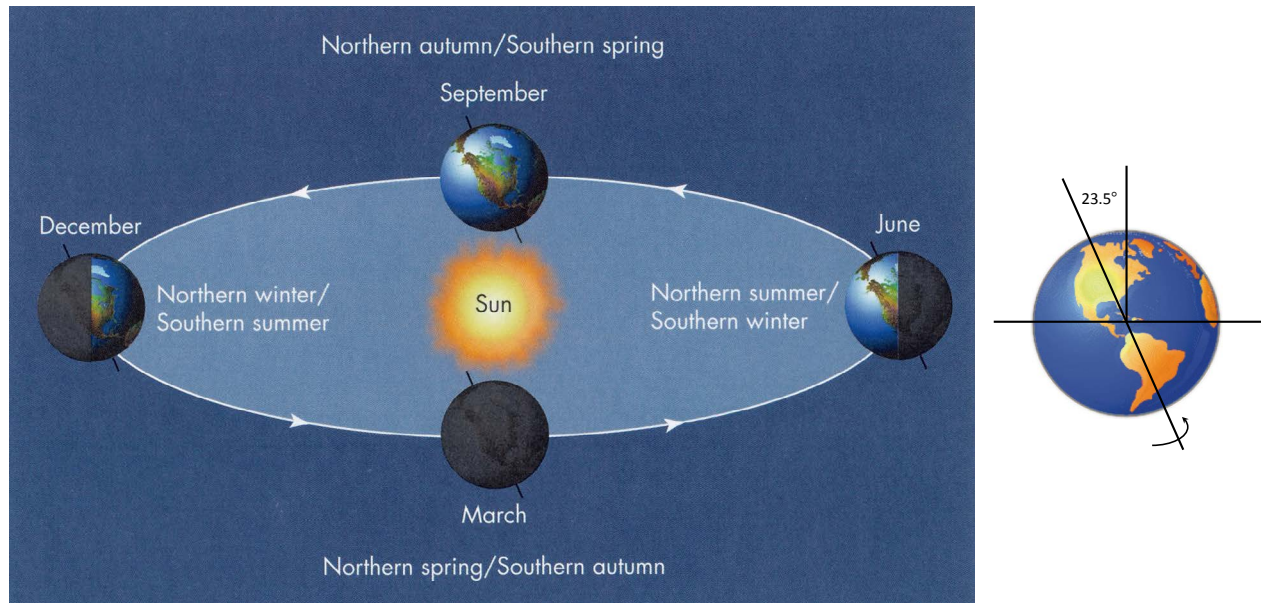
Landscapes that do not provide most of what we need or want are considered **inhospitable**. Is the climate too hot or cold to survive comfortably? Are there frequent earthquakes, volcanic eruptions, or tsunamis? Are the climate, topography (landscape), and soils suitable for growing crops, without worrying about hazards such as hurricanes or tornados?

When we look at areas of the world where settlements are established, we see that many of them do not seem very hospitable, yet the resilience of the human spirit, combined with ingenuity and creative problem solving, mesh with the environmental challenges to create truly unique cultures.

World Climates and Climatic Regions

Because of Earth's position in space relative to the Sun and how Earth is tilted on its rotational axis ($23\frac{1}{2}^{\circ}$), the equatorial regions have more sunlight than areas at higher latitudes—further away from the equator. (Review Figure 1.8 on the following page.) Consequently, the climate tends to be hot at the equator, with cooler temperatures the further away (north or south) one lives from the equator.

When it is summer in the northern hemisphere, the northern part of Earth is tilted toward the Sun and southern areas such as Australia, New Zealand, and the southern tip of South America experience winter. Interestingly enough, Earth is actually slightly further away from the Sun when the northern hemisphere experiences summer.



Source: Vanzant, Paul, et al. *This Earth: Physical Geography and the Environment*. Toronto, ON: Emond Montgomery Publications, 2010. p. 309. Reproduced in accordance with fair dealing guidelines.



Learning Activity 1.3

Drawing a Map

Without looking back at the maps of the world, take a few minutes to draw a freehand map of the world onto a sheet of printer paper (or any paper of a similar size). When you are done, complete the following.

1. Compare the freehand map you just drew to a world map.
2. Did you remember all of the continents? Were the placement and size of the continents relatively accurate? Did you add any features to your map in addition to the basic outlines?
3. What conclusions can you draw about the relative importance attached to certain places based on their features, positioning, and level of detail?

World Soils



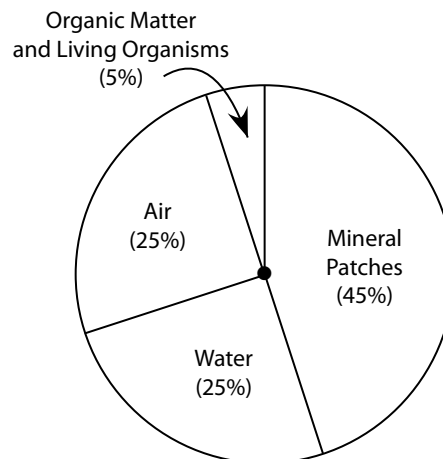
Soil is more than just dirt and it is important for more than just growing vegetation. Soil also helps to control floods, droughts, and local temperatures. It also helps to clean up pollution through the exchange gases and the micro-organisms in the soil. **Topsoil** is the term often used when referring to quality soils that can support regular agricultural use.

Topsoil has four main parts (these are approximate percentages)

1. Mineral particles (45%)
2. Water (25%)
3. Air (25%)
4. Organic matter and living organisms (5%)

Figure 1.9

TOPSOIL



Global soil distribution is closely tied to the global climate because the longer the growing season, the more organic matter is available to be incorporated into the soil. In extreme climates (northern and southern latitudes, deserts, and higher elevations), very little vegetation grows and there is a relatively short period of time for dead vegetation to decompose.

Topsoil provides the base upon which food is produced. As the population of the world continues to grow, the challenges of feeding everyone becomes an increasingly important issue. Where does all the food come from? Globally, most of it is from crops grown in fields and from animals that consume the product of many of these crops.



Unfortunately, places where we like to live are also locations where soil tends to be suitable for growing food. Many cities now cover land that was once used for agriculture. Climate change and deforestation are also contributing to soil loss through erosion and **desertification** (where former agricultural land has degraded, through moisture loss and erosion, to desert-like conditions). Good soil is rare and it is considered a non-renewable resource because we cannot “create” land or soil on a large scale.

Soil is incredibly important, but it does not attract the attention it deserves. That is probably why most people do not realize what an integral role soils play in human geography. However, it is predicted that soils will increasingly become part of the global conversation. In fact, in February 2011, a global partnership was formed to create a global soil map with the intent of assisting decision making in global issues such as hunger eradication and environmental degradation. If you have access to the Internet, research www.globalsoilmap.net for updates.

World Vegetation Zones (Biomes)

The soil conditions, temperature, amount of sunlight, precipitation, and altitude above sea level all determine which plant species can grow in a certain area. These non-living characteristics of an environment are called **abiotic** factors. The abiotic factors help determine the type and number of plant (and animal) species that live in an area. **Biotic** factors include elements such as the amount of competing plant and animal species and the number of predators in an area.



The collection of all living things as well as the non-living resources in one area is referred to as a **biome** or ecosystem. Because plants are the dominant life form (and do not tend to move around much), they are used to help define the extent of each biome.



There are eight main vegetation zones or biomes (see the map that follows):

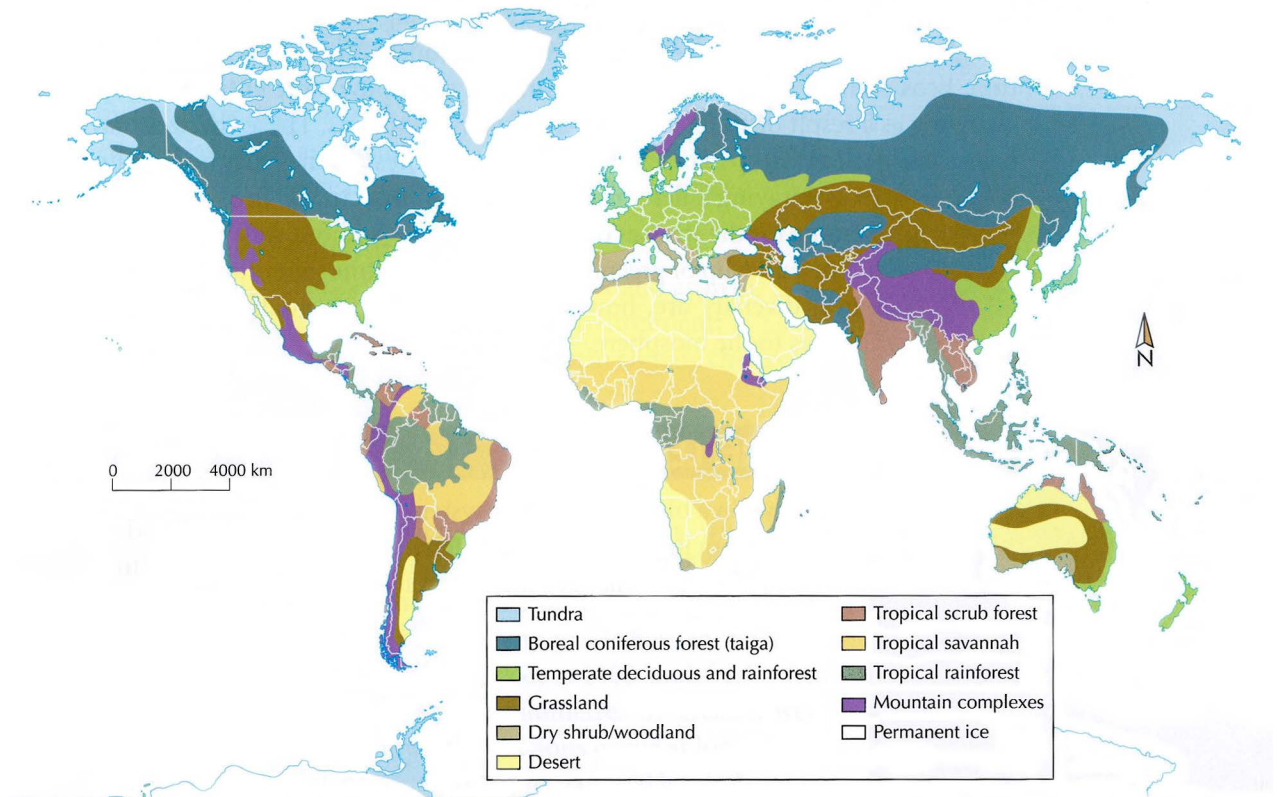
- A. **Tundra:** cold, dry polar regions where only ground-cover vegetation can grow in the very short growing season
- B. **Boreal forest or taiga:** the sometimes swampy, coniferous (evergreen) forest of mid to high northern latitudes, south of the tundra
- C. **Temperate deciduous forest:** moist, temperate climate with leafy trees
- D. **Grasslands:** relatively dry, treeless, subject to seasonal temperature extremes
- E. **Chaparral:** wet winters and dry summers, with shrubby thickets and small trees adapted to the dry summers
- F. **Desert:** area of very low precipitation, can be in hot or cold climate



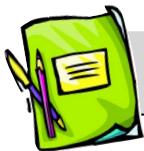
- G. **Savanna:** tropical or subtropical, occasional trees/shrubs scattered in a grassland with the dry season in the winter or low sun period of the year
- H. **Rainforest:** tropical areas with high rainfall and an abundance of plant and animal species

It is not surprising that the distribution of people on the planet is closely related to the availability of water, food, shelter, and all the other factors that make a location a good place to settle down (habitable).

Figure 1.10 | WORLD BIOMES



Source: Vanzant, Paul, et al. *This Earth: Physical Geography and the Environment*. Toronto, ON: Emond Montgomery Publications, 2010. p. 69. Reproduced in accordance with fair dealing guidelines.



Learning Activity 1.4

Topsoil Illustration

Of the land available for human habitation **and** food production, a relatively small proportion is good topsoil that can be used to grow things. To illustrate the rarity of good topsoil, take an apple, which represents Earth and complete the following steps:

1. Cut the apple into four equal parts. Three of the quarters represent the oceans, so set them aside.
 2. Take the quarter that represents all the land on Earth, and cut that land part in half lengthwise into two equal pieces. One piece represents non-habitable land and the second piece represents areas where humans can live but cannot grow food.
 3. Put one of the sections off to the side.
 4. Take the remaining section and cut it crosswise into four equal parts. Three of these sections represent the areas of the world that are rocky, wet, and hot, or contain soil so poor that food production is not possible.
 5. Carefully peel that last piece of apple. This small bit of peel represents the soil on Earth that all of us depend on for food!
-

Lesson Summary

You have reviewed the significant concepts of physical geography and have identified the major physical features of the world as well as where they are located. You should now have a better understanding of which physical landscapes are hospitable to human settlement and why.

When considering hospitable landscapes, you learned about world climates and climatic regions, vegetation zones and soils, and summaries of habitable landscapes as they relate to human settlement.

LESSON 3: THE WORLD'S HUMAN GEOGRAPHY

Lesson Focus

- Learn what is meant by the term *culture* and be able to identify some characteristics of culture.
- Explore the concept of a sense of place as it relates to the connection between physical geography and human activities.
- Learn what is meant by the term *ethnocentrism* and the implications of having an ethnocentric attitude.

Introduction

Lesson 3 introduces you to the “Global Village” by taking a closer look at human geography, culture, and the relationships between humans and the planet. Although this is perhaps an expansive and extensive topic, the lesson also covers some critical thinking skills that will benefit your understanding of this topic.

Human Geography

In Lesson 1, you learned that geography is generally defined as the study of all of Earth's physical features, including vegetation and climate. Take a moment to think about the physical features and consider how these features have influenced us, and how humans have influenced the physical features of Earth over time. The study of how humans have affected the physical world we live in is the foundation of human geography.

Human geography is the study of human-made features and human activities on Earth from a spatial point of view. Human geography is a social science while physical geography is a physical science. The physical characteristics of Earth are important because they influence human behaviour.

Human behaviour is driven by our basic need for food, shelter (safety), purpose, and companionship. The need for food has changed our local landscapes as we engage in agricultural practices (livestock and crop production). The need for shelter has resulted in dwellings of all shapes and sizes being built in a variety of habitable regions. Originally, people grouped into communities for safety; however, in present times, that is less important. Replacing the need for safety is the need for companionship and culture—we are social animals and tend to live in towns and cities. In addition, a secure source of energy must be available in order to support the production of food, commerce, technology, and industry, as well as keep the communities running smoothly.

It is important that we understand that all these topics are connected and that the interrelationships between the various aspects of human behaviour can be quite complex. In many ways, how we meet our basic needs is influenced by our physical environment.

Keeping in mind the connection between physical geography and human life, you can see that every place where humans live is both **unique and** connected. Every place has its own feel—different characteristics form the identity of the space. These unique features are adaptations in response to common human needs, social interactions, and physical forces. Because these forces operate across our planet, keep in mind that every unique place ends up having a lot in common with every other unique place.



The differences, though, are typically more interesting. The different types of human intellectual achievement result in the art, customs, and social institutions of a particular nation, people, or other social group. This is known as **culture**. Thus, if where we live can influence how we meet our basic needs, then we can see that there is a connection between physical geography and human culture.

Culture

The term *culture* was first used by the pioneer English anthropologist, Edward B. Tylor, in his book, *Primitive Culture*, published in 1871. Tylor stated that culture is “that complex whole which includes knowledge, belief, art, law, morals, custom, and any other capabilities and habits acquired by man as a member of society.”

At the time this course was being developed, a Google search of “what is human culture” resulted in more than 141,000,000 hits. Needless to say, there is a lot of information available!



Some **definitions** of culture include

1. excellence in taste and knowledge of the fine arts and humanities
2. the collection of human knowledge, beliefs, and behaviours that are dependent on our capability for symbolic thought and social learning
3. a set of attitudes, goals, practices, and values that are shared by an identifiable organization or group of people
4. the study of human cultures in history as part of the field of **anthropology** (the comparative study of human societies and cultures and their development)
5. a tool for human survival that is fragile and constantly changing
6. the study of culture as it applies to other species

Some **characteristics** of culture include

1. it is an adaptive mechanism (a way for societies to adapt to change)
2. it is learned
3. we are not usually aware of our own culture

Culture gives us a sense of place when we are visiting or studying a different area than our home region.



A **sense of place** is one of the fundamental aspects of geography.

Understanding Sense of Place



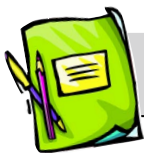
In addition to each place being both unique and connected, the term **region** is the unit by which places are divided and studied. Regions can be defined by a large variety of features, both physical and cultural. For example, a geographer could study a region of prairie between two rivers, or a region where a particular dialect of Cantonese is spoken. As a rule, the larger a region, the more diversity one expects to find.

In 2011, there was a Canadian art exhibition called *A Sense of Place*. This exhibit featured artwork that reflected each artist's environment. Touring with the exhibition were two artists, Alistair McLeod of Nova Scotia and Iain Baxter of Ontario. McLeod is the author of a number of books that demonstrate the relationship between people and the landscape in which they live. His writings show what it is like to be a coal miner climbing down into the dark belly of Earth or a fisherman in a fragile boat trying to escape a stormy sea.

In contrast, Baxter& is a visual artist. Use a search engine, such as Google, to find pictures of his art. If you enter the key phrase “Zero Emissions Baxter&,” you will see a number of car mufflers pointed at the ceiling with different animals perched at the top of each exhaust pipe. The artist is trying to make you think about how people are harming the environment.

Baxter&'s recent work focuses on the ampersand (& symbol). With this art, he is trying to make the viewer question the role of the artist.

Combined, McLeod and Baxter& provide you with samples of the past and the future. Take a minute to think about how their work can help you to better understand how the environment affects Canadians and how Canadians affect their environment. Do you think a coal miner has a different perspective on life than you? Does Baxter& make you think differently about cars? Take a look out your window. What is your cultural connection to the physical geography around you?



Learning Activity 1.5

Sense of Place

In developing a sense of place, it's important to have geographical perspective and be able to see beyond unusual practices.

1. Read the following list of traditional practices and then write down your first impression of these people.
 - They once lived in snow houses all winter.
 - They play soccer at midnight.
 - At one time, their babies wore moss as diapers.
 - In the past they softened animal skin by chewing it.
 - They used to make sleds out of frozen fish.
 - They made sails for their boats from animal intestines (part of the stomach).

continued

Learning Activity 1.5: Sense of Place (continued)

2. The following is an explanation of why moss and intestines were used:

Cultural Practice	Rationale
moss diapers	Moss was widely available in the region. It can be stored in the winter. The diapers are free, absorbent, and soft. The moss is biodegradable. It can be packed tightly and is lightweight for travel.
sails made of intestines	Intestines are strong and don't rip easily. They are lightweight and can be transported easily. They are waterproof. They are easy to sew together. Intestines were available whenever animals were killed. They were environmentally efficient.

These practices were once common among the Inuit people of the Canadian Arctic region.

After reading this, how has your first impression changed?

3. Where you live influences your behaviour and how you meet your basic needs. In general, your sense of place shapes your identity. How might a person who was born in the prairies differ from a person who lived their entire life in the mountains? How might a person who grew up in the city differ from a person who was raised on a farm? Explain your identity and how it is shaped by your environment. Be sure to provide examples.

Although the practices of different regions might seem unusual at first, once you see the reasons why people live a certain way, you can better understand and learn from them.

Ethnocentrism

What happens when that open-minded perspective is lost? If you read the Aesop Fable *The City Mouse and the Country Mouse*, it may give you a bit of an idea of the challenges we face when travelling to some unfamiliar place.

A society is said to be ethnocentric when it applies the value judgments of its own culture onto another culture.



Ethnocentrism is the attitude we have when we impose our own perspective on the interpretation of characteristics of another place or culture. We see cultural norms that are different from our own through stereotypical biases that don't recognize a different reality from our own. It is an egotistical and self-centered attitude, and has caused problems throughout history. As geographers far from home, it is important to be informed and remain conscious of the values and sensitivities of the local people.

The City Mouse and the Country Mouse

an Aesop Fable

A country mouse invited his cousin who lived in the city to come visit him. The city mouse was so disappointed with the sparse meal which was nothing more than a few kernels of corn and a couple of dried berries.

"My poor cousin," said the city mouse, "you hardly have anything to eat! I do believe that an ant could eat better! Please do come to the city and visit me, and I will show you such rich feasts, readily available for the taking."

So the country mouse left with his city cousin who brought him to a splendid feast in the city's alley. The country mouse could not believe his eyes. He had never seen so much food in one place. There was bread, cheese, fruit, cereals, and grains of all sorts scattered about in a warm cozy portion of the alley.

The two mice settled down to eat their wonderful dinner, but before they barely took their first bites, a cat approached their dining area. The two mice scampered away and hid in a small uncomfortable hole until the cat left. Finally, it was quiet, and the unwelcome visitor went to prowl somewhere else. The two mice ventured out of the hole and resumed their abundant feast. Before they could get a proper taste in their mouth, another visitor intruded on their dinner, and the two little mice had to scuttle away quickly.

"Goodbye," said the country mouse, "You do, indeed, live in a plentiful city, but I am going home where I can enjoy my dinner in peace."

**A modest life with peace and quiet is better
than a richly one with danger and strife.**

Source: Storyit.com. Aesop's Fables. "The City Mouse and the Country Mouse."
www.storyit.com/Classics/Stories/citycountrymouse.htm

Lesson Summary

After reading through this lesson and completing the learning activity, you should have a good sense of the connection between physical and human geography, and how one influences the other. It is important to keep an open mind and avoid the pitfalls of ethnocentricity by respectfully developing a sense of place associated with the cultural characteristics of different regions.

Notes



Assignment 1.2

Cultural Study (42 marks)

Assignment Focus

Read the following two articles describing two different cultures and answer the questions that follow. The information in these articles was taken from the following sources:

Stegeborn, Wiveca Ann-Chatrin. "Subsistence Hunting and Gathering." *The Wanniya-Laetto (Veddahs) of Sr. Lanka*. Sept. 1993. <http://vedda.org/stegeborn.htm>;

Harrigan, Patrick. "Cultural Survival Trust of Sri Lanka." *Sri Lanka's Indigenous Wanniya-laeto: A Case History*. <http://vedda.org/wanniyalaeto.htm>;

Countries and Their Culture. "Sami." www.everyculture.com/wc/Norway-to-Russia/Sami.html.

The Sami

The Sami, or Lapps (as they were formerly called), are the original inhabitants of northern Scandinavia and most of Finland.

The Sami can be found in the northern areas of the European countries of Norway, Sweden, Finland, and Russia. They live in tundra, taiga, and coastal zones which experience the Gulf Stream (a powerful and warm Atlantic Ocean current) and usually settle on plateaus or forested mountains near lakes and streams.

Most of the territory where the Sami live is located at latitudes above 62 degrees north. Many Samis live above the Arctic Circle, or the "land of the midnight sun," where they experience long, dark winters (the Sun may not be visible for up to seventy days) and an equally long, warm summer during which time the Sun is constantly visible for up to seventy days.

Sami communities are called Siida, with the major community activities including hunting, trapping, and fishing.

The Sami language varies not according to national boundaries, but more so based on the physical landscapes and regions in which the communities are located. The official definition of a Sami is actually primarily linguistically based. The Sami, who are traditional reindeer hunters, have a variety of words and phrases that describe the different colours, sizes, antler spreads, and fur textures of the reindeer. The language enables them to express in words a reindeer's particular behaviour, whether it is tame or wild, the animal's ability to pull a sled, and even a male reindeer's description in each year of his life.

continued

Assignment 1.2: Cultural Study (continued)

The Sami were semi-nomadic people; this means that they usually lived in permanent settlements but also spent a portion of their lives moving from place to place and living in tents. When they did have permanent homes, they were built with wood frames or as sod huts. The tents, which were referred to as lavvos, had a circular framework with poles that lean towards each other—like the First Nation Peoples’ teepees or wigwams. The floors of the tent were covered in birch twigs and layers of reindeer fur. Huts and tents were always arranged around a central fire. Today, most of the Sami people do not practice this traditional lifestyle. Instead, they live in modern Scandinavian homes with central heating and running water.

The traditional Sami clothing is very brightly coloured and easily recognized by the distinctive bands of bright red and yellow patterns set against deep blue wool or felt fabric. These decorative bands can be found on men’s tunics (gaktis), along the hem of women’s skirts or on the rims of hats (which for men, vary by region). Women and girls also wear fringed scarves while both sexes wear coats made out of reindeer skin. For shoes, the traditional Sami wore reindeer skin moccasins fastened by ribbons with distinctive turned up toes. Instead of wearing socks, the Sami would stuff their moccasins with soft grass, which helped to protect their feet from feeling the cold and wet weather.

As reindeer hunters, it makes sense that the Sami live primarily off of the meat and blood of reindeer. Reindeer meat is protein rich and the blood is used for sausages. Aside from eating reindeer, the Sami also catch fish, which they boil, grill, dry, smoke, or salt. They also gather wild berries, such as the vitamin C rich cloudberry. These items are included in their supper, which is usually their only hot meal of the day. As the northern European regions the Sami live in are relatively cold, they also drink a lot of coffee.

Outdoor physical recreation basically includes any and all of the activities the Sami do for survival, such as hunting. Their entertainment revolves around storytelling, yoik singing, and physical contests such as sled racing or lasso throwing. The Sami are known for their beautiful craftsmanship. They use bone, wood, reindeer antlers, and silver to produce tools, utensils, and crafts.

continued

Assignment 1.2: Cultural Study (continued)

The Veddas

The country of Sri Lanka, which was formerly known as Ceylon, is an island in the Indian Ocean located off the southern coast of India. It is positioned very conveniently alongside major sea trading routes which connect from the Far East, through all of Europe and Africa. The island is located 7 degrees latitude north of the equator, which means that there are no seasonal variations in day length. The average temperature along the coastal areas is around 26°C whereas the hilly country regions usually see temperatures around 19°C. At higher elevations the temperature tends to cool down somewhat and may average 16°C. Generally though, Sri Lankans enjoy warm sunny days, even during monsoon season. Monsoon season, which involves heavy relentless rain, typically lasts throughout the months of May and July (for the south-west monsoon) in the western, southern, and central regions of the island whereas the north-east monsoon brings rain to the northern and eastern regions throughout December and January.

The country's topography consists mostly of low, flat, or rolling plains punctuated by mountain ranges which reach elevations of over 2000 m in the south-central part of the island. Only 31% of the surface area of the island is inhabited by human settlements or has been used for cultivation. Where there used to be rainforest is now mostly clear.

Sri Lanka's indigenous inhabitants, the Veddas or Wanniya-laeto (forest-dwellers) as they call themselves, are directly descended from the island's original Neolithic community (who lived around 14,000 BCE). The Veddas survive by hunting and gathering, slash and burn cultivation, and herding livestock combined with unskilled labour jobs (i.e., digging ditches, carrying soil, or breaking stones). The original language of the Neolithic people is no longer spoken but a few words are still used. The dominant language of Sri Lanka is Sinhalese, which the Veddas also speak.

The island's hot temperature means that the people require clothing that does not cover a great amount of skin. Men wear skirts or sarong cloths to cover their lower half and women wear the same material except that it covers them from their breasts to their knees.

The traditional family roles of the Veddas include the husband/father who is the hunter and the wife/mother who is in charge of gathering plant products. Every day the father hunts for live game and searches for honey, which is their main trade item. Most families have their own places to collect honey and beeswax. If the man's hunting skills are not good or it is a weak day for hunting, he will also collect edible plants, fish, and tubers, which may require him to travel from the shore to the mountains (depending on the location of the village). The hunting tools are muzzle-loaders, old 12-gauge shotguns, knives, and axes.

continued

Assignment 1.2: Cultural Study (continued)

For women, gathering takes place close to home and does not require as much planning. The collecting of plants varies with the seasons but includes tubers, seeds, plants, fruit, nuts, and medicinal herbs. Straw is sometimes used for roofing. Families also usually domesticate animals such as chickens (for eggs) and cows or goats (for milk). They are not slaughtered for their meat because it is considered sinful to do so in the Veddas culture.

Most Veddas engage in slash and burn cultivation, which basically involves clearing a piece of land to create fields that can be cultivated and burning the products of the land. For added food security, the people use the burnt logs, branches, soil, grass, and tree trunks to build a fence around the chena (cleared land). Young boys are often put in charge of making sure that animals do not make it through the fence. This protects the crop from passing elephants, deer, and hares. Just before the monsoon hits in mid-September, the maize (corn) also has to be sown as well as the millet in October.

The villages of the Veddas are usually located in clearings that are separated from other villages by forest areas. The houses are made of mud and sticks and typically last for two years. When a new chena has to be created, the people build new houses and the old ones are abandoned. Even though the village's chena may move locations, it is always within the community's recognized territory.

As mentioned earlier, the climate of Sri Lanka is very hot and humid, which is especially true during monsoon seasons. In this kind of climate, it is very difficult for food to stay fresh and meat is sometimes preserved in honey to save for times of hunger. Storing and saving food can be very difficult because of the environmental factors. Accumulating goods can lead to envious feelings amongst the community, as well as feelings of distrust over the hoarding of food. This may take away from a person's personal honour and prestige within the community. Instead, the Veddas choose to live a very balanced lifestyle, in which they store food and give away food in a very modest fashion.

The Veddas do not formally recognize a community leader. To them, leadership in different activities is recognized according to the person's skill set. A person who is very skilled in one area may be asked to take the lead or to give their advice in certain matters. There are no leadership positions for any economic, political, or religious institutions. They do, however, have shamans, people who are knowledgeable about herbal medicines. Elderly people are greatly respected for their age and wisdom. The division of labour within the family is based on age and gender.

continued

Assignment 1.2: Cultural Study (continued)

- Complete the following table comparing the landscapes and culture of each region. If you are stuck, you may speculate or guess about why the similarities and differences are significant—the purpose of this exercise is to get you to think about connections. The first ones are done for you. (24 marks)

Comparing Each Region	
SIMILARITIES between the landscapes	REASONS why they are significant
1. Both have coastal areas.	1. Both cultures would have access to seafood, and the nutritional benefits seafood provides.
2. _____ _____	2. _____ _____
3. _____ _____	3. _____ _____
4. _____ _____	4. _____ _____
DIFFERENCES between the landscapes	REASONS why they are significant
1. The lack of large trees.	1. Different building materials must be used.
2. _____ _____	2. _____ _____
3. _____ _____	3. _____ _____
4. _____ _____	4. _____ _____

continued

Assignment 1.2: Cultural Study (continued)

Comparing Each Region (continued)	
SIMILARITIES between the cultures	REASONS why they are significant
1. Both are being influenced by dominant cultures around them.	1. Loss of global cultural diversity is seen as a negative.
2. _____ _____	2. _____ _____
3. _____ _____	3. _____ _____
4. _____ _____	4. _____ _____
DIFFERENCES between the cultures	REASONS why they are significant
1. Sami clothing needs to protect from the harsh winter environment.	1. Clothing is a visible cultural identifier.
2. _____ _____	2. _____ _____
3. _____ _____	3. _____ _____
4. _____ _____	4. _____ _____

continued

Assignment 1.2: Cultural Study (continued)

3. Choose either the Sami or the Veddas community and give three examples of how a characteristic of the physical geography (landscape, resources, climate, etc.) has influenced their culture. (6 marks)

Community:	
Physical Geography	Human Geography (Culture)
<hr/>	<hr/> <hr/> <hr/>
<hr/>	<hr/> <hr/> <hr/>
<hr/>	<hr/> <hr/> <hr/>

continued

Assignment 1.2: Cultural Study (continued)

- Using the premise of *The City Mouse and the Country Mouse*, you are reminded that sometimes adjusting to a different culture and location can be a challenge. You may have heard of the term *culture shock* in reference to the difficulties in adjusting to a new location and environment. Imagine that a Sami person was visiting the Veddas village, or perhaps a person from the Veddas village was visiting a Sami reindeer herder’s community during the month of January.

Using either a diary entry format (where you take on the persona of the person traveling to a new, unfamiliar place), or a general storytelling format, describe what it might be like for either a Veddas person or a Sami person to travel to the other’s location for a week-long visit.

Use the following rubric to ensure you get as many marks as possible. (12 marks)

continued

Assignment 1.2: Cultural Study (continued)

Handwriting practice lines consisting of 24 horizontal lines.

continued

Assignment 1.2: Cultural Study (continued)

Marking Rubric for Assignment 1.2		
	Possible Marks	Marks Given
<p>Organization</p> <ul style="list-style-type: none"> Provides a minimum of four clearly explained references to the challenges of adapting to the new location 	<p>8 marks</p> <p>2 marks for each reference that directly relates to a challenge (x 4)</p>	
<p>Development Theme</p> <ul style="list-style-type: none"> Ethnocentrism is defined and discussed in relation to the story At least one example is provided that relates to the theme 	<p>2 marks</p> <p>1 mark for defining ethnocentrism</p>	
<p>Style</p> <ul style="list-style-type: none"> Use of strong language, good sentence structure, and highly appropriate word choices Few grammar or spelling mistakes References are relevant and explained in context 	<p>2 marks</p>	
		Total Score: ____ /12

LESSON 4: THE DEVELOPED AND DEVELOPING COUNTRIES

Lesson Focus

- Examine the difference between a nation and a country.
- Analyze the advantages and disadvantages of the different country groupings.
- Begin to understand the terms *developed* and *developing* countries and be able to identify differences between the two categories.
- Learn about some characteristics of developed and developing countries as well as the processes surrounding their development.
- Identify both the interrelationships between developed and developing countries, and the significant issues these countries must face.

Introduction

Lesson 4 focuses on how different areas of the world are categorized and why these aspects are so important. The use of the labels *developed* and *developing* is also discussed.

A Nation Versus a Country—Definitions



According to *The Oxford English Dictionary* (10th edition), a **country** is “a nation with its own government, occupying a particular territory.”

Examples of countries include the following:

- Canada
- United States of America
- Mexico
- England

Generally, a country is recognized by other countries as being a country and has four defining characteristics.

1. A country has a permanent population.
2. A country has a defined territory.
3. A country is ruled by a government.
4. A country has the capacity to interact and build relations with other states.



The Oxford English Dictionary (10th edition) defines a **nation** as “a large aggregate of people united by common descent, culture, or language, inhabiting a particular state or territory.”

Examples of nations include the following:

- The First Nations people of North America
- The Basques of Spain
- The Roma (also known as Gypsies) of central and Eastern Europe
- The Kurds of Turkey, Iran, and Iraq
- The Jewish nation before the existence of the country of Israel



At the risk of further complicating the issue, it is important to note that the word *state* can be used in place of country. A **state** is a defined area with geopolitical boundaries (borders), organized into a political unit, and ruled by an established government with control over its internal and foreign affairs.

You might be wondering how many countries there are in the world. This is a difficult question to answer because the number changes over time, and depends on the source of the information. At the time this course was written, according to www.worldatlas.com, there were 193 member countries of the United Nations. The US State Department recognized 195 countries, and most of the current World Almanacs identify 194 countries. In 1950, there were only about 50 countries in the world.

Many countries have been created due to nationalities desiring self-determination as a way to express cultural distinctiveness. In addition, some republics such as the Union of Soviet Socialist Republics (USSR) have broken up, resulting in the constituent countries being recognized as independent states. After the break-up of the USSR in 1989, 15 countries were “created.”

There are a number of issues that make it difficult to determine the number of countries in the world.

- For example, the United Kingdom is considered one country even though its constituent countries of Scotland, England, Northern Ireland, and Wales are commonly recognized as individual countries.
- Another example is the relatively new country of Kosovo. Kosovo was formerly an autonomous province within the Republic of Serbia but, after much conflict, declared independence in February of 2008. Not every country has recognized Kosovo as an independent country.
- A third example would be the controversial status of Taiwan. It depends on who you talk to—Taiwan considers itself to be independent of China, but China considers Taiwan to be part of China. Other countries that value good relations with China also do not recognize Taiwan as an independent country.

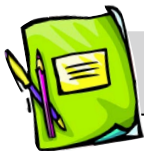
In addition to countries, there are approximately 58 recognized territories in the world. Territories fall under the jurisdiction of another state; for example, Puerto Rico (United States of America), Aruba (Netherlands), and the Cayman Islands (Britain).

The largest unclaimed piece of real estate in the world is Antarctica. Antarctica has almost 98% of its surface area covered by solid ice and has only been considered a continent since 1840. Prior to 1840, Antarctica had been thought to be a group of isolated islands. At the time this course was written, active territorial claims to Antarctica have been submitted by Argentina, Australia, Chile, France, New Zealand, Norway, and the United Kingdom. Many of these claims are not recognized by some countries and the status of Antarctica remains in dispute.



Note: The following link provides useful information and an historical context regarding how governments define nations and countries:

www.infoplease.com/world/statistics/state-country-nation.html#ixzz1RSjsHt8e



Learning Activity 1.6

Countries/Nations/Territories

Determine whether the following statements are true or false. If the statement is false, please rewrite it to make it correct.

1. The continent of Antarctica is divided into territories that belong to Chile, France, New Zealand, and Norway, among others.
 2. Taiwan is an independent country and has a good international relationship with China.
 3. Depending on the source of information, there are between 200 and 204 countries in the world.
 4. The four defining characteristics of a country are that it has a permanent population, it has a defined territory, it is ruled by a government, and it has the capacity to build relations with other states.
 5. Examples of nations without their own state are Kurds, Roma, and First Nations.
 6. A country is a nation with its own government that does not necessarily occupy a particular territory.
-

Grouping Countries

If a person has a collection of various items that he or she wishes to sort, the person generally selects a type of criteria or a defining characteristic by which to sort them. For example, if someone is sorting through photographs on his or her social media website, that person may wish to categorize his or her albums based on where the pictures were taken, or whether the photos are of friends or of relatives. People can do the same things with files or even stamp collections. Generally speaking, groups have one or more common characteristics.

Countries can also be grouped or sorted based on certain important criteria. Let's say you want to go on a winter holiday someplace warm, but you don't want to worry about poisonous spiders. You can begin by eliminating any country north of the 40th–45th parallel. Using the Internet or by inquiring at a travel agency, you can then likely get a short list of suitable locations. If you have a tight budget, you can then use travel and living expenses as the final sorting criteria.

In the world of geography, standardized criteria are used to group countries. Aside from using physical, geographic criteria such as location, climate, or ecology, the most common way of grouping countries in human geography is by looking at the development level in the country.

Globally, there are many organizations that focus on the study of countries and their characteristics; however, for the purpose of this course, the following three groups are referred to the most:

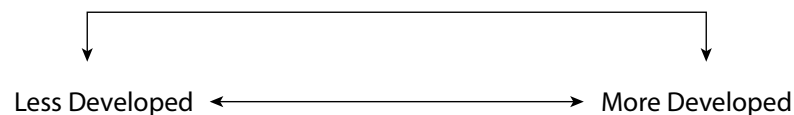
1. The United Nations
2. The World Bank
3. The CIA (United States of America Central Intelligence Agency) World Factbook

Developed versus Developing Countries—Criteria

Rubenstein, James M. *The Cultural Landscape: An Introduction to Human Geography*. Upper Saddle River, NJ. 2003. Used in accordance with fair dealing guidelines.



The level of development of a given country is based on the three ways that people earn their living: growing food, manufacturing, and providing services. **Development** is that process of improving the living conditions, health, and prosperity of the population, and is always changing, usually for the better. Every place that is habitable by humans falls on a **continuum** between less developed and more developed, as shown below.



If all the countries of the world were placed on this continuum line, it would be noted that most fall at either one end or the other. In other words, countries tend to be either more developed or less developed. The term *developing* assumes that the country has recently seen improvements and expects that improvements will continue.

Remember that a significant concept in geography is the sense of place. Look at the global distribution of developed and developing countries. Imagine a globe. If all the developed countries were coloured red and all the developing countries were coloured blue, you would notice that the red countries tend to cluster in the northern hemisphere. The next question might be “Why is that?” The following three factors help to explain why development varies between countries.

1. **Economic factors:** How much money does the country make buying and selling goods and services?
2. **Social factors:** What is the level of education and literacy, or the standard of health and welfare for the country?
3. **Demographic factors:** What is the life expectancy, birth rate, ratio of males to females, etc., for the country?



Since development is seen as a function of the above three factors, the United Nations (UN) has combined them into what is known as the **Human Development Index (HDI)**.

The HDI is a way of measuring development by combining indicators of life expectancy, educational attainment, and income. As a single statistic, it is a useful reference for evaluating the social and economic stage of development of a country. The statistical value of the HDI will fall between 0 (the minimum) and 1 (the maximum), and indicates where the country is in relation to these developmental goalposts.

The latest index at the time of writing was released in the United Nations 2011 Report on Human Development and indicated that there were 47 countries with an HDI of 0.793 or higher. These countries are considered to have very high human development. The next category, countries with high human development, included countries such as Cuba, Mexico, and the Ukraine. There are 46 countries classified as having medium human development and the rest of the countries, with an HDI of 5.10 and lower, are classified as having low human development. The last country on the list is the Democratic Republic of Congo with an HDI of 0.286.

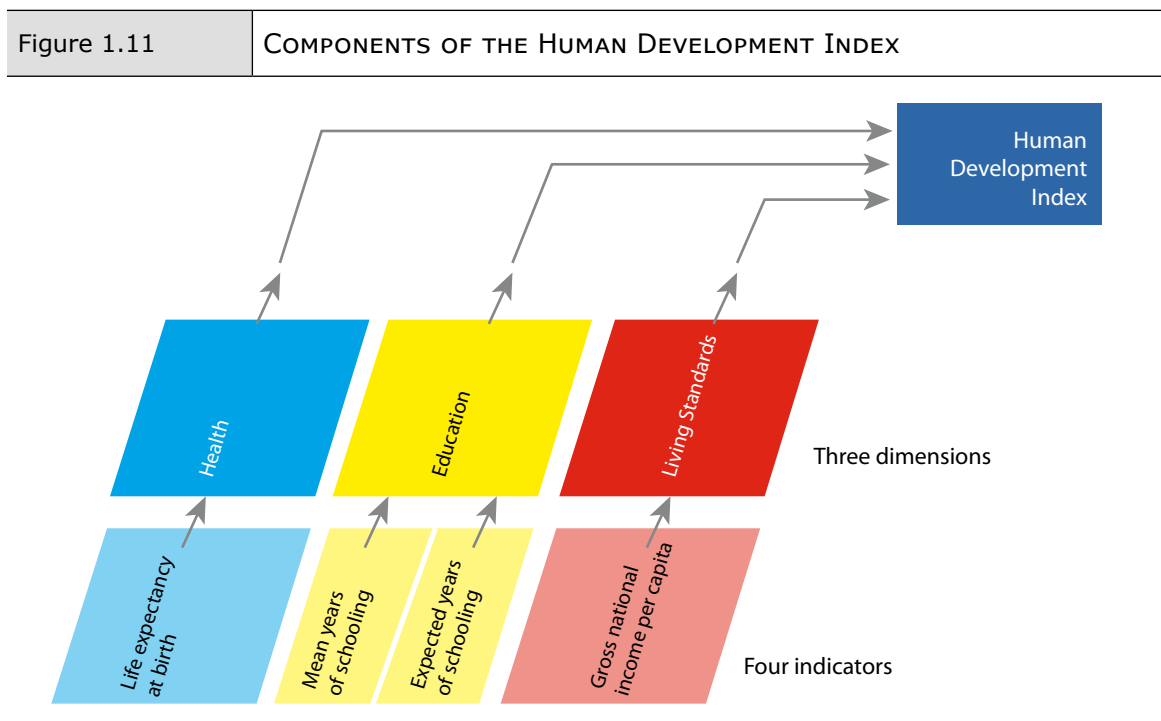
For further information, see the United Nations Human Development 2011 Report at http://hdr.undp.org/en/media/HDR_2011_EN_Table1.pdf.

Table 1.1					
Very High Development Countries and Their Human Development Indexes (HDI)					
Rank	Country	HDI	Rank	Country	HDI
1	Norway	0.943	20	France	0.884
2	Australia	0.929	21	Slovenia	0.884
3	Netherlands	0.910	22	Finland	0.882
4	United States	0.910	23	Spain	0.878
5	New Zealand	0.908	24	Italy	0.874
6	Canada	0.908	25	Luxembourg	0.867
7	Ireland	0.908	26	Singapore	0.866
8	Liechtenstein	0.905	27	Czech Republic	0.865
9	Germany	0.905	28	United Kingdom	0.863
10	Sweden	0.904	29	Greece	0.861
11	Switzerland	0.904	30	United Arab Emirates	0.846
12	Japan	0.901	31	Cyprus	0.840
13	Hong Kong, China	0.898	32	Andorra	0.838
14	Iceland	0.898	33	Brunei	0.838
15	Republic of Korea	0.897	34	Estonia	0.835
16	Denmark	0.895	35	Slovakia	0.834
17	Israel	0.888	36	Malta	0.832
18	Belgium	0.886	37	Qatar	0.831
19	Austria	0.885	38	Hungary	0.816

Adapted from United Nations Human Development Programme. "Table 1: Human Development Index and its components." *Human Development Reports*. http://hdr.undp.org/en/media/HDR_2011_EN_Table1.pdf.

Rank	Country	HDI	Rank	Country	HDI
97	Sri Lanka	0.691	143	Kenya	0.509
100	Fiji	0.688	145	Pakistan	0.504
101	China	0.687	149	Myanmar	0.483
103	Thailand	0.682	154	Yemen	0.462
105	El Salvador	0.674	158	Haiti	0.454
107	Paraguay	0.665	161	Uganda	0.446
110	Mongolia	0.653	166	Rwanda	0.429
112	Philippines	0.644	169	Sudan	0.408
113	Egypt	0.644	172	Afghanistan	0.398
118	Botswana	0.633	180	Sierra Leone	0.336
124	Indonesia	0.617	182	Liberia	0.329
128	Viet Nam	0.593	183	Chad	0.328
134	India	0.547	185	Burundi	0.316
139	Cambodia	0.523	187	Democratic Republic of Congo	0.286

Adapted from United Nations Human Development Programme. "Table 1: Human Development Index and its components." *Human Development Reports*. http://hdr.undp.org/en/media/HDR_2011_EN_Table1.pdf.



Source: United Nations Development Programme. <http://hdr.undp.org/en/statistics/hdi/>.

In order to come up with an HDI number, analysts with the UN assign numbers to each of the three factors of development (four if you count that education has two). A minimum and maximum value for each of the three factors are assigned (referred to as goalposts), then each country is assigned a number between 0 and 1 that reflects where they are between the minimum and maximum.

1. The Economic Factors



A country's income index is calculated by taking the **Gross National Income** or GNI (the adjusted United States of America dollar value of a country's final income in a year) and dividing it by the population. This gives a per capita (per person) income that is used in a calculation involving the maximum and minimum global per capita GNI values, to arrive at an index value of between 0 and 1.



In most developed countries, the per capita GNI is over \$25,000. **Note:** It is important to realize that this is just an average (mean) value of wealth and that it does **not** take the distribution of wealth into consideration.

Previous to the UN 2010 Development Report, the per capita **Gross Domestic Product** or GDP (the market value of all products and services produced in one year by the residents of a country) was used. The GNI more accurately indicates the income of its citizens, as it includes income from assets outside the country.

Other economic factors of development that aren't included in the HDI calculations, but are still important, include a country's economic structure, worker productivity, access to raw materials, and availability of consumer goods.

2. The Social Factors

A country's education index is calculated by analyzing both the average (mean) number of years of schooling of a country's citizens over the age of 25, as well as the expected years of schooling for school-aged citizens. These indicators are set using a minimum value of zero, and maximum values that are set to the actual number of years of schooling and expected years of schooling that have been achieved by any country between 1980 and present. For example, in 2000 the US number for average (mean) years of schooling was 13.2. A value of between 0 and 1 is then calculated for the country. The UN 2010 Development Report also refers to this factor as *access to knowledge*.

Previous to the UN 2010 Report on Development, the **literacy rate** (the percentage of people who can read and write) as well as the quality of education (based on the number of students per teacher) were used as the means to calculate the education index. The literacy rate in developed countries is over 95%, and students are in school for an average of at least 10 years. In developing countries, a person may only have two years or less of schooling and a significant percentage of the population may be illiterate.

3. The Demographic Factors

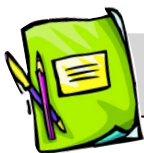
A country's life expectancy index is determined by the life expectancy at birth. Due to a higher infant mortality rate (deaths of babies per 1000 born), people in some developing countries have a life expectancy of less than half of those in developed countries. The majority of people in developed countries can expect to live into their late 70s or early 80s.

The HDI calculation uses a minimum value of 20 years, and a maximum value of 83.2 years (the life expectancy in Japan, 2010). For example, if the life expectancy of a country were 55 years, one would subtract the minimum life expectancy (20 years) from 55 ($55 - 20 = 35$), then divide the resulting 35 by the difference between the maximum and minimum life expectancies ($83.2 - 20 = 63.2$). You would see that $35/63.2 = 0.554$, and 0.554 would be the number used in the final calculation. If this is confusing, don't worry, you will have a chance to practice it in the next learning activity.

If you really enjoy the mathematics involved in statistics and are curious as to how the United Nations calculates the Human Development Index, go to http://hdr.undp.org/en/media/HDR_2010_EN_TechNotes_reprint.pdf. You will see that the final HDI number is the cube root of the product of all three indexes.

To summarize the characteristics of **developed** countries, note the following:

1. The level of education (literacy and access to information) is such that over 95% of the population can read and write and has access to information such as libraries and the Internet.
2. The GNI income per capita is over \$25,000.
3. The life expectancy at birth is 75 years or more.



Learning Activity 1.7

Statistics

Remember the emphasis put on the variety of employment opportunities available to geographers earlier on in this module? Well, the use of math through the analysis of various statistics is fairly common. This learning activity applies basic math concepts while giving you an idea of the types of calculations that would be completed by many geographers.

1. If the population of Canada in 2011 was about 33,476,688 and the GNI was about \$1,517,434,908,290 (one point five trillion dollars in 2011), then what was the approximate per capita GNI of Canada in 2011?

2. Canada's per capita GNI is \$25,442 (2011).

The minimum global value is \$102 (GNI Dem. Republic of Congo, 2011).

The maximum global value is \$40,708 (Norway, 2011).

Using the following formula, calculate Canada's income index.

Income index =

$$\frac{(\text{Canada's per capita GNI}) - (\text{global minimum per capital GNI})}{(\text{global maximum per capital GNI}) - (\text{global minimum per capital GNI})}$$

3. Calculating the education index is done in three steps.
 - finding the mean (average number) years of schooling index
 - finding the expected years of schooling index
 - using those two numbers to calculate the education index

First, the mean years of schooling index is calculated from the data below, using the same formula as in question 1.

Canada's mean years of schooling = 11.5

Global minimum mean years of schooling = 0 (no years of education)

Global maximum mean years of schooling = 13.2 (the US, 2000)

Calculate Canada's mean years of schooling index.

continued

Learning Activity 1.7: Statistics (continued)

Second, the expected years of education index is calculated using the same formula and the data below. Complete the following:

Canada's expected years of schooling = 16

Global minimum expected years of schooling = 0 (no expected years of schooling)

Global maximum expected years of schooling = 20.6 (Australia, 2002)

Calculate Canada's expected years of education index.

Third, we take the two schooling indexes and use the following formula to calculate the education index that's used to calculate the HDI. The global maximum literacy rate in developed countries is 95% or, 0.951 and the minimum literacy rate is 0.

Complete the following:

Canada's education index

$$\begin{aligned} & \sqrt{\frac{(\text{Canada's mean years of schooling index} \times \\ & \text{Canada's expected years of education index}) - 0}{(\text{global maximum literacy rate} - \text{global minimum literacy rate})}} \\ & = \sqrt{\text{above answer}} \end{aligned}$$

4. In the life expectancy factor explanation in Lesson 4, the maximum life expectancy value that is used to calculate the HDI is 83.2 years. Canada's life expectancy at birth is 81 years. Remember that the minimum value used is 20 years.

Use the same calculations to determine Canada's life expectancy factor. The index formula is rewritten for you.

Life expectancy index =

$$\frac{(\text{Canada's life expectancy value}) - (\text{global minimum life expectancy value})}{(\text{global maximum life expectancy value}) - (\text{global minimum life expectancy value})}$$

More Characteristics of Developed and Developing Countries

Now that you are more familiar with the whole concept of HDI, it is time to look at the characteristics of developing countries in a bit more detail.

Table 1.1 lists the 42 countries in the world that are classified as developed (high HDI). You may have noticed that Table 1.2 only showed about every fifth of the remaining 130 countries. These developing countries, or less developed countries (LDCs) as they are also known, are further subdivided into the following three general categories:

1. medium high (HDI between 0.783 and 0.677)
2. medium low (HDI between 0.677 and 0.489)
3. low (HDI between 0.489 and 0.140)

In a report from 2003, the Economic and Social Council of the United Nations used the following three criteria for the identification of the LDCs:

- **a low-income criterion** based on a three-year average estimate of the gross national income (GNI) per capita (under \$750 for low, above \$900 for medium)
- **a human resource weakness criterion based** on indicators of
 - (a) nutrition
 - (b) health
 - (c) education
 - (d) adult literacy
- **economic vulnerability criterion** based on indicators of
 - (a) instability of agricultural production
 - (b) instability of exports of goods and services
 - (c) economic weakness in manufacturing and modern services
 - (d) low variety of exported merchandise
 - (e) handicap of economic smallness (population of less than 75 million people)
 - (f) percentage of population displaced by natural disasters

To be added to the list, a country must satisfy all three criteria. To qualify for graduation from the **low** category to the **medium** category, a country must meet the thresholds for two of the three criteria in two consecutive triennial (once every three years) reviews by this group. In other words, they have to show significant consistent improvements over six years in order to move up a level on the UN development scale.

Advantages and Disadvantages of Grouping Countries

One of the goals of this lesson has been to describe how the world's countries and territories are distributed along that development continuum referred to earlier. By now, you should have a good understanding of how world organizations such as the United Nations classify the development levels of all the countries and territories, and how such classifications can be useful in making choices that involve everything from where educational opportunities are readily available to which country is better suited to starting a business.

Although we know there are practical advantages to sorting and grouping countries, as was mentioned at the beginning of the lesson, it is also important to keep in mind that sorting things as complex as countries and territories needs to be done with care and fairness, as well as with respect for the local populations.

The advantages of countries grouping themselves with others who share their economic, social, and cultural values are diverse, but relate back to the idea that together they can assert themselves on the world stage on issues of trade, finance, and politics. Grouping countries has led to free-trade agreements (such as the North American Free Trade Agreement between Mexico, Canada, and the United States), economic free markets that promote development and growth (such as the European Union), and the implementation of policies to protect the environment.

In the past, negative value judgments about less developed cultures have had prejudicial/negative effects on those nations.

In order to avoid mistakes made in the past, as well as to avoid an unfair or skewed analysis of a country, modern geographers try to take a fair, a holistic, or an understanding view of the countries that are being analyzed. They collect a variety of numerical data that is free of opinion and prejudice to get as realistic a picture of a country as possible.

To illustrate some of the pitfalls to be avoided when examining some of the typical numerical data, a closer look at a particular country is needed. When you were calculating the income index of Canada in Learning Activity 1.8, did you notice that the maximum GNI income value that was used in the formula came from the United Arab Emirates in 1980? Yes, in 1980, the per capita GNI was \$108,211! If they were making that much money then, they must be doing really well now, right? Study Table 1.1 and see where they are on the list of the 38 developed nations.

They are number 30 and Canada is number 6. This should make you wonder, what else has changed? If you have access to the Internet, you can go to The World Bank's website at www.worldbank.org/ or the United Nations website to compare data between countries. Some of the data taken from The World Bank's website is detailed in the following table:

Table 1.3 Comparing the United Arab Republic to Canada (Random Indicators)		
Indicator	Canada	United Arab Republic
Life expectancy at birth (2010)	81	77
Adolescent fertility rates (births per 1,000 women ages 15-19, 2011)	12	24
GDP growth (% annually, 2011)	2	5
Total armed forces personnel (2010)	65,700	51,000
Female legislators (% of total, 2008)	36	10
CO ₂ emissions (kilo tonnes, 2007)	556,884	135,428

Source: The World Bank. www.worldbank.org/.

These indicators were chosen randomly from the almost 300 that were listed on the World Bank data site. Recall that the indicators used to determine the Human Development Index included only life expectancy at birth, means years of schooling, expected years of schooling, and gross national income per capita (see Figure 1.1). If a person were to compare Canada and the United Arab Emirates (UAE) based on those indicators, it would be noted that although the citizens of the UAE have a higher potential income than Canadians, their life expectancy and education system may be less developed. Any details beyond that would be unknown.

The fact that the HDI is based on only four indicators and three criteria, and that there are almost 300 indicators available for most countries, indicates that the HDI is a very general indicator and that it should not be used to arrive at any specific conclusions. Why? It would be unfair to make important decisions or judgments based on just a few data points.

How and Why Did These Countries Evolve?

It is a bit of an understatement to say that there is a rather large disparity, or difference, between the development levels of countries. It is also obvious that there is a similarly large difference in the distribution of wealth on a global scale.

A more detailed explanation of how the current situation has come about will be provided in greater detail. For the time being, a summary of two main models for promoting development are presented below to provide a general idea of how situations can evolve.

Developing countries are faced with two main **challenges** to development.

1. adopting policies that successfully promote development
2. finding funds to pay for development

In order to tackle these challenges, countries choose from two main theories of development.

1. development through self-sufficiency
2. development through international trade

Each of these theories of development has advantages and disadvantages.

Development through Self-Sufficiency

During most of the 1900s, development through self-sufficiency was the model followed by countries such as China, India, and many African and eastern European countries. Emphasis was on spreading investment equally across all regions and in all areas of the economy. The government of each country was very involved in most areas of the economy.

As time progressed, the **advantages** of this model became apparent.

- **Fairness:** Progress was relatively slow, but fair to all residents and regions of the country, and monitored closely by the government.
- **Protected industries:** Businesses were protected from foreign competition and allowed to develop at their own pace.
- **Subsidies:** If private companies were unable to make a profit, the government would help by providing subsidies or forgiving debts.

That being said, the major **disadvantages** to the model were

- **Trade barriers:** Although trade barriers can protect local businesses from outside competition, they also restrict local businesses from exporting to foreign markets.
- **Inefficiency:** Large bureaucracies can hinder the developmental process because there are too many officials, too many regulations, and changes are processed too slowly.

Since companies could sell their products at higher government-controlled prices, and demand was often inflated, there was no motivation to become more efficient. Also, because international trade was discouraged, there was no reason to keep pace with technological advancements.

Furthermore, the large and expensive bureaucracy needed to keep all the government controls in place. Abuse and corruption tend to be associated with complex administrative systems. Imagine the red tape that would be involved with all of the economic controls! Many entrepreneurs found it more profitable to illegally import goods to sell on the black market than to try to work through all the government red tape.

Development through International Trade

Instead of using a general approach to developing a range of economic areas within a country, like the self-sufficiency approach, the international trade development model focuses on finding the resources, or strengths and assets of a country, that can be sold to other countries. What animal, vegetable, or mineral resource do they have? What product can they produce on the world market, that is of better quality and less expensive than the resource or product currently available?

According to this approach, a country can increase its level of development by concentrating its resources on developing local strengths on the world market and then using the resulting funds on development in other areas.

In the 1950s, a supporter of the International Trade model, **W.W. Rostow**, proposed a five stage **model of development**. The model states that each country is in one of these five progressive stages of development.

Rostow's model was based on the fact that the developed countries of western Europe and North America had followed these five steps, and were joined by countries in southern and eastern Europe and Japan. Rostow also knew that many developing countries have a good supply of raw materials that are often in demand by manufacturers in developed countries. Other countries that followed this trade approach include the petroleum-rich Persian Gulf states and the four Asian countries of South Korea, Singapore, Taiwan, and Hong Kong.

Rostow's Model of Development				
1. Traditional Society	2. Pre-Conditions for Take-Off	3. Take-Off	4. Drive to Maturity	5. Age of Mass Consumption
undeveloped, agricultural based much of the national wealth spent on non-competitive activities	country starts to invest in new technology/ infrastructure, such as water systems and transportation	rapid growth in a few economic activities, technological advances other parts of the economy remain traditional	modern technology spreads to other industries, rapid growth occurs workers become more skilled, educated, and specialized	economy shifts from heavy industry manufacturing to consumer goods

Rostow's Model of Development

Developed countries throughout the world have already moved through these stages. For some countries, the progression happened very slowly (over centuries) and for others it may have only taken a few decades. The stages shown below outline Canada's progression through the stages of Rostow's model of development.

Stage 1: During the 1600s and 1700s, Canada was first a colony of France and then of Britain.

Stage 2: Shortly after Canada's Confederation in 1867, the federal government began the construction of the transcontinental railroad and encouraged the beginning of Canada's manufacturing industry.

Stage 3: Between the late 1800s and the two World Wars (World War II ended in 1945), Canada saw tremendous growth in the manufacturing industries in the eastern provinces and the agricultural industry in the western provinces.

Stage 4: Between the end of World War II and the 1970s, Canada saw a great diversification in industries and experienced the beginnings of the age of information and technology.

Stage 5: Today, Canada is solidly located in the last stage of development. Mass consumption of manufactured consumer goods is widespread. Yet, Canada still relies heavily on exporting natural resources and engaging in international trade to boost the country's economy.

Countries that engage in international trade tend to benefit from the exposure to other countries as well as the competitive nature of trading with other countries. Advances in the “takeoff” industries usually filter through to other areas of the economy.

However, as with the self-sufficiency model, there are **disadvantages** with international trade.

- **uneven resource distribution:** If a country only has one main resource, it may be in trouble if the price of that resource drops.
- **market stagnation:** The sales of many low-cost manufactured goods may drop as demand from slow-growing populations is reduced.
- **increased dependence on developed countries:** By spending money in order to build up their industries, the developing nations may not have enough cash left to provide for their own people. Instead of using the income to fund new development, the income must be used to purchase necessities from the developed countries.

In spite of these problems, the international trade approach has proven to be the preferred method of stimulating development, simply because experience shows it works better.

In Order to Make Money, You Need to Spend Money

What if a developing country doesn’t have any money to start with? Well, that country does the same as a person who needs to buy a car to get to their new job—the country goes to an organization to get money. For example,

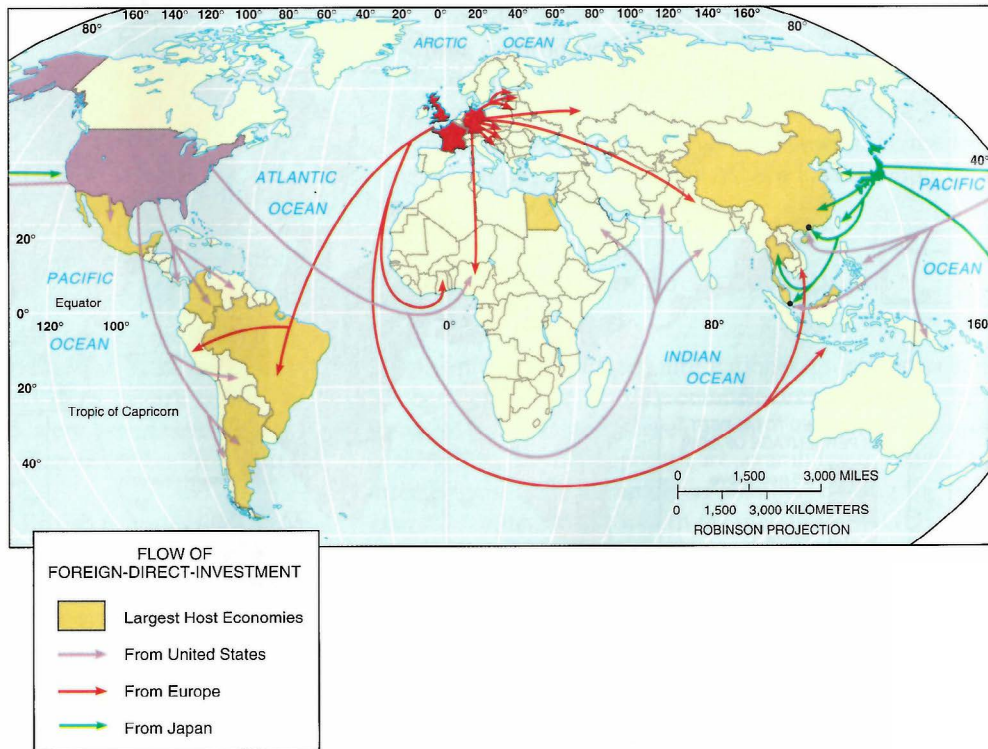
1. loans from a commercial bank (if in a more developed nation)
2. loans from an international organization such as the World Bank or International Monetary Fund
3. direct investment from a **transnational corporation** (a company that operates in countries other than the one in which its headquarters are located)



Figure 1.12 below illustrates the major flow of foreign investment from transnational companies, worldwide. As you can see, the American, European, and Japanese companies make most of the world's foreign investment.

Figure 1.12

FLOW OF INTERNATIONAL (FOREIGN) INVESTMENT



Source: Rubenstein, James M. *The Cultural Landscape: An Introduction to Human Geography*. Upper Saddle River, NJ: Pearson Education, Inc., 2003, p. 308. Used in accordance with fair dealing guidelines.

Loans are usually given to developing countries in order to build infrastructure. The theory is that once you have dependable roads, a safe water supply, and a dependable power and communication grid, conditions will be favourable for new and expanding businesses. Theoretically, the result is a larger tax base with more businesses and individuals paying taxes, resulting in more government income, which can be used for the benefit of the citizens.

Barriers to Development

Money

The problem, unfortunately, is that not all countries are able to pay back their loans. In fact, some of the poorer countries are unable to pay the interest payments, let alone the principal (the original amount of the loan without any interest charges). Often times, if a country is a “poor risk,” or has a poor credit rating, the country has to pay much higher interest rates. The same thing happens with an individual who has poor credit. In some extreme cases, some countries are paying more toward the debt than they are receiving in foreign aid.

It is important to remember that the money the government uses to pay back its debt comes from the taxpayers. If the majority of the population’s income is going towards paying off the interest on their government’s loan, it means that the money is being taken out of the local economy. Social programs, infrastructure projects, and economic institutions all suffer because of this and the standard of living for the entire population falls.

The following are common factors that contribute to debt accumulation:

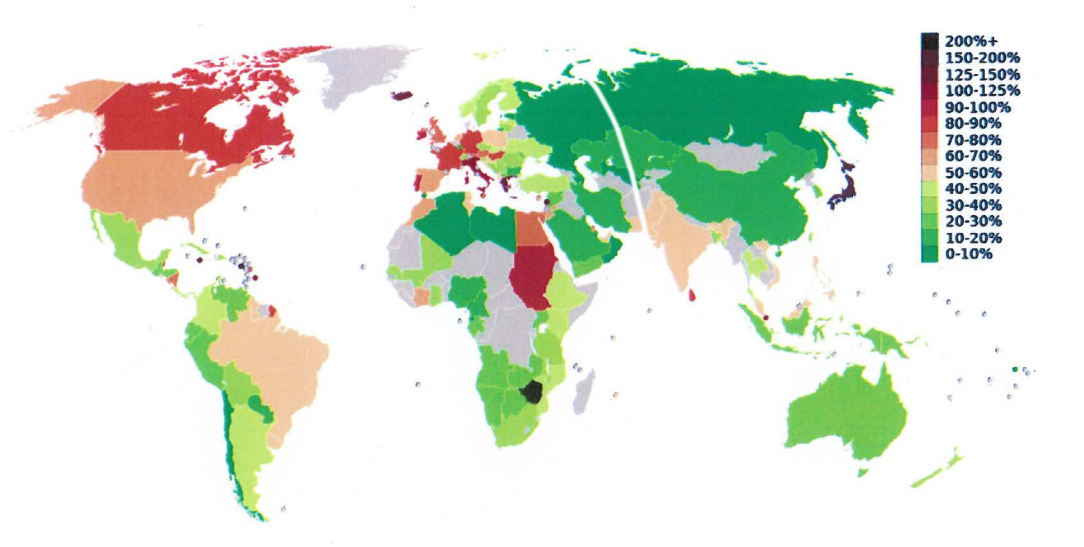
- Infrastructure projects that were expensive failed.
- Some former colonies could not obtain independence unless they assumed some of the debt of the colonizing country.
- Money knowingly lent to dictatorships or unstable political regimes was spent on the military or wasted. In some cases, lending money was a way for a wealthier country to have influence over a developing country.

Even though crippling debt can actually reverse the development of a country, countries cannot claim bankruptcy like an individual or business can and are, therefore, left with few options. The country can refinance their debt, which basically means satisfying the debt by taking on a new loan to pay, or can try to get the debt cancelled. If an international lending agency does forgive the loan or refinance the debt of a country, the agency may require that the country adopt unpopular policies of taxation and reduced government spending designed to encourage international trade. This can result in political unrest among the population, making a tough situation even worse.

The following world map, Figure 1.13, shows the level of public debt as a percentage of GDP per country. The public debt is defined as all government borrowings less repayments, in the local currency.

Figure 1.13

PUBLIC DEBT AS A PERCENT OF GDP



Source: Wikipedia. http://upload.wikimedia.org/wikipedia/commons/thumb/0/0c/Public_debt_percent_gdp_world_map_%282010%29.svg/1024px-Public_debt_percent_gdp_world_map_%282010%29.svg.png. CC License. Estimated 2010 data from the following source: Central Intelligence Agency. "Country Comparison: Public Debt." *CIA World Factbook*. <https://www.cia.gov/library/publications/the-world-factbook/rankorder/2186rank.html>.

Education/Information

Another barrier to development is lack of education and poor access to information. The UN recently proposed that access to the Internet should be considered a human right. This has sparked debate across the developed world.

There is truth to the saying "two heads are better than one," and it becomes obvious when one considers the accomplishments of societies throughout history. The ability to freely accumulate knowledge and to share and collaborate with others is important in developing the economy of a developing nation. As well, these factors influence the social and artistic development of a country.

Infrastructure

Without transportation systems or a consistent and dependable supply of energy, commerce cannot progress beyond the local level. Large-scale manufacturing that could contribute to the wealth of a nation and international trade is impossible.

World Issues Facing All Countries

Due to the continually growing global communications systems and travel infrastructure, the world can be seen as a global community more so now than ever before. Examining the “big picture” and making connections in a variety of economic, humanitarian, and ecological contexts is part of what it means to work as a geographer today. It is important to be able to recognize and predict possible “cause and effect” interactions between events.

Economic

Events in one part of the world can have far-reaching effects on the global economy. For example, the catastrophic March 2011 earthquake and tsunami in Japan, with the resulting nuclear power plant leak, caused disruptions to both the global food supply and the vehicle manufacturing industries in many countries. Numerous countries banned the import of all Japanese foodstuffs over the concern that radiation contamination from the power plant leak may have been spread by the wind and rain, regardless of the proximity of the food source to the disaster area. A large number of manufacturing facilities around the world had to lay off workers because Japan was temporarily unable to supply parts. Any event that disrupts the flow of international trade money will be felt by individuals over a wide area.

Global development programs strive to narrow the gap between rich and poor countries. Many countries also have inclusive economic policies that try to remove barriers to economic success for all citizens.

Human Rights



Human rights are those rights that all humans should have, regardless of race, gender, religion, ethnicity, age, sexual orientation, political belief, nationality, intelligence, or disability.

In countries where it is seen to be important, laws are made to protect the rights of its citizens, so that future governments cannot take them away. Some human rights are

1. freedom of speech
2. freedom of assembly
3. freedom of movement (one can live where they want in that country)

4. right to be protected by laws
5. right to be innocent until proven guilty
6. right to have a say in government
7. right to own property

Human rights are important to all developing countries (and the developed countries that are assisting with their development) because, arguably, the most important resource a country has is its human resource. If people are given the tools and freedom to improve their lives, this grassroots-type of support has the potential to benefit the individual, the community, and, eventually, the entire country.

For example, if the women of an African community who spend six hours a day hauling water were provided with a local well, the time formerly spent hauling water could be used to develop small businesses (produce, crafts) to improve their lives and the local economy. Because the women in many developing nations do not have the education or resources that are available to men, many international development organizations focus on providing these women with an education and with small loans to encourage local business.

In 1948, the United Nations adopted the universal declaration of human rights. The full text is available at www.un.org/en/documents/udhr/.

The Environment

Ecosystems, such as the movements of birds, animals, or weather systems, do not follow political boundaries. Environmental degradation (pollution), habitat loss, global warming, and climate change/shift all have a potential impact on all countries, all of humanity, and all life on Earth. For that reason, global environmental issues continue to grow in international importance.

There have been regular global summits (meetings) where government representatives from different countries meet to discuss the effects that the world population has on the planet, and how humans as a species should be dealing with these effects. Unfortunately, even though most countries have their own rules, regulations, and policies dealing with environmental issues, they vary greatly among countries and finding common ground remains a challenge.



Demographics

Demography is the statistical study of human populations. It focuses on such things as the size of different age groups, the distributions of those age groups (how many in urban areas versus rural areas), and how the groupings shift and influence societies over time (that is, will there be enough people working and paying taxes to support the number of people collecting old age pension).

Demography also addresses the effect that populations have on other factors besides the economy of countries. For instance, health care service decisions are based on populations (for example, should more resources be available for maternal and infant care rather than for seniors) and food supply issues related to increased population may influence the direction and type of urban expansion (for example, city councils may decide to allow more construction for apartments than single-family dwellings to ensure farmland is not lost).

The increasing global population has been the cause of concern since the mid-1800s, but with the world population hitting seven billion in the summer of 2011, it continues to attract increasing attention from global organizations such as the United Nations and the World Health Organization.

Energy

As mentioned previously, consistent energy supplies are crucial to continued global development. The most important energy source is oil—no other sector of the global economy has such a far-reaching and immediate impact as a disruption in the world oil market. The price of gas at the pumps seems to go up at the slightest hint of political unrest near a major oil producing country. The supply of oil is finite (it is a non-renewable resource) and, as a result, most countries that depend on oil are starting to research alternate renewable energy sources such as hydroelectric, solar, tide, and wind power.

The days of plentiful, cheap hydrocarbons—oil and coal—that the developed nations depended on to fuel their own growth are over. Developing nations with access to cheap coal may harbour resentment toward the developed nations that now discourage its use because it contributes to increased carbon in the atmosphere. This is a double standard that frustrates many—“They (developed nations) used it, why can’t we?”

Health

Global connectedness is generally seen as a good thing as markets for trade goods, including agricultural products, open up. However, keep in mind that the benefits are balanced by an increased risk of the spread of diseases.

In recent years, the cattle disease BSE (Bovine Spongiform Encephalopathy or Mad Cow disease) hit the North American cattle industry hard when imports of Canadian and American beef were banned by many countries over fears that the disease would spread to local cattle populations. The H1N1 flu pandemic of 2009 and the SARS (Severe Acute Respiratory Syndrome) scare of 2003 are also examples of how fast pathogens (germs) can spread around the globe infecting populations. Recording and understanding travel and export/import patterns is important in designing “health and safety” policies to protect the residents and livestock of a country.

Conflict

Any type of armed conflict has many negative effects at a local level, but can also harm neighbouring countries. The tide of refugees trying to escape into refugee camps in a neighbouring country puts pressure on the limited resources in that country as well.

If the cause of the conflict can be traced back to the irresponsible foreign policy of a developed nation, that nation may be the target of terrorism in a variety of forms.

Perhaps, the most notable aspect of conflict is the cost. To pay for the equipment and soldiers is one thing, but the cost in life and lost potential is considered by some to be the most heartbreaking. With the cooperation of many developed and developing countries, the United Nations and other international organizations are continually working toward the elimination of armed conflict in all its forms.

Lesson Summary

In this lesson, you have learned how to differentiate between a country and a nation, as well as the different criteria used to group countries in certain ways. You also learned what is meant by the terms *developed* and *developing* countries and you learned some characteristics of each group. You were introduced to the two theories of development, Rostow’s 5-stage model of development, and the different challenges that countries have to overcome as they evolve through the stages.



Assignment 1.3

Development Case Study (51 marks)

This assignment will condense all that you have learned about development into a single case study comparing two countries of your choice. These two countries will be on opposite sides of the development spectrum.

Completing this assignment will be easier with the use of the Internet, but can also be completed by visiting your local library. If you require assistance or have any questions regarding the assignment, please contact your learning partner or your tutor/marker.

Once you have completed this assignment, you should have a better understanding of

- the criteria used to determine whether a country is developed or developing
- how to calculate the HDI of a country
- development through self-sufficiency
- development through international trade
- the various barriers to development



Note: Remember that DC stands for *developed country* and LDC stands for *less developed country*.

1. Tables 1.1 and 1.2 in Lesson 4 list countries according to their Human Development Index, based on a United Nations report with data from 2011. (Remember that the data does change from year to year.)
 - a) First, **choose** one country from Table 1.1 and one country from Table 1.2. **or** consult the entire report at http://hdr.undp.org/en/media/HDR_2011_EN_Table1.pdf to choose one country with very high human development and a second country that falls within the medium-low human development categories that may not have been listed in the course. If the URL no longer works, you can access this report by visiting www.undp.org and searching for the latest annual HDI report. Once you have the report, make your choice of countries.
 - b) **Indicate** the HDI for each country you chose and the year the report that you are using was published. (2 marks)

Very high human development country: _____
Country HDI Year

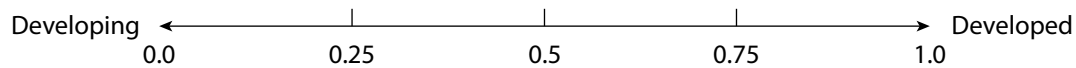
Medium-low human development country: _____
Country HDI Year

continued

Assignment 1.3: Development Case Study (continued)

2. Before doing any research, **describe** your initial perceptions of these two countries. Did you pick them at random or do you have some sort of connection to them? What are some general facts that you know or assumptions that you have about them? Give a brief statement for each country. (2 × 1 mark)

3. Using a different colour of ink for each country, **indicate and label** where the two countries you have chosen fall on the continuum line below. (1 mark)



The three factors tied to development are economic, social, and demographic. Visit www.worldbank.org to find the statistics that will help you with this section of the assignment.

Refer back to Learning Activity 1.8 to refresh your memory on the steps for the calculations. Show all your work.

4. **Calculate** the per capita gross national income of each country. (2 × 2 marks)

continued

Assignment 1.3: Development Case Study (continued)

5. **Calculate** the education index of each country. (2 × 3 marks)
- a) Find the mean (average number) years of schooling index.

 - b) Find the expected years of schooling index.

 - c) Use the two values from (a) and (b) to calculate the education index.
6. **Calculate** the life expectancy index of each country. (2 × 2 marks)

continued

Assignment 1.3: Development Case Study (continued)

Reflect on your answers. Do they make sense with what you know? The highly developed country should have indexes that are closer to 1, whereas the developing country should have indexes closer to 0.

Let's take a closer look at the LDC you chose. The country must fulfill the following three criteria; it must have

- a low per capita gross national income
- human resource weaknesses
- economic vulnerabilities

Since you have already calculated the country's per capita gross national income, look at the human resource and economic vulnerability components in more depth.

7. **Choose and explain two** out of the four indicators of **human resource weaknesses** and the unique challenges that the country faces in each area.

Responses should clearly indicate what the issue is, how many people it affects, and how long it has been a problem, as well as a description of one or two ways in which the government has tried or should be trying to address the issue. (2 × 3 marks)

a) nutrition

b) health

continued

Assignment 1.3: Development Case Study (continued)

c) education

d) adult literacy

8. **Choose and explain three** out of the six indicators of **economic vulnerability** and specify the ways in which these indicators have impacted the country's economy. Responses should provide one or two concrete **examples** that align with the economic vulnerability being discussed, whether or not it could have been prevented (if yes, how), and what the country had to do/is doing to deal with the situation. (2 × 3 marks)

a) instability of agricultural production

continued

Assignment 1.3: Development Case Study (continued)

b) instability of exports of goods and services

c) economic weakness in manufacturing and modern services

d) low variety of merchandise exported

e) handicap of economic smallness (population of less than 75 million)

continued

Assignment 1.3: Development Case Study (continued)

f) percentage of population displaced by natural disasters

Now let's take a closer look at the DC you chose and how this country arrived at its high human development index. Was it through the self-sufficiency model **or** the international trade model? (1 × 10 marks)

9. If the country developed primarily by following the **self-sufficiency model**, write a response that **outlines and describes** the following:
- What were this country's most significant developmental benchmarks? (1 mark)
 - How and when did the most important developments occur? (2 marks)
 - What are two advantages the country gained by developing in this way? (2 marks)
 - What are two disadvantage that hindered its progress? (2 marks)
 - What is the government's current involvement in the country's economy? (1 mark)
 - Is this country still developing? Has it halted in its progress? Explain. (2 marks)

continued

Assignment 1.3: Development Case Study (continued)

If the country developed through the **international trade model**, write a response that **outlines and describes** the following:

- What is the country's most exported resource? (1 mark)
- How much income does the country gain from this resource? To what extent is the economy dependent upon this export? (2 marks)
- Who are this country's primary trading partners? (1 mark)
- What resource is this country's highest import? From which partner does it come from? (2 marks)
- Which stage of Rostow's model of development does this country find itself in? How long has it been in this stage? Is it on the brink of progressing to the next? Why or why not? (3 marks)
- What is this country's greatest disadvantage when it comes to international trade? (1 mark)

continued

Assignment 1.3: Development Case Study (continued)

10. In your opinion, what is the greatest **barrier to development** faced by the DC and the LDC that you chose? In two separate paragraphs, answer the following questions for each country. (*2 × 5 marks = 10 marks*)
- What is the country’s greatest barrier to development? (*1 mark*)
 - Why is this an issue and is it being addressed by the government? If yes, how? If no, why not? (*1.5 marks*)
 - Has the country received international aid to overcome this barrier? If yes, in what ways? If no, why not? (*1.5 marks*)
 - In what ways does this barrier directly affect the country’s population? In what ways is it more of an issue for the government to deal with? (*1 mark*)

DC

continued

Assignment 1.3: Development Case Study (continued)

LDC

MODULE 1 SUMMARY

Congratulations, you have completed Module 1!

The first lesson of this module offered you a very broad overview of the study of geography and the type of work that geographers do. The lesson compared the characteristics of physical and human geography and emphasized the strong connection between land, nature, and people.

The next lesson further explored the concepts of physical geography as they are related to human geography. Human settlement was discussed in relation to hospitable and inhospitable landscapes, climate, vegetation, and soil.

Lesson 3 focused on culture and the relationships that people have to the places in which they live. Our world thrives on the different cultures of its people, which are spread more widely as it becomes easier for people to travel to all areas of the world. As well, a sense of place and ethnocentrism are important concepts that were discussed in this lesson.

Lastly, lesson 4 defined the terms nation and country, analyzed the advantages and disadvantages of grouping countries, and examined the important topic of development. You learned some of the characteristics of developed and developing countries and the significant challenges that countries face along the road to development.



Submitting Assignments

It is now time for you to submit Assignments 1.1 to 1.3 to the Distance Learning Unit so that you can receive some feedback on how you are doing in this course. Remember that you must submit all the assignments in this course before you can receive your credit.

Make sure you have completed all parts of your Module 1 assignments and organize your material in the following order:

- Module 1 Cover Sheet (found at the end of the course Introduction)
- Assignment 1.1: Introduction to Geography
- Assignment 1.2: Cultural Study
- Assignment 1.3: Development Case Study

For instructions on submitting your assignments, refer to How to Submit Assignments in the course Introduction.

Notes



GRADE 12 WORLD
GEOGRAPHY: A HUMAN
PERSPECTIVE (40S)

Module 1
World Geography Overview

Learning Activity Answer Key

MODULE 1: WORLD GEOGRAPHY OVERVIEW

Learning Activity 1.1: The Origins and Growth of Geography

1. Imagine that you were talking to someone new to Earth. Explain geography to them.

Answers should include a description of what is studied in geography (physical topography of Earth, climate, population demographics, resources, etc.), the general goals of geography (mapping, patterns, understanding physical and cultural processes, data collection, making observations, organizing information, making cause and effect connections), and also some of the different techniques used to collect and organize data (by primary, secondary, or tertiary sources).

2. What do you think are the top three most important goals of geography? Why?

Answers should include a list and justification for three of the following:

- Mapping
- Data collection
- Organizing information
- Making cause and effect connections
- Understanding patterns
- Understanding physical and cultural processes

3. What do you think would be the best way to collect information on the number of people in a specific area or region? Why is this done? What would be the best way of first organizing that information and then sharing it with other people?

A possible answer could be to create a census or survey for the inhabitants of the city. The survey would collect basic information such as age, sex, and contact information, which would be organized into different categories, such as: family, finance, education, health, etc. It would have to be made very clear why the survey is being conducted and what the expectation is for completing it. The survey could be mandated by the city or perhaps there would be a special incentive to get people to fill it out. It would be distributed by mail, made available online, and also be available at public locations such as libraries, community centres, and universities. Once the information is collected and recorded, the information would be converted to statistics or a special report that would be sent out to the constituents via mail, email, etc.

4. Look at the list Top 10 Reasons to Study Geography, pick two reasons that are most interesting to you, and explain why (focus on awareness of geographical concepts).

Answers will vary.

Learning Activity 1.2: Exploring Maps

1. Take a look at any kind of geographical map in an atlas or find one online. Identify what kind of map it is and answer the following questions:
 - a) What is the title of the map? What is the purpose of the map?
 - b) When was the map published? Is the information on this map subject to change? If yes, how long do you think it will take for the map to be outdated and no longer accurate?
 - c) What scale is the map using? Is it the most appropriate scale or would it be more effective to use an alternate ratio?
 - d) Is there a legend? What sorts of symbols are used in the legend? Are they clear and easy to locate?
 - e) How is the map oriented? Does it include a direction?
 - f) Is this map clear? Is it easy to find all of the relevant information you are looking for and is it useful?

Answers will vary.

Learning Activity 1.3: Drawing a Map

Without looking back at the maps of the world, take a few minutes to draw a freehand map of the world onto a sheet of printer paper (or any paper of a similar size). When you are done, complete the following:

1. Compare the freehand map you just drew to a world map.
2. Did you remember all of the continents? Were the placement and size of the continents relatively accurate? Did you add any features to your map in addition to the basic outlines?
3. What conclusions can you draw about the relative importance attached to certain places based on their features, positioning, and level of detail?

Answers will vary.

Learning Activity 1.4: Topsoil Illustration

Of the land available for human habitation **and** food production, a relatively small proportion is good topsoil that can be used to grow things. To illustrate the rarity of good topsoil, take an apple, which represents Earth, and complete the following steps:

1. Cut the apple into four equal parts. Three of the quarters represent the oceans, so set them aside.
 2. Take the quarter that represents all the land on Earth, and cut that land part in half lengthwise into two equal pieces. One piece represents non-habitable land and the second piece represents areas where humans can live but cannot grow food.
 3. Put one of the sections off to the side.
 4. Take the remaining section and cut it crosswise into four equal parts. Three of these sections represent the areas of the world that are rocky, wet, and hot, or contain soil so poor that food production is not possible.
 5. Carefully peel that last piece of apple. This small bit of peel represents the soil on Earth that all of us depend on for food!
-

Learning Activity 1.5: Sense of Place

In developing a sense of place, it's important to have geographical perspective and be able to see beyond unusual practices.

1. Read the following list of traditional practices and then write down your first impression of these people.
 - They once lived in snow houses all winter.
 - They play soccer at midnight.
 - At one time, their babies wore moss as diapers.
 - In the past they softened animal skin by chewing it.
 - They used to make sleds out of frozen fish.
 - They made sails for their boats from animal intestines (part of the stomach).

Answers will vary.

2. The following is an explanation of why moss and intestines were used:

Cultural Practice	Rationale
moss diapers	Moss was widely available in the region. It can be stored in the winter. The diapers are free, absorbent, and soft. The moss is biodegradable. It can be packed tightly and is lightweight for travel.
sails made of intestines	Intestines are strong and don't rip easily. They are lightweight and can be transported easily. They are waterproof. They are easy to sew together. Intestines were available whenever animals were killed. They were environmentally efficient.

These practices once common among the Inuit people of the Canadian Arctic region.

After reading this, how has your first impression changed?

Answers will vary.

3. Where you live influences your behaviour and how you meet your basic needs. In general, your sense of place shapes your identity. How might a person who was born in the prairies differ from a person who lived their entire life in the mountains? How might a person who grew up in the city differ from a person who was raised on a farm? Explain your identity and how it is shaped by your environment. Be sure to provide examples.

Answers will vary.

Learning Activity 1.6: Countries/Nations/Territories

Determine whether the following statements are true or false. If the statement is false, please rewrite it to make it correct.

1. The continent of Antarctica is divided into territories that belong to Chile, France, New Zealand, and Norway, among others.

False. Antarctica has several territorial claims by the countries of Chile, France, New Zealand, Norway, and so forth; however, because they are not universally recognized, these claims are disputed.

2. Taiwan is an independent country and has a good international relationship with China.

False. Taiwan considers itself as independent but China and its allies do not recognize it as such. The relationship between Taiwan and China is strained because of this fundamental disagreement.

3. Depending on the source of information, there are between 200 and 204 countries in the world.

False. Most sources of information recognize between 190-195 countries in the world.

4. The four defining characteristics of a country are that it has a permanent population, it has a defined territory, it is ruled by a government, and it has the capacity to build relations with other states.

True

5. Examples of nations without their own state are Kurds, Roma, and First Nations.

True

6. A country is a nation with its own government that does not necessarily occupy a particular territory.

False. A country is a nation with its own government which does occupy a particular territory.

Learning Activity 1.7: Statistics

Remember the emphasis put on the variety of employment opportunities available to geographers earlier on in this module? Well, the use of math through the analysis of various statistics is fairly common. This learning activity applies basic math concepts while giving you an idea of the types of calculations that would be completed by many geographers.

1. If the population of Canada in 2011 was about 33,476,688 and the GNI was about \$1,517,434,908,290 (one point five trillion dollars in 2011), then what was the approximate per capita GNI of Canada in 2011?

$$1,517,434,908,290 \div 33,476,688 = 45,328.1$$

The per capita GNI for Canada was \$45,328.

For this calculation, the values were taken from the World Bank website at http://data.worldbank.org/indicator/NY.GNP.PCAP.KD?order=wbapi_data_value_2011+wbapi_data_value+wbapi_data_value-last&sort=asc. There is a discrepancy between the per capita GNI listed for Canada and the calculation just made; however, for the purpose of understanding the calculations, use the following given values and equation to calculate the income index of Canada.

2. Canada's per capita GNI is \$25,442 (2011).

The minimum global value is \$102 (GNI Dem. Republic of Congo, 2011).

The maximum global value is \$40,708 (Norway, 2011).

Using the following formula, calculate Canada's income index.

Income index =

$$\frac{(\text{Canada's per capita GNI}) - (\text{global minimum per capital GNI})}{(\text{global maximum per capital GNI}) - (\text{global minimum per capital GNI})}$$

$$\text{Canada's income index} = \frac{(25,442 - 102)}{(40,708 - 102)} = 0.624$$

3. Calculating the education index is done in three steps.
 - finding the mean (average number) years of schooling index
 - finding the expected years of schooling index
 - using those two numbers to calculate the education index

First, the mean years of schooling index is calculated from the data below, using the same formula as in question 1.

Canada's mean years of schooling = 11.5

Global minimum mean years of schooling = 0 (no years of education)

Global maximum mean years of schooling = 13.2 (the US, 2000)

Calculate Canada's mean years of schooling index.

$$\text{Canada's mean years of schooling index} = \frac{(11.5 - 0)}{(13.2 - 0)} = 0.871$$

Second, the expected years of education index is calculated using the same formula and the data below. Complete the following:

Canada's expected years of schooling = 16

Global minimum expected years of schooling = 0 (no expected years of schooling)

Global maximum expected years of schooling = 20.6 (Australia, 2002)

Calculate Canada's expected years of education index.

$$\text{Canada's expected years of education index} = \frac{(16 - 0)}{(20.6 - 0)} = 0.777$$

Third, we take the two schooling indexes and use the following formula to calculate the education index that's used to calculate the HDI. The global maximum literacy rate in developed countries is 95% or, 0.951 and the minimum literacy rate is 0.

Complete the following:

Canada's education index

$$\begin{aligned} & \sqrt{\frac{(\text{Canada's mean years of schooling index} \times \\ & \text{Canada's expected years of education index}) - 0}{(\text{global maximum literacy rate} - \text{global minimum literacy rate})}} \\ & = \sqrt{\text{above answer}} \end{aligned}$$

$$\begin{aligned} \text{Education index} &= \frac{\sqrt{(0.871 \times 0.777) - 0}}{0.951 - 0} = \frac{\sqrt{0.677}}{0.951} = \frac{0.823}{0.951} = 0.865 \\ &= \sqrt{0.865} = 0.93 \end{aligned}$$

4. In the life expectancy factor explanation in Lesson 4, the maximum life expectancy value that is used to calculate the HDI is 83.2 years. Canada's life expectancy at birth is 81 years. Remember that the minimum value used is 20 years.

Use the same calculations to determine Canada's life expectancy factor. The index formula is rewritten for you.

Life expectancy index =

$$\frac{(\text{Canada's life expectancy value}) - (\text{global minimum life expectancy value})}{(\text{global maximum life expectancy value}) - (\text{global minimum life expectancy value})}$$

$$\text{Life expectancy index} = \frac{(81 - 20)}{(83.2 - 20)} = \frac{61}{63.2} = 0.965$$



GRADE 12 WORLD
GEOGRAPHY: A HUMAN
PERSPECTIVE (40S)

Module 1
World Geography Overview

Learning Activity Answer Key

MODULE 1: WORLD GEOGRAPHY OVERVIEW

Learning Activity 1.1: The Origins and Growth of Geography

1. Imagine that you were talking to someone new to Earth. Explain geography to them.

Answers should include a description of what is studied in geography (physical topography of Earth, climate, population demographics, resources, etc.), the general goals of geography (mapping, patterns, understanding physical and cultural processes, data collection, making observations, organizing information, making cause and effect connections), and also some of the different techniques used to collect and organize data (by primary, secondary, or tertiary sources).

2. What do you think are the top three most important goals of geography? Why?

Answers should include a list and justification for three of the following:

- Mapping
- Data collection
- Organizing information
- Making cause and effect connections
- Understanding patterns
- Understanding physical and cultural processes

3. What do you think would be the best way to collect information on the number of people in a specific area or region? Why is this done? What would be the best way of first organizing that information and then sharing it with other people?

A possible answer could be to create a census or survey for the inhabitants of the city. The survey would collect basic information such as age, sex, and contact information, which would be organized into different categories, such as: family, finance, education, health, etc. It would have to be made very clear why the survey is being conducted and what the expectation is for completing it. The survey could be mandated by the city or perhaps there would be a special incentive to get people to fill it out. It would be distributed by mail, made available online, and also be available at public locations such as libraries, community centres, and universities. Once the information is collected and recorded, the information would be converted to statistics or a special report that would be sent out to the constituents via mail, email, etc.

4. Look at the list Top 10 Reasons to Study Geography, pick two reasons that are most interesting to you, and explain why (focus on awareness of geographical concepts).

Answers will vary.

Learning Activity 1.2: Exploring Maps

1. Take a look at any kind of geographical map in an atlas or find one online. Identify what kind of map it is and answer the following questions:
 - a) What is the title of the map? What is the purpose of the map?
 - b) When was the map published? Is the information on this map subject to change? If yes, how long do you think it will take for the map to be outdated and no longer accurate?
 - c) What scale is the map using? Is it the most appropriate scale or would it be more effective to use an alternate ratio?
 - d) Is there a legend? What sorts of symbols are used in the legend? Are they clear and easy to locate?
 - e) How is the map oriented? Does it include a direction?
 - f) Is this map clear? Is it easy to find all of the relevant information you are looking for and is it useful?

Answers will vary.

Learning Activity 1.3: Drawing a Map

Without looking back at the maps of the world, take a few minutes to draw a freehand map of the world onto a sheet of printer paper (or any paper of a similar size). When you are done, complete the following:

1. Compare the freehand map you just drew to a world map.
2. Did you remember all of the continents? Were the placement and size of the continents relatively accurate? Did you add any features to your map in addition to the basic outlines?
3. What conclusions can you draw about the relative importance attached to certain places based on their features, positioning, and level of detail?

Answers will vary.

Learning Activity 1.4: Topsoil Illustration

Of the land available for human habitation **and** food production, a relatively small proportion is good topsoil that can be used to grow things. To illustrate the rarity of good topsoil, take an apple, which represents Earth, and complete the following steps:

1. Cut the apple into four equal parts. Three of the quarters represent the oceans, so set them aside.
 2. Take the quarter that represents all the land on Earth, and cut that land part in half lengthwise into two equal pieces. One piece represents non-habitable land and the second piece represents areas where humans can live but cannot grow food.
 3. Put one of the sections off to the side.
 4. Take the remaining section and cut it crosswise into four equal parts. Three of these sections represent the areas of the world that are rocky, wet, and hot, or contain soil so poor that food production is not possible.
 5. Carefully peel that last piece of apple. This small bit of peel represents the soil on Earth that all of us depend on for food!
-

Learning Activity 1.5: Sense of Place

In developing a sense of place, it's important to have geographical perspective and be able to see beyond unusual practices.

1. Read the following list of traditional practices and then write down your first impression of these people.
 - They once lived in snow houses all winter.
 - They play soccer at midnight.
 - At one time, their babies wore moss as diapers.
 - In the past they softened animal skin by chewing it.
 - They used to make sleds out of frozen fish.
 - They made sails for their boats from animal intestines (part of the stomach).

Answers will vary.

2. The following is an explanation of why moss and intestines were used:

Cultural Practice	Rationale
moss diapers	Moss was widely available in the region. It can be stored in the winter. The diapers are free, absorbent, and soft. The moss is biodegradable. It can be packed tightly and is lightweight for travel.
sails made of intestines	Intestines are strong and don't rip easily. They are lightweight and can be transported easily. They are waterproof. They are easy to sew together. Intestines were available whenever animals were killed. They were environmentally efficient.

These practices once common among the Inuit people of the Canadian Arctic region.

After reading this, how has your first impression changed?

Answers will vary.

3. Where you live influences your behaviour and how you meet your basic needs. In general, your sense of place shapes your identity. How might a person who was born in the prairies differ from a person who lived their entire life in the mountains? How might a person who grew up in the city differ from a person who was raised on a farm? Explain your identity and how it is shaped by your environment. Be sure to provide examples.

Answers will vary.

Learning Activity 1.6: Countries/Nations/Territories

Determine whether the following statements are true or false. If the statement is false, please rewrite it to make it correct.

1. The continent of Antarctica is divided into territories that belong to Chile, France, New Zealand, and Norway, among others.

False. Antarctica has several territorial claims by the countries of Chile, France, New Zealand, Norway, and so forth; however, because they are not universally recognized, these claims are disputed.

2. Taiwan is an independent country and has a good international relationship with China.

False. Taiwan considers itself as independent but China and its allies do not recognize it as such. The relationship between Taiwan and China is strained because of this fundamental disagreement.

3. Depending on the source of information, there are between 200 and 204 countries in the world.

False. Most sources of information recognize between 190-195 countries in the world.

4. The four defining characteristics of a country are that it has a permanent population, it has a defined territory, it is ruled by a government, and it has the capacity to build relations with other states.

True

5. Examples of nations without their own state are Kurds, Roma, and First Nations.

True

6. A country is a nation with its own government that does not necessarily occupy a particular territory.

False. A country is a nation with its own government which does occupy a particular territory.

Learning Activity 1.7: Statistics

Remember the emphasis put on the variety of employment opportunities available to geographers earlier on in this module? Well, the use of math through the analysis of various statistics is fairly common. This learning activity applies basic math concepts while giving you an idea of the types of calculations that would be completed by many geographers.

1. If the population of Canada in 2011 was about 33,476,688 and the GNI was about \$1,517,434,908,290 (one point five trillion dollars in 2011), then what was the approximate per capita GNI of Canada in 2011?

$$1,517,434,908,290 \div 33,476,688 = 45,328.1$$

The per capita GNI for Canada was \$45,328.

For this calculation, the values were taken from the World Bank website at http://data.worldbank.org/indicator/NY.GNP.PCAP.KD?order=wbapi_data_value_2011+wbapi_data_value+wbapi_data_value-last&sort=asc. There is a discrepancy between the per capita GNI listed for Canada and the calculation just made; however, for the purpose of understanding the calculations, use the following given values and equation to calculate the income index of Canada.

2. Canada's per capita GNI is \$25,442 (2011).

The minimum global value is \$102 (GNI Dem. Republic of Congo, 2011).

The maximum global value is \$40,708 (Norway, 2011).

Using the following formula, calculate Canada's income index.

Income index =

$$\frac{(\text{Canada's per capita GNI}) - (\text{global minimum per capital GNI})}{(\text{global maximum per capital GNI}) - (\text{global minimum per capital GNI})}$$

$$\text{Canada's income index} = \frac{(25,442 - 102)}{(40,708 - 102)} = 0.624$$

3. Calculating the education index is done in three steps.
 - finding the mean (average number) years of schooling index
 - finding the expected years of schooling index
 - using those two numbers to calculate the education index

First, the mean years of schooling index is calculated from the data below, using the same formula as in question 1.

Canada's mean years of schooling = 11.5

Global minimum mean years of schooling = 0 (no years of education)

Global maximum mean years of schooling = 13.2 (the US, 2000)

Calculate Canada's mean years of schooling index.

$$\text{Canada's mean years of schooling index} = \frac{(11.5 - 0)}{(13.2 - 0)} = 0.871$$

Second, the expected years of education index is calculated using the same formula and the data below. Complete the following:

Canada's expected years of schooling = 16

Global minimum expected years of schooling = 0 (no expected years of schooling)

Global maximum expected years of schooling = 20.6 (Australia, 2002)

Calculate Canada's expected years of education index.

$$\text{Canada's expected years of education index} = \frac{(16 - 0)}{(20.6 - 0)} = 0.777$$

Third, we take the two schooling indexes and use the following formula to calculate the education index that's used to calculate the HDI. The global maximum literacy rate in developed countries is 95% or, 0.951 and the minimum literacy rate is 0.

Complete the following:

Canada's education index

$$\begin{aligned} & \sqrt{\frac{(\text{Canada's mean years of schooling index} \times \\ & \text{Canada's expected years of education index}) - 0}{(\text{global maximum literacy rate} - \text{global minimum literacy rate})}} \\ & = \sqrt{\text{above answer}} \end{aligned}$$

$$\begin{aligned} \text{Education index} &= \frac{\sqrt{(0.871 \times 0.777) - 0}}{0.951 - 0} = \frac{\sqrt{0.677}}{0.951} = \frac{0.823}{0.951} = 0.865 \\ &= \sqrt{0.865} = 0.93 \end{aligned}$$

4. In the life expectancy factor explanation in Lesson 4, the maximum life expectancy value that is used to calculate the HDI is 83.2 years. Canada's life expectancy at birth is 81 years. Remember that the minimum value used is 20 years.

Use the same calculations to determine Canada's life expectancy factor. The index formula is rewritten for you.

Life expectancy index =

$$\frac{(\text{Canada's life expectancy value}) - (\text{global minimum life expectancy value})}{(\text{global maximum life expectancy value}) - (\text{global minimum life expectancy value})}$$

$$\text{Life expectancy index} = \frac{(81 - 20)}{(83.2 - 20)} = \frac{61}{63.2} = 0.965$$

GRADE 12 WORLD GEOGRAPHY: A HUMAN PERSPECTIVE (40S)

Module 2 World Population: Characteristics, Distribution, and Growth



Note: Module 2 contains a number of images that are best viewed in colour. Colour versions of these images in PDF format are available in the learning management system (LMS). Students are issued a username and password at the time of registration. If Internet access is unavailable, a CD with these images is available upon request from the Distance Learning Unit.

MODULE 2: WORLD POPULATION: CHARACTERISTICS, DISTRIBUTION, AND GROWTH

Introduction

Now that you have completed the first module, you are more familiar with the general location of the major countries of the world. The learning activities in Module 1 gave you a good idea of where the developed and less-developed countries are located, enhancing your understanding of a sense of place. Also, you are now able to have an informed discussion about how development levels are defined, regardless of the region.

In a democratic country, such as Canada and most of the developed countries, it is important that the general population (beginning with you, the student) participate in society through civic democratic processes. These processes allow you to influence your own government and to play a small role in the global community. In turn, you can help find the best way to manage interactions among

- the population of a country (demographics)
- the environment
- the economy

To do so, you first need to learn about the relationships between these three factors; specifically, the patterns and trends that emerge when examining demographic information. This module explains what geographers do in the subdiscipline of demographics, including the measure of

- population
- population distribution and redistribution
- how populations are tied to economies and the environment
- demographic transitions

The issues of overpopulation and the effects of an unsustainable world population growth are also introduced in this module.

The knowledge you gain from your study of population distribution is necessary to understand the environmental issues related to how humans meet basic needs (food, resources, space). As well, you can use this knowledge to make educated projections about how the world population will handle future global challenges brought about by issues such as increasing populations and limited resources.

Finally, you will analyze current challenges, including the issue of standard of living and how it is defined in different regions of the world. Your analysis will include resource use and the implications for Indigenous peoples in the world today. As well, the topic of an increasing global population will be looked at in more detail. How will an increasing number of people affect the environment and the economy? Can the present population increase be sustained in the future?

These are pertinent topics that relate to the future of humanity. It is to everyone’s benefit, as citizens in the global community, to learn as much as possible in order to make informed decisions that affect the well-being of the planet and all the life it sustains.

The main focus questions for this module are

Lesson 1	Lesson 2	Lesson 3
1. What is meant by population growth?	1. How is the world population distributed today?	1. What is standard of living and quality of life and how are these quantities measured?
2. What is meant by demographic transition?	2. Is migration a solution to population redistribution?	2. What is the relationship between an increasing world population and the resource base? What is the relationship between an increasing standard of living and the resource base? What are the implications?
3. What is meant by overpopulation?	3. What is the role of government in seeking a balance between the size and growth rate of a country’s population, and the capabilities of the economy and the environment to support that population? Why?	3. What are the major issues facing Indigenous peoples in the world today?
4. What conclusions can be drawn if present trends in world population growth rates continue?	4. What effect does a poor or failing economy have on the population and the environment as compared to a vibrant economy?	4. What are the effects of an increasing population on the environment and on the economy?
		5. Is the present annual population increase and growth rate sustainable in the future?

Reminders

- Let the computer graphics in the margins guide you through the module.
- Whenever you encounter difficulties, contact your tutor/marker. Do not let a roadblock keep you from working towards the completion of the course.

The nature of print documents is such that much of the data and specific examples quickly become dated. Access to the Internet is helpful in order to update some of the information. Take some of your reading time to keep informed about the latest developments in world geography by visiting the online websites for television networks, newspapers, and newsmagazines. Specialty magazines, such as *Macleans*, *Scientific American*, *Canadian Geographic*, and *National Geographic*, deal with the topics you are studying and have comprehensive, easy to navigate websites. Use a search engine, such as Google, to find up-to-date reading material on a topic.

Assignments in Module 2

When you have completed the assignments for Module 2, submit your completed assignments to the Distance Learning Unit either by mail or electronically through the learning management system (LMS). The staff will forward your work to your tutor/marker.

Lesson	Assignment	Marks
1	Assignment 2.1: Investigating Population	19
2	Assignment 2.2: Case Study in Current Events	40
3	Assignment 2.3: Present Challenges	55

Notes

LESSON 1: DEMOGRAPHICS AND GEOGRAPHY

Lesson Focus

By the end of this lesson, you will

- Learn the definition and the history of demographics.
- Look at a census form and learn what the census terms mean.
- Learn how to analyze demographic patterns and trends from tables, charts, and graphs.
- Be able to reproduce raw data into population versus time graphs and population pyramids.
- Examine the issue of overpopulation and the possible effects of continued world population growth.

Introduction

Lesson 1 looks at world population distribution and the changing factors of demography. A bit of history is included because it is always interesting to see that, even as some things change, other aspects of an issue often reoccur.

A Definition and Brief History of Demographics



Demography is the statistical study of human population. It is a general science within the field of **sociology**. However, when one begins to study **population dynamics** (how population changes over time and regions/ places), one notices that geography is also involved.



Temporal and spatial changes are changes in a population over time and place, respectively, in response to four main factors.

- birth
- aging
- death
- migration

Thomas Malthus

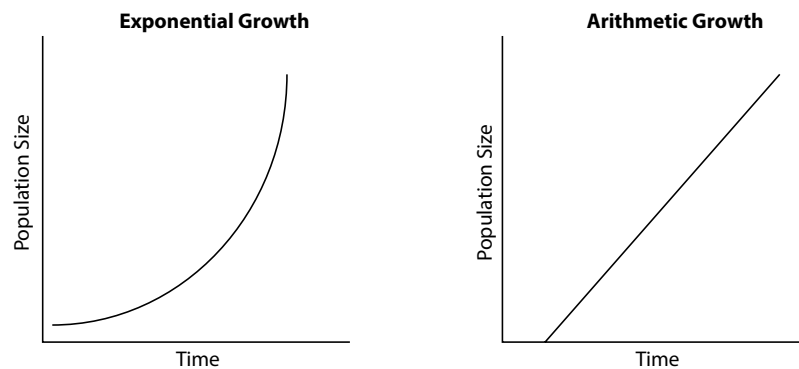
It wasn't until the English scholar Thomas Malthus wrote "An Essay on the Principle of Population" in 1798 that population studies began to reflect some of the contemporary issues that are still relevant today.

In Europe, during the late 1700s, living conditions were improving and it was widely believed that society was "perfectible." Malthus was not so optimistic. He wrote that the dangers of population growth would prevent a "perfect" society. He was critical of the tendency of the working class to reproduce rapidly and he believed that this, rather than exploitation by capitalists, was the reason for their poverty. This view obviously promoted widespread criticism and discussion of his theory. His focus on overpopulation began with his concern about the possibility that a continued increase in the number of poor people, supported by indiscriminate charity, might eventually bankrupt society.

Malthus knew that under good conditions the human population would grow exponentially (1-2-4-8-16 . . .) and he believed that this potential growth rate was limited by "subsistence," that is, the production of food, which could only increase arithmetically (1-2-3-4 . . .). Figure 2.1 shows, in graph form, how these two types of growth would increase.

Figure 2.1

GRAPHS SHOWING EXPONENTIAL GROWTH AND ARITHMETIC GROWTH



Malthus argued that one of two things would happen to a nation—either it would have institutions and customs that would be able to save it from the pressures of population, or it would find itself forced into declining standards of living, trying to find a balance between food and population. Unfortunately, that balance between population and food would most likely be achieved by famine, disease, war, poverty, and riots, with the goal of overthrowing the government (almost always with a great loss of life).

Malthus thought that the only way to save the poor was by regulating them—encouraging later marriages and limiting the number of children per family.

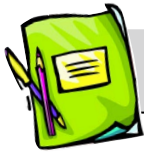
Fortunately, there are very few instances of Malthus' predictions coming true. We now know that Malthus made some errors. To summarize, he did not take industrialization, agricultural revolution, or migration into consideration. His definitions lacked detail, he did not consider family planning (or contraceptives), and his math was not entirely solid. Yet, with the current population crisis, his ideas still have relevance—the world needs to work towards maintaining an optimum population total. There are a number of predictions for the future, but the basic needs of the future population must be kept in mind (e.g., food, minerals, space, water, and electricity).

Marx and Neo-Malthusians

In spite of Malthus' writings being over 200 years old, his ideas persist in the modern thinking of neo-Malthusians (*neo* means new age). Neo-Malthusians advocate the full range of population control programs in order to prevent the depletion of non-renewable resources and possible social and environmental catastrophes. A small family unit is seen as an ideal solution.

Karl Marx (1818–1883), the father of Marxism and Marxist thought, was a German philosopher, sociologist, and socialist who believed that overpopulation was a benefit to social organization. This was the opposite view to Malthus. Marx's economic viewpoint was against capitalism. It was his view that capitalism needed great numbers of poor labourers to manage the business cycle, even though quality of life for many of these people was very low. He saw business moving in cycles, with layoffs, falling wages, rising profits, and expansion, so that overproduction, overpopulation, and overconsumption would keep repeating. An unemployed workforce would keep wages down and poverty ever present. Marx believed that the inherent problems in capitalism would lead to its own self-destruction. In its place, the economic structure would change to **socialism**, in which the proletariat (working class individual) would dominate, leading to the final stage of the economic structure, **communism**, a stateless and classless society.





Learning Activity 2.1

Vocabulary and History

1. Define the following in full sentences. (**Hint:** You may have to refer to the glossary.)
 - a) population dynamics
 - b) temporal and spatial changes
 2. Familiarize yourself with Thomas Malthus and his ideas.
 - a) What was the name of his famous essay and what year was it published?
 - b) What was the main idea presented in the essay?
 3. Karl Marx is considered the father of communism, a political philosophy closely tied to socialism, which plays an important role in Canadian government and society. Define socialism.
 4. Using the following Concept Relationship Form, compare and contrast Neo-Malthusian and Marxist ideas about human population, including a summary statement.
-

Concept Relationship Form (Compare and Contrast)

Make the distinction between
Neo-Malthusian and Marxist
(ideas about human population)

Neo-Malthusian

Marxist

Write a summary statement.

Demographics and the Study of Population



As you have learned, the statistical study of population numbers is called **demography**. Most countries have a system in place called a census to gather these population numbers. A **census** is an official count or survey of a population, typically recording various details about every citizen, such as age, occupation, and language(s) spoken.

Census—A Counting Tool

Many less-developed nations do not have the resources to count every citizen in one day, either due to a lack of census takers or poor transportation systems. Many people may be missed because they are on the move at the time the census taker (enumerator) comes calling. There is also the reluctance to be counted, for if the government knows about you, then you can be taxed, drafted into the army, et cetera.

Statistics Canada's website is an excellent resource. To see some examples of completed census reports, go to the Statistics Canada homepage at www.statcan.gc.ca. Choose either English or French, click "Browse by Key Resource" and a drop-down menu appears, then click on *Census*. Appendix C is the 2011 population census that was distributed through Statistics Canada and can also be found at www.gazette.gc.ca/rp-pr/p1/2010/2010-08-21/html/order-decret-eng.html.

The Value of Census Data

Governments and organizations are interested in the results of a census because they provide information that helps in the planning of many public and private services. When you know the number of people living in an area, you can combine that with other data, such as the birth rate, to make predictions or projections about the population. A scenario might be a projection as to how many citizens live in a certain area and the age groupings found in that population. For example, a school division planning a new school could make educated guesses about the anticipated number of students in order to make a decision regarding the size of a new school. A business owner could project the number of available workers as part of a long-term business plan.

This information can also be used to make comparisons with other groups. For instance, once a total population count is known, the figures are first converted to density figures to ensure fair comparisons are made. This is done by determining the number of people living in a given area; usually in terms of people per km². For example, if it is known that the land area of Manitoba is 548,360 km², and the estimated total population is 1,208,268 (estimated, Statistics Canada, 2011), then the following calculation can be made:

$$\begin{aligned}\text{People per unit area} &= \frac{\text{people}}{\text{area}} = 1,208,268 \text{ divided by } 548,360 \\ &= 2.20 \text{ people per km}^2 \text{ (2.20/km}^2\text{)}\end{aligned}$$

Globally, this is a very low population density when compared to a country such as India, which has a population density of approximately 411.89/km². You can further compare the density of Winnipeg (1,430/km²) to a city such as Mumbai, India, with a density of 24,812/km².

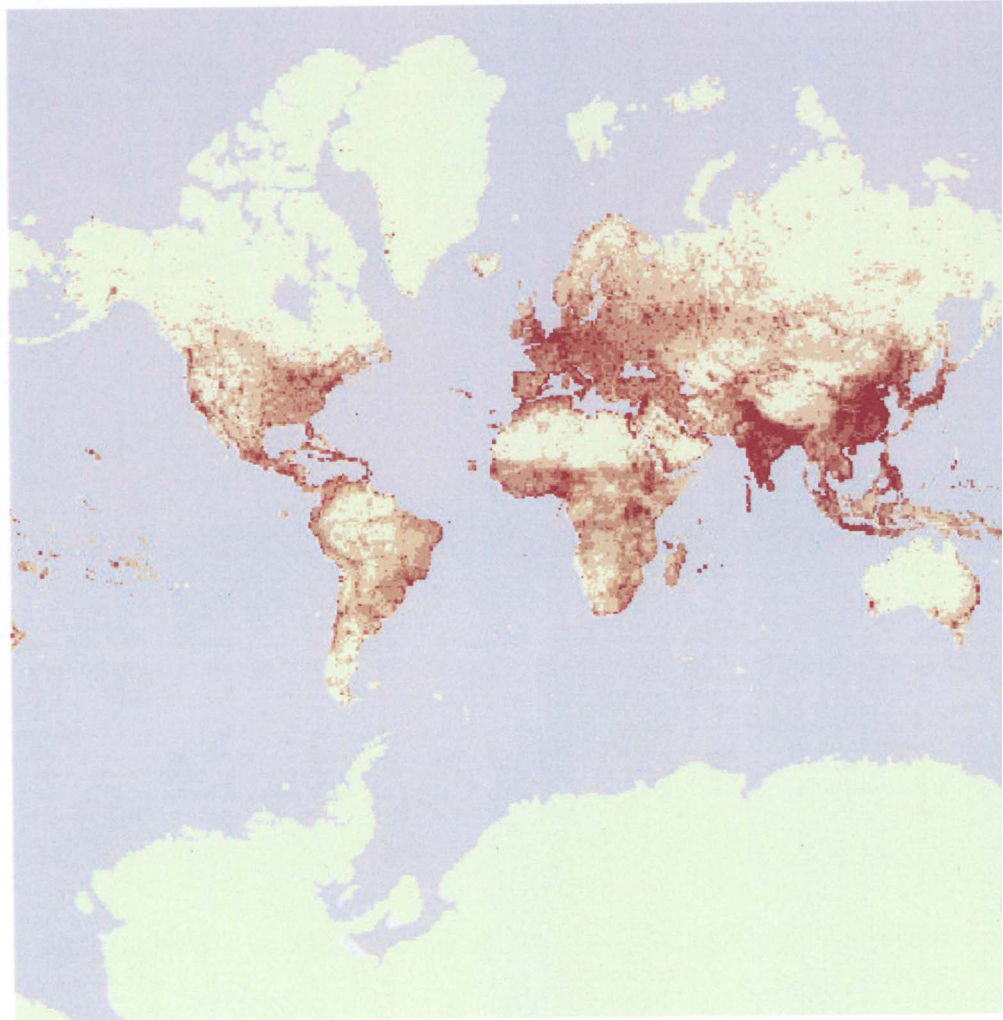
The sources for the above statistics can be found at

- Statistic for the year 2010, according to a World Bank report published in 2012. www.tradingeconomics.com/india/population-density-people-per-sq-km-wb-data.html
- Statistics Canada, 2011 Population Census Winnipeg Profile
- www.indiaonlinepages.com/population/mumbai-population.html

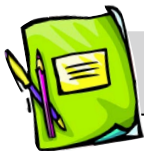
Figure 2.2 shows a map of the world with clusters of red dots that indicate the population density of each country or territory. The darker the shaded area, the more populated the region.

Figure 2.2

POPULATION DENSITY OF THE WORLD



Created on the National Geographic website using their interactive map maker.
http://education.nationalgeographic.com/education/mapping/interactive-map/?ar_a=1.
Used in accordance with fair dealing guidelines.



Learning Activity 2.2

From Census to Demographic Data: Manipulating the Numbers

The following section has relevant information combined with the learning activity, so it is important that you complete the activity **and** give yourself enough time to read everything carefully.

Once the raw population data has been collected, it needs to be sorted. Table 2.1 lists the population of countries, continents, and sub-continents.

1. Fill in the population information for each of the following areas using the information found in Table 2.1. You need to combine data information. For example, to calculate the population of North America, you need to total the populations of Canada, the United States, and Mexico.
 - North America
 - Central America
 - South America
 - Europe
 - Africa
 - Australia and New Zealand (Oceania)
 - East Asia
 - West Asia
 - South Asia
 - a) Using a blank copy of the World Map attached (Appendix C), write in the general population for each of the nine areas listed above.
 - b) Colour the area on the map using specific colours to indicate population levels. Keep in mind that the purpose of the exercise is to be able to visualize any patterns that might exist. Use a key to indicate what each colour means (e.g., different shades of red as the population density increases).
 - c) Once you have transferred the information, write down three patterns that you notice on the map.

continued

Learning Activity 2.2: From Census to Demographic Data: Manipulating the Numbers (continued)



Note: The main sources for global population numbers tend to vary, depending on the source of the primary data (CIA Factbook versus the United Nations). For this reason, the numbers you find may not be the same as the numbers in this course, but they should be similar.

Table 2.1: World Population by Continent and Sub-Continent (Source: CIA World Factbook)	
Region/Country	Population
Canada	34,031,000 (2011, est.)
United States	313,232,000 (2011, est.)
Mexico	113,725,000 (2011, est.)
Central America	154,298,000 (2010)
Caribbean	36,314,000 (2010)
South America	396,391,000 (2010)
Eastern Europe	292,082,000 (2010)
Western Europe	190,106,000 (2010)
Northern Europe	97,547,000 (2010)
Southern Europe	147,348,000 (2010)
Oceania (Australia and New Zealand)	25,770,000 (2010)
Eastern Asia	1,562,109,000 (2010)
South-central Asia	1,717,434,000 (2010)
South-eastern Asia	606,419,000 (2010)
Western Asia	233,667,000 (2010)
Eastern Africa	325,803,000 (2010)
Middle Africa	125,165,000 (2010)
Northern Africa	206,208,000 (2010)
Southern Africa	56,541,000 (2010)
Western Africa	299,240,000 (2010)

continued

Learning Activity 2.2: From Census to Demographic Data: Manipulating the Numbers (continued)

The next part of the activity takes the process of investigation one step further. You know the approximate current population figures throughout the world, now take a look back in time to see how these figures have changed over the years and, based on population trends, how they will change in the future.

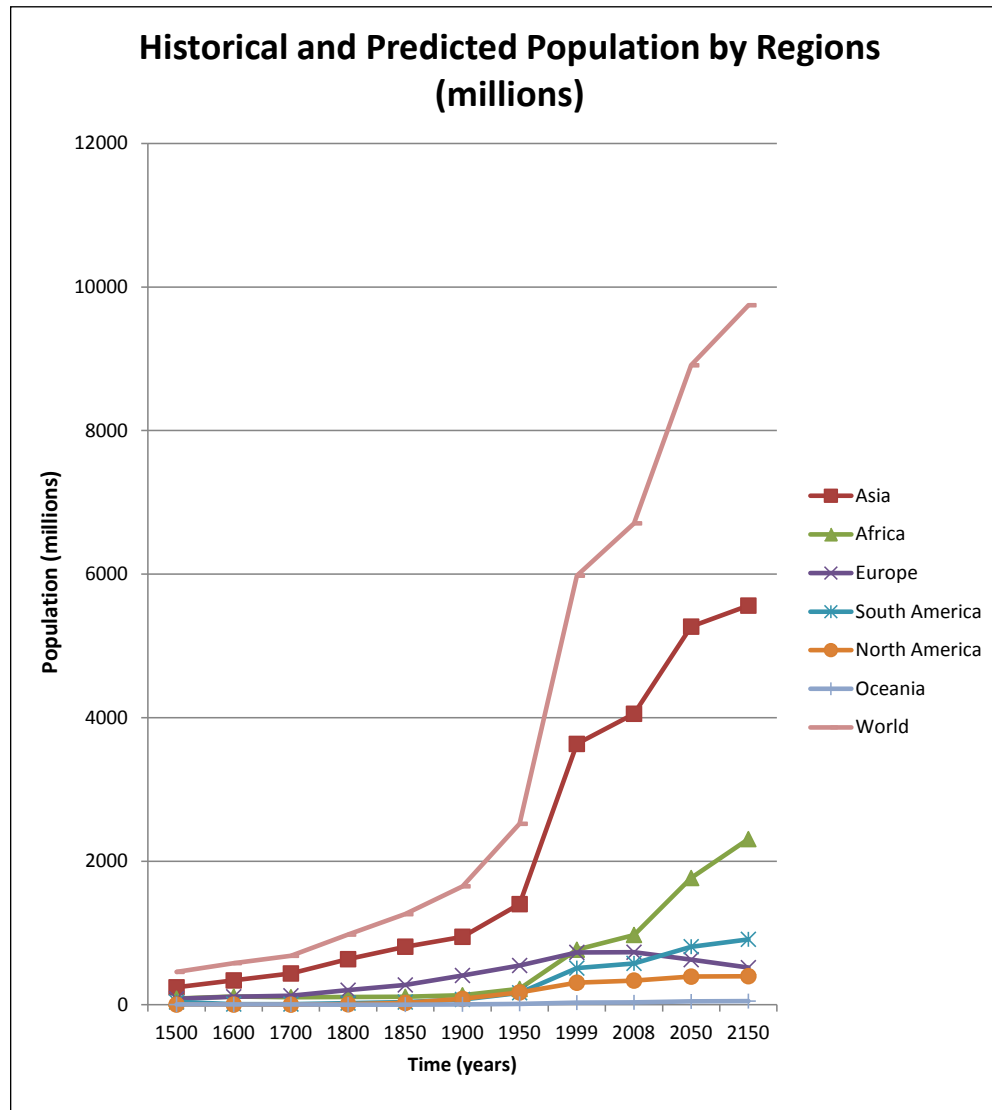
Region	1500	1600	1700	1800	1850	1900	1950	1999	2008	2050	2150
Asia	243	339	436	635	809	947	1,402	3,634	4,054	5,268	5,561
Africa	86	114	106	107	111	133	221	767	973	1,766	2,308
Europe	84	111	125	203	276	408	547	729	732	628	517
South America (including the Caribbean)	39	10	10	24	38	74	167	511	577	809	912
North America	3	3	2	7	26	82	172	307	337	392	398
Oceania	3	3	3	2	2	6	13	30	34	46	51
World	458	580	682	978	1,262	1,650	2,521	5,978	6,707	8,909	9,746

The information for this table was compiled from a variety of sources, including: www.geohive.com/earth/pop_region.aspx, http://en.wikipedia.org/wiki/World_population, the United Nations population data reports (1999–2010), the CIA World Factbooks <http://www.cia.gov/library/publications/the-world-factbook/>, and www.globalchange.umich.edu/globalchange2/current/lectures/human_pop/human_pop.html.

2. At first glance, Table 2.2 might seem confusing. Data charts that consist only of figures are often difficult to read and interpret. This is why it is important to represent data in a variety of different forms. The information in the chart can be translated to a line graph, which shows the increase (or decrease) of population over time in a more visual format.

continued

Learning Activity 2.2: From Census to Demographic Data: Manipulating the Numbers (continued)



Analyze the graph and answer the following:

- State the main points that emerge from the graph, keeping in mind
 - the rate of population change during different periods
 - the steeper the slope to the upper right, the faster the population increase
 - that population decrease lines would slope downward and to the right

continued

Learning Activity 2.2: From Census to Demographic Data: Manipulating the Numbers (continued)

- b) Give possible reasons for
 - the differences, as shown between the slopes of the different regional lines
 - the changes that have occurred over time as shown by the slopes of the individual lines
 - c) Explain your understanding of how this fits in with what you have learned in this course so far.
-

Population Pyramid

Now that you have an understanding of basic population numbers and how they may change over time, the information can be made even more specific.

The information used in Learning Activity 2.2 would be of limited use if an organization wanted to predict how many seniors will live in a region in 20 years. Also, one could not determine how many women of child-bearing age currently live there. In order to gather this data, the original census (primary source data) would have to collect age and gender information. This standard demographic data can be graphed using a **population pyramid**, which depicts population distribution by age and sex.



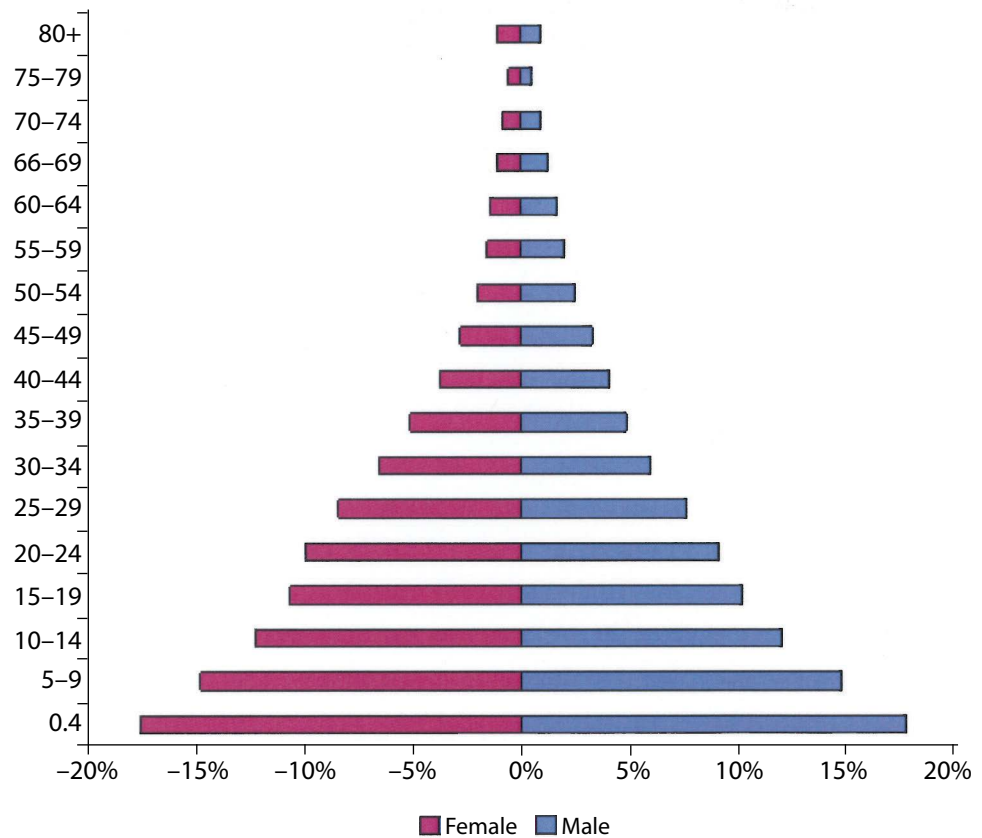
The counted population data is divided into groupings called cohorts. A **cohort** is a five-year age group, with the numbers for each gender and age group plotted on opposite sides of a two-sided graph called a population pyramid.



As a rule, males are represented on the left side and females are represented on the right side. In the following pyramid, the author has chosen to reverse the legend. **In the population pyramid you create, plot males on the left and females on the right.**

Figure 2.3

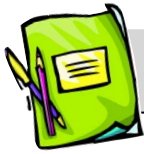
POPULATION PYRAMID EXAMPLE



Reproduced with permission from Dr. Malanding Jaiteh, The Atlas of the Gambia Project, Columbia University. www.columbia.edu/~msj42/PeopleandCulture.htm.

As stated previously, each cohort represents a five-year age group: 0-4, 5-9, 10-14, et cetera. In this pyramid, for ease of plotting, the bar is drawn up to the 5 line, the 10 line, et cetera. Population composition is much easier to analyze when the percentages of males and females in each cohort are plotted.

Important: As you can see in Figure 2.3, many software programs show the left side % value of the pyramid as negative, which you can ignore as it has no relevance to the data presented.



Learning Activity 2.3

Population Pyramid

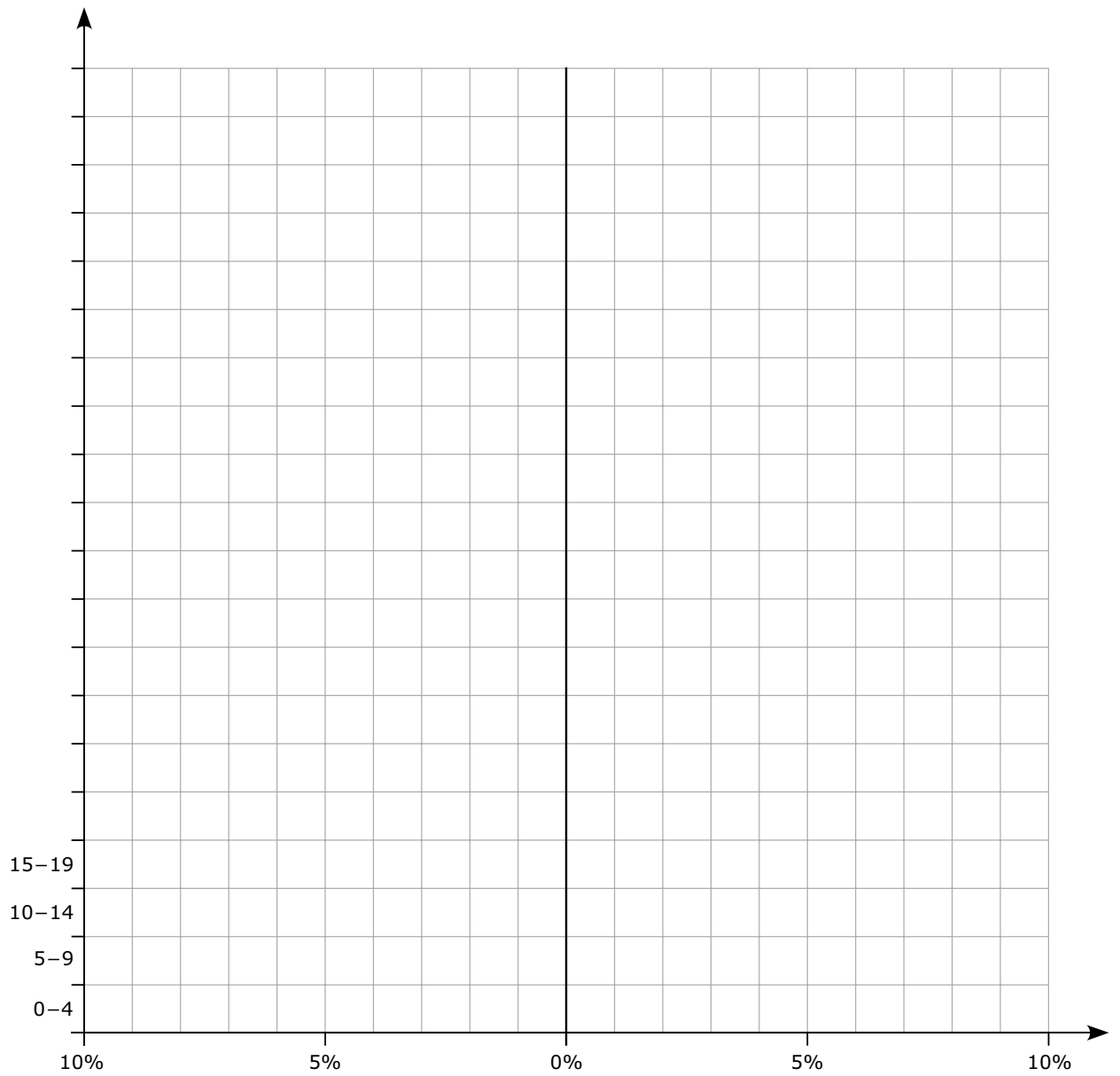
For this learning activity, create a population pyramid based on the information in Table 2.3. The outline of the population pyramid is provided on the following page; you only need to fill it in. Keep the following points in mind:

- The y -axis (age, advancing in five-year intervals) is provided.
- The x -axis (percentage of males versus percentage of females) needs to be plotted.
- The line in the center represents the divide between the male (left) and female (right) sides of the pyramid.
- Use the information in the table below to fill in the pyramid and then choose two different colours to shade in the pyramid.
- Remember to include a legend and title.

Age	% Male	% Female
90+	0.4	1.0
85-89	0.9	1.6
80-84	1.8	2.4
75-79	2.4	2.9
70-74	3.3	3.6
65-69	4.6	4.8
60-64	5.8	6.0
55-59	6.9	7.0
50-54	7.8	7.7
45-49	7.8	7.6
40-44	6.9	6.7
35-39	6.7	6.6
30-34	7.0	6.8
25-29	7.2	6.9
20-24	7.2	6.8
15-19	6.4	6.0
10-14	5.6	5.2
5-9	5.5	5.1
0-4	5.7	5.3

Source: Statistics Canada. www.statcan.gc.ca/tables-tableaux/sum-som/I01/cst01/demo10a-eng.htm. 2012.

Learning Activity 2.3: Population Pyramid (continued)



The Demographic Transition Model



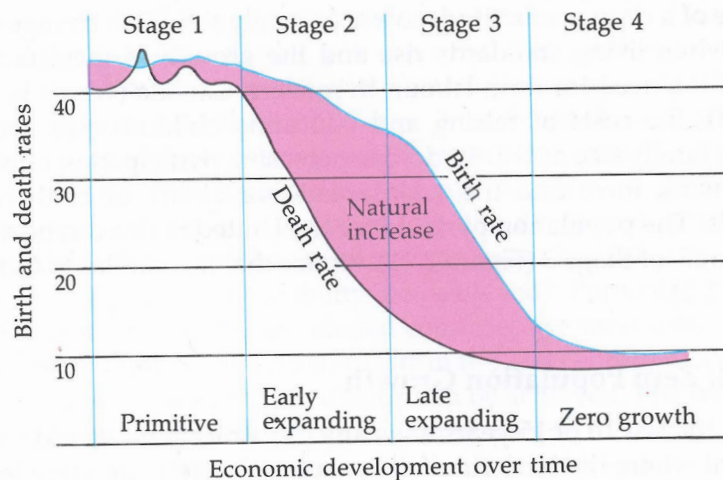
A **demographic transition model** is a simplified version of the stages through which birth and death rates change over time, indicating the rate of natural increase. These changes in stages of the **vital rates** (the number of birth and death rates) leads to a situation where the population does not increase more than the **replacement rate** (2.1 births per woman—the rate needed to maintain a population). This means that the population would be able to maintain conditions that should encourage an improvement in the standard of living.

As populations change in response to economic and societal changes, they can be sorted or categorized into stages. Each stage has distinct characteristics that can be seen both in the shape of the population pyramid (Figure 2.5) and in the performance of the birth and death rates, and the resultant rate of natural increase.

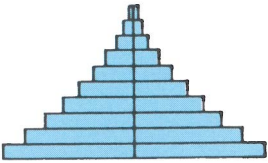
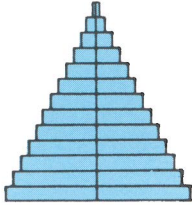
In Figure 2.4, note that in the second stage, where many developing countries are today, the birth rate is fast outstripping any improvements in food production and the ability to provide shelter and health care. These countries are currently in or approaching crisis conditions caused by overpopulation.

Figure 2.4

DEMOGRAPHIC TRANSITION MODEL: WHY IS POPULATION GROWTH GREATEST DURING LATE STAGE 2 AND EARLY STAGE 3?



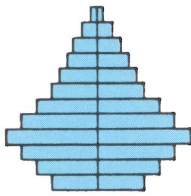
Source: Dunlop, Stewart. *Towards Tomorrow: Canada in a Changing World: Geography*. Toronto, ON: Harcourt Brace & Company, Canada, 1987. p. 39. Used in accordance with fair dealing guidelines.

Figure 2.5	POPULATION PYRAMIDS THAT REFLECT THE DEMOGRAPHIC TRANSITION MODEL
<p style="text-align: center;">Stage 1</p> 	<p>Stage 1: Primitive</p> <p>There are very few countries, if any, that remain at this stage today. However, some areas of countries, such as those experiencing famine or armed conflict, may show very high birth and death rates, which are typical of Stage 1. Life expectancy at this stage is short and the population pyramid for such a situation has a very wide base.</p>
<p style="text-align: center;">Stage 2</p> 	<p>Stage 2: Early Expanding</p> <p>Improved hygiene and medical techniques have an almost immediate impact on reducing mortality rates. Birth rates remain high, as large families are the traditional way of dealing with high infant mortality rates and the demand for labour. Culture and religion may also influence the birth rate. Having many children is a means of ensuring that parents will be looked after in their old age and contraception is often hampered in developing countries due to both poverty and lack of information.</p> <p>The rate of natural increase (the gap between the birth and death rates) is at its highest in Stage 2. The population diagram remains broadly based and pyramid shaped, but less extreme than Stage 1. Most of the less-developed countries have population pyramids with this shape.</p>

Source: Dunlop, Stewart. *Towards Tomorrow: Canada in a Changing World: Geography*. Toronto, ON: Harcourt Brace & Company, Canada, 1987. p. 40. Used in accordance with fair dealing guidelines.

Figure 2.5 POPULATION PYRAMIDS THAT REFLECT THE DEMOGRAPHIC TRANSITION MODEL (CONTINUED)

Stage 3

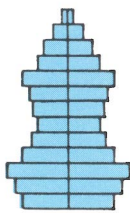


Stage 3: Late Expanding

Years after the rapid fall in the death rate that signals Stage 2 (usually a generation), the birth rate also begins to fall. This results in a slower rate of population increase. The birth rate falls in Stage 3 due to a change in attitude towards family size, resulting from a rise in living standards. As well, the growth of manufacturing reduces the need for farm labour (as seen in the five-stage development model introduced in Module 1).

In modern Canada, the cost of raising and educating children helps to keep the average family size down. The increased participation of women in the workforce and the widespread availability of birth control methods also contributes to a lower family size.

Stage 4

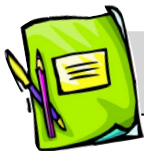


Stage 4: Zero Population Growth

Only in the past few decades has any country in the world reached the point where the birth rate falls to equal the death rate. At Stage 4, the total population count is at a maximum, but population growth is close to, or at, zero. These populations show a gradual increase in average age.

The world population graph in Learning Activity 2.2 showed that the population growth of Europe was/will declining/decline. Many demographers feel that the traditional four-stage model of demographic transition should be expanded to add stages that reflect situations where a country's birth rate is so low that the population is actually dropping.

Figure 2.5	POPULATION PYRAMIDS THAT REFLECT THE DEMOGRAPHIC TRANSITION MODEL (CONTINUED)
Stage 5	<p>Stage 5: Sub-replacement Fertility Rate</p> <p>This stage is proposed by many theorists who consider that a fifth stage is necessary to represent countries that have a sub-replacement fertility rate. Most European and many East Asian countries now have higher death rates than birth rates. Populations in these countries will decline, assuming immigration does not occur.</p>
Stage 6	<p>Stage 6: Demographic Development</p> <p>There may even be a further stage of demographic development. Some demographic studies show that the previously negative relationship between national wealth (as measured by the human development index (HDI)) and birth rates has become J-shaped. This means that the birth rate in developed countries is once again increasing, with fertility rates now approaching two children per woman—although there are exceptions, notably Germany and Japan.</p>



Learning Activity 2.4

Demographic Transition

1. For each of the following brief scenarios, draw a rough sketch of the population pyramid for that country, according to the description.
 - a) Country A has a fertility rate of 2.1 children per woman and has had that same fertility rate for the past 100 years. Life expectancy is 85 years for women and 82 years for men.
 - b) Country B is very highly developed (human development index of 0.94), with a recent increase in the birth rate. Between 50 and 60 years ago, the birthrate was quite high (3 babies per woman), but it dropped to about 1.5 children per woman until the recent increase 5 years ago, when the birth rate increased to 2.5 children per woman.
 - c) Country C has experienced long-term, catastrophic political conflict combined with severe environmental degradation, resulting in damage to the reproductive cycle of humans. The life expectancy is around 55 years, and the birth rate is around 6 children per woman; however, the environmental damage affects gender, resulting in a gender gap of about 121 male births for every 100 female births.
-

A Demographic Case Study

From a demographer's perspective, perhaps the most interesting country to study is China. Not only does China have a very large population, but the government structure and cultural foundation has allowed the country to implement some very aggressive population controls since the mid-20th century. China's "one child policy" has been the topic of much speculation and interest on a global level.

Article 1: Population Control—The Example of China

Source: Dunlop, Stewart. *Towards Tomorrow: Canada in a Changing World*. Toronto, ON: Harcourt Brace & Company, Canada, 1987. 42–46. Used in accordance with fair dealing guidelines.



Many governments see population control as desirable. Few, however, view the matter with such urgency as the government of China, a country which had over one thousand million people in 1984—22 percent of the world’s population. Yet China has only 7 percent of the world’s **arable** land (land on which crops can be grown). (Canada has 3 percent, but only 0.5 percent of the world’s people.) In China, this works out to one-tenth of a hectare per person (roughly one-ninth of the amount in the United States and one-half the amount in India). Much of China consists of mountains and desert. All good arable land has been in cultivation for many years.

China’s birth and death rates were similar to those of any less-developed nation throughout the 1950s and 1960s. Birth control campaigns in these decades were weak and ineffective. The one period when births fell sharply was during the “Great Leap Forward” and its aftermath (1958–1959). At this time, the government used intensive propaganda in an attempt to change the nation into a totally communist and highly productive society. Its hopes proved to be short-lived; indeed, in 1960–1961, there was a two-year famine caused by low farm output. Births fell sharply and deaths rose during this whole period, but soon afterwards the birth rate was once again very high.

Early Birth Control Policy

Since 1971, the Chinese government has been totally committed to reducing the birth rate. Its first campaign, known as *wan xi shao* (“later and fewer”), began in 1971, and established a two-child norm: “One is not too few, two are good, three are too many.” The campaign was based on three policies:

1. later marriage (mid-20s for women, late 20s for men)
2. longer intervals between births (three to four years)
3. fewer children (a limit of two in urban and three in rural areas)

This campaign met with considerable success, mainly because of delayed marriage. But, the government felt that stricter controls were necessary, because the birth rate would inevitably jump when the baby boom of the 1960s reached marriageable age.

continued

The One-Child Policy

This policy dates from 1979. Publicity through all forms of media extolled the virtues of small families. It was reinforced by the use of group and personal meetings to put strong pressure on families to conform to government policies. “Planned Birth” certificates giving official permission to have a child were issued to couples. Remember, however, that a population whose religion and culture encourage large families does not readily adapt to controls of this nature. Rewards were therefore promised to those who conformed to the policy. Penalties were provided for those who did not.

Chinese couples who adhere to the one-child policy now receive free medical care, monthly wage bonuses, preferential housing, and extra pension income. The one child is promised free tuition and an eventual job. If a second child is born, the benefits cease, and some repayments may have to be made. A third child may result in a 10 percent reduction in wages for the parents. As a result of the policy, the birth rate fell in 1979 and 1980, but it has risen since then because of difficulties in enforcing the policy.

Problems with the One-Child Policy

Difficulties with the one-child policy have been pointed out by critics both outside and within China. The most highly publicized problem arises from China’s traditional preference for male children. There has been some infanticide of female babies, especially in more remote areas, although this practice is not widespread. The government has therefore relaxed the one-child rule in certain cases when the first child is female. But if this were done regularly it would upset the sex ratio in the country, which is already 106 males for every 100 females. As a means of counteracting the bias against female children, most government posters show a happy couple with a lovely daughter.

A prolonged one-child campaign would distort China’s age structure. Most couples would have four dependent parents, but only one child to help with support by earning an income. A future labour shortage is also thought to be possible, though unemployment is high today.

The shape of China’s 1982 population pyramid showed that approximately 37 percent of the population was between the ages of 5 and 19 years. This shape points out an immediate problem for China as it attempts to keep the birth rate down over the next decade. There are two other reasons as well why the one-child policy may have only limited success. First, marriage laws were amended in 1980 to allow marriage at 20 for women and 22 for men (three to five years earlier than in the *wan xi shao* campaign). This change recognized the fact that many couples were living together while awaiting marriage. The immediate result was a jump in the number of births in 1981.

continued

The second reason for a continued rise in population in China is less directly related to the one-child policy. The laws relating to the sale of farm produce were relaxed in 1979. This change made it profitable for farmers to increase production on their plots of land. Extra hands make the task easier—another reason why the one-child policy has little chance of total success in rural China, where 80% of the population lives.

The government of China has more power to exert pressure on its population than, for example, the government of India, whose political system is more democratic. India's natural increase was 2 percent in 1983 (birth rate 34, death rate 14), as compared with China's 1.2 percent (birth rate 20, death rate 8). If this difference holds for several decades, India's population will outstrip China's by the year 2040.

Article 2: A 2000 Update—China's Population in the Year 2000

Source: China.org.cn. *State Issues on Major Figures of Population*. www.china.org.cn/english/2001/Mar/9792.htm. Reproduced in accordance with fair dealing guidelines.

Rapid Population Growth Under Control in China

China has effectively put rapid population growth under control with the current population standing at 1,295.33 million, said Zhu Zhixin, commissioner of the National Bureau of Statistics (NBS) Wednesday.

Zhu, who was also deputy head of the Population Census Leading Group Under the State Council, made the announcement at a press conference held by the Information Office of the State Council this morning.

The average annual growth rate over the past 10 years and four months was 1.07 percent, 0.4 percentage point down from the end of 1980s, which indicates that "China's family planning policy has achieved effective results," Zhu said.

He added that China has not only tided over the third baby boom since the founding of the People's Republic of China and put population growth under control, but also entered the stage of low fertility rate.

Quality Further Improved

The educational level of China's population witnessed a remarkable improvement over the past decade with the illiteracy rate down by 9.16 percentage points from a decade ago, according to the commissioner.

The just-concluded fifth national census, which was carried out on November 1st last year (1999), showed that the crude illiteracy rate (the proportion of illiterate population at and above 15 years of age in the total population) stood at 6.72 percent, compared with 15.88 percent in the 1990 census.

continued

In every 100,000 people, the number of people with university degrees increased from 1,422 to 3,611, up 154 percent, while the number of people solely with primary education dropped from 37,057 to 35,701.

“The fast improvement of the population’s educational accomplishment in the 1990s was unprecedented,” Zhu said, adding that China’s efforts to eradicate illiteracy among the young and the middle-aged, and the nationwide popularization of a nine-year compulsory education, have shown good results.

Aging Population Grew Fast

China now has 88.11 million persons in the age group of 65 and over, accounting for 6.96 percent of the total population.

The figures came from China’s fifth national census, carried out in 2000. The share of aging population was up by 1.39 percentage points compared with the 1990 census.

“This reflected that since the country’s reform and opening up, rapid growth was scored in social and economic development, which resulted in remarkable improvement of living standards and health and medical care service,” said Zhu Zhixin.

Zhu also attributed the rise in aging population to the rapid decline in the fertility rate.

Fully Complete Census by 2002

China will fully complete the national census work by the end of 2002, according to Zhu Zhixin.

“The fifth national census, which started in early 1998, has completed the preparation and field enumeration work. Data processing and utilization of census results are underway and the whole work will be completed by 2002,” Zhu said at the press conference held by the Information Office of the State Council.

A 2011 Update—China’s Population in the Year 2011

An Economic Dragon

Since the year 2000, China has experienced great economic growth as the government’s market oriented economic development policies that began in the 1980s have continued. Most developed nations see economic growth on the order of a 2% per year increase in GNP (Gross National Product), but China’s growth between 2000 and 2009 has been in the order of a 10% per year increase in GNP.

continued

Population

The population of China in 2011 was 1,344,130,000 (1.3 billion in 2011, according to the World Bank). That made it the most populous country in the world. According to the CIA World Factbook, the age structure of the population was as follows:

- 0–14 years—17.6%
- 15–65 years—73.6% (this represents the work force)
- 65 years and over—8.9%

In 2011, the population growth rate was 0.49%, with the number of births being 12.29 per 1000 population and the number of deaths at 7.03 per 1000 population. This may sound like a reasonably low rate (it is below the replacement rate), but when you consider the enormous number of people to which it applies, and the even lower rate of death, it still results in a huge increase in the population every year. The birth rate continues to drop and the projected population is expected to stabilize at 1.5 billion in the mid 2030s.

If you recall from the description of China in 1987, the rural population made up 80% of the total population. However, only 24 years later, the total rural population was 53%. That is a result of both a tremendous increase in the urban population and a tremendous decrease in the rural population. It certainly reflects a global trend—growing urbanization is an issue challenging city planners everywhere.

Many corresponding social changes have resulted that reflect this growth in the economy and urbanization, including an increase in the standard of living. Positive changes include an improved level of education, a longer life expectancy, and greater economic freedom. That being said, some negative aspects of life in China continue to challenge authorities. Examples include a higher incidence of disabilities/birth defects than the global average (some say made worse by the ubiquitous or wide-ranging pollution), a widening gender gap, and a lack of social programs for the growing number of elderly who will have fewer younger family members to care for them.

The above information is from *Demographic Changes in China and Its Implications*, a report by Xiaochun QIAO, PhD, Professor, Institute of Population Research, Peking University, China, Bangkok, Thailand, 2010-4-28; http://countryoffice.unfpa.org/thailand/drive/Day1_Session3_Qiao.pdf.
Used in accordance with fair dealing guidelines.

Gender Imbalance

The gender gap, or imbalance between the number of males and females, is a direct result of the one-child policy of the 1980's. In the 1987 report mentioned previously, the male to female ratio was 100 females to 106 males. In 2010, that statistic had risen to 117 males for every 100 females in the below 15 age group, and more than 118 boys for every 100 girls born. During the 1980s, the cultural preference for sons resulted in instances of female infanticide, usually in more remote regions. With the increased availability of ultrasound technology, gender-specific abortions have been widespread.

The above information is from *Demographic Changes in China and Its Implications*, a report by Xiaochun QIAO, PhD, Professor, Institute of Population Research, Peking University, China, Bangkok, Thailand, 2010-4-28; http://countryoffice.unfpa.org/thailand/drive/Day1_Session3_Qiao.pdf.
Used in accordance with fair dealing guidelines.

Future Challenges

In addition to the looming gender gap, which may result in close to one-fifth of the male population unable to find a partner (and associated destabilizing consequences), China has to deal with the same challenges as any country with a large and increasing population.

- Are social systems in place to help all ages and are they able to handle demographic transitions?
- Is the medical system sufficient to meet the needs of the population?
- Is the educational system well-organized and able to meet the demands of such a large population?
- Is there enough space for proper housing and recreational facilities?
- Are the energy distribution and communications infrastructures dependable?
- Are there enough natural resources to meet demand over time?
- Is there a secure source of food and water for everyone (this may be the most important)?

For those willing to speculate even further into the future, what happens when the population transitions from growth to reduction? This is a large unknown that occupies the thoughts of many demographers, economists, and government officials of all nations.

The above information is taken from the article "The most surprising demographic crisis—A new census raises questions about the future of China's one-child policy." *The Economist*, May 5, 2011.
www.economist.com/node/18651512.

A Brief Comparison between China and India

The two most populous countries in the world, China and India, account for about one-third of the population on Earth. Nonetheless, they both have very different policies for meeting population growth challenges.

The government of India is a democracy and provides, suggests, and encourages population control policies (family planning, contraceptives, and education of females) through social programs and the media. China is governed by the Communist Party and can, therefore, implement more intensive policies such as the one-child policy.



Table 2.4 illustrates how select data differs between the two countries. It should be noted that since 1950, India's policies have seen a significant drop in the fertility rate from 6 children per woman to 2.6 children. This translates to a growth rate of 1.6%, which seems low, yet represents a **doubling time** (the time it takes for a population to double from its present value) of under 44 years.

Unfortunately, this drop in the fertility rate has not prevented increasingly impoverished living conditions for growing segments of the Indian population. Projections for India suggest that the total population will approach 2 billion by the year 2100 and that, by 2030, India will overtake China as the most populous country in the world.

Data	India	China
Population	1,220,800,359	1,349,585,838
Median Age	26.5 years	35.9 years
Population growth rate	1.312%	0.481%
Life expectancy	67.14 years	74.84 years
Fertility rate (2.1 is replacement rate)	2.55 children born/woman	1.55 children born/woman

Data Source: Central Intelligence Agency. *CIA World Factbook*. 2011 data.
<https://www.cia.gov/library/publications/the-world-factbook/>.

Lesson Summary

Now that you have read the lesson material carefully and completed the learning activities, you should be able to have an informed discussion about demography and its history.

You learned that Thomas Malthus was one of the first people to raise red flags about the dangers of overpopulating Earth and that the opposite view was held by Karl Marx, who proposed a type of communist socialism, known as Marxism, that accepted population growth.

You also learned what a census is, why it is important, and what it is used for. You created population pyramids using data obtained from a census.

Furthermore, you are now familiar with the demographic transition model and how it may be applied to future demographic changes.

All of the above information was useful when you analyzed the transitions that China has experienced since 1979, including those summarized in the case study that focused on 1987, 2000, and 2011.

Finally, you are now aware of some basic comparisons between China and India and are able to analyze and interpret related media, as many of these issues are the same for other countries that have large populations (Bangladesh, for example). When thinking about what you have read and seen and considering the possibilities as they relate to your own position in the global community, you are now better prepared to make responsible decisions regarding sustaining population growth.



Assignment 2.1

Investigating Population (19 marks)

You have now had an opportunity to learn about the population issues of China. This assignment will give you a chance to familiarize yourself with another population of your choosing, although it is suggested that you choose a developing country. Possible choices include India, Bangladesh, and countries from the Middle East or Africa.

1. **Choose** a format for your report. You can present your research as a written report, a PowerPoint presentation, or a poster.
 - **Report:** The report must consist of at least **four** typed pages, double-spaced, using a 12-point font similar to Arial or Times New Roman. The report **must** include a minimum of **two** graphics (chart, table, or picture).
 - **PowerPoint:** The presentation must include at least **12** slides. The text should be presented in a font and a colour that is easy to read. Use a combination of backgrounds, transitions, and pictures to enhance the presentation.
 - **Poster:** The poster must have a clear heading and clear subheadings. The text should be organized into sections. Use colour and pictures to capture the reader's attention. In order to make good use of space, the use of "lift the flaps" or a three-panel document is allowed.
2. **Choose** a developing country and identify the continent of your country.
3. **Describe** the influence of geography in this country as it relates to population growth.
 - Provide one specific example of the influence of physical geography on the population.
 - Provide two specific examples of the influence of human geography on the population.
4. **Identify** which stage of the demographic transition model this country is currently in. What transitions have occurred in the past 30 to 40 years that have influenced changes in the population? Why?
5. How has the government attempted to influence (or force) the population in terms of population control? **Explain** at least one government policy or campaign.

Make use of the Internet, your school library, and your local library. Possible websites could include the CIA World Factbook and the United Nations.

Use the following rubric to see how your report will be marked.

continued

Assignment 2.1: Investigating Population (continued)

Your report will be assessed using the following rubric.

Marking Rubric for Assignment 2.1		
	Possible Marks	Marks Given
Choice of country <ul style="list-style-type: none"> Identify the country and continent. 	2 marks	
Geography <ul style="list-style-type: none"> Provide one strong example of the influence of physical geography on population. Provide two strong examples of the influence of human geography on population. 	3 marks 1 mark for the physical geography example 1 mark for each of the human geography examples (2 marks)	
Recent demographic transitions <ul style="list-style-type: none"> Identify which stage of the demographic transition model the country is in. Describe two transitions that have influenced changes in population levels and why. 	5 marks 1 mark for identifying stage 1 mark for describing the transition (x 2) 1 mark for explaining why the transition influenced population (x 2)	
Government population control policies <ul style="list-style-type: none"> Explain what change the government wants to see in the population. Identify and explain the policy or campaign. 	3 marks 1 mark for explaining what change the government wants to see 2 marks for identifying and explaining the policy	
Style <ul style="list-style-type: none"> Appropriate use of language. Use of vocabulary suitable for a Grade 12 audience. Balance of complex and simple sentence structure. Contains few spelling and grammar errors, which do not distract from the report. 	3 marks	
Format <ul style="list-style-type: none"> All criteria for the format of the presentation are met. 	3 marks	
		Total Score: ____ /19

LESSON 2: WORLD POPULATION DISTRIBUTION

Lesson Focus

By the end of this lesson, you will

- Discuss the advantages and disadvantages of migration as a way to affect population redistribution.
- Seek to understand the role of governments trying to find a balance between the size and growth rate of a country's population and the capabilities of the economy and environment to support that population.
- Explore the effects of a poor or failing economy on a population and the environment in comparison to a stable economy's effect on a population.

Introduction

In Lesson 2, you will review how the world population is distributed and look at some of the factors that influence that distribution. This lesson also includes some predictions on how population distribution may change in the future.

Assignment 2.2 is fairly extensive and requires that you apply a wide range of information to a problem. Take a moment now and review the assignment. It is recommended that you start working on Assignment 2.2 after you have completed Learning Activity 2.5.

Understanding Population Distribution

First, you will look at some general facts about world population and how it is distributed. The world has more than 7 billion people, having passed that mark in the late autumn of 2011. This is equivalent to over 202 times the population of Canada or 5,600 times that of Manitoba.

If you have access to the Internet, go to the following website for a running tally of the estimated world population: www.worldometers.info/.

Population Concentrations

To this point, your studies have been related to population statistics by country, the relative population numbers on each continent, and the sex/age structure of that population. Approximately three-quarters of the global population live on approximately 5% of the total surface area of the planet (71% of which consists of oceans), and two-thirds of the population live within 500 km of an ocean.

In Lesson 1, Figure 2.1 illustrated the global population density (people per km²), which is also a good general indicator of global population distribution.

As part of Learning Activity 2.4, you totalled the population of countries, then plotted the population of the continents on a map.

Recall that a large proportion of the global population is found in Asia, about 10 times that of North America or South America, and over four times that of Africa. You may also recall the small population statistics for Oceania (Australia and New Zealand). Once you are aware of the population distribution patterns around the world, two questions should come to mind. First, you need to ask why Asia has so many people compared to other less populated regions. Then, you need to ask why the world population is not evenly distributed

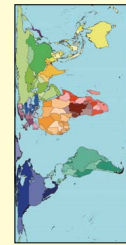
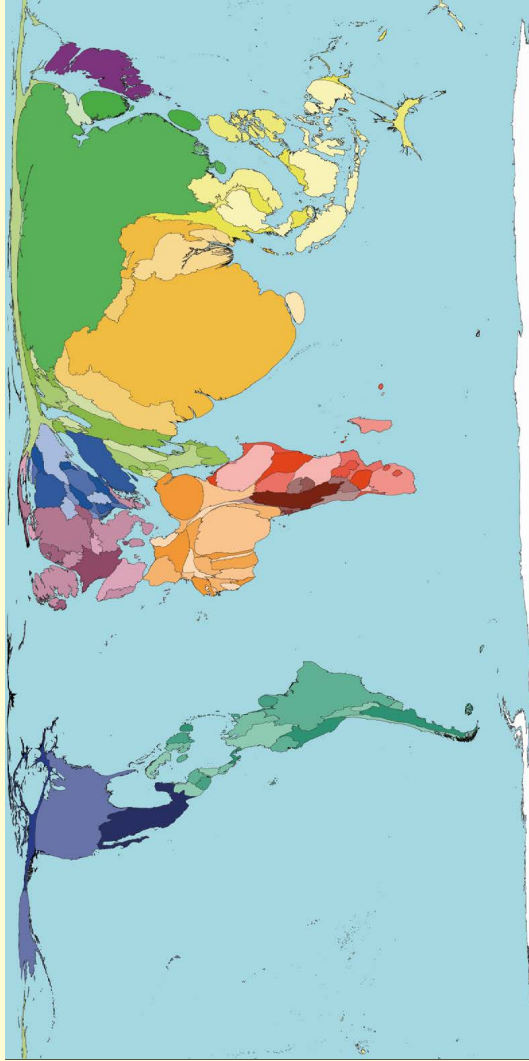


Figure 2.6 is an interesting cartogram. The relative proportion of the world population living in a country determines how large that country appears on the map (China appears large on the map, whereas Panama is barely visible). A **cartogram** is a map on which statistical information is shown in diagrammatic form.

Figure 2.6

WORLD CARTOGRAM

Total Population



Technical notes

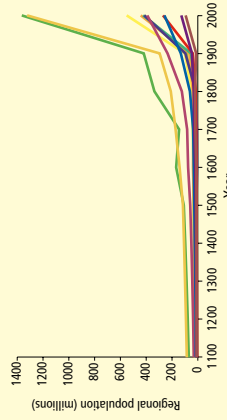
- Data source: United Nations Development Programme, 2004, Human Development Report.
- Population data is from 2005 and is estimated as of 2 to 3 million (see Appendix map 2).
- The population of the United States is estimated as 2 to 3 million (see Appendix map 2).
- See website for further information.

MOST AND FEWEST PEOPLE

Rank	Territory	Value	Rank	Territory	Value
1	China	1295	191	Saint Kitts & Nevis	42
2	India	1050	192	Monaco	34
3	United States	291	193	Liechtenstein	33
4	Indonesia	217	194	San Marino	27
5	Brazil	176	195	Palau	20
6	Pakistan	150	196	Cook Islands	18
7	Russian Federation	144	197	Nauru	13
8	Bangladesh	144	198	Tuvalu	10
9	Japan	128	199	Niue	2
10	Nigeria	121	200	Holy See	1

thousands

WORLD POPULATION BY REGION



The size of each territory shows the relative proportion of the world's population living there.

The University of Sheffield
Produced by the SASI group (Sheffield) and Mark Newman (Michigan)

The Leverhulme Trust
The Association of Geographers

In Spring 2000 world population estimates reached 6 billion; that is 6 thousand million. The distribution of the earth's population is shown in this map.

India, China and Japan appear large on the map because they have large populations. Panama, Namibia and Guinea-Bissau have small populations so are barely visible on the map.

Population is very weakly related to land area. However, Sudan, which is geographically the largest country in Africa, has a smaller population than Nigeria, Egypt, Ethiopia, Democratic Republic of Congo, South Africa or Tanzania.

“Out of every 100 persons added to the population in the coming decade, 97 will live in developing countries.”

Hania Zlotnik, 2005
Map 002

www.worldmapper.org © Copyright 2006 SASI Group (University of Sheffield) and Mark Newman (University of Michigan)

Land can be broken down into three categories, depending on how it is occupied

1. empty lands
2. crowded lands
3. urban lands (urbanization)

Empty Lands

It is estimated that 71% of Earth's surface is covered by oceans, which means that the remaining 29% is covered by land. Take that 29% of Earth's land and divide it into fifths. Four-fifths of this land, or 80% of the land surface of Earth, is essentially empty with no real prospects of supporting a large number of people.

- About 20% (one-fifth) of the uninhabited land is located in the Arctic and Antarctic regions and clearly cannot support any type of agriculture.
- Another one-fifth is located in arid regions dominated by deserts.
- Another one-fifth comprises areas that are mountainous or too hilly to be of use as cropland, although parts can be used for light grazing by livestock.
- The remaining one-fifth of unoccupied land consists of tropical rainforests, temperate coniferous forests, and tropical grasslands (savannah). These areas have very limited areas of high population density for the following reasons:
 - Rainforests cannot support large numbers of people due to poor soil conditions and the large number of disease-bearing insects.
 - Coniferous forests grow in soil with a high acid content that is not suitable for agriculture and, in addition, the growing season is too short for large-scale farming.
 - The climate of the savannah consists of two seasons—a long dry season (winter) and a long wet season (summer)—combined with disease-bearing insects.

Crowded lands

About 90% of the world's population live in the remaining one-fifth of available land, much of which is in Asia, which explains why a large proportion of the global population is found in Asia. As discussed in Module 1, the population can be roughly divided into two types of economies—developing and developed. Generally, developing economies or countries tend to be more rural and traditional with small farming operations being the dominant industry. Developed economies or countries are dominated by urban centres with technology and service-based industries.

Less than 5% of the population farm for a living, and about 80% of the population are located in cities and towns (urban areas).

As shown in Figure 2.6, most of the population growth is in the developing economies (countries). By the year 2050, the population of developing countries is expected to be around 8.2 billion, with the population of developed countries stabilizing at 1.2 billion people.

Urbanization



Urbanization is the process of people moving from rural to urban areas. Since there is no global standard definition for an urban area, it is defined by a variety of criteria. Some countries indicate an urban area as any centre with a population of over 2500, yet others set the bar at 20 000 people.

Review the discussion about population density from Module 1. Urban areas have a high population density, ranging from a city, such as Winnipeg, with a population density of 1365 per kilometre to a city, such as Mumbai, India, with a population density of 20 694 per kilometre. How many citizens live in cities worldwide? In the 1920s, the number was only about 14% but that percentage rose to 40% by 1980. In 2008, there was roughly a 50-50 split between rural and urban populations, and it is projected that by 2050 about 70% of the world population will live in cities.

Urbanization occurs for a variety of reasons. From an historical point of view, once farming and the general food-supply industry (including communication and transportation factors) became advanced enough to feed large groups of people, having a large number of people living together made it easier to meet basic needs, such as shelter, companionship, commerce/business, and entertainment.

In modern times, the growth of cities has continued for mainly economic reasons. The centralized services available in cities make them ideal locations for industrial activities that require access to an available labour force. The related service industries also thrive (construction, banking, health, and education), meeting the needs of a large labour force.

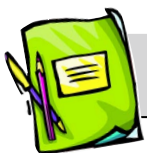
Cities grow through the natural population increase that occurs when the number of births exceeds the death rate (especially now with modern sanitation systems). Further growth occurs when people from rural areas migrate to urban centres in the hope of raising their standard of living.



Table 2.5 shows the top 10 largest agglomerations over a 50-year span. An **agglomeration** is a large connected urban area made up of a central city and the attached suburbs and/or adjacent cities or towns. Note the changes in population and location of these cities over time.

1975 (millions)		2000 (millions)		2025 (millions)	
Tokyo, Japan	26.6	Tokyo, Japan	34.5	Tokyo, Japan	38.7
New York–Newark, USA	15.7	Mexico City, Mexico	18.0	Delhi, India	32.9
Mexico City, Mexico	10.7	New York–Newark, USA	17.9	Shanghai, China	28.4
Osaka–Kobe, Japan	9.8	Sao Paulo, Brazil	17.1	Mumbai, India	26.6
Sao Paulo, Brazil	9.6	Mumbai, India	16.4	Mexico City, Mexico	24.6
Los Angeles, USA	8.9	Delhi, India	15.7	New York–Newark, USA	23.6
Buenos Aires, Argentina	8.7	Shanghai, China	14.0	Sao Paulo, Brazil	23.2
Paris, France	8.6	Calcutta, India	13.1	Dhaka, Bangladesh	22.9
Calcutta, India	7.9	Buenos Aires, Argentina	11.9	Beijing, China	22.6
Moscow, Russia	7.6	Los Angeles, USA	11.8	Karachi, Pakistan	20.2

Source: United Nations. *World Urbanization Prospects, The 2007 Revision*. 2007. www.prb.org/Educators/TeachersGuides/HumanPopulation/Urbanization.aspx. Adapted in accordance with fair dealing guidelines.



Learning Activity 2.5

Global Human Distribution

1. Name four conditions that account for four-fifths of the world’s land area having little or no human habitation.
2. With regard to basic human needs, in which situation is a high-density population more likely to be a problem—a rural area dependent on agriculture or an urban area dependent on manufacturing and services? Why?
3. Take a close look at Table 2.5: Top Ten Largest Urban Agglomerations in 1975, 2000, and 2005. For each of the three years shown, how many cities are located in North America? South America? Europe? Southeast Asia?

continued

Learning Activity 2.5: Global Human Distribution (continued)

Year	North America	South America	Europe	Southeast Asia
1975				
2000				
2025				

4. Once you have completed the table in Question 3, what patterns or changes do you see?
5. Thinking back to the demographic transition model, briefly describe what is happening to the population at each stage and indicate the level of development for a country at each stage (least developed to very developed).

Migration



While birth is the natural means of increasing the population of a country, another way is through **migration**, the movement of large numbers of people from one place to another. **Immigration** refers to the process of moving permanently to a country other than one's native country, whereas **emigration** refers to the opposite process, someone leaving their country of origin to live permanently in another country. The **net migration rate** is the difference between the number of people immigrating to a country and the number of people emigrating from that same country.

The formula for population change is

$$\text{Total population change} = \text{natural increase} + \text{net migration (immigration - emigration)}$$

Population change can have both positive and negative effects. An aging population places greater demands on social and health services, while a young immigrant population brings new skills and consumer demands, and a potential increase in the birth rate once they get established and start their families.

An even mix of all demographic groups provides a balance that is beneficial to a society, a fact that influences government policies related to immigration. If you recall from the Grade 11 Canadian History course, the middle of the 1800s saw a large increase in global migration, much of it influenced by government. Before looking more closely at the role of government in population dynamics, it is important to take a closer look at migration.

Why Do People Migrate?

There are two main types of circumstances that motivate people to move—push factors and pull factors. **Push factors** push people to move out of a country and are typically negative. **Pull factors** are those positive characteristics that pull or attract people to another country.

These push and pull factors can be seen in the three basic reasons someone chooses migration as a viable option.

1. economic (often the most important)
2. cultural
3. environmental

Economic Reasons



Economics refers to the exchange of money for goods and services, usually on a large scale such as the commerce within a country/region.

From your own experiences, you may have seen how attractive the pull of a better salary or a better lifestyle can be for yourself and your family. It is easy, therefore, to understand why economic reasons are often considered the most important of the push and pull factors.

Push	Pull
<ul style="list-style-type: none"> ■ low employment rates and low incomes ■ suffering from economic sanctions imposed by other countries ■ soft or unstable currency, results in high inflation (which means that the value of people’s money decreases) ■ government has less money to subsidize private businesses or invest in social programs ■ unstable banking institutions, could result in ineffective practices and economic meltdown 	<ul style="list-style-type: none"> ■ the variety, availability, and employment income is high ■ strong trade between the country and its partners ■ strong currency means that people can afford goods within the country as well as pay for imports from other countries ■ private investors are more likely to invest money in infrastructure projects and businesses in that country ■ economic efficiency results in reliable banking institutions and banks provide loans to people ■ government will be able to provide subsidies (financial assistance) to other social programs (such as education and healthcare) ■ increased standard of living

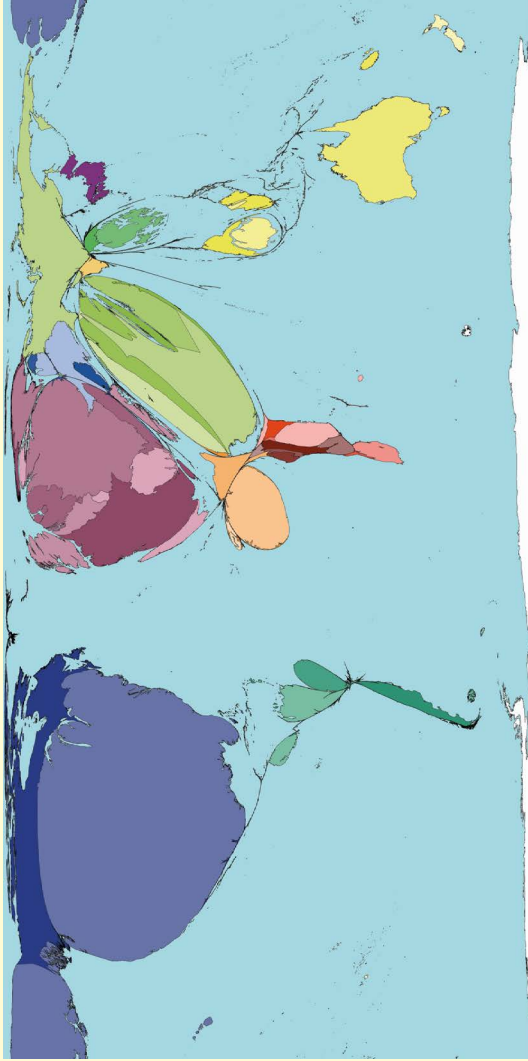
Many immigrants to western Canada in the late 1800s came from areas in eastern Europe (Ukraine, Poland, Russia). Many were poor peasants wanting an opportunity to own their own land, to improve their standard of living, and to create a better way of life with more opportunities for themselves and their families.

A more modern example would be from the 1980s and 1990s when young people from Morocco moved to Spain to work as agricultural labourers. There was high unemployment in Morocco at that time and, even if a person could find a job, the income from working in Spain was five times higher than in Morocco.

Figure 2.7 is another cartogram that shows that the United States, many parts of Europe, and some countries in the Middle East (all developed nations) have a relatively high rate of net immigration. This reflects a common government policy in countries with a low birth rate—concern over the aging population and a diminished workforce often result in efforts to increase immigration.

Figure 2.7 IMMIGRATION CARTOGRAM

Net Immigration

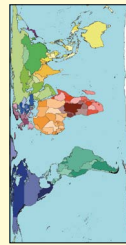


The University of Sheffield
 Produced by the SASI group (Sheffield) and Mark Newman (Michigan)

M The Leverhulme Trust
 Geographical Research Institute

Richer territories tend to experience net immigration (greater immigration than emigration). Just under half of the 200 territories mapped currently experience net immigration. Those territories with net emigration (greater emigration than immigration) have size zero on this map.

Regions experiencing the highest net immigration are North America, Western Europe and the Middle East. Together these three regions account for 79.5% of world net immigration. The United States alone receives 37.1% of the world net total.



Technical notes

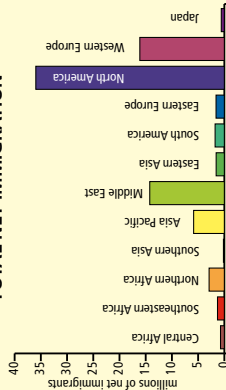
- Based on the Best World Development Index 2005
- International migrants are not included in the territory in which they were born, including refugees.
- The map shows territories with an overall gain of people (net immigration). Negative values (net emigration) are not shown.
- The graph shows the total of territories' net immigration (when positive) in each region.
- See website for further information.

HIGHEST NET IMMIGRATION

Rank	Territory	Value	Rank	Territory	Value
1	United Arab Emirates	59	11	Brunei Darussalam	19
2	Qatar	57	12	Saudi Arabia	17
3	Singapore	25	13	Canada	16
4	Israel	24	14	Côte d'Ivoire	13
5	Luxembourg	24	15	Switzerland	13
6	Kuwait	24	16	United States	11
7	Hong Kong (China)	22	17	Libyan Arab Jamahiriya	10
8	Bahrain	21	18	Bahamas	10
9	Jordan	21	19	Gabon	9
10	Australia	20	20	Gambia	9

net immigrants as a % of resident population

TOTAL NET IMMIGRATION



Territory size shows the relative levels of net immigration in all territories (immigration less emigration).

“And none will doubt but that our emigration ... has proved most useful to the British nation.”
 Henry Carter, 1796

www.ordmapp.org © Copyright 2006 SASI Group (University of Sheffield) and Mark Newman (University of Michigan)

Map 017

Cultural Reasons

Culture refers to the different types of intellectual achievement that result in the art, customs, and social institutions of a particular nation, population, or social group.

Cultural push factors tend to be negative, while cultural pull factors generally tend to be more positive. Examples of both include the following:

Push	Pull
<ul style="list-style-type: none">■ forced immigration as a result of slavery and political instability■ escape from religious persecution and oppression (such as ethnic genocide)	<ul style="list-style-type: none">■ the allure of enjoying the freedom of being able to practice one's religion, cultural practices, and speak one's native tongue in a democratic country■ personal fondness for a certain place (likely because of familial relations)

In the 1700s and 1800s, millions of Africans were brought over to North America as slaves. Human trafficking is still a problem throughout the world, with people often being forced into economic servitude (a form of slavery) in exchange for the money they owe. Sadly, that money is sometimes owed to unethical "immigration service" companies.

As mentioned in Module 1, the relatively recent increase in the number of countries in the world has been the result of boundary changes meant to reduce conflict by separating two cultural groups. However, these types of arbitrary boundary declarations often place people on the "wrong" side of the border, forcing them to move or emigrate.

One of the worst types of political instability is war, often resulting in the forced displacement of hundreds to hundreds of thousands of people. People displaced by conflict are identified as refugees, and sometimes they cannot return to their home countries for fear of persecution due to political, religious, or cultural reasons. They face the disheartening prospect of living in a refugee camp for long periods of time (sometimes years) until they are accepted into another country or can return home.

Occasionally, the cultural factor of politics can be a pull factor. For example, the pull of democratic freedom has influenced migration from countries where individual freedoms are limited.



Environmental Reasons

Environment is defined as all things related to the health and interactions of natural organisms within an ecological zone on Earth. A study of the environment includes Earth's atmosphere, surface, underground areas, and oceans.

Living somewhere with an unstable and vulnerable environmental climate can have a detrimental impact on a population. More favourable climates with a low risk for environmental disasters are extremely appealing. There are many environmental push/pull factors, including

Push	Pull
<ul style="list-style-type: none">■ susceptibility to extreme weather events (hurricanes, tornadoes, earthquakes, volcano eruptions, and tsunamis)■ water-related disasters, such as extreme drought or flooding■ outbreak of disease	<ul style="list-style-type: none">■ a moderate climate compared to the discomfort of an extremely hot/cold climate■ the allure of beautiful landscapes and outdoor recreational activities

When you think of the harsh Manitoba winters, it is not surprising that many people take winter holidays. Why not take that holiday one step further and move south to the more attractive climate of Florida or Arizona? The cold northern climate is the push factor and the warm weather of the southern states can definitely be seen as a pull factor. The attraction of southern France or Spain has the same effect on residents from northern Europe.

Climate is not the only environmental factor that influences migration. Other factors include the frequency of extreme weather events, such as hurricanes. Following Hurricane Katrina in August of 2006, many residents of New Orleans pulled up stakes and moved away. People have also migrated away from areas that have a high risk for tornados or experience frequent seasonal flooding. Climate and environmental refugees are people who must leave their homes and communities because of the effects of climate change, global warming, or other natural disasters.

It is important, however, to keep in mind that migration triggered by such environmental factors is only undertaken by those who can afford to move. In some countries, Pakistan for example, frequent seasonal flooding affects millions. Most of these people don't move away from the flood plain because there are circumstances that prevent them, such as a high population density, mountainous terrain, or a lack of resources (money, official travel documents, etc.).

Water is the most powerful environmental factor influencing the mass movement of people. There may be too much, as in flood-prone Pakistan, or not enough, as in northern Africa. In northern Africa, drought has forced local populations to move and give up their subsistence, nomadic lifestyle and relocate to relief camps.

Other examples of environmental factors that affect migration include catastrophic volcanic eruptions where entire landscapes are obliterated by lava and ash flows, and earthquakes accompanied by a tsunami such as the one in Japan in 2011. The number of climate refugees is increasing.

Migration: Is It a Solution to Population Redistribution?

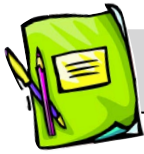
When you ask a question that includes the word *solution*, the implication is that there is an underlying problem. The problem is that many areas of the world are overpopulated, but the solution is complex. Keep in mind that a course such as this can only present a summary overview.

It may seem that the obvious solution for areas of overly high population densities is to redistribute that population to areas of lower density. Unfortunately, the solution is not that simple. The problem lies in **how** the population is distributed, over what **time** period, and the **number** of people involved. Other factors include the issue of resources, as the desired destination has to have the required infrastructure, housing, and food/water services in place to support the increased population. The situation can get even more complex if the destination country has restricted immigration policies based on criteria such as culture or religion.

There is no doubt that, given what we know about current global population distribution, current population growth projections, and the limiting factors of food, water, space, and other resources, migration is and will continue to be an absolute necessity for some areas.

The short answer to whether migration is a solution to population distribution is “Yes, migration helps, but only as one part of the solution.” Solving migration issues is a multi-pronged approach. Several things would have to happen at the same time.

- Migration policies would have to be agreed upon by source and destination countries that are members of a large global organization, such as the UN.
- Every source country would need to implement culturally appropriate policies in areas such as family planning, with the goal of reducing the birth rate to a level that is sustainable, given the local resources and economy.
- Developing source countries would need to provide their citizens with the education and economic tools needed to improve their HDI, which has been shown to reduce the rate of natural increase (higher birth rate than the death rate).



Learning Activity 2.6

Immigration Policies



Completing the learning activities in this course will help you prepare for your examinations. If you have any questions or concerns about any activity, do not hesitate to ask your learning partner for assistance or to contact your tutor/marker.

Migration is important in understanding geography because it involves the movement of people around the world. This physical relocation of people also influences the diffusion of cultures and the economic integration between countries, and brings about social change. Accepting change on such a large scale can be especially challenging for some people. There have been many instances where immigration has been the cause of tension, fighting, and hostility between different groups of people.

Following are two scenarios in which migration, and the related issues of diversification and pluralism, have been the cause of social unrest in traditionally homogenous societies. Once you have examined the two scenarios, complete the activity that follows.



Secularism is a political and social philosophy that rejects all forms of religious faith or worship (see <http://dictionary.reference.com/browse/secularism?s=t>).

Scenario A

In 2013, the Premier of Québec, Pauline Marois, proposed the Charter of Québec Values. The overarching aim of the legislation was to enforce neutrality in a secular public sector. The most controversial aspect of the legislation was the ban on wearing any conspicuous (easily visible) religious symbols by public service employees in the workplace. Examples of religious symbols that fell into this category were the hijab, the turban, the crucifix, and the kippah. If passed, this legislation would affect people in a variety of professions, such as civil servants, teachers, healthcare workers, police officers, prison guards, and judges. There was heated debate around the issue. On the one hand, many people believed that the legislation was discriminatory and infringed on the constitutional right of individuals to publicly express their religious identity. On the other hand, the Parti Québécois and pro-charter advocates insisted that the legislation served to promote a national Québécois identity that was free from religious values. They felt that secularism benefitted all citizens.

continued

Learning Activity 2.6: Immigration Policies (continued)

Scenario B

In 1905, France passed the French law on the Separation of the Churches and the State. In French, the term used to describe secularism is *laïcité*. The primary purpose of this law was to separate public from private life and to ensure that state-funded education remained free from religious influence. However, in the last century, there have been radical changes in the demographics in France due to the influx of immigrants, which has greatly increased the ethnic diversity and pluralism of religions in the country. The laws in France did not prohibit citizens from privately practising religion; however, in 2004, a legal ban was authorized that prohibited the wearing of religious apparel in public schools, such as the hijab, the turban, and the Star of David. Many French citizens expressed the concern that these policies supported systemic racism and discrimination. Debate in France ranged from those advocating pro-reform of the secularist policies and an acceptance of religious pluralism to those advocating no reform for any form of public religious display.

1. After reading these two scenarios about two contentious policies, **discuss** your thoughts about these policies with your learning partner.
 2. **Write** half a page (about 250 words) about the issues surrounding the immigration policies of Québec and France. Choose **one** of the following prompts to get you started:
 - Do you think that Québec's proposed Charter of Values was biased? If yes, why was it problematic? If no, why was there a strong reaction against it?
 - The majority of immigrants to France originate from northern Africa and countries that were former colonies of France. If you were a recent immigrant, or a second or third generation African-French, what would be your reaction to the apparent racism experienced as a result of the secularist policies?
 3. What similarities and differences can you see between the policy implemented in France and the policy proposed in Québec?
 - Combine your thoughts and opinion with the response of your learning partner.
-

The Role(s) of Government

If there are around 195 to 200 countries in the world today, then it can be assumed that there are that many different governments. Each government carries out many jobs and duties but in slightly different ways, influenced by the type of government, the style of governance, as well as the geography and culture of their individual circumstances. When it comes to geography, demographics, and the role of government, there are in all likelihood 200 different ways of dealing with the similar challenges that face most governments. One similarity that you may notice is that all governments must plan long-term as well as short-term solutions to political, social, and environmental challenges.

Government and Influencing Population

Governments are influential upon the population that they govern. Governments that are supportive of their population engage in community consultation and have consistent, fair policies put into place, within a framework of economic responsibility and the rule of law. Depending on their policies, governments can have a positive or a negative effect on domestic demographics. The government of any given country has a lot of responsibility, and citizens must hold their leadership accountable for their actions. Regardless of the level of development in a country, governments are consistently challenged by corruption, lack or misuse of natural resources, economic instability, environmental concerns, and social inequality.

Government and How the Economy and Environment Support a Country's Population

Governments have a huge role to play in supporting the population of their country, both at home and on a global stage. **How** a government does this varies tremendously from country to country.

The environment and the economy are both instrumental in supporting a population; therefore, how the government manages the environment and the economy certainly has an effect on the population. Which needs to be a priority—the environment or the economy? The answer to that question depends on the specific situation and what neighbouring countries might have to say. For the purpose of this discussion, and because nature existed long before any formal system of commerce (the economy), this course will look at the BIG picture from an environmental perspective first and then from an economic perspective.



The Environment and the Population

It is in the interest of any government to maintain a balance between the environment and the economy. This balance is referred to as sustainability. **Sustainability** is the approach to development that meets the needs of the present without negatively affecting the ability of future generations to meet their needs. **Ecological sustainability** (referring to development, exploitation, or agriculture) means to conserve an ecological balance by avoiding depletion of natural resources.

Think about how a government influences the environment of a country. Sustainability of natural resources (including everything from mining, agriculture, and forestry to tourism) is important. In Canada, for instance, the government sets the rules (legislation or laws) and provides guidelines (policies and procedures) for how the federal and territorial lands are to be used. The provinces set land-use rules and guidelines dictating how provincial lands can be used. Most often, the land is used to make money. Logically, money is the foundation of the economy, which means that the environment and the economy are inextricably linked.

Examples of environmental rules designed to maintain a balance between nature and development include laws that

- limit motor vehicle exhaust emissions
- regulate lagoons on hog operations
- enforce completion of environmental impact statements before developing an area of wilderness
- enforce harvest limits on hunting, fishing, and forestry

Look at Earth from space—a beautiful blue speck of paradise in a sea of darkness. Think of sustainability from a global perspective, and then think of all the individual countries communicating with one another, supporting the common goal of stabilizing planetary resource-use for the benefit of future generations **and** our planet.

Because of the increasing global population, the environment is under tremendous stress. In many places, water shortages threaten public health and in many other places, loss of soil, forests, and fishing grounds threaten the food supply.

Rapid population growth complicates the struggle to maintain a high standard of living throughout the world while, at the same time, practising sustainable environmental practices. Two available options that could help maintain a balance are

1. implementing policies that support environmental sustainability in the face of surging populations
2. spending money to develop an energy infrastructure powered by renewable energy sources

Examples of measures that meet both the sustainability criteria and also improve the standard of living are

- using parabolic solar cookers in developing countries to pasteurize water
- replanting trees as a long-term solution to the problem of deforestation

In addition to the social consequences of overpopulation, such as the public health dangers associated with unclean water and possible political unrest, air and ground pollution issues are also worsened by extreme population densities. As well, the food supply is threatened by the adverse effects that too many people living in one spot have on arable (usable) farmland. Pressure on the coastal fisheries is causing a depletion in fish stocks and the continued destruction of the global forests has an effect on global climate, biodiversity, and the sustainability of life as we know it. Latent residual chemicals in the food chain can and do have long-lasting effects on little-known groups of species, such as amphibians and insects.

But take heart! As disheartening as all of this is, it is important to remember that, as a species, humans are capable of meeting challenges with ingenious solutions based on cooperation. Time is an issue, but more and more is known about how sustainable use of the environment can be implemented, and positives can be seen in how the global rate of population growth is slowing and is projected to stabilize in our lifetimes. The vast improvement in communication technology will continue to be a way to inform the world population about the challenges to sustainable initiatives and, at the same time, stimulate discussion about grassroots solutions to these problems.

The Economy and the Population

This might be a good time to reflect on Module 1, Lesson 5, and the description of developed and developing countries, the relationships between these two types of countries, as well as the issues facing countries around the world.

The United Nations uses three sets of measurable factors to calculate the HDI (Human Development Index) of a country. Economic factors make up one set (how much does a country make buying and selling goods and services). The other two are sets are social factors (education and literacy, health and welfare) and demographic factors (life expectancy, birth rate).

Organizations, such as the United Nations (UN), the International Monetary Fund (IMF) and the World Bank, use the Gross National Income (GNI) when calculating the relative wealth of a country. When that value is divided by the population number, the result is the per capita GNI. Remember, this does not indicate the distribution of the wealth, it only indicates the average per person income for that country.

Other economic factors of development that are not included in the HDI calculations, but are still important, include

- the economic structure of a country
- the worker productivity and education levels in a country
- access to raw materials and the availability of consumer goods within a country

As development progresses through the stages of demographic transition, the economy, social factors, and demographic factors all change, leading to an improvement in individual situations. You have already seen that this shift in development results in a lessening of the birth rate, to the point where the population of a developed country starts to drop.

Since the population is important in maintaining a healthy economy, this potential drop in population raises some concerns.

- If the population drops, will the economic growth drop?
- At what point during the drop in population will the economy start to shrink?
- Will a shrinking population (and perhaps economy) mean that the GNI will shrink?
- Will an increase in the size of an aging population mean increased social costs that will further reduce the GNI?



As a rule, population levels do not drop during times of exponential growth; but it can happen and, when it does, it leaves many unanswered questions. It is safe to say that this possibility makes countries nervous because shrinkage of the economy means an economic downturn or recession, such as the 2008 recession, which resulted in many homeowners losing their homes. A downturn can result in a time of prolonged recession or a depression, similar to the Great Depression of the 1930s. A **recession** occurs when growth during two consecutive quarters of an economic year is negative (a quarter is a three-month period).

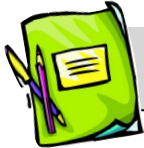
The best solution to the challenge of maintaining and/or increasing economic growth is to increase population through migration. Migration is usually selective, depending on the needs of the country extending immigration visas. For example, if there is a shortage of farm labourers in southern Ontario, then the availability of temporary work visas may be targeted at migrants from rural areas with farming experience. Another example would be if there is a shortage of English teachers in Japan or other Asian countries, those countries would be advertising at universities in English-speaking countries and accepting immigration visas from those with the required credentials.

The Combined Effect of the Economy and the Environment

The complex nature of governments, the cost of managing resources, environmental interactions, overpopulation, and global pollution are all interconnected. The need to improve the economy while protecting the environment raises many concerns which can, at times, seem overwhelming; however, this need is manageable when approached with ingenuity and perseverance. Global conferences and meetings of world leaders, such as the 1992 Earth Summit in Brazil, the 1997 Kyoto Protocol in Japan, and the Copenhagen Climate Conference in 2009, demonstrate the global effort to promote sustainability initiatives.

The environment and the economy are linked and the health of one impacts the other. If the environment is damaged in an effort to improve the economy, there may be a short-term boom in the economy, but once the resources are depleted and the environment damaged, the long-term effects on the economy will be negative, leaving behind a bad situation where political unrest can result in conflict.

The theme of short-term economic gain trumping the long-term pain of environmental degradation has, unfortunately, been a common theme since the industrial revolution began (roughly 200 years ago). The environmental consequences of the past 200 years have reached a critical point. It is time for elected officials to think beyond their time in office and to pursue long-term policies that recognize that the environment, the economy, and the population of the world are interconnected, and that the well-being of all three is at risk.



Learning Activity 2.7

Population, Economics, and the Government

Answer the following true or false questions. If the statement is false, rewrite it to make it true.

1. Governments that influence and educate their people about population control see very little change in demographics over time.
2. Imposing population controls is effective in the short term, but can have negative long-term effects such as gender imbalances.
3. The economy and the environment are independent of each other.
4. Sustainable means to be maintained at a certain rate or level regarding development, exploitation, or agriculture.
5. Economic factors that are included in the calculation of the HDI include access to raw materials plus the availability of consumer goods.
6. Being in an economic recession means having negative growth in three consecutive quarters.
7. Humans are great problem solvers—our ingenuity gives us hope in the face of the negative consequences of possible climate change.

continued

Learning Activity 2.7: Population, Economics, and the Government (continued)

Answer the following short-answer questions.

8. Give two examples of environmental rules aimed at maintaining a balance between nature and development.
 9. Name two concerns that countries have regarding the potential drop in their population.
 10. Research the three global conferences discussed in this lesson that were aimed at promoting sustainability initiatives and describe the mandate addressed at each conference.
-

Lesson Summary

The interconnectedness of the issues surrounding population, economics, the environment, habitable land, climate change, and how governments approach these issues is complex. This course has provided you with information on and an understanding of the multi-faceted nature of these connections.

The general distribution of the global population is influenced by the very small portion of available habitable land and by the infrastructure and opportunities available in larger agglomerations and mega-cities.

Urbanization is increasing globally, providing both solutions and problems for areas with high-population densities.

Migration is one way to redistribute population from areas of high population or conflict areas to more sustainable areas. There are many factors that both “push” and “pull” people to migrate.

The role of government varies from one country to another in terms of how the issues of population, the environment, and the economy are handled. Regardless, reaching decisions on these issues is a long process.

In the future, the challenge for all governments and international organizations will be to deal with global issues in a comprehensive, cohesive manner, with consistent cooperation in meeting common challenges. Collaboration and consultation must be an essential component of any strategy in dealing with global issues.



Assignment 2.2

Case Study in Current Events (40 marks)

The purpose of this assignment is to take what you have learned so far about world population issues and the role of government, and apply those concepts to solve general development challenges.

This assignment will cover

- population demographics
- land
- government
- health, education, and income
- the economy
- the environment

Scenario

You are a private consultant and have been hired to help problem solve and develop a long-term development plan for a specific country.

Sources of online information would include organizations and websites such as the CIA World Factbook, the United Nations, the International Monetary Fund, and *National Geographic* online magazine.

Other sources would include “world issue” magazines, such as *The Economist*, *Macleans*, and *National Geographic*.

1. Using whatever resources you have available (library or Internet), you need to first **identify a developing country** (HDI of less than 0.6). (1 mark)

Suggested countries would include

- Bangladesh
- Pakistan
- Afghanistan
- Haiti
- Somalia

continued

Assignment 2.2: Case Study in Current Events (continued)

A complete listing of countries categorized by their HDI in 2011 can be found at <http://hdr.undp.org/en/statistics/>.

Note: Do **not** choose Sudan as your country of choice for this assignment, as Sudan is used as an example in this assignment.

_____ (2 × 1/2 mark = 1 mark)
Country HDI/Year

2. **Explain** the governing structure of the country. (6 marks)

- What is the type of government?
 - *Example:* democracy, autocracy, communist, military coup, dictatorship?
- What is the name of the ruling person/party?
 - *Example:* Prime Minister Stephen Harper, leader of the national Progressive Conservative Party (2013) is the leader of the government of Canada.
- How did they achieve the position?
 - *Example:* Stephen Harper's political party was democratically elected by the citizens of Canada.
- How long have they been in power?
 - *Example:* Stephen Harper was elected Prime Minister in 2006.
- What is the general structure of the government?
 - *Example:* The Canadian government is structured by the elected political party and cabinet members are chosen by the Prime Minister. The House of Commons is composed of elected officials while members of the Senate are appointed.
- Does the government generate income from taxing its citizens?
 - *Example:* What percentage is the federal tax? Has taxing ever been an issue of conflict between the government and its citizens?

continued

Assignment 2.2: Case Study in Current Events (continued)

3. **Sketch** a map, photocopy an outline of the country, or use your choice of technology to create your own map, and make **three separate maps** that include the following information. (15 marks)
- a) **Population map**
 - Indicate the location and names of **five** major urban centres.
 - Indicate the population numbers.
 - Define the appropriate symbols in a legend.
 - b) **Topographic map**
 - Indicate the location of **five** topographical landmarks.
Examples: forest, desert, mountain range, river, lake, ocean, farmland, glacier
 - Define the appropriate symbols in a legend.
 - c) **Infrastructure map**
 - Indicate the location and type of **five** infrastructure projects.
Examples: major roads/highways, railroads, pipelines, power plants, hydro dams, mines, airports
 - Define the appropriate symbols in a legend.

A good website to find copyright-free maps you can use to complete this assignment is <http://alliance.la.asu.edu/geomath/GeoMath3/Maps/AAMapsNewFormat.html>.

continued

Assignment 2.2: Case Study in Current Events (continued)

Example: Population Map of Sudan



LEGEND

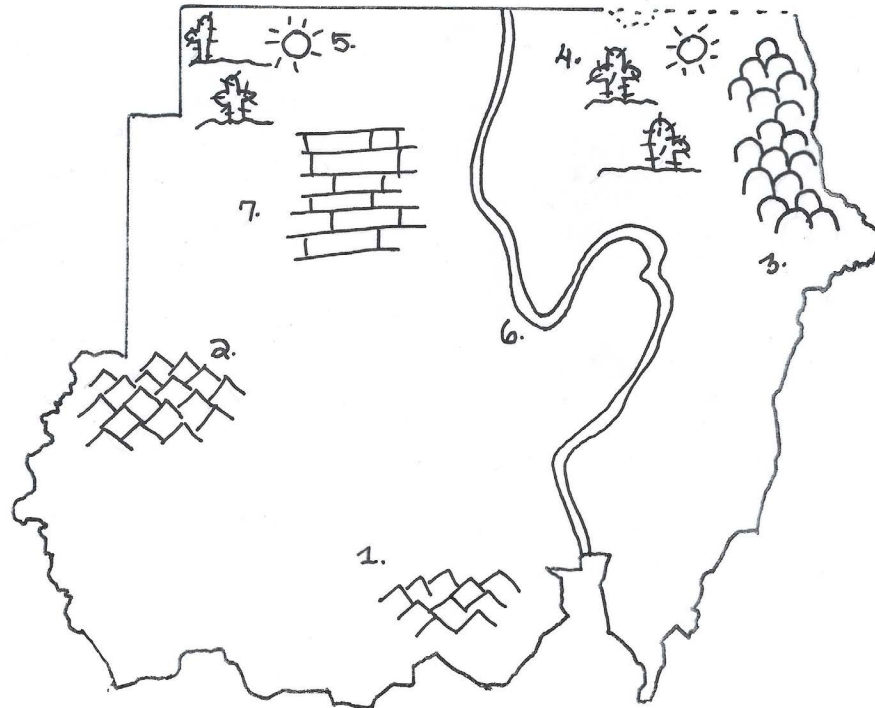
○	1 974 647
●	1 200 000
□	489 125
△	401 477
◇	393 311

Population Statistics current in 2012

continued

Assignment 2.2: Case Study in Current Events (continued)

Example: Topographic Map of Sudan



LEGEND

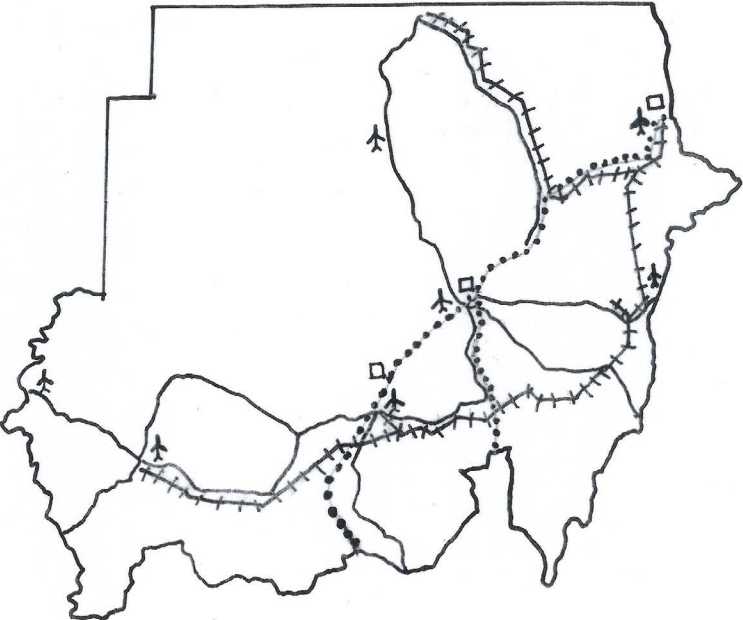
	mountain range
	hills
	desert
	river
	plateau

- | | |
|------------------------|---------------------|
| 1. Nuba Mountains | 2. Marrah Mountains |
| 3. Red sea Hills | |
| 4. Nubian Desert | 5. Libyan Desert |
| 6. Nile River | |
| 7. Jabal Abyad Plateau | |

continued

Assignment 2.2: Case Study in Current Events (continued)

Example: Infrastructure Map of Sudan



LEGEND

—	Road
+++	RailRoad
••••	oil pipeline
□	oil Refinery
✈	airport

continued

Assignment 2.2: Case Study in Current Events (continued)

4. **Describe** the HDI of the country in terms of the following **three** factors: (6 marks)
- health
 - education
 - average income

5. **Choose one** difficulty experienced by the country in **one** of the following areas: health, education, or income. What is a tangible solution that could be implemented by the government or a non-governmental organization (NGO)? (5 marks)
- Briefly state** the issue.
 - Outline one** national program that the government or NGO could/has set up to help address the need.
 - Explain** the strategy implemented by the program.
 - What core group is it focused on?
 - What resources are required?
 - How is the success of the program measured?

continued

Assignment 2.2: Case Study in Current Events (continued)

The following paragraph on education in Sudan is an example of a paragraph that would receive full marks.

Education: In Sudan, it is an ongoing struggle for girls to obtain an education, especially past primary school. The fight to empower girls and women has been slow and not always steady. Today, Sudan’s best known all-female institution is Ahfad University College in Omdurman, founded by Babikr Badri in the 1920s. It is considered to be an excellent women’s university college. The university has an enrollment of approximately 1,800 women and offers both academic and practical courses. The most important resources required by the university are educated professors and support staff, classroom supplies, and computer technology. The success of the university in educating girls is assessed by enrollment numbers, government funding, and public support of its programs.

Reference: www.sudan.net/education.php

Education

continued

Assignment 2.2: Case Study in Current Events (continued)

Income

Health

continued

Assignment 2.2: Case Study in Current Events (continued)

6. Describe the state of the country's economy. (3 marks)

Consider the following:

- What is one highly apparent trend present in the country's economy?
 - **Example:** The country relies on cash crops that can only be grown seasonally. This means that the income generated by the crop is compromised in the winter months and increases in the summer months.
- Which sector of the economy employs the most people?
 - **Example:** agricultural production, textile manufacturing, domestic labour, subsistence farming, fishing, the oil industry
- Is there a large disparity in wealth amongst the population? Why?
 - **Example:** The disparity in wealth relates to physical geography: living close to a coastal region is an advantage for those who can thrive off of the fishing industry.
 - **Example:** The disparity in wealth could be caused by corruption in governance, war, religious insecurity, famine, drought, and/or lack of access to education.

continued

Assignment 2.2: Case Study in Current Events (continued)

7. Keeping in mind how the environment and the economy are related and influence each other, **present two plans** to improve the ecosystems of the country. (4 marks)
- Present and briefly explain **one** realistic short-term goal that can be implemented by the community to prevent climate change.
 - Present and briefly explain **one** realistic long-term goal to improve the environment for the benefit of both its citizens and biodiversity in general.

Short-Term Goal

Long-Term Goal

continued

Assignment 2.2: Case Study in Current Events (continued)

The checklist below shows how the marks are distributed. You do not need to create a properly formatted bibliography but be sure to include the links/names of your sources.

Marking Rubric for Assignment 2.2		
	Possible Marks	Marks Given
Question 1: Country <ul style="list-style-type: none"> ■ Identify a developing country ■ Indicate the country's HDI in the current/past year 	1 mark Identify a developing country (1/2 mark) Indicate the country's HDI in the current/past year (1/2 mark)	
Question 2: Government <ul style="list-style-type: none"> ■ Identify the type of government ■ Identify the ruler of the government ■ Identify how long the ruler has been in power ■ Describe how the ruler is chosen ■ Describe the structure of the government ■ Describe the taxation policies 	6 marks Type of government (1 mark) Ruler of the government (1 mark) How the ruler is chosen (1 mark) How long the ruler has been in power (1 mark) Structure of the government (1 mark) Taxation overview (1 mark)	
Question 3(a): Population Map <ul style="list-style-type: none"> ■ 5 cities are clearly indicated on the map ■ Population statistics for each city are clearly indicated 	5 marks 1/2 x 5 marks for indication of cities 1/2 x 5 marks for current population statistics	
Question 3(b): Topographic Map <ul style="list-style-type: none"> ■ 5 topographic landmarks are clearly indicated 	5 marks 1 mark per landscape	
Question 3(c): Infrastructure Map <ul style="list-style-type: none"> ■ 10 infrastructural landmarks are clearly indicated 	5 marks 1/2 mark per landmark (x 10)	
Question 4: HDI <ul style="list-style-type: none"> ■ Health ■ Education ■ Income 	6 marks 2 marks per factor (x 3)	

continued

Assignment 2.2: Case Study in Current Events (continued)

Marking Rubric for Assignment 2.2 (continued)		
	Possible Marks	Marks Given
<p>Question 5: Description of Issue</p> <ul style="list-style-type: none"> ■ Clearly identify and describe a health/education/income issue ■ Identify a government/NGO solution ■ Clearly explain the program's strategy 	<p>5 marks</p> <p>1 mark for the description of the issue</p> <p>1 mark for the identification of a government/NGO solution</p> <p>3 marks for the explanation of the strategy</p>	
<p>Question 6: State of the Economy</p> <ul style="list-style-type: none"> ■ Clear description of an economic trend ■ Clear description of the largest employee sector ■ Discussion of wealth disparity 	<p>3 marks</p> <p>1 mark for the description of the economic trend</p> <p>1 mark for the description of the employee sector</p> <p>1 mark for the discussion of wealth disparity</p>	
<p>Question 7: Environmental Plans</p> <ul style="list-style-type: none"> ■ One well thought out and explained short-term goal ■ One well thought out and explained long-term goal 	<p>4 marks</p> <p>2 marks per goal (x 2)</p>	
		Total Score: ____ /40

LESSON 3: CONTEMPORARY CHALLENGES

Lesson Focus

By the end of this lesson, you will

- Discuss the concepts of standard of living and quality of life and look at different indicators used to measure these concepts.
- Explore the relationship between an increasing world population and the resource base; between an increasing standard of living and the resource base; and the implications of these changing factors.
- Discuss some of the major issues facing Indigenous peoples in the world today.
- Look at the effects of an increasing population on the environment and the economy.
- Share sustainable solutions to problems that stem from the demands of a large world population.

Introduction

Human geographers study societies to determine how they change over time. They study things such as the birth and death rates, the ages at which most deaths occur, and the length of time that people can expect to live in each society. They then use this data to try and predict the future.

The rapid increase in world population within the last century was outlined at the beginning of Module 2, Table 2.2. To many, this change in population is a reason for alarm. Will Earth be able to sustain the rapid increase in population that is predicted for the mid-21st century? When you consider the extent to which world resources have been affected by environmental damage, many feel that there is a need to do a better job to ensure that there is enough for everyone, always.

In this final lesson of Module 2, you will take a more detailed look at the relationship between an increasing population and the available resources. The concept of “standard of living” is introduced into that relationship, with an examination of how that might change the relationship.

Assignment 2.3 requires a great deal of critical thinking and reflection on the concepts presented in this lesson.

Standards of Living



Standard of living refers to the level of wealth, comfort, goods, and necessities available to the average person in a particular geographic area. A person's quality of life is closely related to his or her standard of living.

There are a number of factors that are used to rate the standard of living, but the main ones include

- income
- quality and availability of employment
- cost and availability of housing
- hours of work required to purchase necessities
- health, healthcare, and education
- political and religious freedom
- environmental quality, climate, and safety
- vacation days per year

Standard of living and quality of life are also closely tied to

- the availability of habitable land
- the local population
- the resources available to that population

When thinking about how standard of living is related to population numbers, it is important to know how population numbers can change.

When you consider population numbers as percentages, it is easier to relate a percentage of a population to the number of people. One example of this would be **doubling time**, first mentioned at the end of Lesson 1. Doubling time is one way to grasp the significance of a change in population.

To determine the doubling time of a population, divide the percentage rate of population change into 70 to get the number of years for the population to double (some researchers use 72 to get a more accurate reading).

For example, with a natural increase of 0.7%, Canada will take close to 100 years to double its population at the current rate of growth ($70/0.7$), while Kenya, at 4%, will have doubled its population in 18 years ($70/4$). You can also use the formula in reverse; if you know the doubling time, you can calculate the percentage of natural increase.

Quality of Life



Population changes and growth are related to factors such as cultural ideals, gender roles, and government influence. As well, a balance between quality of life and standard of living is achievable if both men and women work equally for a better standard of living. Furthermore, a large number of people living in a relatively small space will have an effect on the standard of living, the resource base, and the economy. If you think of the resources as a pie, the more people at the table, the smaller the piece of pie each person receives. How standard of living is defined helps to see population challenges from a more **holistic** perspective, characterized by the understanding that the parts (e.g., population, space, resource base, economy, etc.) are intimately interconnected and explicable only by reference to the whole (i.e., quality of life).

It is important to understand that *poverty is relative* and that our needs and wants are governed by many factors, including climate, culture, and ideas of what is considered to be desirable. While income is one measure of a standard of living, the average dollar amount hides many other factors that determine the comfort level of a person's life.

Module 1 touched on the work of United Nations agencies searching for ways to improve the quality of life for large segments of the population in developing countries. Their efforts resulted in the release of the Universal Declaration of the Rights of the Child that is gradually being endorsed by the nations of the world.

Once you have completed your education or training, you may want to use those newly gained talents in the countries that need the help—as a relief worker, teacher, agricultural advisor, or business advisor. There are volunteer tasks, often coordinated through religious agencies, and paid positions, often managed by the government or the United Nations. A simple donation to a non-governmental organization can go a long way.

If you believe that the world is a global village, then your activities must be carried out with compassion for your neighbours around the world. As global citizens, your actions in Canada should always be geared toward making the world a better place for children living in all corners of this global village.

Our Needs and Wants – Survival versus Desire

Since childhood, you have learned that what you need and what you want are two different things.



Needs are the things necessary for survival, such as food, water, shelter, and companionship. **Wants** are the things that make lives easier, more comfortable, and more enjoyable, but are not necessary for survival. Examples of wants include cars, iPods, large television sets, designer clothing/accessories, and so on.

How the needs and wants of a population are met indicates the level of development of a country or region.

People are conditioned by their culture and the advertising industry to want things above and beyond the bare necessities. Too many wants being met can indicate a problem. How people handle their wants or desires is shaped by parental influences, income or wealth, and the pressures of a consumer-driven advertising culture.

Most people could get by with two or three changes of clothes, especially if the clothing was varied enough to suit the changing Manitoba climate. However, people are driven by advertising to want the latest style either in an effort to compete with friends or to make a statement about individuality and lifestyle.

Serving sizes at restaurants and the fact that food plays a big role in most celebrations speaks to the importance of food in our society. Everyone requires a certain number of calories a day for optimum health, but the number of overweight North Americans attests to the fact that consumption is above that required for survival. The number of diet books and weight-loss programs demonstrates that North Americans, as a group, over-consume, spoiled by the year-round availability of foods imported from around the world.

A comparison of living standards for all countries around the world is a difficult and complicated undertaking. Resources (whether they be human, natural, manufactured, etc.) vary among countries and different cultures have different value systems. World trade and foreign exchange (money to balance the trading accounts) varies from country to country, further complicating the comparison. If income is the only factor being considered, it is impossible to classify the standard of living in any particular country. Not everything gets measured into the GNP.

Measures of the Standard of Living

1. Health and Disease

Health is related to having an adequate food supply and proper nutrition, in conjunction with proper sanitation and lower risk of disease. As previously noted, the health of a country can be judged from the life expectancy figures. Poor nutrition during the growing years and environmental hazards contribute to a shortened lifespan.

Lack of health, whether it is due to famine or disease, can be studied under the following factors:

- **physical**—from within the environment
- **human**—caused by people, either in their daily habits or lifestyle, or by the areas in which they work and live

Disease spreads wherever the necessary preventative measures are not in place to keep the conditions of transmission under control.

Generally, disease is spread in three ways.

1. **through poor sanitation conditions**—examples include cholera, typhoid, polio, various intestinal parasites
2. **airborne** (bacteria and viruses in dirty, dusty, crowded conditions)—examples include tuberculosis, pneumonia, bronchitis, measles, chicken pox
3. **vector borne** (a carrier is involved, such as an insect)—examples include malaria, sleeping sickness, river blindness

In the case of vector-borne diseases, carriers tend to be restricted to certain geographical areas, such as tropical waters or habitats. One of the issues in dealing with diseases transmitted by insects is that the insecticides used against the insects are not only expensive, but can cause reprehensible damage to the environment. The use of effective protective methods, such as mosquito netting for beds, is not widespread mainly due to the cost of the material.

The development of sulpham (anti-bacterial) drugs, antibiotics, and vaccines has helped to not only prevent the spread of many diseases, but has also contributed to the cure of many diseases. Long-term improvement, however, requires a regular program of immunization to eradicate a disease, such as the successful immunization program for smallpox, which the WHO certified as eradicated in 1979. Some of the challenges that must be overcome in order to prevent the spread of disease include the following:

- solving transportation logistics when working in remote areas
- finding the necessary funds

- raising community support in order to provide better sanitation and safe drinking water

Unfortunately, there is growing evidence that while medicine and pharmaceuticals help heal people, the funds used to pay for the drugs are being diverted away from projects aimed at preventative measures, such as better sanitation and nutrition. In addition, some drugs are simply too expensive for poorer nations and their citizens to purchase and cheaper generic drugs may not be available due to patent restrictions.

This imbalance in access to medicine is sometimes viewed as the power of the multinational pharmaceutical companies, seeking profits at the expense of the poor. On the other hand, pharmaceutical companies claim that new drugs cost money to develop and the profits are needed for reinvestment. It is a dilemma that faces everyone trying to improve standards of living.



2. Literacy

Literacy is defined by UNESCO as “the percentage of the population over 15 who can read and write to a basic standard.” How this standard is measured varies from country to country. What does not vary, however, is that reading and writing are vital when it comes to accessing the information necessary to improve quality of life, such as the knowledge necessary to improve sanitation methods, to try new farming methods, or to study new ways to increase production in an industry.

Being literate is defined as the ability to read, write, comprehend, and use mathematics adequately to satisfy the requirement the learner sets for himself or herself as being important for his or her life.

Illiteracy is defined as a lack of skills perceived by individuals as being necessary to fulfill his or her own self-determined objectives as an individual, a family and community member, a consumer, a job holder, and a member of a social, religious, or other association of his or her own choosing.

Whether the definition is imposed by others or the individual, the emphasis is on the learner and the perceived need to be able to do certain things. It is strongly contextual (depends where you are). For example, a person with a Grade 4 education may be literate in a society such as St. Kitts (in the Caribbean), where there is not a great demand for higher level reading and calculating skills, while in Canada most employers require, as a minimum, a Grade 12 education. Recent legislation in Manitoba requires that young people be enrolled in some type of educational institution until the age of 18.

3. Nutrition

The basic human need, other than water, is food. Quality of life is sustained when a person has sufficient nourishment. The standard for “sufficient” food depends on the climate, activities or lifestyle, body type, and other factors. A person hunting for seal on Baffin Island in January will need more nourishment than a person in Winnipeg writing a course.

The human body can be compared to a machine as both need energy to function. The main source of energy for the human body is carbohydrates, found in grains (rice, wheat, quinoa) and tubers (potatoes, yams). Fat is also an excellent source of energy, and is essential to the proper functioning of the body and brain. Protein is the building block of growth. Water, vitamins, and minerals round out the required human diet (as well as most other creatures on the planet).



Living conditions and poverty are major factors in the rise of **malnutrition** across the world. Malnutrition usually is found in someone who suffers from ill health and deficiency diseases. High malnutrition rates can be found in Africa, South America, and southeast Asia. As well, malnutrition can be found in urban settings, such as Winnipeg, where the need for breakfast programs in schools is increasing and lineups at food banks are getting longer.

At the opposite end of the spectrum is the problem of too much food energy. In the developed world, the years of overeating have resulted in a severe strain on the health care system. The rise in heart disease, high blood pressure, obesity, and diabetes are the cause of many preventable deaths and disabilities. If this problem continues, it is speculated that there will be a reduction in the average lifespan of those living in the developed world.

This topic will be dealt with in greater detail in Module 3.

Indicators of Living Standards

If only numerical poverty/income measurements are used, any comparison of societies will be inaccurate and difficult to conduct. As a result, several methods were developed to measure living standards through *quality of life* indexes. These indexes struggle with the subjective nature of determining a number value for *quality* or *goodness* of lifestyle.

1. PQLI

In the 1970s, Dr. Morris D. Morris of the U.S. Overseas Development Council prepared the **Physical Quality of Life Index (PQLI)**, designed to show the quality of life through three indicators.

- life expectancy
- infant mortality
- literacy rate

Each indicator closely relates to the physical, social, and economic well-being of citizens, regardless of culture. In addition, the statistics were easy to gather.

Morris developed the PQLI to challenge the assumption that “growth is good.” He asserted that society must be “economical with our scarce resources.” Dr. Morris offered the PQLI as a way to analyze the interrelatedness of life and to focus on strategies that would help improve world equality.

Morris felt that a country must use its available abundant resources with more relevant technologies. In other words, a developing country needed ways to use the large unskilled and semi-skilled labour force that was there in abundance in a way that was fair in terms of sharing the “wealth” with everyone in the region. It was found that an increase in GNP often did not necessarily help the local poor, but rather ended up in the hands of the rich.

The PQLI was limited in scope and could not measure intangibles, such as freedom, justice, sustainability, and security. For that reason, it has been replaced, to a large extent, by the United Nations’ Human Development Index (refer to Module 1 for more information).

2. Happy Planet Index

The **Happy Planet Index (HPI)** is an index of human well-being that includes environmental impact. It was introduced by the New Economics Foundation (NEF) in mid-2006. The index was meant to be an alternative to indexes that measured the development of a country, such as the Gross Domestic Product (GDP) and the Human Development Index (HDI), which do not take sustainability into account. The name is perhaps misleading as it does not measure *happiness*.

GDP is regarded as an inappropriate indicator of living standards because the ultimate aim of most people is not to be rich, but to be happy and healthy. The HPI relies on this assumption. Furthermore, it is believed that the notion of sustainable development requires a calculation of the environmental cost of pursuing those goals.

The HPI is based on the understanding that most people want to live long and fulfilling lives. If a country is providing those opportunities to its citizens, while not denying other countries the same opportunities, then that country will have a high HPI. The HPI provides a way to measure human well-being and compares that measurement to the amount of natural resources needed to sustain the lifestyle. In other words, it measures the environmental efficiency of well-being.

Unfortunately, it is difficult for most countries to attain a high HPI, especially in the developing world where countries are still going through the stages of industrialization. Generally, industrialization and development are processes that deplete natural resources, exploit the land, and pollute the air. Countries with low HDIs are less concerned with their ecological footprint and more motivated to improve their economy.

The HPI value of each country is a function of that country's average subjective life satisfaction, life expectancy at birth, and ecological footprint per capita. The exact function is a little more complex but, basically, it involves multiplying life satisfaction and life expectancy and then dividing that number by the ecological footprint.

In 2013, Canada's HPI score was 43.6, which ranked the country 65th out of 151 countries. The Happy Planet Index's official website states: "Canada's HPI score reflects a high life expectancy and very high levels of experienced well-being, but is brought down by a very high ecological footprint." See www.happyplanetindex.org/countries/canada/.

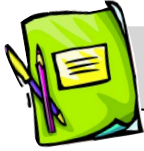
3. **Genuine Progress Indicator**

The **Genuine Progress Indicator (GPI)** is a means of measuring economic growth. It is a more accurate measure than the traditional GDP (Gross Domestic Product) because it takes into account societal and environmental factors, as well as economics in the context of sustainability. Supporters of the GPI claim it is more reliable since it distinguishes between worthwhile growth and uneconomic growth, similar to the difference between gross profit and net profit. The GPI considers the cost of crime and pollution when measuring economic growth. As well, it measures the value of rebuilding homes destroyed by natural disasters (e.g., flooding, landslides, forest fires, etc.) as opposed to simply building new houses for those whose increased standard of living enables them to “move up.”

GPI originated in the late 1990s as a way for economists to measure the costs and benefits of economic growth. It came about partially as a result of the recognition that growth in money supply often had the effect of reducing well-being; the economy was expanding, but life was degrading. The concept is considered controversial by some, but is gaining more of a foothold as more and more organizations recognize that the “cost” of economic activity often includes harmful effects, such as crime, pollution, and resource depletion.

Although this index is more comprehensive than GDP in measuring economic growth, it still requires a country to acknowledge societal and environmental issues as factors affecting the economy. In many cultures, the domestic labour of women is considered as private not public work. As well, what might add to the economic well-being of one group may be dismissed by those in power. Inevitably, the subjective nature of politics at times obscures the true nature of a country’s well-being.

4. Other indicators (also known as metrics) that attempt to put a numerical value to the subjective nature of human satisfaction/standard of living include **Gross National Happiness** and **The Self-Perceived Quality of Life Scale**. At the time this course was written, a Google search of “quality of life measurements” yielded over 25 million hits, so if you are interested in further reading, there are many sources of information!



Learning Activity 2.8

Quality of Life

1. Think back to what life was like for your great grandparents, or people of their generation (young adults in the 1930s and 1940s). Chances are they lived in a rural environment and worked fairly close to home. Think about their standard of living compared to what you have now (do some research, talk to some elders in your community). If you were suddenly transported back in time, what three “quality-of-life” indicators would you miss the most?
 2. Imagine you were suddenly transported to a poor community in a foreign city, such as Kolkata, India. After the initial shock, you realize that you can speak the local language, but you are unable to read or write. Will being illiterate in this environment have any effect on your ability to survive? What about your ability to take advantage of any employment opportunities?
-

Challenges Facing Indigenous Peoples

This module looked at the topic of population to discover how population growth leads to the need for adjustments in the economy and how the environment is used/abused.

Before taking a more detailed look at the challenges of increased population and the subsequent impact on the economy and the environment, you need to consider how this issue affects Indigenous peoples in the world today. What are the challenges for those who would like to maintain a traditional way of life?

When the arrangements were being made to hold the Earth Summit in Rio de Janeiro in 1992, Maurice Strong encouraged the participation of two segments of the world population—the Indigenous and the Traditional peoples. Since then, the term Indigenous has been used to represent both the original peoples from the Americas, Australia, and New Zealand, and peoples with local ethnic roots, such as those from Japan and northern Scandinavia.

Many of the Indigenous populations are small groups struggling to maintain their culture within the majority population. The industrialized populations have moved in on the Indigenous terrain and taken over the local resources, leaving the original or Indigenous inhabitants struggling within their tribal areas. Attention to Indigenous rights is often limited to times of crisis or when an anthropologist comes to study them.

A tribal group is characterized by their distinct language, culture, common history, a defined territory (usually), and strong kinship ties. For many of the Indigenous tribes, their way of life has been changed by the country's industrialized culture.

Historically, the rights of the Indigenous peoples all over the world have been denied. Unfortunately, Canada has not been exempt from this. It was only in the 1990s that land claims and treaties were settled with First Nations bands in British Columbia. The year 1999 saw the creation of Nunavut, a dominant Inuit territory in Northern Canada.

There are also examples of larger tribal groups being split between nations and living as refugees within the nations that divided their territory. One such group is the Kurds. The Kurdish population of 20 million was split between Iran, Iraq, Syria, Turkey, and southern Russia. Review Module 1 for more examples.

Environment, Economy, and Population

No one disputes the fact that an increase in population puts pressure on the environment and presents challenges to local economies, but until the mid 2000s, publications outlining the cost of environmental degradation were rare. In 2010, the World Bank published a book entitled *The Cost of Environmental Degradation, Case Studies from the Middle East and North Africa*, in which the World Bank provided precise cost estimates for environmental degradation, broken down by country within that region.

Through a series of comparative research projects and statistical analyses, the World Bank developed a method to assign costs to major national environmental challenges as a percentage of the GDP of each country, called the **Cost of Environmental Degradation (COED)**.

Typically, costs are calculated for specific industries or sites rather than entire countries. Policy changes that local governments could implement to deal with the root cause of some of the problems were also suggested. This information can be linked back to the roles of government discussed in the previous lesson. In this situation, knowledge is power in that the information provides a clear path of action to meet these challenges.

The five main areas of environmental degradation covered by the World Bank are

1. water degradation
2. air pollution
3. deforestation and forest degradation
4. agricultural land degradation
5. waste disposal as it relates to conflict (war)

1. Environmental Issue	Water Degradation
Country	Tunisia
Population	10 769 913 (2013), growth rate of 1.01% (World Bank, 2009)
Important considerations	<ul style="list-style-type: none"> ■ already a dry country, with less than 50% of the region's average amount of water ■ water supply is unevenly distributed ■ issues of water salinity (saltiness), contamination, waterlogging (saturation of soil that harms agriculture), dam sedimentation (lost water storage), and over exploitation of groundwater by the economic sector
Impact	<ul style="list-style-type: none"> ■ negative impact on fisheries, agriculture, health (contamination causing sicknesses), tourism industry in coastal areas, biodiversity (wetlands), and groundwater (exploitation—lowered water table)
Cost	<ul style="list-style-type: none"> ■ estimated to be 0.6% of GDP (US\$165.8 million) in 2004 with the greatest loss occurring in the agricultural sector as a result of lost productivity due to irrigation damage ■ followed by groundwater overexploitation and the costs of pumping water and building new wells
Recommendation for government policy	<ul style="list-style-type: none"> ■ improve agricultural practices to reduce the impact of salinity ■ reduce groundwater overuse (including artificially recharging groundwater with treated wastewater) ■ encourage saving water, better coordination among groups managing groundwater

2. Environmental Issue	Air pollution
Country	Jordan
Population	6 564 821 (2013), growth rate of 2.36% (World Bank, 2009)
Important considerations	<ul style="list-style-type: none"> ■ emissions were nitrous oxide, sulfur dioxide, and total suspended particulates ■ sources of pollution were mainly from road transportation and electricity production
Impact	<ul style="list-style-type: none"> ■ health effects measured included chronic bronchitis, respiratory hospital admissions, restricted activity days, and respiratory symptoms
Cost	<ul style="list-style-type: none"> ■ cost of discomfort caused by the pollution in terms of the loss of visibility worked out to US\$4.5 million ■ total cost from damage relating to air pollution in Jordan was \$161 million or 1.15% of GDP in 2006 ■ the most significant cost was in treating health-related illnesses of the population over age 30 (two-thirds of the total)
Recommendation for government policy	<ul style="list-style-type: none"> ■ improve the air quality monitoring system ■ phase out use of high-sulfur diesel fuel ■ reduce the number of older vehicles and design long-term traffic models that ease congestion, in conjunction with a nation-wide long-term plan to reduce air pollution

3. Environmental Issue	Deforestation and forest degradation
Country	Iran
Population	76 382 993 (2013), growth rate of 1.31% (World Bank, 2009)
Important considerations	<ul style="list-style-type: none"> ■ deforestation: long-term loss of forest cover ■ degradation: reduction of productivity ■ forest degradation is caused by past and present wood overexploitation, overgrazing, and overhunting
Impact	<ul style="list-style-type: none"> ■ estimated that the annual deforestation was about 125,000 acres, which is a significant amount when one considers that only 7.4% of the country is forested ■ very degraded forests cannot regenerate naturally, and the trees are thinly spaced at less than 100 m³ per hectare ■ degraded forests have trees that are closer together, with many young saplings, but some replanting is still necessary
Cost	<ul style="list-style-type: none"> ■ calculated by measuring the value of wood and non-wood forest products that were lost, as well as measuring the indirect value of the forest in terms of watershed protection and purification, carbon loss, and soil protection ■ soil erosion was also calculated in terms of dam sedimentation, resulting in a loss of reservoir storage capacity and the impact that has on irrigation ■ hunting and recreation were also taken into account ■ the total costs of deforestation and forest degradation worked out to US\$843 million or 0.7% GDP in 2002, with deforestation accounting for over 80% of the cost
Recommendation for government policy	<ul style="list-style-type: none"> ■ no policy recommendations included ■ a national forest conservation plan that includes information on regular harvest and use would presumably serve the country well

4. Environmental Issue	Agricultural land degradation
Country	Morocco
Population	32,857,438 (2013), growth rate of 1.22 (World Bank, 2009)
Important considerations	<ul style="list-style-type: none"> ■ land degradation is defined as a reduction in land production, temporarily or permanently, because of human activities ■ 33% of the population makes a living through agriculture ■ Morocco is a dry, arid country with only 7% of the country classified as humid or sub humid ■ soils are very fragile as they have an organic-matter content of less than 2% (good soils typically have 5% or more organics)
Impact	<ul style="list-style-type: none"> ■ population growth has led to increased pressure on the agricultural sector, resulting in over exploited resources
Cost	<ul style="list-style-type: none"> ■ cost of degradation is estimated in three steps <ol style="list-style-type: none"> 1. estimating the amount of degraded land in an area 2. estimating how much production has dropped 3. estimating the dollar value of the “missing” product ■ cropland and rangeland degradation costs an average of US\$134 million (0.4% GDP) with cropland accounting for almost 90% of the cost
Recommendation for government policy	<ul style="list-style-type: none"> ■ no specific policy recommendations made ■ a long-term national strategy to educate, encourage, and subsidize agricultural producers to change land management strategies would certainly help

5. Environmental Issue	Waste disposal as it relates to conflict (war)
Country	Lebanon
Population	4 277 045 (2013), growth rate of 0.71% (World Bank, 2009)
Important considerations	<ul style="list-style-type: none"> ■ Lebanon experienced a 34-day period of conflict with Israel during July and August of 2006, resulting in tragic loss of life, injuries, and a displaced population ■ there was bombing of fuel oil storage tanks at a power plant on the shores of the Mediterranean Sea
Impact	<ul style="list-style-type: none"> ■ the fragile environment of Lebanon was damaged by the resulting demolition, the military, and the medical waste generated by the hostilities ■ shortly after the conflict, the local government and other international NGOs completed damage assessments on infrastructure, manufacturing, agriculture, fisheries, and forestry, but no estimates were made of the environmental damages ■ rubble dumped in low-lying areas caused damage to the ecosystem ■ unexploded bombs littered agricultural areas
Cost	<ul style="list-style-type: none"> ■ damage costs caused by the oil spill included the cost of the oil itself, the carbon input into the atmosphere (much of the oil burned), lost business from tourism for local businesses, such as restaurants, hotels, and beach resorts, and damage to the local fishing industry and nature/heritage sites ■ cleanup and monitoring expenses ■ wear and tear on roads ■ costs of manpower and machines to load, haul, and transport rubble ■ cost of land for the landfill ■ medical costs for treatment, transport (ambulances), and disposal of related waste ■ estimated total cost of the 2006 hostilities was US\$729 million or 3.6 percent of GDP in 2006
Recommendation for government policy	<ul style="list-style-type: none"> ■ implementation of sustainable oil spill preparedness ■ response systems along with a national oil spill control plan ■ contingency plan ■ increased diplomatic efforts to avoid conflict in the first place would also be a good plan

Benefits of COED studies

The major impact of environmental degradation studies is that they raise awareness of the economic value of the natural environment, providing practical evidence of the connections among poverty, energy, trade, and the environment. This increased awareness has influenced national and regional policies, as well as international policies from organizations such as the United Nations.

These studies identify areas where environmental degradation will cost society the most, where the degradation will impair development the most, and, more importantly, the studies provide a way to merge environmental issues into economic discussions, giving the environment more credibility within policy-making circles. They also provide concrete values when funds are being sought for environmental protection, and thus help to increase investment in the environment.



Learning Activity 2.9

Economic Environments

1. What are some of the impacts that water degradation can have on an area?
 2. What kinds of policy recommendations were made for the country of Jordan to reduce air pollution?
 3. What is the difference between deforestation and degradation?
 4. How is the cost of land degradation calculated?
 5. What damage costs were accounted for when determining the cost of the oil spill during the 2006 Lebanon/Israeli conflict?
-

Ingenuity and Perseverance at Work

Fortunately, it is not difficult to find examples of how people have managed to fix and reverse environmental damage due in part to population pressures. The following example is of a project undertaken in a Canadian city.

The Greening of Sudbury

Since the early 1900s, Sudbury, Ontario, has been a hub for nickel mining and smelting. Over the course of many decades, environmental damage from sulfur-rich smoke and particulate matter from the smelting process transformed the area around the city into a wasteland. The sulfur combined with water vapour in the air to create sulfuric acid. The acidity of the soils increased to the point where almost nothing could grow, and the pH of some lakes and streams was a very acidic 4 (similar to tomato juice). Erosion slowly washed away what soil there was, exposing the bedrock beneath. It was compared to a lunar landscape.

In 1972, a smoke stack, 381 metres tall, was built to disperse the sulfur-rich smoke over a larger area, and the city began a 30-year process of environmental recovery, initially spearheaded by Laurentian University.

Lime was spread over the soil to neutralize the pH and grass and trees were replanted, with the initial work focusing on roadsides. These *view corridors* were easy to access and provided visual evidence of progress. There were struggles with funding and finding the manpower to do all the leg work, but the view corridors helped with public perception and the reclamation process continued. Fixing the acidified watershed took more time than fixing/replenishing the soils—it took almost 15 years from the time the project started until the vegetation was established to a point where it would take the acid out of the soil, preventing it from seeping into the lakes.

As of 2010, over 3350 hectares of land had been reclaimed, with more than 9.2 million trees planted in and around the city. Around 30,000 hectares still need rehabilitation, but the environmental stewardship mindset is evident in other projects in the area, such as transplanting healthy forest ground cover in reclamation sites.

The Greening of Sudbury project attracted attention and inspiration from like-minded organizations around the world and has won several environmental awards. It has also been the catalyst for the development of eco-friendly tourism and research facilities.

Sustainable Population Growth

The following question has been asked as part of this course: “Is the present annual population increase and growth rate sustainable for the future?” This is an important question, but the answer is not simple. As a global citizen, you need to be actively engaged in both researching the issues and finding solutions.



From a biological perspective, **overpopulation** is defined as too many of any organism for the **carrying capacity** of the region, which refers to how many resources are available to support life. This means that the availability of water, food, space, and shelter are all limiting factors on a population. In the case of humans, the more people, the smaller the share of available resources per person.

Throughout history, humans have been inventive and stubborn and, as a result, have persevered in the face of obstacles. If water is unavailable in an area, humans will find a way to pipe it in. If food is unavailable, they will find a new way to produce or acquire it. Humans can also be short-sighted, taking what is needed or wanted now and not taking into account any possible future consequences. People are also very good at justifying **not** doing things that they know should be done. Have you ever not done your homework, saying you will have time later? People everywhere share these characteristics, and it takes conscious thought, information, understanding, **and effort** to do the right thing as opposed to the easiest thing.

If you have access to the Internet, do a search on “sustainable population growth.” What do you find? Chances are you will find many websites dedicated to informing the reader about the dangers of global overpopulation and the damage it does to the ecosystems that sustain life.

There are many suggestions as to what can be done to ensure the continued survival of the human race, including

- technological advancements to ensure efficient use of resources
- adopting quality of life indexes (that is, live more with less, living a happier, “more-connected-to-nature” life)

Increasing public access to resources and giving back control of the economy to the locals in developing countries could be beneficial. The top-down development practices have proven to be ineffective in the past. Temporary aid packages have also been proven ineffective. Providing clean, safe, living spaces, improving sanitation, promoting safe sex practices to prevent the spread of disease, and lowering infant mortality rates through proper nutrition and medical treatment are all in the realm of possibility that allow citizens to exercise their individual autonomy.

While it would be nice to see the living conditions of the world's poor improve, and it would be nice to see improved economic situations for poorer countries without the abuse of resources, it must be recognized that there is a balance that must be addressed by citizens and governments on a global scale.

Lesson Summary

Now that you have completed this lesson, you have a better understanding of how standard of living and quality of life are measured, and how these indexes can change according to where one lives and to what culture one belongs. This lesson emphasized the relationship between population increase and decreased standards of living. Developing nations that are confronted with quickly rising levels of population must also address problems of resource depletion and environmental damage. Improvements in technology and efforts to reserve and stretch resources are positive measures some governments have enforced in an effort to improve the general standard of living in developed and developing countries alike.

Other consequences of the global population increase are the challenges faced by Indigenous peoples. Relatively new to the issue of population growth is the Cost of Environmental Damage (COED). Research in this field puts a monetary value on environmental degradation and damage. This valuation presents the challenge of achieving sustainable development in a language that most governments, economists, and business organizations can understand. This understanding is an important step to including environmental concerns in any long-term economic plans.

The lesson ended with the optimistic case study on the greening of Sudbury, Ontario, and illustrates what can be done to combat the effects of environmental degradation.

Notes



Assignment 2.3

Present Challenges (55 marks)

Answer all questions in complete sentences.

1. a) **List** your top 10 needs and your top 10 wants in the table provided below.
(1/2 mark \times 20 = 10 marks)

Needs	Wants

continued

Assignment 2.3: Present Challenges (continued)

- b) **Choose five** items from your list of needs and **indicate in a sentence** a worst-case scenario in which your need would become difficult to maintain. (5 marks)

The worst case scenarios should all be different, but remember they can relate to the environment, politics, war/conflict, the economy, health and disease, literacy, or nutrition.

continued

Assignment 2.3: Present Challenges (continued)

2. List the most important pro and con of using the PQLI, HPI, or GPI (choose **one**) as an index to measure standard of living. (2 marks \times 1 = 2 marks)

PQLI	
Pro	Con

HPI	
Pro	Con

GPI	
Pro	Con

continued

Assignment 2.3: Present Challenges (continued)

3. **Choose one** of the three measures of standard of living (health and disease, literacy, nutrition) and, **in paragraph form**, argue why you think it is the most important measure and why it should be prioritized over the other two. *(5 marks)*
- How is the standard of living measured? *(1 mark)*
 - What other areas of people’s lives does it affect, and in what ways? *(2 marks)*
 - Is the measure affected by the economy, environment, or resources? In what ways? *(2 marks)*
 - Provide a strong argument for prioritizing this factor over the other two.

continued

Assignment 2.3: Present Challenges (continued)

4. a) **List three** consequences that humans might face if the world population keeps increasing and the standard of living does not keep up with that increasing population. (3 marks)

- b) **Write a few sentences** giving your opinion on whose responsibility it will be to prevent and/or deal with these issues (individuals, NGOs, governments), and how they will do so. (2 marks)

continued

Assignment 2.3: Present Challenges (continued)

5. **Research** a small rural or isolated community, such as an Indigenous community (First Nations, Métis, or Inuit) in Canada that has faced challenges similar to those outlined in the course (use the Internet or visit your local library for sources of information) and **write** a response, condensing the following information: (10 marks)
- What is the name of the community? When was it established?
 - Where is the community located?
 - How many people live in that community? What are the demographics?
 - In what ways has the community retained their cultural heritage? Are there customs and traditions that have been lost over the years?
 - What are three of the most prominent issues affecting this community?
 - In what ways have the community leaders attempted to address these issues? Do they require outside resources, such as government funding, skills training, or equipment to improve their situation?

The following websites are good places to start your research:

- www.mmf.mb.ca/
- <http://pse5-esd5.ainc-inac.gc.ca/fnp/Main/index.aspx>
- www.aadnc-aandc.gc.ca/Map/irs/mp/mp-html-eng.asp

continued

Assignment 2.3: Present Challenges (continued)

6. Choose a form of environmental degradation that was not explored in the course and complete the following chart detailing the COED for a particular country. (10 marks)

Environmental Issue	
Country	
Population	
Important Considerations	<ul style="list-style-type: none"> ■ ■
Impact	<ul style="list-style-type: none"> ■ ■
Cost	<ul style="list-style-type: none"> ■ ■
Recommendations for Government Policy	<ul style="list-style-type: none"> ■ ■

continued

Assignment 2.3: Present Challenges (continued)

7. **Respond** to the following question in paragraph form: “Is the present annual population increase and growth rate sustainable for the future?” (8 marks)
- Give at least **three** reasons for your answer. (3 marks)
 - Make sure your reasons are clear, well-developed, and supported by examples. (3 marks)
 - Include **two** sources of information other than those listed in the course. (2 marks)

Source 1: _____

Source 2: _____

Notes

MODULE 2 SUMMARY

Congratulations, you have completed Module 2!

Module 2 provided an in-depth look at the characteristics, distribution, and growth of the global population. The module went on to explain how population growth impacts governments, the economy, the environment, and the lives of people everywhere.

Lesson 1 explained the phenomenon of population growth and the concern that some governments share regarding overpopulation and the stress that high-density populations place on the environment. The lesson explained the demographic transition model, population census forms, as well as population pyramids.

Lesson 2 focused on the distribution of the global population and examined migration as a possible solution to the problems caused by overpopulation. The lesson emphasized the role of government in seeking a balance between the size and growth rate of a country's population, encouraging an expanding economy, and responsible use of environmental resources.

Lesson 3 looked at the present challenges faced by all countries today with regard to population. These challenges include maintaining a high standard of living for the general population, as well as a high quality of life in relation to the resource base. Proper management and use of resources is essential in preventing exploitation of natural habitats and irreversible environmental damage. This lesson also discussed the challenges faced by Indigenous peoples living throughout the world and the challenges associated with integrating Indigenous peoples into a post-colonial society in a fair and non-discriminatory way.



Submitting Assignments

It is now time for you to submit Assignments 2.1 to 2.3 to the Distance Learning Unit so that you can receive some feedback on how you are doing in this course. Remember that you must submit all the assignments in this course before you can receive your credit.

Make sure you have completed all parts of your Module 2 assignments and organize your material in the following order:

- Module 2 Cover Sheet (found at the end of the course Introduction)
- Assignment 2.1: Investigating Population
- Assignment 2.2: Case Study in Current Events
- Assignment 2.3: Present Challenges

For instructions on submitting your assignments, refer to How to Submit Assignments in the course Introduction.



GRADE 12 WORLD
GEOGRAPHY: A HUMAN
PERSPECTIVE (40S)

Module 2
World Population: Characteristics,
Distribution, and Growth

Learning Activity Answer Key

MODULE 2: WORLD POPULATION: CHARACTERISTICS, DISTRIBUTION, AND GROWTH

Learning Activity 2.1: Vocabulary and History

1. Define the following in full sentences. (**Hint:** You may have to refer to the glossary.)
 - a) population dynamics
the way populations are affected by birth and death rates, immigration, and emigration
 - b) temporal and spatial changes
changes of a population over time and place

2. Familiarize yourself with Thomas Malthus and his ideas.
 - a) What was the name of his famous essay and what year was it published?
“An Essay on the Principle of Population,” published in 1798
 - b) What was the main idea presented in the essay?
Malthus warned that the population would eventually outstrip the food supply, and that people would have to overcome the many negative consequences related to food shortages.

3. Karl Marx is considered the father of communism, a political philosophy closely tied to socialism, which plays an important role in Canadian government and society. Define socialism.
Socialism is a political and economic theory of social organization that advocates that the means of production, distribution, and exchange should be owned or regulated by the community as a whole.

4. Using the following Concept Relationship Form, compare and contrast Neo-Malthusian and Marxist ideas about human population, including a summary statement.
Students should clearly indicate that Neo-Malthusians support population control with the goal of perhaps eventually reducing global population, while Marxist thought supports the continued growth of the population to ensure economic success and increase of community wealth. They are on opposite sides in the population issue.

Concept Relationship Form (Compare and Contrast)

Make the distinction between
Neo-Malthusian and Marxist
(ideas about human population)

Neo-Malthusian

Marxist

Write a summary statement.

Learning Activity 2.2: From Census to Demographic Data: Manipulating the Numbers

The following section has relevant information combined with the learning activity, so it is important that you complete the activity **and** give yourself enough time to read everything carefully.

Once the raw population data has been collected, it needs to be sorted. Table 2.1 lists the population of countries, continents, and sub-continents.

1. Fill in the population information for each of the following areas using the information found in Table 2.1. You need to combine data information. For example, to calculate the population of North America, you need to total the populations of Canada, the United States, and Mexico.
 - North America *total of first 3 countries in table 2.1: 460,998,000*
 - Central America *154,298,000*
 - South America *396,391,000*
 - Europe *727,083,000*
 - Africa *1,012,957,000*
 - Australia and New Zealand (Oceania) *25,770,000*
 - East Asia *1,562,109,000*
 - West Asia *233,667,000*
 - South Asia *2,323,853,000*
 - a) Using a blank copy of the World Map attached (Appendix C), write in the general population for each of the nine areas listed above.
 - b) Colour the area on the map using specific colours to indicate population levels. Keep in mind that the purpose of the exercise is to be able to visualize any patterns that might exist. Use a key to indicate what each colour means (e.g., different shades of red as the population density increases).
 - c) Once you have transferred the information, write down three patterns that you notice on the map.

The summary should include remarks about the huge proportion of people found in Asia – the population being about 10 times that of North America or South America, and over four times that of Africa, and how few people are found in Oceania.



Note: The main sources for global population numbers tend to vary, depending on the source of the primary data (CIA Factbook versus the United Nations). For this reason, the numbers you find may not be the same as the numbers in this course, but they should be similar.

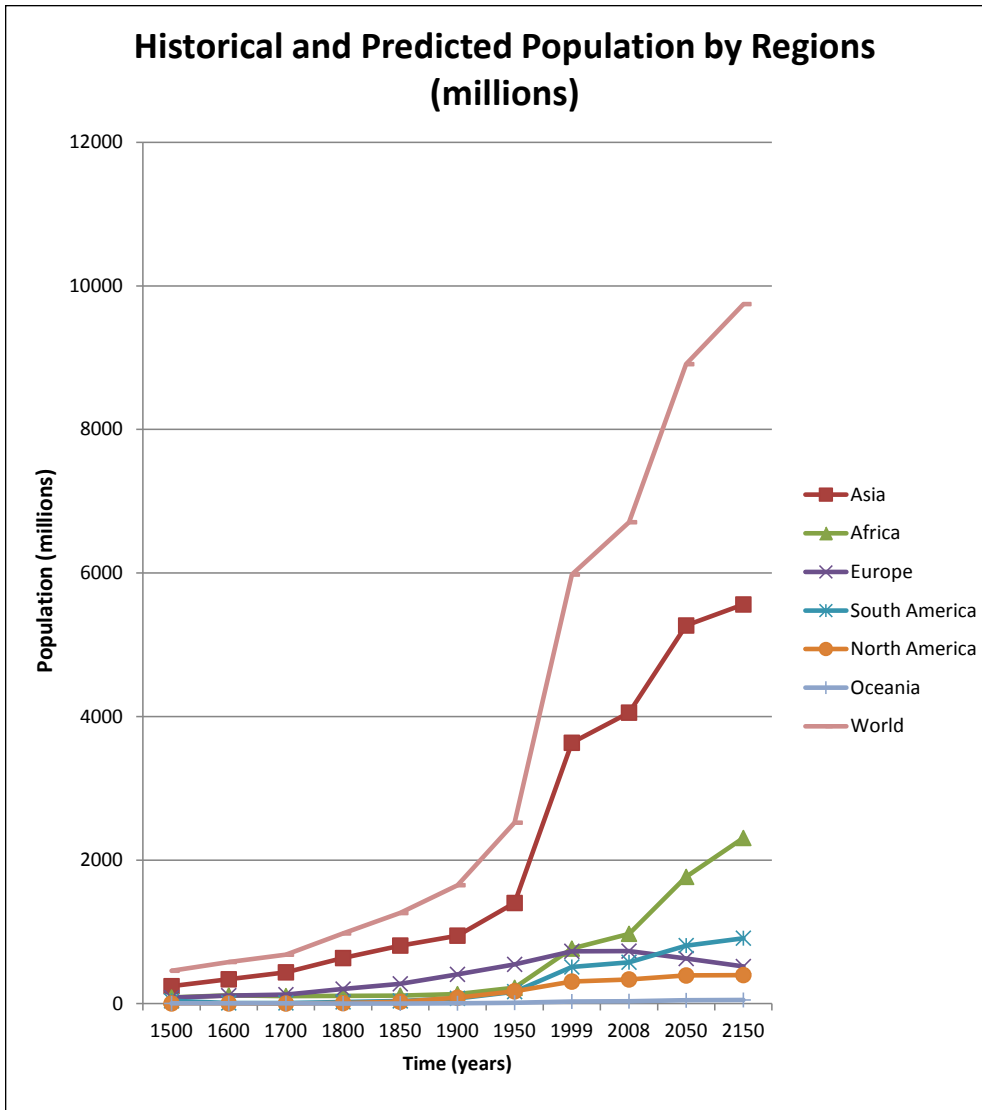
Region/Country	Population
Canada	34,031,000 (2011, est.)
United States	313,232,000 (2011, est.)
Mexico	113,725,000 (2011, est.)
Central America	154,298,000 (2010)
Caribbean	36,314,000 (2010)
South America	396,391,000 (2010)
Eastern Europe	292,082,000 (2010)
Western Europe	190,106,000 (2010)
Northern Europe	97,547,000 (2010)
Southern Europe	147,348,000 (2010)
Oceania (Australia and New Zealand)	25,770,000 (2010)
Eastern Asia	1,562,109,000 (2010)
South-central Asia	1,717,434,000 (2010)
South-eastern Asia	606,419,000 (2010)
Western Asia	233,667,000 (2010)
Eastern Africa	325,803,000 (2010)
Middle Africa	125,165,000 (2010)
Northern Africa	206,208,000 (2010)
Southern Africa	56,541,000 (2010)
Western Africa	299,240,000 (2010)

The next part of the activity takes the process of investigation one step further. You know the approximate current population figures throughout the world, now take a look back in time to see how these figures have changed over the years and, based on population trends, how they will change in the future.

Region	1500	1600	1700	1800	1850	1900	1950	1999	2008	2050	2150
Asia	243	339	436	635	809	947	1,402	3,634	4,054	5,268	5,561
Africa	86	114	106	107	111	133	221	767	973	1,766	2,308
Europe	84	111	125	203	276	408	547	729	732	628	517
South America (including the Caribbean)	39	10	10	24	38	74	167	511	577	809	912
North America	3	3	2	7	26	82	172	307	337	392	398
Oceania	3	3	3	2	2	6	13	30	34	46	51
World	458	580	682	978	1,262	1,650	2,521	5,978	6,707	8,909	9,746

The information for this table was compiled from a variety of sources, including: www.geohive.com/earth/pop_region.aspx, http://en.wikipedia.org/wiki/World_population, the United Nations population data reports (1999–2010), the CIA World Factbooks <http://www.cia.gov/library/publications/the-world-factbook/>, and www.globalchange.umich.edu/globalchange2/current/lectures/human_pop/human_pop.html.

- At first glance, Table 2.2 might seem confusing. Data charts that consist only of figures are often difficult to read and interpret. This is why it is important to represent data in a variety of different forms. The information in the chart can be translated to a line graph, which shows the increase (or decrease) of population over time in a more visual format.



Analyze the graph and answer the following:

- a) State the main points that emerge from the graph, keeping in mind
- the rate of population change during different periods
 - the steeper the slope to the upper right, the faster the population increase
 - that population decrease lines would slope downward and to the right

The chief points that emerge from the graph: rapid increase in North America during and after the 1950s, in Oceania in the late 1800s (hard to tell unless the log graph was used), in the 1900s for Latin America and since 1940 for Africa and Asia, with steady increase in Europe, with a slight decrease since 1999. There is an overall decline in the rate of increase, globally, since the early 2000s.

- b) Give possible reasons for
- the differences, as shown between the slopes of the different regional lines
 - the changes that have occurred over time as shown by the slopes of the individual lines

Possible reasons for

- i) *the differences in slope of the lines—immigration, changes in death rates and higher/lower birth rates, more/less habitable regions, higher/lower initial populations*
 - ii) *the changes that have occurred over time for each of the lines—immigration, changes in death rates and remaining high birth rates, natural disasters or conflict*
- c) Explain your understanding of how this fits in with what you have learned in this course so far.

Answers will vary.

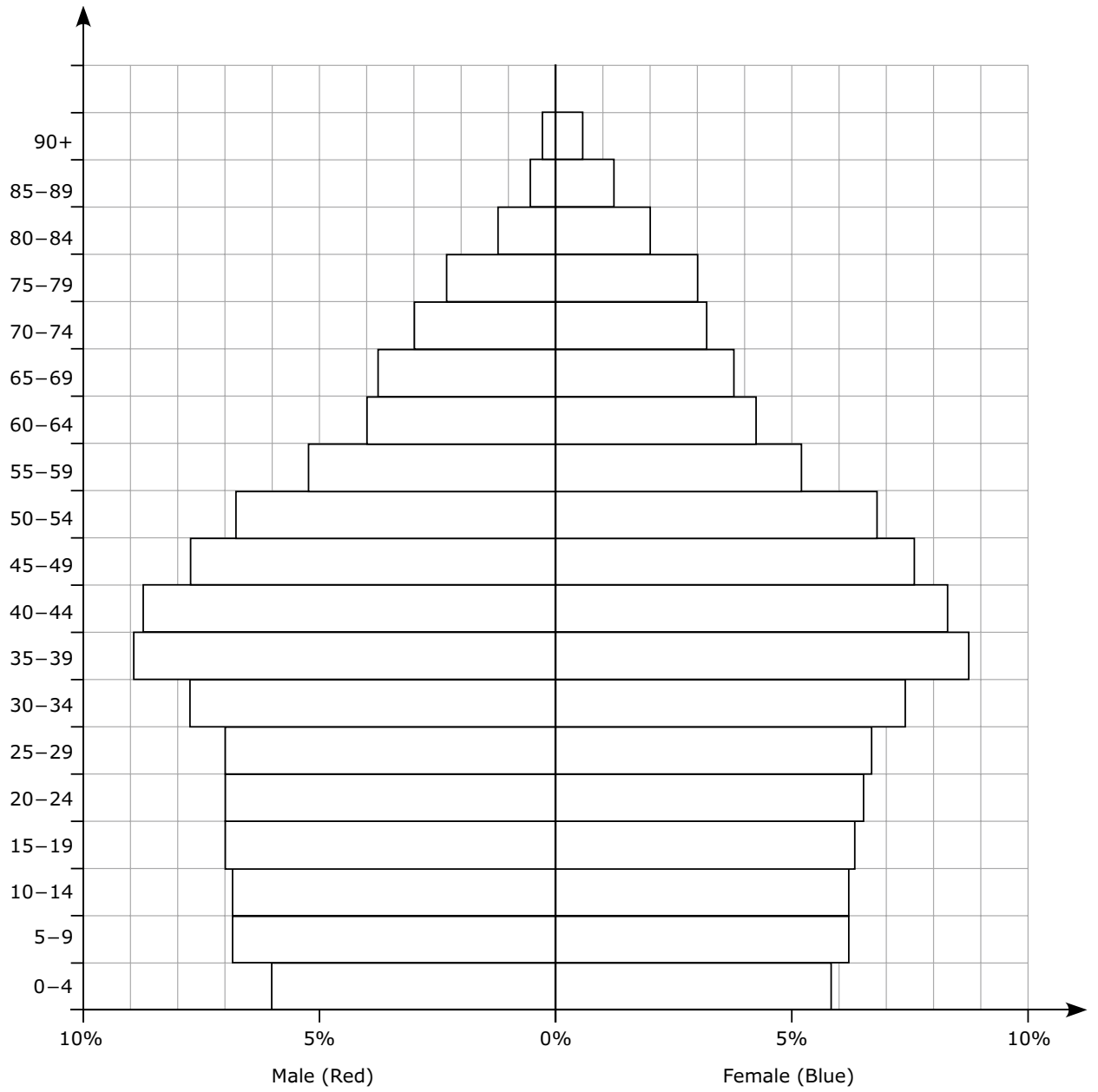
Learning Activity 2.3: Population Pyramid

For this learning activity, create a population pyramid based on the information in Table 2.3. The outline of the population pyramid is provided on the following page; you only need to fill it in. Keep the following points in mind:

- The *y*-axis (age, advancing in five-year intervals) is provided.
- The *x*-axis (percentage of males versus percentage of females) needs to be plotted.
- The line in the center represents the divide between the male (left) and female (right) sides of the pyramid.
- Use the information in the table below to fill in the pyramid and then choose two different colours to shade in the pyramid.
- Remember to include a legend and title.

Age	% Male	% Female
90+	0.4	1.0
85-89	0.9	1.6
80-84	1.8	2.4
75-79	2.4	2.9
70-74	3.3	3.6
65-69	4.6	4.8
60-64	5.8	6.0
55-59	6.9	7.0
50-54	7.8	7.7
45-49	7.8	7.6
40-44	6.9	6.7
35-39	6.7	6.6
30-34	7.0	6.8
25-29	7.2	6.9
20-24	7.2	6.8
15-19	6.4	6.0
10-14	5.6	5.2
5-9	5.5	5.1
0-4	5.7	5.3

Source: Statistics Canada. www.statcan.gc.ca/tables-tableaux/sum-som/I01/cst01/demo10a-eng.htm. 2012.

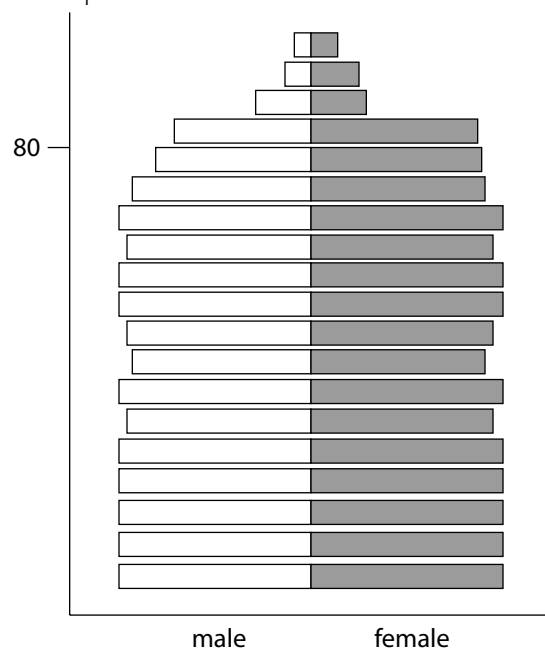


Learning Activity 2.4: Demographic Transition

1. For each of the following brief scenarios, draw a rough sketch of the population pyramid for that country, according to the description.
 - a) Country A has a fertility rate of 2.1 children per woman and has had that same fertility rate for the past 100 years. Life expectancy is 85 years for women and 82 years for men.

The population pyramid the student draws should have about the same width all the way from the base to the 80 year point... at that point, there should be slightly more women than men and the top of the pyramid should be quite blunt, not extending much past 90 years.

Example:

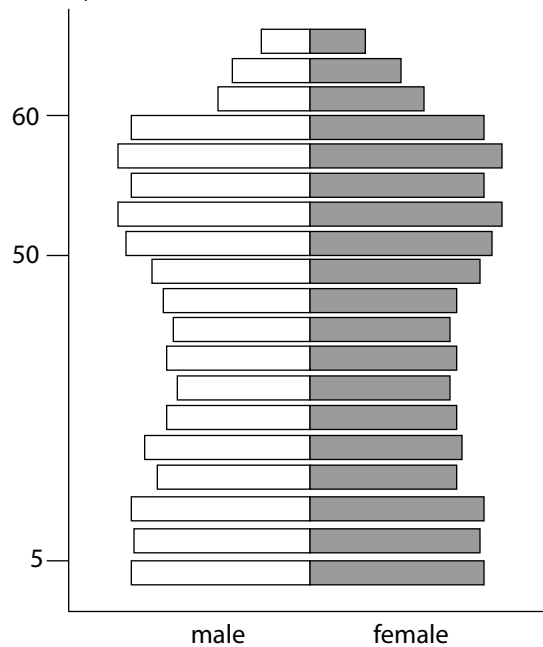


- Fertility rate stable at 2.1
- Life expectancy: 85 (female), 82 (men)
- Roughly same width from base to peak
- Slightly more women than men in last few rows

- b) Country B is very highly developed (human development index of 0.94), with a recent increase in the birth rate. Between 50 and 60 years ago, the birth rate was quite high (3 babies per woman), but it dropped to about 1.5 children per woman until the recent increase 5 years ago, when the birth rate increased to 2.5 children per woman.

This population pyramid should look a bit like an hour glass, with a large bulge at the top between the 50-60 year old cohorts, shrinking toward the bottom, with a somewhat wider base at the youngest cohort, but not quite as wide as the 50-60 year olds.

Example:

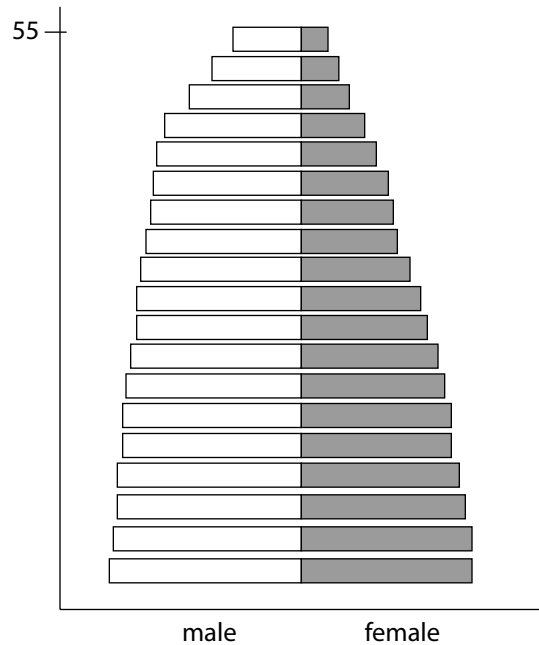


- Largest bulge from 50 to 60 cohort (high birth rate)
- Shrinkage all the way until youngest cohort (low birth rate)
- Wider base but not as wide as top of pyramid

- c) Country C has experienced long-term, catastrophic political conflict combined with severe environmental degradation, resulting in damage to the reproductive cycle of humans. The life expectancy is around 55 years, and the birth rate is around 6 children per woman; however, the environmental damage affects gender, resulting in a gender gap of about 121 male births for every 100 female births.

Students should show a classic stage 1 population pyramid with a wide base, and pointed top, with noticeably more population on the male side of the pyramid.

Example:



- Stage 1 development population pyramid
- Wide base equals a high birth rate
- Average life expectancy only 55 years
- Gender gap: more boys than girls

Learning Activity 2.5: Global Human Distribution

- Name four conditions that account for four-fifths of the world's land area having little or no human habitation.
 - the climate is too cold for agriculture
 - the climate is too dry for agriculture
 - the landscape is too high or too steep for agriculture
 - the soils are too poor for agriculture (tropical rainforests, temperate coniferous forests)
 - highly seasonal rainfall
 - infectious disease carrying insects

- With regard to basic human needs, in which situation is a high-density population more likely to be a problem—a rural area dependent on agriculture or an urban area dependent on manufacturing and services? Why?

The situation that is more likely to have the problem is the rural area dependent on agriculture because there may not be enough food produced or stored to feed the high density population, especially if the crops that season are poor. In an urban environment, transportation supply chains that can handle the needs of a dense population are usually in place, and they are not so dependent on local growing conditions.

- Take a close look at Table 2.5: Top Ten Largest Urban Agglomerations in 1975, 2000, and 2005. For each of the three years shown, how many cities are located in North America? South America? Europe? Southeast Asia?

Year	North America	South America	Europe	Southeast Asia
1975	New York, Mexico City, Los Angeles	Buenos Aires, São Paulo	Moscow, Paris	Calcutta, Osaka-Kobe, Tokyo
2000	New York, Mexico City, Los Angeles	Buenos Aires, São Paulo		Tokyo, Bombay, Shanghai, Calcutta, Delhi
2025	New York, Mexico City	São Paulo		Tokyo, Bombay, Delhi, Dhaka, Calcutta, Shanghai, Karachi

4. Once you have completed the table in Question 3, what patterns or changes do you see?

North America went from having 3 of the top 10 cities to only two. South America has only 1 of the top 10 cities. Europe has nothing from before 2000 onward. Southeast Asia went from having 3 of the top 10 cities to 7 of the top 10 cities. India alone has 3 of the top 10 cities. Tokyo has remained the most populous city over the 50 year span. The 10th largest city increased by 11.5 million people.

5. Thinking back to the demographic transition model, briefly describe what is happening to the population at each stage and indicate the level of development for a country at each stage (least developed to very developed).

It depends on what stage in the demographic transition process a country is in.

- *Stage 1 means low population growth due to the high birth rate and the almost as high death rate. (Least developed countries)*
- *Stage 2 is where the death rate drops, usually due to an improvement in farming production combined with an increase in basic sanitation and health care, but the birth rate remains high resulting in a large increase in population. (Developing countries)*
- *Stage 3 is characterized by a drop in both the birth and death rates (births still outnumbering deaths) which results in a slowing of the population increase. (More developed countries)*
- *Stage 4 is characterized by zero population growth where the birth and death rates are equal. (Developed countries)*
- *Stage 5 is characterized by slow population growth where the birth rate begins to increase. (Very developed countries)*

Learning Activity 2.6: Immigration Policies



Completing the learning activities in this course will help you prepare for your examinations. If you have any questions or concerns about any activity, do not hesitate to ask your learning partner for assistance or to contact your tutor/marker.

Migration is important in understanding geography because it involves the movement of people around the world. This physical relocation of people also influences the diffusion of cultures and the economic integration between countries, and brings about social change. Accepting change on such a large scale can be especially challenging for some people. There have been many instances where immigration has been the cause of tension, fighting, and hostility between different groups of people.

Following are two scenarios in which migration, and the related issues of diversification and pluralism, have been the cause of social unrest in traditionally homogenous societies. Once you have examined the two scenarios, complete the activity that follows.



Secularism is a political and social philosophy that rejects all forms of religious faith or worship (see <http://dictionary.reference.com/browse/secularism?s=t>).

Scenario A

In 2013, the Premier of Québec, Pauline Marois, proposed the Charter of Québec Values. The overarching aim of the legislation was to enforce neutrality in a secular public sector. The most controversial aspect of the legislation was the ban on wearing any conspicuous (easily visible) religious symbols by public service employees in the workplace. Examples of religious symbols that fell into this category were the hijab, the turban, the crucifix, and the kippah. If passed, this legislation would affect people in a variety of professions, such as civil servants, teachers, healthcare workers, police officers, prison guards, and judges. There was heated debate around the issue. On the one hand, many people believed that the legislation was discriminatory and infringed on the constitutional right of individuals to publicly express their religious identity. On the other hand, the Parti Québécois and pro-charter advocates insisted that the legislation served to promote a national Québécois identity that was free from religious values. They felt that secularism benefitted all citizens.

Scenario B

In 1905, France passed the French law on the Separation of the Churches and the State. In French, the term used to describe secularism is *laïcité*. The primary purpose of this law was to separate public from private life and to ensure that state-funded education remained free from religious

influence. However, in the last century, there have been radical changes in the demographics in France due to the influx of immigrants, which has greatly increased the ethnic diversity and pluralism of religions in the country. The laws in France did not prohibit citizens from privately practising religion; however, in 2004, a legal ban was authorized that prohibited the wearing of religious apparel in public schools, such as the hijab, the turban, and the Star of David. Many French citizens expressed the concern that these policies supported systemic racism and discrimination. Debate in France ranged from those advocating pro-reform of the secularist policies and an acceptance of religious pluralism to those advocating no reform for any form of public religious display.

1. After reading these two scenarios about two contentious policies, **discuss** your thoughts about these policies with your learning partner.
2. **Write** half a page (about 250 words) about the issues surrounding immigration policies of Québec and France. Choose **one** of the following prompts to get you started:
 - Do you think that Québec's proposed Charter of Values was biased? If yes, why was it problematic? If no, why was there a strong reaction against it?
 - The majority of immigrants to France originate from northern Africa and countries that were former colonies of France. If you were a recent immigrant, or a second or third generation African-French, what would be your reaction to the apparent racism experienced as a result of the secularist policies?

Answers will vary.

3. What similarities and differences can you see between the policy implemented in France and the policy proposed in Québec?
 - Combine your thoughts and opinion with the response of your learning partner.

One similarity is that the wearing of overt religious symbols is prohibited in both situations. A difference is that in France they are also banned in public schools, and not just in the public service workplace like in Québec. Both governments in Québec and France are trying to promote secularism as a solution to problems that have historically been caused by a strong religious influence over government. Advocates of secularism believe that it promotes equality among all people, whereas opponents believe that secularist policies create unnecessary division between people of different religious faiths. Racism and discrimination towards minority immigrants has been a concern in both cases.

Learning Activity 2.7: Population, Economics, and the Government

Answer the following true or false questions. If the statement is false, rewrite it to make it true.

1. Governments that influence and educate their people about population control see very little change in demographics over time.
False. These governments see good results but over long periods of time.
2. Imposing population controls is effective in the short term, but can have negative long-term effects such as gender imbalances.
True.
3. The economy and the environment are independent of each other.
False. They are both related to the health of each other, although the health of the environment has often been sacrificed for the short-term health of the economy.
4. Sustainable means to be maintained at a certain rate or level regarding development, exploitation, or agriculture.
True.
5. Economic factors that are included in the calculation of the HDI include access to raw materials plus the availability of consumer goods.
False. The economic factor that the HDI takes into consideration is a country's per capita GNI.
6. Being in an economic recession means having negative growth in three consecutive quarters.
False. The negative growth need only happen in two consecutive quarters.
7. Humans are great problem solvers—our ingenuity gives us hope in the face of the negative consequences of possible climate change.
True.

Answer the following short-answer questions.

8. Give two examples of environmental rules aimed at maintaining a balance between nature and development.

Limiting the motor vehicle exhaust emissions, implementing regulations regarding lagoons on a hog operation, completing environmental impact statements before developing an area of wilderness, and putting in place harvest limits on hunting and fishing, or forestry.

9. Name two concerns that countries have regarding the potential drop in their population.

- *If the population drops, will the economic growth also drop?*
- *At what point during the lessening of population will the economy start to shrink?*
- *Will a shrinking population (and perhaps economy) mean that the GNI will shrink?*
- *With the size of the aging population increasing, will that mean increased social costs that will perhaps further reduce the GNI?*

10. Research the three global conferences discussed in this lesson that were aimed at promoting sustainability initiatives and describe the mandate addressed at each conference.

- *1992 Earth Summit in Brazil*
 - *relationship between economics, science and the environment in a political context*
 - *sustainable development*
 - *conservation of the Amazon rainforest*
- *1997 Kyoto Protocol in Japan*
 - *obligations on industrialized countries to reduce their greenhouse gas emissions*
- *2009 Copenhagen Climate Conference*
 - *laying the framework for climate change mitigation past 2012*

Learning Activity 2.8: Quality of Life

1. Think back to what life was like for your great grandparents, or people of their generation (young adults in the 1930s and 1940s). Chances are they lived in a rural environment and worked fairly close to home. Think about their standard of living compared to what you have now (do some research, talk to some elders in your community). If you were suddenly transported back in time, what three “quality-of-life” indicators would you miss the most?

Answers will vary, things missed the most could be anything from flush toilets, to mobile phones, to good highways and fast transportation, to the internet, televisions or computers.

2. Imagine you were suddenly transported to a poor community in a foreign city, such as Kolkata, India. After the initial shock, you realize that you can speak the local language, but you are unable to read or write. Will being illiterate in this environment have any effect on your ability to survive? What about your ability to take advantage of any employment opportunities?

Answers will vary. Basic survival probably won't be affected by whether a person is literate or not, but certainly if a person wants to better their situation, having the ability to read and write in the local language will offer opportunities for employment and education.

Learning Activity 2.9: Economic Environments

1. What are some of the impacts that water degradation can have on an area?

The impact of water degradation can be felt in the fisheries, on agriculture, on health (contamination causing sicknesses), on the tourism industry in coastal areas, on biodiversity (wetlands) and on groundwater exploitation (lowered water table).

2. What kinds of policy recommendations were made for the country of Jordan to reduce air pollution?

Policy recommendations included improving the air quality monitoring system, phasing out use of high-sulfur diesel fuel, reducing the number of older vehicles, and designing long-term traffic models that ease congestion in conjunction with a nation-wide, long-term plan to reduce air pollution.

3. What is the difference between deforestation and degradation?

Deforestation is the long-term loss of forest cover and degradation is the reduction of productivity within a forested area.

4. How is the cost of land degradation calculated?

The cost of land degradation is calculated in three steps.

- a) estimating the amount of degraded land in an area
- b) estimating how much production has dropped
- c) estimating the dollar value of the 'missing' product

5. What damage costs were accounted for when determining the cost of the oil spill during the 2006 Lebanon/Israeli conflict?

Damage costs caused by the oil spill included the cost of the oil itself, the carbon input to the atmosphere (much of the oil burned), lost business to local tourism such as restaurants, hotels, and beach resorts, and damage to the local fishing industry and nature/heritage sites. There were also the cleanup and monitoring expenses.



GRADE 12 WORLD
GEOGRAPHY: A HUMAN
PERSPECTIVE (40S)

Module 2
World Population: Characteristics,
Distribution, and Growth

Learning Activity Answer Key

MODULE 2: WORLD POPULATION: CHARACTERISTICS, DISTRIBUTION, AND GROWTH

Learning Activity 2.1: Vocabulary and History

1. Define the following in full sentences. (**Hint:** You may have to refer to the glossary.)
 - a) **population dynamics**
the way populations are affected by birth and death rates, immigration, and emigration
 - b) **temporal and spatial changes**
changes of a population over time and place
2. Familiarize yourself with Thomas Malthus and his ideas.
 - a) **What was the name of his famous essay and what year was it published?**
“An Essay on the Principle of Population,” published in 1798
 - b) **What was the main idea presented in the essay?**
Malthus warned that the population would eventually outstrip the food supply, and that people would have to overcome the many negative consequences related to food shortages.
3. **Karl Marx is considered the father of communism, a political philosophy closely tied to socialism, which plays an important role in Canadian government and society. Define socialism.**
Socialism is a political and economic theory of social organization that advocates that the means of production, distribution, and exchange should be owned or regulated by the community as a whole.
4. **Using the following Concept Relationship Form, compare and contrast Neo-Malthusian and Marxist ideas about human population, including a summary statement.**
Students should clearly indicate that Neo-Malthusians support population control with the goal of perhaps eventually reducing global population, while Marxist thought supports the continued growth of the population to ensure economic success and increase of community wealth. They are on opposite sides in the population issue.

Concept Relationship Form (Compare and Contrast)

Make the distinction between
Neo-Malthusian and Marxist
(ideas about human population)

Neo-Malthusian

Marxist

Write a summary statement.

Learning Activity 2.2: From Census to Demographic Data: Manipulating the Numbers

The following section has relevant information combined with the learning activity, so it is important that you complete the activity **and** give yourself enough time to read everything carefully.

Once the raw population data has been collected, it needs to be sorted. Table 2.1 lists the population of countries, continents, and sub-continents.

1. Fill in the population information for each of the following areas using the information found in Table 2.1. You need to combine data information. For example, to calculate the population of North America, you need to total the populations of Canada, the United States, and Mexico.
 - North America *total of first 3 countries in table 2.1: 460,998,000*
 - Central America *154,298,000*
 - South America *396,391,000*
 - Europe *727,083,000*
 - Africa *1,012,957,000*
 - Australia and New Zealand (Oceania) *25,770,000*
 - East Asia *1,562,109,000*
 - West Asia *233,667,000*
 - South Asia *2,323,853,000*
- a) Using a blank copy of the World Map attached (Appendix C), write in the general population for each of the nine areas listed above.
- b) Colour the area on the map using specific colours to indicate population levels. Keep in mind that the purpose of the exercise is to be able to visualize any patterns that might exist. Use a key to indicate what each colour means (e.g., different shades of red as the population density increases).
- c) Once you have transferred the information, write down three patterns that you notice on the map.

The summary should include remarks about the huge proportion of people found in Asia – the population being about 10 times that of North America or South America, and over four times that of Africa, and how few people are found in Oceania.



Note: The main sources for global population numbers tend to vary, depending on the source of the primary data (CIA Factbook versus the United Nations). For this reason, the numbers you find may not be the same as the numbers in this course, but they should be similar.

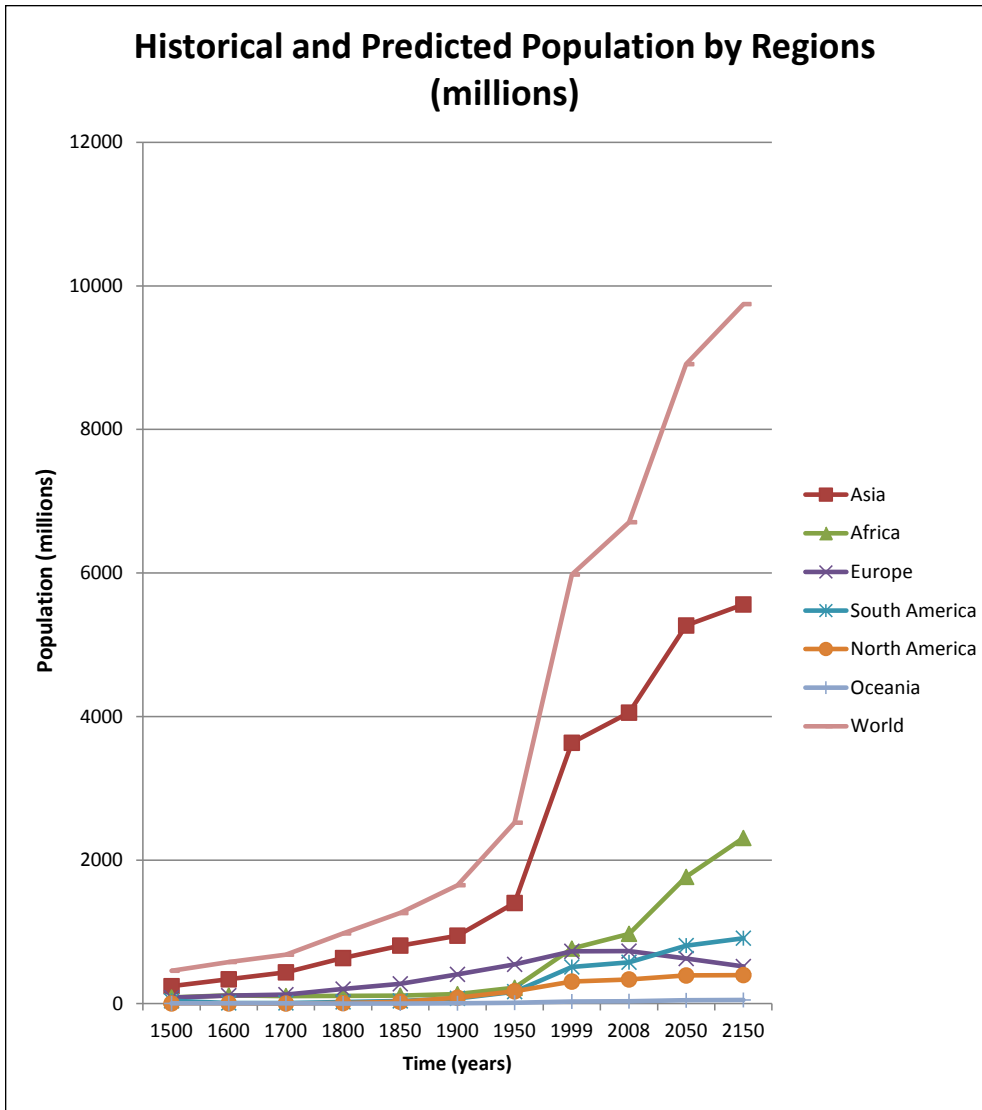
Region/Country	Population
Canada	34,031,000 (2011, est.)
United States	313,232,000 (2011, est.)
Mexico	113,725,000 (2011, est.)
Central America	154,298,000 (2010)
Caribbean	36,314,000 (2010)
South America	396,391,000 (2010)
Eastern Europe	292,082,000 (2010)
Western Europe	190,106,000 (2010)
Northern Europe	97,547,000 (2010)
Southern Europe	147,348,000 (2010)
Oceania (Australia and New Zealand)	25,770,000 (2010)
Eastern Asia	1,562,109,000 (2010)
South-central Asia	1,717,434,000 (2010)
South-eastern Asia	606,419,000 (2010)
Western Asia	233,667,000 (2010)
Eastern Africa	325,803,000 (2010)
Middle Africa	125,165,000 (2010)
Northern Africa	206,208,000 (2010)
Southern Africa	56,541,000 (2010)
Western Africa	299,240,000 (2010)

The next part of the activity takes the process of investigation one step further. You know the approximate current population figures throughout the world, now take a look back in time to see how these figures have changed over the years and, based on population trends, how they will change in the future.

Region	1500	1600	1700	1800	1850	1900	1950	1999	2008	2050	2150
Asia	243	339	436	635	809	947	1,402	3,634	4,054	5,268	5,561
Africa	86	114	106	107	111	133	221	767	973	1,766	2,308
Europe	84	111	125	203	276	408	547	729	732	628	517
South America (including the Caribbean)	39	10	10	24	38	74	167	511	577	809	912
North America	3	3	2	7	26	82	172	307	337	392	398
Oceania	3	3	3	2	2	6	13	30	34	46	51
World	458	580	682	978	1,262	1,650	2,521	5,978	6,707	8,909	9,746

The information for this table was compiled from a variety of sources, including: www.geohive.com/earth/pop_region.aspx, http://en.wikipedia.org/wiki/World_population, the United Nations population data reports (1999–2010), the CIA World Factbooks <http://www.cia.gov/library/publications/the-world-factbook/>, and www.globalchange.umich.edu/globalchange2/current/lectures/human_pop/human_pop.html.

- At first glance, Table 2.2 might seem confusing. Data charts that consist only of figures are often difficult to read and interpret. This is why it is important to represent data in a variety of different forms. The information in the chart can be translated to a line graph, which shows the increase (or decrease) of population over time in a more visual format.



Analyze the graph and answer the following:

- a) State the main points that emerge from the graph, keeping in mind
- the rate of population change during different periods
 - the steeper the slope to the upper right, the faster the population increase
 - that population decrease lines would slope downward and to the right

The chief points that emerge from the graph: rapid increase in North America during and after the 1950s, in Oceania in the late 1800s (hard to tell unless the log graph was used), in the 1900s for Latin America and since 1940 for Africa and Asia, with steady increase in Europe, with a slight decrease since 1999. There is an overall decline in the rate of increase, globally, since the early 2000s.

- b) Give possible reasons for
- the differences, as shown between the slopes of the different regional lines
 - the changes that have occurred over time as shown by the slopes of the individual lines

Possible reasons for

- i) *the differences in slope of the lines—immigration, changes in death rates and higher/lower birth rates, more/less habitable regions, higher/lower initial populations*
 - ii) *the changes that have occurred over time for each of the lines—immigration, changes in death rates and remaining high birth rates, natural disasters or conflict*
- c) Explain your understanding of how this fits in with what you have learned in this course so far.

Answers will vary.

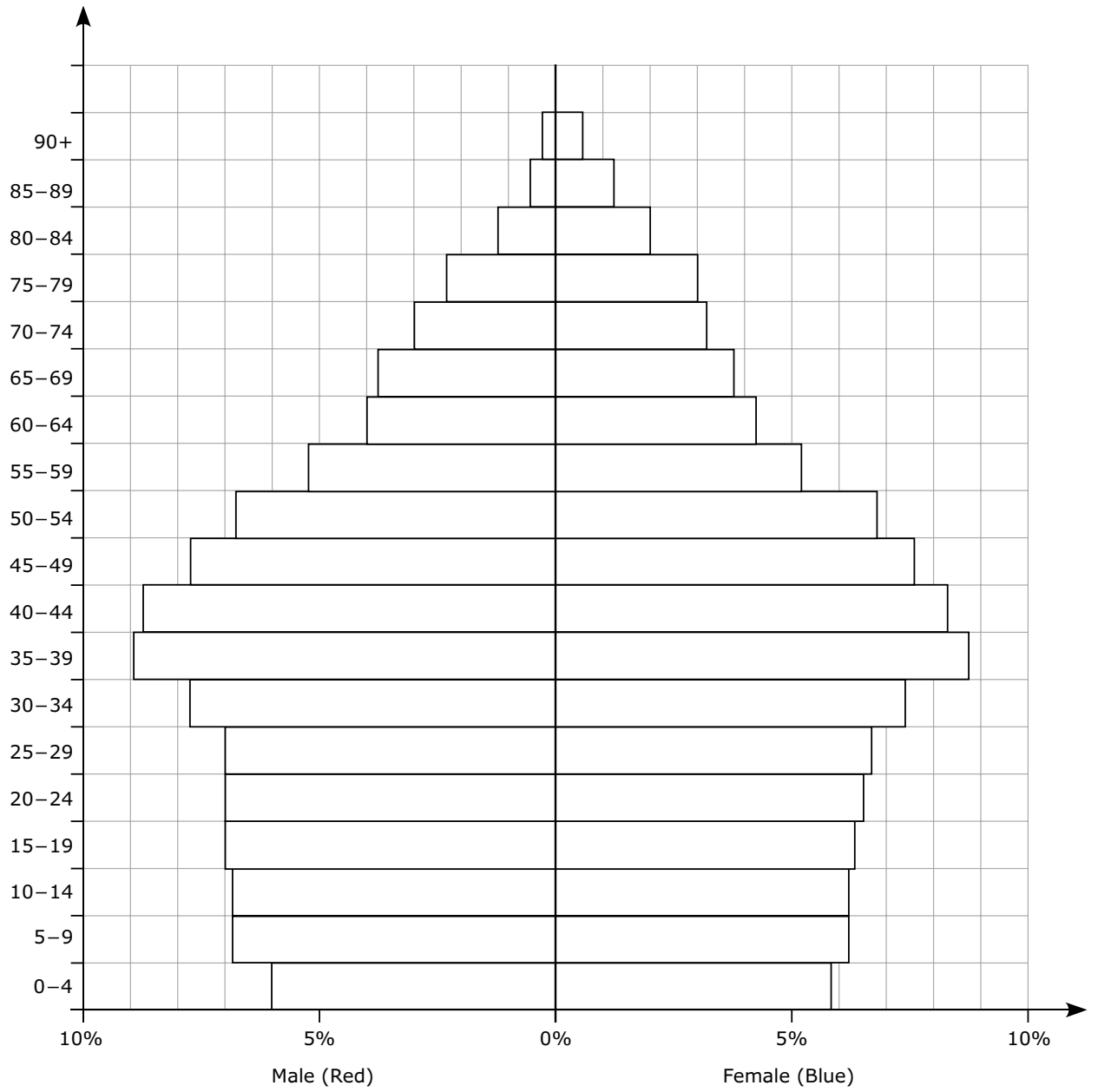
Learning Activity 2.3: Population Pyramid

For this learning activity, create a population pyramid based on the information in Table 2.3. The outline of the population pyramid is provided on the following page; you only need to fill it in. Keep the following points in mind:

- The *y*-axis (age, advancing in five-year intervals) is provided.
- The *x*-axis (percentage of males versus percentage of females) needs to be plotted.
- The line in the center represents the divide between the male (left) and female (right) sides of the pyramid.
- Use the information in the table below to fill in the pyramid and then choose two different colours to shade in the pyramid.
- Remember to include a legend and title.

Age	% Male	% Female
90+	0.4	1.0
85-89	0.9	1.6
80-84	1.8	2.4
75-79	2.4	2.9
70-74	3.3	3.6
65-69	4.6	4.8
60-64	5.8	6.0
55-59	6.9	7.0
50-54	7.8	7.7
45-49	7.8	7.6
40-44	6.9	6.7
35-39	6.7	6.6
30-34	7.0	6.8
25-29	7.2	6.9
20-24	7.2	6.8
15-19	6.4	6.0
10-14	5.6	5.2
5-9	5.5	5.1
0-4	5.7	5.3

Source: Statistics Canada. www.statcan.gc.ca/tables-tableaux/sum-som/I01/cst01/demo10a-eng.htm. 2012.

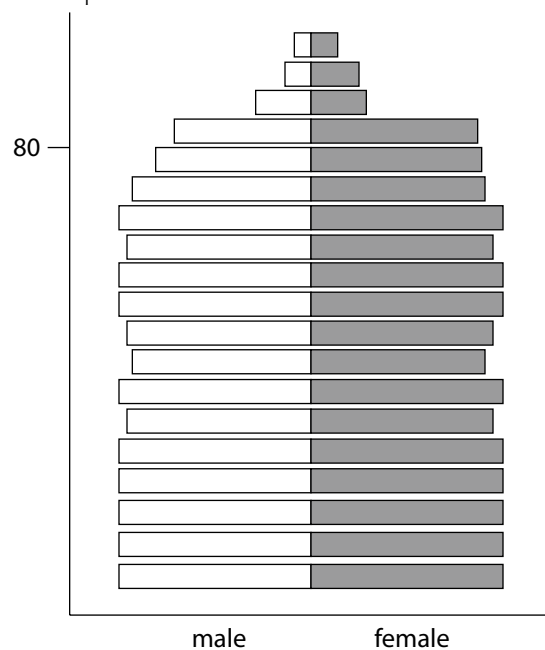


Learning Activity 2.4: Demographic Transition

1. For each of the following brief scenarios, draw a rough sketch of the population pyramid for that country, according to the description.
 - a) Country A has a fertility rate of 2.1 children per woman and has had that same fertility rate for the past 100 years. Life expectancy is 85 years for women and 82 years for men.

The population pyramid the student draws should have about the same width all the way from the base to the 80 year point... at that point, there should be slightly more women than men and the top of the pyramid should be quite blunt, not extending much past 90 years.

Example:

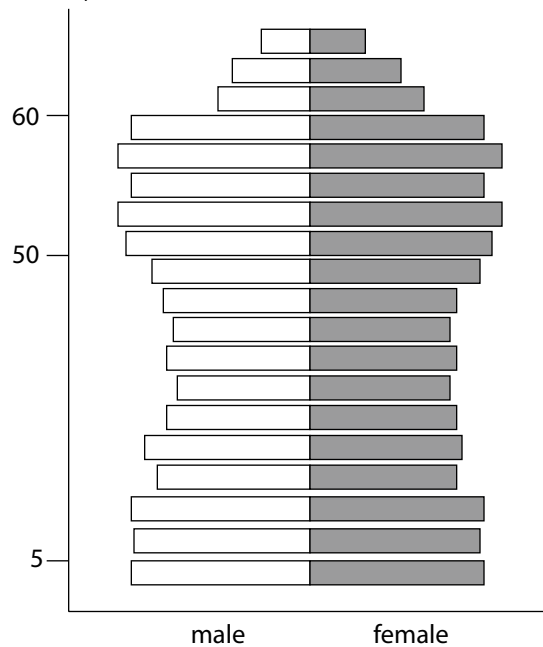


- Fertility rate stable at 2.1
- Life expectancy: 85 (female), 82 (men)
- Roughly same width from base to peak
- Slightly more women than men in last few rows

- b) Country B is very highly developed (human development index of 0.94), with a recent increase in the birth rate. Between 50 and 60 years ago, the birth rate was quite high (3 babies per woman), but it dropped to about 1.5 children per woman until the recent increase 5 years ago, when the birth rate increased to 2.5 children per woman.

This population pyramid should look a bit like an hour glass, with a large bulge at the top between the 50-60 year old cohorts, shrinking toward the bottom, with a somewhat wider base at the youngest cohort, but not quite as wide as the 50-60 year olds.

Example:

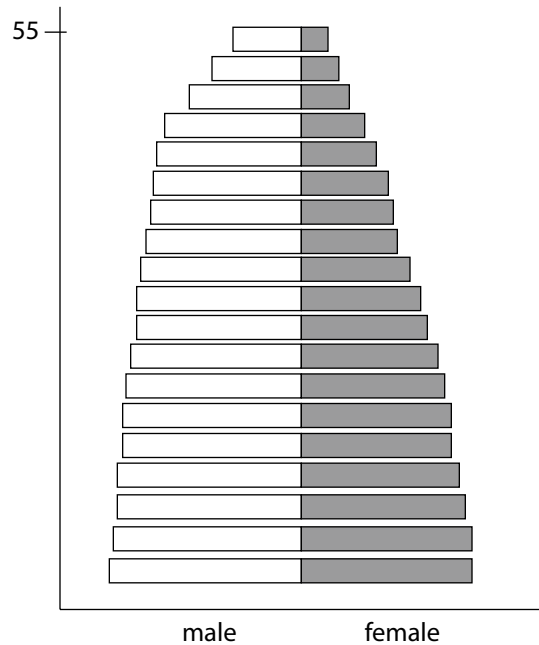


- Largest bulge from 50 to 60 cohort (high birth rate)
- Shrinkage all the way until youngest cohort (low birth rate)
- Wider base but not as wide as top of pyramid

- c) Country C has experienced long-term, catastrophic political conflict combined with severe environmental degradation, resulting in damage to the reproductive cycle of humans. The life expectancy is around 55 years, and the birth rate is around 6 children per woman; however, the environmental damage affects gender, resulting in a gender gap of about 121 male births for every 100 female births.

Students should show a classic stage 1 population pyramid with a wide base, and pointed top, with noticeably more population on the male side of the pyramid.

Example:



- Stage 1 development population pyramid
- Wide base equals a high birth rate
- Average life expectancy only 55 years
- Gender gap: more boys than girls

Learning Activity 2.5: Global Human Distribution

- Name four conditions that account for four-fifths of the world's land area having little or no human habitation.
 - the climate is too cold for agriculture
 - the climate is too dry for agriculture
 - the landscape is too high or too steep for agriculture
 - the soils are too poor for agriculture (tropical rainforests, temperate coniferous forests)
 - highly seasonal rainfall
 - infectious disease carrying insects

- With regard to basic human needs, in which situation is a high-density population more likely to be a problem—a rural area dependent on agriculture or an urban area dependent on manufacturing and services? Why?

The situation that is more likely to have the problem is the rural area dependent on agriculture because there may not be enough food produced or stored to feed the high density population, especially if the crops that season are poor. In an urban environment, transportation supply chains that can handle the needs of a dense population are usually in place, and they are not so dependent on local growing conditions.

- Take a close look at Table 2.5: Top Ten Largest Urban Agglomerations in 1975, 2000, and 2005. For each of the three years shown, how many cities are located in North America? South America? Europe? Southeast Asia?

Year	North America	South America	Europe	Southeast Asia
1975	New York, Mexico City, Los Angeles	Buenos Aires, São Paulo	Moscow, Paris	Calcutta, Osaka-Kobe, Tokyo
2000	New York, Mexico City, Los Angeles	Buenos Aires, São Paulo		Tokyo, Bombay, Shanghai, Calcutta, Delhi
2025	New York, Mexico City	São Paulo		Tokyo, Bombay, Delhi, Dhaka, Calcutta, Shanghai, Karachi

4. Once you have completed the table in Question 3, what patterns or changes do you see?

North America went from having 3 of the top 10 cities to only two. South America has only 1 of the top 10 cities. Europe has nothing from before 2000 onward. Southeast Asia went from having 3 of the top 10 cities to 7 of the top 10 cities. India alone has 3 of the top 10 cities. Tokyo has remained the most populous city over the 50 year span. The 10th largest city increased by 11.5 million people.

5. Thinking back to the demographic transition model, briefly describe what is happening to the population at each stage and indicate the level of development for a country at each stage (least developed to very developed).

It depends on what stage in the demographic transition process a country is in.

- *Stage 1 means low population growth due to the high birth rate and the almost as high death rate. (Least developed countries)*
- *Stage 2 is where the death rate drops, usually due to an improvement in farming production combined with an increase in basic sanitation and health care, but the birth rate remains high resulting in a large increase in population. (Developing countries)*
- *Stage 3 is characterized by a drop in both the birth and death rates (births still outnumbering deaths) which results in a slowing of the population increase. (More developed countries)*
- *Stage 4 is characterized by zero population growth where the birth and death rates are equal. (Developed countries)*
- *Stage 5 is characterized by slow population growth where the birth rate begins to increase. (Very developed countries)*

Learning Activity 2.6: Immigration Policies



Completing the learning activities in this course will help you prepare for your examinations. If you have any questions or concerns about any activity, do not hesitate to ask your learning partner for assistance or to contact your tutor/marker.

Migration is important in understanding geography because it involves the movement of people around the world. This physical relocation of people also influences the diffusion of cultures and the economic integration between countries, and brings about social change. Accepting change on such a large scale can be especially challenging for some people. There have been many instances where immigration has been the cause of tension, fighting, and hostility between different groups of people.

Following are two scenarios in which migration, and the related issues of diversification and pluralism, have been the cause of social unrest in traditionally homogenous societies. Once you have examined the two scenarios, complete the activity that follows.



Secularism is a political and social philosophy that rejects all forms of religious faith or worship (see <http://dictionary.reference.com/browse/secularism?s=t>).

Scenario A

In 2013, the Premier of Québec, Pauline Marois, proposed the Charter of Québec Values. The overarching aim of the legislation was to enforce neutrality in a secular public sector. The most controversial aspect of the legislation was the ban on wearing any conspicuous (easily visible) religious symbols by public service employees in the workplace. Examples of religious symbols that fell into this category were the hijab, the turban, the crucifix, and the kippah. If passed, this legislation would affect people in a variety of professions, such as civil servants, teachers, healthcare workers, police officers, prison guards, and judges. There was heated debate around the issue. On the one hand, many people believed that the legislation was discriminatory and infringed on the constitutional right of individuals to publicly express their religious identity. On the other hand, the Parti Québécois and pro-charter advocates insisted that the legislation served to promote a national Québécois identity that was free from religious values. They felt that secularism benefitted all citizens.

Scenario B

In 1905, France passed the French law on the Separation of the Churches and the State. In French, the term used to describe secularism is *laïcité*. The primary purpose of this law was to separate public from private life and to ensure that state-funded education remained free from religious

influence. However, in the last century, there have been radical changes in the demographics in France due to the influx of immigrants, which has greatly increased the ethnic diversity and pluralism of religions in the country. The laws in France did not prohibit citizens from privately practising religion; however, in 2004, a legal ban was authorized that prohibited the wearing of religious apparel in public schools, such as the hijab, the turban, and the Star of David. Many French citizens expressed the concern that these policies supported systemic racism and discrimination. Debate in France ranged from those advocating pro-reform of the secularist policies and an acceptance of religious pluralism to those advocating no reform for any form of public religious display.

1. After reading these two scenarios about two contentious policies, **discuss** your thoughts about these policies with your learning partner.
2. **Write** half a page (about 250 words) about the issues surrounding immigration policies of Québec and France. Choose **one** of the following prompts to get you started:
 - Do you think that Québec's proposed Charter of Values was biased? If yes, why was it problematic? If no, why was there a strong reaction against it?
 - The majority of immigrants to France originate from northern Africa and countries that were former colonies of France. If you were a recent immigrant, or a second or third generation African-French, what would be your reaction to the apparent racism experienced as a result of the secularist policies?

Answers will vary.

3. What similarities and differences can you see between the policy implemented in France and the policy proposed in Québec?
 - Combine your thoughts and opinion with the response of your learning partner.

One similarity is that the wearing of overt religious symbols is prohibited in both situations. A difference is that in France they are also banned in public schools, and not just in the public service workplace like in Québec. Both governments in Québec and France are trying to promote secularism as a solution to problems that have historically been caused by a strong religious influence over government. Advocates of secularism believe that it promotes equality among all people, whereas opponents believe that secularist policies create unnecessary division between people of different religious faiths. Racism and discrimination towards minority immigrants has been a concern in both cases.

Learning Activity 2.7: Population, Economics, and the Government

Answer the following true or false questions. If the statement is false, rewrite it to make it true.

1. Governments that influence and educate their people about population control see very little change in demographics over time.
False. These governments see good results but over long periods of time.
2. Imposing population controls is effective in the short term, but can have negative long-term effects such as gender imbalances.
True.
3. The economy and the environment are independent of each other.
False. They are both related to the health of each other, although the health of the environment has often been sacrificed for the short-term health of the economy.
4. Sustainable means to be maintained at a certain rate or level regarding development, exploitation, or agriculture.
True.
5. Economic factors that are included in the calculation of the HDI include access to raw materials plus the availability of consumer goods.
False. The economic factor that the HDI takes into consideration is a country's per capita GNI.
6. Being in an economic recession means having negative growth in three consecutive quarters.
False. The negative growth need only happen in two consecutive quarters.
7. Humans are great problem solvers—our ingenuity gives us hope in the face of the negative consequences of possible climate change.
True.

Answer the following short-answer questions.

8. Give two examples of environmental rules aimed at maintaining a balance between nature and development.

Limiting the motor vehicle exhaust emissions, implementing regulations regarding lagoons on a hog operation, completing environmental impact statements before developing an area of wilderness, and putting in place harvest limits on hunting and fishing, or forestry.

9. Name two concerns that countries have regarding the potential drop in their population.

- *If the population drops, will the economic growth also drop?*
- *At what point during the lessening of population will the economy start to shrink?*
- *Will a shrinking population (and perhaps economy) mean that the GNI will shrink?*
- *With the size of the aging population increasing, will that mean increased social costs that will perhaps further reduce the GNI?*

10. Research the three global conferences discussed in this lesson that were aimed at promoting sustainability initiatives and describe the mandate addressed at each conference.

- *1992 Earth Summit in Brazil*
 - *relationship between economics, science and the environment in a political context*
 - *sustainable development*
 - *conservation of the Amazon rainforest*
- *1997 Kyoto Protocol in Japan*
 - *obligations on industrialized countries to reduce their greenhouse gas emissions*
- *2009 Copenhagen Climate Conference*
 - *laying the framework for climate change mitigation past 2012*

Learning Activity 2.8: Quality of Life

1. Think back to what life was like for your great grandparents, or people of their generation (young adults in the 1930s and 1940s). Chances are they lived in a rural environment and worked fairly close to home. Think about their standard of living compared to what you have now (do some research, talk to some elders in your community). If you were suddenly transported back in time, what three “quality-of-life” indicators would you miss the most?

Answers will vary, things missed the most could be anything from flush toilets, to mobile phones, to good highways and fast transportation, to the internet, televisions or computers.

2. Imagine you were suddenly transported to a poor community in a foreign city, such as Kolkata, India. After the initial shock, you realize that you can speak the local language, but you are unable to read or write. Will being illiterate in this environment have any effect on your ability to survive? What about your ability to take advantage of any employment opportunities?

Answers will vary. Basic survival probably won't be affected by whether a person is literate or not, but certainly if a person wants to better their situation, having the ability to read and write in the local language will offer opportunities for employment and education.

Learning Activity 2.9: Economic Environments

1. What are some of the impacts that water degradation can have on an area?

The impact of water degradation can be felt in the fisheries, on agriculture, on health (contamination causing sicknesses), on the tourism industry in coastal areas, on biodiversity (wetlands) and on groundwater exploitation (lowered water table).

2. What kinds of policy recommendations were made for the country of Jordan to reduce air pollution?

Policy recommendations included improving the air quality monitoring system, phasing out use of high-sulfur diesel fuel, reducing the number of older vehicles, and designing long-term traffic models that ease congestion in conjunction with a nation-wide, long-term plan to reduce air pollution.

3. What is the difference between deforestation and degradation?

Deforestation is the long-term loss of forest cover and degradation is the reduction of productivity within a forested area.

4. How is the cost of land degradation calculated?

The cost of land degradation is calculated in three steps.

- a) estimating the amount of degraded land in an area
- b) estimating how much production has dropped
- c) estimating the dollar value of the 'missing' product

5. What damage costs were accounted for when determining the cost of the oil spill during the 2006 Lebanon/Israeli conflict?

Damage costs caused by the oil spill included the cost of the oil itself, the carbon input to the atmosphere (much of the oil burned), lost business to local tourism such as restaurants, hotels, and beach resorts, and damage to the local fishing industry and nature/heritage sites. There were also the cleanup and monitoring expenses.

GRADE 12 WORLD GEOGRAPHY: A HUMAN PERSPECTIVE (40S)

Module 3 World Food Supply: Production and Distribution



Note: Module 3 contains a number of images that are best viewed in colour. Colour versions of these images in PDF format are available in the learning management system (LMS). Students are issued a username and password at the time of registration. If Internet access is unavailable, a CD with these images is available upon request from the Distance Learning Unit.

MODULE 3: WORLD FOOD SUPPLY: PRODUCTION AND DISTRIBUTION

Introduction

In Module 2, you read about standard of living and quality of life. One of the more important factors with regard to quality of life is food and nutrition. This module takes a closer look at how food and nutrition are obtained.

A geographer is always concerned with the *where*. In the case of food supply, this refers to the location of the raw products. Geographers working in this field of research study where food is produced, where it is distributed, where there are shortages, and how production and distribution issues are (and could be) handled.

Countries throughout the developing world often experience crises related to food production and distribution, and it is important to understand why and how these crises develop. Many recurring food-shortage situations are the result of disruptions both in the normal food-producing patterns and in the distribution networks. This often is due to economic troubles as well as local conflicts. Any environmental stress makes matters worse and becomes another contributing factor to an existing conflict.

The purpose of this module is to explore existing methods for increasing food production and distribution, for improving the quality of life for marginalized peoples, and for increasing the pressure on world leaders to address environmental sustainability and other challenges confronting both the developed and less-developed countries.

Reminders

- Let the computer graphics in the margins guide you through the module.
- Whenever you encounter difficulties, contact your tutor/marker. Do not let a roadblock keep you from working towards the completion of the course.

The main focus questions for this module are

Lesson 1	Lesson 2	Lesson 3	Lesson 4
1. What is the primary purpose of agriculture?	1. What are the major problems facing farmers in developing countries? In developed countries?	1. What is aquaculture?	1. What impact does technological development have in terms of alternate methods of producing food?
2. Where is agriculture practised?	2. What methods have been or are being tried to increase agricultural food production? With what success?	2. What is the role of fishing and aquaculture as a way to supply food for both developed and developing countries?	2. To what extent will these sources be able to supply food for an increasing population?
3. Why is there sometimes an insufficient food supply in developing countries, but an overabundance in developed countries?		3. To what extent can aquaculture supply food for an increasing world population?	3. What conclusions can be drawn from present trends in food production and distribution, plus what happens if the population growth continues?
4. What are the implications of these disparities?			4. How can principles of sustainable development be honoured when producing and distributing food?

The information in this course may eventually become dated, so it is important that you check on current events frequently. While working through this module, keep your eye on print media, television, and the Internet for reports about world food situations. Keep track of where they occur for use later in this module. Magazines, such as *The Economist*, *Macleans*, and *National Geographic*, also deal with these topics.

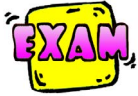
As already mentioned, with the modern connected “global village” making the world smaller, it is important that you are always aware of distant events and how they might impact your own situation and vice versa.

Assignments in Module 3

When you have completed the assignments for Module 3, submit your completed assignments to the Distance Learning Unit either by mail or electronically through the learning management system (LMS). The staff will forward your work to your tutor/marker.

Lesson	Assignment	Marks
1	Assignment 3.1: Global Agricultural Production	34
2	Assignment 3.2: Food Security Investigation	35
3	Assignment 3.3: Article Analysis	20

Writing Your Midterm Examination



You will write the midterm examination when you have completed Module 3 of this course. The midterm examination is based on Modules 1 to 3, and is worth 25 percent of your final mark in the course. To do well on the midterm examination, you should review all the work you complete in Modules 1 to 3, including all the learning activities and assignments. You will write the midterm examination under supervision.

Notes

LESSON 1: AGRICULTURE

Lesson Focus

By the end of this lesson, you will

- Learn about the history and purpose of agriculture and answer the question, “Where is agriculture practiced?”
- Become familiar with the general distribution of major crops and answer the question, “What local choices and situations affect production?”
- Learn the reasons why food is unfairly distributed around the globe as well as the implications of this unequal distribution.

Introduction

In this first lesson of Module 3, you will review the main purpose of agriculture and the issues surrounding the global food supply, including the fact that food production in developed nations is much higher than food production in developing nations.

The History and Purpose of Agriculture

Before there was agriculture, people lived a nomadic lifestyle that involved hunting and gathering activities. Then, there was a shift from that nomadic lifestyle to a more settled existence, where people stayed in one area and established an agricultural system based on the domestication of plants and animals. Initially, the purpose of agriculture was to ensure a stable food supply from year to year.

To the people living at the time, it was a slow process that took generations to develop. From today’s vantage point, it was a radical change—a revolution. The food supply was no longer dependent upon the migration patterns of wild animals or a hunter’s skill. Agriculture allowed whole communities to settle in an area where the land could provide an abundance of easily obtained and storable food. **Agricultural production** refers to the volume/ amount of agricultural products produced in a given area.



Pastoral living started with herders relying on the domestication of animals such as cattle, horses, sheep, and goats. Those who raised crops and also kept livestock became known as mixed farmers. For many, it was a matter of subsistence living, raising only enough food and goods to look after their own needs.



Commercial farming is the large-scale production of crops for sale, intended for widespread distribution to wholesalers or retail outlets. With the emphasis on selling a product for money, commercial farming was a development that came much later with the Industrial Revolution (wheat growing, cattle ranching, tropical crops). It required considerable start-up investment and enough cash to keep the business going. It became part of the cash economy. Since this type of agriculture also required large markets, it was important that good transportation networks were developed and maintained.

Today, subsistence farmers (living largely in developing nations) are becoming part of the larger cash economies. This is not always a positive turn of events, especially when the farmers are pressured into these changes. New varieties of seeds and fertilizer are sold to farmers in developing countries and these farmers are encouraged to produce crops for markets in developed countries. In many places, the reallocation of land for cash crops means that there is less land for food crops for the local people. This has contributed to the food shortage problems in those areas.

The purpose of modern commercial agriculture goes beyond providing a stable food supply. Agribusiness encompasses an entire subsection of the economy and provides income to a variety of industries, including fertilizer and pesticide companies, farm equipment companies, agricultural education and research institutions, and the food-processing industry.

The Location of Agricultural Production

Think back to the geography of Earth and the discussion about land use presented in Module 2. You learned that the amount of land available for agricultural production is a very small portion of the total land area.

In fact, the Food and Agriculture Organization of the United Nations (FAO) estimates that more than three-quarters of Earth's land surface is unsuitable for growing rain-fed crops (raising crops without irrigation). The remainder of arable land is subject to limited soil, poor terrain (steep areas), and/or climate limitations. On average, only about **3.5%** of Earth's surface is suitable for agriculture without any physical constraints. **Arable land** is land that is



Source: Annenberg Learner. "Unit 7: Agriculture//Section 2: Earth's Land Resources." *The Habitable Planet*. <http://learner.org/courses/envsci/unit/text.php?unit=7&secNum=2>. Used in accordance with fair dealing guidelines.



land that is capable of sustaining farming and cultivating practices, whereas **potential arable land** includes land presently used for other purposes, such as grassland, forests, protected areas, buildings, and infrastructure. In most cases, this land is not available for agricultural practices.

The data found in Table 3.1 below provide some idea of the distribution of unsuitable agricultural land, potential arable land, and actual arable land within the seven continental regions.

Region	Unsuitable Agricultural Area (km²)	Potential Arable Land (km²)	Used Arable Land (1994) (km²)	Total Region Population
Asia and Pacific	28 682	7779.35	4777.06	2,073,805,000
Europe	6 806	3842.20	2137.91	654,955,000
North Africa and Near East	11 545	496.32	715.80	290,860,000
North America (Canada and USA only)	19 295	4796.32	2332.76	285,342,000
North Asia, east of Urals	20 759	2977.46	1755.40	201,270,000
South and Central America	20 541	10 284.73	1433.52	372,897,000
Sub-Saharan Africa	24 238	11 098.51	1576.08	572,736,000

Data Source: Central Intelligence Agency. *CIA World Factbook*.
<https://www.cia.gov/library/publications/the-world-factbook/>.

The pie charts that follow were constructed based on the data in Table 3.1 and are a good visual representation of the distribution of land throughout the world.

Looking at the charts, ask yourself what it might mean for a continent with a large population to be dependent upon a small area of arable land? What social, economic, or political problems could result? What advantage might a continent with a relatively stable population and large areas of arable land have on a global scale? Are these benefits or drawbacks consistent throughout the countries located in each continent? It is important to think critically and to analyze the information, rather than just take the numbers and figures at face value.

Figure 3.1A

ASIA AND PACIFIC REGION

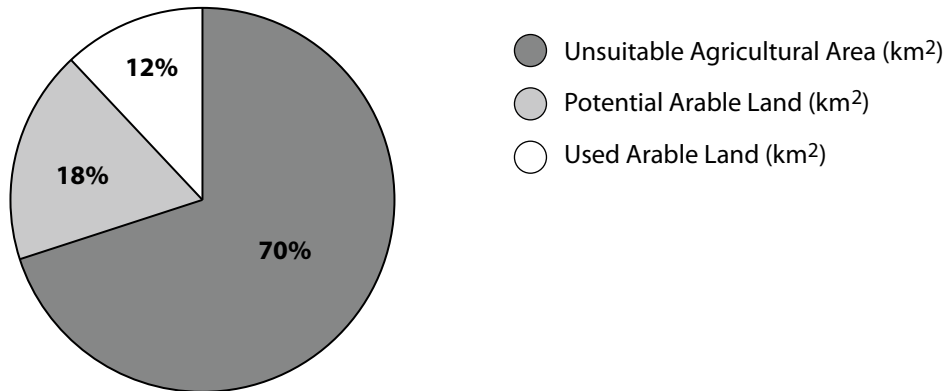


Figure 3.1B

EUROPE

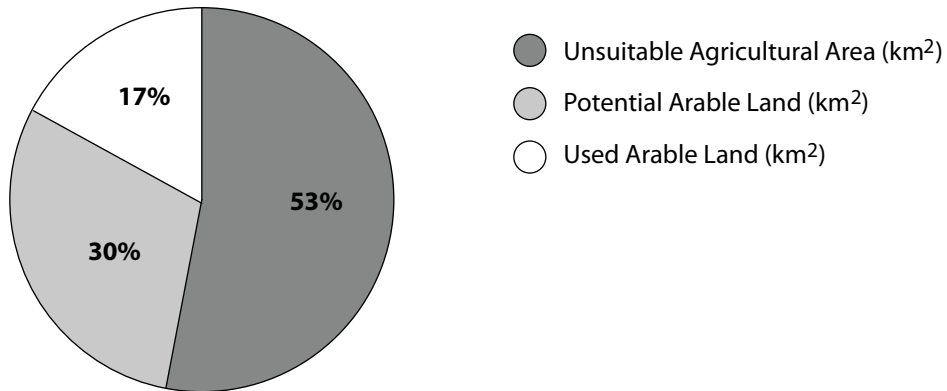


Figure 3.1C

NORTH AFRICA AND NEAR EAST

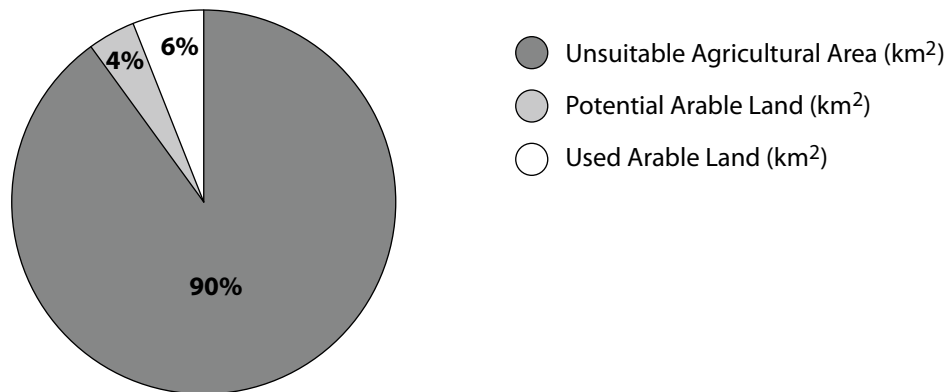


Figure 3.1D NORTH AMERICA

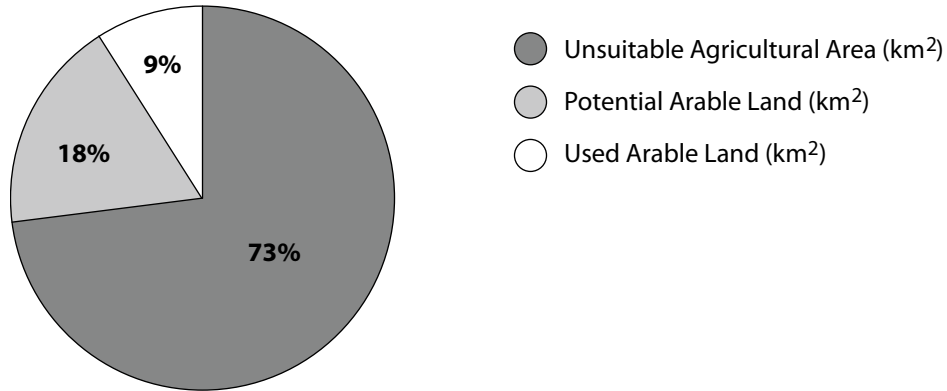


Figure 3.1E NORTH ASIA

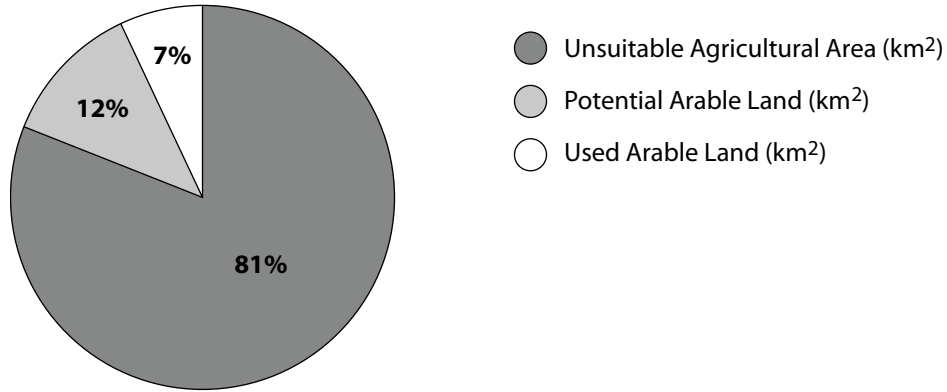


Figure 3.1F SOUTH AND CENTRAL AMERICA

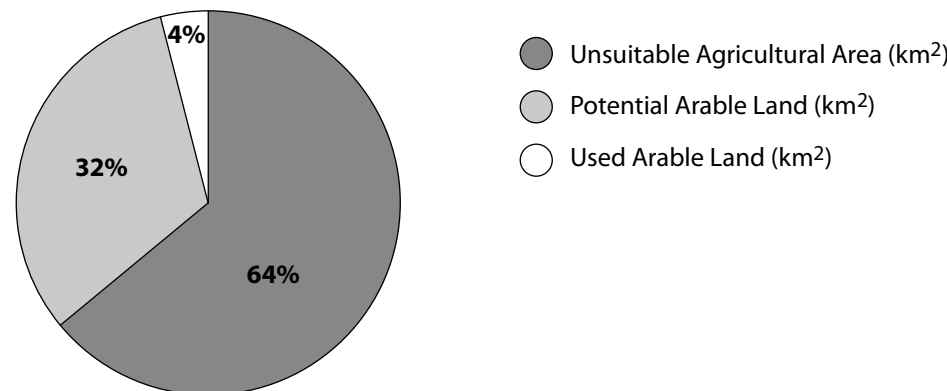
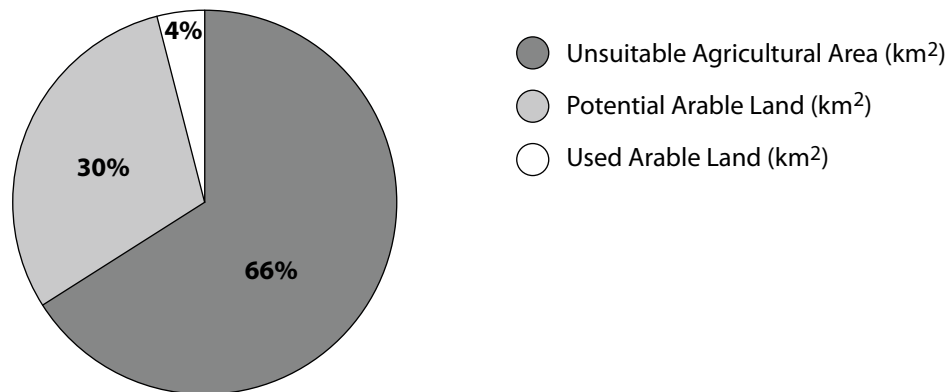


Figure 3.1G

SUB-SAHARAN AFRICA



Learning Activity 3.1

Unsuitable, Potential, and Used Land Area

As mentioned previously, it is important to think critically about the information that is presented and it is your responsibility to back up your conclusions with some degree of research.

1. Study the pie charts and Table 3.1, comparing the unsuitable area, potential arable land area, and used arable land area of the seven continental regions. Then, **answer** the following reflection and critical-thinking questions:
 - a) Which continental region has the lowest percentage of used arable land? How many people does this continent support?
 - b) Which continental region has the largest population? What is the percentage of unsuitable agricultural land? Is this continent developed or developing?
 - c) Which continental region has the largest percentage of unsuitable agricultural land area? Why do you think this is?
 - d) Which continental region has the greatest percentage of used arable land and potential arable land combined? Does this percentage, along with the size of the population, reflect its level of development?
 - e) The unsuitable agricultural land in North America is estimated to be roughly 73% and yet it is one of the most developed continents with relatively few problems concerning food production and distribution. Why do you think this is? Explain why North America has few concerns regarding food production and distribution.

continued

Learning Activity 3.1: Unsuitable, Potential, and Used Land Area (continued)

2. **Calculate and record** the population density of the continents in the table below.

The used arable land column has been filled in for you, converted from km² to ha² (1 km² = 100 ha). Use the numbers from Table 3.1 to fill in the population column and calculate the population density by dividing the population by the used arable land. Which continent has the greatest population density? Which continent has the lowest?

Region	Used Arable Land (ha ²)	Population (persons)	Population Density (persons/ha ²)
Asia and Pacific	477706		
Europe	213791		
North Africa and near East	71580		
North America (Canada and US only)	233276		
South and Central America	143352		
Sub-Saharan Africa	157608		

General Distribution of Major Crops

The problem of unequal food distribution would be made a lot easier if most major agricultural crops could be planted regardless of climate and topography. Unfortunately, that is not the case. Some climates are just better suited to growing particular crops in particular regions at particular times of the year. Regions must take advantage of the crops that can be grown because those crops could provide the individual farmers, communities, and entire countries with an advantage in the global food market. The following table gives an idea of what kinds of crops the different continental regions are capable of growing.

Crops by Continental Region	
Temperate and sub-tropical regions	<p>Wheat grows well in these regions and is the most important crop in terms of world food production, providing a staple food for over one-third of the world's population. The protein content varies between 8 and 15 percent.</p> <p>Potatoes grow successfully in cool, moist temperate regions and are a staple carbohydrate in many developed countries.</p> <p>Oats and rye are grains grown in cool, damp climates. Oats are used mainly for feeding livestock, while rye is used mainly for bread flour.</p>
North America	<p>Corn is the number one crop in the USA and the USA is the largest producer of corn, with the bulk of the corn being used as livestock feed, and the rest being used by the food-processing industry and in ethanol fuel production.</p> <p>Barley is the fourth most important cereal crop globally, and is mainly used for animal feed and malting for beer and whiskey.</p>
Tropical regions	<p>Rice is the leading crop in Asia. Wet rice cultivation allows for continuous cropping, so it supports high densities of population. Nutritionally, it is an excellent food, with a protein content between 8 and 9 percent.</p> <p>Barley is also an important food crop in parts of Asia and Ethiopia.</p> <p>Sweet potato is commonly grown in wetter tropical regions as a secondary rather than a staple food. Its chief food value is starch.</p> <p>Cassava (or manioc) is a very important food crop in Africa, being extremely resistant to drought. It has very low protein content and should be supplemented with other high protein foods.</p> <p>Sorghum and millet are tropical cereals grown in the drier parts of Africa and Asia. The grain lacks gluten and cannot be used for bread making.</p>
South America and Africa	<p>Maize, as a food for people, is a staple crop in this region. The average protein content is 10 percent.</p>
Temperate, sub-tropical, and tropical regions	<p>Pulses (soya beans, lentils, peas) are a major source of dietary protein (containing 30–50 percent protein). Soy beans also yield oil. Pulses are soil improvers as they fix nitrogen in the soil, and many varieties are drought resistant. Soy bean production in the USA is second after corn.</p>

Social Factors of Food Production

Farmers take many factors into consideration when deciding what crops to grow. In addition to the obvious factors such as climate, soil, and topography, there are less obvious factors such as cultural, social, religious, and technological considerations that can be just as influential.

There are cultures where, for religious reasons, certain foods or beverages are not allowed. For example, pork is not consumed in Israel, which has a predominantly Jewish population. Alcohol is banned on the market for Muslims living in Middle Eastern Arab countries, also for religious reasons. On the other hand, in other countries the culture embraces their excellent grape vineyards and the production of fine wines (e.g., wine-producing countries of Italy and Argentina).

Technological capabilities also differ greatly from one country to another. The more developed countries have a better infrastructure system in place to implement and support technologies to help farmers. It is clear that a farmer who has access to a tractor has an economic advantage over a farmer in a less-developed country who must make a living with only a donkey to pull his plough.

Also, many farmers have the option of deciding between operating an organically mixed farm or a monoculture farm. The decision to choose either is complicated, depending on the value the culture and the individual farmer place on the crop. In developed countries, this is a common issue and referred to as the **expected value** of the crop, which calculates the cost of production (fuel, fertilizer, and chemicals) against the projected returns after the crop is sold (profit margin), as well as the added complexities of farm subsidies.



Farm subsidies are what the government pays the farmer per unit of crop produced or for each unit of land in cultivation. On a global scale, the goal of a healthy profit margin (as opposed to providing a local food supply) is becoming more and more common. In other words, commercial agriculture is becoming more common than subsistence agriculture.



Table 3.2 below outlines the general differences in production between the developed and developing nations.

Table 3.2: Farm Characteristics		
	Developed Nations	Developing Nations
The number of farmers	Less than 5% of the population	Over 50% of the population
The size of farms	Over 500 acres	Less than 5 acres
Available technology	Machinery and computers	Hand tools and animals
Market for product	Global	Local
Budget	Hundreds of thousands of dollars	Hundreds of dollars or less
Regional population distribution	Mainly urban	Mainly rural

The reasons why these large differences exist are many, but can be directly related to the development information presented in Module 1.

For example, a country's infrastructure, economy, resources, and politics all play a part.

- **Infrastructure:** If there are no established transportation, communication, and energy infrastructures in place, such as roads, mobile phone (communication) coverage, or electricity/fuels, then surplus crops cannot be transported easily, market information cannot be shared, and machinery/appliances cannot be used dependably.
- **Economy:** If loans are not available to the farmers, then investments in farm improvements such as the purchase of labour saving devices is impossible.
- **Resources:** If there is no income from the use and sale of resources, there can be no investment in other areas such as the education of a population, which would lead to increased production.
- **Politics:** If politicians and leaders are corrupt and do nothing for the well-being of the people and the betterment of a nation, production levels will remain low.

Three Key Points of Food Production—Classifying Agriculture

There are three key points of food production even though agriculture is essentially a primary occupation, which uses the resources of the soil and climate to produce food.

1. Economics of Food Production

The first way to classify agriculture is to categorize the economics of food production. The work is first sorted according to the type of farming—arable (crops), pastoral (livestock), and mixed (check out Figure 3.2A).

- **Arable:** cultivation of cereals, vegetables, and root crops
- **Pastoral:** involves grazing animals herded and valued for their products—milk, meat, hides, and so on
- **Mixed:** a combination of the first two categories, with considerable crop area devoted to feeding the animals

A little more information on pastoral farming

The use of animals in a farming operation offers practical advantages in making a farm more productive.

Marginal land grazers, browsers, and foragers convert otherwise unusable energy into meat (e.g., camels, goats, sheep, chickens, ducks, cows, red deer, buffalo, ponies).

In better growing conditions, intermediate grazers use pasture, crop residues, and stubble (e.g., pigs, cattle, sheep).

Grazers can use non-cropland and mobilize plant material that has no nutritional benefit for humans as an energy source. Non-grazing farm animals are fed large amounts of mixed feed to fatten them quickly, which is extremely wasteful of plant protein. High-grade feeders require intensive feeding for meat, and the use of plant protein is very inefficient. Cattle need 9 to 10 times the nutrients to produce one unit of edible energy (chickens up to 12 times).

In all cases, animal manure can be used to supplement the soil, resulting in more sustainable crop production and a reduction in chemical fertilizers for those areas where manure is used. The advantage of having the animals is that they are used for their muscle power on ploughs and as forms of transportation, as well as for their hides, wool, and other by-products.

In developed nations, meat consumption has not changed drastically over the years, but in developing nations, consumption has doubled since 1980.



2. Types of Farming

The second way to classify agriculture is by distinguishing between the types of farming: commercial, small-holding, and subsistence. **Commercial farming** is the large-scale production of crops for sale, intended for widespread distribution to wholesalers or retail outlets. **Small-holding farming** usually supports single families by providing a mixture of cash crops and subsistence farming; many organic farms are small-holding farms. **Subsistence farming** refers to self-sufficient farming where farmers produce enough to support themselves and their family and have little to no margin of profit. Commercial and subsistence farming occupy the opposite ends of the spectrum (see Figure 3.2B).

3. Factors of Production

Lastly, agriculture can be classified based on whether the factors of production—land, labour, and capital—are used intensively or extensively.

Intensive cultivation requires a large amount of labour and capital relative to land area. Labour and capital are necessary for the application of fertilizer and other insecticides and pesticides, and also for the acquisition and maintenance of farming machinery. The capital that is invested into the farming materials and machines ensures that the land is used in the most optimum way to ensure that productivity increases and, as a result, the profitability of the farm increases.

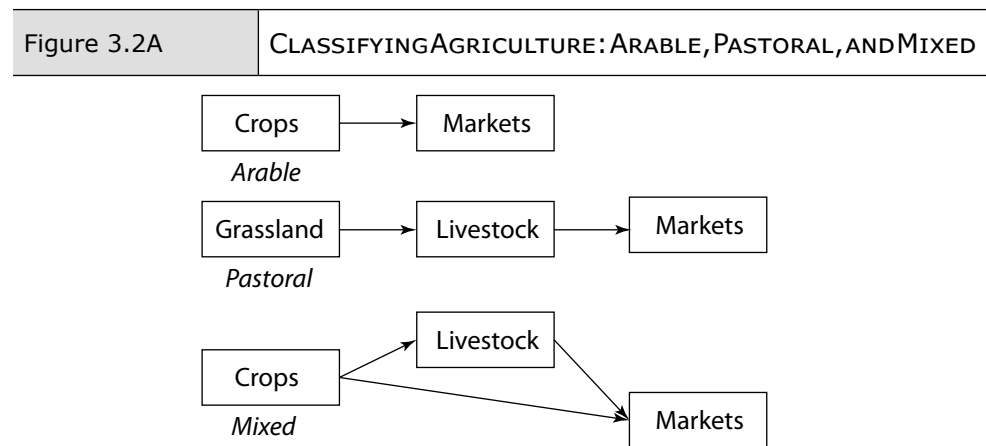
In theory, the increased productivity of the land means that intensively cultivated farms require less land than extensively cultivated farms to produce a similar profit. Of course, an incentive for farmers to expand their operations is to cover the cost of the machinery. It is important to remember that overproduction can also result in decreased product prices.

Extensive cultivation requires a small amount of labour and capital relative to land area. Crop yields are dependent on soil fertility, terrain, climate, and the availability of water. This means that a large area of land is required in order to be profitable for farmers. Extensive farms are large scale and generally only farm one type of crop (referred to as monoculture). Extensive agriculture is typically practised in areas with low population densities and at a distance from primary markets (www.ecifm.rdg.ac.uk/intensive&extensive.htm).

Acquiring land for farming is a much more difficult challenge for farmers in less-developed countries (LDCs). The majority of local food production in LDCs is grown on subsistence farms. The best agricultural land is reserved for cash crops, which are agricultural products grown specifically to be sold to the foreign market. These crops exist partly as a result of colonialism and partly as a result of the debt problem facing most LDCs. Local residents are forced to survive on low food supplies while the bulk of the agricultural input is exported to developed countries. Even though it is the LDCs that supply the raw product, it is often the developed countries that make the most profit by refining, re-packaging, and re-pricing the product and selling it back to the suppliers at an increased cost (<http://motspluriels.arts.uwa.edu.au/MP1500rs.html>).

It is no surprise that citizens of LDCs suffer from food shortages. Remember, the primary cause of hunger is poverty. Food shortages lead to increased stress on the environment and land as people try to make ends meet by overusing the arable land available to them. This situation can go from bad to worse and eventually lead to famine and the need for temporary food aid, which can be the beginning of a cycle of dependency for the country. These complex situations can become even more difficult if political conflict erupts.

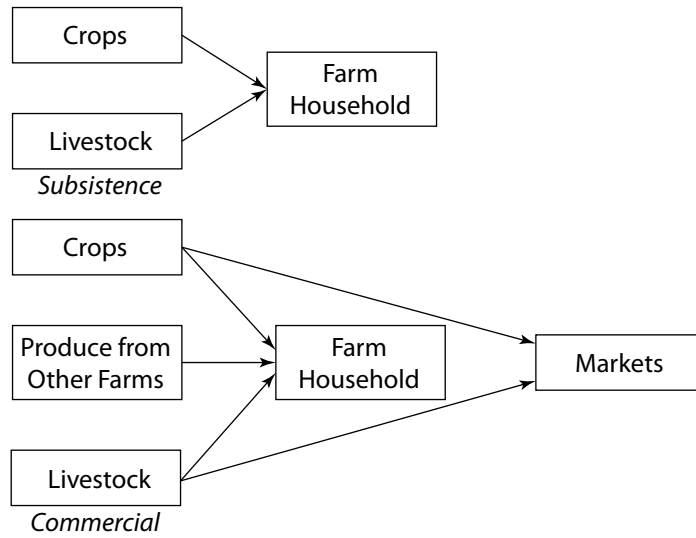
The following visual flowcharts depict the different classifications of agriculture. Inputs and outputs are shown with proportional lines (thicker = more).



Source: Briggs, K. *Human Geography Concepts and Applications*. London, UK: Hodder and Stoughton, 1982. p. 59. Reproduced in accordance with fair dealing guidelines.

Figure 3.2B

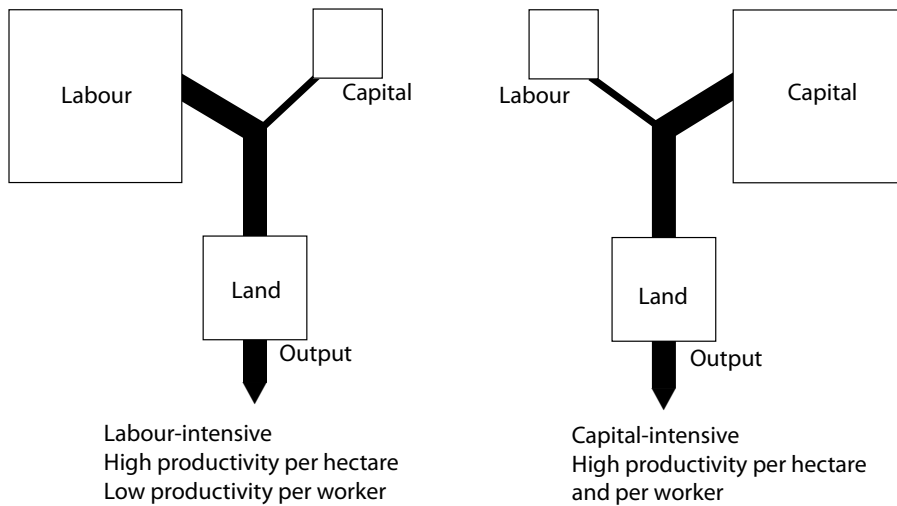
CLASSIFYING AGRICULTURE: SUBSISTENCE AND COMMERCIAL



Source: Briggs, K. *Human Geography Concepts and Applications*. London, UK: Hodder and Stoughton, 1982. p. 59. Reproduced in accordance with fair dealing guidelines.

Figure 3.2C

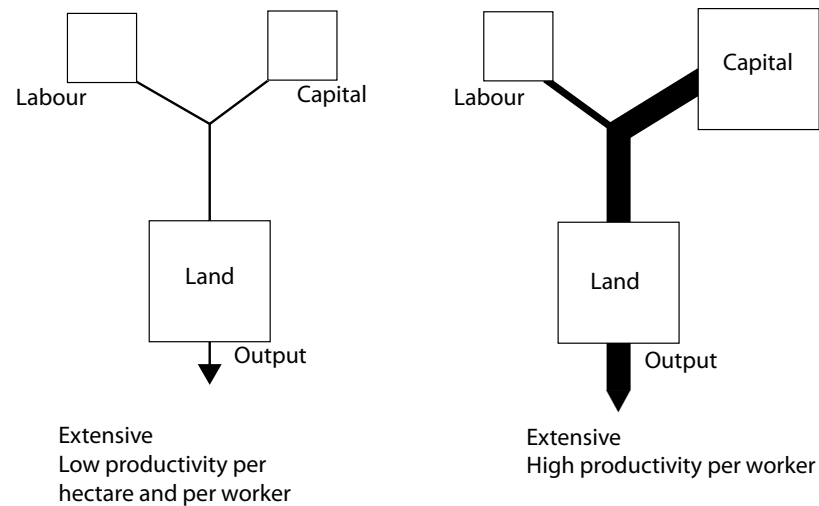
CLASSIFYING AGRICULTURE: INTENSIVE



Source: Briggs, K. *Human Geography Concepts and Applications*. London, UK: Hodder and Stoughton, 1982. p. 59. Reproduced in accordance with fair dealing guidelines.

Figure 3.2D

CLASSIFYING AGRICULTURE: EXTENSIVE



Source: Briggs, K. *Human Geography Concepts and Applications*. London, UK: Hodder and Stoughton, 1982. p. 59. Reproduced in accordance with fair dealing guidelines.

Lesson Summary

You now have knowledge and understanding of where and why agriculture began, how it is practised across the world, and where the major crops tend to be grown. You have gained general information about farming to help you make connections between agriculture and world issues.

You have been introduced to the basics of food supply (production and consumption) and how it relates to the population level and the level of development of a country or region. Again, the ability to see connections between different issues that affect all of us (regardless of our global location, culture, or economic status) is important to understanding regional diversity.

The next lesson uses these general connections to present more specific situations that illustrate the consequences of an unequal global food supply that go beyond simple hunger.

Before moving on to Lesson 2, complete Assignment 3.1.

Notes



Assignment 3.1

Global Agricultural Production (34 marks)

This assignment has three parts. Complete all sections for full marks.

- Part A: Figure Analysis
- Part B: Article Analysis
- Part C: Essay Response

Part A: Figure Analysis

1. Using the Internet, a world atlas, or the following map, study the different regions and types of agricultural production. Organize the information by **filling out the chart that follows**. Group regions together based on their shared dominant methods of farming. (8 marks)

Remember: Regions that practise a particular style of farming do not reflect the dominant style of farming for whole countries or continents.

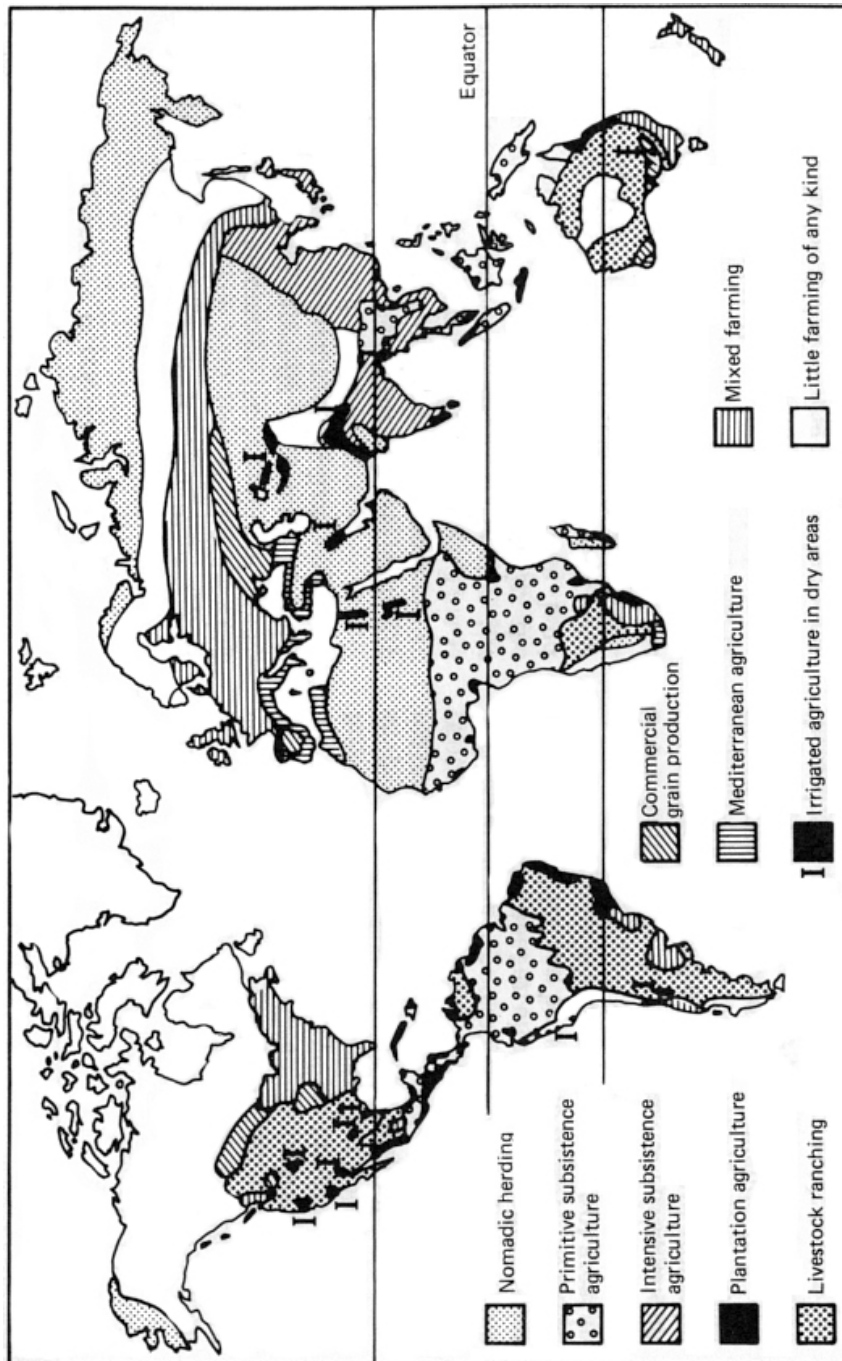
Example: The dominant style of farming in southern South America might be similar to that of Australia, but northern South America would not fit into the same category.

continued

Assignment 3.1: Global Agricultural Production (continued)

Figure 3.3

GLOBAL AGRICULTURE



Source: Briggs, K. *Human Geography: Concepts and Applications*. London, UK: Hodder and Stoughton, 1982. p. 61. Reproduced in accordance with fair dealing guidelines.

continued

Assignment 3.1: Global Agricultural Production (continued)

Region	Dominant Style of Farming	Sub-style of Farming	Example of Production

continued

Assignment 3.1: Global Agricultural Production (continued)

2. **Respond** to the following questions:

a) What is the relationship between population density and the amount of arable land? (2 marks)

- Include land degradation issues.

b) How does the level of development affect production? (2 marks)

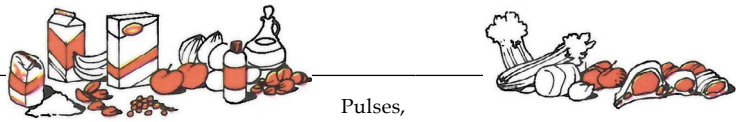
- Include two economic or political reasons that account for low production.

continued

Assignment 3.1: Global Agricultural Production (continued)

- c) State the type(s) of food energy the population of each continent relies on most and the compatible style of farming (arable, pastoral, or mixed) that would be needed to provide that food energy. (4 marks)

■ Use Figure 3.4 as a reference.

Figure 3.4		DIET BY CONTINENT							
<i>Diet by Continents. In what part of the world do people most rely on cereals as food?</i>									
									
		Cereals	Starchy roots	Sugar	Pulses, nuts, fruit and vegetables	Meat, fish, eggs and milk	Oils and fats	Total supply	Total daily needs
North America	Kilojoules	4465	764	1772	920	3398	1087	13 306	10 880
Europe and Oceania	Grams of protein	29.9	4.4	—	7.6	49.3	0.3	91.5	39.8
Africa		4939	1852	479	958	664	609	9501	9870
		33.3	5.2	—	10.4	12.1	—	61.0	41.5
Asia		5796	571	479	777	643	378	8644	9660
		31.7	1.7	0.2	10.6	9.7	—	53.9	37.8
Latin America		4200	1205	1789	1142	1663	832	10 831	9996
		24.8	3.2	0.1	12.6	24.5	—	65.2	37.7

Source: Dunlop, Stewart. *Towards Tomorrow: Canada in a Changing World: Geography*. Toronto, ON: Harcourt Brace & Company, Canada, 1987. p. 71. Used in accordance with fair dealing guidelines.

North America, Europe, and Oceania

Africa

Asia

Latin America

continued

Assignment 3.1: Global Agricultural Production (continued)

Part B: Article Analysis

1. **Read** the following excerpt from the World Health Organization (WHO) document “Global and Regional Food Consumption Patterns and Trends” (2004) and answer in complete sentences the food production questions that follow.

3.7 Future trends in demand, food availability and consumption

In recent years the growth rates of world agricultural production and crop yields have slowed. This has raised fears that the world may not be able to grow enough food and other commodities to ensure that future populations are adequately fed. However, the slowdown has occurred not because of shortages of land or water but rather because the demand for agricultural products has also slowed. This is mainly because world population growth rates have been declining since the late 1960s, and fairly high levels of food consumption per person are now being reached in many countries, beyond which further rises will be limited. It's also true that a high share of the world's population remains in poverty and hence lacks the necessary income to translate its needs into effective demand. As a result, the growth in world demand for agricultural products is expected to fall from an average 2.2% per year over the past 30 years to an average 1.5% per year for the next 30 years. In developing countries the slowdown will be more dramatic, from 3.7% per year to 2% per year, partly as a result of China having passed the phase of rapid growth in its demand for food. Global food shortages are unlikely, but serious problems already exist at national and local levels, and may worsen unless focused efforts are made.

The annual growth rate of world demand for cereals has declined from 2.5% per year in the 1970s and 1.9% per year in the 1980s to only 1% per year in the 1990s. Annual cereal use per person (including animal feeds) peaked in the mid-1980s at 334 kg and has since fallen to 317 kg. The decline is not a cause for alarm, it is largely the natural result of slower population growth and shifts in human diets and animal feeds. During the 1990s, however, the decline was accentuated by a number of temporary factors, including serious economic recessions in the transition countries and in some East and South-East Asian countries.

The growth rate in the demand for cereals is expected to rise again to 1.4% per year up until 2015, slowing to 1.2% per year thereafter. In developing countries overall, cereal production is not expected to keep pace with demand. The net cereal deficits of these countries, which amounted to 103 million tonnes or 9% of consumption in 1997-1999, could rise to 265 million tonnes by 2030, when they will be 14% of consumption. This gap can be bridged by increased surpluses from traditional grain exporters, and by new exports from the transition countries, which are expected to shift from being net importers to being net exporters.

Oil crops have seen the fastest increase in area of any crop sector, expanding by 75 million hectares between the mid-1970s and the end of the 1990s, while cereal area fell by 28 million hectares over the same period. Future per capita consumption of oil crops is

continued

Assignment 3.1: Global Agricultural Production (continued)

expected to rise more rapidly than that of cereals. These crops will account for 45 out of every 100 extra kilocalories added to average diets in developing countries between now and 2030.

There are three main sources of growth in crop production: expanding the land area, increasing the frequency at which it is cropped (often through irrigation), and boosting yields. It has been suggested that growth in crop production may be approaching the ceiling of what is possible in respect of all three sources. A detailed examination of production potentials does not support this view at the global level, although in some countries, and even in whole regions, serious problems already exist and could deepen.

Source: World Health Organization (WHO). "Future trends in demand, food availability and consumption." *World Health Organization*. 2004. www.who.int/nutrition/topics/3_foodconsumption/en/index6.html. (Accessed May 27, 2013).

- a) What trend is seen regarding the rate of world food production and why? (2 marks)

- b) Give two reasons why it is important to understand the status of the world's food supply. (2 marks)

- c) What are the three main sources of growth in crop production? (3 marks)

- d) What is the primary reason that demand for growth in world agriculture is expected to fall? (1 mark)

continued

Assignment 3.1: Global Agricultural Production (continued)

Part C: Short Essay Response

Write a short essay discussing the following question. (10 marks)

Based on what you've read so far in this course, do you think that the future global food supply is in jeopardy? Why or why not?

Your essay should be **two** pages long, double-spaced, 12 point, and Times New Roman font.

Note: The most important part of any essay is your thesis statement.

- A thesis statement is one or two sentences, usually found at the end of your introduction paragraph.
- Your thesis should explain the subject of the essay and how you will be interpreting that subject.
- It is **not** an observation. To turn your observation into an argument, you must explain *why* or *how* something is and come up with *reasons* and *causes*.
- The thesis statement is not meant to be an absolute answer—it is one possible answer.
- The rest of your paper should be organized into a persuasive argument to support your thesis statement.
- You can support your thesis with examples, quotations, statistics, graphs, etc.

Example of an **observation**: Saint-Bernard dogs are larger than terriers.

Example of a **thesis**: Saint-Bernard dogs are bigger than terriers *because* of genetic influences *such as* selective breeding and *because* of environmental influences *such as* the climate of the region where they evolved.

Consider focusing on a few of the following important points in your response:

- Does the location for agricultural production matter? What factors have to be taken into consideration?
- What are the dominant styles of farming? Are some styles more beneficial for food production than others? Is there a disparity among regions with regard to where certain crops can be farmed?
- Do some countries/continents have an agricultural production advantage/disadvantage? Why or why not?
- What is the correlation between development and food supply?
- How does population play into all of this?

continued

Assignment 3.1: Global Agricultural Production (continued)

Write your answer in a short-essay format based on the following rubric.

Marking Rubric for Assignment 3.1 (Part C)		
	Possible Marks	Marks Given
Introduction <ul style="list-style-type: none"> ■ Clearly states position of the essay ■ Centres around a well-developed thesis statement 	2 marks 1 mark for a clear and interesting introduction 1 mark for a proper thesis statement	
Body of Essay <ul style="list-style-type: none"> ■ Has at least two well-developed paragraphs, which directly support the thesis statement ■ At least two relevant examples are provided that relate to the topic 	4 marks 1 mark for two paragraphs 1 mark for connections to the thesis statement 1 mark for each example (x 2)	
Conclusion <ul style="list-style-type: none"> ■ Restates the main argument ■ Summarizes the points and offers final comments ■ Has an effective concluding statement 	2 marks 1 mark for an effective summary 1 mark for the concluding statement	
Style <ul style="list-style-type: none"> ■ Use of strong language, good sentence structure, and highly appropriate word choices ■ Few grammar or spelling mistakes ■ References are relevant and explained in context 	2 marks	
		Total Score: _____ /10

Notes

LESSON 2: AGRICULTURAL CHALLENGES

Lesson Focus

By the end of this lesson, you will

- Expand on the three main methods of increasing agricultural production: increasing the area under production, increasing the frequency of cropping, and increasing the production per unit area
- Discuss the reduction of famine by looking at specific case studies, and how well they worked.
- Look at the future of global food production and ask the following questions:
 - “Is increased production enough to feed the projected increase in human population?”
 - “If there is enough production, will everyone have enough money to buy the food?”
 - “If there is enough production, will a global food distribution problem still exist?”

Introduction

In Lesson 1, you learned about a few factors that contribute to food supply problems and the general challenges that are common to farmers in developing nations. This lesson expands on that information and discusses the challenges facing farmers in developed nations as well. The major focus of this lesson is to explore the issues that impact world hunger, to look at the cause and effects of famine, and to examine strategies to reduce the prevalence of extreme hunger in developing countries.

Challenges Facing Farmers in Developed Nations

If you could talk to farmers anywhere in the world, they would all agree that no matter where and how someone farms there are always challenges, especially those challenges that cannot be controlled, such as the weather.

Up to this point, it would appear that the difficulties faced by farmers in developing nations are fairly evident. However, you must not lose sight of the fact that agricultural producers in developed nations also face a unique set of challenges, beyond those of environmental issues that threaten the way of life (culture) of a substantial number of people.

For example, the European Commission, through its Common Agricultural Policy (CAP), identifies agriculture in the European Union as having an important role to play in the health of rural economies, as well as countryside management, nature conservation, and tourism.

Some of the challenges that have been identified by CAP include

- **Standard of living:** providing a reasonable standard of living for farmers in the united European marketplace (free trade)
- **Rural development:** diversifying the economy, improving competitiveness
- **Sustainability:** ensuring that farming will continue in Europe amidst growing urbanization, which results in a loss of available land and water
- **Production:** controlling the surplus of products to maintain prices
- **Environment:** adapting to climate change, combating animal and plant diseases
- **Supply and demand:** adapting to global changes in supply and demand, ensuring that the global food supply is safe and stable
- **Technology:** integrating new production technology and new uses of agricultural products (e.g., methanol, biodiesel)

Closer to home, North American farmers must respond to the same general economic issues and challenges. Aside from the expected challenges presented by the weather and climate change, these problems include the following:

- **Urbanization:** It causes the loss of available farmland, and creates conflict between the farmer and non-farmer over issues such as the smell of manure and intensive farming practices that can be seen as harmful to the environment.
- **Political and economic realities:** For example, the North American Free Trade Agreement (NAFTA) resulted in more competition and commodity price drops, affecting the income of individual farm operators.
- **Changing global market forces:** This may result in subsidies (more available in the United States of America than Canada) not being enough to compensate for lower global prices, forcing some farmers out of business (production costs are local).

- **Smaller farmers:** They may have trouble accessing financial assistance and thus would not be able to pay for seed, chemicals, fertilizers, machinery—the tools needed to grow a large enough crop to make a reasonable living.
- **Environment:** Adapting to climate change and animal/plant diseases are also challenges.

The issues that all farmers must deal with, regardless of location, are as varied as the farms they operate. Research the advantages and disadvantages of farming trends to decide for yourself whether developed nations should be following the trend towards developing larger global farm businesses and producing less expensive food for the consumer, or aiming for an increased number of small to mid-sized family farms that produce locally sourced, diverse, and sustainable food supplies for more money.

Such an issue cannot be properly addressed without looking at it from different perspectives. Thinking critically about the issue is the first step towards solving any social, economic, or political dilemma.

World Hunger

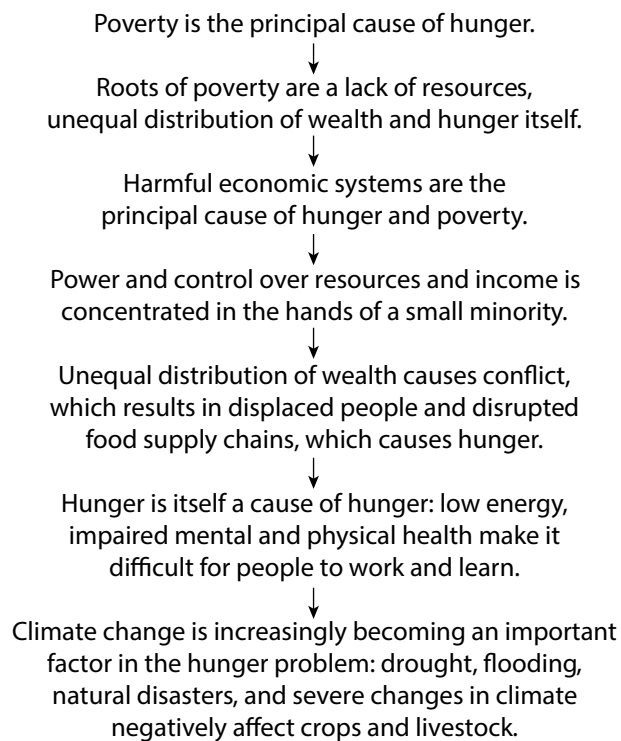
According to the World Hunger Education Service (WHES), world hunger refers to the want or scarcity of food in a country, which results in widespread malnutrition and undernourishment. When people are malnourished or undernourished, it means they are lacking the required number of calories needed to convert food into energy and they are also missing nutrients that are essential for the body to function in a healthy way.

According to the United Nations Food and Agricultural Organization (UNFAO) estimates of world hunger, 870 million people suffered from chronic undernourishment from 2010–2012. Out of a population of 7.1 billion, this means that one-eighth of the world's population suffers from extreme hunger. Of that population, 98% live in developing countries.

Each year, hunger claims the lives of 5 million children around the world. In addition, children affected by poor nutrition are more susceptible to disease, diarrhea, pneumonia, malaria, and stunted growth. As well, infants born with low birth weight have increased chances of being afflicted with learning disabilities, mental retardation, poor health, blindness, and premature death.

In their publication *Hunger Notes*, the WHES emphasizes that the world does in fact produce enough calories to feed every mouth on the planet. The problem is rooted in distribution: the unequal distribution of arable land, food, and wealth. The WHES uses the following schema (an organized pattern of thought) to explain the causes of hunger:

Figure 3.5	WHES SCHEMA
------------	-------------



Source: World Health Education Service (WHES). www.worldhunger.org/. Used in accordance with fair dealing guidelines.

Unfortunately, the reality of world hunger is often overshadowed with myths and misperceptions. Without the right information, people make incorrect generalizations about world hunger. In 1986, Frances Moore Lappé and Joseph Collins wrote a book titled *World Hunger: Twelve Myths*. Art Meyer summarized the main arguments in the book as part of the Mennonite Central Committee Hunger Packet (a portion of which you will find on the following pages).

Examine these myths and the response given by the researchers Lappé and Collins, and note the extra commentary by Meyers, who studied the situation from his viewpoint.

North Americans are generally well fed and often overfed. This fact alone should be reason enough to question the problems associated with food production worldwide, especially the political will to see that equity is brought into the provision of food for all people.

Remember, the following myths were taken from a 1986 publication when the world population was around 4.9 billion people, not the 7 billion plus that exists now.

Myth 1

With food-producing resources in so much of the world stretched to the limit, there's simply not enough food to go around. Unfortunately, some people have to go hungry.

Response: The world today produces enough grain to provide everyone on Earth with 3600 calories a day (15120 kJ or 1.5 times our daily need). Abundance, not scarcity, best describes the supply of food in the world today.

Commentary: Such abundance is at the expense of the soil, fuel supply, and environment. A sustainable method of food production must be implemented worldwide very soon.

Myth 2

Droughts and other events beyond human control cause famine.

Response: Clearly, human-made forces are making people increasingly vulnerable to nature's vagaries. Natural events are not the cause, they are the final blow.

Commentary: Natural catastrophes may exacerbate (make worse) hunger. Famine, though, is basically human-made in today's world.

Myth 3

Hunger is caused by too many people pressing against finite resources. We must slow population growth before we can hope to alleviate hunger.

Response: There doesn't seem to be a correlation between population density and hunger. Hunger, the most dramatic symptom of pervasive poverty, and rapid population growth occur together because they have a common cause. The more poverty is eradicated, the more population growth will decrease.

Commentary: As economic conditions improve for poor people, they perceive less need for many children. The best way to stabilize population and to eliminate hunger is to decrease world poverty.

Myth 4

Pressure to feed the world's hungry is destroying the very resources needed to grow food. Clearly we cannot both feed the hungry and protect our environment.

Response: The theory that an environmental crisis is undercutting our food-producing resources is not a myth, but myths and half-truths confound our grasp of the root cause of the crisis. We need to ask why peasants are denied productive land and forced to farm land subject to environmental degradation, why forests are cut down, why farmers use chemicals, et cetera.

Commentary: This is no myth—we can't do both at the same time. A return to labour-intensive, sustainable agriculture with the recycling of natural resources will be essential.

Myth 5

The Green Revolution is the answer. The miracle seeds of the Green Revolution increase grain yields and, therefore, are key to ending world hunger. Biotechnology offers an even more dramatic food production revolution. More food means less hunger.

Response: The first Green Revolution (GR1) increased food production greatly through use of chemical fertilizers and irrigation. The second Green Revolution (GR2)—biotechnology—is very promising. Nonetheless, increasing food production this way has hidden social and environmental costs. Just because there is more food, it does not guarantee that the hungry poor will eat.

Commentary: There is simply “no free lunch” in nature. The increased food production with hybrid seeds and chemicals (GR1) or with biotechnology and genetic engineering (GR2) has had, and will continue to have, negative side effects (loss of wild types of genes, environmental degradation, et cetera). The short-term benefits of this kind of food production will be erased by the long-term consequences.

Myth 6

The big farmers have the know-how to produce better. Even though we want to be fair, reforms that take land away from the big producers will lower food output and, therefore, hurt the hungry people they are supposed to help.

Response: Many big farmers underuse and misuse food resources. The small farmer is almost always more productive than the large landowner. They work the land more intensively.

Commentary: Industrial agriculture may be “productive” but it is not energy “efficient.” American agriculture consumes about 10 calories (42 kJ) of energy input for each calorie (4.2kJ) of food placed on the table. The Chinese rice farmer can produce about 50 calories (210 kJ) of food energy for every calorie of energy input. Small farmers are usually better conservationists, too. Land in their hands will benefit the poor.

Myth 7

If governments just got out of the way, the free market could work to alleviate hunger.

Response: A “market is good/government is bad” formula can never help address the causes of hunger. Every economy on Earth combines the market and government in allocating resources and distributing goods.

Commentary: True, there is no such thing as a “free market” economy in our interdependent world; however, it can be argued that a “free market” economy can have fewer hungry people, although other factors are important too.

Myth 8

Free trade is the answer. World trade could reflect the comparative advantage of each country—each exporting what it can produce most cheaply and importing what it cannot.

Response: A nice theory but it falls apart in the real world. If increased exports contributed to the alleviation of poverty and hunger, how can we explain that in so many Third World countries exports have boomed while hunger has increased?

Commentary: Fair (equitable) trade is what is needed as opposed to protectionism and financial control that is so much the case at present.

Myth 9

If initiative for change must come from the poor, then the situation truly is hopeless. They can hardly be expected to bring about change.

Response: Survival (for the poor) demands resourcefulness and learning the value of joint effort. If the poor were truly passive, few of them could even survive.

Commentary: The poor have plenty to offer. Numerous development projects demonstrate that the poor can initiate change and break the poverty cycle when they are given a share of power and provided with incentives. The situation is not hopeless if the poor are given a proper chance.

Myth 10

In helping to end world hunger, our primary responsibility as citizens is to increase and improve our government's foreign aid.

Response: Our primary responsibility as citizens is to make certain our government's policies are not making it harder for people to end hunger for themselves. Genuine freedom can only be won by people for themselves.

Commentary: Again true. Most aid has gone to help the military or the multinational companies when, in fact, it should go to the poor.

Myth 11

Deep down we know hunger benefits us. We would have to sacrifice too much of our standard of living for there to be a world without hunger.

Response: The biggest threat to our own well-being is not the advancement in the world, but the continued deprivation of the hungry.

Commentary: The biggest threat to world peace and stability is the present intolerable rich-poor gap. To decrease the gap, the rich must lower their unrealistic standards of living, which they can afford to do; however, not too many think about this problem.

Myth 12

Societies that eliminate hunger also end up eliminating the freedom of their citizens. People may just have to choose one or the other.

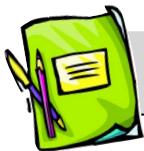
Response: If freedom means civil liberties, there is no reason why they are incompatible with ending hunger. There is good reason to expect greater progress towards ending hunger in societies where civil liberties are protected.

Commentary: It depends on the definition of “freedom.” If it means license to exploit in a “free market economy,” then there may be a conflict between “freedom” and ending hunger. This does not go along with the humanitarian ideal of caring for the poor and oppressed. Ending hunger should not affect civil liberties.

Source: Lappé, Frances Moore, and Joseph Collins. “World Food Production.” *World Hunger: Twelve Myths*. New York, NY: Grove Press Inc., 1986. Reproduced in accordance with fair dealing guidelines.

Conclusion

A common thread that emerges from the information provided by the World Hunger Education Service and Lappé and Collins’ year of research is that poverty is the principal cause of hunger. Eradicating extreme hunger and poverty is number one on the list of the United Nation’s Millennium Development Goals, developed in September of 2000 at the largest gathering of world leaders in history. The solution to eliminating hunger through reducing levels of poverty is not an easy task by any means, but it can be broken down into more feasible goals and initiatives. Examples of changes that countries could support and that could have a huge impact in the long term include establishing a national minimum wage, relaxing limitations on refugee immigration, supporting laws that give more control of food production back to the local farmers, encouraging fair trade, and financially supporting the research and supply of micronutrients.



Learning Activity 3.2

Changing Myths

1. Turn **four** of the aforementioned myths, along with their responses and commentaries (other than Myth 1, which is used as an example), into a positive statement about hunger. Restate the myth to make it a true statement and then simply summarize the response and commentary in your own words (giving your opinion too). The following example is provided:

Truth 1: The planet produces enough food to feed everyone. The difficulty is being able to sustain that level of production without harming our environment beyond repair, depleting our fuel source, and degrading our soil. The allocation of our food supply is also unequal amongst the global population. We must plan our farming so that the soil and the environment will still provide us with food in the future.

2. Myth 8 addresses both Free Trade and Fair Trade. What are the most important *differences* between the two?
 3. When you consider the statements that Art Myers considers to be myths, which statement do you find the most surprising? Why?
-

Strategies to Reduce World Hunger

Global aid programs have been in existence for many years but have had only varying levels of success in solving the causes of hunger, of which there are many. Most of the recent worst cases of famine and hunger around the world have been caused by political, economic, or cultural conflicts. In those cases, the re-establishment of peace has always been the best strategy with which to fight hunger. With peace comes the prioritization of infrastructure repair and the resumption of normal trade practices; food production and distribution quickly follow.

Before looking at strategies to reduce world hunger, you will review famine more closely to better understand the causes and impact of this food-oriented crisis.



What is Famine?

Famine has been defined as an extreme and a general scarcity of food, resulting in hunger and starvation. In comparison, malnutrition is a general, often long-term condition in which there is food, but it does not have sufficient nutrition—calories or kilojoules, protein, vitamins—to sustain a healthy body.

The conditions contributing to famine often include the lack of a transportation system capable of moving food supplies to an area of need. A flood or major storm may have damaged not only the crops in a specific area, but destroyed the roads and rail system in that area as well. The lack of a transportation system to move food into the affected area results in a worsening of the famine conditions.

As mentioned, war and conflict often cause famine through the destruction of croplands and infrastructure, and also by affecting the people working the land. People are forced to take refuge elsewhere and the cropland lies idle. This forced relocation means that land does not get worked at the appropriate time for seeding to take place, or it means that crops cannot be harvested.

Moving food to refugee displacement camps is far too expensive and, as the 1985 Ethiopian famine demonstrated, food dropped from planes is not always a viable solution, as much of the food is wasted, spilled, or cannot be gathered. One study showed that a tonne of grain shipped from the U.S. midwest dwindled away to just over one-third of a tonne at the receiving end as a result of being left to rot, being eaten by rats, stolen, and sold along the way. The problem is often in the receiving country where there are no proper storage bins and a lack of security, which means that grain in sacks is easily stolen or the grain is eaten by rodents and insects. The physical distance and time gap between the food leaving the producer and reaching the consumer can result in considerable losses.

The causes of famine are multi-faceted. According to Oxfam International, a non-governmental organization committed to the elimination of global poverty and hunger, famine results “from a combination ‘triple failure’: food production, access to food and political response by governments and international donors.” Oxfam believes that people and governments have the power to eradicate famine by addressing these problems head-on.

1. Accelerate investment in food production by supporting small-holdings farmers and pastoralists (e.g., hardier crops, less expensive inputs, disaster risk management).
2. Alleviate rural poverty by investing in physical infrastructure and allowing public intervention to correct market failures.

3. Move away from discretionary assistance to guaranteed social protection. This may involve providing social assistance and insurance to poorer households so that they are able to access food throughout the year in times of crisis. In contexts where availability of food is not a problem, cash transfers can be more appropriate than food aid.

The following editorials concerning the foreign relief sent to the Sudan and the global food riots illustrate some of the many causes of famine in developing regions.

The Globe and Mail Editorial

A \$230-million United Nations aid program is ready to roll in the Sudan, and the foreign relief workers are eager to send food to areas where it is desperately needed. But there is a war to be fought, and this enjoys priority with the ruling junta, which has imposed near impossible conditions for the program.

A relief worker summed up the prospects for starving refugees: "If hunger, exhaustion and disease do not kill them, pro-government militias will do the job." The world is now equipped to beat hunger if it gets the chance, but it still can't cope with inhumanity.

Source: Toronto Globe and Mail. "War Comes First." http://articles.cnn.com/2008-04-14/world/world.food.crisis_1_food-aid-food-prices-rice-prices?_s=PM:WORLD.

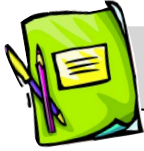
Food Riots in 2008

World food prices increased dramatically in 2007 and the 1st and 2nd quarter of 2008 creating a global crisis and causing political and economical instability and social unrest in both poor and developed nations.

Although the media spotlight focused on the riots that ensued in the face of high prices, the ongoing crisis of food insecurity has been years in the making. Systemic causes for the worldwide increases in food prices continue to be the subject of debate. After peaking in the second quarter of 2008 prices fell dramatically during the late-2000s recession but increased during 2009 and 2010, peaking again in early 2011 at a level slightly higher than the level reached in 2008. However a repeat of the crisis of 2008 is not expected due to ample stockpiles.

Initial causes of the late-2006 price spikes included droughts in grain-producing nations and rising oil prices. Oil price increases also caused general escalations in the costs of fertilizers, food transportation, and industrial agriculture. Root causes may be the increasing use of biofuels in developed countries, and an increasing demand for a more varied diet across the expanding middle-class populations of Asia.

Source: Wikipedia. http://en.wikipedia.org/wiki/2007-2008_world_food_price_crisis. CC License.



Learning Activity 3.3

Food Security

1. Explain the difference between *famine* and *malnutrition*.
 2. Read the editorial provided previously once more and record your reaction to it. Explain one reason for the food supply problem in Africa over the years.
 3. Explain the causes of the food riots of 2008 and why there were no riots in 2011, even though the price of food was higher than it was in 2008?
-

Positive Action

Although it seems that there are no shortages of examples of dire situations involving hunger, malnutrition, famine, drought, war, and ineffectual governments, there are, fortunately, many examples of organizations that have established programs to combat famine and are working towards ensuring food security for the vulnerable and disenfranchised. Two of those positive action programs are discussed in this section.

The Hunger Project (www.thp.org)

The Hunger Project (THP) is a global, non-profit, strategic organization, started in 1977, committed to the sustainable end of world hunger. In Africa, South Asia, and Latin America, THP seeks to end hunger and poverty by empowering people to lead lives of self-reliance, to meet their own basic needs, and to build better futures for their children. The head office is in New York City, but it has programs in 11 countries.

The Hunger Project's approach is different from the conventional, top-down planning used by many development agencies and governments. These top-down approaches follow a service-delivery model and often undermine our most important resource: the creativity and self-reliance of people living in conditions of hunger and poverty themselves.

The table below shows why, according to THP, the top-down, service-delivery approach so often fails, and why the bottom-up, empowerment approach succeeds.

Service Delivery vs. Empowerment		
	The Conventional Top-Down, Service-Delivery Model	The Hunger Project's Bottom-Up Empowerment Model
Who are the hungry people?	Beneficiaries whose basic needs must be met	Principal authors and actors in development—hardworking, creative individuals who lack opportunities
What must be done?	Provide services through government or charities	Mobilize and empower people's self-reliant action, and stand in solidarity with them for their success
What's the primary resource for development?	Money and the expertise of consultants and program managers	People: their vision, mobilization, entrepreneurial spirit, and confidence
Who is in charge?	Donors, who provide the money and hold implementers to account	Local people: through elected local leaders whom they hold to account
What are the main constraints?	Bureaucracy: the inefficiency of the delivery system	Social conditions: resignation, discrimination (particularly gender), lack of local leadership, lack of rights
What is the role of women?	Vulnerable group who must be especially targeted beneficiaries	Key producers who must have a voice in decision making
What about social and cultural issues?	Immutable conditions that must be compensated for	Conditions that people can transform
How should we focus our work?	Carefully target beneficiaries on an objective-needs basis	Mobilize everyone as broadly as possible, build spirit and momentum of accomplishment
What is the role of central government?	Operate centrally managed service-delivery programs	Decentralize resources and decision making to local level, build local capacity, set standards, protect rights
What is the role of local government?	Implementing arm of central programs	Autonomous leadership directly accountable to people
What is the role of civil society?	Implementing arm of central programs	Catalyst to mobilize people, fight for their rights, empower people to keep government accountable

Source: The Hunger Project. "Service Delivery vs. Empowerment."
www.thp.org/what_we_do/program_overview/methodology.

Key initiatives over the past decades have include the following:

- **the epicentre strategy:** clusters of rural villages where people are mobilized to create and run their own programs
- **microfinance programs:** training, savings, and credit programs that aim to empower the female farmers
- honouring Africa’s leadership
- halting the spread of HIV/AIDS
- fostering government accountability and ending the corruption in Bangladesh
- celebrating girl children in Bangladesh
- empowering women’s leadership in India

The results of the four-phase (about eight years) epicentre strategy are summarized in the following table:

Before Launching the Epicentre Strategy	After the Epicentre Reaches Self-Reliance
People often live in dependency and resignation, with almost no hope for a better future.	People are successful agents of their own development: motivated, confident, improving life every day.
People live in isolated small villages, divided by rivalries.	People work together as a community that is large enough to be a viable economic unit. Leadership is established.
Women are the poorest, work the hardest, and have no voice in society.	Women have equal leadership with men and are key economic players in society. Many women run for local office and are elected.
There is no opportunity for women to become literate.	All women participating in the credit program must enroll in literacy and numeracy courses.
Government programs never reach the people living in remote, isolated villages.	The community has the confidence and strength in numbers to successfully demand services, such as roads and electricity.
People are poorly nourished, eating one meal per day and suffering seasonal hunger.	People are adequately well-nourished and successfully manage their own food security through the community food bank.
Farmers raise a staple subsistence crop.	Farming is diversified, improved, and successful in the marketplace. People are cultivating vegetables and fish, and raising poultry and livestock.
The majority of children are not in school, particularly girls.	Both girls and boys attend pre- and primary schools near their homes. There is a library filled with books.

continued

Before Launching the Epicentre Strategy	After the Epicentre Reaches Self-Reliance
People have no health care. Infant and maternal mortality rates (IMR and MMR) are tragically high.	People have reliable health care. The MMR and IMR drop dramatically.
Fueled by gender inequality, HIV/AIDS is out of control.	Both women and men are halting dangerous practices that spread HIV/AIDS.
Any cash that people have is idle.	Through the bank, savings are mobilized as investment capital for community enterprises.
Men often migrate to the cities to find cash employment.	There is a vibrant rural economy. Men begin returning to the community.

World Vision International (www.wvi.org)

This is a faith-based organization that does community development, disaster relief, and advocacy work throughout the world. The organization is also known for its “sponsor a child” campaign and the “30 Hour Famine” program.

World Vision works to help communities in many places worldwide deal with poverty, with an emphasis on improving the well-being of children. Because poverty has both local and global causes, World Vision works with individual communities to identify and overcome obstacles through programs promoting education, health, economic development, microfinance, agriculture, sanitation, and access to clean drinking water. By enabling community members, the process of change continues after the World Vision staff has left.

Read the following case study that illustrates one way that World Vision helps community development:

Uganda: Tom’s life transformed by micro-loan

Tom dreamed of tomatoes. When he dropped out of high school in 1995, he decided his future lay in producing tomatoes.

It was an uncommon choice, but then Tom is not a common farmer.

“I decided to grow tomatoes because I had seen and interacted with a successful tomato farmer who motivated me to join the business,” Tom says. “Farming is the only thing I know how to do well.”

continued

Tom identified a quarter of an acre of land in his village and rented it at 10,000 shillings [\$3.60 US]. With the land, Tom and his wife, Sylvia, planted their first crop of tomatoes—enough for home consumption and to sell on the local market.

After a few months, the harvest came. It was good enough. So the next year, they planted tomatoes again.

As Sylvia and Tom started having children—Mark Nsamba, 12, Mariam Nabukere, 10, and Meded Muwonge, six—the tomatoes provided enough income to support the family.

After a while, Tom diversified—he began growing maize, cassava, green bananas, watermelons and cabbage. Many people in Tom’s farming community of Nakaseke began to take note.

Today, Tom is a model farmer.

Secret to His Success

Tom’s journey towards becoming a successful farmer has been a result of his work and support from World Vision’s Micro-Enterprise Development Network (MEDNet), an institution that enables its clients to save and borrow money while developing financially.

World Vision Uganda’s staff singled out Tom as a farmer who was in need of financial support to boost his farming business.

“He was a small farmer with a small garden of tomatoes,” remembers Adraine Basiima, MEDNet’s Branch Manager. “When we told him about our work, he showed a lot of interest and later applied for a loan.” In 2008, Tom was given a two million shilling [\$714 US] loan. After repaying the initial loan, a year later Tom acquired another loan worth three million shillings [\$1,071 US]. Again, he faithfully paid back the loan. In 2010, Tom was given a 4,000,000 shilling [\$1,428 US] loan.

With this money, Tom was able to buy a new and bigger water pump which he uses to irrigate his crops throughout the year. This has allowed Tom to become strategic and sow and harvest throughout the year.

“I started using the water pump to enable me to plant my crops throughout the year. While people are harvesting, I am sowing. I sell my harvest during a period of scarcity and get more money for them,” Tom explains.

In March 2011, Tom bought 2.5 acres of land, secured five other acres of land with a land agreement and continues to rent 2.5 acres per year. Along with the tomatoes and other crops, Tom has recently planted coffee.

continued

“It will bring in a lot of money in my old age,” he says. “When I retire from active farming, I will not have enough energy to dig big pieces of land but can work easily on the coffee plantation.”

This year, Tom has earned 32 million shillings [\$11,428 US] from cabbages and 1.1 million shillings [\$393 US] from watermelons. In a month’s time, he will harvest maize.

Benefitting the Children’s Future

With World Vision’s support, a visible positive change can be seen in Tom’s family. Besides becoming a model farmer, Tom built a permanent house where he lives with his wife and children. The children are all enrolled in school in a nearby town.

Tom and Sylvia are able to pay the children’s school fees and buy their scholastic materials, pay medical bills when they fall sick and can afford to buy them new clothes once in a while.

Food is not scarce in Tom’s home. He only goes to the market to buy sauce and other household necessities.

“Why would I go to the market to buy food? I have all the food I need. The only food I buy from the market is rice because I do not grow it and sauce.”

MEDNet continues to provide sensitive microfinance services to the economically active poor, like Tom, in rural Uganda for the enhancement of socio-economic development. The program has helped 669 families.

Source: Nabirye, Davinah. “Uganda: Tom’s life transformed by a micro-loan.” *World Vision*. <https://wvioaptus2.wvi.org/wvi/wviweb/nsf/updates/E2472B1833082CD68825794100663FE3?opendocument>. (7 Nov. 2011). Used in accordance with fair dealing guidelines.

This next case-study shows how World Vision approaches disaster relief.

Kenya: Malnutrition levels to increase further, report warns

Close to half a million children under the age of 5, as well as pregnant and lactating mothers, are currently affected by acute malnutrition throughout Kenya. These levels are expected to rise further if current trends are not immediately addressed, a United Nations Office for the Coordination of Human Affairs (UNOCHA) report warns.

“The trend has been that the malnutrition rates have been on the rise, especially in the drought’s worst-hit districts of Turkana, Marsabit, Samburu, Isiolo, Wajir and Mandera,” explains World Vision Nutrition Programme Officer Daniel Muhinja.

continued

After two successive failed seasons of rain, the aforementioned pastoral districts are currently under severe food stress, according to the long-rains assessment that was recently concluded. This has resulted in deepened household food insecurity.

The UNOCHA Situation Report no. 11 of August 25, 2011, states that the percentage of children at risk of acute malnutrition, which is based on the mid-upper arm circumference measurements (MUAC), is increasing in most areas. While another report by the Kenya food security and steering group (KFSSG) indicates that MUAC is declining.

These trends are being attributed to poor food consumption patterns like insufficient dietary diversity and decreasing number of meals that have been reported across the pastoral areas. For instance, in Turkana, Marsabit and Samburu, households are having one to two meals instead of three to four meals each day.

According to the KFSSG report, shared on August 25, 2011, emergency levels of acute malnutrition suggest that interventions intended to save lives are urgently required. This is also against the backdrop of a nutrition survey conducted in June that had global acute malnutrition (GAM) levels in some districts as high as 37.4 per cent; the WHO emergency threshold is 15 per cent.

Urgent response critical

The nutrition sector reports that 17,686 children and 63,679 under the age of 5 are being treated for severe and moderate acute malnutrition, respectively, while 23,844 pregnant and breastfeeding mothers are also under treatment. The highest caseloads have been reported in Turkana, Mandera and Wajir.

Meanwhile, the Blanket Supplementary Feeding Programme (BSFP), a nutrition programme that is meant to prevent increases in protein energy malnutrition and thereby reduce mortality and morbidity, has begun in these districts, targeting a total of 81,805 beneficiaries.

World Vision is currently carrying out BSFP in the Turkana and Samburu districts benefitting 31,658 and 15,399 people, respectively.

According to Daniel Muhinja, the initial target for BSFP was all children under the age of 5. However, due to limited resources, the programme can only focus on children under 3 years of age. The programme, funded jointly by World Vision and the World Food Programme, will run until December.

“IDP Kanamkemer health outreach centre in Turkana Central district, for internally displaced persons (IDPs), was buzzing with activity as the first BSFP began on the 31st of August,” reports a World Vision staff member.

continued

World Vision BSFP Programme Coordinator Rebecca Mugo described the turnout in Kanamkemer as more than expected. “Residents came in large numbers, the turnout was more than 100 per cent,” Rebecca notes.

“I saw a lot of expectant faces, especially those of mothers with their children all curled up in their arms,” Rebecca further explains. “World Vision nurses and nutritionists were at the health centre doing mass screening of children, registration, vaccination, medical checkups, de-worming, treatment of minor ailments, giving Vitamin A and other micronutrient supplementation, health education, and distribution of corn-soy blend (CSB) flour,” says Rebecca.

World Vision plans to increase the nutrition outreach sites in Turkana district from the current 33 to 80 so as to increase coverage. This will be done in joint collaboration with the Ministry of Health and the Diocese of Lodwar.

In addition to this, a supplementary feeding programme (SFP) and general food distribution (GFD) linkage that begun in July is ongoing in Turkana South and East. The total number of people linked so far is 60,000.

World Vision is also conducting nutrition outreaches in Baringo, covering 118 health facilities and 39 outreaches that are benefiting 3,500 under-5 children and mothers (pregnant and lactating). In Laisamis, nutrition outreach services are running in 19 sites, reaching 1,290 community members.

These efforts are being complemented by other partners. In Moyale, for example, child monitoring and surveillance of new admissions in SFP and an outpatient therapeutic programme (OTP) are being implemented by Concern World Wide in 18 health centres.

Gaps and constraints

According to UNOCHA, the nutrition sector faces resource and pipeline challenges, including lack of medical staff in the field and a lack of coordination. Notably, there exists a funding shortfall of \$15 million for BSFP targeting children aged 3 to 5 years for six months in the six affected Arid and Semi-Arid Lands (ASAL) districts (Turkana, Samburu, Marsabit, Isiolo, Wajir and Mandera).

Source: Murunga, Lucy. “Kenya: Malnutrition levels to increase further, report warns.” *World Vision*. <https://wvioaptus2.wvi.org/wvi/wviweb.nsf/updates/533FDF95202F4F0488257903005D3668?opendocument> (6 Sept. 2011). Used in accordance with fair dealing guidelines.

The final case study illustrates World Visions' advocacy program.

France: World Vision leader meets with President Sarkozy

World Vision's national director in India, Dr Jayakumar Christian, met privately with French President Nicholas Sarkozy and other NGO leaders Tuesday morning to discuss critical issues in this year's G20 Summit. The meeting included representatives of French and international NGOs and focused on food security, innovative financing, and social protection.

Dr Christian challenged the President to consider what his legacy would be to the 200 million children who experience malnutrition every day and are permanently affected by stunting, poor educational outcomes, and lack of employment opportunities.

"The G20 should be ashamed that there are 200 million malnourished children around the world every day," said Dr Christian. "There have been significant improvements for children over the past decade, but we cannot stop now. It is not enough for the G20 to include the words 'food security and nutrition' in its statements - its members must intentionally focus on the situation of children who are so deeply impacted by food insecurity and poor nutrition."

President Sarkozy assured Dr Christian that he was personally committed to addressing food security, particularly through investments in agricultural production.

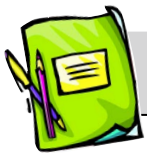
Commenting on the value of this meeting with President Sarkozy, Dr Christian said, "This kind of opportunity is so important for organisations like World Vision because we are able to bring the lives and stories of children we work with directly to some of the most powerful leaders in the world. The decisions made by President Sarkozy and other G20 leaders will have a direct impact on the children we work with in 100 countries around the world."

Source: World Vision. "France: World Vision leader meets with President Sarkozy." *World Vision*. <https://wvioaptus2.wvi.org/wvi/wviweb.nsf/updates/C41929E6E1B5F2068825793D005B6AE2?opendocument>. (3 Nov. 2011). Used in accordance with fair dealing guidelines.

Recap: Strategies to Reduce World Hunger

You have learned about the problems that arise as a result of world hunger. There are indeed tangible strategies that people and governments could implement to combat the issue. These are summarized below.

Strategies to Reduce World Hunger		
Agricultural	Economic	Political
<ul style="list-style-type: none">practise sustainable farming methodseliminate waste in food storage and transportationincrease farming efficienciesput more land into the hands of small farmerssupport fair and equitable trade so farmers can make a decent livingpromote more efficient use of land, irrigation, and chemicals/non-chemical pest reduction techniques	<ul style="list-style-type: none">establish decent energy and transportation infrastructureprovide micro-loans to local farmers, artisans, entrepreneurssupport "bottom up" aid programsdecrease the rate of poverty	<ul style="list-style-type: none">reduce armed conflictprovide basic primary education to all childrengive the poor more control over their lives, and incentives to improve their standards of livingempower the "little people" and women in the communityend political corruption and demand fair electoral practices



Learning Activity 3.4

Strategies

- Choose one of the following aid groups (or one of your own choosing), and provide a description of the organization. Please include the following three pieces of information:
 - A few sentences describing the organization
 - The goals of the organization
 - An example of what the organization has accomplished and a brief description of how it did so (a summary of a case study would be fine)

continued

Learning Activity 3.4: Strategies (continued)

An Internet search of any of the following will get you to their home pages:

- Mennonite Central Committee
 - Action Against Hunger
 - Oxfam International
 - Bread for the World
 - Mercy Corps
 - CARE
-

Questions for the Future

As mentioned in the introduction to Lesson 2, you will be focusing on some pressing questions about the future. There is a wealth of information available regarding speculation about the future of food security. This discussion will be limited to information from an article found in *Scientific American* entitled “How to Double Global Food Production by 2050 and Reduce Environmental Damage” (Mark Fischetti, Oct 12, 2011).

In summary, the article states that by 2050, global agriculture will have to double its food production in order to feed the world’s growing (and increasingly well off) population that is expected to top out at around 10 to 12 billion by the middle of the 21st century. More farming, however, usually means more environmental damage as a result of clearing land, burning fossil fuels, consuming water for irrigation, and spreading fertilizer. Agriculture already puts more stress on the environment than almost any other human activity, so simply doubling current practices would ruin large areas of land as well as poison rivers and oceans.

An international research team led by Jon Foley at the University of Minnesota concluded that five basic changes in the way agriculture operates—and in the ways we eat—could double food production, yet decrease overall environmental impacts. The five steps are as follows:

1. **Improve crop yields**

If the crop yield of the world’s most ineffective farms were raised to 95 percent of the best yields attained by farmers in similar climates, farmers worldwide could produce 50 to 60 percent more food.

2. **Consume less meat**

Only 62 percent of crops are meant for human consumption. Another 35 percent goes to feed meat and dairy animals and the remainder is used for biofuels and other uses. The production of meat for food is a highly inefficient way to transfer plant energy to people. If humans switched to all-plant diets, the same agricultural land could produce 50 percent more food for humans. Even a small shift away from meat production could free up more land to produce many more plant calories for human consumption.

3. **Reduce food waste**

Reducing waste is important. Roughly 30 percent of the food grown worldwide is lost to failed crops, stockpiles ruined by pests, food that is never delivered because of bad infrastructure or markets, and food that spoils or is thrown away after purchase.

4. **Stop expanding into rainforests**

The agriculture industry is a grave environmental threat. Producing even more food would severely damage the planet. In recent years, agriculture has expanded its output primarily by clearing land. Today the world population cultivates 38 percent of Earth's ice-free surface. Pastures and rangelands for livestock cover two-thirds of that area, and croplands cover the rest. Because most of the remaining land is desert, mountainous, tundra, or urban space, expansion today occurs mostly by burning down tropical forests and savannas, which releases huge quantities of carbon dioxide into the atmosphere and reduces biodiversity.

5. **Use fertilizer and water more efficiently**

Damage also results from overuse of fertilizer. Excess use of fertilizer results in the run off of nitrogen from crop fields into rivers and oceans, creating enormous "dead zones." The nitrogen triggers massive algae blooms that, when they decompose, use all the available oxygen, killing all plant life. Farms in the central United States are extremely wasteful in terms of fertilizer use, but so are those in much of Europe, India, and China. Foley's group at the University of Minnesota estimates that 10 percent of the world's croplands account for 32 percent of the global nitrogen surplus—hot spots that could use much less fertilizer and still achieve the same yield.

Possible Answers to Food Security Questions

1. The first question that you read in the lesson introduction was, *“Is increased production enough to feed the projected increase in human population?”* Assuming the research presented here is accurate, you can say “yes,” increased production could help feed human populations worldwide.
2. The second question asks, *“If there is enough production, will everyone have enough money to buy the food?”*
3. The third question is, *“If there is enough production, will a global food distribution problem still exist?”*

The second and third questions are difficult to answer, but if you recall from the readings, you can probably say that “the chances are getting better as time progresses.” Poor countries are continuing to develop—the level of education is increasing, and as poverty decreases, so does the birth rate. Infrastructure is slowly improving in many areas. Accounting for differences in acceptable standards of living, and assuming that the culture of sustainability continues to spread, there may be a more equitable distribution of global wealth that results in enough money to buy the food and the means to distribute it. Realistically though, it may take generations before these questions can be answered with any certainty.

Lesson Summary

As you have seen, there are many myths about world hunger. Understanding these issues is often the first step in coming up with solutions.

Challenges facing farmers all over the planet often go beyond the issues that subsistence farmers have in their own backyards. Large-scale farmers in developed nations also have their own set of challenges to deal with and these challenges go far beyond the weather, to include large-scale economics and complex political situations. Knowing what roadblocks farmers face, regardless of the type of farm or location, gives the consumer a better understanding of the agricultural industry. Perhaps this will be reflected in the choices you make when buying your groceries.

Strategies to reduce world hunger and to increase local and regional food security are many, just as there are many different situations that result in hunger and famine conditions. Use the Internet or your local library to search for information on what can be done.

More and more, people are coming to the conclusion that hungry people are not the problem, they are the solution. The cliché, "*The world has seven billion mouths to feed,*" is not only inaccurate but dangerous in that it leads to resignation. There are many courageous individuals whose creativity and productivity must be unleashed.

Hunger persists because hungry people lack the opportunity to bring their own hunger to an end. Only by mobilizing the energy, responsibility, creativity, and resources of the poor themselves can a society be created that is truly free from hunger.



Assignment 3.2

Food Security Investigation (35 marks)

1. **Choose** a format for your report. You can present your research as a written report, a PowerPoint presentation, or a poster.
 - **Report:** The report must consist of at least **four** typed pages, double-spaced, using a 12-point font similar to Arial or Times New Roman. The report **must** include a minimum of **two** graphics (chart, table, or picture).
 - **PowerPoint:** The presentation must include at least **12** slides. The text should be presented in a font and a colour that is easy to read. Use a combination of backgrounds, transitions, and pictures to enhance the presentation.
 - **Poster:** The poster must have a clear heading and clear subheadings. The text should be organized into sections. Use colour and pictures to capture the reader's attention. In order to make good use of space, the use of a pamphlet or "lift the flaps" format is allowed.
2. **Choose** any three of the food security factors listed below. You will answer Questions 3 to 6 for each factor.

<ul style="list-style-type: none">■ war and civil unrest■ availability of small scale loans to farmers■ education of women and girls■ secure source of water■ secure food storage	<ul style="list-style-type: none">■ availability of a variety of seeds■ availability of fertilizer and pesticides■ dependable communication infrastructure■ stable energy source	<ul style="list-style-type: none">■ maintenance of transportation infrastructure■ reduction of waste■ education for farmers (i.e., making research available on improved farming techniques)■ political support
---	---	--

Note: Although war/civil unrest is used as an example for the following questions, you may choose this factor as long as your answers are original.

continued

Assignment 3.2: Food Security Investigation (continued)

3. **Describe** each factor and provide a relevant example.
 - *Example:* War is a state of armed conflict and/or hostility that can exist between nations, states, or armed groups. The war in Afghanistan was between the al-Qaeda terrorist organization and the allied NATO troops.
4. **Identify** one consequence of the factor that has a negative impact on food security and provide an example.
 - *Example:* One consequence of war is that foreign countries may impose sanctions as a way to pressure the country/groups to stop fighting. These sanctions could include stopping the provision of food aid to citizens. Many countries ordered food sanctions against Iraq during the Gulf War (Iraqi invasion of Kuwait).
5. **Present** one scenario whereby the factor could be improved.
 - *Example:* International pressure (how) by the United Nations (who) can stop or prevent countries/individuals/organizations from funding groups that are a part of the conflict (what). A lack of funding makes it difficult for groups to arm themselves with weapons, supplies, and equipment.
6. **Compare** how changing the factor can result in improved food security.
 - *Example:* During a state of war, many people's jobs are affected or lost entirely. Ending the war/conflict would allow people to get back to earning a stable income and providing food for their families.
7. **Create** a bibliography that has a complete list of the sources you have used.

Examples:

- Gorley, Sean. "We can't stop war; can we control it?" *TED.com*. Ted Conversations, n.d. Web. 02 Oct. 2013. www.ted.com/conversations/15192/we_can_t_stop_war_can_we_cont.html.
- The page/slide/section should be the last page of your paper/the last slide of your presentation/on the back of the poster.
- You must have at least four sources of information. You may use the course package as one of them.
- Please be sure to consult Appendix E: Instructions for Creating a Bibliography.

continued

Assignment 3.2: Food Security Investigation (continued)

Your assignment will be assessed using the following rubric.

Marking Rubric for Assignment 3.2		
	Possible Marks	Marks Given
Description of Factors <ul style="list-style-type: none"> ■ Brief but accurate descriptions ■ A relevant example is provided per factor 	6 marks 1 mark for the description (x 3) 1 mark for the example (x 3)	
Negative Consequences <ul style="list-style-type: none"> ■ Identification of a negative consequence ■ A strong connection is made between the consequence and the impact on food security ■ Refers to course content as well as to independent research for examples 	9 marks 1 mark for identifying a consequence (x 3) 1 mark for explaining the impact on food security (x 3) 1 mark for providing a relevant example (x 3)	
Scenarios <ul style="list-style-type: none"> ■ Each scenario addresses who, what, and how ■ Scenarios are plausible and well thought out 	12 marks 3 marks for identifying the who, what, and how (x 3) 1 mark for plausibility (x 3)	
Results <ul style="list-style-type: none"> ■ Identify the change in the factor ■ Explain the resulting improvement in food security 	6 marks 1 mark for identifying the change (x 3) 1 mark for explaining the result (x 3)	
Style <ul style="list-style-type: none"> ■ Use of strong language, good sentence structure, and highly appropriate word choices ■ Few grammar or spelling mistakes ■ References are relevant and explained in context 	2 marks	
		Total Score: _____ /35

Notes

LESSON 3: FOOD FROM WATER

Lesson Focus

By the end of this lesson, you will

- Learn about the importance of food from water in the global diet.
- Learn about aquaculture and its growing importance as it contributes to a stable, renewable source of protein for an increasing world population.
- Answer the question “What role does fishing play in supplying food for both developed and developing nations?”
- Discover what are Marine Protected Areas and what role they play in sustainability.

Introduction

Living in the middle of the Prairies, you may not think about where the seafood you eat comes from. Perhaps you don't eat seafood, but eat lake fish instead. Depending on your lifestyle, you may have gone fishing in a lake and had the pleasure of frying up perch, pickerel, or pike over an open fire. The increasing world population has an impact on all things and fishing is no exception. This lesson will revisit some of the issues related to increased population and agriculture by looking at how those issues relate to food from the waters.

The Big Picture

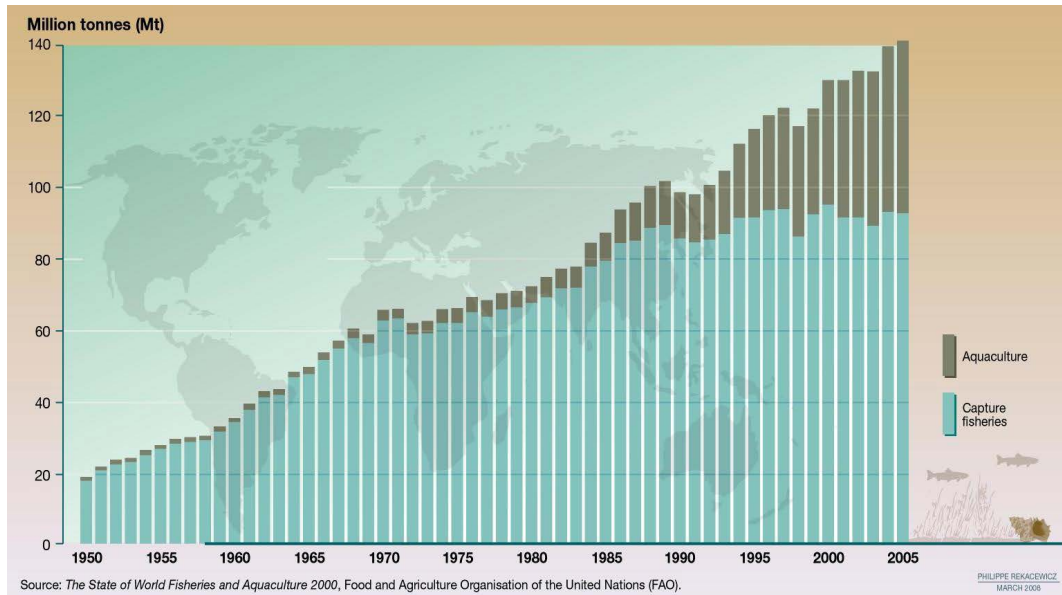


It is probably best to start with a review of some vocabulary used when discussing the fish industry. If you read any articles from the World Health Organization (WHO) or the United Nations Food and Agriculture Organization (FAO), you need to know that **capture fisheries** refers to catching wild fish as opposed to farmed fish. Farmed fish are identified as **aquaculture**. Capture fisheries can be further subdivided into marine catch or inland water catch.

Capture fisheries and aquaculture provided about 140 million tonnes of food in 2007, which translates to just under 17 kg of fish per person (see Figure 3.5). Figure 3.5 also illustrates that over 40% of this fish is from aquaculture (almost half of which comes from China), and about a quarter of the total catch is used for animal feed.

Figure 3.5

GLOBAL FISH PRODUCTION



Source: United Nations Environment Programme. *Vital Water Graphics*. Earthtrend database, World Resources Institute (WRI), Washington; Faostat, Food and Agriculture Organization of the United Nations (FAO). www.unep.org/dewa/vitalwater/article167.html.

According to the FAO, more than 2.5 billion people acquire at least 20% of their animal protein from fish, and around one billion people depend on fish for their main source of animal protein. Of the total amount of animal protein consumed in the entire world, around 15% is provided by fish. That being said, keep in mind that a fair amount of the production is from unrecorded subsistence fisheries, so these numbers are estimates.

The Fish Products and Industry Division of the FAO indicates that, in 2004, over 71 billion dollars worth of fish was traded on the global market. The numbers show that the value of this world trade increased by more than 50% in the ten years between the mid-1990s and the mid-2000s. Most of this increase can be attributed to increased participation by developing nations in the fishing industry and to changes in the market.

Notice that in those ten years only the *value* of fish on the global market increased by roughly 50%. The actual *production* of fish, or the amount of fish being harvested, rose by about 1.2% per year, overall. When you look at the world distribution of that 1.2% increase, just under two-thirds or around 60% is from developing nations.

The increased use of processing techniques such as freezing, canning, and curing (especially freezing), has enabled fish products to be transported and sold to all corners of the world.

The fact that the value of fish has increased to such an extent is good from an economic point of view, but the globalization of the industry presents challenges from a regulatory point of view, with regard to quotas (harvesting limits), worker safety, and the safety and quality of the fish products. A more important concern, however, is the pressure that increased harvesting places on a resource that is not limitless and the environmental consequences.

Sustainability Issues

The FAO estimates that over 50% of fish stocks worldwide are fished at the limit to which they are able to produce through reproduction (MSY—Maximum Sustainable Yield). As well, 25% of the stocks are overfished (harvest is more than the reproduction rate of the fish population or MSY), and only just over 20% of the stocks are being fished at less than MSY. There is no place on Earth that has not been fished.

One of the problems in determining the level of harvest that is sustainable is the interpretation of the biological data on fish populations. The question that needs to be asked is whether the MSY is a goal to be reached or is it an absolute maximum, and, therefore, outside safe limits. The situation has been relatively stable since the mid-1990s, but there are concerns about the domino or “knock on” effect. Some fishery biologists and watchdog groups claim that the large harvest rates have had a noticeable impact on the food web and that the non-economic marine populations are changing in ways never before seen. For example, with the reduction of predator fish populations, the prey populations are rising.

There is general agreement around the world that aquatic ecosystems are in decline. There has been considerable media coverage on the issue of overfishing, coastal degradation, and pollution, with the focus being aimed at the failure of the fisheries management. What are the challenges that the global fisheries “managers” have to deal with? Some of these challenges are

- overfishing, unregulated harvests, and unreported harvests
- too many vessels chasing too few fish
- waste of “bycatch” (unwanted species that get caught in nets and die)

- degradation of aquatic habitats by coastal degradation and pollution and bottom trawlers in the high seas

The fisheries are crucial, especially for developing nations, for both income and nutrition. The global nature of the industry certainly complicates the issue when cultural values and socioeconomic factors are included in any large-scale management revisions. According to the FAO, however, there are steps that can be taken to ensure sustainable fishing practices.

- Simplify management objectives and ensure that they are consistent across jurisdictions.
- Recognize the nutritional, economic, social, environmental, and cultural importance of the fisheries industry, as well as its biological sustainability.
- Implement enforceable rights.
- Ensure secure rights are granted to the resource users.
- Offer incentives to increase compliance, such as market-based compliance status to increase sales.
- Eliminate short-term perspectives motivated by politics and money.
- Move away from the “top down” system of management.
- Improve the scientific information upon which decisions are based.

Management is also moving toward a more holistic “ecosystem-based” approach where the entire system, or food web, is considered. Traditionally, the approach has been a species-by-species approach. Recognizing the complexities of the connections within ecosystems, and the fact that the actual management will be directed at fishers (as opposed to the environment as in terrestrial systems), will help improve the efficiency of the system.

In 1996, the Marine Stewardship Council (MSC) was launched, partly in response to the 1992 closure of the cod fishery on the east coast of Canada. The MSC uses consumer education and purchasing power as an incentive for fishers to harvest their catch sustainably. In response to consumer demands, retailers are increasingly committing their companies to selling only fish that comes from sustainable fishery resources. Many leading food retailers in the developed world have made the decision to sell only fishery products that are sustainably harvested and that carry a statement to that effect. This places a great deal of pressure on both the government and the industry to meet these demands. The FAO has set out guidelines that outline the basic requirements for such ecolabelling initiatives.

The potential for the wild capture fisheries worldwide is at its limit. Increases in catch can only come through restoration of overfished populations, which would require greatly improved management practices. All projections, however, point to increased demand for fishery products in the future and this means that aquaculture will need to play a substantial role in satisfying that demand.

Limits on the amount of fish trade keeps fish prices relatively high. Unfortunately, this reduces access to adequate fish protein and all its nutritional benefits by those who cannot afford the higher prices.

The Role of Fishing in Developing and Developed Nations

On a basic level, fishing can be seen as the water equivalent of farming. Like farming, there is a huge difference of scale in the fishing activities of developed nations to that of developing nations.

Developed Nations	Developing Nations
<ul style="list-style-type: none"> ■ fish catch is from large companies that use factory trawlers to harvest in international waters ■ ships harvest for weeks at a time and have the on-deck facilities needed to process most of the catch ■ very few staff are needed to operate a factory trawler, so output per person is quite high 	<ul style="list-style-type: none"> ■ small-scale fishers with smaller boats, pull nets by hand, or fish with line and hook ■ local fishermen stay close to shore and process or sell their fish at the harbour ■ number of fishers per unit of catch is much lower than the industrial scale factory trawler number

To further illustrate the differences between fishing in the developing versus the developed world, consider that most fishers in the world are located in developing nations and operate small, motorized and non-motorized vessels. These types of fisheries are called artisanal, small-scale, or subsistence fisheries. The FAO estimates that, in 2004, there were over 41 million of these fishers. Compare this to only one million fishers in developed nations—a huge difference, considering that the total catch for the world is nearly the same for the two groups.

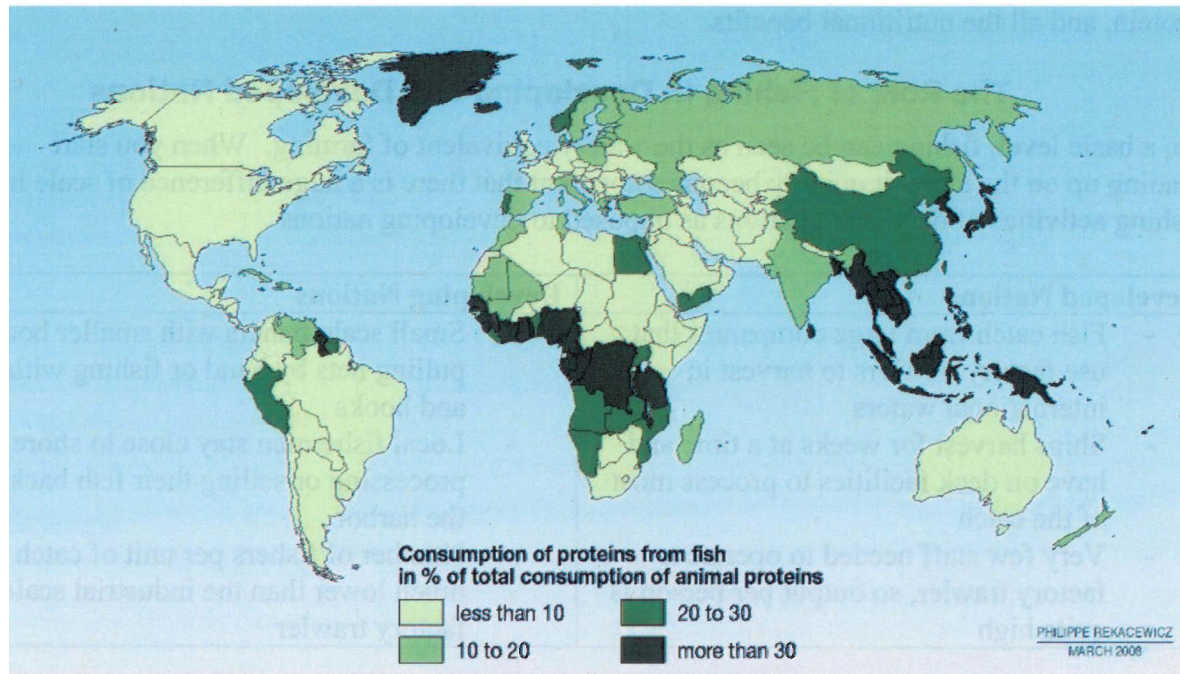
This difference in the number of people involved speaks to the different role that fishing plays in the developed versus the developing world. If approximately half the money from the global fishing industry goes to the 40 plus million people in the developing world, then clearly the role that fishing plays is more important in the developing world. Fishing also plays a more important cultural role for people in the developing nations than the developed nations.

With regard to nutrition, food from the water, either marine or inland, is an important source of protein and nutrition. The FAO states that 2.5 billion people depend on fish for 20% of their protein, not to mention the importance of fish oils.

Figure 3.6 illustrates that consumption of fish protein is more concentrated in developing regions of the world, such as southern Africa and southeast Asia.

Figure 3.6

PROTEIN CONSUMPTION FROM FISH



Source: United Nations Environment Programme. *Vital Water Graphics*. Earthtrend database, World Resources Institute (WRI), Washington; Faostat, Food and Agriculture Organization of the United Nations (FAO).
www.unep.org/dewa/vitalwater/article176.html.

In the discussion on fisheries management, recall the point that was made about moving away from a “top down” management style. It is recognized that co-management arrangements driven by the fishers themselves are generally more effective management structures. Given the fact that there are so many fishers in developing nations, establishing defined fishing rights in those nations is crucial for the long-term sustainability of the resource. Hand-in-hand with this is the need for education and secure infrastructure.

Aquaculture

What is Aquaculture?

Do you remember reading about the different types of agriculture? Depending on individual circumstances and location, farmers usually grow crops or raise livestock (pastoral farming).

With the amount of wild-caught fish (both marine and inland) levelling out in recent years, and with the very real risk overfishing places on wild fish stocks, more people have turned to raising fish much the same as land-based livestock is raised. Fish are raised in a variety of controlled environments. Since the mid-1980s, aquaculture has been supplying an increasing portion of the global fish supply (see Figure 3.5), and may soon be providing close to half the total supply.



As defined by the United Nations Food and Agriculture Organization (FAO), **aquaculture** is the “farming of aquatic organisms including fish, mollusks, crustaceans and aquatic plants. Farming implies some sort of intervention in the rearing process to enhance production, such as regular stocking, feeding, protection from predators, etc. Farming also implies individual or corporate ownership of the stock being cultivated . . .”

Marine Protected Areas

Marine protected areas (MPAs) are established to assist in sustaining exploited fish stocks and to protect critical habitats and their biodiversity. As of early 2010, only about 2% of the world’s oceans are protected by MPAs in one form or another. However, many of these protected areas still allow sport fishing and recreation. The reality is that less than 1% of the world’s oceans are protected from fishing.

International organizations that support the establishment of MPAs include the United Nations, the World Health Organization, the International Union for the Conservation of Nature, and the World Commission on Protected Areas, just to name a few. It has been suggested that an achievable goal would be the establishment of MPAs to cover 20% of the world’s oceans.

Well-designed MPAs cover a large area, are in a good location, have proper management and enforcement policies, and benefit from grassroots support. Scientific evidence shows that MPA habitats damaged by overfishing can recover, resulting in larger and more numerous fish than before. If an MPA is designed with recovery in mind, the eggs and larvae of species stay within the boundaries of the MPA and stand a good chance of becoming established. Activities outside the boundaries of the MPA, such as intense harvesting, will also clearly have an effect on the success of an area.

A social impact of MPAs could be a short-term reduction in the income of local fisheries, but in the long term, these effects are offset by a consistent growth in the levels of fish available and in the size of the fish, thanks to the spillover of fish from the protected area. These kinds of social effects are important to consider when designing an MPA.

Pros and Cons of Aquaculture

Aquaculture has both positive and negative consequences.

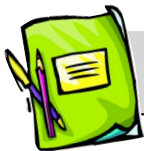
Pros	Cons
<ul style="list-style-type: none"> ■ is a potential boon for the recovery of fish stocks that are in collapse ■ provides a means of livelihood for fishers who no longer have the option of doing their traditional work ■ provides half of the world’s total fish catch ■ is an effective source of animal protein and nutrition for those who can afford it ■ provides economic development and encourages local investment ■ increases scientific knowledge and technology ■ helps protect coastal waters from pollution (for example, farmed mollusks such as oysters) 	<ul style="list-style-type: none"> ■ reduces world prices and thus the viability of distant fisheries ■ requires the intensive use of resources such as food, chemicals, and medicines for the increased development of high-value carnivorous fish (e.g., salmon) ■ increases the risk of associated environmental damage connected to all things “industrial” ■ spreads disease and parasites to the local wild populations when the two species are in close quarters ■ pollutes coastal ecosystems when industrial aquaculture is unregulated ■ causes environmental damage and social conflicts when fish waste is exported to the surrounding environments ■ damages the delicate balance of the ecosystem if the farmed species is not native to the local ecosystem and escapes ■ reduces the overall available aquatic food supply as smaller fish are often harvested to feed larger fish

Unfortunately, it is not difficult to find an example of social conflict in developing nations as a consequence of aquaculture. The shrimp fisheries located in tropical areas of developing countries is just one example. Large-scale shrimp farms, owned by foreign, multinational corporations, set up operations in a designated location, often with little regard for the local ecosystem, and may leave the area unsuitable for the local small-scale shrimpers. The resultant loss of livelihood and food source for the local population has a long-term negative impact on the community.

In addition, there is little economic benefit to the local economy as the market for the shrimp product is found in developed countries. When the product leaves the region, the main financial gain from the shrimp farms leaves as well, along with the livelihood of the local shrimpers and the main nutritional protein for the local community. The negative impact to the economy and the environment, and the threat to the nutritional well-being of the local population act as lightning rods for social conflict.

An example of the social impact that fish farming can have on communities in the developed world is the economic results of flooding the world market with cheap, farmed salmon. Inexpensive prices result in significant business and job losses for commercial fishers and all the social problems associated with those losses, such as the disappearance of small coastal communities. Also, in developed nations, farming methods have become more intensive, resulting in fewer employees despite increased production.

It is evident that the continued development of industrial aquaculture needs to be mindful of the principles of sustainability in both the developed and the developing world.



Learning Activity 3.5

Aquaculture

1. According to the FAO, how many tonnes of food were provided from the fisheries and aquaculture in 2007? How many kilograms per person?
2. If the actual production of fish has increased by only 1.2% per year over a ten-year period, then how do you explain the 50% increase in the value of the fish on the global market for the same period?
3. What does FAO stand for? What does MSY stand for? What does the FAO say about world fish stocks and the MSY?
4. Research the Marine Stewardship Council. Describe the organization and identify how it works towards creating sustainability in the seafood market.
5. Some biologists feel that heavy harvest rates have had a noticeable impact on the food web. Non-economic marine populations are changing in ways never seen before. Conduct your own research and find one or two examples of how the catch of predator fish has affected the prey fish populations. This is also called the “knock on” effect.

Future Role of Aquaculture

To what extent is aquaculture able to supply food for an increasing world population? Current research suggests that aquaculture will continue to play a pivotal role in providing animal protein for human consumption, especially given that the wild fish stocks are greatly depleted and have reached a plateau.

At the time of writing, the most recent statistics on aquaculture were from the FAO statistics website (www.fao.org/fishery/statistics/global-aquaculture-production/en). These numbers tell us that between 2005–2006, 2006–2007, 2007–2008, and 2008–2009, total production increased 5.8%, 5.5%, 5.7%, and 5.8%, respectively, with the total global production in 2009 at just over 73 million tonnes.

When considering the value in US dollars (USD) for the same four-year period, from 2005–2006 the total production value increased 10.3% and jumped to 16.4% from 2006–2007. When the global recession of 2008 occurred, the growth between 2007 and 2008 dropped to 7%. The recession continued to influence the values of aquaculture with an increase in production of only 5% between 2008 and 2009.

According to the FAO, aquaculture is, “developing, expanding and intensifying in almost all regions of the world, except Sub-Saharan Africa, as the global population demand for aquatic food products is expected to increase.” Globally, however, most of the main fishing areas have reached their potential and this will create difficulties for sustaining increasing levels of fish production in the capture fisheries. It is predicted that supply will not be able to meet the demand.

In order to significantly contribute to this increasing demand, aquaculture must continue to develop by intensifying, diversifying, and modifying its systems and practices, including breeding new species of fish. It is imperative that these measures are carried out with the awareness that resources must be used responsibly and effectively.



Learning Activity 3.6

Critical Thinking

This is a quick, critical thinking activity.

Imagine that you are the Canadian Minister of the Environment in Ottawa. During question period in the House of Commons, the Environment Critic for the Opposition asks you why Canada is lagging behind the rest of the world in establishing MPAs, and adds that it is embarrassing that only 1% of Canada's waters are protected. How do you respond?

Lesson Summary

When it comes to food from the water, the big picture consists of an overview of the fishery industries around the world. It is clear that all forms of aquatic harvest are important to the health and nutrition of the 2.5 billion people that consume fish as a substantial part of their diet. In addition to the nutritional importance of the aquatic harvests, the fishing industry has had worldwide impacts on the economic and social structure of countries that depend so heavily on its success.

The importance of sustainability is repeated in this lesson and includes concrete steps that everyone, no matter if they are fishers, politicians, business people, or consumers, must take in order to sustain the industry and protect the resources and the environment worldwide.

It was shown that fishing is proportionately more important to the developing nations and, for this reason, it is important to remember why sustainability is important. If half of the aquatic production occurs in developing nations, then it makes sense to emphasize the importance of long-term viable harvests from the water.

Aquaculture holds the promise of reducing the pressure on wild fish, shrimp, and shellfish stocks, but it is not without drawbacks. Again and again the world is confronted with the challenge of how to ensure the sustainability of food production. MPAs offer the potential to help ensure a stable supply of food from water.

Notes



Assignment 3.3

Article Analysis (20 marks)

In this assignment, you are asked to read about two different situations.

The first reading is a series of notes taken during the viewing of a documentary film, *The End of the Line*, which presents the state of world fishery in 2009.

The second reading is more local. It gives a description of the collapse of the Canadian east coast Atlantic cod stocks and the resulting moratorium (suspension of activity) that occurred in 1992 and continued into early 2010.

The **purpose** of this assignment is to give you an opportunity to practise looking at the “big picture” of an issue, and making connections between cause and effect. You are also asked to engage in some critical thinking as well as to develop and express your own opinions.

As you read the two articles, pay attention to the wording and how ideas are presented. Keep in mind the difference between *fact* and *opinion*. Follow the instructions for each article.

Article 1

Read the notes and complete the Article/Media Analysis sheet found after the article.

Notes from “The End of the Line”

- Humans have always looked upon the fish in the oceans as a renewable resource, but with the amount of biomass (biological material or food) being harvested, it is not renewable.
- Local catches of fish are declining; however, in 2001, the total world catch was still going up ... World catch had actually been decreasing since 1988, but officials only acknowledged it in 2002. This is arguably one of the biggest problems in the world.
- Large-scale industrial fishing started around 1950. The abundance of large fish globally has declined by about 90%. Some dispute this and say it’s only a 70% decline, but this is still huge.
- The basic problem is that there are too many boats and too few fish.
- Global fishing capacity could catch the current world catch 4X over. The technological equipment is so good, fish cannot escape.

continued

Assignment 3.3: Article Analysis (continued)

- Bottom trawlers do a tremendous amount of damage to the ocean floor.
- Fishing is supposed to be controlled through internationally agreed upon quotas. However, scientist recommendations are sometimes ignored.
- Hundreds of millions of people depend on fish to stay alive: around 1.2 billion people rely on fish as a key part of their diet. The governments of many developing countries trade fishing rights for cash from developed nations. Super trawlers are paid for by rich government subsidies.
- Each year more than 7 million tonnes of fish are wasted—a tenth of the world’s catch is killed as “bycatch.”
- As the amount of fish decreases, the people are made poorer, and they then try to emigrate.
- Harvesting of predators upsets the natural balance and results in a domino effect that we have no way of predicting.
- Extrapolated graphs of fish stocks show a total collapse by 2048. One third of the species that we eat are in a collapsed state right now.
- Consumers have the power to support the ethical fishing industry. There are fish buying guides and also labels that certify sustainability set by the Marine Stewardship Council (MSC).
- Fish farming uses wild fish to feed farmed fish but it kills more than it produces.
- The solution is the marine preserves. In 7 years of protection, Caribbean reefs showed a 3 to 5% increase in the number of fish species.
- If between 20 and 30% of the world’s oceans were to be protected, it would cost about 12–14 billion per year. This is about the same amount as subsidies that encourage overfishing. It would also create about 1 million jobs worldwide.
- The world signed up to create a network of marine protected areas by 2012, but citizens have to put pressure on governments. There are 4000 marine reserves worldwide and they cover only 0.6% of the oceans. Politicians have to act responsibly when making decisions, and consumers need to change their eating habits. The global fishing industry has to abide by the rules and cut back on the harvest. The problem, again, is the political will to address these issues.

Source: *The End of the Line*. Arcane Pictures, 2009. Based on a book by Charles Clover. Directed by Rupert Murdoch. Film.

Assignment 3.3: Article Analysis (continued)

Analyzing Opinion-Based Article/Media (6 marks)
Title and description of article/media: _____ _____
Date of article/media: _____
What question/issue does the documentary address? _____ _____ _____
State the opinion of the documentary in your own words, and list the evidence given to support the opinion. _____ _____ _____ _____ _____
Do you agree or disagree with the documentary's perspective on the issue? Explain why or why not. _____ _____ _____ _____ _____
What further information do you think you should have on this issue? _____ _____ _____ _____ _____
Explain why the ideas in this documentary are important. _____ _____ _____ _____ _____

Assignment 3.3: Article Analysis (continued)

Article 2

Read the article and complete the Article/Media Analysis sheet found after the article.

The Collapse of the East Coast Cod Fishery (2011)

History

The earliest trans-Atlantic fishery was conducted in the 1500's by French and Portuguese fishermen, soon joined by Basques, who took cod in coastal waters and dried them ashore.

Once cod stocks became known, the Normans, Bretons, and Portuguese who pioneered the trans-Atlantic fishery at the beginning of the 16th century were joined in the 1570s by the English. By the second half of the 16th century, in most years, they sent out several hundred ships and many thousand men.

The English fishery grew rapidly in the early decades of the 17th century and became more concentrated than the French. It soon employed well over 200 ships but never exceeded the French cod fleet, which in the mid-17th century comprised over 400 ships, large and small, and almost 10,000 men.

By 1720, the Cape Breton (Île Royale) area fisheries produced about 150,000 quintals (1 quintal = about 50 kg) or 7500 tonnes of dried cod a year, almost half the output of the English fisheries at Newfoundland (estimated at 18,000 tonnes). Schooners, most of them based in Louisbourg, made voyages of 20-30 days to the fishing banks.

The merchant-directed fishery, concentrating upon cod taken close to shore, continued to dominate the economy and society of much of coastal Newfoundland and the Gulf of St Lawrence into the 1800's. In 1900 Newfoundland was still the world's largest producer of salt cod. Half of the cod catch came from the Grand Banks and Labrador fisheries, but these fisheries declined after the 1890s and the inshore fishery increased in relative importance.

In the early 1900s, technological changes occurred in the fishing industry. In Newfoundland the cod trap and the motorized dory increased output per person and improved inshore catch relative to the offshore Bank catch. By the 1920s most boats were gasoline-powered, more trawls were used, and motorized schooners grew in importance; in 1925 there were 10 steam trawlers in Nova Scotia.

Recent Issues

For over 500 years, Atlantic Canada had one of the world's richest commercial fisheries. The Grand Banks were a major source of cod, one of the world's leading food fishes. From the 1950s on, new fishing technologies—including dragnet fishing—and expanding markets for seafood, caused overfishing.

continued

Assignment 3.3: Article Analysis (continued)

In 1977, Canada intervened to protect dwindling stocks and the Atlantic fishery by extending the offshore limit to 370 kilometres (200 nautical miles). But by the late 1980s, groundfish stocks (fish living near the ocean floor, such as cod and halibut) were seriously depleted. In 1992, the steep decline in cod and other groundfish prompted Canada to curtail cod fishing off eastern Newfoundland and Labrador.

What was originally a two-year government moratorium has since been extended indefinitely. Unfortunately, some foreign trawlers continue to overfish outside Canada's 200-mile protective limit.

After 20 Years, Why No Recovery?

For years fisheries scientists could not explain why the stocks were not recovering. However, as research has continued, we now know of some factors that would explain the situation.

Cod are a predator fish, normally pretty high on the food chain. They are referred to as a groundfish, because most of their prey lives on the ocean bottom. Their prey includes foraging fish and organisms such as juvenile lobsters and crabs.

When the cod stocks were fished down to such a huge reduction of their original population, the normal predator/prey relationship was severely disrupted. The first thing that happened was the populations of the prey organisms increased. Scientists speculate that this population increase led to a type of role reversal, where the increased number of foraging bottom dwelling organisms like lobster and crab, began preying on the immature cod, slowing the recovery of their population.

These foraging organisms also depend on zooplankton for their food supply. The increase in their numbers, which in terms of biomass had reached levels 900% more than their pre-collapse levels, resulted in a reduction of available zooplankton. With the reduction of their food supply, the prey populations are decreasing. A return to the original ecosystem structure is predicted.

A limited fishery was opened in 1999, but then closed again in 2003. In the research paper entitled "Correlates of recovery for Canadian Atlantic Cod..." J.A. Hutchings and R.W. Rangeley point the finger at poor management as being a contributing factor to the failure of the stocks to recover. In reality, the failure/delay of the cod stock recovery is likely a result of a combination of factors.

Based on: Frank, K.T., et al. "Transient dynamics of an altered large marine ecosystem". *Nature* 477, 86–89. (Oct. 2011). www.canadiangeographic.ca/atlas; Canadian Geographic. "Fishery." www.canadiangeographic.ca/atlas/themes.aspx?id=fishery&sub=fishing_centuries_16th&lang=En; and Hutchings, Jeffery A. and Robert W. Rangeley. "Correlates of Recovery for Canadian Atlantic Cod (*Gadus morhua*).". *Canadian Journal of Zoology*. http://myweb.dal.ca/jhutch/publications_pdfs/2011_hut_rang_cjz.pdf.

continued

Assignment 3.3: Article Analysis (continued)

Analyzing Opinion-Based Article/Media (6 marks)
Title and description of article/media: _____ _____
Date of article/media: _____
Main Idea _____ _____ _____
Summarize the main points in your own words. _____ _____ _____ _____ _____
In point form, list ten facts presented and underline a key word in each fact. _____ _____ _____ _____ _____ _____ _____ _____ _____ _____
Write a minimum of five questions you have about the topic. _____ _____ _____ _____ _____
Explain why the ideas in this article are important. _____ _____ _____ _____ _____

Assignment 3.3: Article Analysis (continued)

The final piece of this assignment is to **complete** the Making Connections form that follows. This will allow you to summarize and connect the issues raised in both articles.

Again, the purpose of this assignment is for you to practise looking at the “big picture” of an issue and to make connections between cause and effect. It is an opportunity for you to engage in critical thinking and to express your own opinions.

continued

Assignment 3.3: Article Analysis (continued)

Making Connections (8 marks)	
	Commentary
Issue	<hr/> <hr/> <hr/>
Cause(s)	<hr/> <hr/> <hr/>
Historical Background	<hr/> <hr/> <hr/>
Present Situation	<hr/> <hr/> <hr/>
Main Stakeholders	<hr/> <hr/> <hr/>
Main Issues	Political <hr/> <hr/> <hr/> <hr/>
	Economic <hr/> <hr/> <hr/> <hr/>
	Environmental <hr/> <hr/> <hr/> <hr/>
	Social <hr/> <hr/> <hr/> <hr/>

LESSON 4: TECHNOLOGY, PRESENT AND FUTURE CHALLENGES

Lesson Focus

By the end of this lesson, you will

- Discuss the alternate methods for producing food and explore the question: “To what extent will these sources be able to supply food for an increasing world population?”
- Look at some present challenges to food production and population growth.
- Critically analyze the current global food situation and look at what present trends in food production could be altered to implement the principles and guidelines of sustainable development.

Introduction

This is the final lesson in Module 3. Although there is no assignment for this lesson, there may be questions on your midterm examination that deal with the material presented here. Some of the lesson content may seem to repeat content from Lesson 2 where you read about the methods used to increase food production. However, the information in Lesson 4 is presented in the context of technology and how increased scientific knowledge is being applied to food production and food processing.

Before reading this lesson, it is important to understand that the production, distribution, and economic components of meeting the global food supply requirements, combined with population growth, are and will continue to be the most important challenges facing those concerned with meeting that demand.

Food from Other Sources: Technological Developments

What other methods are there for producing food? In this lesson, you will be looking at technology in the agricultural industry. Technology can be seen as the application of scientific knowledge for practical purposes in an industry.

The technological methods being considered can be divided into two general areas.

- low-technology methods (minimal use of tools and/or processing)
- high-technology methods (use of complex processing laboratories and facilities)

Alternative Low-Technology Food Sources



Low-technology refers to technology that uses equipment or production techniques that are considered relatively unsophisticated and inexpensive.

Alternative sources of nutrition, beyond the already discussed traditional forms of agriculture (crops and livestock) and aquaculture, often take the form of alternative ways of growing already established crops. For this reason, scientific knowledge of growth patterns, soil management, and insect and disease susceptibilities, can be applied to these alternative growing methods. These methods can be applied in the same general area as applied to traditional crops in an effort to make the most efficient use of available space. These methods include urban farming (incorporating container gardening and vertical gardening) and forest gardening (gardens modelled on natural woodlands). These methods are all based on variations of permaculture.

Permaculture



Permaculture is an approach to designing communities and agricultural systems that are based on and modelled after the relationships found in nature. Many of the modern low-technology developments in food production that multi-task (do more than one thing) are based on this system (for example, different crops in the same space).

Scientists and people who practice permaculture study how organisms interrelate with each other in an ecosystem. This layered approach is different from the usual concerns of mainstream agriculture.

The goal of permaculture is to create stable, productive systems that provide for human needs. It is a system of design where each element supports and feeds other elements, with the goal being to build systems that are virtually self-sustaining.

The main way permaculture practitioners organize and design the elements comprising an area is based on the frequency of human use, and plant or animal needs. Frequently manipulated or harvested elements are located close to the home, and less frequently used elements are located further away. For example, the home itself would be designed to be as efficient as possible (e.g., storing rainwater, solar energy), and the area closest to the home would be those sections of the garden that need frequent attention (e.g., greenhouse, compost, salad crops). Further away from the home would be areas including elements such as fruit trees and bushes, larger compost bins, and bee hives. If space allows, further out still would be where the main crops of the farm are located, then semi-wild areas, and, finally, the wild areas.

Urban Farming

The Food and Agriculture Organization of the United Nations (FAO), has defined urban agriculture as

An industry that produces, processes and markets food and fuel, largely in response to the daily demand of consumers within a town, city, or metropolis, on land and water dispersed throughout the urban and peri-urban area, applying intensive production methods, using and reusing natural resources and urban wastes to yield a diversity of crops and livestock.



In brief, **urban farming** is the cultivation, processing, and distribution of food in and around a village, town, or city.

Many urban gardening organizations exist throughout North America (and on every other continent). The principles of urban gardening include

- making use of abandoned/unused land
- empowering local residents to have more control over their own food security
- saving money, eating better, and developing healthy lifestyles
- increasing local biodiversity and education

A further benefit associated with urban gardening is a noticeable reduction in urban crime. Although it is difficult to prove, it appears that there is a correlation between urban gardening and an enhanced feeling of community and mutual respect among neighbours.

Specific strategies used in urban areas, beyond the traditional garden form, include both container gardening and vertical gardening. In fact, the two are often combined.



Container gardening consists of gardening in large pots or containers in areas where natural soil is contaminated, limited, or covered up. Some aspects of container gardening include the following:

- the efficient use of space makes it popular among apartment and condominium dwellers who have access to patios or balconies
- less water is wasted and disease or insect problems are more easily controlled
- the gardener would need to be able to access research-sourced information on use of proper seed, nutrient requirements, moisture levels, and soil types



Vertical gardening (in containers or elsewhere) provides a vertical space for plants to grow, increasing efficiency of production per unit area. This type of gardening makes sense for those who want to grow vine crops that typically take up a large area, such as cucumbers or squash.

Livestock urban farming is surprisingly diverse. In many urban areas, it is common to keep chickens in backyard coops for both eggs and meat. (Roosters are usually discouraged due to noise complaints.) Examples of other urban livestock are rabbits, pigeons, ducks, turkeys, pigs, goats, guinea pigs, bees, and fish.

In North America, Europe, and Australia, it is becoming more common to hear of backyard chicken coops, beehives set up in backyards or parks, and even abandoned warehouses or basements being converted to sustainable fish farms.



Vermicomposting is the composting of kitchen and household waste with the assistance of worms (usually red wigglers). The worms can also be used as the main source of fish food and the waste water from the fish tanks can be used to irrigate gardens.

Forest Gardening



Once established, **forest gardening** is a low-maintenance and highly productive collection of trees, shrubs, fungi, and perennial ground covers. When mature, forest gardens provide an assortment of fruits, berries, roots, mushrooms, and other edible products such as honey and syrup, as well as forage, fuel, and material for crafts or construction.

Thinking beyond the dirt is one way of visualizing how the forest garden works. Planning is undertaken with the space above the soil in mind—a layered concept. Tall maple trees (sap for syrup, building materials, fuel) and the shorter fruit and nut trees are intermixed with high- and low-berry trees and nut bushes (craft materials), and vines with perennial vegetables such as rhubarb and horseradish fill the middle space. Ground cover could be

strawberries and an assortment of herbs and fungi. A diverse population of insects, animals, and possibly fish would round out the biodiversity.

In the urban setting, these “edible parks” are being established with public access to the edible resources. In the late 1990s, the city of Asheville, North Carolina, dedicated a city park to just such a venture. Many cities are incorporating these and similar principles of sustainability into their long-term plans.

Insects as Food

In Module 1, you were introduced to the characteristics of culture and to the term *ethnocentric* (negative reactions to practices considered very different than our own).

In this context, most European and North American cultures do not look at eating insects as a normal activity. In fact, most people would be opposed to the idea. It is unfortunate from a practical point of view as, according to the FAO of the United Nations, there are over 1400 species of edible insects. Considering the pressures that traditional agriculture puts on the environment and the growing human population, eating insects provides a sustainable source of protein with few negative environmental impacts.

Many countries in South America and southeast Asia eat insects on a regular basis, including as a snack food. During the Beijing Olympics in 2008, many visiting westerners were introduced to deep-fried centipedes, bees, worms, and spiders. Some Taiwanese movie theatres sell deep-fried bees instead of popcorn. In Laos, the FAO has initiated an insect farming project to reduce malnutrition rates and to improve the livelihood of local farmers.

A quick Internet search of “insects as food” resulted in as many as 71,500,000 hits! Clearly, this is not a passing fad, as some of the sites have been on the Internet for over a decade. Research departments in many North American universities are investigating the nutritional advantages of producing this alternative form of protein. Given the fact that the FAO has published information on **entomophagy** (the practice of eating insects) as a realistic factor in feeding the world’s population, it is definitely worth examining.



Advantages

- Insects have about the same amount of protein as meat, but much less fat.
- Because insects are cold blooded, they do not spend their food energy keeping warm as birds and mammals do. This means that they are more efficient at transforming their food to protein and they eat less food per unit weight—about one-fifth less than traditional livestock.

- Farming insects takes less space and energy, making it more environmentally sustainable.
- Butchering is not labour intensive, there are no veterinary or machinery expenses. As well, insects grow faster than traditional livestock.
- The low overhead is particularly advantageous in developing nations where subsistence farmers could farm insects and, as a result, feed the local population and contribute to the economy.

Disadvantages

- Because it is a “new” food source (in North America, at least), there may be some concerns regarding allergies, especially for those people who are allergic to shellfish or shrimp.
- Wild harvested species may have been exposed to pesticides or carry germs. It is recommended that only insects that have been bred and raised by a safe source be eaten.
- Lastly, one cannot discount the resistance factor when trying to sell this form of protein to a culture where consumption of insects is typically seen as disagreeable.

Alternative “High-technology” Food Sources



High-technology methods require sophisticated equipment and advanced engineering techniques, and are relatively expensive.

Greenhouses

Greenhouses are not necessarily high-technology but because they require construction, time, and money, they are beyond the resources of many farmers, urban and rural. However, greenhouses can be as simple as plastic sheeting stapled to a wood frame (often referred to as a cold frame), or as complex as a multi-million dollar facility with computer-controlled temperature, shading, and irrigation.

Principles of vertical and container gardening are used regularly in greenhouses, as the limited area demands an efficient use of space.

Hydroponics

Hydroponics is a method of growing plants in water, without soil, using a mineral-rich nutrient solution. Crops may be grown with their roots in the mineral nutrient solution itself, or in a soilless medium, such as perlite, gravel, mineral wool, or coconut husk.

Two important points about soilless cultivation of plants are

- hydroponics may potentially produce much higher crop yields
- hydroponics can be used in places where in-ground agriculture or gardening are not possible

In the 1700s, researchers discovered that plants absorb essential mineral nutrients from water. In natural conditions, soil acts as a reservoir for the nutrients but the soil itself is not necessary. Once the minerals in the soil dissolve in water, those minerals are absorbed by the plant roots. When the required mineral nutrients are introduced artificially into the water supply for plants, soil is no longer required for the plant to thrive.

Hydroponics uses as little as one-twentieth the amount of water as a typical farm, while producing the same amount of food. While the water table could be impacted by the high water use and chemical runoff from large-scale modern farms, hydroponics tends to minimize any negative water-based consequences. There is the added advantage that water use is easier to measure and, as a result, can save the farmer money.

Advantages

There are several reasons why hydroponics is being adapted around the world for food production.

- No soil is needed.
- The water stays in the system and can be reused—lower water costs.
- The nutrition levels in their entirety can be controlled—lower nutrition costs.
- No nutrition pollution is released into the environment because of the controlled system.
- It results in stability and high yields.
- It is easier to eradicate pests and disease than in soil because of the container's mobility.
- It has an ease of harvest.
- Growers can make ultra-premium foods anywhere in the world, regardless of temperature and growing seasons.
- Hydroponics have been used to enhance the nutritional content of some vegetables.

Disadvantages

- Without soil as a buffer, any system failure results in the plants dying quickly.
- High moisture levels can cause “damping off,” a fungus that kills the young plants.

- Different hydroponic plants may require different fertilizers and containment systems, which means the whole system can be complex, expensive, and intimidating.

With pest problems reduced and nutrients constantly fed to the roots, productivity in hydroponics is high, although plant growth can be limited by the low levels of carbon dioxide in the atmosphere or limited light exposure. To further increase yields, some sealed greenhouses inject carbon dioxide into their environment to help growth (CO₂ enrichment) or add lights to increase light exposure.

Algae

There are different opinions as to whether algae is a low-technology or a high-technology method, because it has been used as a food source and dietary supplement for centuries. However, with the use of modern technology, different varieties of edible algae are used for many different things.

Algae is the Latin word for *seaweed* and refers to a large group of simple but diverse organisms that range from a single cell to larger sea weeds (e.g., kelp). Ocean microalgae (phytoplankton) are the base of the ocean food chain. They contain chlorophyll and photosynthesize (convert solar energy to carbohydrates), but because they do not have plant structures such as leaves and roots, algae are not considered plants.

Besides being used as a source of food, algae have many other different uses. The following list shows the many uses and versatility of this organism:

- agar (solid substrate to contain culture medium for microbiological work in petrie dishes)
- soaking up carbon (photosynthesis uses carbon, gives off oxygen)
- sustainable biofuels
- bioplastics
- fertilizer
- livestock and fish food
- dyes and pigments
- pharmaceuticals
- thickener in food processing (carageenan from Irish moss)

Spirulina is a spiral-shaped microalgae used in human and animal food supplements. When dried, spirulina forms a fine dark blue-green powder with a mild seaweed taste.

Spirulina is cultivated around the world and is used as a human dietary supplement as well as a whole food. The UN has identified spirulina as the *best food for the future* and a number of aid agencies use a high protein algae powder mixed with flour in famine emergency situations. It can be used to add flavour and nutrients to smoothies, salads, and dips, and can be used as a food supplement in the aquaculture, aquarium, and poultry industries. To produce your own supply all you need to do is purchase a photobioreactor! As far as the nutritional content goes, spirulina contains an unusually high level of protein, making it superior to typical plant protein, such as that from beans and other legumes. In fact, NASA and the European Space Agency have both identified it as one of the primary foods to be cultivated for long-term space missions. By-product waste from the production of the algae powder can be used to make bioplastics. It is truly a versatile organism.

Other Technologies

Nanotechnology is a wide-ranging area dedicated to working with extremely small materials and structures in the order of one-millionth of a millimetre. Nanotechnology in food production is a new industry and companies are currently researching the use of nanotechnology in areas such as packaging (to reduce spoilage or to indicate that spoilage is beginning) and food processing (creating new products and improving old ones).

New factories that include research and development sections are being built to incorporate principles of sustainability, such as waste water and heat recycling, use of solar energy, and having as many parts of the food production chain on site as possible (e.g., grain storage on site with flour milling, a bakery, a packaging area, and transportation facilities).

Advances in technology also allow for a more varied use of protein isolate extracted from sources such as barley, canola, and soy beans. In addition to being used as fish and livestock feed, protein isolate is used as an ingredient in the preparation of beverages and foods, such as vegetarian dishes and sports or energy bars.

Corn is processed into many products and is used in many forms of industrial food processing. Check the ingredients of many prepared foods and you will see ingredients such as high fructose corn syrup, corn starch, modified corn starch, hydrolyzed corn protein, and dextrose, just to name a few.



Learning Activity 3.7

Technology and Food Production

Read the following newspaper article and answer the questions that follow.

Edible park just keeps on giving

Twelve years ago, local volunteers teamed up with the city's Parks and Recreation Department to replace trash with trees and establish Asheville's first edible park. City Seeds, a now-defunct local nonprofit, enlisted a group of Warren Wilson College students and other volunteers to transform a rubble-filled lot into an urban orchard. Today, George Washington Carver Park occupies the former site of Stephens-Lee High School, which served African-American students during segregation; it was demolished in 1975 in the name of urban renewal.

Boasting more than 40 varieties of fruit and nut trees, the park serves as both a peaceful place to relax and a city farm providing the community with nutritious, locally produced food. "We have everything from A to Z growing there," notes permaculture guru "T. Bud Barksip" (aka Bill Whipple). "A for apple and Z for Ziziphus (also called jujube fruit or Chinese date)."

Barksip learned of the orchard five years ago while looking for a good place to view the Fourth of July fireworks. Realizing that he was surrounded by fruit trees, he also saw that they needed attention. "Many people are intimidated by [maintaining] fruit trees, since they need lots of cutting and care." Barksip now helps provide that care, along with a cadre of volunteers from the Bountiful Cities Project.

Seeing the park as a source of inspiration for the community, Barksip hopes the experience of harvesting fresh fruits and nuts from the land will encourage residents to plant trees of their own while continuing to enjoy their fair share of the park's annual harvest. Unfortunately, that's not always the case, he reports. "Since this is a public park, people are welcome to pick from the trees, though it's interesting to see that most people aren't used to sharing. We ask people to take only what they need."

On Saturday, April 3, Barksip will lead a hands-on program designed to help the general public learn more about this special place. Presented in cooperation with local grass-roots group Transition Asheville, the program will include a 10:30 a.m. tree-pruning demonstration followed by the tour, which will start at 11 a.m.

continued

Learning Activity 3.7: Technology and Food Production (continued)

“We envision a thriving, resilient Asheville known for its strong local economy, regional food system, minimal dependence on fossil fuel and skilled citizens,” writes Jeanie Martin, describing Transition Asheville’s mission. “The edible park is a great example of how public land can be put to its highest use,” she continues. “It offers local food, shade, educational opportunities and a spot that neighborhood residents can be proud of.”

Source: Sezak-Blatt, Aiyanne. “Edible Park Just Keeps on Giving.” Asheville, NC: Mountain Xpress News. <http://mountainx.com/news/>. (March 30, 2010). Used with permission.

1. What are some challenges faced by communities when starting long-term projects such as the edible park described in the article?
 2. List five educational opportunities that a park like this could provide.
 3. Which of the low-technology food sources listed below do you think will be the most popular and useful to society in the future? Will it be difficult to convince people to embrace these methods? Which high-technology food source listed below will be the most beneficial? Why?
 - Low-technology food sources
 - permaculture
 - urban farming (crops and livestock)
 - forest gardening
 - insects as food
 - High-technology food sources
 - greenhouses
 - hydroponics
 - algae
 - other (nanotechnology, food processing)
-

Present Challenges

What do you know about present trends in food production and population growth?

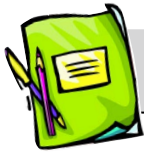
Food production has always generally managed to keep up with the global population growth, in spite of regional famines caused by factors unrelated to the global food supply.

Global population growth has slowed since the end of the twentieth century and is projected to continue to slow. Assuming that all things remain equal, it is possible that the global food supply will keep pace with the population growth.

However, most geographers would agree that food production, population growth, and environmental health remain in a delicate balance. Knowledge, education, and access to information will likely be the key to maintaining this balance. The more educated the populations (and governing officials) are on the dangers of environmental degradation, and the more widespread the understanding of the benefits of sustainability, the better the situation will be for everyone.

It was mentioned earlier in the course that it is important to keep in touch with current events. There are many ways to do this, including reading newspapers, checking online sources, and accessing social networking sites.

Keeping on top of present trends in food production and population growth will continue to be important. As global citizens, you need to be able to reach sensible conclusions about possible consequences of world events, including present trends in food production and population growth.



Learning Activity 3.8

Something to Think About

Based on what you know about mainstream, large-scale food production and the principles of sustainability, how do you think industrial food production can be altered to better implement the principles and guidelines of sustainable development?

The UN Division for Sustainable Development has 96 indicators that countries can use (www.un.org/esa/sustdev/natlinfo/indicators/guidelines.pdf). For this reason, identifying precise principles and guidelines can be complex. In fact, there is no internationally agreed upon list of principles and/or guidelines.

As a rule, however, there are three main components to sustainability when talking about development.

- the social aspects (includes culture)
- the environment
- the economy

Social: When implementing new development, people should be aware of the local and regional social and cultural situation. Local development should not harm the established structure: it should improve the structure through economic opportunities, and maintenance or improvement of local resources.

Environmental: The environment will most likely be changed, but plans should be made to minimize disruption and mitigate (improve) negative consequences, such as air pollution and groundwater contamination. In the case of logging and mining, this would include reclamation of the extraction site so that once the operation is complete, the environment can be cleaned and restored to its original condition.

Economic: The health of the economy, present and future, must be considered. For example, if there is little economic diversity in an area and any development plan is a short-term venture, is there anything that can be done to develop long-term economic prospects? Can part of the profit be dedicated to specific retraining and education of any sort?

continued

Learning Activity 3.8: Something to Think About (continued)

For this learning activity, look at the three components of sustainability (social, environmental, and economic) and complete the following:

- Identify three things that large-scale **livestock producers** could do to become more sustainable (one for each of the three components).
 - Identify three things that large-scale **crop producers** could do to have a more sustainable operation (one for each of the three components).
 - What are three things that could be done to make **fisheries** (wild and/or aquaculture) more sustainable (one for each of the three components)?
-

Lesson Summary

When food is said to come from “other” sources, it refers to food not produced through mainstream, large-scale monoculture industrial farming methods. Scientists are studying alternative high- and low-technology food sources to determine the advantages and disadvantages of their production, based on the need for efficiency in production, storage, and transportation. This includes consideration of social, environmental, and economic sustainability as emphasized in Learning Activity 3.8.

Permaculture involves the interconnected and multi-layered use of available space and is related to forest gardening. Urban farming (crops and livestock) is all about efficient use of city space. Insects as a food source is gaining more credibility in cultures where it has not been a traditional source of protein.

High-technology food sources include crops grown in greenhouses using hydroponics and using technology to turn algae into an important source of nutrition. Industrial food processing research is opening doors to areas such as nanotechnology and the manipulation of plant proteins and carbohydrates as ingredients in many processed foods.

To what extent will these sources be able to supply food for an increasing population in a sustainable manner? This is completely dependent upon the initiative and political will of those populations in need of more food security, as well as the populations that need to be paying more attention to sustainability. The potential for success in keeping the balance exists, as does the potential for human ingenuity and perseverance.

Information sources for this lesson include

- www.cityfarmer.org/sublivestock.html
- <http://en.wikipedia.org/wiki/Permaculture>
- <http://en.wikipedia.org/wiki/Hydroponics>
- <http://en.wikipedia.org/wiki/Sustainability>
- livepage.apple.comhttp://www.growing-algae.com/index.html
- www.fooddrinkeurope.eu/industry-in-focus/topic/nanotechnology/
- www.foodprocessing-technology.com/projects/algae-biosciences-arizona-facility-expansion/
- http://insectsarefood.com/what_is_entomophagy.html
- www.ontariocorn.org/classroom/products.html
- www.fao.org
- <http://faostat.fao.org/>

Notes

MODULE 3 SUMMARY

Congratulations, you have completed Module 3!

Lesson 1 presented an historical perspective on the general purpose of agriculture, as well as a perspective on the location of arable land by region and the general distribution of major crops. The focus then narrowed to look at production variables and characteristics of farms in both developed and developing nations. As well, this lesson discussed the factors of production (land, labour, capital) and the classification of agriculture by type of production (crops, livestock).

Lesson 2 examined some of the challenges that farmers worldwide must overcome and the global struggle to combat hunger. Several myths regarding world hunger were presented. Possible strategies to reduce world hunger were discussed, including the definition of famine, what causes it, and a look at specific situations, including the food riots of 2008 and the Horn of Africa crisis in early 2010.

You also read examples of positive action by organizations trying to combat world hunger, such as The Hunger Project and various programs by World Vision International. You learned about global fish production, including sustainability issues and the role of fishing in both developed and developing nations. Aquaculture and Marine Protected Areas were looked at as solutions to the problem of overfishing with an analysis of the respective pros and cons of each.

Alternative low-technology and high-technology food sources such as permaculture, urban agriculture, and hydroponics definitely have a role to play in the global food supply. Algae and insects are another source of food that could be used to a greater extent than is currently the case. High-technology food processing and nanotechnology offer improvements to current food processing and packaging methods.

Present challenges relating to food production, increasing population, and sustainable development can theoretically be solved, but time will tell if the political and social will exists to speed up the process.



Submitting Assignments

It is now time for you to submit Assignments 3.1 to 3.3 to the Distance Learning Unit so that you can receive some feedback on how you are doing in this course. Remember that you must submit all the assignments in this course before you can receive your credit.

Make sure you have completed all parts of your Module 3 assignment and organize your material in the following order:

- Module 3 Cover Sheet (found at the end of the course Introduction)
- Assignment 3.1: Global Agricultural Production
- Assignment 3.2: Food Security Investigation
- Assignment 3.3: Article Analysis

For instructions on submitting your assignments, refer to How to Submit Assignments in the course Introduction.

Midterm Examination

Before moving on to Module 4, you must write the midterm examination. The midterm is out of 100 marks and worth 25 percent of your final mark.

The exam will follow the following format:

Part A: True or False	1 mark × 15 = 15 marks
Part B: Multiple Choice	1 mark × 15 = 15 marks
Part C: Matching	1 mark × 10 = 10 marks
Part D: Definitions and Connections	5 marks × 5 = 25 marks
Part E: Short Answer	5 marks × 3 = 15 marks
Part F: Long Answer	10 marks × 2 = 20 marks

How to Study for your Final Examination

In order to succeed in your final examination, make sure that you review all of your learning activities and assignments, and all of the lessons in Modules 1 to 3.

There are different strategies you can use to study for this examination. For Parts A, B, and C, it would be extremely helpful to locate key words (highlighted in bold) throughout the modules and review them in the glossary.

Parts D, E, and F may cover the following concepts in greater detail than the first half of the examination.

Lesson	Module 1	Module 2	Module 3
1	<ul style="list-style-type: none"> ■ Physical geography vs. Human geography ■ Physical, cultural, and topical elements of geography 	<ul style="list-style-type: none"> ■ Ideology of Thomas Malthus and Karl Marx ■ Population dynamics and the demographic transition model 	<ul style="list-style-type: none"> ■ Relationship between population density and agricultural production ■ Subsistence, pastoral, and commercial farming practices ■ Global distribution of important crops

continued

Lesson	Module 1	Module 2	Module 3
2	<ul style="list-style-type: none"> ■ Biotic versus abiotic factors ■ Characteristics of maps 	<ul style="list-style-type: none"> ■ Arable land distribution ■ Migration and push/pull factors ■ Environment and population ■ Economy and population ■ China's one-child policy 	<ul style="list-style-type: none"> ■ Myths about world hunger ■ Sustainable agricultural practices
3	<ul style="list-style-type: none"> ■ Ethnocentrism ■ Sense of place ■ Culture 	<ul style="list-style-type: none"> ■ Standard of living and quality of life ■ Needs vs. wants 	<ul style="list-style-type: none"> ■ Capture fisheries
4	<ul style="list-style-type: none"> ■ Human development index ■ Nation vs. country ■ Grouping countries ■ Factors of development ■ Theories of development ■ Less developed countries vs. Developed countries 		<ul style="list-style-type: none"> ■ Aquaculture ■ Alternate sources of nutrition and technology

In addition, reviewing key learning activities and assignments that cover any of the topics mentioned above is an effective way to practise writing short- and long-answer questions.

This may seem overwhelming because there are quite a few areas that are important to review. It helps to study strategically. Familiarize yourself with the main ideas, make connections between topics when relevant, and spend more time on topics that are frequently repeated throughout the modules.

You will complete this examination while being supervised by a proctor. You should already have made arrangements to have the examination sent to the proctor from the Distance Learning Unit. If you have not yet made arrangements to write it, then do so now. The instructions for doing so are provided in the Introduction to this module.

You will need to bring the following items to the examination: pens/pencils and scrap paper. A maximum of 3 hours is available to complete your midterm examination. When you have completed it, the proctor will then forward it for assessment. Good luck!



GRADE 12 WORLD
GEOGRAPHY: A HUMAN
PERSPECTIVE (40S)

Module 3
World Food Supply:
Production and Distribution

Learning Activity Answer Key

MODULE 3: WORLD FOOD SUPPLY: PRODUCTION AND DISTRIBUTION

Learning Activity 3.1: Unsuitable, Potential, and Used Land Area

As mentioned previously, it is important to think critically about the information that is presented and it is your responsibility to back up your conclusions with some degree of research.

1. Study the pie charts and Table 3.1, comparing the unsuitable area, potential arable land area, and used arable land area of the seven continental regions. Then, **answer** the following reflection and critical-thinking questions:
 - a) Which continental region has the lowest percentage of used arable land? How many people does this continent support?
South and Central America; population of 372,897,000
 - b) Which continental region has the largest population? What is the percentage of unsuitable agricultural land? Is this continent developed or developing?
Asia and Pacific; unsuitable land percentage is 70%; the continent is developing
 - c) Which continental region has the largest percentage of unsuitable agricultural land area? Why do you think this is?
North Africa and Near East; the unsuitable land is most likely due to the desert-like and arid climate of the region, the lack of good agricultural soil, areas affected by drought, and overpopulation, to name a few reasons
 - d) Which continental region has the greatest percentage of used arable land and potential arable land combined? Does this percentage, along with the size of the population, reflect its level of development?
Almost half of Europe's land area (47%) is arable or potentially arable; although Europe has high population levels, the continent definitely benefits from the significant amount of land that can be used to produce and sustain enough food for its population and this is reflected in its progressive development

- e) The unsuitable agricultural land in North America is estimated to be roughly 73% and yet it is one of the most developed continents with relatively few problems concerning food production and distribution. Why do you think this is? Explain why North America has few concerns regarding food production and distribution.

Answers will vary but there are connections between low population levels in North America compared to all other continents; the political and economic hegemony of the West, a well-suited agricultural climate (especially in the southern United States) are two explanations

2. **Calculate and record** the population density of the continents in the table below.

The used arable land column has been filled in for you, converted from km^2 to ha^2 ($1 \text{ km}^2 = 100 \text{ ha}$). Use the numbers from Table 3.1 to fill in the population column and calculate the population density by dividing the population by the used arable land. Which continent has the greatest population density? Which continent has the lowest?

Asia and Pacific has the highest population density, North America has the lowest.

Region	Used Arable land (ha^2)	Population (persons)	Population Density (persons/ ha^2)
Asia and Pacific	477706	2,073,805,000	4341
Europe	213791	654,955,000	3063
North Africa and near East	71580	290,860,000	4063
North America (Canada and US only)	233276	285,342,000	1223
South and Central America	143352	372,897,000	2601
Sub-Saharan Africa	157608	572,736,000	3634

Learning Activity 3.2: Changing Myths

1. Turn **four** of the aforementioned myths, along with their responses and commentaries (other than Myth 1, which is used as an example), into a positive statement about hunger. Restate the myth to make it a true statement and then simply summarize the response and commentary in your own words (giving your opinion too). The following example is provided:

Truth 1: The planet produces enough food to feed everyone. The difficulty is being able to sustain that level of production without harming our environment beyond repair, depleting our fuel source, and degrading our soil. The allocation of our food supply is also unequal amongst the global population. We must plan our farming so that the soil and the environment will still provide us with food in the future.

Responses will vary with the choices each student makes, but should meet the following criteria—the myth should be restated as a true statement, and the response and commentary should be in the student’s words. Opinions are optional.

2. Myth 8 addresses both Free Trade and Fair Trade. What are the most important *differences* between the two?

Free trade is a policy by which a government does not discriminate against imports or interfere with exports by applying tariffs (to imports) or subsidies (to exports), or quotas. According to the law of comparative advantage, the policy permits trading partners mutual gains from trade of goods and services. See

http://en.wikipedia.org/wiki/Free_trade;
www.dosomething.org/tipsandtools/free-trade-vs-fair-trade#.
www.smallbusiness.chron.com/trade-vs-fair-trade-1683.html

Fair trade is a trading partnership, based on dialogue, transparency, and respect, that seeks greater equity in international trade. It contributes to sustainable development by offering better trading conditions to, and securing the rights of, marginalized producers and workers—especially in the Global South. Fair trade organizations, backed by consumers, are engaged actively in supporting producers, raising awareness and campaigning for changes in the rules and practice of conventional international trade. See the following:

http://en.wikipedia.org/wiki/Free_trade
www.dosomething.org/tipsandtools/free-trade-vs-fair-trade#
www.smallbusiness.chron.com/trade-vs-fair-trade-1683.html

3. When you consider the statements that Art Myers considers to be myths, which statement do you find the most surprising? Why?

Answers will vary.

Learning Activity 3.3: Food Security

1. Explain the difference between *famine* and *malnutrition*.

Famine has been defined as an extreme and a general scarcity of food, where there is hunger and starvation. Malnutrition is a general, often long-term condition in which there is food, but it does not have sufficient nutrition to sustain a healthy body.

2. Read the editorial provided previously once more and record your reaction to it. Explain one reason for the food supply problem in Africa over the years.

Individual reactions will vary. One reason for the food supply problem is that the local governments often see wars as a priority over the well-being of the general population. In the case of the editorial, the governing body (junta) had imposed strict conditions for the distribution of relief, making a difficult situation even more challenging for the relief workers. The problem could be solved IF the political will was there.

3. Explain the causes of the food riots of 2008 and why there were no riots in 2011, even though the price of food was higher than it was in 2008?

Causes included droughts and oil price increases that pushed up the cost of transport, fertilizers, and industrial farming. Other causes included increased production of bio-fuels and the increased demand for a varied diet by the growing portion of the global population that is getting richer. There were no riots in 2011 because there was enough food stockpiled to remove any fear of running out.

Learning Activity 3.4: Strategies

1. Choose one of the following aid groups (or one of your own choosing), and provide a description of the organization. Please include the following three pieces of information:
 - a) A few sentences describing the organization
 - b) The goals of the organization
 - c) An example of what the organization has accomplished and a brief description of how it did so (a summary of a case study would be fine)

An Internet search of any of the following will get you to their home pages:

- Mennonite Central Committee
- Action Against Hunger
- Oxfam International
- Bread for the World
- Mercy Corps
- CARE

Answers will vary.

Learning Activity 3.5: Aquaculture

1. According to the FAO, how many tonnes of food were provided from the fisheries and aquaculture in 2007? How many kilograms per person?

Capture fisheries and aquaculture provided about 140 million tonnes of food in 2007, which translates to just under 17 kg of fish per person.

2. If the actual production of fish has increased by only 1.2% per year over a ten-year period, then how do you explain the 50% increase in the value of the fish on the global market for the same period?

Most of that increase can be attributed to the increased participation of developing nations in the fishing industry, and the changes in the market. More people are buying the fish at a higher price; there is also the effect of inflation to take into consideration.

3. What does FAO stand for? What does MSY stand for? What does the FAO say about world fish stocks and the MSY?

FAO—Food and Agriculture Organization of the United Nations

MSY—Maximum Sustainable Yield

The FAO estimates that over 50% of the fish stocks worldwide are fished at the limit to which they are able to replenish through reproduction. 25% of the stocks are overfished (harvest is more than the reproduction rate of the fish population, or MSY), and only just over 20% of the stocks are being fished at less than MSY. There is no place on Earth that hasn't been fished.

4. Research the Marine Stewardship Council. Describe the organization and identify how it works towards creating sustainability in the seafood market.

From www.msc.org: “The MSC’s fishery certification program and seafood eco-label recognize and reward sustainable fishing. We are a global organization working with fisheries, seafood companies, scientists, conservation groups and the public to promote the best environmental choice in seafood.”

The MSC works to “transform the seafood market to a sustainable basis” by using market incentives as a way of rewarding and recognizing sustainable fishing practices.

5. Some biologists feel that heavy harvest rates have had a noticeable impact on the food web. Non-economic marine populations are changing in ways never seen before. Conduct your own research and find one or two examples of how the catch of predator fish has affected the prey fish populations. This is also called the “knock on” effect.

In Chesapeake Bay, on the east coast of the US, the Cownose ray population is higher than it has ever been due to the harvest of its predator, the shark (from the film documentary “The End of the Line”).

Off the coast of Newfoundland, the lack of cod and other bottom dwelling prey fish is suspected as being the reason why there have been increased lobster catches (from the documentary “The End of the Line”). It could also be because the sea urchins, that typically eat kelp, have been heavily harvested, leaving more kelp cover to protect juvenile lobsters.

See www.qma.org/lobsters/allaboutlobsters/society.html.

Some bird populations are increasing because of the waste of “bycatch.”

See <http://archive.greenpeace.org/comms/cbio/crisis1.html>.

Learning Activity 3.6: Critical Thinking

This is a quick, critical thinking activity.

Imagine that you are the Canadian Minister of the Environment in Ottawa. During question period in the House of Commons, the Environment Critic for the Opposition asks you why Canada is lagging behind the rest of the world in establishing MPAs, and adds that it is embarrassing that only 1% of Canada's waters are protected. How do you respond?

Something like this: "Mr. Speaker, the Honourable member across the floor needs to realize that we have almost 500 marine protected areas (it is acceptable to round up if it sounds better . . . that's often called "spin"), and if you consider the total area that is protected, we are among the top 10 countries in the world!" You could also go on to explain that we have a national framework that is in line with international standards.

Learning Activity 3.7: Technology and Food Production

Read the following newspaper article and answer the questions that follow.

Edible park just keeps on giving

Twelve years ago, local volunteers teamed up with the city's Parks and Recreation Department to replace trash with trees and establish Asheville's first edible park. City Seeds, a now-defunct local nonprofit, enlisted a group of Warren Wilson College students and other volunteers to transform a rubble-filled lot into an urban orchard. Today, George Washington Carver Park occupies the former site of Stephens-Lee High School, which served African-American students during segregation; it was demolished in 1975 in the name of urban renewal.

Boasting more than 40 varieties of fruit and nut trees, the park serves as both a peaceful place to relax and a city farm providing the community with nutritious, locally produced food. "We have everything from A to Z growing there," notes permaculture guru "T. Bud Barksliip" (aka Bill Whipple). "A for apple and Z for Ziziphus (also called jujube fruit or Chinese date)."

Barksliip learned of the orchard five years ago while looking for a good place to view the Fourth of July fireworks. Realizing that he was surrounded by fruit trees, he also saw that they needed attention. "Many people are intimidated by [maintaining] fruit trees, since they need lots of cutting and care." Barksliip now helps provide that care, along with a cadre of volunteers from the Bountiful Cities Project.

continued

Seeing the park as a source of inspiration for the community, Barkslip hopes the experience of harvesting fresh fruits and nuts from the land will encourage residents to plant trees of their own while continuing to enjoy their fair share of the park's annual harvest. Unfortunately, that's not always the case, he reports. "Since this is a public park, people are welcome to pick from the trees, though it's interesting to see that most people aren't used to sharing. We ask people to take only what they need."

On Saturday, April 3, Barkslip will lead a hands-on program designed to help the general public learn more about this special place. Presented in cooperation with local grass-roots group Transition Asheville, the program will include a 10:30 a.m. tree-pruning demonstration followed by the tour, which will start at 11 a.m.

"We envision a thriving, resilient Asheville known for its strong local economy, regional food system, minimal dependence on fossil fuel and skilled citizens," writes Jeanie Martin, describing Transition Asheville's mission. "The edible park is a great example of how public land can be put to its highest use," she continues. "It offers local food, shade, educational opportunities and a spot that neighborhood residents can be proud of."

Source: Sezak-Blatt, Aiyanne. "Edible Park Just Keeps on Giving." Asheville, NC: Mountain Xpress News. <http://mountainx.com/news/>. (March 30, 2010). Used with permission.

1. What are some challenges faced by communities when starting long-term projects such as the edible park described in the article?

Volunteer organizations sometimes don't last very long, and the project falls apart leaving whatever the group did to either deteriorate or become non-productive due to neglect. Having a paid staff to oversee long-term volunteer projects is a good long-term investment.

2. List five educational opportunities that a park like this could provide.

Students of all ages can learn

- *the reproductive methods of plants*
- *the life cycles of plants and the animals that depend on them*
- *food preservation techniques*
- *the history of the town*
- *anthropology (the importance of foraging)*
- *how to maintain and prune an orchard*
- *nutrition*
- *the importance of a secure food supply*

3. Which of the low-technology food sources listed below do you think will be the most popular and useful to society in the future? Will it be difficult to convince people to embrace these methods? Which high-technology food source listed below will be the most beneficial? Why?

- Low-technology food sources
 - permaculture
 - urban farming (crops and livestock)
 - forest gardening
 - insects as food
- High-technology food sources
 - greenhouses
 - hydroponics
 - algae
 - other (nanotechnology, food processing)

Answers will vary. One could presume that making more efficient use of space (low technology and high technology) would increase the available nutrition within a specific area. High-technology food production, and the ability to recycle all/most of the inputs, such as water, would result in increased sustainability. The sustainable and efficient use of space to grow plants could be enough to take a significant amount of carbon out of the atmosphere.

Learning Activity 3.8: Something to Think About

Based on what you know about mainstream, large-scale food production and the principles of sustainability, how do you think industrial food production can be altered to better implement the principles and guidelines of sustainable development?

The UN Division for Sustainable Development has 96 indicators that countries can use (www.un.org/esa/sustdev/natlinfo/indicators/guidelines.pdf). For this reason, identifying precise principles and guidelines can be complex. In fact, there is no internationally agreed upon list of principles and/or guidelines.

As a rule, however, there are three main components to sustainability when talking about development.

- the social aspects (includes culture)
- the environment
- the economy

Social: When implementing new development, people should be aware of the local and regional social and cultural situation. Local development should not harm the established structure: it should improve the structure through economic opportunities, and maintenance or improvement of local resources.

Environmental: The environment will most likely be changed, but plans should be made to minimize disruption and mitigate (improve) negative consequences, such as air pollution and groundwater contamination. In the case of logging and mining, this would include reclamation of the extraction site so that once the operation is complete, the environment can be cleaned and restored to its original condition.

Economic: The health of the economy, present and future, must be considered. For example, if there is little economic diversity in an area and any development plan is a short-term venture, is there anything that can be done to develop long-term economic prospects? Can part of the profit be dedicated to specific retraining and education of any sort?

For this learning activity, look at the three components of sustainability (social, environmental, and economic) and complete the following:

- Identify three things that large-scale **livestock producers** could do to become more sustainable (one for each of the three components).

Social: Purchase supplies locally, even if it means paying more. Train and hire local people.

Environmental: Implement an integrated waste management system that transforms the manure into marketable fertilizer and reclaims waste water. During construction of the facility, design groundwater contamination prevention. The facility should be as energy efficient as possible, using renewable energy when possible.

Economic: Make the product available to locals, at a reasonable price. Divert some profits to a fund to be accessed in times of economic downturns. Diversify the operation to include some secondary products such as hides, wool, or processed meats.

- Identify three things that large-scale **crop producers** could do to have a more sustainable operation (one for each of the three components).

Social: Purchase supplies locally, even if it means paying more. Train and hire local people.

Environmental: Diversify the crop rotations, increase the variety of crops grown, and increase the number of shelter belts. Use an integrated waste management program in conjunction with a soil improvement plan. Use manure from local livestock operations.

Economic: Make the product available to locals, at a reasonable price. Divert some profits to a fund to be accessed in times of economic downturns. Diversify the operation to include some secondary products such as flour, baked goods, and oils.

- What are three things that could be done to make **fisheries (wild and/or aquaculture)** more sustainable (one for each of the three components)?

Social: Purchase supplies locally, even if it means paying more. Train and hire local people to promote the use of more and smaller boats in the fleet.

Environmental: Avoid use of fishing equipment that damages the local environment (e.g., bottom trawlers). Make sure the location of any cages considers the local current flows so waste doesn't build up. Do not harvest more fish than can be replaced by natural reproduction.

Economic: Make the product available to locals, at a reasonable price. Divert some profits to a fund to be accessed in times of economic downturns. Diversify the operation to include some secondary products such as oils, smoked fish, and tourism services.

Notes



GRADE 12 WORLD
GEOGRAPHY: A HUMAN
PERSPECTIVE (40S)

Module 3
World Food Supply:
Production and Distribution

Learning Activity Answer Key

MODULE 3: WORLD FOOD SUPPLY: PRODUCTION AND DISTRIBUTION

Learning Activity 3.1: Unsuitable, Potential, and Used Land Area

As mentioned previously, it is important to think critically about the information that is presented and it is your responsibility to back up your conclusions with some degree of research.

1. Study the pie charts and Table 3.1, comparing the unsuitable area, potential arable land area, and used arable land area of the seven continental regions. Then, **answer** the following reflection and critical-thinking questions:

- a) Which continental region has the lowest percentage of used arable land? How many people does this continent support?

South and Central America; population of 372,897,000

- b) Which continental region has the largest population? What is the percentage of unsuitable agricultural land? Is this continent developed or developing?

Asia and Pacific; unsuitable land percentage is 70%; the continent is developing

- c) Which continental region has the largest percentage of unsuitable agricultural land area? Why do you think this is?

North Africa and Near East; the unsuitable land is most likely due to the desert-like and arid climate of the region, the lack of good agricultural soil, areas affected by drought, and overpopulation, to name a few reasons

- d) Which continental region has the greatest percentage of used arable land and potential arable land combined? Does this percentage, along with the size of the population, reflect its level of development?

Almost half of Europe's land area (47%) is arable or potentially arable; although Europe has high population levels, the continent definitely benefits from the significant amount of land that can be used to produce and sustain enough food for its population and this is reflected in its progressive development

- e) The unsuitable agricultural land in North America is estimated to be roughly 73% and yet it is one of the most developed continents with relatively few problems concerning food production and distribution. Why do you think this is? Explain why North America has few concerns regarding food production and distribution.

Answers will vary but there are connections between low population levels in North America compared to all other continents; the political and economic hegemony of the West, a well-suited agricultural climate (especially in the southern United States) are two explanations

2. **Calculate and record** the population density of the continents in the table below.

The used arable land column has been filled in for you, converted from km^2 to ha^2 ($1 \text{ km}^2 = 100 \text{ ha}$). Use the numbers from Table 3.1 to fill in the population column and calculate the population density by dividing the population by the used arable land. Which continent has the greatest population density? Which continent has the lowest?

Asia and Pacific has the highest population density, North America has the lowest.

Region	Used Arable land (ha^2)	Population (persons)	Population Density (persons/ ha^2)
Asia and Pacific	477706	2,073,805,000	4341
Europe	213791	654,955,000	3063
North Africa and near East	71580	290,860,000	4063
North America (Canada and US only)	233276	285,342,000	1223
South and Central America	143352	372,897,000	2601
Sub-Saharan Africa	157608	572,736,000	3634

Learning Activity 3.2: Changing Myths

1. Turn **four** of the aforementioned myths, along with their responses and commentaries (other than Myth 1, which is used as an example), into a positive statement about hunger. Restate the myth to make it a true statement and then simply summarize the response and commentary in your own words (giving your opinion too). The following example is provided:

Truth 1: The planet produces enough food to feed everyone. The difficulty is being able to sustain that level of production without harming our environment beyond repair, depleting our fuel source, and degrading our soil. The allocation of our food supply is also unequal amongst the global population. We must plan our farming so that the soil and the environment will still provide us with food in the future.

Responses will vary with the choices each student makes, but should meet the following criteria—the myth should be restated as a true statement, and the response and commentary should be in the student’s words. Opinions are optional.

2. Myth 8 addresses both Free Trade and Fair Trade. What are the most important *differences* between the two?

Free trade is a policy by which a government does not discriminate against imports or interfere with exports by applying tariffs (to imports) or subsidies (to exports), or quotas. According to the law of comparative advantage, the policy permits trading partners mutual gains from trade of goods and services. See

http://en.wikipedia.org/wiki/Free_trade;
www.dosomething.org/tipsandtools/free-trade-vs-fair-trade#.
www.smallbusiness.chron.com/trade-vs-fair-trade-1683.html

Fair trade is a trading partnership, based on dialogue, transparency, and respect, that seeks greater equity in international trade. It contributes to sustainable development by offering better trading conditions to, and securing the rights of, marginalized producers and workers—especially in the Global South. Fair trade organizations, backed by consumers, are engaged actively in supporting producers, raising awareness and campaigning for changes in the rules and practice of conventional international trade. See the following:

http://en.wikipedia.org/wiki/Free_trade
www.dosomething.org/tipsandtools/free-trade-vs-fair-trade#
www.smallbusiness.chron.com/trade-vs-fair-trade-1683.html

3. When you consider the statements that Art Myers considers to be myths, which statement do you find the most surprising? Why?

Answers will vary.

Learning Activity 3.3: Food Security

1. Explain the difference between *famine* and *malnutrition*.

Famine has been defined as an extreme and a general scarcity of food, where there is hunger and starvation. Malnutrition is a general, often long-term condition in which there is food, but it does not have sufficient nutrition to sustain a healthy body.

2. Read the editorial provided previously once more and record your reaction to it. Explain one reason for the food supply problem in Africa over the years.

Individual reactions will vary. One reason for the food supply problem is that the local governments often see wars as a priority over the well-being of the general population. In the case of the editorial, the governing body (junta) had imposed strict conditions for the distribution of relief, making a difficult situation even more challenging for the relief workers. The problem could be solved IF the political will was there.

3. Explain the causes of the food riots of 2008 and why there were no riots in 2011, even though the price of food was higher than it was in 2008?

Causes included droughts and oil price increases that pushed up the cost of transport, fertilizers, and industrial farming. Other causes included increased production of bio-fuels and the increased demand for a varied diet by the growing portion of the global population that is getting richer. There were no riots in 2011 because there was enough food stockpiled to remove any fear of running out.

Learning Activity 3.4: Strategies

1. Choose one of the following aid groups (or one of your own choosing), and provide a description of the organization. Please include the following three pieces of information:
 - a) A few sentences describing the organization
 - b) The goals of the organization
 - c) An example of what the organization has accomplished and a brief description of how it did so (a summary of a case study would be fine)

An Internet search of any of the following will get you to their home pages:

- Mennonite Central Committee
- Action Against Hunger
- Oxfam International
- Bread for the World
- Mercy Corps
- CARE

Answers will vary.

Learning Activity 3.5: Aquaculture

1. According to the FAO, how many tonnes of food were provided from the fisheries and aquaculture in 2007? How many kilograms per person?

Capture fisheries and aquaculture provided about 140 million tonnes of food in 2007, which translates to just under 17 kg of fish per person.

2. If the actual production of fish has increased by only 1.2% per year over a ten-year period, then how do you explain the 50% increase in the value of the fish on the global market for the same period?

Most of that increase can be attributed to the increased participation of developing nations in the fishing industry, and the changes in the market. More people are buying the fish at a higher price; there is also the effect of inflation to take into consideration.

3. What does FAO stand for? What does MSY stand for? What does the FAO say about world fish stocks and the MSY?

FAO—Food and Agriculture Organization of the United Nations

MSY—Maximum Sustainable Yield

The FAO estimates that over 50% of the fish stocks worldwide are fished at the limit to which they are able to replenish through reproduction. 25% of the stocks are overfished (harvest is more than the reproduction rate of the fish population, or MSY), and only just over 20% of the stocks are being fished at less than MSY. There is no place on Earth that hasn't been fished.

4. Research the Marine Stewardship Council. Describe the organization and identify how it works towards creating sustainability in the seafood market.

From www.msc.org: “The MSC’s fishery certification program and seafood eco-label recognize and reward sustainable fishing. We are a global organization working with fisheries, seafood companies, scientists, conservation groups and the public to promote the best environmental choice in seafood.”

The MSC works to “transform the seafood market to a sustainable basis” by using market incentives as a way of rewarding and recognizing sustainable fishing practices.

5. Some biologists feel that heavy harvest rates have had a noticeable impact on the food web. Non-economic marine populations are changing in ways never seen before. Conduct your own research and find one or two examples of how the catch of predator fish has affected the prey fish populations. This is also called the “knock on” effect.

In Chesapeake Bay, on the east coast of the US, the Cownose ray population is higher than it has ever been due to the harvest of its predator, the shark (from the film documentary “The End of the Line”).

Off the coast of Newfoundland, the lack of cod and other bottom dwelling prey fish is suspected as being the reason why there have been increased lobster catches (from the documentary “The End of the Line”). It could also be because the sea urchins, that typically eat kelp, have been heavily harvested, leaving more kelp cover to protect juvenile lobsters.

See www.gma.org/lobsters/allaboutlobsters/society.html.

Some bird populations are increasing because of the waste of “bycatch.”

See <http://archive.greenpeace.org/comms/cbio/crisis1.html>.

Learning Activity 3.6: Critical Thinking

This is a quick, critical thinking activity.

Imagine that you are the Canadian Minister of the Environment in Ottawa. During question period in the House of Commons, the Environment Critic for the Opposition asks you why Canada is lagging behind the rest of the world in establishing MPAs, and adds that it is embarrassing that only 1% of Canada's waters are protected. How do you respond?

Something like this: "Mr. Speaker, the Honourable member across the floor needs to realize that we have almost 500 marine protected areas (it is acceptable to round up if it sounds better . . . that's often called "spin"), and if you consider the total area that is protected, we are among the top 10 countries in the world!" You could also go on to explain that we have a national framework that is in line with international standards.

Learning Activity 3.7: Technology and Food Production

Read the following newspaper article and answer the questions that follow.

Edible park just keeps on giving

Twelve years ago, local volunteers teamed up with the city's Parks and Recreation Department to replace trash with trees and establish Asheville's first edible park. City Seeds, a now-defunct local nonprofit, enlisted a group of Warren Wilson College students and other volunteers to transform a rubble-filled lot into an urban orchard. Today, George Washington Carver Park occupies the former site of Stephens-Lee High School, which served African-American students during segregation; it was demolished in 1975 in the name of urban renewal.

Boasting more than 40 varieties of fruit and nut trees, the park serves as both a peaceful place to relax and a city farm providing the community with nutritious, locally produced food. "We have everything from A to Z growing there," notes permaculture guru "T. Bud Barksliip" (aka Bill Whipple). "A for apple and Z for Ziziphus (also called jujube fruit or Chinese date)."

Barksliip learned of the orchard five years ago while looking for a good place to view the Fourth of July fireworks. Realizing that he was surrounded by fruit trees, he also saw that they needed attention. "Many people are intimidated by [maintaining] fruit trees, since they need lots of cutting and care." Barksliip now helps provide that care, along with a cadre of volunteers from the Bountiful Cities Project.

continued

Seeing the park as a source of inspiration for the community, Barkslip hopes the experience of harvesting fresh fruits and nuts from the land will encourage residents to plant trees of their own while continuing to enjoy their fair share of the park's annual harvest. Unfortunately, that's not always the case, he reports. "Since this is a public park, people are welcome to pick from the trees, though it's interesting to see that most people aren't used to sharing. We ask people to take only what they need."

On Saturday, April 3, Barkslip will lead a hands-on program designed to help the general public learn more about this special place. Presented in cooperation with local grass-roots group Transition Asheville, the program will include a 10:30 a.m. tree-pruning demonstration followed by the tour, which will start at 11 a.m.

"We envision a thriving, resilient Asheville known for its strong local economy, regional food system, minimal dependence on fossil fuel and skilled citizens," writes Jeanie Martin, describing Transition Asheville's mission. "The edible park is a great example of how public land can be put to its highest use," she continues. "It offers local food, shade, educational opportunities and a spot that neighborhood residents can be proud of."

Source: Sezak-Blatt, Aiyanne. "Edible Park Just Keeps on Giving." Asheville, NC: Mountain Xpress News. <http://mountainx.com/news/>. (March 30, 2010). Used with permission.

1. What are some challenges faced by communities when starting long-term projects such as the edible park described in the article?

Volunteer organizations sometimes don't last very long, and the project falls apart leaving whatever the group did to either deteriorate or become non-productive due to neglect. Having a paid staff to oversee long-term volunteer projects is a good long-term investment.

2. List five educational opportunities that a park like this could provide.

Students of all ages can learn

- *the reproductive methods of plants*
- *the life cycles of plants and the animals that depend on them*
- *food preservation techniques*
- *the history of the town*
- *anthropology (the importance of foraging)*
- *how to maintain and prune an orchard*
- *nutrition*
- *the importance of a secure food supply*

3. Which of the low-technology food sources listed below do you think will be the most popular and useful to society in the future? Will it be difficult to convince people to embrace these methods? Which high-technology food source listed below will be the most beneficial? Why?

- Low-technology food sources
 - permaculture
 - urban farming (crops and livestock)
 - forest gardening
 - insects as food
- High-technology food sources
 - greenhouses
 - hydroponics
 - algae
 - other (nanotechnology, food processing)

Answers will vary. One could presume that making more efficient use of space (low technology and high technology) would increase the available nutrition within a specific area. High-technology food production, and the ability to recycle all/most of the inputs, such as water, would result in increased sustainability. The sustainable and efficient use of space to grow plants could be enough to take a significant amount of carbon out of the atmosphere.

Learning Activity 3.8: Something to Think About

Based on what you know about mainstream, large-scale food production and the principles of sustainability, how do you think industrial food production can be altered to better implement the principles and guidelines of sustainable development?

The UN Division for Sustainable Development has 96 indicators that countries can use (www.un.org/esa/sustdev/natlinfo/indicators/guidelines.pdf). For this reason, identifying precise principles and guidelines can be complex. In fact, there is no internationally agreed upon list of principles and/or guidelines.

As a rule, however, there are three main components to sustainability when talking about development.

- the social aspects (includes culture)
- the environment
- the economy

Social: When implementing new development, people should be aware of the local and regional social and cultural situation. Local development should not harm the established structure: it should improve the structure through economic opportunities, and maintenance or improvement of local resources.

Environmental: The environment will most likely be changed, but plans should be made to minimize disruption and mitigate (improve) negative consequences, such as air pollution and groundwater contamination. In the case of logging and mining, this would include reclamation of the extraction site so that once the operation is complete, the environment can be cleaned and restored to its original condition.

Economic: The health of the economy, present and future, must be considered. For example, if there is little economic diversity in an area and any development plan is a short-term venture, is there anything that can be done to develop long-term economic prospects? Can part of the profit be dedicated to specific retraining and education of any sort?

For this learning activity, look at the three components of sustainability (social, environmental, and economic) and complete the following:

- Identify three things that large-scale **livestock producers** could do to become more sustainable (one for each of the three components).

Social: Purchase supplies locally, even if it means paying more. Train and hire local people.

Environmental: Implement an integrated waste management system that transforms the manure into marketable fertilizer and reclaims waste water. During construction of the facility, design groundwater contamination prevention. The facility should be as energy efficient as possible, using renewable energy when possible.

Economic: Make the product available to locals, at a reasonable price. Divert some profits to a fund to be accessed in times of economic downturns. Diversify the operation to include some secondary products such as hides, wool, or processed meats.

- Identify three things that large-scale **crop producers** could do to have a more sustainable operation (one for each of the three components).

Social: Purchase supplies locally, even if it means paying more. Train and hire local people.

Environmental: Diversify the crop rotations, increase the variety of crops grown, and increase the number of shelter belts. Use an integrated waste management program in conjunction with a soil improvement plan. Use manure from local livestock operations.

Economic: Make the product available to locals, at a reasonable price. Divert some profits to a fund to be accessed in times of economic downturns. Diversify the operation to include some secondary products such as flour, baked goods, and oils.

- What are three things that could be done to make **fisheries (wild and/or aquaculture)** more sustainable (one for each of the three components)?

Social: Purchase supplies locally, even if it means paying more. Train and hire local people to promote the use of more and smaller boats in the fleet.

Environmental: Avoid use of fishing equipment that damages the local environment (e.g., bottom trawlers). Make sure the location of any cages considers the local current flows so waste doesn't build up. Do not harvest more fish than can be replaced by natural reproduction.

Economic: Make the product available to locals, at a reasonable price. Divert some profits to a fund to be accessed in times of economic downturns. Diversify the operation to include some secondary products such as oils, smoked fish, and tourism services.

Notes

Midterm Examination

Before moving on to Module 4, you must write the midterm examination. The midterm is out of 100 marks and worth 25 percent of your final mark.

The exam will follow the following format:

Part A: True or False	1 mark × 15 = 15 marks
Part B: Multiple Choice	1 mark × 15 = 15 marks
Part C: Matching	1 mark × 10 = 10 marks
Part D: Definitions and Connections	5 marks × 5 = 25 marks
Part E: Short Answer	5 marks × 3 = 15 marks
Part F: Long Answer	10 marks × 2 = 20 marks

How to Study for your Final Examination

In order to succeed in your final examination, make sure that you review all of your learning activities and assignments, and all of the lessons in Modules 1 to 3.

There are different strategies you can use to study for this examination. For Parts A, B, and C, it would be extremely helpful to locate key words (highlighted in bold) throughout the modules and review them in the glossary.

Parts D, E, and F may cover the following concepts in greater detail than the first half of the examination.

Lesson	Module 1	Module 2	Module 3
1	<ul style="list-style-type: none"> ■ Physical geography vs. Human geography ■ Physical, cultural, and topical elements of geography 	<ul style="list-style-type: none"> ■ Ideology of Thomas Malthus and Karl Marx ■ Population dynamics and the demographic transition model 	<ul style="list-style-type: none"> ■ Relationship between population density and agricultural production ■ Subsistence, pastoral, and commercial farming practices ■ Global distribution of important crops

continued

Lesson	Module 1	Module 2	Module 3
2	<ul style="list-style-type: none"> ■ Biotic versus abiotic factors ■ Characteristics of maps 	<ul style="list-style-type: none"> ■ Arable land distribution ■ Migration and push/pull factors ■ Environment and population ■ Economy and population ■ China's one-child policy 	<ul style="list-style-type: none"> ■ Myths about world hunger ■ Sustainable agricultural practices
3	<ul style="list-style-type: none"> ■ Ethnocentrism ■ Sense of place ■ Culture 	<ul style="list-style-type: none"> ■ Standard of living and quality of life ■ Needs vs. wants 	<ul style="list-style-type: none"> ■ Capture fisheries
4	<ul style="list-style-type: none"> ■ Human development index ■ Nation vs. country ■ Grouping countries ■ Factors of development ■ Theories of development ■ Less developed countries vs. Developed countries 		<ul style="list-style-type: none"> ■ Aquaculture ■ Alternate sources of nutrition and technology

In addition, reviewing key learning activities and assignments that cover any of the topics mentioned above is an effective way to practise writing short- and long-answer questions.

This may seem overwhelming because there are quite a few areas that are important to review. It helps to study strategically. Familiarize yourself with the main ideas, make connections between topics when relevant, and spend more time on topics that are frequently repeated throughout the modules.

You will complete this examination while being supervised by a proctor. You should already have made arrangements to have the examination sent to the proctor from the Distance Learning Unit. If you have not yet made arrangements to write it, then do so now. The instructions for doing so are provided in the Introduction to this module.

You will need to bring the following items to the examination: pens/pencils and scrap paper. A maximum of 3 hours is available to complete your midterm examination. When you have completed it, the proctor will then forward it for assessment. Good luck!

GRADE 12 WORLD GEOGRAPHY: A HUMAN PERSPECTIVE (40S)

Module 4 World Resources, Energy, and the Environment



Note: Module 4 contains a number of images that are best viewed in colour. Colour versions of these images in PDF format are available in the learning management system (LMS). Students are issued a username and password at the time of registration. If Internet access is unavailable, a CD with these images is available upon request from the Distance Learning Unit.

MODULE 4: WORLD RESOURCES, ENERGY, AND THE ENVIRONMENT

Introduction

The world's supply of non-renewable resources is finite. This means that there is a limit to the available sources for non-renewable resources. You will begin the module by learning where the world's major non-renewable resources are located.

It is important to understand where resources are located, how they are used, and what can be done to ensure both their equitable distribution now and their availability for future generations. You will be introduced to how resource and energy issues influence politics and economics, and how alternative sources of energy are influencing current events and creating possibilities for future development.

Technology and needs change over time. As well, sources of energy have changed throughout history and will continue to do so in the future. What does not change, however, is the relationship between energy and power, and the importance of the different types of energy sources.

The module concludes with a detailed examination of where current and future energy reserves are located, and whether or not the world should depend on only one source of energy. Current research illustrates both the advantages and disadvantages of alternative (often renewable) sources of energy, and allows for speculation regarding the future challenges of world energy sources.

Reminders

- Let the computer graphics in the margins guide you through the module.
- Whenever you encounter difficulties, contact your tutor/marker. Do not let a roadblock keep you from working towards the completion of the course.

The main focus questions for this module are

Lesson 1	Lesson 2	Lesson 3	Lesson 4
1. What is a resource?	1. How does the use and demand for resources affect interdependence among countries?	1. What is the relationship between energy and power?	1. What conclusions can be drawn if present trends in resource and energy development continue?
2. What resources are essential today? Why?	2. How does the use and demand for resources affect the environment?	2. Why is energy so important today in developed and developing countries?	2. What changes need to be made in energy production and consumption in order to implement the principles and guidelines of sustainable development?
3. Where are major resources located? How do they differ?	3. How does the use and demand for resources affect the economy?	3. How is the quality of life affected by the amounts of energy available?	
	4. Who should manage resource development in a country?	4. What are the common forms of energy used today in developed and developing countries?	
		5. What alternate energy sources are being researched today?	

Assignments in Module 4

When you have completed the assignments for Module 4, submit your completed assignments to the Distance Learning Unit either by mail or electronically through the learning management system (LMS). The staff will forward your work to your tutor/marker.

Lesson	Assignment	Marks
2	Assignment 4.1: Resources and Standard of Living	21
3	Assignment 4.2: Blood Diamonds and International Trade	37
4	Assignment 4.3: Energy Demand, Supply, and Consumption	49

Notes

LESSON 1: RESOURCE DISTRIBUTION

Lesson Focus

By the end of this lesson, you will

- Define what resources are and why they are essential.
- Review how humans have valued resources in the past, and some reasons why specific resources are valued today.
- Learn how to calculate the R/P ratio.
- Examine four main categories of natural resources: minerals, energy, biological, and land.

Introduction

A study of resource allocation around the world provides an opportunity to review the basic physical makeup of Earth, including a focus on geology. As well, you will learn why some of the same resources may differ slightly, depending on the location.

Resource: Standard Definition

There are a number of definitions for the term *resource*, depending on the context within which it is used. The following is a standard dictionary definition for the term resource (from the *Oxford American Dictionary*).

- a stock or supply of money, materials, staff, and other assets that can be drawn on by a person or organization in order to function effectively (i.e., the local authorities complained that they lacked resources)
- a country's collective means of supporting itself or becoming wealthier, as represented by its reserves of minerals, land, and other assets
- all available assets

You might think that the second definition is the most appropriate for our purposes; however, all three definitions apply.

Think back to prehistoric times when the most important resources would have been those necessary for survival. For instance, the two most valued resources would have been good chert (a type of rock) with which to make stone tools necessary for hunting and gathering, and a source of fuel for cooking and heating.

There are five basic needs for survival

- food
- water
- shelter
- space
- companionship



Resources, therefore, can be defined as those things necessary to help meet basic needs as well as those things that help fulfill various wants.

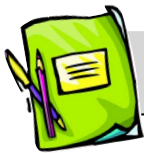
As people became more established and made the transition from a nomadic, prehistoric society to a more permanent, agrarian (agriculture-based) society, the need for tools increased and their construction became more complex. With the establishment of permanent communities, dependable, long-term sources of two resources—food and water—became important factors in picking permanent sites.

Along with the need for food and water necessary for survival, aesthetic wants, such as jewellery, music, and entertainment became important. Gold, silver, and precious gems used in the creation of jewellery became desirable items, along with acquiring pigments used in paints and spices used in food. These items all became valued resources.



Materials for building structures, such as clay, wood, and stone became important resources. Metals came into use (copper, which is relatively soft), eventually leading to the creation of **alloys** (blends of metals) such as the much harder bronze, a mix of copper and tin. Eventually, iron became the metal of choice for its strength, durability, and ability to form a variety of alloys. The early use of any particular resource depended on its availability.

Consider the resources that are valued today and why they are valued. Look back in history and choose specific resources that were valued at different periods of time. Canada has many good examples. In the early years of New France, fur was considered to be the most valuable resource. After the colony came under British control, timber for shipbuilding grew in importance. In order to continue to extract the natural resources of the colonies, the British crown saw the value of immigration (human resources). This facilitated the Great Migrations that developed the western territories. It was much more complex than this of course, but it is a great example of how resource valuation changes over time.



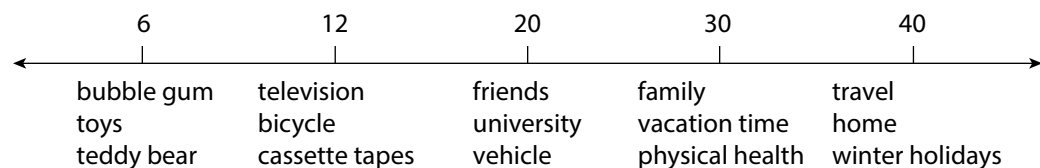
Learning Activity 4.1

Personal Resources

The purpose of Learning Activity 4.1 is to put into perspective how the supply of resources is directly related to the demand of the consumers. Demand is constantly changing and influenced by various factors, which could include advances in technology, evolving fashion trends, or increasing awareness of health benefits. There are an infinite number of reasons why people are influenced to buy and consume one particular resource over another.

Based on your own experiences and memories as to how your life has changed since you were in Grade 1 or Grade 2 (or as far back as you can remember), draw a simple timeline of how the physical objects or luxuries you valued as a child have changed over the years. You should have at least five moments on your timeline, supported by three examples.

The timeline below could be for a woman born in the mid-1960s. Depending on your age, you might want to use two- or three-year increments.



Natural Resource Allocation



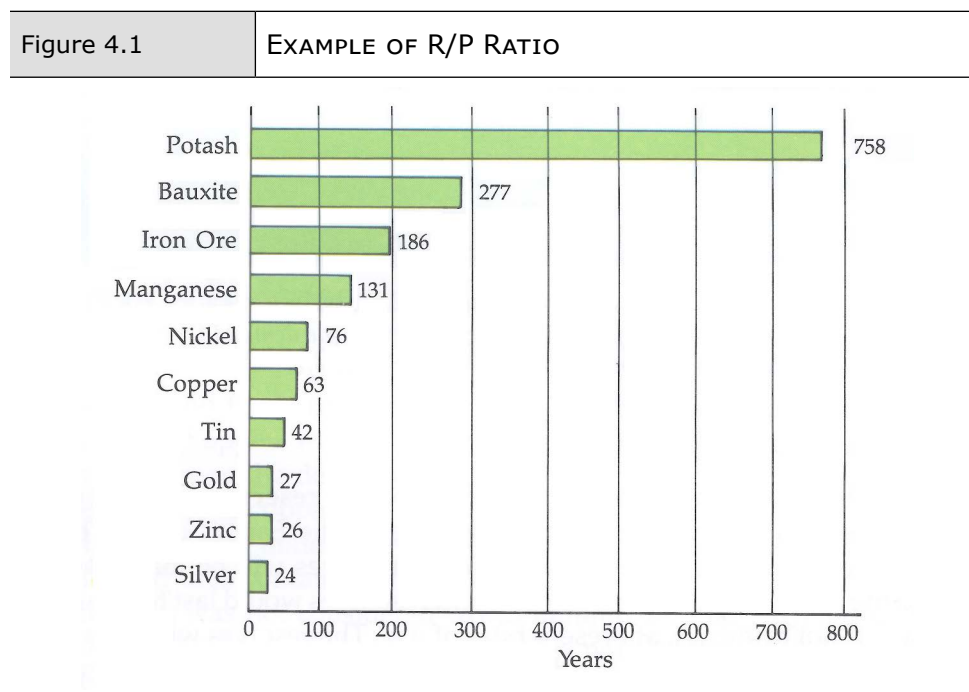
Natural resources are those resources that occur naturally within environments and exist relatively undisturbed.

The Lifespan of Resources

A common way of estimating the quantity of any resource is to calculate its lifespan, assuming that reserves continue to be used at present rates. In the case of non-renewable sources, such as minerals, oil, and gas, this calculation is called the **R/P ratio**. The R represents the known reserve, and the P stands for how much material is being produced. To calculate the ratio, existing reserves are divided by annual production. The ratio can be applied to any mineral but does not take into account new discoveries.

A country must have certain resources in order to access other resources. For example, is there technology in place to enable detailed exploration or extraction of minerals? Does the country have access to the machinery needed (e.g., drill rigs, pipelines, tankers) or the necessary human resources (e.g., geologists, geophysicists, drillers)? Working in the far north or at sea presents its own set of complications, including climate and sensitive ecosystems.

Figure 4.1 shows an example of how the R/P Ratio can be used to illustrate the lifespan of resources. The figures are based on 1980 known reserves and rates of annual use.



Source: Dunlop, Stewart. *Towards Tomorrow: Canada in a Changing World: Geography*. Toronto, ON: Harcourt Brace & Company, Canada Ltd., 1987. p. 126.

Categories of Natural Resources

In general, natural resources fall into the following categories (water will be discussed separately in the next lesson).

1. mineral
2. energy
3. biological
4. land

To understand non-renewable mineral and energy resources, you need to understand the science of geology. Geology is the science that deals with the physical structure and substance of Earth. If you are interested in doing additional research on this topic, two excellent sources are the US Geological Survey website (The Global Mineral Resource Assessment Project) and the CIA Factbook (world natural resources of commercial importance).

Mineral Resources

What is a mineral? A mineral is a naturally occurring, usually solid, substance, is stable at room temperature, is usually abiogenic, has a chemical formula, and has an ordered atomic structure.

Minerals are vital for economic, social, and technological development. Their use in everyday life includes agriculture, construction, technology, transportation, energy, and the list goes on. For this reason, minerals are extremely valuable.

Minerals can be found throughout the world in Earth's crust but usually in such small amounts that they are not worth extracting. Only with the help of certain geological processes are minerals concentrated into economically viable deposits.

Deep-sea mining for minerals involves different technology than land mining. It also raises questions about possible environmental damage to deep-sea ecosystems.

In Canada, mineral rights are government-owned and cannot be purchased, but only leased, by individuals or companies. As a result, the mineral rights on more than 90% of Canada's land are currently regulated under provincial/territorial government jurisdictions. Where mineral rights are privately owned, they are independent of surface rights and can be sold separately.

Having a basic understanding of these issues is important because proper resource management relates to the economic and environmental well-being of the country, and can potentially have global consequences.

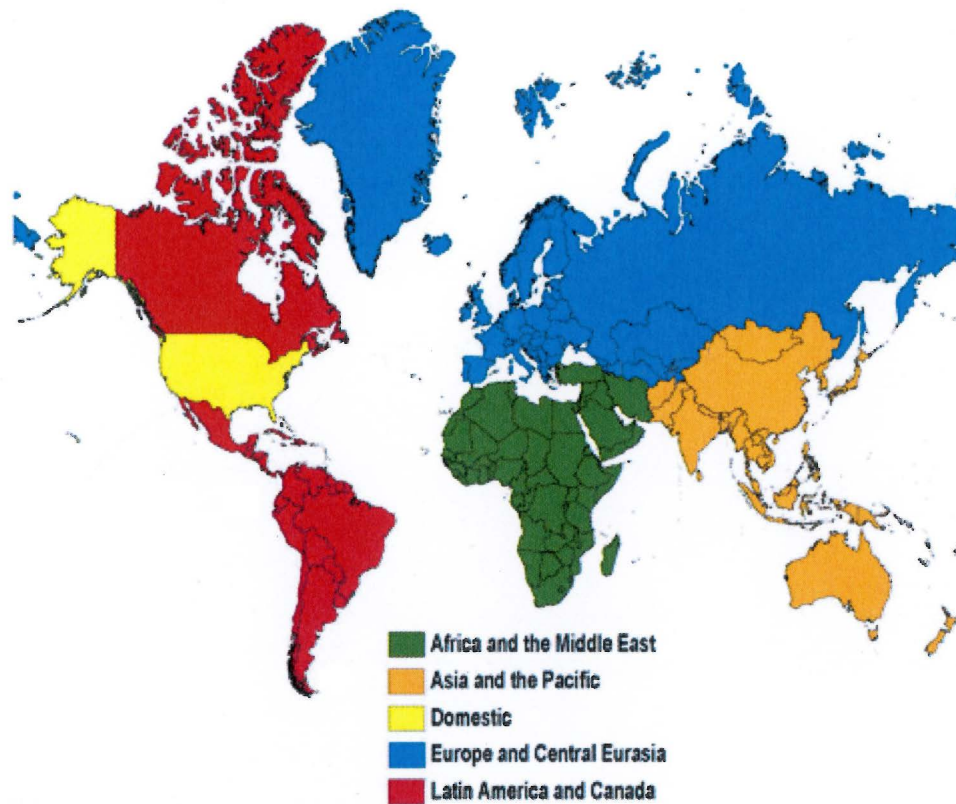
The Geology and the Location of Minerals

In 2005, the United States Geological Survey (USGS) released online reports under the title of *Reviews of the Geology and Nonfuel Mineral Deposits of the World*. The reviews consisted of five online reports outlining the world's distribution of known nonfuel mineral deposits and their resources broken down by area. The five general regions are (see Figure 4.2)

- United States
- Africa and the Middle East
- Asia and the Pacific
- Europe and Central Eurasia
- Latin America and Canada

Figure 4.2

REGIONS OF THE USGS REPORT ON WORLD MINERAL DEPOSITS



Source: Schulz, Klaus J., and Joseph A. Briskey. "Review of the Geology and Nonfuel Mineral Deposits of the World." United States Geological Survey. <http://pubs.usgs.gov/of/2005/1294/index.htm>. Used with permission.

Mineral deposits are associated with large-scale geologic processes that recur over time and in different places. These geologic processes include erosion, weathering, and plate tectonics. Erosion refers to the shifting or loosening of rock and soil on Earth's surface, which creates valleys, rivers, and hills. Weathering is the breaking up of soil by either the wind or exposure to the air. Plate tectonics, as discussed in Module 1, is the slow but constant movement of rigid plates on Earth's surface.

The geology of a region determines what minerals are found in that region and different mineral deposits are found in different geologic settings. The more that is known about the geology of a region, the easier it is to predict where new deposits of a particular mineral might be found. This information helps minimize the negative environmental and societal impacts of mining.

Energy Resources

Almost everything you do is dependent on energy. Going to work, studying, and going to a movie all require energy. The creation of the goods necessary for your well-being and survival requires energy. Developed nations have become very dependent on the various forms of energy.

The Energy Crisis in the 1970s demonstrated just how dependent people were on energy. At that time, the price of oil increased sharply, sparking North American fears of a major fuel and oil shortage. In Manitoba, the majority of current heating needs is supplied by electricity and it is less noticeable when the cost of heating oil increases. However, when the price of gasoline and diesel fuel goes up, Manitobans feel the impact. During the summers of 2008 and 2012, local fuel prices increased sharply, noticeably increasing the cost of transportation and the production of many goods, including food.



Occasionally, producers of **commodities** (a raw material or primary agricultural product that can be bought and sold) will form an alliance with other producers. This type of alliance is known as a **cartel**, an association of manufacturers or suppliers formed to maintain high prices and restrict competition. The goal is to gain complete control over the supply and price of a specific commodity. For the most part, this ensures that the price will remain stable, but it can still fluctuate. The Organization of Petroleum Exporting Countries (OPEC) is an example of such a cartel.

After the Energy Crisis of the 1970s, it took several years for the energy-dependent citizens of the developed world to adjust to the new reality of more expensive fuel. As a result, the demand for oil lessened (as did the price). This led to a temporary reduction in the number of countries that belonged to the OPEC. The price of oil on the international market continues to change based on market demand, the amount of oil in reserve, and market speculation.

The price of natural gas is subject to the same market forces as oil, but has the advantage of being a cleaner burning fuel. Economists often use the term “million tonnes of oil equivalent” (toe), showing the relationship of value between the types of energy. One toe is equivalent to 1270 cubic metres of natural gas. Due to increased North American demand, natural gas prices rose considerably during 2000–2001, only to sink back during the summer of 2010.

Non-Renewable Energy



Non-renewable energy sources exist in nature as a result of geological processes that have taken place over millions of years. Non-renewable energy sources cannot be replenished or replaced. The majority of non-renewable energy sources are hydrocarbon fossil fuels: coal, petroleum, and natural gasoline. These compounds are referred to as **hydrocarbons** because the molecules are various arrangements of carbon and hydrogen atoms.

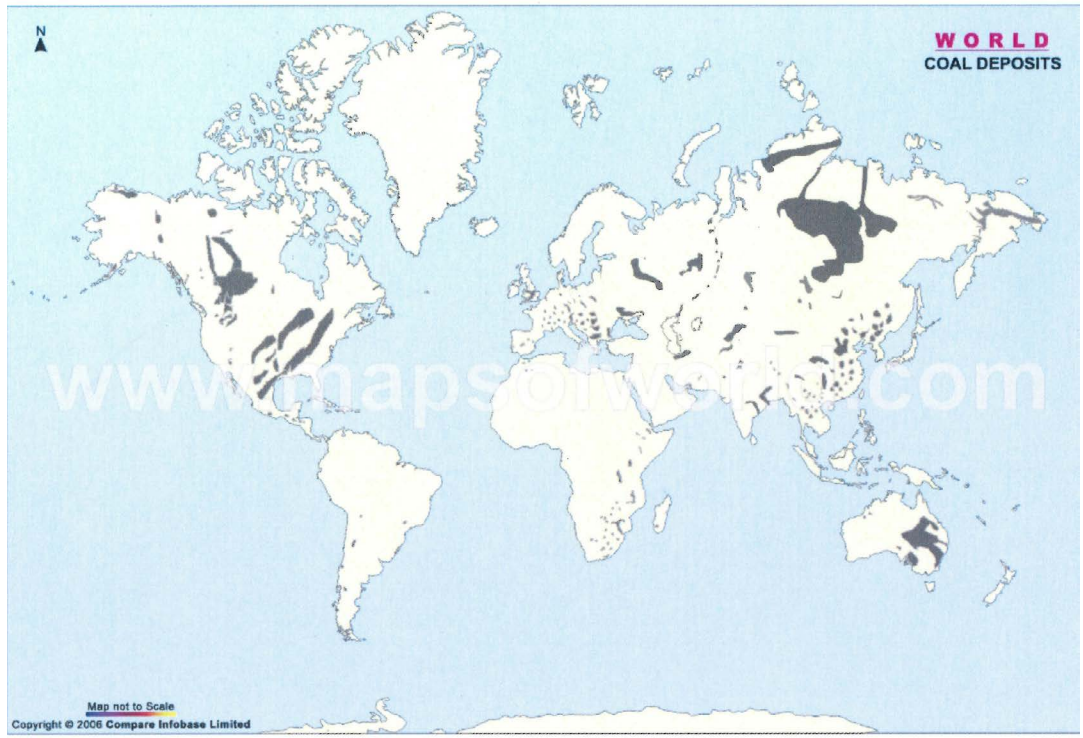
Coal is the most abundant of the fossil fuels. It is a fossil fuel that forms when dead plant matter is converted into peat, which in turn is converted into lignite, then sub-bituminous coal, followed by bituminous coal, and lastly anthracite. It is composed primarily of carbon along with variable quantities of other elements, chiefly hydrogen, sulfur, oxygen, and nitrogen. Coal is the combustible black or brownish-black sedimentary rock. The harder forms, such as anthracite coal, can be regarded as metamorphic rock because of later exposure to elevated temperature and pressure.

Coal can be cheaply mined, but is also a major source of sulphur and other pollutants that contribute to acid rain, smog, and increased carbon dioxide levels. It has been largely replaced by cleaner alternatives such as oil, natural gas, and electricity.

As you can see in Figure 4.3, the general coal distribution throughout the world is found to be along the eastern side of the United States, western Canada, eastern Australia, and north-central Asia.

Figure 4.3

WORLD COAL DEPOSITS



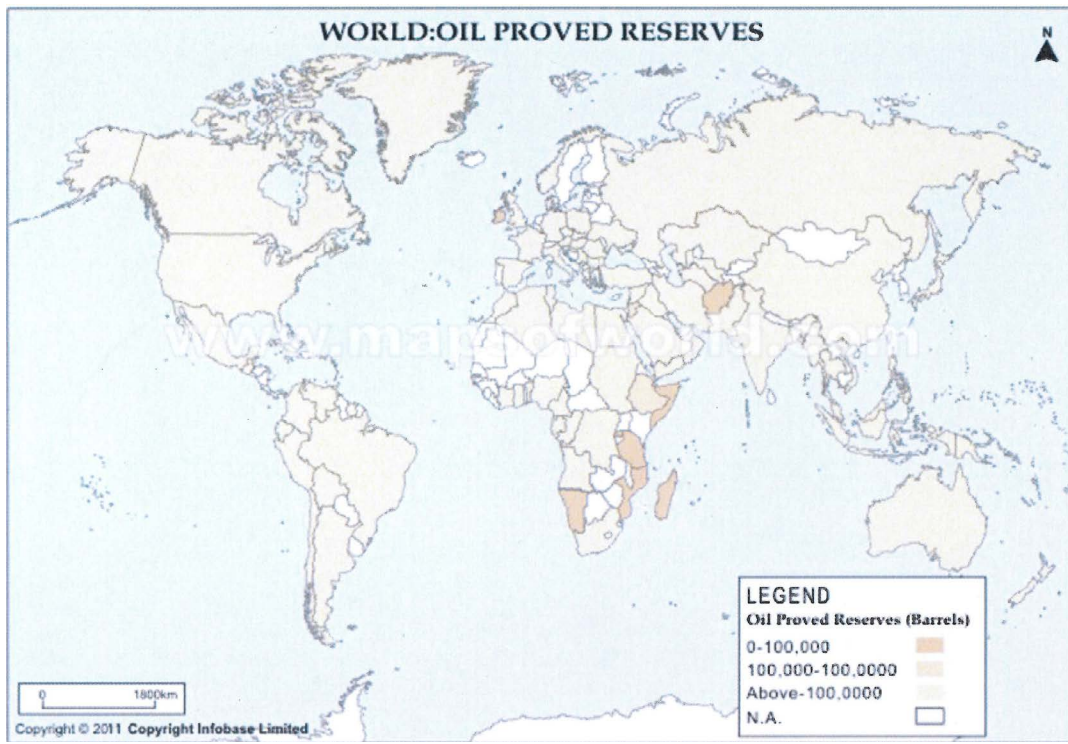
Source: Maps of World. *World Coal Deposits*. www.mapsofworld.com. Used with permission.

Natural gas is a fossil fuel formed when layers of buried plants, gases, and animals are exposed to intense heat and pressure over thousands of years. The energy that the plants originally obtained from the sun is stored in the form of chemical bonds in natural gas.

Petroleum is a fossil fuel formed when large quantities of dead organisms, usually zooplankton and algae, are buried underneath sedimentary rock and subjected to intense heat and pressure. It is a naturally occurring, yellow-to-black liquid found in geologic formations beneath Earth's surface, which is commonly refined into various types of fuels. It consists of hydrocarbons of various molecular weights and other organic compounds. The name petroleum covers both naturally occurring unprocessed crude oil and petroleum products that are made up of refined crude oil.

Figure 4.4

EXISTING OIL RESERVES IN THE WORLD

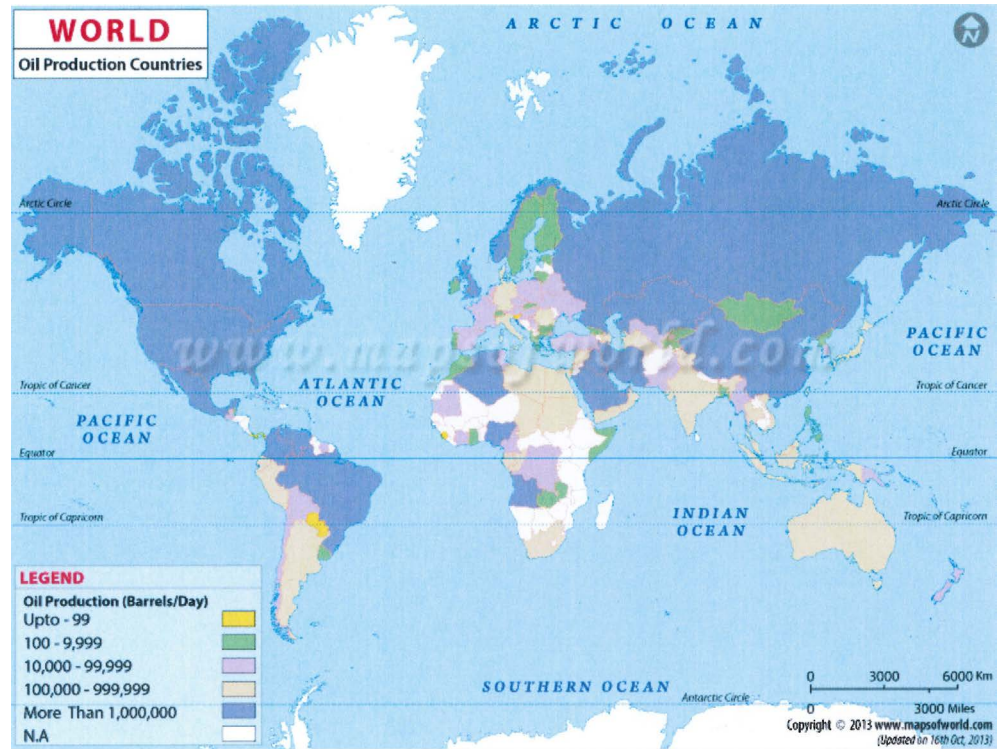


Source: Maps of the World. *World: Oil Proved Reserves*. www.mapsofworld.com. Used with permission.

Figure 4.4 shows that most countries have significant amounts of existing oil reserves. You may wonder then why there are often reports in the media about oil shortages and an end to the world oil supply. The answer can be found in Figures 4.5 and 4.6, showing that the oil and gas may not always be accessible and hence the concern over shortages and the inevitable end to the supply.

Figure 4.5

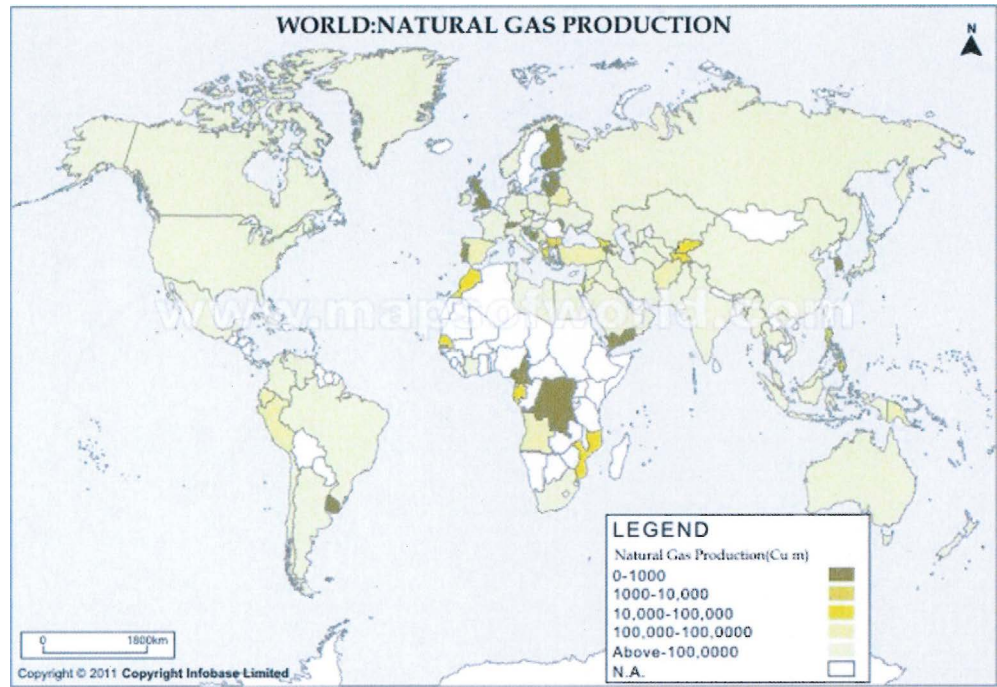
WORLD OIL PRODUCTION



Source: Maps of World. *World Oil Production Countries*. www.mapsofworld.com. Used with permission.

Figure 4.6

WORLD GAS PRODUCTION



Source: Maps of World. *World: Natural Gas Production*. www.mapsofworld.com. Used with permission.



Renewable Energy

Renewable energy is energy that is continuously replenished because it is generated from natural processes. Examples include sunlight, geothermal heat, wind, tides, water, and various forms of biomass. Renewable energy cannot be exhausted and is constantly renewed.

In the early 1960s, Manitobans were encouraged, wherever possible, to increase their standard of living by using electricity generated by renewable hydro power. With the shock of the energy crisis of the 1970s, the emphasis on using electricity rather than oil continued this trend. However, the renewed emphasis on resource conservation views any over-consumption in a negative light. In the 1970s, Manitobans were encouraged to conserve oil and then, in the 1990s, Manitobans were being encouraged to be “Power Smart.”

The provincial government continues to assist people in converting their oil furnaces to natural gas or electricity. There is also an emphasis on improving the energy efficiency of homes by encouraging the use of more efficient appliances and lighting. The energy efficiency of infrastructure such as street lights has also been improved.

Manitoba continues to pursue hydroelectric sources of energy and the development of the Wuskwatim hydroelectric site on the Nelson River is the most recent development at the time of writing this course. At the time, almost 98% of the power generated in Manitoba came from hydroelectric plants located on the Winnipeg, Saskatchewan, Laurie, and Nelson Rivers. In addition, Manitoba now exports (sells) electricity to the United States.

Other sources of renewable energy include the following:

Table 4.1: Sources of Renewable Energy	
Source of Renewable Energy	Description
Biomass	<ul style="list-style-type: none"> ■ plant and animal materials can be converted to energy (mainly forestry and agricultural residues that are converted into fuel) ■ can result in deforestation and desertification
Biogas	<ul style="list-style-type: none"> ■ predominantly methane gas produced by anaerobic (absence of oxygen) decomposition of organic materials (like vegetative waste or animal manure) ■ technology is new and not yet economically feasible
Gasifiers	<ul style="list-style-type: none"> ■ devices used to convert a solid biomass fuel into a combustible gas through a controlled thermo-chemical process ■ the resulting gas can be used to either produce heat or to produce steam for electricity generation
Biodiesel	<ul style="list-style-type: none"> ■ a form of diesel fuel made from vegetable or rendered animal oils using the process of transesterification ■ biodiesel is usually blended with petroleum diesel, which reduces dependence on fossil fuel usage
Wind	<ul style="list-style-type: none"> ■ result of atmospheric pressure differences due to the uneven heating of Earth's surface ■ doubling of wind speed produces eight times the energy. ■ Manitoba has been developing wind farms since 2006
Geothermal	<ul style="list-style-type: none"> ■ the use of the heat of Earth ■ in Manitoba, geothermal systems use a ground loop where liquid is circulated through the ground (Heat is extracted by a heat pump and circulated throughout the home or business. The system also works in reverse, cooling buildings in the summer.)
Solar	<ul style="list-style-type: none"> ■ harnessing of the sun's radiation in order to use the energy for heating or electricity ■ passive solar heat uses windows and dense building materials (rock, concrete) to collect heat, and then slowly releases it when the sun is no longer shining ■ active solar heating uses a system to move air or water heated by the sun into cooler areas, transferring the heat ■ photovoltaics (solar PV) is the process of changing the sun's radiant energy to electricity
Sea Power	<ul style="list-style-type: none"> ■ uses the motion of waves, tides, and currents ■ thermal energy conversion technology relies on the differences between water temperatures at the surface and the temperatures at a depth
Nuclear	<ul style="list-style-type: none"> ■ harnessing of the heat energy of radioactive materials ■ Advantages: very little greenhouse gas emissions, the reliability of proven technology, the large amount of electricity produced per plant ■ Disadvantages: unsolved problem of what to do with the radioactive wastes and the tremendous danger of radiation pollution in the case of accidents

Biological Resources

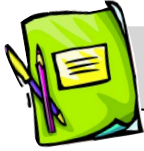


Almost anything that is living, or once was, can be considered a biological resource. Do you remember reading about biotic and abiotic factors in Module 1, World Vegetation Zones? Biotic factors are living characteristics of a biome or vegetation zone. A zone is characterized by its **biodiversity** – the variety of plant and animal life found in that particular habitat. Holistic (interconnected, whole) natural systems can filter the air and water and reduce carbon emissions that would otherwise end up in the atmosphere. Biotic factors include producers (plants), consumers (animals), and decomposers (fungi and bacteria to break down chemicals from producers and consumers). Abiotic factors include any non-living characteristic of an ecosystem; for example, climate, topography, soil, and availability of water.

The most common biological resource is food, including plants, fungi, animals, fish, and insects. Non-food resources include clothing (wool, cotton, silk, bamboo), building materials (wood, grass), and textiles (hemp, coconut fibre).

People enjoy the natural ecosystems that exhibit beauty and biodiversity. Natural areas can be places of recreation and can play an important role in spiritual healing. Many people believe that our connection to nature has slowly been eroded as populations continue to move to urban centres.

The link between people and nature is being recognized as an important aspect of the mind-body-spirit connection that contributes to overall human health. In 2005, author Richard Louv published his book *Last Child in the Woods* in which he describes a condition he refers to as “nature deficit disorder.” Since its release, Mr. Louv’s book has sparked considerable discussion about the connection between the natural world and issues such as childhood obesity and increasing behavioural challenges.



Learning Activity 4.2

Biological Resources



There are eight main vegetation zones (biomes) as described in Module 1. Based on what you have learned in this course so far, and with help from the Internet or an encyclopedia, fill in the following table with as wide a variety of **biological resources** as possible.

Biome	Biological Resource
Tundra	
Boreal forest/taiga	
Temperature deciduous forest	
Grasslands	
Chaparral	
Deserts	
Savannah	
Rainforest	

Land Resources

If you have ever flown in an airplane and looked down on the land below, you will have seen patterns on the land that are a result of human activity. Manitobans are familiar with how land is divided into sections, townships, and ranges, or into long lots (based on the Lower Canada land division patterns of early settlement).

In some parts of the world, land divisions reflect feudal times when land was shared and nobility offered work in return for protection and management. Many of the small fields have been taken over by commercial agriculture, such as sheep grazing in the Scottish highlands, grain growing with mechanical cultivation, or the production of cash crops on plantations.

Ever since early times when people gave up nomadic hunting and gathering to raise crops and animals, food production has been essential to survival. This means that people depend upon arable land for their survival. Agriculture is a part of everyday life, even for those who have lived for several generations as urban dwellers. Agriculture is not the only purpose for land, however, and a great deal of land is used for residential housing, commercial businesses, parks, recreational facilities, roads, and more.

Land is an important focus in geography and is fundamental to so many physical and human interactions. Unfortunately, land is often a resource that is taken for granted and is owned by a small minority of the people. When land is shared, it benefits many people rather than just a few. It is important to remember also that the land used today must be preserved for future generations. This is a fact that is often forgotten in the pursuit of wealth, and land is often damaged due to over-farming or lost to new housing developments.

Lesson Summary

In this lesson you were introduced to four categories of natural resources: minerals, energy, biological, and land.

The location of mineral deposits depends entirely upon geological processes that shape Earth's surface. Erosion, weathering, and plate tectonics all play a role. Governments have invested energy and money into developing infrastructure to mine minerals. Mineral extraction can be very expensive, but minerals are an important resource for trade and for industry development.

Energy can be divided into two categories: non-renewable and renewable. Non-renewable sources of energy rely on finite resources. This means that there is a limited amount of those resources available and once the supply is exhausted, the resource cannot be replenished or recycled. The use of non-renewable resources, such as oil and gasoline, is often harmful to the environment because of the release of carbon emissions into the atmosphere. In the past few decades, there has been an emphasis on using technology to develop renewable energy. This “clean” energy is better for the environment, but it is often expensive and not widely available. Much more has to be learned about these resources and their advantages and disadvantages, especially in the case of nuclear energy (discussed in Lesson 4). Examples of renewable energy include wind, solar, and sea power energy.

Biological resources refer to both living and non-living organisms and are categorized as either abiotic or biotic factors. Abiotic resources include topsoil, water, topography, and climate. Biotic resources generally refer to plants and animal species. The most important biological resource for humans is food, but other significant biological resources are used for clothing, shelter, and recreation.

Finally, this lesson discussed the importance of land. Land is an important resource for agricultural purposes, but also provides space for people to live, work, play, and commute between places. Sharing land has become more and more difficult as people see the opportunities to make money and create a living from land ownership, through either farming, construction, or leasing the land to others.

Notes

LESSON 2: WATER

Lesson Focus

By the end of this lesson, you will

- Examine the availability of fresh water.
- Discuss aspects of the freshwater issue.
- Review articles from a 2010 issue of National Geographic concerning the evolution of water use and societal attitudes towards water.

Introduction

Water is the most important and valuable resource. Without fresh water, life on Earth would not exist, including humans, plants, and animals. Water is essential for health, for food production, for sustaining ecosystems, for regulating climate change, and much more. Unfortunately, water is often taken for granted and people forget that water is a resource that needs to be protected and used wisely.

Water: A Resource

Our planet is called “Earth” even though, when viewed from space, the perception is that the more appropriate name would be “Water.” Over 70% of Earth’s surface is covered in water; however, usable fresh water makes up a very small percentage of that 70% seen from space.

How is Earth’s water distributed?

- 97% is found in the oceans
- 3% of the total amount is fresh water
- almost three-quarters of fresh water is frozen in glaciers and ice caps
- one-quarter of fresh water is underground, in aquifers
- only about 1% of fresh water is found in lakes, rivers, the atmosphere, plants, and animals

If all the water on Earth were found in a 4-litre jug, the available fresh water would only be about 15 mL (one tablespoon). You may wonder why anyone would ever take water for granted. If you have ever gone camping, you probably have a good appreciation of running water, indoor plumbing, and water heaters. Imagine life for the billions of people in the world with very little water security.

The two most important resources for humans are land and water, with water being the most important. Both resources are essential components of our quality of life and are important elements of industry, agriculture, and urbanization (growing city populations). Canadians often take water for granted, but Canadians need to start thinking about water in a more sustainable manner. If future generations are to be guaranteed the same privileges currently available to Canadians today with respect to this life-giving resource, attitudes towards sustainable stewardship need to change.

As a citizen and a consumer, it is your responsibility to be knowledgeable about the impact that you, and your government, have on the environment and the water supply. The Environment Canada website includes an entire section devoted to water. Just looking at the subheadings gives a better idea of the complexity of the issue.

- water governance and legislation
- water management
- water pollution
- water education and outreach
- water quality
- water quantity
- water research
- water and society
- water sources
- water use

To learn more about any of these categories, visit the Environment Canada website at www.ec.gc.ca/eau-water/.

There are four areas that are essential to understanding the issues that surround water: supply, development, pollution, and restoration. These four areas became areas of focus in the 20th century and have led to a better understanding of water issues today.

Table 4.3: Water Supply, Development, Pollution, and Restoration	
Supply	Development
The amount of water on Earth is the same today as when dinosaurs roamed. Large amounts of water cannot be created, which is a limiting factor in the growth and development of human populations.	Irrigation systems have existed on the planet for thousands of years. The hydroelectric projects of the 20th century were triggered by the Great Depression of the 1930s and now many manufacturing, transportation, and recreation industries use hydroelectric power, which is relatively inexpensive and has increased the standard of living for many people.
Pollution	Restoration
The chemical and physical properties of water are factors in water pollution. When a substance cannot be dissolved in water (e.g., chemicals), that substance will be transported as runoff. Runoff water (water that is carried from one area to another area by a body of water) can be very destructive when it reaches agricultural land, forests, human settlements, and larger bodies of water.	When the natural path of streams and rivers are disrupted by industrial processes, it can cause damage to the ecosystem. Water restoration projects aim to restore these areas to their original pattern and configuration. The goal of local residents and government officials should be to establish well-managed and sustainable water systems for which everyone is responsible.

In April of 2010, the National Geographic Society released *Water: Our Thirsty World, A Special Issue*. A few of the stories featured in the issue are summarized below. For further reading, visit the National Geographic Society website at <http://ngm.nationalgeographic.com/2010/04/table-of-contents/>.

1. “Water is Life”

- There is a limited quantity of fresh water available globally. The overwhelming majority of Earth’s water is either salt water or frozen in ice caps and glaciers.
- Changes in weather patterns can drastically impact water levels.
- Respecting the environment and everyone’s equal right to water is not just a practical issue, but it also has a philosophical importance. Our well-being is fundamentally dependent upon nature and a healthy environment, with water being the most important consideration.

2. “The Big Melt”

- A noticeable increase (0.74 °C) in the average global temperature has resulted in the notable decrease in the number and size of the remaining glaciers all over the planet.
- Such a drastic climate change would have a huge negative impact on populations that depend on rivers that are fed by glacial melt waters, so reducing the available water to such areas of high population can only lead to eventual trouble.

3. “Sacred Waters”

- This article moves beyond the focus of Geography with examples of how water is important to religious faiths worldwide.

4. “The Burden of Thirst”

- Much of the water available in underdeveloped areas of the world is contaminated, which means it is polluted by chemicals or infected with parasites that can cause disease or illness.
- When water is limited, it is not used for such things as washing or sanitation—it is used for cooking and keeping crops and animals alive.
- A consequence of having to haul and drink contaminated water is the loss of time. Drinking contaminated water can lead to a weakening illness that prevents a person from devoting his or her time and energy to household tasks, work, or school. Time is a valuable commodity that people use to grow food, raise animals, get an education (many children are pulled from school so they can help haul water), or start a business.

5. “Silent Streams”

- Unfortunately it has been the case for many decades that people have viewed the environment as a way to make money. Streams, rivers, forests, and other ecological habitats are constantly assessed for the economic value they offer to humans.
- One of the most harmful activities that humans have engaged in has been to dump toxic waste into rivers and oceans. This has led to the extinction of some aquatic species and mutations in others.

6. “California’s Pipe Dream”

- California, in 2010, was still struggling with trying to supply the southern part of the state with a system of dams, pumps, and canals that would redirect water from the north.
- One problem with this plan is that the Endangered Species Act wins out over local water legislation. This causes conflict when agricultural water needs to be diverted to habitats in times of drought.
- One positive result is that human ingenuity has led to the construction of waste-water (sewage) recycling facilities, desalinization facilities, and conservation measures that are supported by the law

7. “Parting the Waters”

- Focuses on the Middle East and examines the interactions and conflicts surrounding the Jordan River between the Israelis, Palestinians, and Jordanians who all depend heavily on the river.
- The Jordan River situation chronicled in this 2010 article illustrates the potential conflict over water that could happen anywhere.
- The same basic problems plague this river as those in most developed nations—years of pollution and diversions, too many people, and not enough water.

8. “The Last Drop”

- Summarizes the global water situation, emphasizing the finite amount of fresh water available and the variance in natural distribution.

Lesson Summary

This lesson focused on water as the most essential component of life on Earth. The amount of fresh water is limited as the majority of Earth’s water is salt water or frozen in glaciers and ice caps.

There are many issues surrounding water use and different aspects to consider, so it is useful to sort those topics into categories. Four general categories that provide a broad overview of water as a resource are supply, development, pollution, and restoration.

Some of the following topics were briefly touched on in this lesson and can be explored further by reading articles from the National Geographic issue that was featured in this lesson. Topics include water distribution, water laws and regulations, conservation efforts, the impact of water pollution on plants and wildlife, health concerns related to contaminated water, political conflicts over water, and the damaging effects of drought and flooding. These are all important examples of how water affects our daily lives locally, nationally, and internationally.

As a global citizen, it is vital to remember that you have a part to play and can contribute to the development and implementation of sustainable initiatives. At the end of the day, conserving and protecting your water supply is not only something that you want to do, but rather, it is something that you must do.

Notes



Assignment 4.1

Resources and Standard of Living (21 marks)

The first two lessons of this module focused on the five main categories of resources.

- mineral
- energy
- biological
- land
- water

Each of these resources contributes to

- the standard of living of Canadians through the production of consumer goods
- fuelling industries
- supporting lifestyles of leisure and luxury

Completing this assignment will provide further insight into the cost of maintaining such a high standard of living and how important it is to responsibly use and conserve resources.

Choose one natural resource and identify the category of resources it belongs to (e.g., lumber is a biological resource). Examples of resources include water, oil, gasoline, coal, trees, soil, cotton, coffee, chocolate, gold, and diamonds. There really are so many to choose from! Try to pick a resource that you perhaps take for granted but that is either essential or something you really enjoy having in your life.

Write a short response (approximately 400 to 600 words) that demonstrates your understanding of the connection between the resource you chose and your personal standard of living. Your response does not require a formal introduction or conclusion, but ensure that your paragraphs are well-organized. You may choose to type your response using a word processor, or you can write your response in the space provided.

continued

Assignment 4.1: Resources and Standard of Living (continued)

Respond to the following questions to help you organize your essay.

- What is the resource that you chose? Is it a renewable or non-renewable resource? (2 marks)
- Is this resource essential for your survival or is it a luxury? Explain. (1 mark)
- Is it a resource that you use on a daily, weekly, or monthly basis? Is it something you pay for once or do you pay per use? What is the cost of the resource? (2 marks)
- In what specific ways would your life be different if you did not have access to, or could no longer afford to, take advantage of the resource? Give three examples. (3 marks)
- Is this resource accessible and affordable for all Manitobans? Identify which, if any, demographic group(s) would have difficulty accessing or being able to afford the resource. Give two reasons that account for this inequality. (4 marks)
- Is the supply of this resource limited or threatened by external forces (such as pollution)? If yes, are there any current initiatives in place to combat this problem? Are they effective? If the resource supply is unlimited (such as wind or solar power), discuss current development projects aimed at harnessing energy from the resource. (3 marks)
- What is the significance of this resource at the local, national, and international level? Discuss the impact that it has on the lives of people, its importance to the federal government, and its role in international relations. (6 marks)

continued

LESSON 3: RESOURCE DEMANDS

Lesson Focus

By the end of this lesson, you will

- Examine resource management related to land reform and land ownership.
- Examine how the demand for resources affects relationships between countries. Are the relationships a matter of conflict, cooperation, or both?
- Examine what effect the demand for resources has on the environment.
- Explore the impact that global resource distribution has on the local and global economy; as well as what is meant by domestic resource management and what is the Dutch Disease.
- Learn about the international water agreement, UNCLOS.

Introduction

Now that you are familiar with what constitutes “resources,” you will examine resource issues through the filter of human politics.

Resource extraction and use is based on the quality of the infrastructure that is already in place. A lack of infrastructure generally means no access to resources.

Resource distribution and demands often involve a measure of conflict between competing interest groups. Domestic (local or national) resource management is important, but sharing the resources from international waters and disputed territories is a reality of the global, interconnected world.

Ultimately, there are no simple answers. Keeping the public educated and knowledgeable about the issues, and encouraging the development of critical-thinking skills, are the first steps towards progress and change.

Changing Resources, Changing Demands: Land Reform



Land reform involves the changing of laws, regulations, or customs regarding land ownership. The term *reform* implies that changes are necessary. Reform can be a change in the arrangement of land ownership or may involve government-initiated or government-backed property redistribution, generally of agricultural land.

The term *land reform* can refer to three types of changes to land ownership.

- Powerful to the less powerful
 - Transfer ownership from a relatively small number of wealthy owners with extensive land holdings (e.g., plantations, large ranches, or agribusiness plots) to individuals who work the land.
 - Such transfers of ownership may be with or without compensation. Compensation may vary from small amounts to the full value of the land.
- Individual to the government
 - Peasant ownership of small holdings that are bought out by the government in order to run government-owned collective farms.
- Government to the individual
 - Government-owned collective farms may be divided into small holdings and transferred to individual ownership.

One commonality in land reform is that there is always a change or replacement of the organization or person who owns the land and/or the way that land is used. Reform can be quite radical, with a large-scale transfer of land from one group to another, or less dramatic, such as basic reforms aimed at improving land administration.

Any revision or reform of a country's land laws can be a complicated political process. This is because reforming land policies changes relationships within and between communities, as well as between communities and the government. Even small-scale land reforms and legal modifications may be subject to intense political debate or conflict.

Also consider the effect that such reforms would have on the local, regional, and larger area economies. If the reforms help the agricultural industry, then the ripple effect will be far-reaching. For example, if food security is high in one area, then food and food-related industries in neighbouring areas will be more successful as well.

In many less-developed countries, there is a desire to divide large land holdings (a result of colonialism) into smaller sections. This action would enable local farmers, who rent rather than own the land on which they farm, to share in the land and earn a living. Land reforms that involve changing ownership, such as taking land away from large-scale landlords and giving it to local farmers, can lead to tension and conflict.

This topic can be quite controversial because ideas of land ownership and definitions of what it means to access or control land can vary between regions and between countries. There is also a deep resentment towards former European colonial powers, whose institutions and rules gave rise to multiple problems after the colonizers left the country.

Types of Land Ownership: Individual versus Community

Western conceptions of land possession have evolved over the past several centuries to place greater emphasis on individual land ownership. This process has been formalized through documents such as land titles.



Land tenure refers to when an individual holds rights to the land, rather than owns the land. Historically, in many parts of Africa for example, land was not owned by an individual, but rather it was used by an extended family or a village community. Various people in a family or community had rights to access this land for different purposes and at different times. Such rights were often passed on through oral history and not formally documented.

The higher input (more work) that the farmer/peasant puts into the land, the greater the output, or benefit, to the whole area. With the challenges the world faces in providing enough food for the growing global population, increasing productivity in this way is a goal worth pursuing.

The First Peoples of North America believed that land was meant to be used and shared by everyone.

“Sell land? As well sell air and water! The Great Spirit gave them to all in common.”

Tecumseh

There are limitations to creating landowners out of everyone. The sense of power that comes with owning land can drive some landowners to increase their holdings. Once people have land and power, they are reluctant to give it up. Land and the subsequent power can be gained through

- investing surplus (extra) cash into more land
- acquiring the neighbour's land when he or she can't pay his or her debts
- access to additional land through marriage contracts

The difficulty is in trying to treat all people as equal. In most cases, the goal is to simply establish a fair process.

The terminology or language used to describe land ownership and tenure includes

- "formal" or "statutory" land systems: refers to ideas of land control more closely affiliated with individual land ownership
- "informal" or "customary" land systems: refers to ideas of land control more closely affiliated with land tenure

Land reform will always be part of the solution to the problems of finding work and overcoming poverty and hunger for the world's poor. The important question to ask is, "Who controls the resources and how do as many people as possible benefit from them?"



Learning Activity 4.3

Land Reform Case Study Analysis

Mexico

- Mexico experienced major land reforms between the Mexican Revolution in 1910 to the end of land redistribution in 1976.
- Before 1910, most of the land and political power was in the hands of a small percentage of rich landowners.
- Slavery was illegal in Mexico, but a large portion of the land workers were essentially debt-slaves to the landowners, which resulted in social unrest.
- A significant amount of land was seized by American landowners in the 1930s, which caused conflict between the United States and Mexico even though Mexico experienced an increase in agricultural production.

continued

Learning Activity 4.3: Land Reform Case Study Analysis (continued)

- The confiscated land was redistributed to the peasant farmers as “ejidos,” plots of communally owned lands where individuals had the right to farm certain parcels and were able to pass those rights on to their descendants.
- Between the 1940s and the 1970s, it became possible for peasant groups to rent out their ejidos to capitalist entrepreneurs.
- This changed again in the early 1990s when it became possible for peasants to sell the ejido land and also allow individuals to put up their portion of the land to help pay off loans. Some groups have used the land for tourism development.
- Many contemporary peasants are landowners, but most have plots of land that are too small for anything other than subsistence farming, so they must supplement their incomes in other ways.

Source: Gledhill, John. “Historical Notes on Mexico’s Land Reform.” *The University of Manchester*, England. http://jg.socialsciences.manchester.ac.uk/Peasants/mexican_land_reform.html. (Accessed May 2015.)
Adapted in accordance with fair dealing guidelines.

Zimbabwe

- Zimbabwe is a land-locked country, north of South Africa and shares borders with Botswana, Zambia, and Mozambique.
- European expansionism in Zimbabwe began in the mid-1800s and was fueled by gold exploration.
- By 1891, the area had been declared a British protectorate (a state that is controlled and protected by Britain) known as Rhodesia.
- The African occupants of the land were displaced so that European settlers could occupy the agricultural land.
- Over the next dozen years or so, political power gradually moved from the local population to the European settlers.
- The African struggle for an independent Rhodesia continued between the early 1960s and 1980. The political struggle was further complicated by the emergence of both white supremacist and African political parties.
- In 1979, Britain agreed to purchase land from British farmers who were willing to sell and redistribute that land through a land-reform program.
- Following the upheavals caused by the “fast track” land reforms of the early 2000s, Zimbabwe continued to experience economic hardships which were made worse by the AIDs epidemic.
- During the decade of 2000 to 2010, agricultural production dropped rapidly. Zimbabwe’s lack of food security and widespread hunger problems were made worse by international economic sanctions.

continued

Learning Activity 4.3: Land Reform Case Study Analysis (continued)

Complete the following chart, which outlines the similarities and differences between these two countries, and their struggle for independence and control over land ownership.

Similarities	Differences
<ul style="list-style-type: none"> ■ land was unfairly seized by _____ ■ political power stayed in the hands of the _____ ■ both countries experienced _____ movements ■ the question of land ownership caused significant _____ 	<ul style="list-style-type: none"> ■ Mexico’s economy _____ with agricultural production, whereas Zimbabwe’s agricultural production _____ ■ Zimbabwe was a _____ colony, Mexico was _____ ■ American _____ owned the land in Mexico, Europeans in Zimbabwe were _____

Interdependence among Countries

One of the questions posed earlier in this lesson was, “How does the demand for resources affect the relationships between countries?” Actions and events in one part of the world can have a ripple effect on other parts of the world. These impacts can be felt on the economy and the environment. Global history is littered with instances in which one country has been invaded by another in order to gain resources, including territory, people, and physical resources such as gold and oil. The mutual dependence on the Jordan River by Israel and Jordan is a good example of conflict, cooperation, and interdependence regarding a water resource.

With the creation of the League of Nations following World War I (became known as the United Nations after World War II), alliances between countries have become more common than international conflicts. The more people learn and the more technology is used to communicate between individuals and organizations, the less isolation there is. It is becoming increasingly important to see the “big picture” connections.



Note: The United Nations is an international organization, which was founded in 1945. After the Second World War, 51 countries committed to the UN’s vision of maintaining international peace and security, developing friendly relations among nations, and promoting social progress, better living standards, and human rights (www.un.org/en/aboutun/index.shtml).



If a country engages in bullying-type behaviour or any sort of behaviour that involves violence, coalitions (teams) of other nations will often step in to put up a defense against the offensive attack. The case study of land reform in Zimbabwe is a good example. **Sanctions** are measures taken by a country to persuade, force, or pressure another country to obey international rules of conduct or agreements.

There are different types of sanctions (http://en.wikipedia.org/wiki/International_sanctions#Military_sanctions).

- **diplomatic sanction:** removing or reducing diplomatic ties in a country (e.g., embassies)
- **economic sanction:** refusing to trade with a country
- **military sanction:** can range from cutting off military supplies to a country to intervening in a conflict without that country's permission
- **sport sanction:** preventing individuals and teams from competing in international sporting events

Other ways nations can intervene could include anything from negotiations, to boycotts, to counter invasions. An example of a counter invasion would be the 1991 Gulf War. Iraq invaded Kuwait to control Kuwait's oil resources, and Kuwait asked for help from the United States of America. The American foreign policy team, under the leadership of President Bush, formed an international alliance with its NATO allies, as well as the Middle Eastern countries of Saudi Arabia, Egypt, and Syria, to oppose Iraq in a land war.

An example of a sport sanction would be the 1980 Olympic Games in Moscow. Several countries boycotted the Olympic Games in response to the USSR's (Union of Socialist Soviet Republics), current day Russia, invasion of Afghanistan. In 1984, the Soviet Union and thirteen of its allies boycotted the Olympic Games in Los Angeles as a response to what they felt was anti-Soviet hysteria.

Resource Demand and the Environment

One of the most dramatic cases of how resource demand can affect the environment is one involving the Aral Sea. The Aral Sea is situated in Central Asia, between the southern part of Kazakhstan and northern Uzbekistan. In 1950, cotton production in the USSR was struggling because of the lack of irrigation to the cotton fields. The government decided to construct canals to divert the water entering the Aral Sea from the Syr Darya and Amu Darya Rivers to irrigate the desert region rather than supply the Aral Sea basin.

Consequences of this short-sighted plan were severe and affected local weather patterns, the economy, and public health. Between 1960 and 2009, the Aral Sea lost 88 percent of its surface area and 92 percent of its water volume.*

The following paragraphs are an excerpt from an article written by Dr. David Suzuki in 2000 for his foundation's newsletter, after his visit to the Aral Sea. In the article, Suzuki describes how "the story of the Aral Sea is an ecological, economic and human health disaster."

* Micklin, P. (2010, September 16). "The past, present, and future Aral Sea." *Lakes & Reservoirs: Research & Management*, 15(3), 193–213.

Shrinking Sea a Bleak Warning

Recently, my filming schedule took me to Uzbekistan, one of the republics formed after the break-up of the Soviet Union. The country is home to what used to be one of the greatest inland bodies of water in the world—the Aral Sea. Now it is just a reminder of what can go terribly wrong when we misuse our resources.

In the 1950s, the Soviet Union decided the great plains around the Aral were ideal for growing cotton and built a series of dams on the great rivers that fed the sea. Some 40,000 kilometres of canals were then dug from the dam reservoirs to divert water to the fields.

But the sea began to shrink. At first, the villagers in fishing towns like Muynac on the water's edge assumed this was a temporary condition and dredged canals to allow fishing to continue. But soon canals were 30 km long!

Then the fish began to die, as run-off full of pesticides and salt from the fields poisoned the water. Eventually, every native fish species became extinct. Today, Muynac is more than 100 kilometres from the sea. The only reminders of the once-thriving fishing activity are the rusting hulks of ships and an ancient fish plant.

The sea's water level has dropped by 16 meters and exposed a vast area of seabed that is laced with pesticides. Now, when the wind blows, toxic dust spreads across hundreds or even thousands of kilometres. As a result, people in this region have the highest incidence of tuberculosis in the world, plus elevated levels of a host of bronchial and kidney problems as well as cancer.

Leonid Elpiner, of the Russian Academy of Sciences, recites a litany of problems ranging from increased microbial contamination of water to higher levels of chemical pollution of air, water and food; intestinal diseases; polio, viral hepatitis and non-infectious diseases.

Zita Mazhitova, Head of Pediatrics at Kazakh State University, reports that 80% of fertile women in the region are anemic, while 87% have various chronic diseases. Mortality has doubled and life expectancy dropped. Children are especially vulnerable. Mazhitova's devastating analysis concludes: "There are no healthy children in the Aral Sea area and 89 per cent of them have several organs and systems affected at the same time."

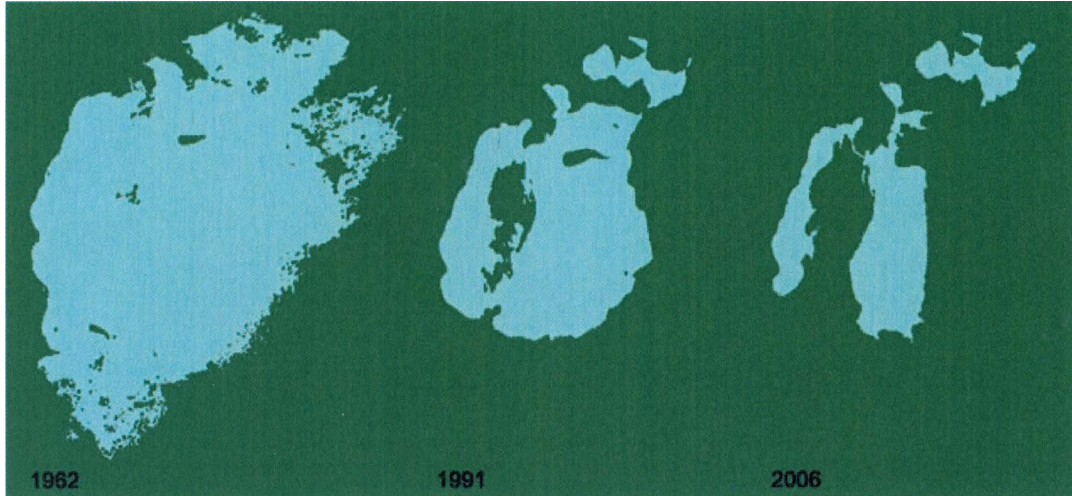
The story of the Aral Sea is an ecological, economic and human health disaster. But it is one from which we can draw many lessons—lessons on how not to use a resource, lessons on how not to conduct agriculture and perhaps most important, lessons on how connected human health is to that of the natural world.

Source: Suzuki, David. "Shrinking Sea a Bleak Warning." *David Suzuki Foundation*. www.davidsuzuki.org/publications/downloads/2000/Newsletter_summer00.pdf. Used with permission.

To chart the decline of the Aral Sea over 44 years, Planetary Visions Ltd. used satellite imagery from the earliest days of the space program.

Figure 4.7

DECLINE OF THE ARAL SEA



Source: Planetary Visions Limited. "Historical Maps: The Aral Sea." www.planetaryvisions.com/Project.php?pid=2224. Used with permission.



If you have access to the Internet, the following website includes a slideshow, illustrating how the lake has changed between 2000 and 2011:

http://earthobservatory.nasa.gov/Features/WorldOfChange/aral_sea.php.

The Aral Sea case illustrates how overuse or misuse of a natural resource, in this particular case, water, can have catastrophic effects on the environment and on the human population living in the affected area (in this case the dried up sea). The following chart demonstrates how the negative change in the environment had an equally disastrous impact on the human population.

Table 4.5: Environmental and Human Impact	
Environmental Impact	Human Impact
extinction of fish species	collapse of fisheries and the elimination of jobs
salt level of water increases (a consequence of fertilizer and pesticide runoff)	salt water cannot be used for drinking purposes or irrigation
contamination of the exposed lake bed with agricultural chemicals	dust and sediment from the lake bed is a health hazard if inhaled by humans
loss of thousands of square kilometres of rich shoreline ecosystems, home to native species of plants and animals	loss of biodiversity has a negative impact on the emotional and psychological health of the population
lack of vegetation resulting in desertification	reduced air quality
removal of the moderating effect of such a large body of water	colder winters and hotter summers

In 2001, the government of Kazakhstan and the World Bank started construction of the Kok-Aral Dam to allow for the northern portion of the sea to be filled with water from the Syr Darya River. The dam was completed in 2005. The Kok-Aral Dam separates the North Aral Sea from the larger and saltier South Aral Sea in Uzbekistan. The South Aral Sea is irrecoverable due to damage caused by pollution. As a result of the construction of the Kok-Aral Dam, the surface area and water depth of the North Aral Sea has increased, fish species have returned, and the local climate has improved.

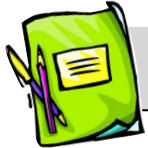
Unfortunately, the large-scale effort to renew the North Aral Sea in Kazakhstan has not been matched in Uzbekistan with regard to the South Aral Sea. Although it is impossible for the South Aral Sea to be rejuvenated to its 1960 condition, partial restoration efforts cannot move forward until the government of Uzbekistan chooses to contribute its support.

Kazakhstan and Uzbekistan are not the only countries with a stake in this issue. The neighbouring countries of Turkmenistan, Kyrgyzstan, and Tajikistan have hydroelectric infrastructure that rely on the Amu Darya and Syr Darya Rivers. These hydroelectric projects reduce the water flowing into the Aral Sea drainage basin and further complicate any cooperative discussions between the countries.

In April of 2009, the five countries met and agreed that wasteful irrigation was the main cause of the shrinking of the Aral Sea. They also agreed that solutions were needed to resolve environmental damage and public health concerns, but differing interests have prevented any agreement on a joint action plan.



This situation is further complicated by the fact that potentially rich oil and gasoline resources have been found underneath the dry sea bed in Uzbekistan, and that a state-run company is investigating this potential resource with Russian and Asian partners. This reduces the incentive to try and fix the lake, and introduces competing interests in the issue, which will prolong the entire process of remediation. **Remediation** refers to the process of helping an area return to its natural state.



Learning Activity 4.4

The Aral Sea

1. In which country is the North Aral Sea located?
 - a) Russia
 - b) Kazakhstan
 - c) Uzbekistan
 - d) Poland
2. Between 1960 and 2009, the Aral Sea lost what percentage of its water volume?
 - a) 70%
 - b) 88 %
 - c) 60 %
 - d) 92%
3. The names of the two main rivers feeding the Aral Sea are
 - a) Danube and Nile
 - b) Yangzte and Syr Darya
 - c) Syr Darya and Amu Darya
 - d) Red and Assiniboine
4. What was the main cause of extinction of fish species?
 - a) pesticide and salt runoff
 - b) water drainage
 - c) large predator fish
 - d) overfishing

continued

Learning Activity 4.4: The Aral Sea (continued)

5. Which of the following health issue has not been associated with the shrinking of the Aral Sea?
 - a) intestinal diseases
 - b) polio
 - c) malaria
 - d) viral hepatitis
 6. Which of the following is a human impact related to the loss of shorelines and diverse ecosystems?
 - a) reduced air quality
 - b) negative emotional and psychological reaction
 - c) colder winters and hotter summers
 - d) collapse of fisheries and elimination of jobs
 7. What reason did the USSR give for building wasteful irrigation channels to the plains surrounding the Aral Sea?
 - a) It would increase the number of fish species.
 - b) It would increase grain production.
 - c) It would be used as a source of hydroelectric power.
 - d) It would increase cotton production.
 8. Which valuable resource(s) has/have been found beneath the dried sea bed?
 - a) oil and gasoline
 - b) diamonds
 - c) gold
 - d) copper
-

Resource Demands and the Economy

The Aral Sea disaster is an economic as well as an environmental and political issue. The large-scale irrigation projects temporarily benefitted farmers and the then USSR government because of the short-term boost in agricultural production. In the long term, these economic benefits were hindered because the loss of biodiversity and an increase in salinization (salt level in the water) resulted in the destruction of good farmland. In recent decades the local economies of Kazakhstan and Uzbekistan have been negatively affected by the loss of tourism, the struggling fishing industry, and the increased health care costs. A potential silver lining in this catastrophe is the discovery of oil and gasoline resources available beneath the seabed. If the governments of Kazakhstan and Uzbekistan choose to take advantage of these resources in a responsible and sustainable manner, then it could open up many possibilities for economic development in the region.



The Aral Sea case is a perfect example for a quickly evolving discipline known as Natural Resource Economics. **Natural Resource Economics** deals with the supply, demand, and allocation of Earth's resources. The focus of this discipline is to identify the connections and interdependence between human economies and nature by asking "how can we operate an economy within the natural limitations of an ecosystem?"

The traditional curriculum of natural resource economics emphasized fish, trees, and ore (a type of rock that contains minerals). The discipline has been adapted in recent years to include other resources such as air, water, tropical rain forests, sustainable fisheries, biodiversity, and endangered species. Environmental economics is an important field of study because it broadens our understanding of why certain natural resources are threatened and how these resources can be better protected. The danger of viewing natural resources solely in economic terms is that people lose sight of environmental degradation and the importance of living in a sustainable society, which both protects the environment and maintains a high standard of living.

According to the following article by the David Suzuki Foundation, the shift to more inclusive resource management is no longer an option, but a necessary path that society, as a collective group, must take.



Note: Some of the language used in the following article is at a very sophisticated level. If you have difficulty understanding a sentence or feel like you are missing the main points, discuss the article with your learning partner. A dictionary and thesaurus might also be useful tools to improve your reading of the article.

The fundamental failure of environmentalism

Environmentalism has failed. Over the past 50 years, environmentalists have succeeded in raising awareness, changing logging practices, stopping mega-dams and offshore drilling, and reducing greenhouse gas emissions. But we were so focused on battling opponents and seeking public support that we failed to realize these battles reflect fundamentally different ways of seeing our place in the world. And it is our deep underlying worldview that determines the way we treat our surroundings.

We have not, as a species, come to grips with the explosive events that have changed our relationship with the planet. For most of human existence, we lived as nomadic hunter-gatherers whose impact on nature could be absorbed by the resilience of the biosphere. Even after the Agricultural Revolution 10,000 years ago, farming continued to dominate our lives. We cared for nature. People who live close to the land understand that seasons, climate, weather, pollinating insects, and plants are critical to our well-being.

This year marks the 50th anniversary of the birth of the environmental movement. In 1962, Rachel Carson published *Silent Spring*, which documented the terrible, unanticipated consequences of what had, until then, been considered one of science's great inventions, DDT. Paul Mueller, who demonstrated the effects of the pesticide, was awarded the Nobel Prize in 1948. In the economic boom after the Second World War, technology held out the promise of unending innovation, progress, and prosperity. Rachel Carson pointed out that technology has costs.

Carson's book appeared when no government had an environment department or ministry. Millions around the world were soon swept up in what we now recognize as the environmental movement. Within 10 years, the United Nations Environment Programme was created and the first global environmental conference was held in Stockholm, Sweden.

With increasing catastrophes like oil and chemical spills and nuclear accidents, as well as issues such as species extinction, ozone depletion, deforestation, acid rain, and global warming, environmentalists pressed for laws to protect air, water, farmland, and endangered species. Millions of hectares of land were protected as parks and reserves around the world.

Thirty years later, in 1992, the largest gathering of heads of state in history met at the Earth Summit in Rio de Janeiro, Brazil. The event was meant to signal that economic activity could not proceed without considering ecological consequences. But, aided by recessions, popped financial bubbles, and tens of millions of dollars from corporations and wealthy neoconservatives to support a cacophony of denial from rightwing pundits and think tanks, environmental protection came to be portrayed as an impediment to economic expansion.

continued

This emphasis of economy over environment, and indeed, the separation of the two, comes as humanity is undergoing dramatic changes. During the 20th century, our numbers increased fourfold to six billion (now up to seven billion), we moved from rural areas to cities, developed virtually all of the technology we take for granted today, and our consumptive appetite, fed by a global economy, exploded. We have become a new force that is altering the physical, chemical, and biological properties of the planet on a geological scale.

In creating dedicated departments, we made the environment another special interest, like education, health, and agriculture. The environment subsumes every aspect of our activities, but we failed to make the point that our lives, health, and livelihoods absolutely depend on the biosphere—air, water, soil, sunlight, and biodiversity. Without them, we sicken and die. This perspective is reflected in spiritual practices that understand that everything is interconnected, as well as traditional societies that revere “Mother Earth” as the source of all that matters in life.

When we believe the entire world is filled with unlimited “resources” provided for our use, we act accordingly. This “anthropocentric” view envisions the world revolving around us. So we create departments of forests, fisheries and oceans, and environment whose ministers are less concerned with the health and well-being of forests, fish, oceans, or the environment than with resources and the economies that depend on them.

It’s almost a cliché to refer to a “paradigm shift”, but that is what we need to meet the challenge of the environmental crises our species has created. That means adopting a “biocentric” view that recognizes we are part of and dependent on the web of life that keeps the planet habitable for a demanding animal like us.

Source: Suzuki, David. “The Fundamental Failure of Environmentalism.” *David Suzuki Foundation*. www.davidsuzuki.org/blogs/science-matters/2012/05/the-fundamental-failure-of-environmentalism/. Used with permission.



Note: One of the most important points brought up in Mr. Suzuki’s article is the distinction between an anthropocentric and biocentric world view.

- An **anthropocentric** view regards humankind as the most important element of existence.
- A **biocentric** view supports the belief that the rights and needs of humans are not more important than those of other living things.

Domestic Resource Management

Each country is responsible for its own self-sustainable economic development. As this lesson has already established, natural resources play a significant role in the economy. Governments must govern the use and distribution of these resources within their own country as well as manage international investment. This section of the course will discuss which groups have controlled the resources in the past and where the status of resource ownership is today. The word *jurisdiction* refers to legal authority.

European Colonialism

At the time of European colonialism in the 18th and 19th centuries, resource control was, as a rule, in the hands of the colonizing country rather than the local populations. When Canada was a colony of England, the colonizer, England, benefitted economically by importing goods and products that were produced in Canada back to England to sell and trade. There were very few countries in North and South America that did not feel the effects of colonialism. Since this time, the issue of who has the control of natural resources continues to be a source of social and political unrest in much of the world.

Federal and Provincial Jurisdiction

At the time of Confederation in 1867, resource management was different than it is today.



In 1879, Canada's first Prime Minister, Sir John A. MacDonald, implemented his National Policy. The **National Policy** was a way of building the manufacturing capacity of eastern Canada through increased tariffs (taxes) on imported goods. Many of the goods were from the United States. The policy also meant to make use of the soon to be completed transcontinental railroad to build east-west domestic trade. This resulted in western farmers having to purchase more expensive products.

Natural resources were originally owned by the federal government before control was given to the provinces. There are a few resources that still fall under federal jurisdiction; for example, fish, migratory birds, and any resources found in the territories (Nunavut, Northwest Territories, and the Yukon). Otherwise, natural resources fall under the jurisdiction of the province in which they are found. Although there are certain regulations set out by the federal government that must be followed, the provinces are, for the most part, in control of their resources.

Most Canadians realize that the shift from federal control to provincial control of natural resources has benefited the provinces, especially in the west (e.g., the Alberta oil and gas industry). With the sudden increase in global fuel prices during the late 1970s, the Liberal Party of Canada felt that steps needed to be taken to ensure the energy security of the entire country.

Following the Federal election of 1980, Liberal Prime Minister P. E. Trudeau implemented the National Energy Program. As a result of the increased global oil prices and an inability to come to an agreement with Alberta over pricing and revenue sharing, the Federal government voted to shift some of the control of the oil and gasoline industry back to Ottawa. This resulted in the transfer of some of the profits to Ottawa for the benefit of all Canadians, thus increasing energy security and Canadian ownership in the industry.

Unfortunately, energy prices did not continue to rise. The National Energy Program was a perfect example of how government intervention seemingly could not be justified. The program was dismantled following the Conservative win in the 1984 election. In spite of having reduced Canadian dependency on foreign oil, the program is remembered more for rekindling the flames of western alienation, first seen with MacDonald's National Policy.

Aboriginal Land Claims

The natural resource control system is also, in some ways, further complicated by Aboriginal land claims. Aboriginal rights are included in Canada's constitution, which include comprehensive land claims. Comprehensive land claims do not stem from a specific treaty or reserve, but from a Status, non-Status, Métis, or Inuit group who believe their title to the land was never given up and the land their group had lived on in the past was taken from them without any recognition or compensation. Comprehensive land claims are also called modern treaties.

Treaty rights are those rights that were negotiated as part of a treaty. Treaty rights apply to land, as well as to the practice of cultural traditions. Many of the treaties included the right to use non-reserve lands for hunting, fishing, and trapping. Treaty rights also provide for reserve lands set aside for the exclusive use of First Nations bands. These are the rights that form the foundation of specific land claims. When a First Nations band does not receive the land as stipulated in the treaty, or land is taken away and no compensation is provided, the band can make a claim for the land in question. This claim is called a specific claim.

Moving Forward

What you should take from this historical development of natural resources is that there is always a background balancing act that needs to be considered when examining resource management. Local needs/wants should be balanced with regional needs and wants, which should be balanced with national needs and wants.

What do you value in a society or in a nation? What do you want the future to look like for your descendants? Can enough people agree on a plan of action that can be put into place? What consequences will your descendants be faced with as a result of current value judgments? As the values in society change, so do all those balances. There are more questions than answers, yet being aware of what to ask is the beginning of the collection of information process that is necessary for challenging decisions.

Norway

Norway's model of responsible resource management has proven to be very successful. As well, Norway falls within the top three to five developed countries on the "standard of living" and "quality of life" indices. There are several reasons for this, including the following:

- Norway is a relatively small country with a population of less than 5 million people. It is a constitutional monarchy with most resource industries under state control or influence. This means that most of the profits generated from natural resources go back to the state.
- The country emphasizes sustainability by avoiding excessive spending in the good times in order to be prepared for possible future economic downturns.
- The country has committed to a conscious, long-term effort of sustainability and sensible planning. This effort has resulted in a diverse economy with service and manufacturing sectors balancing the oil-dominated resource sector.
- Social support programs, including the education system, have led to an educated labour force that enables the potential value of the natural resources to be realized. A country can have an abundance of natural resources yet, without the human resources providing the necessary knowledge and skills to use these resources, the potential wealth cannot be realized.

Developing Nations

Development is related to potential natural resource wealth in many ways, but there are a number of factors that must be taken into consideration before direct connections can be made.

For example, a specific country or region may have an abundance of oil, but the country/region might also have social, cultural, and institutional traditions that prevent it from engaging in trade with countries that have different values and beliefs. Therefore, it cannot be said that oil (or any other resource) is the main cause of economic growth, or lack thereof.

Economic stability is also related to the stability of the political climate. An important indicator of economic stability is whether or not countries that experience a sudden resource-related increase in income can remain stable. Norway, for instance, experienced a significant increase in income during the early 1970s with the discovery of offshore oil and gas deposits with essentially no negative consequences. On the other hand, many newer autocracies that experience a similar sudden increase in resource income become very unstable. An **autocracy** is a system of government in which one person rules with absolute power. Those in power tend to want to keep as much of the wealth as they can, which often results in conflict.



The influx of money often results in varying degrees of corruption. For example, a municipality in Brazil may be receiving payments of some sort for the sale of local oil and gasoline resources, but the average standard of living may not reflect the amount of money coming in. The lifestyles of local officials may see improvements, but those of average citizens may not change. This speaks to a lack of local accountability and an uninformed population.

In response to the sometimes negative side-effects of these resource windfalls, there is a so-called resource-curse hypothesis that suggests that resource booms are bad for development. Some economists say that countries with abundant natural resources tend to have slower economic growth and tend to see more armed conflict than resource-poor countries.

This “curse theory” was first talked about in the 1990s and has been debated ever since. Dutch Disease (see the description that follows) was initially suggested as a culprit for slow growth. At the same time, greedy behaviour by rebel groups seemed to offer a plausible explanation for the link between resources and conflict. Later, the focus of the explanation moved to weak institutions that allowed corruption that stunted development.

Whatever the reason, the “resource curse” regularly finds its way into the popular press because of its interesting and paradoxical nature (something good turning into something bad). If you do see a story about a “resource curse” situation, you have a great opportunity to exercise your critical-thinking skills.

The reality is that there is more evidence supporting the fact that the “curse” is closer to an urban legend than reality. There are too many factors that must be considered, both inside and outside a country, to be able to draw any firm cause and effect conclusions. For example, if foreign investors (a person or a company committing money to a project in a different country) are aware of conflict within the country or an unstable economy, they might pull their investments. This decrease in money coming in might make a country more dependent on selling their goods to other countries as the only remaining economic activity. On the other hand, the dependence on the resource money might simply be the outcome of a badly thought out economic development strategy.

The good news is, since the 1990s, many economies (especially African) have shown significant economic improvements. While it is evident to observers that resource discoveries have enhanced corruption and inequality in some countries, the overall pattern holds promise for the future.

Dutch Disease



The **Dutch Disease** is a term that was coined in 1977 by *The Economist* in reference to an economic crisis in the Netherlands in the 1970s. During this time, there was a discovery of vast amounts of natural gas deposits in the North Sea. The Dutch took advantage of this discovery to export (sell) the natural oil to other countries. The newfound wealth caused the Dutch currency to rise, making exports of all non-oil Dutch products less competitive on the world market because they were now more expensive.

The result is that other industries, such as manufacturing, were hurt by the increase in wealth generated by the resource-based industries. Manufacturing plants have fixed costs in dollars (e.g., wages); therefore, they had the same costs but less people wanting to buy their products. The Dutch products became much more expensive for everyone else to buy, because most other foreign currencies were not changing. The resource industry today still does well because there is a demand for oil but the manufacturing industry suffers.

The Dutch disease is usually associated with a natural resource discovery, but it can result from any large increase in foreign currency, including foreign direct investment, foreign aid, or a substantial increase in natural resource amounts or prices. You are more likely to hear it in a discussion about resources.

The Dutch disease has two main effects:

1. **The abundance of a natural resource strengthens the country's currency because it results in an increase in exports.** However, this also makes all of the other manufactured products more expensive as well. If the goods are more expensive, less people are likely to buy them and exports of manufactured goods decrease.
2. **The increase in the value of local currency also results in an increase in imports.** Local consumers have more money in their pockets to spend on foreign products (typically more expensive than local products) and this hurts the domestic (home) economy in the long run.

Exports are the goods that a particular country is selling to other countries in order to make money. When exports are high and the prices are competitive on the global scale, it means that the country's economy at home will benefit.

Imports are the goods that the country has bought or traded for with another country. When people buy imported products, the money used to purchase the items is leaving the country. That is why countries impose tariffs on imported goods. Tariffs are taxes. In this way, countries can still make money off of the products, even though most of the profit is leaving the country.

In the long run, both these factors can contribute to manufacturing jobs being lost to foreign countries that have lower labour costs.

In May of 2012, there were some political discussions regarding how the Alberta oil sands project near Fort McMurray could potentially be having the same inflationary effect on the Canadian dollar. This could potentially have a negative effect on manufacturing elsewhere in the country. **Inflation** is when the price of goods increases, but the value of money decreases.

The following article provides a summary of the issue.



Was Thomas Mulcair right? New report supports 'Dutch Disease' claims Steve Rennie, The Canadian Press May 30, 2012

OTTAWA—On the eve of NDP leader Tom Mulcair's visit to Alberta after being lambasted for his criticisms of the province's oil sands, a new report backs his claim that Canada's economy suffers from a form of Dutch Disease.

A study released Wednesday by the Pembina Institute says Canada has come down with a unique strain of the phenomenon, dubbed "oil sands fever," that is producing near-term economic benefits that are often overstated.

The report says these benefits are spread unevenly across the country and could be hiding economic turmoil down the road.

But another report by a different group says Canada's oil and gas industry is spreading the wealth by using the money earned from booming exports to buy goods and services from the rest of the country.

The two reports were simultaneously released as Mulcair embarked on his first tour of the oil sands.

The NDP chief has been battered by western premiers and the federal Conservatives for suggesting oil exports raise the value of the Canadian dollar, which in turn hurts the economy in other parts of the country.

The phenomenon is dubbed the "Dutch Disease" in reference to the manufacturing decline that occurred in the Netherlands after a boom in natural gas exports in the 1970s.

The Pembina study says the Dutch Disease label may be too simplistic.

"It seems clear that Canada is undergoing changes, both positive and negative, that are unique to both the nature of its domestic economy and Canada's role in a shifting global economy," the report says.

"The result appears to be a uniquely Canadian strain of the Dutch Disease that could be called 'oilsands fever'—a strain that is beginning to create clear winners and losers in Canada's economy and could pose a significant risk to Canada's competitiveness in the emerging, clean energy economy."

The report urges the federal government to create a rainy-day savings fund for oil and gas revenues, get rid of tax breaks for oil and gas companies, convene an expert panel on the oil sands and the economy, study regional competitiveness in an era of a high loonie and work on a national energy strategy.

A separate report also released Wednesday by the Macdonald-Laurier Institute came to a different conclusion.

continued

The Macdonald-Laurier study found all provinces will enjoy benefits from oil- and gas-rich western provinces that far outweigh any ill-effects from a higher Canadian dollar.

“While the so-called ‘Dutch Disease’ mechanism may operate, in practice it is partially (perhaps more than fully) offset by the gains to the overall Canadian economy documented by these studies,” the report says.

Source: Rennie, Steve. “Was Thomas Mulcair Right? New Report Supports “Dutch Disease” Claims.” <http://news.nationalpost.com/2012/05/30/was-thomas-mulcair-right-new-report-supports-dutch-disease-claims/>.



Learning Activity 4.5

Playing a Role in the Economy

Understanding how the economy works is not an easy task. There are many different factors that influence the well-being of the economy. A few of those factors were mentioned in this lesson, but others also include

- currency value
- discovery of natural resources
- quantity of imports and exports
- cost of labour
- global trading relations between nations
- competitive pricing
- consumer demands

Consider the following scenarios. Answer the questions using your knowledge of supply, demand, and the economic factors listed above.

1. You are the CEO of a large Canadian retail export company (think Joe Fresh, Hudson’s Bay Company, Le Château, Winners, etc.). The economy is booming and the Canadian dollar is high. Is it cheaper for Canadians to shop locally at your store or to cross the border into the United States to shop?
2. You are the CEO of an oil company in Alberta. Oil is a sought after commodity—everyone needs it and you are exporting large amounts to foreign countries. This exchange strengthens Canada’s currency. What implications does this have for the Canadian manufacturing sector?

continued

Learning Activity 4.5: Playing a Role in the Economy (continued)

3. You are an environmental activist who is taking a stand against pollution in the Great Lakes (Canada's largest bodies of fresh water).
 - a) What are some possible negative environmental effects of pollution?
 - b) What are the long-term economic consequences of polluting the Great Lakes?
-

Resources in International Waters

The oceans have long been viewed by nations as a wide-open, free space. In the 17th century, countries formalized this viewpoint into the Freedom of the Seas Doctrine. A principle was put forth essentially limiting national rights and jurisdiction over the oceans to a narrow belt of sea surrounding a nation's coastline. The remainder of the seas was proclaimed to be free to all and belonging to none.

By the 20th century, the ocean's resources were increasingly used for economic purposes. Countries started to claim offshore resources, such as oil, tin, diamonds, gravel, and seafood, as domestic resources. The depletion of fishing stocks in coastal waters and seas by long distance fishing fleets began to cause growing concern. Waste from transport ships and oil tankers carrying toxic cargos began to pile up on sea routes, spreading pollution across the world.

Adding to the problems were other developments such as deep-sea oil drilling, which moved further and further from the land and deeper into the continental bedrock. Tension escalated among coastal nations who competed for harvests and resources. The increased presence of conflicting maritime naval powers threatened to transform the oceans into a global arena for conflict and instability. Countries wanted to expand their territorial rights, and disputes broke out over how to carve up the continental shelf.

The year 2012 marked the 30th anniversary of The United Nations Convention on the Law of the Sea (UNCLOS). Since 1982, this important international agreement has provided a framework for the use of the ocean's resources. UNCLOS is an international organization set up to resolve disputes between nations.

A timeline is provided below which identifies important dates that led to the creation of UNCLOS.

Table 4.5: UNCLOS Timeline	
Timeline	
1945	
<ul style="list-style-type: none"> ■ U.S. President Harry Truman directly challenged the Freedom of the Seas Doctrine in 1945 by extending US rights to a wider band covering all of the resources on the continental shelf, including oil, gasoline, and minerals. ■ Many countries followed Truman’s lead and also extended their sovereign national rights to the seas. 	
1956	
<ul style="list-style-type: none"> ■ The United Nations held its first conference on the Law of the Sea in Geneva, Switzerland. It resulted in 4 treaties in 1958. Although the convention was considered a success, it left open the important issue of the span of territorial waters. 	
1960	
<ul style="list-style-type: none"> ■ The United Nations held the second conference on the Law of the Sea, UNCLOS II. This was a 6-week conference held in Geneva, Switzerland. ■ Developing nations participated only as clients, allies, or dependents of the United States or the Soviet Union, and it did not result in any new agreements. 	
1967	
<ul style="list-style-type: none"> ■ In New York, Arvid Pardo, a Maltese diplomat best known as the father of the Law of the Sea conference, made a stirring speech at the UN General Assembly. He proposed that the bounty of the sea should be considered the common heritage of all people. ■ His vision led to the formation of the committee on the peaceful uses of the sea and the ocean floor beyond the limits of national jurisdiction. 	
1973	
<ul style="list-style-type: none"> ■ Mr. Pardo’s speech also led to the subsequent authorization of the third UN Conference on the Law of the Sea. That conference met in 1973 to draft a constitution for the world’s oceans. 	
1982	
<ul style="list-style-type: none"> ■ After 9 years of negotiations with more than 160 nations participating, the conference ended in 1982 by successfully agreeing to a new UN convention. ■ This United Nations Convention on the Law of the Sea, UNCLOS, was a first-time attempt by the international community to regulate all aspects and resources of the sea, as well as uses of the world’s oceans. 	

As a result of these meetings, a comprehensive treaty was drafted. The following are a few of the issues covered by the convention:

- navigation rights
- setting limits to states' Maritime Zones
- regulation of the continental shelf
- rules for deep sea mining
- protection of the marine environment
- marine scientific research
- binding procedure for settlement of disputes

Lesson Summary

This lesson focused on the demands placed on world resources. It explored the concept of resource ownership at both the domestic and the international level. The demand for resources is an important issue facing all countries, since resource management and distribution of resources have a significant impact on local, national, and international economies, as well as on the environment.

The complex interplay between supply, demand, and allocation of resources is an ongoing process in this globally interconnected world. International systems of government may determine how natural resources are traded and the cost to consumers, but it is the responsibility of every global citizen to make decisions that support a sustainable future. Do you as a global citizen or global business

- choose to pour the old fish tank water down the toilet or do you use it to water the plants?
- shave with the water running or shut the water off until you are ready to rinse?
- dam a river and flood habitats to create a large reservoir of water for human use or do you design your own habitat to collect and conserve your own water supply?

The global societal mentality must involve an understanding of limits. The majority of natural resources on which humans depend are finite and cannot be recycled. Humans value resources, but it is time to ask an important question: why are people so willing to ask the world to adapt to their needs, yet hesitant to consider adapting their habits and lifestyles in return? For the sake of the planet and future generations of people who will be equally dependent on natural resources, it is time to look at the big picture rather than at individual snapshots of the world.

Notes



Assignment 4.2

Blood Diamonds and International Trade (37 marks)

This lesson focused on natural resources and their importance to society. The lesson discussed land ownership and land reform, interdependence among countries, as well as the impact of natural resources on the environment and on the economy.

The **purpose** of this assignment is to enable you to see the “big picture” by analyzing the relationships between each of these components. In this assignment, you will recall what you have learned and apply it to the issue of blood diamonds.

Background Information

Blood diamonds (also known as conflict, illicit, or illegal diamonds) are diamonds that are “illegally traded to fund conflict in war-torn areas, particularly in central and western Africa.” They are used by rebel groups who use the money and connections to finance their fight against local governments. Blood diamonds have caused conflict in a number of countries, including the following United Nations member-states:

- Angola, Sierra Leone, Liberia, Democratic Republic of Congo

Economic impact: Conflict diamonds represent roughly 4% of the world’s diamond production. In 2002, the world diamond industry declared a zero-tolerance policy towards trading blood diamonds. The industry began working with the United Nations and non-governmental organizations to resolve this international problem through the creation of the Kimberly Process Certification System. The Kimberly Process is a national law that is active in 74 countries and that works to keep blood diamonds out of the legitimate diamond supply chain.

Ecological impact: Conflict diamonds are mined irresponsibly. Irresponsible diamond mining can have a hugely negative impact on the environment. It results in soil erosion, deforestation, and river and stream pollution. Diamonds are formed in Earth’s core and brought to the surface by volcanic explosions. They end up in rivers and get stuck in the riverbeds. In order to expose the riverbeds and make the search for diamonds easier, miners will construct dams or reroute the rivers altogether. This can seriously damage habitats for fish and other wildlife. Also, people who live along the riverbanks may be forced to move because of flooding, drought, or military activity.

continued

Assignment 4.2: Blood Diamonds and International Trade (continued)

In some extreme cases, diamond mining can cause entire ecosystems to collapse. Abandoned mining pits remain where habitats and farmland once existed. When these pits fill with water, they are the perfect breeding ground for mosquitoes, infected with malaria or other infectious diseases, to lay their larvae.

In 2003, the United Nations General Assembly met to discuss the role of blood diamonds in fuelling conflict. The following passages are taken from the transcript of this conference (www.un.org/). There were delegates from each of the 21 countries in attendance. Each delegate had the opportunity to make a statement in front of the group. A few of these statements are used in this assignment.

1. **Locate** Sierra Leone, Angola, and the Democratic Republic of Congo on a world map. These are the three countries you will be focusing on in the assignment.
2. **Read** the following statements made by the delegations at the UN conference. Then, respond in complete sentences to the analysis questions that follow the quotes.



Note: Responses to these questions should demonstrate analysis of the quotes, but they should also reflect what you have learned in Lesson 3. Be sure to refer to the introduction of the assignment to supplement your answers with any relevant background information. In addition, be sure to use your own words when explaining each quote.

Quote 1: Mr. Kumalo (South Africa):

“It is important to emphasize . . . that conflict diamonds make up only about four per cent of the total world diamond market. That means that 96 per cent of the world’s diamonds are in fact “prosperity diamonds.” This legitimate trade in diamonds is critical to economic development in many countries.”

- a) What are “prosperity diamonds”? What percentage do they make up of the world diamond industry? (2 marks)

continued

Assignment 4.2: Blood Diamonds and International Trade (continued)

Quote 2: Mr. Holbrooke (United States of America):

“As we have seen in Angola, Sierra Leone, Congo and elsewhere, there is a direct link between conflict diamonds and funds for rebel movements to purchase sophisticated illicit arms. In such places, we have seen the terrible consequences: homeless families, destroyed communities, poisoned societies, and children with their limbs hacked off.”

- a) Who directly benefits from the profit of conflict diamonds? What is the money used for? (2 marks)

- b) The conflict diamonds produced in Sierra Leone, Angola, and the Democratic Republic of Congo fall under the category of domestic resource management. Why should these conflicts concern the international community? (2 marks)

- c) What is the responsibility of governments who support the global diamond industry? (1 mark)

continued

Assignment 4.2: Blood Diamonds and International Trade (continued)

Quote 3: Mr. Levitte (France):

“...success in combating illicit trade of this kind cannot be achieved on a purely national basis but requires enhanced international cooperation in ensuring the application of the rule of law.”

- a) Mr. Levitte (France) states that resolving the problem of conflict diamonds cannot be achieved on a “national basis.” What is his alternative suggestion? (1 mark)

- b) Do you agree with his suggestion? Why or why not? Support your statement by making relevant connections to the course content. (3 marks)

Quote 4: Mr. Aboulgheit (Egypt):

“...at a time when we are attempting to strengthen international cooperation in order to combat illicit trade in conflict diamonds in general, we feel that there is a great and urgent need to tighten the sanctions system that the United Nations has established as regards this type of diamonds in both Angola and Sierra Leone.”

- a) Mr. Aboulgheit (Egypt) spoke about United Nations sanctions. In your own words, define sanction. (1 mark)

continued

Assignment 4.2: Blood Diamonds and International Trade (continued)

- b) What category of sanction is Mr. Aboulgheit referring to? (1 mark)

- c) Sanctions are one way that countries try to change how another country is doing something. Write one statement on the effectiveness of a sanction against countries producing conflict diamonds, and another statement on the ineffectiveness of sanctions. (2 × 2 marks = 4 marks)

Quote 5: Mr. Mehta (India):

“It is ironic that diamonds, a symbol of love, sublimity and purity, have been an object of desire for the rich and the mighty, who have used power, influence, guile, coercion and outright violence to acquire these stones.”

- a) Generally speaking, who is Mr. Mehta referring to as “the rich and the mighty”? List at least two possible answers. (2 marks)

continued

Assignment 4.2: Blood Diamonds and International Trade (continued)

- b) Gemstone diamonds, the ones used in jewelry, have been characterized as “a symbol of love, sublimity and purity.” Write a paragraph response to this statement. Address the following points in your answer: (6 marks)
- Do you believe that these commercial values are important enough to support the production of diamonds worldwide? (2 marks)
 - What impact do diamonds have on the social well-being, quality of life, or happiness of citizens? (2 marks)
 - This is rather unlikely to ever happen, but if it did, what are some potential drawbacks of slowing down the gemstone diamond industry? What are some potential benefits? (2 marks)
 - Support your argument by making relevant connections to the course.

continued

Assignment 4.2: Blood Diamonds and International Trade (continued)

Quote 6: Mr. Heinbecker (Canada):

“As a new producer and manufacturer of diamonds, Canada considers that it has both a responsibility for and an interest in participating in international efforts to curb conflict diamonds.”

- a) Why should the fact that Canada is a new producer and manufacturer of diamonds be an important consideration regarding the issue of conflict diamonds? (2 marks)

Quote 7: Mr. Cappagli (Argentina):

“It is ironic that sometimes the possession of natural resources can be a tremendous burden rather than a blessing. The paradox of wealth is that such resources, rather than meeting the needs of society, serve to prolong bloody conflict.”

- a) What do you make of this comment? Write a three paragraph response in which you choose to either defend this argument or reject it. (10 marks)

Pick a country and resource situation discussed in this course, or one that you would like to research on your own, to use as an example.

- Paragraph 1: Introduce the topic and state your position. (3 marks)
- Paragraph 2: Discuss your position and support it with examples. (5 marks)
- Paragraph 3: Conclude the topic and restate your position. (2 marks)

You may wish to consider issues such as

- poverty, state failure, civil war, corruption, political oppression
- lack of accountability, uninformed population
- form of government
- development
- ecological impact
- Dutch disease

continued

Assignment 4.2: Blood Diamonds and International Trade (continued)

In 2006, Edward Zwick directed a movie titled *Blood Diamond* starring Leonardo DiCaprio, Djimon Hounsou, and Jennifer Connelly. The movie takes place in Sierra Leone and follows the lives of a diamond smuggler, a fisherman, and a journalist, all caught up in the world of blood diamonds. Watching the movie or the trailer of the movie on *YouTube* provides a good perspective on the issue and demonstrates the real-life challenges faced by people living in areas where diamonds cause conflict and bloodshed.

LESSON 4: WORLD ENERGY

Lesson Focus

By the end of this lesson, you will

- Examine the relationship between energy and power.
- Learn of common as well as uncommon forms of energy.
- Compare the use and importance of energy in developed versus developing countries.
- Determine the geographical location of important energy source reserves.
- Explore alternate energy sources being researched today.

Introduction

You may have seen the concept of energy and the relationship between energy and power in a science or physics course. In geography, the definitions of energy and power are expanded to include broad questions such as: “How has the human use of energy and power changed the world in which we live?”

Quality of life is influenced by the availability and price of energy, and these two factors influence the sources of energy used in developed and developing countries. The forms of energy and power have evolved with technology and economic development.

This lesson will also discuss the traditional patterns of energy consumption within countries, as well as recent changes in consumption patterns.

The Relationship between Energy and Power

The Physical Interpretation

Power is the efficiency of energy. The relationship between energy and power is that **power is energy used or released in a given period of time** (usually measured in seconds). If the energy released in a short amount of time is high, the power is also high.

If power is measured in watts, then watts per second become a measurement of energy. The following demonstrates what it looks like as a formula:

$$\text{Power} = \frac{\text{(change in energy)}}{\text{time (units of energy are joules)}}$$

“Change in energy” is the same as “work done,” so the formula becomes

$$\text{Power} = \frac{\text{work}}{\text{time (units of energy are watts)}}$$

Power is the rate at which energy is spent, which is why it is divided by time. Power is measured in watts, while work is measured in joules. So, one watt is equivalent to one joule per second.



Note: When Manitoba Hydro employees prepare invoices, they use the kilowatt hour to measure energy consumption, rather than the joule. Since power is energy divided by time, then energy is power multiplied by time. If power is measured in kilowatts and time in hours, then energy can be measured in kilowatt hours [(k)(W)(h)]. View a sample bill on the Manitoba Hydro website at www.hydro.mb.ca/mybill/sample_bill.pdf.

Power is a time-based quantity related to how fast energy can fulfill its task. Two identical tasks can be done at different rates—one slowly and one rapidly. If they are identical tasks, the energy required will be the same in each case, but the power involved will vary. For example, if you decide to walk one mile, it requires the same amount of energy as running one mile (1.6 km). You burn the same amount of calories (joules or change in energy) but because running a mile is completed in less time, more power is involved.

Example: There are roughly 4000 joules in one food calorie, and the average person burns about 100 calories for every mile they walk or run (depending on their weight). To calculate how much energy a person will use to walk or run one mile, multiply 4000 joules/calorie \times 100 calories = 400,000 joules of work. Remember also that time in this formula is expressed in seconds, not minutes. You must multiply each minute it takes to walk or run by 60 (because there are 60 seconds in one minute).

P = power (measured in watts)

w = work (measured in joules)

t = time (measured in seconds)

$$\text{Walking a 15-minute mile: } P = \frac{w}{t} = \frac{400,000 \text{ J}}{900 \text{ s}} = 444 \text{ W}$$

$$\text{Running a 10-minute mile: } P = \frac{w}{t} = \frac{400,000 \text{ J}}{600 \text{ s}} = 667 \text{ W}$$

The Geographical Interpretation

Energy consists of anything that allows work to be done. Historically, energy sources were renewable—wood or dung heat, wind powered sea transportation, solar heat, and energy generated by flowing water. Since the Industrial Revolution, the energy of hydrocarbons has fueled the world. In recent decades, concern over dwindling supplies of hydrocarbons has increased and the pendulum of energy is swinging back to more renewable energy sources. The future holds the promise of more technologically advanced renewable energies.



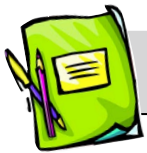
Note: Hydrocarbons are organic compounds made up entirely of hydrogen and carbon atoms. They can be in gas form (methane and propane are the most common) but can also be in liquid, wax, and melting solid form.

Control over these resources and the physical energy created through the harnessing of these resources invests certain multinational corporations and countries with a significant amount of social, political, and economic power on a global level. In the field of International Relations, power is most often described as the ability of actor A to get actor B to do something he or she would not otherwise do. Power can be constructive, meaning it can be used in the positive sense, but it can also be destructive, particularly when one actor decides to use his or her power to compel another actor to do something that is against his or her best interest or moral belief. Power is the most important and influential instrument in the game of life and politics, and energy plays a significant role in creating both physical and social power.

If, for instance, a country has abundant energy (hydrocarbons or hydroelectricity) and the ability to develop that energy for export, it probably means that country has more than an average share of political and economic power on the world stage. If the wealth generated from these resource exports is distributed by the government to economically and socially support its citizens, it is more likely that the citizens can afford a comfortable standard of living. Energy is a valuable and in demand resource, which makes energy security a high priority for most countries.

It is often the case that a developing country has an abundant energy source, but does not have the money or infrastructure to develop that resource. This puts the country at a disadvantage because the local use of the resource, coupled with the profit earned from exports, could increase development and prosperity if the wealth were shared among the population. An option for this country is to allow foreign investors to have access to this energy. Companies that are based outside of the country can build a factory and access the resource, but will have to pay the host country rent, annual fees, taxes, etc. These foreign companies may also provide jobs to the local population, and sometimes pay higher wages and have better working conditions than other workplaces.

This may sound like a pretty reasonable solution but, in reality, foreign investment takes the power out of the hands of the local population, and even away from the local government. Often, the foreign companies will take advantage of the host country's labour and environmental laws, which are sometimes much less strict than in other areas of the world. This can lead to human and ecological exploitation. In this case, the short-term benefits of allowing a foreign company to use the energy source are overshadowed by the long-term negative consequences. It becomes difficult for the host country to maximize local energy security and maintain a sense of independence.



Learning Activity 4.6

Calculating Power

The purpose of this learning activity is to practice calculating energy and power.

Remember: $P = \frac{w}{t}$

Symbol	Name	Measured In
P	power	J/s = W (joules per second = watts)
w	work	J (joules)
t	time	s (seconds)

As you work through the questions, be sure to

1. Write out the formula $P = \frac{w}{t}$.
2. Fill in the information you know, including the numbers and measurement.
3. Write an answer to the question in words.

For example, a girl is riding her bike. She uses 10 watts of power every 2 seconds. How much work is she putting out?

continued

Learning Activity 4.6: Calculating Power (continued)

Steps:

$$1. P = \frac{w}{t}$$

2. You know: $P = 10 \text{ W}$ (watts)

$t = 2 \text{ s}$ (seconds)

$$P = \frac{w}{t}$$

$$10 \text{ W} = \frac{w}{2 \text{ s}}$$

$$(10 \text{ J/s})(2 \text{ s}) = w$$

$$20 \text{ J} = w$$

3. The girl is putting out 20 J of work.

Note: Step 2 involves cross-multiplying. Here is a review.

To solve for a value that you do not know you must have this value stand alone. In this example, you need to have w stand alone. To do this, you multiply both sides by 2 s. Remember, that anything divided by itself = 1. The 2 s on the right side, divided by 2 s, becomes 1.

Since $W = \text{J/s}$, it is changed in the final step.

Step 1: Need to isolate w	Step 2: Multiply by 2 s	Step 3: $2 \text{ s} / 2 \text{ s} = 1$	Step 4: $1 \times w = w$
$10 \text{ W} = \frac{w}{2 \text{ s}}$	$(10 \text{ W})(2 \text{ s}) = \frac{w(2 \text{ s})}{2 \text{ s}}$	$(10 \text{ W})(2 \text{ s}) = w(1)$	$(10 \text{ W})(2 \text{ s}) = w$

Problems

1. If a construction worker is pushing a wheelbarrow, he puts out 50 J of work in 2 s. How much power is he using?
2. A crane is used to remove a fallen electricity pole from the highway. It takes the crane 15 seconds, using 100 watts of power, to lift, move, and drop the pole. How much energy did the crane need?
3. Two friends are on a track behind their school. Person A decides to run 1 mile, and it takes her approximately 8 minutes and 280 watts of power. Person B decides to walk the 1 mile, and it takes her 15.5 minutes and 144.5 watts of power. Which person does more work to finish the exercise?

Energy Then and Now

Most sources of energy on Earth can be traced back to the Sun, although the potential energy of free flowing water is a notable exception. Water wheels have been used for centuries to capture the energy of free flowing water and allow humans to grind grains, irrigate crops, power means of transporting supplies, and so forth.

Coal was formed from the remains of terrestrial plants that were buried for millions of years. The Carboniferous Period, during which coal was produced, occurred between 286 and 360 million years ago.

There were also two geological epochs of global warming that occurred 90 and 150 million years ago. Algae and phytoplankton flourished in the warm and sunny waters along with aquatic vegetation. Their remains sank to the depths of the aquatic environments where they were preserved (similar to coal beds) and, over millions of years, converted to oil and gas.

The Industrial Revolution: Introduction



The **Industrial Revolution** refers to a period of massive economic, technological, social, and cultural change that affected people to such an extent that it is often compared to the change from a hunter-gatherer to an agrarian existence. The precise dates of the revolution are open to debate and vary depending on the source, but the most common time frame is 1760–1840. The Industrial Revolution started in Britain and then spread to the rest of the world.

The Industrial Revolution dramatically changed the global economy. Economic markets stimulated by agriculture and manual labour were transformed into markets determined by industry, machines, and cheap energy. Machines cut down on the cost of labour (good for manufacturers), but were bad for the people who lost their jobs. The introduction of new technology brought about many changes to industrial jobs and allowed for goods to be produced in large quantities. Machines meant that workers were no longer required to be skilled labourers able to perform several tasks with precision and accuracy. Workers could now specialize and focus on one particular skill or task.



Specialization is a narrow and limited method of production; it means being able to use equipment to do a small range of tasks with speed and efficiency. In a factory, the process of building a physical commodity, such as a car, no longer demanded the complete energy of a small team of people who understood the mechanics of the project. Instead, the total job was broken up into small segments so that each worker could perform one part of the task. In the car example, this could mean that one person was exclusively in charge of assembling the steering wheel or upholstering the seats. Although this method of production increased efficiency, it was also repetitive, boring, and resulted in a deskilled labour force.

Important industrial inventions included:

- the coal-powered steam engine
- the internal combustion engine
- the first car and tractor

The availability of cheap and plentiful fuels derived from hydrocarbons led to rapid expansion in the economy. The economy was boosted by the expansion of profitable industries such as the manufacturing, agriculture, trade, and transportation sectors. These changes resulted in the historically unprecedented increase in human population that has led to the current 7 billion plus people living on the planet.

Following the use of coal and then oil as the main sources of energy fueling development, the next energy source that took on prominence was electricity. In fact, some historical texts split the Industrial Revolution into two parts:

- **First Revolution:** This part was dominated by the development of steam-powered machines driven by burning coal to produce commodities such as textiles.
- **Second Revolution:** This part was characterized by the use of new technologies, especially electricity, the internal combustion engine, new materials and substances, and communication technologies, such as the telegraph and radio.

Chronology of Sources of Energy

The production of usable power from electricity took time to become established. Despite the early lead given by British inventors, electricity made relatively little impact on British industry. Many of the streets, public buildings, and houses were already lit by coal and gas, so the demand for electric light was not so immediate. Similarly, in a country where coal was abundant and relatively cheap, there was no great demand for electricity as a fuel.

As a consequence, many manufacturers saw no reason to convert existing steam-powered machines to run on electricity. Thus, the initial drive for the development of electricity passed from Britain to Germany and the United States.

During this time, inventor Thomas Edison was engaged in research that, in 1880, led to the first commercially practical version of the light bulb. Within the next few years, some North American cities built electrical generating stations based on Edison's design, and delivered the power as DC (direct current). Unfortunately, DC power has a relatively short transmission distance, which is limiting in a practical sense when it is being used to generate electricity for large areas.



Note: The difference between direct current (DC) and alternating current (AC) is in the method of transmission. DC is caused by a magnetic field near the wire that causes the electrons to flow in a single direction. AC uses a rotating magnet to move the electrons in a wire. AC can be transported over long distances, is safer than DC, and can transmit more power.

The turning point of the electric age occurred in the mid-1890s when Nikola Tesla developed an AC power system. With alternating current, power plants could transport electricity much farther than before. While Edison's DC plants could transport electricity within one square mile, an AC plant was able to transport electricity more than 200 miles! AC became the standard power system, even though there is no global standard for the voltage (North America uses 110 V and much of Europe uses 220 V).

Soon after, hydroelectric power plants were built to use the potential energy of flowing water to generate power. Dams using hydraulic reaction turbines were first used to generate electricity in the United States of America in the 1880s. By the second decade of the 20th century, nearly 40 percent of the electricity in the United States of America was being produced hydroelectrically.

From 1905 through the 1930s, the first large dams were added to meet public demand for electricity in homes. By 1940, three-quarters of the electricity for the western states came from hydroelectric power. Similar growth was occurring in other nations worldwide. One advantage of electrical generation using the flow of water was the level of control. Production could be increased or decreased (as demand changed) by simply controlling the flow.

In the mid-20th century, it became apparent that hydroelectric power could not meet the growing demand of the increasing population. In North America, the use of electrical appliances was increasing and electricity projects in the rural areas were growing.

New forms of electrical power generation were developed, such as using coal (and later nuclear power) to convert water to steam that would then turn the electric generator turbines. These types of electrical generating stations were also beginning to be used more and more throughout the world, especially in countries that lacked the physical geography that would allow hydroelectric development. In some countries, such as Norway, the Democratic Republic of the Congo, Paraguay, and Brazil, hydroelectricity supplies over 85% of the country's electricity. As of 2010, in the United States of America, hydroelectric dams running at their maximum produced only enough electricity to power 10% of the homes.

Electrical power generation using cheap and abundant fossil fuels was the logical solution to meet the demand for electrical energy. Unfortunately, fossil fuel electricity emits troubling amounts of pollution, even though much has been done in recent decades to reduce the amount of particulate matter that is released to the atmosphere. Acid rain in the 1970s and 1980s was caused in part by these types of generating plants.

In the 1960s and 1970s, smog-based pollution (small particles in the air) became an issue. This type of pollution not only causes severe health problems in people and animals, but contributes to the formation of acid rain as well. To combat this problem, nuclear-based electrical power generation became an attractive alternative.

Oil Shocks of the 1970s

Oil, which is used for gasoline as well as a variety of other products, is one of the most important commodities available to consumers. The majority of the global oil supply is imported from Middle Eastern countries such as Saudi Arabia, Iraq, Kuwait, and Iran. In the 1960s, these oil exporting countries formed the Organization of Petroleum Exporting Countries (OPEC).

The OPEC is an oil cartel established to coordinate the policies of oil-producing countries as well as to secure the supply of petroleum to other countries. For additional information on the OPEC, visit the following website: <http://en.wikipedia.org/wiki/OPEC>. The OPEC was formed in the 1960s, following an intense period of decolonization. Many of these oil rich, newly independent states in the developing world recognized the need to unify and coordinate the petroleum policies of its 12 member countries. For a full list of member countries (and more information on the OPEC), visit www.opec.org/opec_web/en/17.htm.

In the 1970s, American dependency on foreign oil was rising at a rapid pace. In 1973, when the demand for oil was high, the OPEC decided to restrict its supply of oil to the U.S. market. This caused global fuel shortages and the price of oil skyrocketed. The greatest impact of this energy crisis, aside from forcing consumers to cut back on their oil demand and consumption, was the financial shocks that affected the automotive industry and the many associated industries that supplied products such as parts.

Although the restrictions were lifted in March of 1974, oil prices remained high and the effects of the crisis lingered in the minds of policymakers. There were a number of changes that took effect, such as an experiment in 1974–1975 to have daylight saving time all year-round, the reduction of maximum speed limits to 55 mph (88 km/h) on American (and Canadian) highways, and mandatory gas rations in the United States of America. There was also a reactionary wave of environmentalist activism and a demand for energy reform. Energy reform included efforts to increase the domestic production of oil; reduce the dependence on foreign sources of fossil fuels; and find alternative, renewable sources of energy.

The following table summarizes the sources of energy that you have examined in this lesson. Also included is a description of plants as the earliest and most important suppliers of energy.



Note: Coal, oil, and natural gasoline are collectively known as fossil fuels (fossilized remains of living organisms) and hydrocarbons (molecule chains of mostly carbon and hydrogen atoms).

Table 4.6: Description of Various Energy Sources

Energy Source	Description
Plants (autotrophs)	<ul style="list-style-type: none">Any organism with chlorophyll (plants and plankton) can produce energy through photosynthesis.Photosynthesis is the process by which plants convert the energy from sunlight, carbon dioxide, and water from the atmosphere to produce carbohydrates (sugars).Carbohydrates are molecules that are made up of chains of hydrogen, carbon, and oxygen atoms.Energy from the sun is transferred from the plants to the animals throughout the food chain.When plants and animals die, their remains decompose. Throughout geologic history, this decomposed material has accumulated, effectively storing much of the Sun's past energy in the resulting layers of carbon and water (hydrogen and oxygen).
Coal	<ul style="list-style-type: none">Coal is an energy source that was formed from the remains of terrestrial plants that were buried for millions of years.Coal was produced between 286 and 360 million years ago.Dead plants accumulated into layers of organic matter known as peat, which was eventually buried.Over millions of years, the peat deposits were subjected to high pressure and temperatures to create coal.Generally, the older the coal, the blacker it is (greater carbon content), the less moisture content, and the more energy it has per unit volume.
Oil	<ul style="list-style-type: none">The first modern oil wells were drilled in the mid-1800s.Crude oil has more stored energy per unit volume than coal does, and burns without the smoky pollution that plagued the early stages of industrial development.
Electricity	<ul style="list-style-type: none">Electricity has been known to humans throughout the ages through the observations of electric eels and rays, and the ancient Greek demonstrations of static electricity.The useful application of electricity was first seen in the late 1800s.
Hydroelectricity	<ul style="list-style-type: none">Electrical power plants used the potential energy of flowing water to generate power.Advantage: Electrical generation using the flow of water makes it easy to control the increase or decrease of production according to demand.
Fossil Fuel Electricity	<ul style="list-style-type: none">Electrical power is generated using cheap and abundant fossil fuels.Disadvantage: This type of energy creation emits a lot of pollution into the atmosphere.

Nuclear Power

With the discovery of uranium in the 18th century, research led to the production of nuclear energy. The term *radioactivity* was first used in 1896 and research continued until 1939. That year, nuclear fission was demonstrated—the breaking apart of a heavy uranium atom with the resulting release of great amounts of energy. This was the first experimental confirmation of Albert Einstein’s famous equation $E = mc^2$ (energy = mass times the square of the speed of light). World War II also began that year and, with it, the motivation to speed up the research over the next six years in order to harness that incredible amount of energy in the form of the atomic bomb.

At first, nuclear power seemed to be the ideal solution to the challenges of hydro electric generation and the pollution from hydrocarbon generated electricity. The discovery that a significant quantity of heat can be generated from a small quantity of uranium was so exciting and full of possibilities that it prompted the construction of nuclear reaction facilities before the waste management question was answered. Nuclear waste is extremely toxic and continues to emit radiation as it decays. This is especially dangerous because nuclear radiation can only be detected using an instrument called a Geiger counter, and not through exposure by any of our senses. Operational safety is also a public concern, especially in countries where the use of nuclear energy is quite significant, such as France where over 75% of electricity is generated from nuclear energy.

Table 4.7: Nuclear Power Considerations

The atomic bomb
<ul style="list-style-type: none">■ The atomic bomb demonstrated that it was possible to control a slow nuclear reaction.■ The atomic bomb was used by the United States of America against two Japanese cities during World War II (dropped August 6th on Hiroshima and August 9th on Nagasaki in 1945).■ To date, those two events are the only use of nuclear weapons in war.
Nuclear powered transportation
<ul style="list-style-type: none">■ Nuclear power is a compact and long-lasting power source used in shipping and in submarines.■ The engines are basically steam engines run by the heat of nuclear reaction rather than burning coal or oil.■ This form of power was perfect for any vessel that needed to be at sea for long periods of time without refueling, and it was powerful enough for submarine propulsion.■ The first nuclear-powered submarines and surface vessels were launched in the 1950s.
Nuclear electrical generation plants
<ul style="list-style-type: none">■ Nuclear electrical generation plants were built in the 1960s in Canada, the United States, France, the Soviet Union, and Kazakhstan.■ The Kazakhstan reactor also functioned as a desalinization plant.■ Since then, many countries around the world have developed nuclear power generating programs including many European countries, as well as India, South Korea, Japan, and Argentina.
Safe storage of radioactive waste
<ul style="list-style-type: none">■ This was not an initial priority because the amounts of waste were so small compared to the waste given off by fossil fuel power generation.■ Waste is stored in pools of water on site, until long-term storage is finalized.■ In the mid 1970s, countries began full scale waste storage plans.■ To date, no permanent storage facility has been established anywhere in the world.

Dangers of Power Plant Operations and Nuclear Waste

The following describes three major nuclear reactor accidents that shocked the world and had devastating consequences on the health of humans and the environment.

1. **Three Mile Island** (reactor near Middletown, Pennsylvania, March 1979)

Three-Mile Island was the most serious accident in the commercial nuclear power plant operating history of the United States of America, even though it led to no deaths or injuries. A mechanical malfunction of a cooling valve resulted in the overheating and partial meltdown of the nuclear fuel core. Although the small amount of radioactive steam that was released had no environmental impact, the accident had a rather large impact on future safety regulations.

2. **Chernobyl** (nuclear power plant in the Ukraine, April 1986)

During a routine test, human error, lack of safety procedures, and a flawed reactor design resulted in one of the reactors overheating and causing a steam explosion that blew up the containment structure and ejected radioactive material into the environment. Two plant workers died that day, and 28 other fatalities occurred within a few weeks, due to acute radiation poisoning. Over the years, there have been higher than normal rates of thyroid cancers in the area. As with the Three Mile Island incident, safety modifications resulting from the Chernobyl accident have been put in place by the global nuclear energy community in an effort to prevent a repeat disaster.

Chernobyl was by far the worst civilian nuclear disaster in history and had a negative effect on the nuclear-energy industry. Nuclear development in most countries was put on hold or underwent two decades of stagnation. Many plants scheduled for overhauls were shut down instead. Public relations firms hired by nuclear power facilities around the world were challenged to educate and inform both policymakers and the general public. At the same time, growing concerns regarding carbon emission-fueled climate change, meant nuclear energy options were being considered by many countries.

3. **Fukushima Daiichi** (nuclear power plant, Japan, March 11, 2011)

The Fukushima Daiichi plant automatically shut down the moment the earthquake was detected and diesel generators kicked in to continue the automatic cool-down process. However, a gigantic tsunami struck 50 minutes later, disabling the generators and disrupting the local power grid. With the cool-down process halted, the residual core heat continued to build. In order to release internal pressure, the system released a moderate amount of radioactive vapours into the atmosphere. There was also a build-up of hydrogen gas that caused an explosion in the outer shell of the building.

The eventual, partial meltdown of the core was contained by the 7.6 m thick concrete slab beneath the reactor. There were no immediate radiation-related casualties from this event although there were three deaths on the site—one as a result of the earthquake and two from tsunami-related flooding.

In the months and years following Fukushima, nuclear energy development appeared to be in decline, or at least in a holding pattern, but for how long? If you research the topic, you may discover that in BRIC countries (Brazil, Russia, India, China) nuclear energy remains a viable option for the following three key reasons:

- a) growing economy = energy demands
- b) not enough fossil fuels to meet energy demands
- c) environmental concerns including global climate change

Alternative Sources of Energy

The field of options for global energy is larger than what has been discussed so far. Remember past references to human ingenuity and our ability to solve problems? The search for future energy sources has resulted in many viable options, such as wind, solar, and geothermal energy.

Some opponents of renewable energy sources refer to the impossibility of generating enough energy for the current centralized point-source distribution system. This means that power is generated at a station, and then delivered to customers through a network of wires.

Supporters of renewable energy sources and conservationists have taken that basic premise of centralized energy distribution and turned it on its ear with the concept of the smart grid.

What Is a Smart Grid?

“A smart grid is an evolved grid system that manages electricity demand in a sustainable, reliable and economic manner, built on advanced infrastructure and tuned to facilitate the integration of all involved” (<http://new.abb.com/smartgrids/what-is-a-smart-grid>).



Note: Electrical plants have been included on the following chart to compare to the smart grid layout.

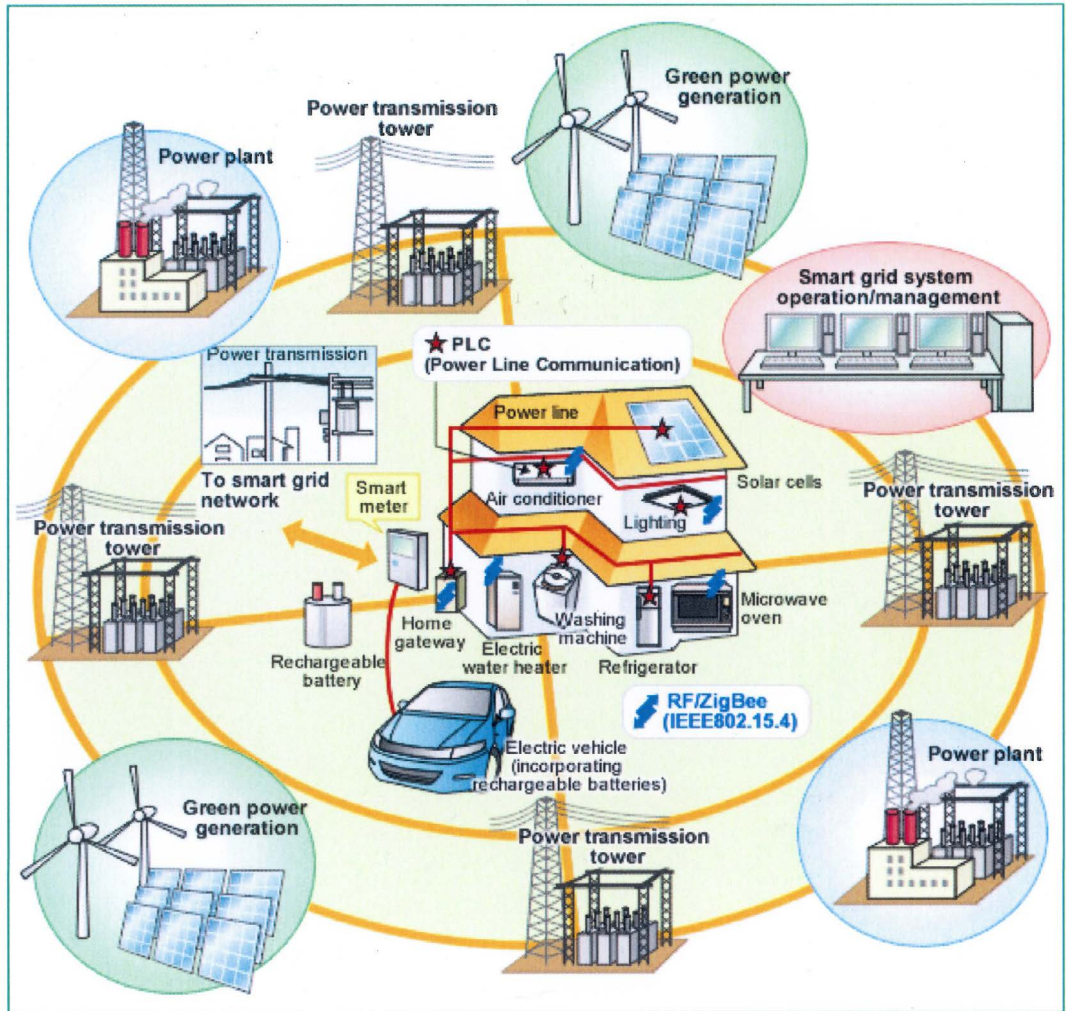
Electrical Plants	Concept	Characteristics	Benefits
<ul style="list-style-type: none"> ■ potentially unsafe ■ polluting ■ technologically complex ■ expensive to build and maintain ■ can be crippled or disabled by terrorist attacks or natural disasters 	<ul style="list-style-type: none"> ■ evolution began in the late 1990s, early 2000s ■ aim: greater efficiency and security ■ attempt to use electronic control, metering, and monitoring of electricity distribution and consumption ■ technology that can sense and control electricity consumption over a wide area 	<ul style="list-style-type: none"> ■ ability to integrate sources of electricity from solar panels/windmills ■ ability to sense the quality and usage patterns of power in real time and through automated computer systems ■ ability to control industrial electrical appliances (i.e., air conditioners or lighting systems) 	<ul style="list-style-type: none"> ■ greater reliability ■ better efficiency ■ more accurate billing of customers ■ increased sustainability

As a homeowner, a person may wish to invest in solar panels as a way of reducing overall energy expense. Another way to reduce the energy bill would be to allow the energy stored in electric car batteries to be fed back to the grid while the car is parked. In fact, if the power fed back into the system was more than what was consumed, a home or business owner could actually be paid by the power company!

See Figure 4.8 for a visual representation of how the smart grid would work.

Figure 4.8

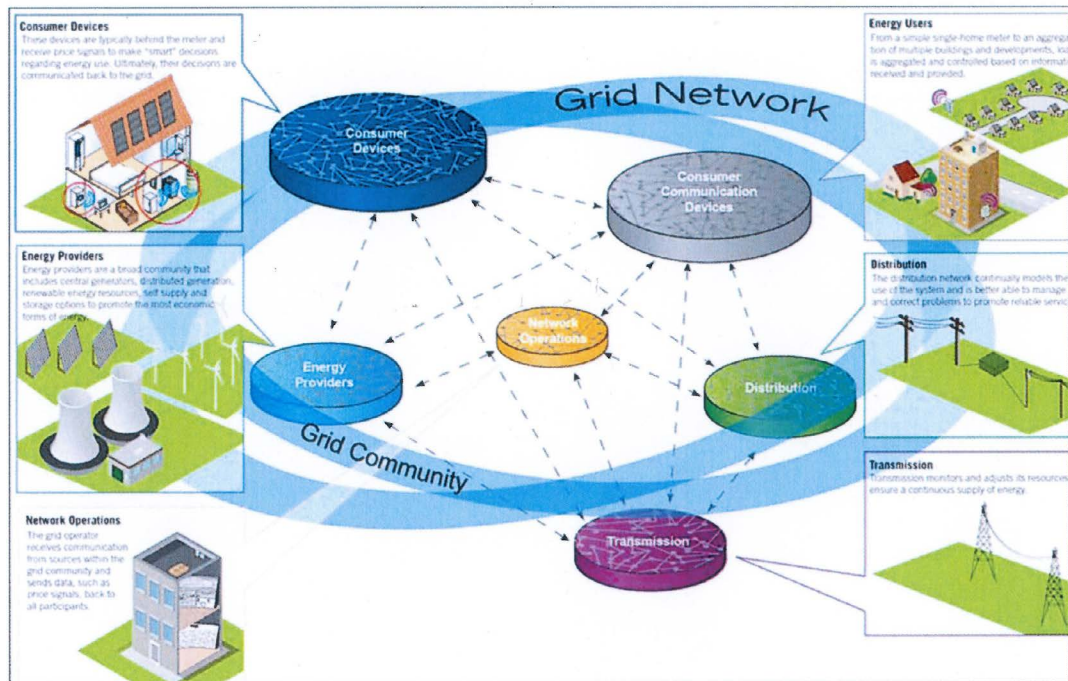
THE SMART GRID: AN INTERCONNECTED NETWORK OF INFORMATION AND ELECTRICITY



Source: Deshpande, Girish. "Smart-Grid-concept-image.jpg." *The New Technologist*. <https://newtechnologist.wordpress.com/author/giridesh3/>. Used with permission.

Figure 4.9

THE SMART GRID NETWORK AND COMMUNITY



Source: Deshpande, Girish. "Smart Grid." *The New Technologist*. <https://newtechnologist.wordpress.com/author/giridesh3/>. Used with permission.

In the future, more sources of energy will be developed. Look back to Lesson 1 for a review of sources of renewable energy. Two other sources that have not been mentioned are fusion and hydrogen.

- **Fusion power:** Fusion power is the combining of two light atoms, such as hydrogen, to create a heavier element, such as helium. It is the process that powers the sun and is the opposite of what goes on in nuclear power plants (heavier elements being broken into lighter elements). It has been demonstrated in laboratory conditions, but several websites (including the World Nuclear Association) state that it is not expected to be used as a commercial source of energy before 2050.
- **Hydrogen:** Hydrogen does not occur naturally on Earth's surface and needs to be manufactured before being used. The monetary and environmental cost of this manufacturing process has been the main barrier to using hydrogen as a primary energy source.
 - A fuel cell chemically converts hydrogen and oxygen into water, which simultaneously produces electricity. This same process happens in batteries, except that fuel cells are constantly recharged by the flow of hydrogen and oxygen.
 - Hydrogen gas is also used as a combustion fuel. When the gas is burned it combines with oxygen in the atmosphere and releases heat and water vapour.

Energy, Development, and Quality of Life

The availability of cheap and plentiful energy has had a transformative effect on Earth in the past two and a half centuries (a drop in the bucket of the 50,000+ years of human existence).

As mentioned in a previous lesson, before the Industrial Revolution, the energy that was available was renewable.

- water power was used for mills
- combustion of biofuels (wood) for heat
- animal labour (horses, oxen, donkeys, camels) for land transportation and for ploughing soil on farms
- wind power or physical labour for water transportation (ships with sails or rowboats)

Industries did not exist in the same way they do now; manufacturing consisted mostly of local trade people and artisans. Education was undertaken in the home, mostly passed down from generation to generation or through apprenticeships. This all changed with the spread of the Industrial Revolution and the invention of labour-saving machines paired with the discovery and use of energy dense hydrocarbons.

At its most basic, the connection among energy, development, and quality of life is the same worldwide, regardless of the location in the timeline of history, and regardless of the culture. A chain reaction is started wherever energy is used to make life easier for humans.

The following scenario is an example of how the use of simple technology can have a big impact:

1. A water pump is installed in a village, eliminating the need for 3 hours of water fetching each day.
2. The people who had traditionally fetched water now have more time on their hands.
3. Water can now be spent keeping living quarters cleaner, reducing illness among family members and saving on medical costs.
4. Water, money, and more time is the perfect combination for land to be put into irrigated cultivation, resulting in larger, healthier crops.
5. Surplus food is sold and the extra income is used to educate the children and buy livestock.
6. Diversification of income means more stability.
7. Leisure time increases, quality of life continues to improve, and on it goes—all just from one labour-saving device!

A similar example could be access to “clean” household cooking fuels. According to the World Health Organization (WHO), indoor air pollution is one of the most dangerous health risks faced by people living in developing countries.

Indoor air pollution is caused by burning biomass fuels (such as wood, crop waste, dung, or coal) within a closed space, without proper air ventilation. The WHO estimates that inhalation of these poisonous vapours causes the deaths of 1.6 million people a year. A majority of the victims are children under the age of 5.

Unfortunately, almost half of the world’s population (roughly 52%) continues to cook and heat their homes using solid biomass fuel as well as coal.

The WHO suggests the following strategies to reduce the impact of indoor air pollution on human health and the environment:

- Shifting from solid fuels to cleaner energy technologies—for instance, liquid petroleum gas (LPG), biogas, or solar power generation
- Improved design of stoves and ventilation systems can reduce indoor air pollution in many poor communities.
- Public awareness of the health risks of indoor air pollution (For instance, mothers can be encouraged to keep small children away from constant contact with fires.)

Shifting to cleaner sources of energy will have a positive effect on the quality of life for people currently dependent on biofuels.

The next example has to do with the electrification of rural Saskatchewan, which occurred between 1949 and 1961. Saskatchewan was the last of the western Canadian provinces to provide electricity to its rural inhabitants. American rural electrification started during the Depression (1933) as part of President Franklin Roosevelt’s New Deal economic stimulus, but Canadian provinces could not afford to do so until the relative prosperity of the 1950s.

A typical farm housewife in rural Saskatchewan, prior to electrification, had to, on any given day, split wood for the wood burning kitchen stove; haul the wood to the house; stoke the stove; haul buckets of water to the house from the yard well for baths, laundry, cooking, and cleaning; keep the coal oil lamps running; cook meals for her large family and the farmhands; can fruit and vegetables from the garden; bake bread; do laundry by hand . . . all without electricity.

The arrival of the refrigerator, the electric stove, and the deep freezer improved food security and quality of life immensely. This is another example of how improving the lives of those who occupy traditional roles within the household (men and women) have a beneficial ripple effect on the family and the wider community.

The same principles apply to the larger economic picture. With accessible and affordable energy available to a population (everyone, not just isolated segments), more work can be completed and the economy is healthier. Education of the population is fundamental to the development strategy so that when a variety of economic opportunities exist for those willing and able to take advantage of them, they do. Quality of life and the ability for individuals to choose where they work and the lifestyle they pursue go hand in hand.

The complex connection between how energy smoothes the progress of development and the resulting improvements in quality of life should be seen as widely beneficial. That said, it is to everyone's benefit to keep in mind the balance that is required to ensure the sustainability of the whole system.

Developed Versus Developing

Energy Today in Developing Nations

As mentioned earlier in the course, all nations are aware of the increasing risk of putting more carbon into the atmosphere, as well as the finite (limited) nature of fossil fuels. Countries are increasing their efforts to put policies in place that help reduce dependence on non-renewable forms of energy.

The most common forms of energy used today in developing nations are

- kerosene
- biofuels (wood, dung, straw)
- liquid propane gas (LPG)
- electricity



Note: Kerosene is a light fuel oil obtained by distilling petroleum. It is used especially in jet engines, domestic heaters, lamps, and as a cleaning solvent.

Generally speaking, the majority of the fuel used in rural areas is individually harvested biofuels, while the main source of fuels in an urban setting is kerosene, liquid propane gas, and wood.

According to the World Bank, access to environmentally and socially sustainable energy is essential to reduce poverty. Over 1.3 billion people worldwide still do not have access to electricity. Almost all of these people live in developing countries. About 2.5 billion use solid fuels—wood, charcoal, and dung—for cooking and heating.

Africa faces the most significant energy challenges. Only 26% of households on the African continent are run with electricity. That leaves about 550 million African people without access to electricity. Without access to energy services, the poor are denied the most basic economic opportunities needed to improve their economic standing and standard of living.

To make the leap to universal access to modern energy services by 2030, World Bank data indicates that new capital investment of about \$35–40 billion will be needed every year. This is in addition to worldwide annual investments of about \$450 billion just to sustain energy services at current levels.

Climate change still remains a critical concern. At present, more than 75% of global energy consumed comes from burning fossil fuels, which produces greenhouse gases that cause climate change. Moving to low-carbon renewable energy and enhancing energy efficiency is essential to reduce the energy sector's impact on the climate. The World Bank Group is contributing to this worldwide effort through lending money, analytical support, technical assistance, and community capacity-building.

Energy Today in Developed Nations

The most common forms of energy used today in developed nations are

- oil and gas (transportation)
- coal (electrical power generation)
- hydroelectricity
- nuclear (electrical power generation)
- renewable energy (solar, wind generated electricity, and geothermal heating and cooling)

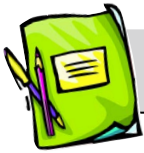
Over 75% of current energy use comes from hydrocarbons. Most energy policy analysts would agree that the best way to both reduce the use of non-renewable energy sources, and facilitate the transition to renewable energy sources, is to focus first on greater efficiencies.



During the early 2000s, the United Nations Environment Programme completed a study examining the effects of subsidies on non-renewable energy. A **subsidy** is a sum of money granted by the government or a public body to assist an industry or business so that the price of a commodity or service may remain low or competitive. The reasoning behind providing energy subsidies was to

- help develop industries that would benefit local, regional, and national economies
- encourage environmental responsibility
- make the costs accessible to lower income bracket populations

These strategies offer short-term solutions; however, subsidies tend to lose their benefits by removing the initiative to improve efficiencies and develop technology. Subsidized industries often fall behind if not “pushed” by real-market conditions and competition.



Learning Activity 4.7

Energy Basics

Part A: True or False

If the answer is false, write the correct statement below.

1. Coal is formed from the remains of terrestrial plants that were buried on Earth for millions of years.
2. During the Industrial Revolution, the world economy shifted from one that was based on animal labour to human labour.
3. Electricity generated by fossil fuels is considered a form of “clean energy.”
4. Fossil fuels refer to fossilized remains of living organisms (coal, oil, and natural gas) and to hydrocarbons.
5. The primary concern with nuclear energy is the fear that countries may use the knowledge to build atomic bombs.

continued

Learning Activity 4.7: Energy Basics (continued)

Part B: Fill-in-the-Blanks

Use the word box below. There are more options than questions.

1. Smart grid technology depends on a system which _____ energy sources.
2. The Second Industrial Revolution was characterized by the use of _____.
3. _____ include wind, solar, and geothermal forms of energy.
4. One of the most dangerous health risks faced by people in developing countries is _____.
5. A _____ is a sum of money granted by the government or a public body to assist an industry or business so that the price of a commodity or service may remain low or competitive.

integrates	subsidy	isolates
coal	electricity	oil
renewable energy sources	non-renewable energy sources	food poisoning
contaminated water	indoor air pollution	

World Energy Consumption Statistics

The International Energy Agency (IEA) is an independent organization that works to ensure reliable, affordable, and clean energy for its 28-member countries and beyond. All 28 countries are also members of the Organization for Economic Cooperation and Development (OECD). The mission of the OECD is “to promote policies that will improve the economic and social well-being of people around the world” (<www.oecd.org/about/>).

The IEA’s four main areas of focus are

1. energy security
2. economic development
3. environmental awareness
4. engagement worldwide

Based in Paris, France, the IEA regularly publishes Key World Energy Statistics as part of their free publications. The 82 page 2012 publication can be found at <www.iea.org/publications/freepublications/publication/kwes.pdf>.

In order to compare energy use between regions (developed and developing), as well as energy use over time, it is necessary to have access to understandable data and be able to get some useful information from the data. The figures used in Assignment 4.3 are taken from the IEA Key World Energy Statistics publication and should allow for basic comparisons between regions as well as between periods of time. The next assignment will require you to extract information from the charts and pie graphs and use those statistics to make larger connections to the learning outcomes for this lesson.

Energy Reserves

There is a limited amount of energy sources remaining on Earth that can be exploited. This excludes renewable energy sources such as wind and solar, although they are growing in importance. Nuclear has its limitations and hydropower is limited by the location of rivers. Most of the discussion focuses on the sources of energy that are, and have been, used the most: hydrocarbons.

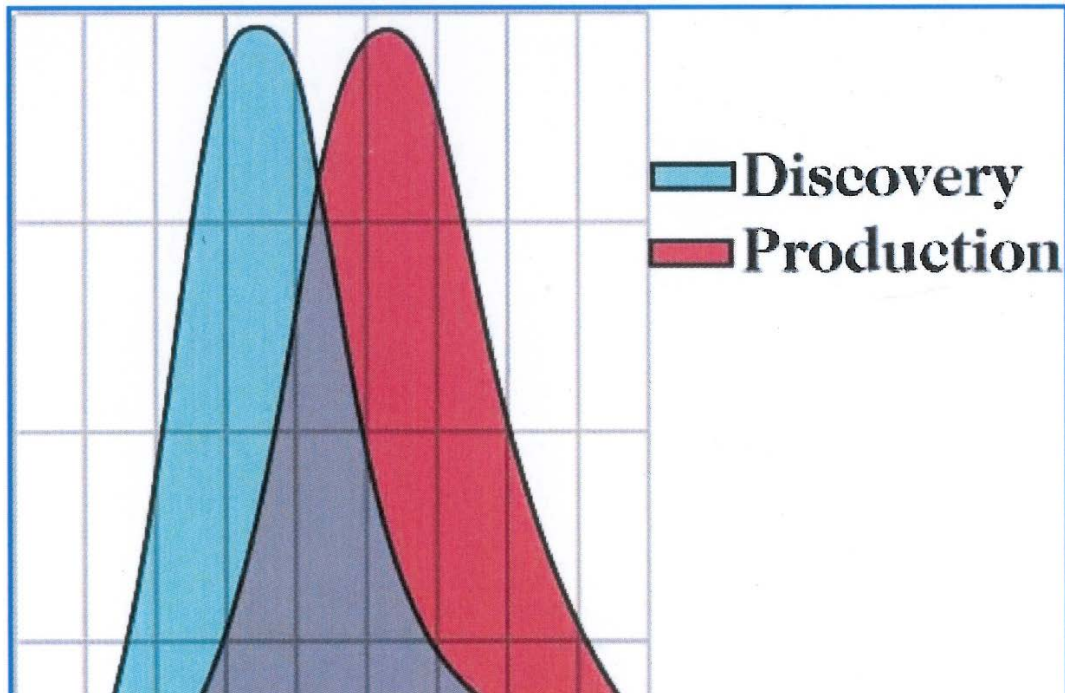
Aside from nuclear energy, fossil fuels are the most energy-rich and easily accessible/usable source of energy. Currently, this trumps the climate change and environmental damage concerns that are gaining prominence, and explains why they dominate any discussion on future energy reserves.



Most places on Earth have been explored, and it is generally agreed that there are no more major oil discoveries to be made. In fact, there are publications that say that the oil industry has already reached **peak oil** production, and that the challenge in the near future is to maintain the balance between slower production and consumption. Once consumption is greater than production, there will probably be increased conflict over fossil fuels.



Note: Peak oil theory states that any finite resource (including oil), will have a beginning, a middle, and an end of production. Oil production typically follows a bell-shaped curve when charted on a graph (see Figure 4.10). The peak of production occurs when approximately half of the oil has been extracted. The term peak oil refers to that point in the life of the resource where the level of oil production begins to drop.



Source: Peakoil.com. "Exploring Hydrocarbon Depletion." <http://peakoil.com/what-is-peak-oil/>
Reproduced in accordance with fair dealing guidelines.

Much of the search for new oil and natural gas reserves is spreading to increasingly remote areas. As a result, oil (hydrocarbon of choice) is going to be increasingly difficult to move to markets. Other efforts involve improving the extraction technology. Scientists are discovering increasingly advanced methods by which to extract as much oil and gasoline from the discovered deposits as possible. Conservation programs to increase technology and market efficiencies are working hard to make the available fossil fuels last longer.

Exploration in remote areas has specific challenges. The weather and climate in polar regions is challenging as the energy needed to do work in -30°C or colder is much greater, and there is significant wear and tear on people and equipment. Consideration must also be given to the fragility of the environment. For example, the Arctic environment has an incredibly short growing season, which reduces the chance of recovery for vegetative damages. The increase in deep-sea drilling platforms has not only resulted in huge monetary expense, but also tragic expense in human life and environmental damage as a result of accidents and oil spills.

An interesting point made by Australian “futurist” (someone who projects the future consequences of peak oil and climate change) David Holmgren is the speculation that there is not enough fossil fuel left with which to cause the rampant global warming that was predicted in the worst-case emission scenarios of the Intergovernmental Panel on Climate Change (IPCC). It is hard to determine whether this claim is true or not, but the stakes are so high that it is safe to assume not too many people are willing to take that risk.

Since there is not one sole source of energy that can replace hydrocarbons, there is speculation that there will be several energy sources powering our lives in the future. Therefore, the growth of smart-grid technology will continue, likely with regional and seasonal variations. Development will continue to make use of renewable sources of energy and, with improvements to technology, perhaps even less common hydrocarbons such as **gas hydrates** may be used.



Note: Gas hydrates are natural gas and water that are essentially “frozen” together at low temperatures and high pressures.

Lesson Summary

This lesson focused on exploring different sources of energy that are used to power our world. It built upon your knowledge of renewable and non-renewable sources of energy and you learned how to calculate the relationship between power and energy.

You learned that developing countries with an abundance of natural resources often feel that they have no other choice than to open up their borders to foreign investors. This means sharing the profits with a number of large multinational corporations.

You also learned about the Industrial Revolution and examined a chronology of the history of resource use in Britain and around the world. Plants were the very first energy producers, but people have relied overwhelmingly on fossil fuels (coal, oil, and gas) for the past few centuries to power our lives. Nuclear power is a relatively new form of energy that has many advantages (no CO₂ pollution) but also has some disadvantages (requires in-depth waste management procedures and there is a danger of nuclear accidents that emit radiation poisoning). Fusion and hydrogen power were mentioned as additional alternative sources of energy. You also examined the concept of the smart grid.

The lesson ended with a discussion on energy, development, and quality of life, and compared energy use in developed and developing countries. The peak oil issue has caused much speculation regarding the use of fossil fuels in the future.

The IEA world energy statistical tables used in the following assignment demonstrate just how much our world relies on these sources of energy. The statistics should have you repeating the question: “Why is energy important today and is our energy use sustainable for the future?”



Assignment 4.3

Energy Demand, Supply, and Consumption (49 marks)

In Lesson 4, you learned that there is a relationship between energy and power in both the physical, as well as the geographic sense. Some countries have an abundance of natural resources that can be converted into usable energy. Other countries depend on foreign exports to supply homes and communities with electricity and fuel. Developed and developing nations rely on different forms of energy for different reasons.

You learned that fossil fuels (coal, oil, and gas) are inexpensive and incredibly efficient, but are also harmful to the environment because they cause toxic emissions. You examined a variety of alternative forms of energy, such as wind, solar, and hydroelectric that are being harnessed more and more to supply the world's growing energy demands.

The **purpose** of this assignment is to learn how to analyze energy statistics and use them in a helpful and purposeful way. Statistics are more than just numbers and percentages. When placed in context, they can encourage you to change your perspective and examine a situation in a whole new light. Additionally, you will be asked questions regarding energy sources, their use, and the future of energy.

Using Circle Graphs

This assignment will require you to analyze circle graphs.

A **circle graph** represents different categories of data as sectors of a circle, similar to slices of a pizza. All circle graphs compare parts of a whole, where whole represents 100% of the data. The sections of this graph are usually labeled with a percentage, which reflects how much of the data is represented by that sector.

Circle graphs are used to display **discrete data**. This means that the data can be sorted into well defined categories that are clearly separate.

The following are components of a good circle graph:

- title
- accurately drawn sectors
- percentage labels on each sector
- a legend explaining what each sector represents, and the actual values
- accurate division of the circle based on the percentage of each sector compared to the total population (larger percentages should be larger sectors)

continued

Assignment 4.3: Energy Demand, Supply, and Consumption (continued)

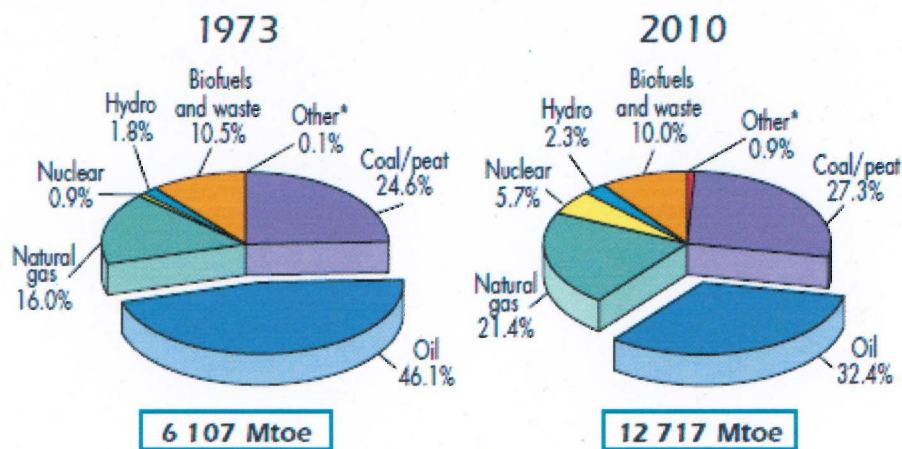
Figure 4.11

WORLD ENERGY SUPPLY (TOTAL) FROM 1973 TO 2010

TOTAL PRIMARY ENERGY SUPPLY

World

1973 and 2010 fuel shares of TPES



*Other includes geothermal, solar, wind, heat, etc.

Source: International Energy Agency. *Key World Energy Statistics*. www.iea.org/.

1. Although the largest portion of our energy supply comes from oil, our dependency on oil has decreased since the 1970s. Take a look at the circle graphs above. (5 marks)
 - a) How much has oil dependency decreased? (1 mark)

- b) Explain the connection between this statistic and the 1970s energy crisis. (4 marks)

continued

Assignment 4.3: Energy Demand, Supply, and Consumption (continued)

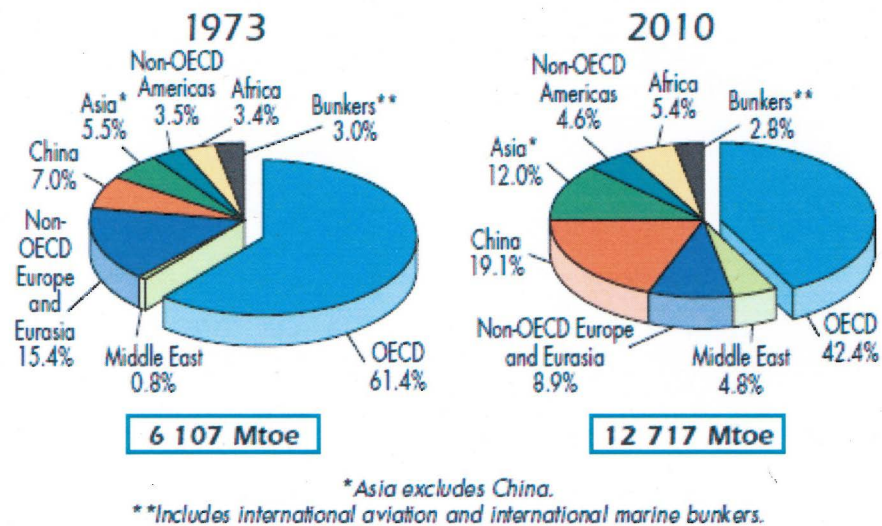
Figure 4.12

WORLD PRIMARY ENERGY SUPPLY BY REGION

TOTAL PRIMARY ENERGY SUPPLY

World

1973 and 2010 regional shares of TPES



Source: International Energy Agency. *Key World Energy Statistics*. www.iea.org/.

2. The mission statement of the OECD is to “promote policies that will improve the economic and social well-being of people around the world.” It is clear by looking at the graph above that the OECD countries control most of the global energy supply. (5 marks)

a) What is the connection between energy and the economy? (1 mark)

continued

Assignment 4.3: Energy Demand, Supply, and Consumption (continued)

b) What is the connection between energy and social well-being? (1 mark)

c) Has the OECD control of energy supply increased or decreased? By how much? (1 mark)

d) There was a 20% decrease in the energy supplied by OECD countries and a significant increase from China and countries in Asia and the Middle East. List at least two possible implications regarding this increase for those developing countries. (2 marks)

continued

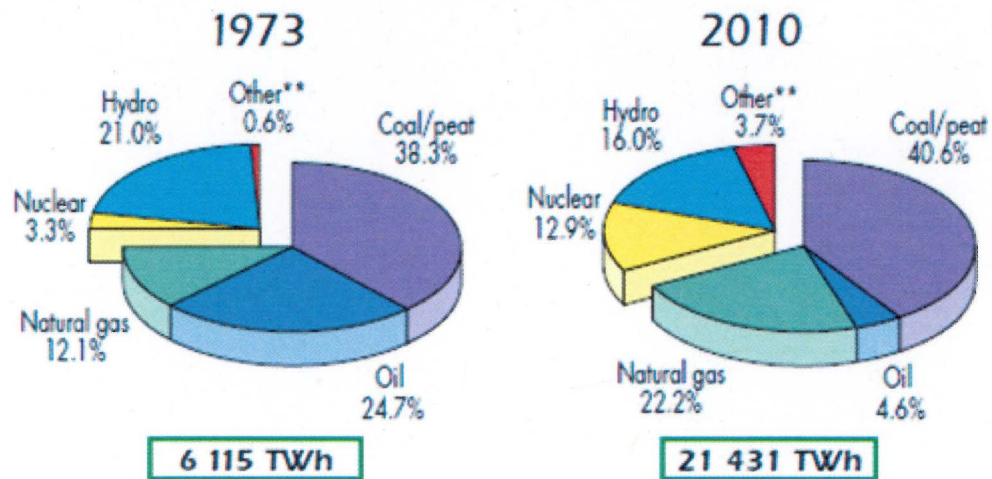
Assignment 4.3: Energy Demand, Supply, and Consumption (continued)

Figure 4.13

WORLD ELECTRICITY GENERATION BY FUEL

Electricity Generation by Fuel

1973 and 2010 fuel shares of electricity generation*



Source: International Energy Agency. *Key World Energy Statistics*. www.iea.org/.

3. Look at the above graph and answer the following analysis questions. (12 marks)
- a) What types of fuel are included in the “other” category? Which one do you think is the most important? Why? (3 marks)

continued

Assignment 4.3: Energy Demand, Supply, and Consumption (continued)

- b) Which form of energy has increased by 9.6%? List at least two pros and two cons to using this fuel. (5 marks)

Pros (2 marks)	Cons (2 marks)

- c) What is hydroelectric power, and why did the use of hydroelectricity decrease since the 1970s? (4 marks)

continued

Assignment 4.3: Energy Demand, Supply, and Consumption (continued)

4. Create a table that outlines the benefits and problems of three sources of energy: coal, oil, and electricity. (6 marks)
- Each source should have at least two benefits and two problems.
 - Each point is worth 0.5 mark.

Energy Source	Benefits	Problems
Coal		
Oil		
Electricity		

continued

Assignment 4.3: Energy Demand, Supply, and Consumption (continued)

5. Choose one alternate, renewable source of energy. Write two paragraphs describing this source. **Hint:** There is a chart in Lesson 1 that lists different forms of renewable energy. (8 marks)

- Describe the energy source, how it's used, and an example of what it is used for. (2 marks)
- How successful has this alternate energy source been/how successful do you think it will be? (2 marks)
- What is one advantage and one disadvantage of this source? (2 marks)
- Can this source be easily used by the populations of developing nations (is it inexpensive, easy, effective)? How can it become more accessible? (2 marks)

continued

Assignment 4.3: Energy Demand, Supply, and Consumption (continued)

6. Complete the following timeline. Use the word box, but be careful because there are more terms in the word box than needed to complete the timeline. (7 marks)
- Each fill in the blank word is worth 0.5 mark.

_____	Carboniferous Period _____ is produced between 280–360 million years ago from _____	First modern oil wells drilled 1973 Increases
_____	Mid-1880s _____	Nuclear power plant 2011
_____	1880 Edison develops the first practical use for electricity, _____	Oil Nuclear fission Dinosaurs
_____	Mid-1880s Nikola Tesla _____ electric power systems	AC Oil is extracted from mountains
_____	1896 The term _____ is first used	The electric car Television
_____	1905–1930s _____	Large scale dams are built to produce hydroelectric power
_____	1939 First demonstration of _____	Refrigerator Coal DC
_____	1945 _____ is dropped on Japan	Fossil fuel Hydroelectricity
_____	1950s onwards Fossil fuel usage (coal, oil, and natural gas) dramatically _____	Pollution Plants and aquatic vegetation Conservation programs in the polar regions are established
_____	1960s and 1970s _____	Atomic bomb Nuclear transportation Hydrogen bomb
_____	1986 Chernobyl _____ disaster _____	Smog-based pollution a concern Decreases
_____	Earthquake, tsunami, and Japanese Fukushima Daiichi power plant meltdown	The light bulb Alternative sources of energy are introduced 1975 Radioactivity Greenhouse gas emissions

continued

Assignment 4.3: Energy Demand, Supply, and Consumption (continued)

7. Based on everything that has been covered in this lesson, what three predictions can you make about the future with respect to energy? (6 marks)
- Write a statement (in complete sentences) declaring each prediction. (1 mark each)
 - Write a statement below your prediction that explains your reasoning. (1 mark each)

Example:

Prediction: Greenhouse gas emissions and pollution will continue to have a negative impact on the environment, destroy habitats, and affect human health.

Reason: The population of the world is increasing and more people are depending on fossil fuel energy to meet their basic needs.

Prediction:

Reason:

Prediction:

Reason:

Prediction:

Reason:

MODULE 4 SUMMARY

Congratulations, you have finished Module 4!

This Module has looked at natural resources and examined questions of global distribution and demands. Through analysis of case studies, statistics, and articles, you looked at the relationships between resources and the economy and resources and the environment, and the role that resources play in international relations between countries.

You also learned about energy and power, and the relationship between them. This module discussed quality of life in developed and developing countries with respect to sustainable resource management. Within this context, you examined the components of energy demand, supply, and consumption.

A common thread throughout this entire module was the question of sustainable development and predictions for the next phase of resource and energy use.



Submitting Assignments

It is now time for you to submit Assignments 4.1 to 4.3 to the Distance Learning Unit so that you can receive some feedback on how you are doing in this course. Remember that you must submit all the assignments in this course before you can receive your credit.

Make sure you have completed all parts of your Module 4 assignments and organize your material in the following order:

- Module 4 Cover Sheet (found at the end of the course Introduction)
- Assignment 4.1: Resources and Standard of Living
- Assignment 4.2: Blood Diamonds and International Trade
- Assignment 4.3: Energy Demand, Supply, and Consumption

For instructions on submitting your assignments, refer to How to Submit Assignments in the course Introduction.

Notes



GRADE 12 WORLD
GEOGRAPHY: A HUMAN
PERSPECTIVE (40S)

Module 4
World Resources, Energy,
and the Environment

Learning Activity Answer Key

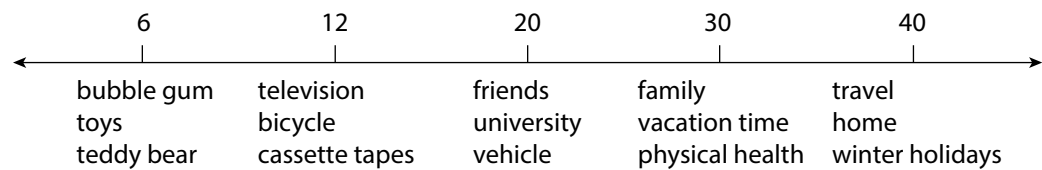
MODULE 4: WORLD RESOURCES, ENERGY, AND THE ENVIRONMENT

Learning Activity 4.1: Personal Resources

The purpose of Learning Activity 4.1 is to put into perspective how the supply of resources is directly related to the demand of the consumers. Demand is constantly changing and influenced by various factors, which could include advances in technology, evolving fashion trends, or increasing awareness of health benefits. There are an infinite number of reasons why people are influenced to buy and consume one particular resource over another.

Based on your own experiences and memories as to how your life has changed since you were in Grade 1 or Grade 2 (or as far back as you can remember), draw a simple timeline of how the physical objects or luxuries you valued as a child have changed over the years. You should have at least five moments on your timeline, supported by three examples.

The timeline below could be for a woman born in the mid-1960s. Depending on your age, you might want to use two- or three-year increments.



Learning Activity 4.2: Biological Resources

There are eight main vegetation zones (biomes) as described in Module 1. Based on what you have learned in this course so far, and with help from the Internet or an encyclopedia, fill in the following table with as wide a variety of **biological resources** as possible.

Table 4.2: Biological Resources	
Biome	Biological Resource
Tundra	Unique plant <i>species</i> ; medicinal plants; animals and fish that support commercial enterprises; berries, fungi, and pine nuts; migratory birds
Boreal forest/taiga	Softwood forestry products; unique plant <i>species</i> ; medicinal plants; animals and fish that support commercial enterprises (tourism); bees, berries, fungi, and pine nuts; migratory birds
Temperature deciduous forest	Hardwood forestry products; unique plant <i>species</i> ; medicinal plants; animals and fish that support commercial enterprises (tourism); bees, berries, fungi, and pine nuts; migratory birds; amphibians; reptiles; insects
Grasslands	Rich soils; agricultural production (livestock and crops); unique plant <i>species</i> ; medicinal plants; animals and fish that support businesses; bees; migratory birds; reptiles; insects
Chaparral	Cacti; other unique plant <i>species</i> ; medicinal plants; animals and fish that support businesses; bees; migratory birds; insects; reptiles
Deserts	Uniquely adapted plant, animal, reptile, and insect <i>species</i>
Savannah	Rich soils; agricultural production (livestock and crops); unique plant <i>species</i> ; medicinal plants; animals and fish that support businesses; bees; migratory birds; reptiles; insects
Rainforest	Silk; exotic woods; many plants and animal <i>species</i> ; medicinal plants; animals and fish that support commercial enterprises (tourism); berries; fungi; migratory birds; amphibians; reptiles; insects

Learning Activity 4.3: Land Reform Case Study Analysis

Mexico

- Mexico experienced major land reforms between the Mexican Revolution in 1910 to the end of land redistribution in 1976.
- Before 1910, most of the land and political power was in the hands of a small percentage of rich landowners.
- Slavery was illegal in Mexico, but a large portion of the land workers were essentially debt-slaves to the landowners, which resulted in social unrest.
- A significant amount of land was seized by American landowners in the 1930s, which caused conflict between the United States and Mexico even though Mexico experienced an increase in agricultural production.
- The confiscated land was redistributed to the peasant farmers as “ejidos,” plots of communally owned lands where individuals had the right to farm certain parcels and were able to pass those rights on to their descendants.
- Between the 1940s and the 1970s, it became possible for peasant groups to rent out their ejidos to capitalist entrepreneurs.
- This changed again in the early 1990s when it became possible for peasants to sell the ejido land and also allow individuals to put up their portion of the land to help pay off loans. Some groups have used the land for tourism development.
- Many contemporary peasants are landowners, but most have plots of land that are too small for anything other than subsistence farming, so they must supplement their incomes in other ways.

Source: Gledhill, John. “Historical Notes on Mexico’s Land Reform.” *The University of Manchester*, England. http://jg.socialsciences.manchester.ac.uk/Peasants/mexican_land_reform.html. (Accessed May 2015.)
Adapted in accordance with fair dealing guidelines.

Zimbabwe

- Zimbabwe is a land-locked country, north of South Africa and shares borders with Botswana, Zambia, and Mozambique.
- European expansionism in Zimbabwe began in the mid-1800s and was fueled by gold exploration.
- By 1891, the area had been declared a British protectorate (a state that is controlled and protected by Britain) known as Rhodesia.
- The African occupants of the land were displaced so that European settlers could occupy the agricultural land.
- Over the next dozen years or so, political power gradually moved from the local population to the European settlers.

- The African struggle for an independent Rhodesia continued between the early 1960s and 1980. The political struggle was further complicated by the emergence of both white supremacist and African political parties.
- In 1979, Britain agreed to purchase land from British farmers who were willing to sell and redistribute that land through a land-reform program.
- Following the upheavals caused by the “fast track” land reforms of the early 2000s, Zimbabwe continued to experience economic hardships which were made worse by the AIDs epidemic.
- During the decade of 2000 to 2010, agricultural production dropped rapidly. Zimbabwe’s lack of food security and widespread hunger problems were made worse by international economic sanctions.

Complete the following chart, which outlines the similarities and differences between these two countries, and their struggle for independence and control over land ownership.

Similarities	Differences
<ul style="list-style-type: none"> ■ land was unfairly seized by <i>foreign settlers</i> ■ political power stayed in the hands of the <i>rich landowners</i> ■ both countries experienced <i>land reform</i> movements ■ the question of land ownership caused significant <i>social unrest</i> 	<ul style="list-style-type: none"> ■ Mexico’s economy <i>improved</i> with agricultural production, whereas Zimbabwe’s agricultural production <i>dropped</i> ■ Zimbabwe was a <i>British colony</i>, Mexico was <i>independent</i> ■ American <i>landowners</i> owned the land in Mexico, Europeans in Zimbabwe were <i>settlers</i>

Learning Activity 4.4: The Aral Sea

1. In which country is the North Aral Sea located?
 - a) Russia
 - b) *Kazakhstan*
 - c) Uzbekistan
 - d) Poland

2. Between 1960 and 2009, the Aral Sea lost what percentage of its water volume?
 - a) 70%
 - b) 88 %
 - c) 60 %
 - d) *92%*

3. The names of the two main rivers feeding the Aral Sea are
 - a) Danube and Nile
 - b) Yangzte and Syr Darya
 - c) *Syr Darya and Amu Darya*
 - d) Red and Assiniboine
4. What was the main cause of extinction of fish species?
 - a) *pesticide and salt runoff*
 - b) water drainage
 - c) large predator fish
 - d) overfishing
5. Which of the following health issue has not been associated with the shrinking of the Aral Sea?
 - a) intestinal diseases
 - b) polio
 - c) *malaria*
 - d) viral hepatitis
6. Which of the following is a human impact related to the loss of shorelines and diverse ecosystems?
 - a) reduced air quality
 - b) *negative emotional and psychological reaction*
 - c) colder winters and hotter summers
 - d) collapse of fisheries and elimination of jobs
7. What reason did the USSR give for building wasteful irrigation channels to the plains surrounding the Aral Sea?
 - a) It would increase the number of fish species.
 - b) It would increase grain production.
 - c) It would be used as a source of hydroelectric power.
 - d) *It would increase cotton production.*
8. Which valuable resource(s) has/have been found beneath the dried sea bed?
 - a) *oil and gasoline*
 - b) diamonds
 - c) gold
 - d) copper

Learning Activity 4.5: Playing a Role in the Economy

Understanding how the economy works is not an easy task. There are many different factors that influence the well-being of the economy. A few of those factors were mentioned in this lesson, but others also include

- currency value
- discovery of natural resources
- quantity of imports and exports
- cost of labour
- global trading relations between nations
- competitive pricing
- consumer demands

Consider the following scenarios. Answer the questions using your knowledge of supply, demand, and the economic factors listed above.

1. You are the CEO of a large Canadian retail export company (think Joe Fresh, Hudson's Bay Company, Le Château, Winners, etc.). The economy is booming and the Canadian dollar is high. Is it cheaper for Canadians to shop locally at your store or to cross the border into the United States to shop?

When the Canadian dollar is high, Canadian consumers can get more for their money if they shop in the United States. The products are typically cheaper and there are fewer taxes on retail goods.

2. You are the CEO of an oil company in Alberta. Oil is a sought after commodity—everyone needs it and you are exporting large amounts to foreign countries. This exchange strengthens Canada's currency. What implications does this have for the Canadian manufacturing sector?

When the value of the currency increases, it makes all of the other non-oil Canadian products more expensive as well. This negatively impacts the manufacturing industry because they are unable to lower their prices enough to remain competitive in the global trading arena. Manufacturing exports decrease and jobs are lost and potentially relocated to other countries where the cost of labour and production is cheaper.

3. You are an environmental activist who is taking a stand against pollution in the Great Lakes (Canada's largest bodies of fresh water).

a) What are some possible negative environmental effects of pollution?

Water pollution could cause extinction of fish species, birds, and other animals and insects that live in or around the Great Lakes area. The pollution contaminates our drinking water and could cause sickness in humans. Increasing salt or pesticide levels in the water also leaks into the ground and results in erosion of good agricultural soil.

b) What are the long-term economic consequences of polluting the Great Lakes?

Water is the most important natural resource in Canada. Allowing our fresh water source to become contaminated would severely limit our ability to generate income from water exports. Our health-care services would be strained if many people required medical attention because of contaminated drinking water. The fertile land surrounding the Great Lakes would also be polluted, which would severely hurt Canada's agricultural industry.

Learning Activity 4.6: Calculating Power

The purpose of this learning activity is to practice calculating energy and power.

Remember: $P = \frac{w}{t}$

Symbol	Name	Measured In
P	power	J/s = W (joules per second = watts)
w	work	J (joules)
t	time	s (seconds)

As you work through the questions, be sure to

1. Write out the formula $P = \frac{w}{t}$.
2. Fill in the information you know, including the numbers and measurement.
3. Write an answer to the question in words.

For example, a girl is riding her bike. She uses 10 watts of power every 2 seconds. How much work is she putting out?

Steps:

1. $P = \frac{w}{t}$

2. You know: $P = 10 \text{ W}$ (watts)

$t = 2 \text{ s}$ (seconds)

$$P = \frac{w}{t}$$

$$10 \text{ W} = \frac{w}{2 \text{ s}}$$

$$(10 \text{ J/s})(2 \text{ s}) = w$$

$$20 \text{ J} = w$$

3. The girl is putting out 20 J of work.

Note: Step 2 involves cross-multiplying. Here is a review.

To solve for a value that you do not know you must have this value stand alone. In this example, you need to have w stand alone. To do this, you multiply both sides by 2 s. Remember, that anything divided by itself = 1. The 2 s on the right side, divided by 2 s, becomes 1.

Since $W = \text{J/s}$, it is changed in the final step.

Step 1: Need to isolate w	Step 2: Multiply by 2 s	Step 3: $2 \text{ s} / 2 \text{ s} = 1$	Step 4: $1 \times w = w$
$10 \text{ W} = \frac{w}{2 \text{ s}}$	$(10 \text{ W})(2 \text{ s}) = \frac{w(2 \text{ s})}{2 \text{ s}}$	$(10 \text{ W})(2 \text{ s}) = w(1)$	$(10 \text{ W})(2 \text{ s}) = w$

Problems

1. If a construction worker is pushing a wheelbarrow, he puts out 50 J of work in 2 s. How much power is he using?

Formula:

$$P = \frac{w}{t}$$

$$P = \frac{50 \text{ J}}{2 \text{ s}}$$

$$P = 25 \text{ J/s} = 25 \text{ W}$$

Words:

50 J divided by 2 s is 25 J/s or 25 W. The worker is using 25 watts of power.

2. A crane is used to remove a fallen electricity pole from the highway. It takes the crane 15 seconds, using 100 watts of power, to lift, move, and drop the pole. How much energy did the crane need?

Formula:

$$P = \frac{w}{t}$$

$$100 = \frac{w}{15}$$

$$(15)(100) = \frac{w(15)}{(15)}$$

$$1500 = w$$

Words:

The crane needed 1500 J of energy.

3. Two friends are on a track behind their school. Person A decides to run 1 mile, and it takes her approximately 8 minutes and 280 watts of power. Person B decides to walk the 1 mile, and it takes her 15.5 minutes and 144.5 watts of power. Which person does more work to finish the exercise?

Person 1	Person 2
$P = \frac{w}{t}$	$P = \frac{w}{t}$
$280 = \frac{w}{480}$	$144.5 = \frac{w}{930}$
$280(480) = \frac{w(480)}{(480)}$	$144.5(930) = \frac{w(930)}{(930)}$
$134,400 = w$	$134,400 = w$

Words:

It takes them the exact same amount of energy/work to finish the mile in different times.

Learning Activity 4.7: Energy Basics

Part A: True or False

If the answer is false, write the correct statement below.

1. Coal is formed from the remains of terrestrial plants that were buried on Earth for millions of years.
(True)
2. During the Industrial Revolution, the world economy shifted from one that was based on animal labour to human labour.
(False) *Economic markets stimulated by agriculture and manual labour were transformed during the Industrial Revolution into markets determined by industry, machines, and cheap energy.*
3. Electricity generated by fossil fuels is considered a form of “clean energy.”
(False) *Electricity generated by fossil fuels emits particulate matter into the atmosphere and causes smog and pollution.*
4. Fossil fuels refer to fossilized remains of living organisms (coal, oil, and natural gas) and to hydrocarbons.
(True)
5. The primary concern with nuclear energy is the fear that countries may use the knowledge to build atomic bombs.
(False) *The primary concern with nuclear energy is the safe storage of radioactive waste.*

Part B: Fill-in-the-Blanks

Use the word box below. There are more options than questions.

1. Smart grid technology depends on a system which *integrates* energy sources.
2. The Second Industrial Revolution was characterized by the use of *electricity*.
3. *Renewable sources of energy* include wind, solar, and geothermal forms of energy.
4. One of the most dangerous health risks faced by people in developing countries is *indoor air pollution*.
5. A *subsidy* is a sum of money granted by the government or a public body to assist an industry or business so that the price of a commodity or service may remain low or competitive.

integrates

subsidy

isolates

coal

electricity

oil

renewable energy sources

non-renewable energy sources

food poisoning

contaminated water

indoor air pollution

Notes



GRADE 12 WORLD
GEOGRAPHY: A HUMAN
PERSPECTIVE (40S)

Module 4
World Resources, Energy,
and the Environment

Learning Activity Answer Key

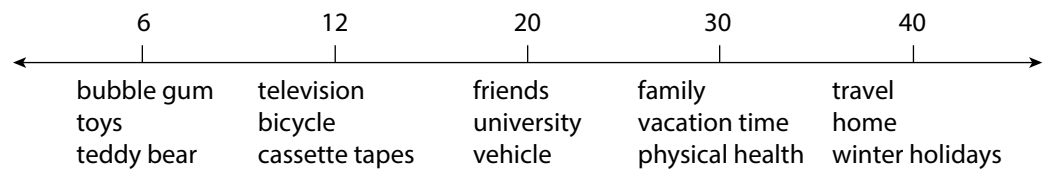
MODULE 4: WORLD RESOURCES, ENERGY, AND THE ENVIRONMENT

Learning Activity 4.1: Personal Resources

The purpose of Learning Activity 4.1 is to put into perspective how the supply of resources is directly related to the demand of the consumers. Demand is constantly changing and influenced by various factors, which could include advances in technology, evolving fashion trends, or increasing awareness of health benefits. There are an infinite number of reasons why people are influenced to buy and consume one particular resource over another.

Based on your own experiences and memories as to how your life has changed since you were in Grade 1 or Grade 2 (or as far back as you can remember), draw a simple timeline of how the physical objects or luxuries you valued as a child have changed over the years. You should have at least five moments on your timeline, supported by three examples.

The timeline below could be for a woman born in the mid-1960s. Depending on your age, you might want to use two- or three-year increments.



Learning Activity 4.2: Biological Resources

There are eight main vegetation zones (biomes) as described in Module 1. Based on what you have learned in this course so far, and with help from the Internet or an encyclopedia, fill in the following table with as wide a variety of **biological resources** as possible.

Table 4.2: Biological Resources	
Biome	Biological Resource
Tundra	Unique plant <i>species</i> ; medicinal plants; animals and fish that support commercial enterprises; berries, fungi, and pine nuts; migratory birds
Boreal forest/taiga	Softwood forestry products; unique plant <i>species</i> ; medicinal plants; animals and fish that support commercial enterprises (tourism); bees, berries, fungi, and pine nuts; migratory birds
Temperate deciduous forest	Hardwood forestry products; unique plant <i>species</i> ; medicinal plants; animals and fish that support commercial enterprises (tourism); bees, berries, fungi, and pine nuts; migratory birds; amphibians; reptiles; insects
Grasslands	Rich soils; agricultural production (livestock and crops); unique plant <i>species</i> ; medicinal plants; animals and fish that support businesses; bees; migratory birds; reptiles; insects
Chaparral	Cacti; other unique plant <i>species</i> ; medicinal plants; animals and fish that support businesses; bees; migratory birds; insects; reptiles
Deserts	Uniquely adapted plant, animal, reptile, and insect <i>species</i>
Savannah	Rich soils; agricultural production (livestock and crops); unique plant <i>species</i> ; medicinal plants; animals and fish that support businesses; bees; migratory birds; reptiles; insects
Rainforest	Silk; exotic woods; many plants and animal <i>species</i> ; medicinal plants; animals and fish that support commercial enterprises (tourism); berries; fungi; migratory birds; amphibians; reptiles; insects

Learning Activity 4.3: Land Reform Case Study Analysis

Mexico

- Mexico experienced major land reforms between the Mexican Revolution in 1910 to the end of land redistribution in 1976.
- Before 1910, most of the land and political power was in the hands of a small percentage of rich landowners.
- Slavery was illegal in Mexico, but a large portion of the land workers were essentially debt-slaves to the landowners, which resulted in social unrest.
- A significant amount of land was seized by American landowners in the 1930s, which caused conflict between the United States and Mexico even though Mexico experienced an increase in agricultural production.
- The confiscated land was redistributed to the peasant farmers as “ejidos,” plots of communally owned lands where individuals had the right to farm certain parcels and were able to pass those rights on to their descendants.
- Between the 1940s and the 1970s, it became possible for peasant groups to rent out their ejidos to capitalist entrepreneurs.
- This changed again in the early 1990s when it became possible for peasants to sell the ejido land and also allow individuals to put up their portion of the land to help pay off loans. Some groups have used the land for tourism development.
- Many contemporary peasants are landowners, but most have plots of land that are too small for anything other than subsistence farming, so they must supplement their incomes in other ways.

Source: Gledhill, John. “Historical Notes on Mexico’s Land Reform.” *The University of Manchester*, England. http://jg.socialsciences.manchester.ac.uk/Peasants/mexican_land_reform.html. (Accessed May 2015.)
Adapted in accordance with fair dealing guidelines.

Zimbabwe

- Zimbabwe is a land-locked country, north of South Africa and shares borders with Botswana, Zambia, and Mozambique.
- European expansionism in Zimbabwe began in the mid-1800s and was fueled by gold exploration.
- By 1891, the area had been declared a British protectorate (a state that is controlled and protected by Britain) known as Rhodesia.
- The African occupants of the land were displaced so that European settlers could occupy the agricultural land.
- Over the next dozen years or so, political power gradually moved from the local population to the European settlers.

- The African struggle for an independent Rhodesia continued between the early 1960s and 1980. The political struggle was further complicated by the emergence of both white supremacist and African political parties.
- In 1979, Britain agreed to purchase land from British farmers who were willing to sell and redistribute that land through a land-reform program.
- Following the upheavals caused by the “fast track” land reforms of the early 2000s, Zimbabwe continued to experience economic hardships which were made worse by the AIDs epidemic.
- During the decade of 2000 to 2010, agricultural production dropped rapidly. Zimbabwe’s lack of food security and widespread hunger problems were made worse by international economic sanctions.

Complete the following chart, which outlines the similarities and differences between these two countries, and their struggle for independence and control over land ownership.

Similarities	Differences
<ul style="list-style-type: none"> ■ land was unfairly seized by <i>foreign settlers</i> ■ political power stayed in the hands of the <i>rich landowners</i> ■ both countries experienced <i>land reform movements</i> ■ the question of land ownership caused significant <i>social unrest</i> 	<ul style="list-style-type: none"> ■ Mexico’s economy <i>improved</i> with agricultural production, whereas Zimbabwe’s agricultural production <i>dropped</i> ■ Zimbabwe was a <i>British colony</i>, Mexico was <i>independent</i> ■ American <i>landowners</i> owned the land in Mexico, Europeans in Zimbabwe were <i>settlers</i>

Learning Activity 4.4: The Aral Sea

1. In which country is the North Aral Sea located?
 - a) Russia
 - b) *Kazakhstan*
 - c) Uzbekistan
 - d) Poland
2. Between 1960 and 2009, the Aral Sea lost what percentage of its water volume?
 - a) 70%
 - b) 88 %
 - c) 60 %
 - d) *92%*

3. The names of the two main rivers feeding the Aral Sea are
 - a) Danube and Nile
 - b) Yangzte and Syr Darya
 - c) *Syr Darya and Amu Darya*
 - d) Red and Assiniboine
4. What was the main cause of extinction of fish species?
 - a) *pesticide and salt runoff*
 - b) water drainage
 - c) large predator fish
 - d) overfishing
5. Which of the following health issue has not been associated with the shrinking of the Aral Sea?
 - a) intestinal diseases
 - b) polio
 - c) *malaria*
 - d) viral hepatitis
6. Which of the following is a human impact related to the loss of shorelines and diverse ecosystems?
 - a) reduced air quality
 - b) *negative emotional and psychological reaction*
 - c) colder winters and hotter summers
 - d) collapse of fisheries and elimination of jobs
7. What reason did the USSR give for building wasteful irrigation channels to the plains surrounding the Aral Sea?
 - a) It would increase the number of fish species.
 - b) It would increase grain production.
 - c) It would be used as a source of hydroelectric power.
 - d) *It would increase cotton production.*
8. Which valuable resource(s) has/have been found beneath the dried sea bed?
 - a) *oil and gasoline*
 - b) diamonds
 - c) gold
 - d) copper

Learning Activity 4.5: Playing a Role in the Economy

Understanding how the economy works is not an easy task. There are many different factors that influence the well-being of the economy. A few of those factors were mentioned in this lesson, but others also include

- currency value
- discovery of natural resources
- quantity of imports and exports
- cost of labour
- global trading relations between nations
- competitive pricing
- consumer demands

Consider the following scenarios. Answer the questions using your knowledge of supply, demand, and the economic factors listed above.

1. You are the CEO of a large Canadian retail export company (think Joe Fresh, Hudson's Bay Company, Le Château, Winners, etc.). The economy is booming and the Canadian dollar is high. Is it cheaper for Canadians to shop locally at your store or to cross the border into the United States to shop?

When the Canadian dollar is high, Canadian consumers can get more for their money if they shop in the United States. The products are typically cheaper and there are fewer taxes on retail goods.

2. You are the CEO of an oil company in Alberta. Oil is a sought after commodity—everyone needs it and you are exporting large amounts to foreign countries. This exchange strengthens Canada's currency. What implications does this have for the Canadian manufacturing sector?

When the value of the currency increases, it makes all of the other non-oil Canadian products more expensive as well. This negatively impacts the manufacturing industry because they are unable to lower their prices enough to remain competitive in the global trading arena. Manufacturing exports decrease and jobs are lost and potentially relocated to other countries where the cost of labour and production is cheaper.

3. You are an environmental activist who is taking a stand against pollution in the Great Lakes (Canada's largest bodies of fresh water).

a) What are some possible negative environmental effects of pollution?

Water pollution could cause extinction of fish species, birds, and other animals and insects that live in or around the Great Lakes area. The pollution contaminates our drinking water and could cause sickness in humans. Increasing salt or pesticide levels in the water also leaks into the ground and results in erosion of good agricultural soil.

b) What are the long-term economic consequences of polluting the Great Lakes?

Water is the most important natural resource in Canada. Allowing our fresh water source to become contaminated would severely limit our ability to generate income from water exports. Our health-care services would be strained if many people required medical attention because of contaminated drinking water. The fertile land surrounding the Great Lakes would also be polluted, which would severely hurt Canada's agricultural industry.

Learning Activity 4.6: Calculating Power

The purpose of this learning activity is to practice calculating energy and power.

Remember: $P = \frac{w}{t}$

Symbol	Name	Measured In
P	power	J/s = W (joules per second = watts)
w	work	J (joules)
t	time	s (seconds)

As you work through the questions, be sure to

1. Write out the formula $P = \frac{w}{t}$.
2. Fill in the information you know, including the numbers and measurement.
3. Write an answer to the question in words.

For example, a girl is riding her bike. She uses 10 watts of power every 2 seconds. How much work is she putting out?

Steps:

1. $P = \frac{w}{t}$

2. You know: $P = 10 \text{ W}$ (watts)

$t = 2 \text{ s}$ (seconds)

$$P = \frac{w}{t}$$

$$10 \text{ W} = \frac{w}{2 \text{ s}}$$

$$(10 \text{ J/s})(2 \text{ s}) = w$$

$$20 \text{ J} = w$$

3. The girl is putting out 20 J of work.

Note: Step 2 involves cross-multiplying. Here is a review.

To solve for a value that you do not know you must have this value stand alone. In this example, you need to have w stand alone. To do this, you multiply both sides by 2 s. Remember, that anything divided by itself = 1. The 2 s on the right side, divided by 2 s, becomes 1.

Since $W = \text{J/s}$, it is changed in the final step.

Step 1: Need to isolate w	Step 2: Multiply by 2 s	Step 3: $2 \text{ s} / 2 \text{ s} = 1$	Step 4: $1 \times w = w$
$10 \text{ W} = \frac{w}{2 \text{ s}}$	$(10 \text{ W})(2 \text{ s}) = \frac{w(2 \text{ s})}{2 \text{ s}}$	$(10 \text{ W})(2 \text{ s}) = w(1)$	$(10 \text{ W})(2 \text{ s}) = w$

Problems

1. If a construction worker is pushing a wheelbarrow, he puts out 50 J of work in 2 s. How much power is he using?

Formula:

$$P = \frac{w}{t}$$

$$P = \frac{50 \text{ J}}{2 \text{ s}}$$

$$P = 25 \text{ J/s} = 25 \text{ W}$$

Words:

50 J divided by 2 s is 25 J/s or 25 W. The worker is using 25 watts of power.

2. A crane is used to remove a fallen electricity pole from the highway. It takes the crane 15 seconds, using 100 watts of power, to lift, move, and drop the pole. How much energy did the crane need?

Formula:

$$P = \frac{w}{t}$$

$$100 = \frac{1}{15}$$

$$(15)(100) = \frac{w(15)}{(15)}$$

$$1500 = w$$

Words:

The crane needed 1500 J of energy.

3. Two friends are on a track behind their school. Person A decides to run 1 mile, and it takes her approximately 8 minutes and 280 watts of power. Person B decides to walk the 1 mile, and it takes her 15.5 minutes and 144.5 watts of power. Which person does more work to finish the exercise?

Person 1	Person 2
$P = \frac{w}{t}$	$P = \frac{w}{t}$
$280 = \frac{w}{480}$	$144.5 = \frac{w}{930}$
$280(480) = \frac{w(480)}{(480)}$	$144.5(930) = \frac{w(930)}{(930)}$
$134,400 = w$	$134,400 = w$

Words:

It takes them the exact same amount of energy/work to finish the mile in different times.

Learning Activity 4.7: Energy Basics

Part A: True or False

If the answer is false, write the correct statement below.

1. Coal is formed from the remains of terrestrial plants that were buried on Earth for millions of years.
(True)
2. During the Industrial Revolution, the world economy shifted from one that was based on animal labour to human labour.
(False) *Economic markets stimulated by agriculture and manual labour were transformed during the Industrial Revolution into markets determined by industry, machines, and cheap energy.*
3. Electricity generated by fossil fuels is considered a form of “clean energy.”
(False) *Electricity generated by fossil fuels emits particulate matter into the atmosphere and causes smog and pollution.*
4. Fossil fuels refer to fossilized remains of living organisms (coal, oil, and natural gas) and to hydrocarbons.
(True)
5. The primary concern with nuclear energy is the fear that countries may use the knowledge to build atomic bombs.
(False) *The primary concern with nuclear energy is the safe storage of radioactive waste.*

Part B: Fill-in-the-Blanks

Use the word box below. There are more options than questions.

1. Smart grid technology depends on a system which *integrates* energy sources.
2. The Second Industrial Revolution was characterized by the use of *electricity*.
3. *Renewable sources of energy* include wind, solar, and geothermal forms of energy.
4. One of the most dangerous health risks faced by people in developing countries is *indoor air pollution*.
5. A *subsidy* is a sum of money granted by the government or a public body to assist an industry or business so that the price of a commodity or service may remain low or competitive.

integrates

subsidy

isolates

coal

electricity

oil

renewable energy sources

non-renewable energy sources

food poisoning

contaminated water

indoor air pollution

Notes

GRADE 12 WORLD GEOGRAPHY: A HUMAN PERSPECTIVE (40S)

Module 5 World Industrialization and Urbanization



Note: Module 5 contains a number of images that are best viewed in colour. Colour versions of these images in PDF format are available in the learning management system (LMS). Students are issued a username and password at the time of registration. If Internet access is unavailable, a CD with these images is available upon request from the Distance Learning Unit.

MODULE 5: WORLD INDUSTRIALIZATION AND URBANIZATION

Introduction

In Module 4, you were introduced to the topic of the Industrial Revolution. Most people have heard of the Industrial Revolution, but may not be aware of how the movement came about or what the effect has been on the contemporary world. This module will further explain the history of the Revolution and its impact on global economics and foreign relationships between developed and developing nations.

Closely related to the development of global industry is the process of urbanization. You will learn about the urbanization process, the factors that affect urbanization, the function of urban centres, and the problems associated with large cities.

If trends in industrialization and urbanization continue, the challenge for society will be to project the consequences on the economy, the environment, and communities, and to shift priorities to implement the principles and guidelines of sustainable development.

Reminders

- Let the computer graphics in the margins guide you through the module.
- Whenever you encounter difficulties, contact your tutor/marker. Do not let a roadblock keep you from working towards the completion of the course.

The main focus questions for this module are

Lesson 1	Lesson 2	Lesson 3
1. What is industrialization?	1. What is urbanization?	1. What conclusions can be drawn if present trends in industrialization continue?
2. What is the Industrial Revolution and what was its effect on the world?	2. What factors cause urban areas to grow and develop?	2. What conclusions can be drawn if present trends in urbanization continue?
3. What factors are necessary for industrialization to occur?	3. What factors cause urban areas to be limited in growth?	3. How would the present trends in industrialization and urbanization need to be altered to implement the principles and guidelines of sustainable development?
4. What effect have transnational corporations had on industrialization?	4. What are the functions of urban areas?	
5. How does industrialization differ between developed and developing countries?	5. What problems are related to urbanization?	
6. What problems and benefits are associated with industrialization?		

Assignments in Module 5

When you have completed the assignments for Module 5, submit your completed assignments to the Distance Learning Unit either by mail or electronically through the learning management system (LMS). The staff will forward your work to your tutor/marker.

Lesson	Assignment	Marks
1	Assignment 5.1: Industrialization	42
2	Assignment 5.2: Urban Planning for a City	36
3	Assignment 5.3: Value Judgments	32

LESSON 1: INDUSTRIALIZATION

Lesson Focus

By the end of this lesson, you will

- Review the history and spread of industrialization.
- Assess the global effect of the Industrial Revolution.
- Learn about the distribution of industry.
- Assess the location factors of industrialization.
- Examine the role of transnational corporations and industry.
- Compare and contrast industrialization in developed and developing countries.
- Assess the problems and benefits associated with industrialization.

Introduction



Industrialization can be defined as the process of developing industries on a wide scale such as in a country or region. An industry is defined as any economic activity concerned with the processing of raw materials and the manufacturing of goods in factories. However, it can also include an industry where the commodities bought or sold are services, such as those found in the tourist and hospitality industries. Hospitality industries include hotels and conference centres.

Modern industrialization reflects the changes that have occurred over the last 200 years. The world is a barely recognizable place compared to pre-industrial times. The technology of industry has changed so much that it is difficult to imagine a pre-industrial world, especially considering how information and communication technology (ICT) has evolved in a single generation.

The Industrial Revolution

The Industrial Revolution transformed how goods were produced for society and the way people obtained food, clothing, and shelter. The Revolution was a period of massive economic, technological, social, and cultural change that affected humans to such an extent that it is often considered to be on the same scale as the change from a hunting-gathering society to an agrarian society.

The four factors that contributed to the growth of industrialization in Britain were

- a large population
- the availability of capital (wealth)
- the development of products
- an abundance of natural resources

The three major aspects of industrialization were

- **division of labour:** the breaking down of large jobs into individual components
- **specialization:** a narrow and limited method of production
- **mechanization:** the process of doing work with machinery

The following is a **brief summary** of what caused the Industrial Revolution and the industrial and economic, as well as social and cultural changes that occurred as a result.

Causes of the Industrial Revolution

- Use of the land for purposes other than farming drove farmers to urban centres.
- Use of machines freed people from the soil, allowing—or forcing—the people into cities and manufacturing jobs.
- A proportionally large amount of spare capital (money) became available for investment, further driving industrial development.
- Trade networks established during the age of colonialism gave countries access to cheap natural resources.
- Inventions and the scientific revolution allowed for new technology to thrive.
- Scientific advances in sanitation led to less disease and lower infant mortality rates, which resulted in a higher population and a larger industrial workforce.

Industrial and Economic Changes

- Steam power was invented and used to power factories and aid in transportation, first canals and then railways.
- There were improvements in iron-making techniques, metallurgy, and chemical production.
- The textile industry was transformed by the invention of new machines allowing for much higher production at a lower cost.
- Improved tools allowed for development of more and better machines.

Social and Cultural Changes

- Rapid urbanization led to dense, cramped housing and poor living conditions with weak infrastructure.
- Education was institutionalized, which means that it became a structured and well-established system.
- Development and growth of social safety nets occurred (e.g., welfare programs).
- New city and factory cultures affected family and peer groups.
- There were movements to change laws regarding child labour, public health, and working conditions.

The Spread of the Industrial Revolution

Manufacturing techniques developed in the iron and textile industries of northern England and Scotland spread through the United Kingdom during the 1800s. The continued growth of these industries spearheaded the continual generation of new innovations. The 1851 World's Fair or Great Exhibition held in Hyde Park, London, was organized to showcase the modern industrial technology and design of the time. At that time, Britain was the world's first "Super Power," producing over half of the world's cotton fabric and iron; and British mines accounted for two-thirds of the world's coal production.

From England, the "revolution" moved east into Europe and west across the Atlantic Ocean to the United States. In Europe, even though some industrial innovations were originating in Belgium, France, and Germany, it wasn't until later in the 19th century that industrialization took hold in those countries. Political instability in Europe arising from The French Revolution (1789 to 1799) and the Napoleonic Wars (1796 to 1815) interfered with industrial expansion in France and contributed to the late introduction of industrial change to the area.

With regard to the railroad, international cooperation and standardization were essential. The width of the tracks needed to be the same across Europe in order for the railway to be feasible. The large sums of capital needed for this type of infrastructure development also required international collaboration. Some parts of Europe didn't get rail transportation until 50 years after it was established in Britain.

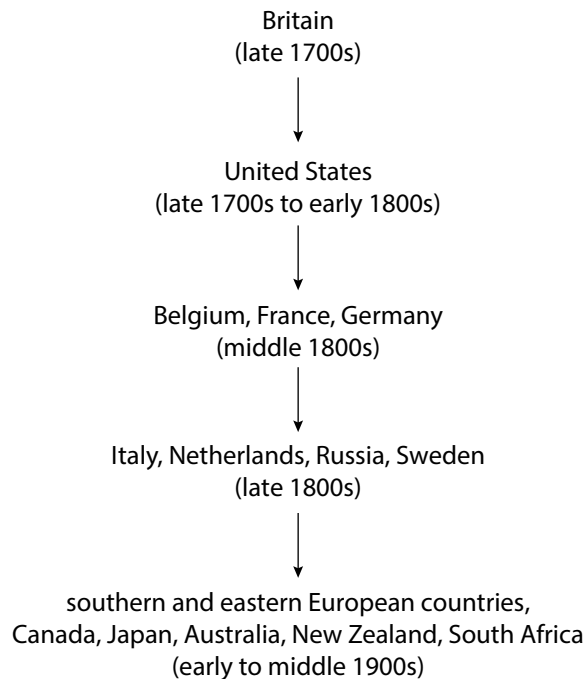
In the late 1700s, the United States was an agricultural society, importing most manufactured goods from Britain. Industrialization first appeared in 1791 with the establishment of a textile mill in Rhode Island. Industrialization started later in the United States than in Europe, but due in part to the stable political environment at the time in the United States, it spread much more rapidly. The Napoleonic Wars also played a role in the spread of industrialization in the United States. To avoid any involvement in the conflict, the United States placed an embargo on all European textiles. This embargo stimulated the textile industry in the United States.



An **embargo** is an official ban on trade or other commercial activity with a particular country.

In less than 70 years, by 1860, the United States was second only to Britain in industrial output, with most production in the areas of food, textiles, and lumber.

Figure 5.1 EARLY GLOBAL SPREAD OF THE INDUSTRIAL REVOLUTION, 1700S TO 1900S



Important Inventions and Innovations

Water Wheel

The water wheel had been around long before the start of the Industrial Revolution. British historian, M.J.T. Lewis, indicates that water wheels have been around since the third century B.C.E (before Common Era) and were used by all cultures.

Water wheels work by harnessing the power of moving water. The force of the water turns the water wheel, which then turns an axle that drives the mill's other machinery. Historically, water wheels were used for irrigation and as a power source. However, water wheels have been used to run mills designed for milling, hammering, or rolling devices meant to produce goods such as flour, lumber, paper, textiles, and metal products. As such, mills using water wheels could be gristmills, sawmills, rolling mills, textile mills, and so forth.

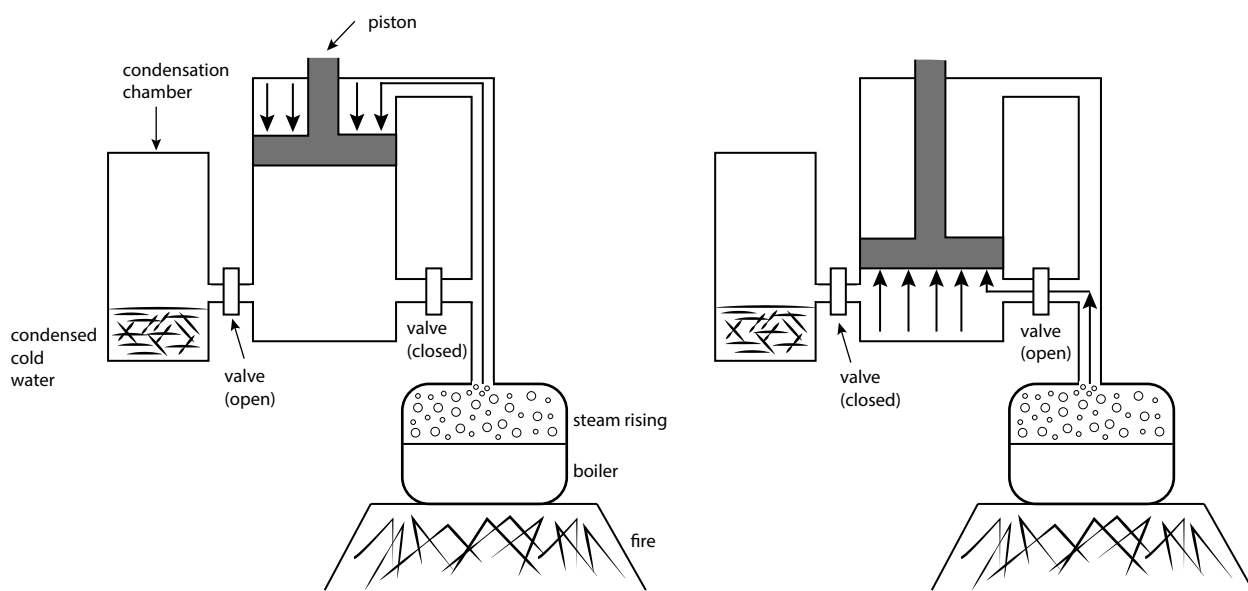
The big changes in water-based technology started around 1750 in the north of England. Improvements to the water mills and inventions of other water-powered labour-saving machines transformed the way textile goods were manufactured, such as the spinning wheel and weaving loom. The result was increased productivity that resulted in more available capital (money) to invest in further improvements to the mills and machines. The increased production led to a better standard of living.

Steam Engines

After 1769, technological change occurred more rapidly. This change in pace was marked by the invention of the first practical steam engine by James Watt. His design used a separate chamber for condensing the steam, and used the steam pressure to move the piston in both directions. A hinge located on the end of the pistons created a rotary power effect and more power could be applied to increase production. If you have access to the Internet, search for animations showing how the steam engine worked.

Figure 5.3

WATT'S BASIC STEAM ENGINE TECHNOLOGY



Essentially, the following describes how a steam engine works:

1. Steam rises into the top of the main cylinder and pushes the piston down.
2. The steam escapes into the condensation chamber.
3. The condensation chamber valve closes and the valve to the main cylinder opens.
4. The steam in the main cylinder pushes the piston back up.
5. The movement of the piston powers the machine.

The Iron Industry

The iron industry was the first industry to increase production through extensive use of the steam engine.

Iron and coal were vital to the success of the Industrial Revolution. Iron was required for economic expansion as it was a key manufacturing material, from household items to bridges. Iron led to expansion in areas such as manufacturing, transportation, mining, and construction.

Coal was important since coal was needed to make iron. The increased coal production meant miners needed to dig deeper and the problem of the mine shafts flooding needed to be addressed. The development of the Newcomen engine to pump the water from the mine shafts increased coal production. James Watt's steam engine greatly improved on the Newcomen engine, and its higher efficiency, coupled with lower operating costs, led to increased coal production. The increased production, along with new iron smelting techniques, meant increased iron production that brought about lower prices and a better quality of iron.

After the price of iron dropped, it was cheaper to make machines and tools from iron. This not only increased the production of manufacturing goods but impacted the areas of mining, transportation, and construction as well.

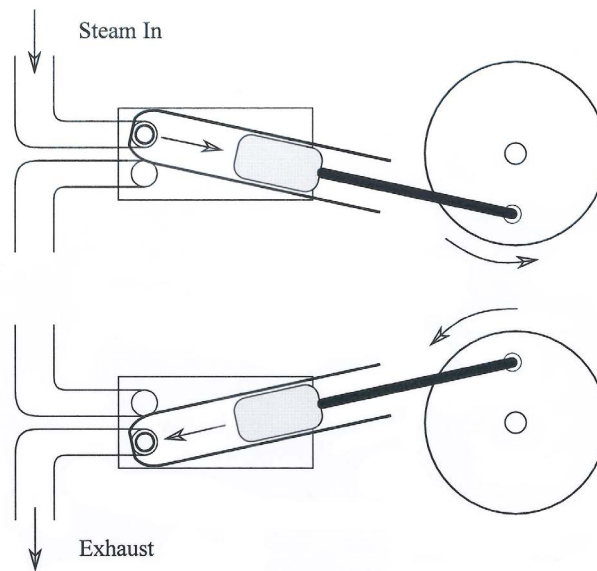
The steam engine provided the freedom for industries to build factories in more convenient locations. Previous to the late 1700s, industries were restricted to locations close to a source of moving water. The size of the industry was also limited by the power available (volume or flow of water). Nonetheless, by the mid-1800s, industrial manufacturing was clustered in areas where coal was plentiful and transportation of people, supplies, and manufactured goods was possible.

As growth continued, it soon became apparent that improvements to the transportation situation were needed. The first stage was the construction of canals as an economic and reliable way to transport goods and commodities in large quantities. Barges were used on the canals to transport workers to the factories and goods to market. The first barges were horse-drawn barges with the horses walking on the shore and towing the barges through the canal system. Diesel-powered boats to pull the barges were faster and more economical, and soon replaced the horse-drawn barges. Canal construction in England started in 1760 but was soon eclipsed by the onset of rail transportation.

Steam engine locomotives were one of the most important inventions, if not the most important, of the Industrial Revolution. In 1804, Richard Trevithic designed the first full-scale working railway steam locomotive. Trevithic's model met with limited success and it wasn't until 1814 that the first successful steam engine locomotive was built by George Stephenson. Stephenson went on to build the first public railway in 1821, the Stockton and Darlington Railway.

Figure 5.4

WATT'S STEAM-ENGINE TECHNOLOGY IN LOCOMOTIVES



Source: Williams, Roly. "Oscillating Cylinder." *Wikipedia*.
http://en.wikipedia.org/wiki/File:Oscillating_cylinder.svg. CC License.

Textiles

Steam engines were much more convenient and powerful than water power and allowed for great expansion in the textile industry. In the late 1760s, a “carding” machine was invented that straightened out cotton fibres before they were twisted into thread. Around the same time, a machine to spin the fibres into thread was developed. These weaving machines, also known as power looms, required more power than humans could provide, hence the use of water mills.

Eventually, the home-based cottage industries and the mills along rivers and creeks merged into larger steam-powered factories. Just as the iron industry, with the development of the steam-powered engine, took over the canal system of transportation, the steam-powered factories took over the textile industry. All aspects of textile production were now located under one roof and powered by one power source. The workers, former cottage-industry workers, followed the jobs and lived in close proximity to the factories.

Chemicals

Before the manufactured cloth was used for clothing or other purposes, it was usually bleached and then dyed. Until the 1850s, dyes were obtained from natural sources, most commonly from vegetables, plants, trees, lichens, and insects. The traditional methods included exposure of the cloth to the sun for long periods of time or treating the fabric with ashes, then sour milk, and then, finally, boiling the cloth.

With the increased textile production, the traditional methods of dyeing cloth were too time-consuming and expensive, creating a demand for inexpensive dyes. The synthetic dye industry exploded with the creation of “coal tar” dyes. The creation of the synthetic dyes quickly eliminated the production of the natural dyes. The inexpensive synthetic dyes combined with the new available colours were embraced by the textile industry.

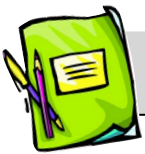
Many industrially driven chemical advances were developed at this time, closely tying the chemical industry with the textiles. In 1855, research into man-made fibres resulted in the creation of rayon, a purified cellulose fibre made primarily from wood pulp; however, this “artificial silk” wasn’t commercially produced until 1924. Nylon, a synthetic polymer, was first introduced in 1939, and developed at the DuPont research facility. Even today, many of the large textile companies are owned by chemical companies.

Food Processing

As industry became concentrated in smaller geographic areas, the population also began to move to the areas where labour was needed. Entire families moved to these areas, resulting in larger population densities than had ever been seen before. Most of these people had no means of growing their own food and many had nowhere to buy it. Food preservation techniques of the day, such as drying, pickling, and fermenting, could not meet all the needs of an increasing urban population.

During the Napoleonic Wars, the French government offered an incentive to anyone who could design an inexpensive but effective method of preserving food. In 1809, Nicolas Appert, a French confectioner and brewer, found that food cooked inside a glass jar was an effective method of preserving food. The glass jar proved difficult to transport, however, and, in 1810, the glass jar was replaced with a tin can, a version of which you still see today.

Canning works by destroying micro-organisms that can spoil food. The easiest way to do this is by exposing the food to high temperatures. Initially, canned food needed to be boiled in water for up to five hours in order to be sterilized, but the chemists improved the efficiency by adding calcium chloride to the boiling water. This increased the boiling temperature by 16°C and that reduced the boiling time to about half an hour.



Learning Activity 5.1

The History of the Industrial Revolution

1. What is the definition of industry?
2. What is the definition of the Industrial Revolution?
3. List three industrial and economic changes brought about by the Industrial Revolution.
4. List three social and cultural changes brought about by the Industrial Revolution.
5. List two causes of the Industrial Revolution.
6. Explain the basic water mill technology.
7. As best as you can, redraw the basic diagram of Watt's steam engine. Be sure to label the direction of the steam.

The Distribution of Industry

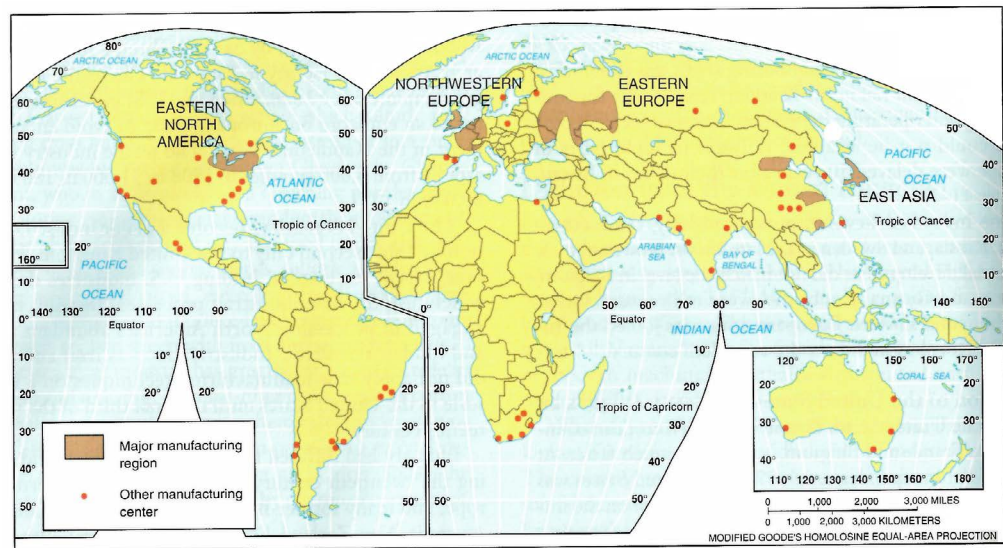
About three-quarters of the world's industrial production is located in four main geographic areas.

1. North America
2. Western Europe
3. Eastern Europe
4. East Asia

Figure 5.5 shows the general locations of industry. Use a world atlas to trace the progression of industry as well as to get a good sense of the location of industry in each of those general areas.

Figure 5.5

FOUR MAIN MANUFACTURING AREAS OF THE WORLD



Source: Rubenstein, James M. *The Cultural Landscape: An Introduction to Human Geography*. 7th ed. Upper Saddle River, NJ: Pearson Education, 2003, p. 354. Reproduced in accordance with fair dealing guidelines.

North America

The first place settled during the European expansion was the northeastern United States (includes the states of Maine, New Hampshire, Vermont, New York, Pennsylvania and Ohio among others) and southeastern Canada (lower Québec and Ontario). The geography of the area was ideal because of the availability of water needed for both power and transportation. This resulted in relatively high population densities in these areas. These three factors—power, transportation, and population—along with the availability of raw materials, such as iron and coal, were instrumental in building the infrastructure that helped the establishment of industry.

North America	
Area	Manufacturing Industry
Area around Boston, Massachusetts	The textile industry processed cotton from the American south and shipped the finished textile products back to Britain.
Belt between New York City and Baltimore	High population levels required most of the manufacturing to be in consumer goods.
Buffalo, New York, and around the south shore of Lake Ontario	Steel, food processing, aluminum, paper, and electrochemical industries flourished in this area due to the abundance of agricultural land, trees, and electricity.
Pittsburgh and Cleveland areas	The steel production industry developed in this area. Ore was brought in from the Appalachian mountains and distributed via the Great Lakes.
Area between Lake Erie and Lake Michigan, including Milwaukee, Chicago, Detroit, and Toledo	This region had the three main factors (power, transportation, and population) needed for industrialization, but the location (the centre of the continental United States) was the reason this region became a transportation hub where manufactured goods could reach the rest of the country (or continent). Automobile manufacturers converged there for the same reason.

In recent years (since the 1980s), the west coast of the United States has seen notable growth in industry, specifically in ship building, aircrafts, textiles, food processing, and the computer industry.

Most major American brands, including HP, IBM, Microsoft, and Apple (all information technology corporations) are based in northern California (known as Silicon Valley). This name now refers to the high-technology economic sector of the United States, not just the silicon chip innovators. It is also home to Hollywood, the centre of the entertainment industry.

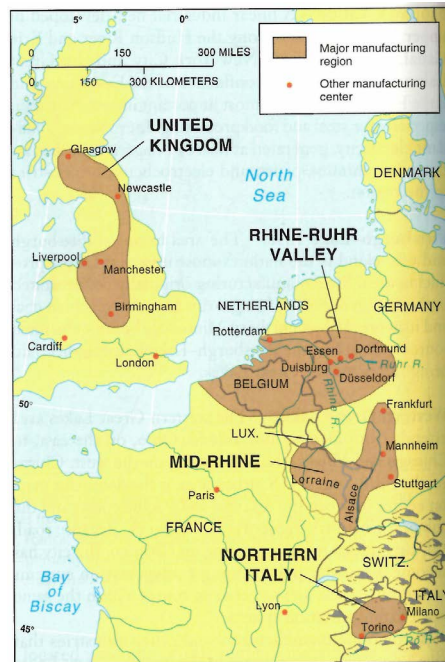
In Canada, the St. Lawrence Valley and Ontario Peninsula have all the requirements of an industrialized zone, including inexpensive power, raw materials, access to transportation, and a relatively large population base. The same industrial activities occurred here as in the United States and Europe; however, because of the smaller population, industrialization happened on a smaller scale.

Western Europe: Four Distinct Areas

Western Europe	
Area	Manufacturing Industry
<ul style="list-style-type: none"> ■ Rhine-Ruhr Valley is located mostly in Germany (cities of Cologne and Düsseldorf), but also includes Belgium, France, and the Netherlands (city of Rotterdam). ■ Though it has more than 20 million people, most cities have populations between one and two million people. ■ Two rivers run through the region, providing transportation to the North Sea and the rest of the world. 	<ul style="list-style-type: none"> ■ Iron, steel, and heavy equipment manufacturing have historically been the main industries, although that has been replaced by the food processing industry. ■ Service industries in financial and information technologies are growing in importance.
<ul style="list-style-type: none"> ■ Mid-Rhine area includes southwestern Germany (city of Frankfurt), northeastern France (city of Alsace), and the small country of Luxembourg. 	<ul style="list-style-type: none"> ■ The region lacks abundant raw materials, (although Luxembourg has a thriving steel industry) but its skilled labour force and central European location compensate for that. ■ Manufactured goods consist mainly of a variety of consumer items and chemicals.
<ul style="list-style-type: none"> ■ Britain is the site of the Industrial Revolution. ■ Britain has some of the oldest infrastructure and factories. Outmoded and deteriorating facilities were partly the cause of Britain losing its industrial world dominance in the mid-20th century. ■ After World War II, Germany and Japan rebuilt destroyed factories with modern ones, allowing the factories to surpass former production. 	<ul style="list-style-type: none"> ■ Britain responded with a focus on high-technology industries and political changes (lower taxes, fewer government regulations) to encourage economic growth.
<ul style="list-style-type: none"> ■ Po River Basin is located in northern Italy. ■ One-third of Italy's population lives here. ■ Industry started with textile manufacturing in the 19th century. ■ The two factors that encouraged development were (a) a large workforce willing to accept lower wages, and (b) cheap electricity from the Alps (mountainous area in central Europe). 	<ul style="list-style-type: none"> ■ The economic strength of the region is in manufacturing, mainly in small and medium-sized family-owned firms. ■ The major industries today are precision machinery, motor vehicles, chemicals, pharmaceuticals, electric goods, tourism, fashion, and clothing.

Figure 5.6

WESTERN EUROPEAN MANUFACTURING ZONES



Source: Rubenstein, James M. *The Cultural Landscape: An Introduction to Human Geography*. 7th ed. Upper Saddle River, NJ: Pearson Education, 2003. p. 356. Reproduced in accordance with fair dealing guidelines.

Eastern Europe (and Western Russia): Seven Distinct Areas

Eastern Europe (and Western Russia)	
Area	Manufacturing Industry
<ul style="list-style-type: none"> The oldest industrial region is centered on Moscow even though there are not a lot of natural resources (coal, iron) in the area. 	<ul style="list-style-type: none"> The population is high enough that a skilled workforce exists and manufacturing of consumer goods dominates. Other important industries are textiles, chemicals, software, energy, and light industrial goods.
<ul style="list-style-type: none"> St. Petersburg is Russia's western-most city, and the second largest. 	<ul style="list-style-type: none"> The industrial district surrounding the city specializes in many things, including shipbuilding and other industries serving Russia's navy (close to the Baltic Sea). Modern industrial activities include finance, oil and gas, aerospace, ICT, heavy machinery and transport, ferrous and nonferrous metallurgy (production of aluminum alloys), chemicals, pharmaceuticals, and a variety of others.

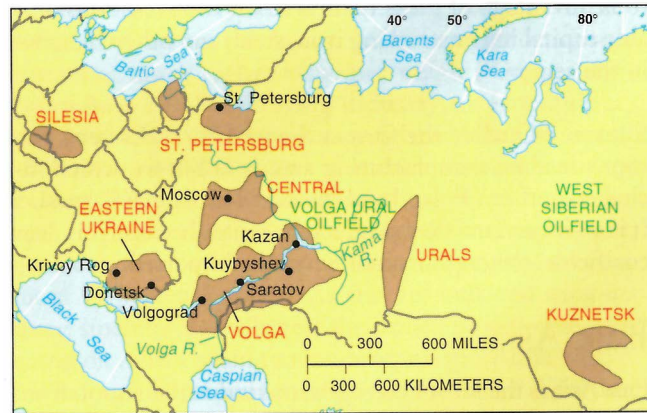
continued

Eastern Europe (and Western Russia) (continued)	
Area	Manufacturing Industry
<ul style="list-style-type: none"> ■ Eastern Ukraine 	<ul style="list-style-type: none"> ■ It has one of the largest coal deposits in the world, combined with iron ore, manganese, and natural gas. ■ The area is one of Eastern Europe's largest producers of steel and iron.
<ul style="list-style-type: none"> ■ The Volga Industrial District, located in southwestern Russia, developed into an important industrial centre during the Second World War. 	<ul style="list-style-type: none"> ■ The district has major oil and gas reserves. The petroleum industry goes hand-in-hand with the chemical industry. ■ The district is also known for vehicle manufacturing and metallurgy.
<ul style="list-style-type: none"> ■ The Urals Industrial District ■ The amount of different kinds of resources prompted the former Soviet government of the USSR (1922-1991) to locate many related industries there; however, because there are no nearby energy sources, development isn't what it could be. 	<ul style="list-style-type: none"> ■ This region benefits from the wealth of minerals found in the Ural mountain range that has a greater variety of deposits than any other region on the planet.
<ul style="list-style-type: none"> ■ Kuznetsk is Russia's most important manufacturing district east of the Ural Mountains. 	<ul style="list-style-type: none"> ■ It contains huge amounts of both coal and iron and, during the Soviet era, the state invested heavily in developing the iron and steel industry.
<ul style="list-style-type: none"> ■ Silesia, a region in eastern Europe, includes southwestern Poland and the northern part of the Czech Republic. 	<ul style="list-style-type: none"> ■ It is a resource-rich area, especially in high-quality coal. ■ It is an important steel production area even though iron ore needs to be imported.

Figure 5.7 gives the general location of the industrial zones spread throughout Eastern Europe and Western Russia. If you have an atlas or access to the Internet, you will be able to find a more detailed picture of the area.

Figure 5.7

EASTERN EUROPEAN MANUFACTURING ZONES



Source: Rubenstein, James M. *The Cultural Landscape: An Introduction to Human Geography*. 7th ed. Upper Saddle River, NJ: Pearson Education, 2003. p. 357. Reproduced in accordance with fair dealing guidelines.

East Asia

As an entire region, East Asia has a wide range of industrial development that is reflected in the range of Human Development Index (HDI) values as well as the gross domestic product (GDP). The disparity among countries in this region is clearly shown in the two tables that follow.

Human Development Index (HDI)	
Country	Ranking
Japan	12th
South Korea	15th
Taiwan	18th
Vietnam	40th
China	101st
Nepal	157th

Data Source: United Nations Development Programme. "Human Development Index." *Human Development Reports*. <http://hdr.undp.org/en/>.



Note: The UN does not recognize Taiwan as a separate country from China so it does not have an HDI assigned. However, as reported by the *China Post* (January 18, 2011), the local Directorate-General of Budget, Accounting and Statistics, has used the same method of calculation and determined that Taiwan would be ranked 19th in the world. (See www.chinapost.com.tw/taiwan/foreign-community/2011/01/18/288084/Taiwan-ranks.htm.)

Gross Domestic Product (GDP)	
Country	Ranking
China	2nd
Japan	4th
South Korea	12th
Taiwan	19th
Vietnam	40th
Nepal	94th

Source: Wikipedia. 2011. [http://en.wikipedia.org/wiki/List_of_countries_by_GDP_\(PPP\)](http://en.wikipedia.org/wiki/List_of_countries_by_GDP_(PPP))



Note: This 2011 data was obtained from the IMF (International Monetary Fund).

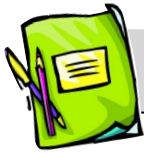
It should be noted that the level of industrial output does not always reflect the level of human development as defined by the UN.

All the countries of East Asia are a long way from western markets yet a few manufacture consumer goods to be sold in those distant markets. Faced with relative economic isolation and a lack of natural resources, East Asia has taken advantage of its most abundant resource since WWII: the large labour force.

Beginning in the 1950s, Japan started manufacturing relatively inexpensive consumer goods that, even with significant shipping charges, remained inexpensive on the European and North American markets. This was possible because of their extremely low labour costs, as well as because of their politically backed plan.

By the late 1960s, Japan realized that neighbouring countries, such as Taiwan and South Korea, were following their economic lead and doing the same thing to build their economy and manufacturing capacity. Those countries had even lower labour costs than Japan. Not wishing to compete with Taiwan and South Korea, Japan embarked on a plan that resulted in an earned reputation for a skilled workforce that produced (and continues to do so) high-quality electronics, automobiles, ships, cameras, stereos, computers, cellphones, smart phones, and televisions.

In recent years, China's development has become a fascinating example of what a country is capable, in terms of industrial and economic development.



Learning Activity 5.2

Industry in Your Community



Note: This learning activity requires that you complete some outside research. Use the Internet, an encyclopedia, a history book, and your local library. You may also find some useful information by simply talking to your learning partner or members of your community.

1. What area of Manitoba do you live in? Indicate the name of a community, town, city, or region.

Examples: Black River First Nations Community, Pilot Mound, Winnipeg, Interlake Region

2. What is a prominent industry on which this area relies? Briefly describe the industry.

Industries could include agriculture, forestry, mining, generation of electricity, transportation, steel, fishing, manufacturing, technology, aerospace, energy, life sciences, tourism, creative industry (music, movies, art, theatre, advertising, digital media), and so on.

A good resource to learn about the different industries in Winnipeg is www.economicdevelopmentwinnipeg.com/strategic-sectors.

If you do not live in the Winnipeg area, type in keywords, such as the name of the industry and the name of your community, into a search engine such as Google for online sources.

3. Write down a few points for each of the following questions:
 - Does this industry provide a good or a service? Describe the good/service.
 - Does this industry rely mostly on people, transportation, or power (energy)? Is it a combination of the three? Explain.
 - What other factors can you identify that have supported this industry?

Example: Is it cheaper to operate this industry in your area compared to other places?

Example: Is the area accessible to outsiders?

Example: Is the industry supported by government funding? Is there any sort of local, provincial, national, or even international partnership involved?

continued

Learning Activity 5.2: Industry in Your Community (continued)

Example: Does the industry rely on research, culture, infrastructure, etc.?

- Has this industry contributed to the region's sense of community? If yes, in what ways? If no, why do you think that is?
 - How successful is the industry? Do you see a bright future for the business? Why or why not?
4. What is the level of development in this region? What connections can you make between the standard of life and the presence of this industry in this area?
 5. Can you think of any new industries that would benefit your area? Which one(s)? Why might they succeed in your area?

Example: Building a greenhouse in northern Manitoba to grow fresh fruits and vegetables to sell to the local population.

Location Factors of Industry

Many of the same factors that explain where people settle also apply to where industry locates. These factors include

- the presence of natural resources (includes raw materials and energy sources)
- the layout of the landscape (affects construction of infrastructure)
- the climate (affects labour conditions and cost of services such as heating/cooling)
- the position (proximity to major transportation routes)
- the labour (total number of trained/trainable workers, value of wages)
- the government regulations (tax incentives, fewer restrictions, and a suitable infrastructure)



Infrastructure is the combination of services available in a community, including roads, hydro, sewer and water, police and fire protection, telephone, Internet, mobile phone networks, and other communications.

The owners of an industry make decisions regarding possible locations based on many factors. There is always the consideration of profit, low costs, climate, and other conditions that affect industry, such as

- regulations
- additional costs due to environmental concerns
- rising demands from labour



There are many other pressures that can force a business to pick up and move to a better location. Some call this overcoming **industrial inertia**—the body at rest wishing to remain at the current condition until moved or altered by some external force (similar to a person staying in bed until forced to get up).

There are two main factors that determine the large-scale distribution of industries, both based on the goal of maximizing profits and minimizing costs.

■ **Situation factors**

- These come into play with regard to the transportation of materials to and from a factory.
- Businesses seek out locations that make it easy and inexpensive to receive raw materials as well as to ship out finished goods to the consumers.

■ **Site factors**

- These factors result from the unique characteristics of a location.
- Land, labour, and capital are the three traditional production factors that may vary among locations.

The factors that determine the location of an industry also determine the method of production. The different categories of production are

■ **Materials-oriented production**

- Every industry uses inputs (materials) that vary from natural resources to other manufactured goods.
- Weight and bulk determine transportation costs, which influence location.

■ **Market-oriented production**

- For many businesses, the best location is close to markets.
- The cost of transporting goods to consumers is critical for bulk-gaining industries (soft drink bottling), single market manufacturers (garment parts such as zippers, automotive parts), and perishable products (bread, milk).

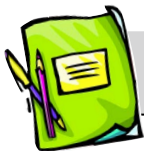
■ **Transport-oriented production**

- There are four modes of transportation—ship, rail, truck, and air. These modes vary in cost depending on the distance being transported—the longer the distance, the cheaper the “per km” cost, largely due to the cost of loading and unloading.
- Ship transport is cheapest, followed by train, then truck, and most expensive is air transport. If a product is going to be shipped by sea, then production is going to be as close to the port as possible.



- **Break-of-bulk points** are geographical locations where two or more modes of transport meet. Many industries that use multiple modes of transportation are located near break-of-bulk points (i.e., steel mills located near rail-sourced coal and ship-sourced iron ore).
- **Energy-oriented production**
 - Both the cost of energy and the supply are characteristics that must be considered in production. Historically, lumber and paper mills have been located on rivers that provide inexpensive hydroelectricity. Production of energy-intensive aluminum is located near inexpensive and plentiful sources of electricity.
- **Research-oriented production**
 - Any type of higher technology or information-based service/production needs an educated workforce.
 - A good example of higher technology would be Apple factories in China. According to the biography of the late Steve Jobs (CEO of Apple Inc), production of their products was located in China largely because most other countries could not provide the number of engineers and technicians needed to manufacture the amount of product that the market demanded.
 - An example of information-based service would be the number of tech-based call centres in India.

Some industries are able to go to several places just as easily. As such, they are rated as “footloose”—able to go wherever the industry management team thinks is a good idea.



Learning Activity 5.3

Location Factors

1. List and describe the two main factors that determine the larger-scale distribution of industries.

2. Fill in the blanks in the following statements.

Materials-oriented production: Every industry uses _____ (materials) that vary from natural resources to other _____ goods.

Market-oriented production: For many businesses, the best location is close to _____.

Transport-oriented production: There are _____ modes of transportation: _____, _____, _____, and _____. _____ is cheapest, followed by train, then truck and most expensive is _____ transport.

_____ are geographical locations where two or more modes of transport meet.

Energy-oriented production: Both the cost of _____ and the _____ are characteristics that must be considered in production.

Research-oriented production: Any type of higher technology or information-based service/production needs an _____ workforce.

3. Which of the location factors of industry do you think is most important? Why?
-

The Problems of Industry

Industrial growth is considered a priority in maintaining the health of the global economy. There are, however, issues with this from a global perspective, both for developed and developing nations.

From a **global** perspective, the biggest challenge is the gap between supply and demand. With technological development, the capacity to manufacture goods has increased beyond consumer demand. Stagnant demand has become more common in more developed nations, where slow population growth, minimal increases in spending power, and market saturation (people have all the appliances they need) have resulted in “flat” demand.

Other reasons for the “flat” demand include

- Older items are replaced with new and better quality items that need replacing less frequently.
- There is a lower demand for steel—cars built today contain about one-fourth the steel of those built in the 1980s, yet global steel production capacity has increased.
- Developed nations no longer have colonies like they did in the 19th century. In the 1800s, industrialization was located in the “mother country,” and the market was largely the colonies. Today, most former colonies are independent nations that are developing their own industries.

Developed nations are challenged to keep their industries competitive in an increasingly globalized economy, all the while dealing with their own distinctive geographical issues. Developed industries must protect their markets from competition and developing nations must identify new markets and sources of capital to generate industrial growth.



One way the developed nations protect their markets is by forming **trading blocs** where groups of countries cooperate in trade with each other, and compete against the other blocs. There are three main global trading blocs.

- Western Hemisphere (i.e., North American Free Trade Agreement)
- Western Europe (i.e., European Union)
- East Asia



Cooperation and competition within and among trading blocs take place mainly through the actions of large **transnational corporations**, sometimes called multinational corporations. These companies open manufacturing facilities (branch plants) in countries other than the one in which its headquarters are located.

This is done

- to increase markets
- to get around local import trade restrictions
- to avoid local stagnant demand
- to reduce production costs by relocating to an area of less expensive labour

The final challenge that developed nations face is the unequal distribution of wealth that exists within each country. Differences in unemployment, average income, and per capita gross domestic product pose difficulties related to health and well-being, uneven funding of social programs, internal migration (people moving around within the country), and social unrest.

Developing nations are looking to reduce the difference in wealth between the developed nations and themselves. As such, they look to industrialization to expand their economies, which are dominated by agriculture.

Industrial development can both raise the value of exports as well as generate the money needed to buy other products. If western countries built their wealth on industrial modernization, why can't the developing nations? The three main reasons are

- developing industries are too far from the wealthy consumers of developed nations
- inadequate infrastructure (transportation, education, communications, energy, no steel manufacturing)
- few untapped foreign markets and local markets that are too small, making it hard to compete with imports

Those barriers are balanced by developing nations following two main advantages:

- access to raw materials
- inexpensive, abundant labour

The labour factor is most influential in attracting transnational companies, many of which will have branch plants in developing nations that make use of unskilled labour, while keeping the highly skilled workers busy at the home plant.

Industrial Effects

Industry and Development: For Better or For Worse?

When Manitobans see the word “development,” they often think of a building project, such as houses on what were once farmers’ fields, or the change from a city lot to a shopping mall or factory site.

The term also involves a choice about land use and recognizes that change is often driven by the economics of a new and “better” use of the land. You saw this split in what is “better” over the debate for and against development that involves the cutting down of tropical forests or diverting waters for irrigation purposes, such as the Aral Sea scenario.

On a global level, a discussion of development most often involves a discussion of industry. It signifies the creation of factories and processing plants, and of improved agriculture and irrigation projects that create employment and harness the economic potential of resources. As always though, there are two sides to this debate.

Industry Development	
Pros	Cons
<ul style="list-style-type: none"> ■ development of industries provides employment ■ industries make better use of the natural resources ■ industries provide a supply of goods for global markets 	<ul style="list-style-type: none"> ■ new industries spread pollution ■ ineffective management, oversight, and accidents can often lead to major disasters (e.g., Three-Mile Island, Chernobyl) ■ money borrowed to facilitate development contributes to government debt ■ profits and interest payments flow back to the lender nation (often a wealthy developed country)

Development projects can be controversial because often the people who claim to know the best way of “improving” an industry tend to ignore the needs of the local populations and are focused only on making a profit. Consider the following scenario: A development project, supported by the government of a developing country, plans to set up a government-owned milk store in a rural farm village. On the surface, the idea sounds wonderful. The milk would be processed, packaged, and available to everyone for purchase, and the store might provide two or three new jobs in the community.

The closer you examine the issue, however, the less it seems like a good idea. What if the money to build the store must be collected from peasant farmers who cannot afford an increase in taxes? What if the set price of milk is too expensive for most of the villagers to afford? What if the creation of the store destroys the livelihoods of villagers who own cattle and sell milk to their friends and neighbours for a living?

Another problem is that development projects often displace existing activities and businesses. For example, a plate and bowl manufacturing industry will put the local potters out of business. One side of the argument is that those same potters have skills that can be used in the factory. Others might argue that the wages paid are below minimum wage and development can't exist where workers' wages don't support a decent standard of living. A further consideration is what happens if the project stops and the developing country hasn't the available funds to pay for either the social welfare or re-education costs to assist those affected by the closure.

Development is never as simple a process as it seems, and it is important to think critically about these issues, especially when transnational companies and governments make broad claims about who these projects will benefit in the long run.

The Effect on Society and the Economy

Industrialization and its effect on societies ties in closely to the topic of development. The unequal distribution of resources can lead to unequal trade relationships and have a negative effect on jobs, leading to a cycle of poverty and debt. This takes us into the topic of resource misuse, seen mainly as waste buildup, pollution, and the need for conservation.

The overabundance of global steel production resulted in the closure of many less-efficient steel production facilities. This has had a negative effect on many cities, such as Gary, Indiana, where the numbers of employees dropped from a high of 30,000 in the 1970s to only 8000 just two decades later. Aside from the obvious economic impact, imagine the drop of morale in the community. The ripple effect is far-reaching—as steel production drops, the coal mining communities, such as those in Nova Scotia, also have to deal with unemployment and low morale.

Canadian industrial and manufacturing labour are not immune to the changes pushed on companies by this type of globalization. Relatively high labour costs here have resulted in jobs being moved overseas. The Winnipeg garment industry has felt the effects of this aspect of globalizaiton.



Globalization refers to a process of worldwide integration of financial markets, international trade, and cultural exchange. Globalization is facilitated by technological advancements in transportation and telecommunications.

The following chart provides a quick summary of the advantages and disadvantages of globalization on industries. It is important to remember that individual people, organizations, businesses, and governments approach the phenomenon of globalization in different ways, depending on their various interests and political, social, or economic goals.

Potential Advantages and Disadvantages of Globalization on Industries	
Advantages	Disadvantages
Promotes global economic growth <ul style="list-style-type: none"> ■ creates jobs ■ makes companies more competitive ■ lowers prices for consumers 	Potential widening of the gap between the rich and the poor
Potential increase in support for democracies and respect for human rights	Transnational corporations could be held responsible for <ul style="list-style-type: none"> ■ social injustice ■ unfair working conditions ■ lack of concern for the environment ■ mismanagement of resources
Creates a global marketplace for companies and consumers	Transnational corporations could have increasing power to influence political decisions and less accountability for their actions
Greater spread of information and technology	Developing countries could be exploited by the developed countries for their natural resources and large labour forces
Increased cultural integration	Possible preference of the American culture
Companies more invested in reducing their ecological impact	Increase in the spread of communicable diseases such as HIV/AIDS
Greater respect when interacting with people of different cultures and backgrounds	Exploitation of labour <ul style="list-style-type: none"> ■ child/prisoner labour ■ human trafficking ■ ignored safety standards
Mass communication	Social welfare programs potentially under increased pressure to provide for the poor

Possible Environmental Effects

Historically, the effects of heavy industry (mining, coal, iron, and steel production), plus the production and use of fossil fuels and related products and chemicals, have damaged the environment. We have learned and continue to learn from mistakes of the past, yet in spite of nature's impressive ability to recover from attempts to take advantage of the raw resources of the world, most modern geographers agree that sustainable industrialization is the way of the future.

To that end, the United Nations Development Plan (UNDP) supports sustainable industrialization in developing nations. The UNDP is committed to promoting low carbon, climate resilient, and inclusive development.

For example, in 2007 the UNDP entered into a partnership with India to promote sustainability in several areas. The UNDP supports the Government of India in meeting national development objectives along with commitments under important environment agreements. Key areas are

- climate change
- sustainable natural resource management
 - conserving biodiversity
 - addressing land degradation
- integrated chemical management
 - phasing out of ozone depleting substances
 - reducing persistent organic pollutants



Specific to sustainable industrialization, the main goal is to involve all the players by building stakeholder capacities and involvement. A **stakeholder** is an individual (perhaps representing a company) who has an interest in a business and has invested or will invest money into that business. The project, in partnership with the Indian Ministry of Environment and Forests, aims to influence industries to *voluntarily* improve their environmental performance, strengthen regulatory systems, and increase community engagement in local industrialization processes.

The project was scheduled to continue into 2012, with the aim of working toward the following goals:

- understand greenhouse gas (GHG) emission profiles of key emitting sectors such as cement, fertilizer, thermal power plants, pulp, paper, and steel
- better monitor water quality and development of action plans for critically-polluted areas
- monitor wastewater treatment plants and analyze trace metal pollutants
- better understand industrial projects amongst a range of stakeholders
- greater awareness generation of relevant environmental issues at public hearings
- enable a more informed understanding in civil society through training of different stakeholders, environmental clearance process, mining, and thermal power plants
- provide inputs to policy discussions on the rapid industrialization of the state of Chhattisgarh

For further information, visit www.undp.org/content/india/en/home/operations/projects/environment_and_energy/sustainable_industrialization-buildingstakeholdercapacityandinv/.

Any endeavour devoted to sustainability has the goal of maintaining the balance between energy and the resources used, the waste produced, and the well-being of all living organisms in the system. This includes present and future populations.

Possible Political Effects

The role of government in the development of industry is crucial. Indeed, the “how, when, and where” of industrialization are determined by the leadership role of government policy.

A government usually has both short- and long-term plans to provide for the development of the whole economy, including all types of industry that it wants to encourage. The role of the government is multi-faceted in that it can support industry in a number of ways.

- government as a business partner
- government as a researcher
- government as a banker
- government as an educator
- government as a facilitator (greater or lesser rules and regulations, subsidies to encourage/discourage growth, including such things as immigration policy to enhance a country’s human resources)

Industry can influence the government by

- lobbying politicians
- getting involved in the political process (i.e., financially supporting a political group, campaigning on their behalf, participating in fundraisers and other events)
- providing economic support

You may recall from other courses (the civics unit in the Grade 9 Social Studies course) that citizens in democracies can participate in government through various means such as joining a political party or being part of a special interest organization engaged in lobbying the government in power. The same goes for industries. For example, over the years industries such as the fossil fuel industry have influenced many government policies both at home and abroad.

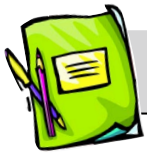
The goal of the involvement has been to make the process of exploration and development of resources easier, as well as to develop foreign relations with other countries that further the development. This would also include building relationships with transnational corporations and local industry.

The Role of Advancing Technology

The role of advancing technology is increasingly influential on industries. The harnessing of machinery and energy has allowed the production of more goods for less cost, which means that those with money benefit. The speed of the change in technology over the last several decades has affected many old, established industries and created many new ones.



Technology is the application of scientific knowledge for practical purposes (*Oxford Dictionary*, 10th edition). The improvements over time are called technological progress. The way that we do things can be improved—for example, the older independent study courses were once typed on typewriters and then re-typed when changes were made. Now the original typing can easily be edited and reprinted using computers.



Learning Activity 5.4

Problems and Effects of Industry

1. What is the biggest challenge of global modern industrialization?
 2. What is meant by **stagnant demand**?
 3. What are the different industrial challenges faced by both developed and developing nations?
 4. How do nations protect their markets? Provide three examples.
 5. What are some disadvantages **and** advantages experienced by developing nations that are increasing their levels of industrialization?
 6. List two possible advantages and two possible disadvantages of industrialization.
 7. List **two** ways the government influences industrial development and two ways industrial businesses can influence the government.
-

Lesson Summary

Since the Industrial Revolution, the generation and management of industry has had a revolutionary effect on the world. The amount of industrial change and the speed at which it is occurring continues to be unprecedented in human history.

You are now somewhat familiar with the history of industrialization and you should be able to discuss factors that influence the location of industry as well as the effect industry has had on society, the environment, the economy, and politics. The level of development of a country also influences industrialization, and vice versa.

Modern industrialization reflects the changes that have occurred over the last two centuries as well as the technological advancements in information and communication technology; however, these changes have also created problems specific to industrialization. One of the primary roles of modern governments is being able to recognize and deal with these challenges while coordinating the framework necessary for economic, social, and environmental sustainability.

Notes



Assignment 5.1

Industrialization (42 marks)

This lesson discussed industrialization and the effects of the Industrial Revolution on the world. These effects vary depending on where the industry is located (level of development is an important consideration) as well as a number of other factors. This lesson organized the effects of industrialization into the following general categories: social, economic, environmental, political, and technological.

Assignment 5.1 is divided into three parts.

- Part A: Multiple Choice (7 marks)
- Part B: Role Play (20 marks)
- Part C: Industrial Events and Effects (15 marks)

Part A: Multiple Choice

Circle the correct answer.

1. Which of the following is **not** a cause of the Industrial Revolution?
 - a) advances in sanitation
 - b) trade networks
 - c) large amounts of spare capital
 - d) invention of the Internet and cell phones

2. Trade networks gave countries greater access to
 - a) inexpensive natural resources
 - b) exotic fruits and spices
 - c) fresh water supplies
 - d) information technology

continued

Assignment 5.1: Industrialization (continued)

3. Advances in sanitation **did not** lead to
 - a) a higher population
 - b) an increased use of machines
 - c) less disease and lower infant mortality
 - d) a larger industrial workforce

4. Steam power was primarily used for
 - a) textile machines
 - b) farm equipment
 - c) transportation
 - d) metallurgy

5. New machines allowed for _____ production at a _____ cost
 - a) higher, lower
 - b) higher, higher
 - c) lower, higher
 - d) lower, lower

6. Education was transformed through
 - a) better teachers
 - b) institutionalization
 - c) bilingual education
 - d) larger class sizes

7. Water mills worked by
 - a) moving pistons powered by steam
 - b) harnessing the power of moving water to turn an axle
 - c) straightening out cotton fibres before they were twisted into thread
 - d) drying, pickling, and fermenting food

continued

Assignment 5.1: Industrialization (continued)

Part B: Role Play

Imagine you have been hired by a transnational snack food company as an “industrial geographer.” You are expected to know the industrial factors that are important for your company to stay successful. You have been asked to do a presentation on the “ABCs of Industrial Location Factors” for the summer student staff.

Note: Remember that transnational companies operate manufacturing facilities in countries other than where their headquarters are located.

1. Choose a format for your presentation.
 - Written response (400 to 500 words, double-spaced, 12 point font)
 - *PowerPoint* presentation (8 to 10 slides, 14 to 16 point font, one image per slide)
 - Poster (28" × 22", at least 8 to 10 images and text for explanation)

Note: You will hand in Part B separately from the rest of the assignment. If you choose to create a written response or *PowerPoint* presentation, you will either print the response or slides and either mail or electronically submit them to the Distance Learning Unit.

If you choose to create a poster, you may either mail your poster or electronically submit a picture of the poster. Be sure that the picture file is clear. You may have to take multiple photos of the poster to zoom in on the text.

2. The company you are representing is part of the **food industry**. Give a brief history of the company's origin. (5 marks)
 - What is the name of your company? When was it established?
 - What good does your company produce?
 - What is the size of the company?
 - Who is the company's target market?
3. Explain the **site** and **situation** factors of the company. (5 marks)
 - How are the materials transported to and from the factory?
 - What are the characteristics of the land?
 - Who is employed to work for the company? What are their wages?
 - What are the production costs?
 - How profitable is the company?

continued

Assignment 5.1: Industrialization (continued)

4. In complete sentences, explain how the following industrial factors affect your company: (7 marks)
 - Regulation
 - *Example:* food safety, food quality, industry lobbying activities
 - Research and development
 - *Example:* food technology
 - Manufacturing
 - *Example:* use of chemicals, farm machinery, infrastructure
 - Agriculture
 - *Example:* crops, livestock, seafood
 - Food processing
 - *Example:* fresh or prepared food products
 - Marketing
 - *Example:* advertising, packaging, public relations
 - Wholesale and distribution
 - *Example:* warehousing, transportation, logistics
5. In three to five sentences, discuss the effects of the industry (positive and negative) in relation to **one** of the following categories: (3 marks)
 - social
 - economic
 - environmental
 - political
 - technological

continued

Assignment 5.1: Industrialization (continued)

Part C: Industrial Events and Effects

This section will require you to answer three questions related to the Industrial Revolution and the effect that growing industries have had on the world.

1. In point form, list **five** changes (social, economic, environmental, political, or technological) which resulted in the spread of the Industrial Revolution. (5 marks)

2. Canadian industrial and manufacturing industries are not immune to the changes that globalization has pushed on companies. Do you think that globalization is generally advantageous or disadvantageous for local populations? (5 marks)

- Write a paragraph response that includes at least three advantages or disadvantages.
- Be sure to state your personal opinion.
- Support your answer with facts, statistics, and/or examples.

continued

Assignment 5.1: Industrialization (continued)

3. On the chart below, indicate whether the industrialization trend is positive or negative. Use **P** for positive and **N** for negative. (5 marks)

Industrialization Trends	
P or N	Trend
	better, more efficient use of renewable resources
	less suffering/illness
	poor management of renewable resources causing environmental damage
	greater communication leading to fewer global conflicts
	greater gap between the "have" and "have nots" within and between countries
	more competition leading to more global conflicts
	better, more efficient use of non-renewable resources
	running out of non-renewable natural resources
	more suffering/illness
	comfortable standard of living for humanity

LESSON 2: URBANIZATION

Lesson Focus

By the end of this lesson, you will

- Read about the function of urban areas.
- Identify which factors cause urban areas to develop and grow.
- Identify which factors limit urban growth.
- Explore the problem of unsanitary living conditions.
- Discuss the future of urbanization.

Introduction

Module 2 introduced the topic of urbanization—the process of people moving from rural to urban areas. The term is also used more generally to refer to the growth of cities and areas of dense human habitation. Urbanization is a process that has many benefits as well as many limitations. This lesson will explore both sides of the issue.

Urban planning is a relatively new concept but has developed into an important profession. Urban planners help growing urban centres to better access and utilize limited resources. They do this by making relevant connections to many of the general geographical concepts outlined in this course.

Development and Growth

In his book, *Welcome to the Urban Revolution*, Jeb Brugmann states that the majority of the people who move to the city do so because they are looking for economic, educational, and “civilizing” opportunities. About 75% of the people who migrate to North America, choose to live in cities.

Historically, city growth has been fueled by migration. Over time, three general types of migration have been identified.

1. **Seasonal migration:** Seasonal changes in climate and agricultural patterns force many rural workers to enter a city for part of the year to work.

2. Chain migration:

- Stage 1: Random, rural risk-takers get established in a city, typically working in a specialized area learned from the rural area (e.g., leather work, brick-making), then play the role of contact/mentor to other family members who follow.
 - Stage 2: Other members of rural communities make the move to larger cities to establish networks in their specialized area.
 - Stage 3: City dwellers move to cities in other countries to expand the already established network.
3. **Fleeing circumstances:** Individuals and families are forced from their traditional rural homes by political factors (war), social factors (economic hardships), or environmental (natural disasters). These people choose the city particularly because they believe that the city offers the best opportunity to improve their economic situation. Many of these migrants would be classified as refugees.

Some who study all things urban might agree with Brugmann that current trends in city growth are comparable to the Industrial Revolution in terms of the amount of change that is happening and the speed at which it is occurring. In fact, the Industrial Revolution was not identified as a revolution until it had been in progress for almost 100 years. Perhaps current urbanization patterns will be identified as an urban revolution in the future.

Urban design can be seen as the language of the city; a way in which the history, culture, and lay of the land are reflected. Understanding the patterns of migration also helps to understand this “language” and perhaps anticipate growth patterns.

Factors of Urbanization

Why do cities exist? There are both economic and psychological pull factors.

Economic Pull Factors: Cities are places where the flow of people and resources come together in ways that facilitate manufacturing, service industries, and buying and selling activities. This hub of activity provides opportunities for a wide-range of people and organizations, from the street vendor to government institutions and transnational corporations.

Psychological Pull Factors: People are social creatures who work well together and enjoy socializing together. People are attracted to possibilities and discoveries. Urban areas contribute to a person’s sense of place and sense of belonging to a community.

Cities offer far more options with respect to food, entertainment, and recreational activities than do smaller, rural areas. It might be easier to find a life partner in a city than it is in an isolated community. Social supports and interest groups enrich a person's daily life—book clubs, knitting groups, specialized athletic groups, charities, museums, arts groups.



Urbanologists are people who have studied all aspects of cities and urban areas, including their advantages and disadvantages, as well as the design and growth patterns of urban networks. Urbanologists have identified four fundamental economic factors that influence the growth and development of an urban centre—density, scale, association, and extension.

The level of growth and general functionality for any city is determined by the interaction of these four factors within the urban network.

Economic Factors of an Urban Network	
<p>Density: Densely populated urban areas have a high concentration of people in a small space.</p> <ul style="list-style-type: none"> ■ It is less expensive to provide infrastructure such as roads, water, waste management (sewer), power, public transportation. ■ There is greater access to services such as healthcare. ■ Communication costs (for phones, Wi-Fi, Internet connection) decrease. ■ More services are available for the same amount of money. ■ The concentration of jobs and industry pushes up wages. ■ There is greater choice in destinations, and destinations are much closer together. 	<p>Scale: This refers to the size of the economic market. In comparison to a rural area, an urban market has a much greater scale for economic ventures and opportunities.</p> <ul style="list-style-type: none"> ■ More people produce and buy more goods, and provide a larger number of services (size of market increases). ■ A larger market splits fixed costs amongst more customers, which makes the end price less expensive. ■ Greater economic opportunities are available for entrepreneurs.

continued

Economic Factors of an Urban Network (continued)	
<p>Association: This refers to the interactions that take place between people. The number and frequency of interactions increases with a higher population.</p>	<p>Extension: This refers to extending the benefits experienced by one urban area to various other urban and rural areas.</p>
<ul style="list-style-type: none"> ■ The human tendency to organize into groups encourages innovation and collaboration. ■ Sometimes these advantages do not seem as obvious because they are not physical objects or do not have a monetary value. ■ The advantages can be intangible, such as developing skills or emotions. ■ People get positive feelings when they interact with others through the arts, culture, and sports. 	<ul style="list-style-type: none"> ■ Most cities develop around transportation routes and ports to facilitate trade with other places. ■ Growing markets have the opportunity to expand into other urban areas and cities are able to share innovations. ■ An example of this would be the Internet. It was initially only available in a few cities, but then spread to other urban areas and eventually to the rural regions, usually “piggy backing” on the already established phone lines or cellular phone networks. ■ The urban strategy of extending associations between cities is another way of looking at the process of globalization.

These extended urban networks have a notable influence on the politics of countries in the following ways:



- Through **diaspora** (a cultural group living outside of their country of origin) and sending money back home to fuel political and social changes
- Through the demands of commercial enterprises influencing communication changes such as the establishment of cellular phone coverage
- Through the demands of businesses for support/upgrades of transportation hubs



Although most people living in an urban area can take advantage of these benefits and opportunities, there are sometimes people who must fight for the right of **enfranchisement**. Essentially, becoming enfranchised means that people gain control of their social and political rights. These rights enable someone to become a contributing member of the city’s democratic system.

Limitations to Growth

The limitations to the growth of urban areas are the same as the limitations to the growth of any group of living organisms. Biologically, the factors that can limit a population are

- air
- water
- food
- space
- reproductive ability

The availability of these same factors helps shape the appearance of the city, as well as its health and well-being. People living in any given city should be asking themselves questions similar to the following:

- How much space is available? Is the city population expanding or shrinking?
- Is housing safe and affordable?
- What is the basic supply and demand infrastructure like?
- Are there sufficient sanitation facilities?
- Are food and water available at a reasonable price?
- How organized (or disorganized) are the local authorities? Is there a high crime rate?
- Can the level of pollution affect my health?

It is important to consider the reputation of a city with respect to corruption, money peddling, and bribery. Disregard for city laws may be an indication that the municipal government and authorities are not as organized or effective as they should be. As a result of this disconnect between government and citizens, the general health of the city may suffer. Living conditions could deteriorate to the extent that life expectancy drops. Pollution, crowding, and unsanitary living conditions can also result in epidemics, high infant mortality rates, and other health and safety issues. When a city is no longer considered a desirable place to live, people start to migrate out, causing the population to drop.

The following chart summarizes a few of the possible limitations to living in a city.

Limitations to Living in a City			
Economic	Social	Political	Environmental
<ul style="list-style-type: none"> ■ Lack of jobs or an abundance of low-paying jobs ■ Poverty ■ Limited spacing available for housing, which drives up the price for real estate ■ Overpriced goods (inflation) 	<ul style="list-style-type: none"> ■ Little sense of community ■ Overcrowding ■ Overwhelming (can cause stress and anxiety) ■ Higher levels of crime, bribery, and civil disputes ■ Distrust in authorities ■ Gap between social classes 	<ul style="list-style-type: none"> ■ Corrupt government officials ■ Rigged elections ■ Competition more common than cooperation ■ Ineffective policies and city laws 	<ul style="list-style-type: none"> ■ Rising levels of smog and air-based pollution ■ Increasing the size of landfills ■ Fresh water contaminated by sewage ■ Disposable products creating unnecessary waste

Cost of Living

In 2011, *The Economist* referred to the Balassa-Samuelson effect in a discussion of the rising cost of living in urban settlements. This theory, named after the economists Béla Balassa and Paul Samuelson, states that countries with a higher per capita income inevitably will have higher exchange rates. The more money that people earn, the more money they have to spend on local goods and services. This drives the price of goods up, which results in a high exchange rate. When the increase in price is not matched by an increase in wages, it is called **inflation**.



What impact does this have on people living in cities? Although there are a greater number of economic opportunities for people to pursue, there are not enough well-paying jobs for everyone. Cities foster competitive and fast-paced atmospheres. In very large cities, the job market is unable to absorb the surplus of people migrating from rural areas (as a result of either poverty, a lack of security, or a desire to be closer to family). This does not stop the city from being expensive to live in, however, and many people struggle to make ends meet. One of the largest problems that growing cities must overcome is the creation of unsanitary living conditions, which is discussed in the next section.

The “Slum” Problem

In the middle of the 1900s, cities really started to grow. It was also around this time that the growth of cities was underestimated and mismanaged, through both lack of information and neglect.

The dominant problem in cities in developing countries is the formation of areas with unsanitary living conditions, or “slums.” According to a UN Habitat report published in 2007, the word slum is used to describe “a wide range of low-income settlements and poor human living conditions.” Essentially, slums are highly populated settlements where people live in substandard housing structures.

Why do slums exist? The UN report identifies the following as forces which contribute to the creation and continuation of slums:

- rapid rural-urban migration
- political conflict
- increasing urban poverty and inequality
- insecure tenure
- globalization

The United Nations characterizes slums and/or informal settlements by one or more of the following:

- poor quality and structurally instable housing
- overcrowded housing (more than three people sharing a room)
- difficulty living in a rented space for a long period of time
- poor access to water
- lack of sanitation facilities

As informal settlements, slums lack official organization and are not policed by the local authorities. This creates an opening for people to start their own underground, or alternate, economy. This economy can provide opportunities for both legal and illegal activities. Once slums are established, providing basic services becomes more of a challenge and local authorities often show very little respect for these populations.

Other problems facing cities include climate change, transnational crime, political instability, terrorism, epidemics, supply chain breakdowns (for necessities such as food and water), congestion, and riots. Now that these problems are a reality in so many places, major strategies are needed to resolve them.

According to the documentary *Urbanized* (Gary Hustwit, 2012), 33% of new urban dwellers live in slums without consistent access to sewer and water. In fact, sanitation is identified as the biggest challenge to urbanization. For example, in 1989, the city of Mumbai, India, had 900 people per toilet. In 2012, the number had been reduced to 600 people per toilet. According to city officials, the goal is 50 people per toilet. Interestingly, some local politicians expressed concern, indicating that if they provided more toilets, there would be even more people coming to the city. Would toilets be considered a motivating pull factor in North America? If not, can you think of any other pull factors to cities like Winnipeg, Brandon, Thompson, or The Pas?

In the early history of city growth, the strategy to control populations was to take a military approach. This strategy was not well-received by the people and, as a result, morphed into a business strategy. The business strategy was the beginning of globalization trends. Transnational corporations were given a lot of power and the transportation and trade of global goods was based on cheap energy. Following that, global industrial economies promoted more “top down” action plans to deal with major problems in agriculture, intelligence gathering, and global diseases. As cities grow in population and size, the effectiveness of these models seems to drop.

With further study, it is becoming evident that the growth of a city (or lack thereof) is not top down, but the reverse. The local traditions and cultures are what drive how the interactions evolve from local cultural and social conditions.

More and more, city planners are becoming aware of the “bottom-up” influence and taking into consideration the social interactions that occur in the physical spaces being designed. It is difficult to decide what would be the best practice because institutions around the world are not consistent in their approaches to guiding or controlling urban growth.

Making Connections

Present and Future Challenges

Rapid Rural-Urban Migration

For the last 60 years or so, the number of people working in the agriculture industry in developing countries has significantly decreased. Migrants to the city are enticed by economic opportunities (jobs) that may or may not exist. Unfortunately, the formal labour market in many developing cities cannot absorb the huge influx of people. Most of the migrants then must seek jobs within the informal sector (small-scale businesses or odd jobs), which only continues the cycle of poverty.

Political Conflict

Rebel groups, riots, and civil conflicts have forced thousands of people out of their rural homes in an attempt to find safety in large urban centres. Most of these displaced people do not have the means to secure affordable and safe housing within the city and are forced to live in slum settlements.

Poverty

Although people migrate to cities in an effort to escape poverty, the sad reality is that poverty in urban areas is increasing at a rapid rate. Institutions such as the World Bank and the International Monetary Fund have attempted to lift developing countries out of their debt by putting in place structural adjustment programs (SAPs). Unfortunately, SAPs have had a negative impact on urban economies and it is the citizens who suffer as the country tries to pay back its foreign debts to lender nations.

Insecure Tenure

Insecure tenure means that slum dwellers do not typically own or pay for the housing structure they live in. As is often the case with rental properties, the people living in these structures do not feel a sense of ownership over the shelter and, therefore, do not have many incentives to try to radically improve their surroundings. At any moment, they may be forced to pack up and leave, and this makes it difficult for them to want to invest a lot of time, effort, or money into any one particular shelter.

Globalization

Globalization typically includes integrating global economies. Anti-globalization movements are typically characterized by the struggle against capitalist forces and corporate interests. Development policies have been criticized for prioritizing the interests of the already rich and powerful rather than the people who are in desperate need of enfranchisement. The growth of slums is worsened by the increasing gap between the rich and poor and economic structures that maintain systems of inequality and oppression.

Competition for Resources

The greatest future challenge cities face is to transform the competition for resources into governed negotiation practices. This will allow the advantages of living in an urban setting to be shared amongst the entire urban population. Administrations that govern urban areas need to recognize the urban advantages, and then work at setting up a framework of rules that allow the population to take advantage of any entrepreneurial opportunities that present themselves. Every individual should be fully aware of his or her fundamental rights and responsibilities as a citizen.

The concept of a world-city system is beginning to compete with the international system of nation states governed by international organizations such as the UN, WTO, and IMF. It is becoming increasingly clear that global cooperation will be the key to successfully operating urban centres. It will become more and more important for all groups of people to think in terms of the big picture, how everything and everyone is connected on some level; and that the underlying concern should be the health of the planet and its people.



Learning Activity 5.5

Urbanization

1. Complete the table below by providing three examples of economic “pull factors” and three examples of psychological “pull factors” that influence the movement to urban areas. Remember that there are a number of possible answers.

Economic “Pull Factors”	Psychological “Pull Factors”
1	1
2	2
3	3

continued

Learning Activity 5.5: Urbanization (continued)

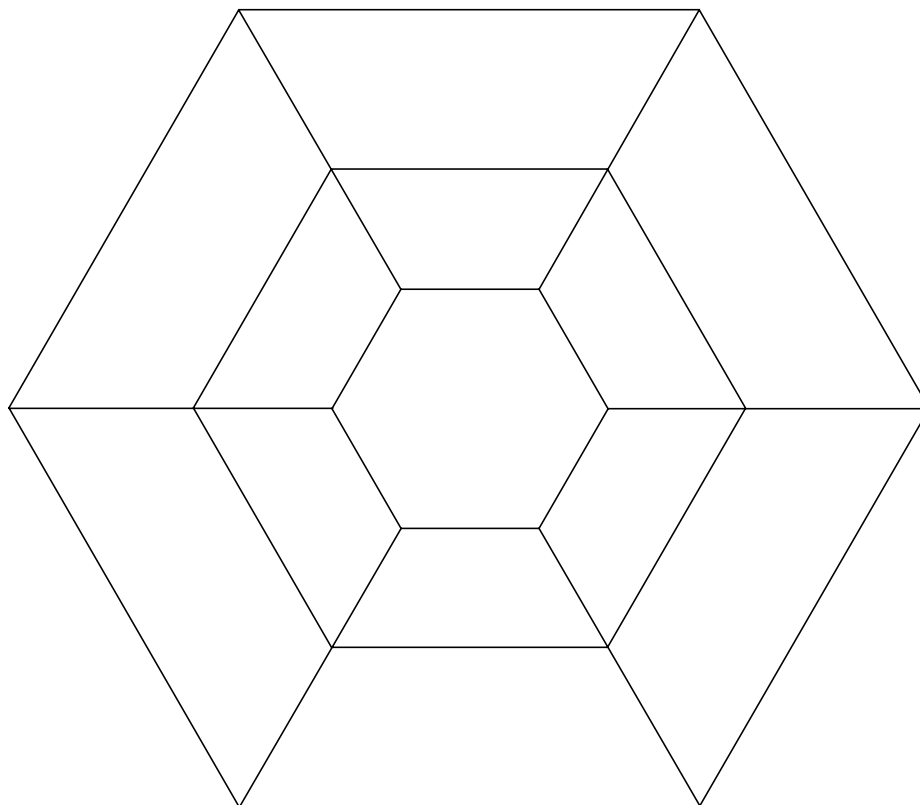
2. Briefly explain the three historical types of migration.
3. What are the four fundamental economic factors that influence the growth of urban areas?
4. One of the problems with urbanization is the formation of slums. Listed below are several difficulties and obstacles experienced by people living in slums. Explain at least one consequence for each.

Formation of Slums	
Difficulty/Obstacle	Consequence(s)
Poor quality and structurally unstable housing	
Overcrowded housing (more than three people sharing a room)	
Difficulty living in a rented space for a long period of time	
Poor access to water	
Lack of sanitation facilities	

continued

Learning Activity 5.5: Urbanization (continued)

- 5 a) There are many challenges that migrants may face when they move to urban centres. List at least **five** of these challenges.
- b) Choose **one** of the challenges you identified and fill in the mind-map below. A mind-map is a tool that helps us to make connections between our ideas.
- At the centre of the mind-map, record the challenge (for example, pollution).
 - In the boxes around the centre, give examples of what this challenge might look like (for example, growing landfills).
 - In the outermost boxes, make a connection between the problem and the impact that it has on people (for example, children playing in landfills can get seriously hurt and/or sick).



Lesson Summary

Urbanization is a reality that has been around since the early 19th century. There is no doubt that it will continue to play an increasingly important role in the development of cities around the globe.

We know there are two general reasons (pull factors) why cities exist (economic and psychological), and that there are four economic factors (density, scale, association, and extension) that play a role in the successful growth and development of a city. That being said, the future success of a city hinges on how well local and regional governments acknowledge the “bottom up” nature of urban growth. This involves an awareness of the relationship between physical spaces and social interactions and how important it is to design urban settings in a way that reflects this reality.

If urban planning can incorporate the above challenges as well as the growing need for sustainable city systems that can also absorb the different types of migration, the future will be positive.

Notes



Assignment 5.2

Urban Planning for a City (36 marks)

The year is 2050 and you live in a world that exerts more control over the way that urban centres are developed, shared, and expanded.

1. As part of an urban planning team for your city, describe a plan to improve two areas—slums and population expansion. (Total: 20 marks)

Note: Be sure to empower the residents of the slums by incorporating them into the decision-making process.

a) Slums (8 marks)

- Slums have always been a problem in cities. Your city has decided to eliminate slums. Identify and explain three difficulties/challenges that slums present. (3 marks)

- Describe how your city will get rid of each of these difficulties/challenges so that slums will disappear from your city in the future. (3 marks)

- Explain how eliminating slums from your city can be a pull factor. (2 mark)

continued

Assignment 5.2: Urban Planning for a City (continued)

b) Population Expansion (12 marks)

Last year, your city's population grew from 1.2 million people to 1.3 million people. This means there was a growth of 100,000 people. How did this happen?

- There were about 20,000 births.
- There were 10,000 deaths.
- About 15,000 people left the city (for jobs in different cities).
- 105,000 people migrated to your city due to "pull factors."

This coming year, you want to increase your population by 200,000 people. Your office predicts that in the coming year

- There will be about 21,500 births.
- There will be about 10,800 deaths.
- There will be about 15,000 people leaving the city.
- If the city does nothing, about 105,000 people will migrate to the city this year due to "pull factors."
- To meet the city's goal, 99,300 more people must move to the city.

How can you attract another 99,300 people to the city this year? Take a look at the example on the following page. The example has identified an economic pull factor, how it will be implemented, and why it will attract migrants to the city. Choose **two additional** pull factors and fill in the table on the following page. An example is provided in the table. (Each box is worth 2 marks, for a total of 12 marks.)

- Expand each pull factor idea with **two** descriptors.
- Describe **two** things the city will do to make this pull factor a reality.
- Give **two** reasons this pull factor will attract people to move into the city.

continued

Assignment 5.2: Urban Planning for a City (continued)

Population Expansion		
Economic Pull Factor	How Will the City Make This Pull Factor Happen?	How Will This Pull Factor Attract People to the City?
Incentives to start up small businesses <ul style="list-style-type: none"> ■ Offer loans with low interest rates. ■ Offer free classes on running a business (lessons on advertising and money management). 	<ul style="list-style-type: none"> ■ The city will partner with banks to provide lower interest rates for people starting a small business. ■ Money from the city budget will be redirected to this educational program. 	A person interested in starting a new business will be more likely to move to this city because <ul style="list-style-type: none"> ■ It is cheaper to start a business. ■ There is extra support available through schooling.

continued

Assignment 5.2: Urban Planning for a City (continued)

2. The urban planning team decides to meet and discuss the plans you have made. Near the end of the meeting, your boss is feeling very happy because your team has done a great job. Within a few years, your small city will become quite large.

It is now your turn to present. Your topic is how the expected population growth might cause problems for your city. Describe **one** anticipated problem and **at least one** possible solution to each problem for each of the following five categories. If you are unsure what to write, see the section “Limitations to Growth.” (10 marks)

Air

Water

Food

continued

Assignment 5.2: Urban Planning for a City (continued)

Space

Ability to Reproduce

3. **Psychological Pull Factors** (6 marks)

Oxana has just finished her university education in dentistry at the University of Manitoba. She lives in a small town outside the city of Winnipeg, about a 45-minute drive from the city. Now that Oxana is finished her university education, do you think she will move to the city? Explain your answer in complete sentences using the information below as well as the psychological “pull factors” you studied in this lesson.

Some information about Oxana

- single woman (not married)
- 32 years of age
- currently not working
- parents are deceased
- no other family living in Canada
- has family living in Ukraine, including a younger brother

continued

Assignment 5.2: Urban Planning for a City (continued)

LESSON 3: PRESENT AND FUTURE CHALLENGES

Lesson Focus

By the end of this lesson, you will

- Learn critical thinking skills and how to make important value judgments.
- Discuss which conclusions can be drawn if present trends in industrialization and urbanization continue.
- Question how the present trends in industrialization and urbanization need to be altered to implement the principles and guidelines of sustainable development.

Introduction

The processes of industrialization and urbanization are linked. In this lesson, you will examine critical thinking skills, geographical value judgments, present trends in both urbanization and industrialization, and speculations about what the future is likely to bring.

Critical Thinking and Value Judgments



Critical thinking is a self-guided and disciplined way of thinking. It means to engage in quality reasoning in a fair-minded way. Put another way, thinking critically means not always taking facts and opinions at face value, but always questioning whether a claim is true, partially true, or not true at all. People who think critically, try to examine issues from a variety of different perspectives, keeping in mind that their thinking is influenced by their own bias and social ideas. It is important to recognize the influences that inform our own thinking.

Likewise, it is important to think critically in all aspects of your life. Although many 'big picture' questions are difficult to answer, you must be aware of the different forces that influence your thoughts and opinions. Take for example a very broad question that is often asked regarding development: "Can and should the developing world catch up to the level of industrialization achieved by the developed world?"

Can you identify any biases, social perspectives, environmental concerns, or economic considerations that might influence a person's answer to this question? Usually, it comes down to a question of values as well as geographical importance. Geographical importance refers to the features of particular geographic phenomena and locations that make them worthy of attention or recognition.

Methods of Critical Thinking

Question: *Should richer nations give aid to help poorer nations?*

When you consider a question such as this, your feelings are shaped by the values that you hold and those values can have an emotional affect on your response. The self-tests methods outlined below demonstrate three ways to practise critical-thinking methods and problem-solving skills.

A. The Role-Exchange Test

The role-exchange test involves imagining yourself in the situation of another person. To perform this test, ask yourself, "How would I like that done to me?" After you have answered this question, you can make a thoughtful value judgment of an action. For further information, visit www.sponsoravillage.ca/just-citizens/moral-principle-tests/role-exchange-test/.

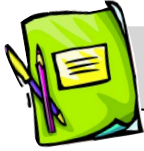
B. The Universal-Consequences Test

The universal-consequences test involves imagining the consequences of everyone performing the action you are trying to judge. To perform this test, ask yourself, "What if everyone did that?" Your answer to this question will lead you to a fairer value judgment of the action. For further information, visit www.sponsoravillage.ca/just-citizens/moral-principle-tests/universal-consequences-test/.

C. The New-Cases Test

The new-cases test gives you an opportunity to apply the action you are trying to judge to a distinct but similar situation. To perform this test, ask yourself, "What would I, or someone whose judgment I trust, do in a similar situation?" Once you have answered this question, you can form a thoughtful value judgment of the action you wish to assess. For further information, visit www.sponsoravillage.ca/just-citizens/moral-principle-tests/new-cases-test/.

Read the dialogues provided in Learning Activity 5.6 and determine which of the critical-thinking methods above has been applied in each dialogue.



Learning Activity 5.6

Critical Thinking

Read each dialogue and record your responses in your notes.

Dialogue 1

John: I don't think we should make any sacrifices to help poorer countries. They should look after themselves.

Meng: So you believe that people shouldn't get any charitable aid?

John: That's right. People should look after themselves.

Meng: Does that mean you wouldn't give any money to charities to help people who are blind or handicapped or mentally ill?

John: Well, no. That's different. Somebody has to help those people.

- What test is Meng using to challenge John?
- Does John meet Meng's challenge appropriately? Explain your answer.
- How would you meet Meng's challenge?

Dialogue 2

Maria: I'm not going to help people in other countries. I've got enough problems of my own.

Terri: But suppose you were really poor and starving. Wouldn't you want someone to help you?

Maria: Mmm, I guess so.

- What test is Terri using to challenge Maria?
- Does Maria meet Terri's challenge appropriately? Explain your answer.
- How would you meet Terri's challenge?

continued

Learning Activity 5.6: Critical Thinking (continued)

Dialogue 3

Zena: We ought to contribute a quarter every week to help the starving people in the Sudan.

Jean: You mean you want everyone in this school to do that?

Zena: Yes, I do.

Jean: But what about the ones who can't afford to give a quarter every week?

Zena: I'd only want the people who can afford it to give, of course.

Jean: But what if they don't think giving a quarter is a good idea?

Zena: I'd still say they ought to give it because they can afford it.

- a) What test is Jean using to challenge Zena's judgment?
- b) Does Zena meet Jean's challenge appropriately? Explain your answer.
- c) How would you meet Jean's challenge?

Dialogue 4

Abdul: Do you really believe that everyone should have the right to do whatever he likes with his own money and to choose whether or not to give aid to developing countries?

Debbi: Yes, I think it should be an entirely personal decision.

Abdul: But if people did that, nobody would give aid.

Debbi: That's not true. Some people want to give aid, and so even if you agree with me and don't ask people to give, some of them will.

- a) What test is Abdul using to challenge Debbi's judgment?
- b) Does Debbi meet Abdul's challenge appropriately? Explain your answer.
- c) How would you meet Abdul's challenge?

continued

Learning Activity 5.6: Critical Thinking (continued)

Dialogue 5

Bill: I'd give money to help Ethiopia.

Jim: Would you give money to help the Sudanese?

Bill: No.

Jim: Why not?

Bill: Because the Sudanese can help themselves.

Jim: According to the news media, the Sudanese are just as poor as the Ethiopians.

Bill: I don't care. I still wouldn't give them money.

- What test is Jim using to challenge Bill's judgment?
- Does Bill meet Jim's challenge appropriately? Explain your answer.
- How would you meet Jim's challenge?

Geographical Value Judgments

Value judgments are assessments about what should or should not be. They do not describe the world as it is, but are evaluations of what should occur. Value judgments represent individual and group beliefs about what is "good" and "bad"—beneficial or harmful, morally right or wrong, and effective or ineffective. They pertain to current practices but, at the same time, stipulate a course of action for the future.

People make judgments about geographical matters from many different points of view. Read the following value judgments that might be made in a discussion of the petroleum industry:

- **Economic:** Fossil fuels are essential for economic stability.
- **Political:** Governments should show more political responsibility when faced with difficult issues raised by fossil fuel extraction.
- **Legal:** It would be unconstitutional (against a person's constitutional rights) for the federal government to force regulations on producers of non-renewable energy.
- **Environmental:** Pollution from hydrocarbon production has had disastrous consequences for many ecosystems and habitats.

- **Ethical:** Local residents are being treated unfairly by the multinational companies working on fossil fuel extraction projects.

Judgments can also be made from the point of view of different regions (Western Canada, Middle East, United States) and groups (humans, animals, oil field workers, First Nations people). These assessments may be positive from one perspective and negative from another. For example, developing the Alberta oil sands would appear to be economically desirable but environmentally undesirable. The judgment can be broken down even further: it may be economically desirable for those employed in the oil business, but economically undesirable for producers of alternative renewable energy sources.

A person could continue to break down the value judgments into more and more detailed components, but the overall goal and challenge in many geography-related issues is to reach a “global” or inclusive judgment—one that can accommodate the various disciplinary, group, and regional perspectives and, at the same time, offer what seems best to all concerned.

Value judgments are often based on deep rooted and highly personal beliefs and values and, as a result, such judgments are often made instinctively and quickly. This is not the best way to make any judgment. Once you know the key perspectives and have understood them, you are in a better position to make a fair-minded value judgment that you can defend against criticism. Alternative perspectives often provide valuable information that complements your own understanding of an issue. An open mind is crucial in order to broaden your understanding and knowledge about all issues. It is only when you understand all perspectives that you can make a judgment based on fact.

When deciding on matters of public policy that affect the common good, value judgments should be based on a careful and informed assessment of the options. To do this, all the relevant factors should be considered. Then their quality can be assessed by the following criteria:

- Based on accurate and adequate evidence
 - The evidence is accurate, representative, and extensive enough to provide an informed opinion on the issue.
- Consider a variety of factors or criteria
 - Make sure there’s a range: is it technologically feasible, ethically justified, environmentally sustainable?
- Represent a variety of significant interests
 - All key stakeholders should at least be considered when assessing what ought to be done.

- Fairly assess the pros and cons
 - Try to be neutral when you weigh the evidence; empathize with others and try to see things from their point of view, avoid favouring one's own preferences and needs.

Issues are often more complex than they first appear, so having an open mind and an awareness of critical-thinking skills will help you to make decisions and justify your personal support of complex issues. Your own convictions will be strong and you will be less likely to be caught in a situation where you can't defend your point of view.

Present and Future Trends



Note: This course was written at a specific point in time, so any mention of present and future trends may end up being old trends by the time you read this. That being said, keep in mind that the following held true during early 2010.

You can spend a lot of time surfing the Internet, checking out the United Nations website as well as a variety of subject-specific organizations, but the following overriding themes seem to hold true regardless of what you are reading and what region of the globe you are reading about.

- The human population is expected to continue to grow by at least two more billion (more according to some sources) from the current 7 billion plus, by the middle of this century.
- Global population growth will occur mainly in Africa and East Asia, and will occur in urban areas (rural populations will continue to decline).
- Urbanization is, and will continue to be, dominated by immigration to cities.
- Industrialization (including food production) will continue to be essentially tied to urbanization (and vice versa).
- Industrialization (including food production) will be influenced more and more by the principles of sustainability, technological improvement, and diversification.
- Climate change will definitely influence how industrialization and urbanization evolve.
- Energy resource availability will influence how industrialization and urbanization evolve, as the era of cheap energy nears the end.
- If the price of energy continues to increase, transportation will become more expensive. This may impact the volume of goods shipped through international trade. It may also result in a decrease in the number of people travelling around the world.

Industrialization

In developed nations, future industrialization is projected to reflect technological advancements and related efficiencies. This will increase the sustainability factor, especially if changes are made to enforce efficient energy consumption and waste management.

Competition between industries is expected to result in a better balance between supply and demand. As well, since transportation costs are expected to increase as energy supplies dwindle, smaller regional production facilities will likely replace the current globalization patterns of manufacturing.

The present trend for an increase in labour costs is likely to continue. The standard of living is improving for growing numbers of people in developing East Asian countries. This will have a ripple effect throughout the world economies. This is a positive, but it also results in increased pressure on the environment. Increasing the efficiency of industries can contribute to long-term sustainability, but perhaps not before environmental pressures and damage gets worse.



Earlier in the course, you learned some of the challenges that developing nations face in all aspects of development, including industrialization. If you have access to the Internet, the United Nations multimedia website is an excellent source of information on this topic and can be accessed at www.unmultimedia.org/. The website also offers access to thousands of radio programs by registering with an email address.

In a June 2012, broadcast entitled “Africa urged to adopt ‘green’ policies of industrialization”, the discussion begins with an outline of a UN report that suggests Africa should be moving toward value-added processes that are technologically intensive and away from labour-intensive practices. It is suggested that countries should avoid depending solely on the export of commodities, but should instead use them locally in order to diversify the economy. This has been the preferred plan since the 1970s, but the reality is that it is a slow process. The process is made even slower in Africa with the economic fallout that is the result of many factors, including conflict, climate change, falling global commodity prices, and reductions in aid, to name a few.

Many African countries depend on the export of commodities, which includes leasing agricultural land for the export of produce. This method has been seen as unsustainable in relation to the environment. It also does not help build local economic resiliency. True sustainability needs to honour the following three pillars: society, economy, and environment. Most people and organizations promoting sustainability agree that it is the responsibility of the local governments to establish the framework within which sustainable industrialization is developed. Going green is no longer an option for

countries, it is a necessity. Fortunately, economic investment in the renewable energy sector in Africa (and the rest of the world) is seeing steady increases.

Other UN publications include some from the group Economic Commission for Latin America and the Caribbean (ECLAC). These publications analyzed selected economic areas, namely resource-based sectors, tourism, and small and medium-sized enterprises. The purpose of one literature review was to show how industrialization, through technological and value-added development, can lead to competitiveness, but only with supportive government policy along with private and public sector partnerships. It can be seen over and over again, that political will is usually the driving force behind development, regardless of the location.

Industrialization and Sustainability

In 2009, Professor J.E. Ikerd from the University of Missouri published a research paper entitled, *Current Status and Future Trends in American Agriculture: Farming with Grass* (<http://web.missouri.edu/ikerdj/papers/Oklahoma%20Farming%20with%20Grass%20-%20Status%20%20Trends.htm>). In this paper, he makes the connection between food production, industrialization, and sustainability. This connection was discussed earlier in this course in the module on global food supplies, but it is worth revisiting the connection between industrialization, urbanization, and food production, and how these three aspects are integrally connected to sustainability. After water, food security is the most pressing topic of long-term global sustainability.

To review



- The fundamental purpose of industrialization is to enhance productivity and economic efficiency by making it possible to produce more output from a given amount of input.
- The basic strategies are **specialization**, **standardization**, and **consolidation** of control. Consolidate means to combine or merge a number of things into a more coherent or effective whole.
- As agriculture becomes more specialized and standardized, it can be mechanized to follow set routines. This allows, and sometimes forces, individual farmers to consolidate more land, labour, and capital under their control, or to contract their resources to corporations.

As farms became larger, many smaller farmers were forced off the land and moved to urban centres to take jobs in factories and offices. This illustrates the connection to urbanization.

According to Ikerd's research paper, the American food system as a whole has followed the same basic path of specialization, standardization, and consolidation and is in the final stages of global consolidation of corporate control. There are advantages and disadvantages.

- **Advantages** include reducing costs and increasing the availability of food.
- **Disadvantages** include the cost to nature and society through environmental degradation and growing social inequity.

Public concerns about the American (and global) food system have mounted and people are becoming aware that industrial agriculture is simply not environmentally sustainable in the long run. Another concern is the realization that the consumer really has very little control over the food choices he or she makes. Much of the global marketplace is controlled by a few large corporate groups involved in all aspects of food production, including processing and marketing. This effectively squeezes out many smaller companies and forces many producers to sell products so cheaply that only the largest farms can remain profitable.

There is, however, some room for optimism. The future of agricultural industrialization, indeed all industrialization, is benefiting from the age of information. When people, as consumers, are made aware of how their actions can have global impact, the choices they make in the marketplace can be a driving force toward the sustainability of all economic/industrial endeavours, and eventually trickle down to social endeavours. Given the opportunity, the majority of people will make decisions for the well-being of the group.

With regard to food and sustainability, the organic food movement that began in the 1980s has been growing in the United States. The organic food industry in the United States grows at about 20% per year and, according to several sources, currently makes up about 5% of the retail food market in the United States. In Canada, the Organic Agriculture Centre of Canada (OACC) published a synopsis paper in 2006 estimating total retail sales to be over a billion dollars, a 20%+ increase in sales over the previous year and about 3% of the total retail food sales. Most indicators would suggest that the 3% has continued to increase.

Biofuels (fuels derived from living matter) are one way for industry to work toward sustainability. The United States has a policy requiring all stored domestic gasoline supplies to contain a certain amount of biofuel, but the reality is that the production of biofuels is limited. All the energy collected by all the green plants in the United States is equivalent to only about half of the total fossil energy use, and that doesn't count the fossil energy needed to convert the energy stored in the green plants into biofuel. To give you more perspective, if all the agricultural production in 2009 had been converted to biofuels, it would have replaced only about one-sixth of the hydrocarbon used in the United States that year.

Another concern with biofuels is the effect that diverting food crops into fuel production can have on the food market. Prices can go up and availability can go down, possibly causing shortages or even food riots.

Peak oil, climate change, and demographic changes are going to drive the future evolution of industrialization. How sustainable the changes are will depend on whether political regimes and world leaders honour the fundamentals of sustainability. How the details play out is obviously unknown, but the entire industrial era has been based on cheap fossil-based energy, so it is safe to guess that alternative energy sources are definitely going to play an increasingly larger role. In fact, most major oil companies have started to research this area.

Urbanization

In 2006, the journal *Technology in Society* published a paper by B. Cohen entitled "Urbanization in developing countries: Current trends, future projections, and key challenges for sustainability." This paper is a one-stop shop in describing recent patterns and trends of urban growth and summarizes most of what one would find on the United Nations websites. If you have access to the Internet and you want to access the most recent information, the UN website would be the best place to start.

Some of the material in this paper will be familiar as it has been covered previously in this course. The paper indicates that half the world's population currently lives in urban areas and that definitions of urban and rural differ according to region. Urban areas are where the bulk of population growth will occur, and urbanization is closely tied to industrialization and the economy. You have repeatedly seen that the structure for any improvement to the human condition rests heavily with the political will at all levels of government.

In addition to the previous points, Cohen also asserts the following:

- Urban characteristics are being spread over larger and larger areas, so that the traditional distinction between urban and rural is blurring.
- Conditions are deteriorating for the urban poor.
- Much of the urban growth will occur in small to medium-sized cities rather than the mega-cities (cities with over 10 million inhabitants).
- These small to medium-sized cities tend to have more challenges providing comprehensive basic public services (i.e., energy, sanitation, drinking water, transportation).
- The challenge of managing this growth has led to changes in urban governance. This has resulted in the shift of political power to the municipal from the national or provincial/state level.
- The national and provincial/state levels of government need to support local governments as they strive to meet the public service demands that go hand in hand with rapid urban growth.

Urbanization and Sustainability

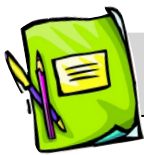
You know what is meant by urbanization, but how does urbanization relate to sustainability? There is a growing spread between rich and poor in the global economy. This is relevant because, if most of the population growth is occurring in small to medium-sized cities, then there is a disproportionate number of urban poor living in a relatively small geographic area. This could have serious effects on the political stability of many countries, as well as the quality of life and the environment. For example, if basic public needs and services aren't being met within an established government system, desperate individuals often take what they need from their surroundings without concern for long-term consequences (for example, cutting down trees for fuel).

The concept of sustainability applies to all things urban, including established political and commercial institutions. It could be argued that the monetary policies of the United States and several European countries are not sustainable. Take the example of the United States of America during the late 2000s and early 2010 on—the federal deficit was at a record high and the U.S.A. had become the world's largest debtor nation with the debt held mainly by other countries. Instead of reducing expenditures and increasing taxes (income) to help pay off the debt, taxes and interest rates were cut, money was printed, and financial institutions were bailed out. These types of policies are not likely to be sustainable in the long-term. Policies such as those also have a ripple effect on the economies (and therefore the societies) of other countries who do business with the United States of America.

Urban sustainability is obviously closely tied to maintaining the basic necessities for the people who live there. This includes the big picture (clean air, water, and food security) as well as food quality, food safety, nutritional health, fossil energy, global warming, social inequity, and economic instability. These are all ultimately connected to issues of food security and are a major reason why industrialization of the food industry has the potential to be a global concern in the future.

As far as livestock production goes, proponents for grass-based operations believe that there needs to be a priority shift from productivity and profitability, to agricultural ecology and even greater quality of life that embraces natural systems. Most would agree that the sustainability of a country's agriculture (including food security) is the foundation of urban sustainability.

With all of this basic information, as well as our individual tendencies to be optimistic or pessimistic, each one of us is capable of making predictions about where the world will be in 20, 50, or 100 years. If you can base your predictions on reality and established fact, you will most likely get to have an intelligent and lively discussion or debate on the matter that will get you thinking about aspects of the issue you perhaps hadn't thought of before. Thinking about things you wouldn't normally have thought about is one of the goals of learning.



Learning Activity 5.7

Evaluating Different Perspectives

1. The following statement is neither negative nor positive, but it is factual: "Cities in developing countries are growing at an increasingly fast pace and are characterized by a permanent, large, high density and diversified population."

Respond to this statement through the different perspectives of value judgments. Include both a positive response and a negative response for each perspective. There are many possible answers. The first one is done as an example for you to follow.

continued

Learning Activity 5.7: Evaluating Different Perspectives (continued)

Evaluating Different Perspectives		
Perspective	Negative	Positive
Economic	Growing cities may offer more economic opportunities for some people, but most markets are unable to absorb the large surge of people. This results in widespread poverty and joblessness.	Rural migrants come to the city seeking jobs and better opportunities. Many people are able to improve their standard of living and experience an overall boost in happiness and well-being when they advance their education or economic standing.
Political		
Legal		
Environmental		
Ethical		

continued

Learning Activity 5.7: Evaluating Different Perspectives (continued)

2. If you ever find yourself involved in a controversial issue regarding public policy that will effect most people in your community, you will need to consider all the options and understand all the factors at play before you decide which side of the issue you agree with. The quality of information you have can be determined by the following: (fill in the blanks)
 - Based on _____ and adequate evidence.
 - Consider a _____ of factors or criteria.
 - Represent a variety of _____.
 - Fairly assess the _____.
 - Things are often more _____ than they appear on the surface.
 - Having an _____.
 - An awareness of _____ skills will help in justifying your personal support of complex issues.
 - Your own convictions will be strong and you will be less likely to be _____.
 3. Summarize the future trends of industrialization.
 4. Summarize the future trends of urbanization.
-

Lesson Summary

The future health of the planet depends on the sustainability of all human endeavours, including urbanization and industrialization. In this lesson, you learned about what has already been done to address sustainability, how present trends and related value judgments influence each other, and what could be, and perhaps needs to be, improved in the future.

You also learned that critical thinking is a self-guided and disciplined way of thinking, which attempts to engage in quality reasoning in a fair-minded way. Methods of critical thinking are tied to the values that you hold when you answer certain questions, and are often very emotionally charged and controversial. There are three tests that can help clarify the values involved.

- The Role Exchange Test
- The Universal Consequences Test
- The New Cases Test

When deciding on matters of public policy that affect the common good, value judgments should carefully assess the options and should

- be based on accurate and adequate evidence
- consider a variety of factors or criteria
- represent a variety of significant interests
- fairly assess the pros and cons



Assignment 5.3

Value Judgments (32 marks)

The purpose of this assignment is to learn to recognize both obvious and implied judgments and interests that are often promoted in geographical materials such as textbooks and articles.



You can use the article presented here, or you may find similar material on your own and use it, as long as you have the approval of your tutor/marker. It could be an excerpt from a textbook, government publication, or news article on a current issue. Example topics could include the preservation of land for agricultural or urban purposes, problems of desertification, pipeline pros and cons, invasive species, or rising sea water temperatures/levels.

1. Read through the article “Rouge National Urban Park” or your own chosen publication and identify at least **three** examples each of factual statements (e.g., data, events, statistics) and opinion statements (e.g., beliefs, speculations, value judgments). Fill out the following table. (6 marks)

Note: If you are not using the included article, please attach a copy to this assignment, with the relevant passages highlighted or underlined.

Facts versus Opinion	
Examples of Factual Statements	Examples of Opinion Statements

continued

Assignment 5.3: Value Judgments (continued)

2. What is the main issue described in this article? (1 mark)

3. What are two secondary issues? (2 marks)

a) _____

b) _____

4. Who are the stakeholders that will be directly affected by this issue? Identify **two** main stakeholders and two lesser stakeholders. For each group, name **one** interest that may be affected by the resolution of the issue. Example: Some people may gain employment by a development within an undeveloped area, and others may lose access to wilderness areas. Fill out the following table with the appropriate information. (8 marks)

Stakeholders	
Stakeholder	Interest or Values Affected by a Resolution
Main	
Main	
Lesser	
Lesser	

continued

Assignment 5.3: Value Judgments (continued)

5. Based on the material that you've used to answer the first three questions, write a short opinion piece based on your views of the issue. You can choose to write either a letter to the editor, or an editorial. (15 marks)
- A letter to the editor is typically written in response to an article that has appeared previously in a newspaper or magazine.
 - An editorial is typically written in response to a situation or event that has occurred recently.

A common organizational pattern for opinion pieces is as follows:

- Opening paragraph: States the issue or problem and your opinion on the topic.
- Second paragraph: Presents opposing points of view.
- Third paragraph: Returns to your argument and supports it with specific facts/ examples.
- Fourth paragraph: Offers a possible solution or solutions to the problem.
- Closing paragraph: Summarizes the argument and offers final commentary.

continued

Assignment 5.3: Value Judgments (continued)

The opinion piece will be out of 15 marks and will be assessed based on the following rubric.

Marking Rubric for Assignment 5.3 (Question 5)		
	Possible Marks	Marks Given
Introduction <ul style="list-style-type: none"> ■ Letter to the editor: clearly states what issue or problem you will address that was in the article you read ■ Editorial: clearly states the issue or problem of the recent event/situation that you will discuss ■ In both cases your personal opinion on the topic should be logical and clear. 	2	
Body of Letter/Editorial <ul style="list-style-type: none"> ■ Second paragraph proposes at least 2 opposing points of view ■ Third paragraph develops your personal opinion argument ■ Fourth paragraph offers possible solutions to the problem ■ Relevant facts and/or examples are provided which relate to the topic and support your argument 	8	
Conclusion <ul style="list-style-type: none"> ■ Restates the main argument ■ Summarizes the points and offers final comments ■ Has an effective concluding statement 	2	
Style <ul style="list-style-type: none"> ■ Use of strong language, good sentence structure, and highly appropriate word choices ■ Few grammar or spelling mistakes ■ References are relevant and explained in context 	3	
		/ 15

continued

Assignment 5.3: Value Judgments (continued)

Article for Assignment 5.3: Rouge National Urban Park

Rouge Park is Canada's first national urban park. It is located in the eastern section of Greater Toronto, in close proximity to roughly 20% of Canada's population. The vision for the park was to sustain a natural wildlife habitat that is able to thrive regardless of the urban activities taking place next door. The Board of Directors for the Park and Parks Canada envision Rouge Park as a place where people and nature can interact in a peaceful and respectful way.

Rouge Park is located north of Lake Ontario and along Toronto's eastern border. It is a gateway between the city of Toronto and the city of Pickering. The forested region covers 47-square kilometres in the transition zone between the deciduous Carolinian Forest and the mixed, sub-boreal Great Lakes Forest. This unique position means that Rouge Park is home to a number of diverse species, including 23 designated at-risk species.

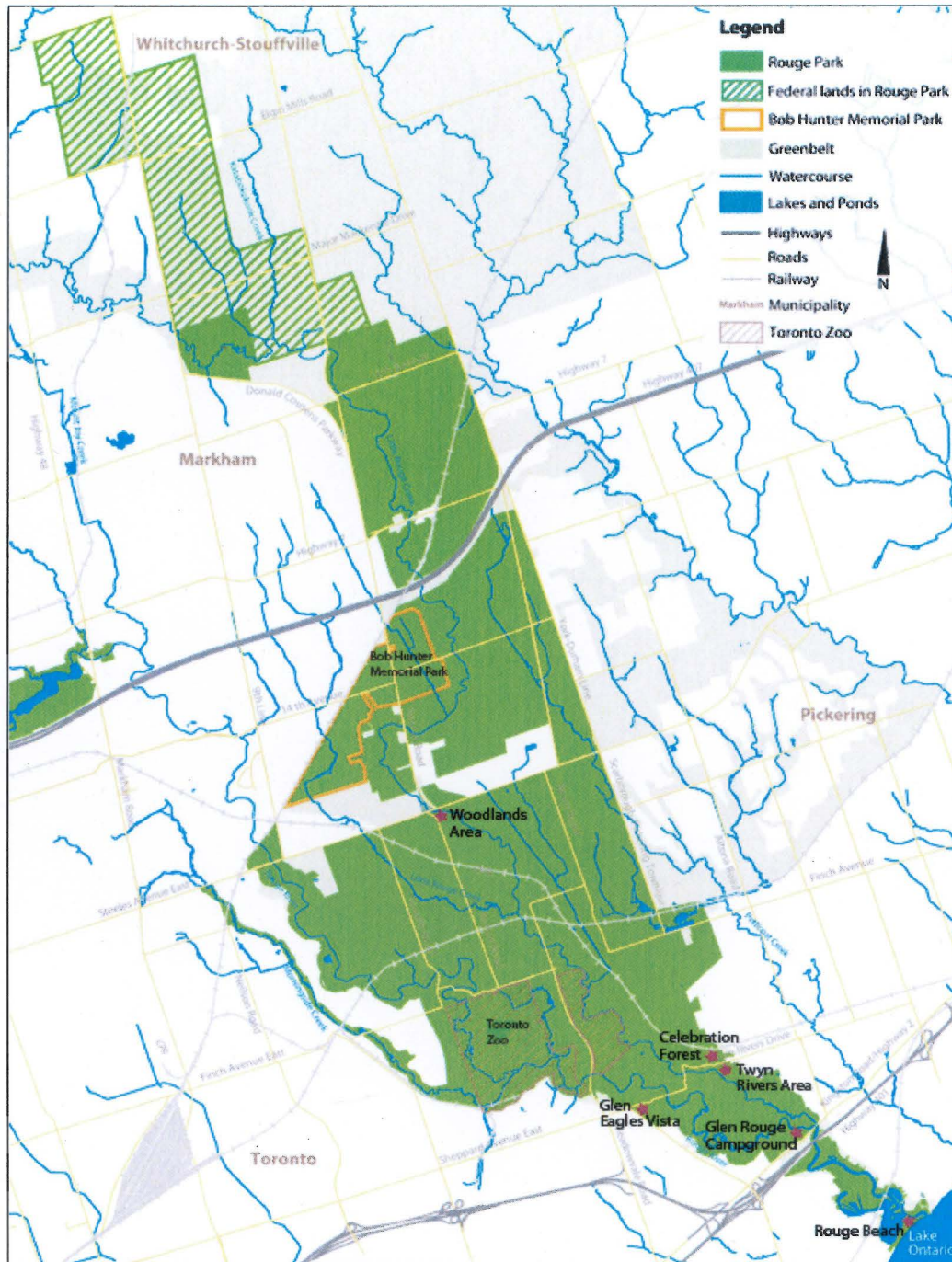
Although the park is significantly large, it has only very recently been a topic of interest that has demanded the attention of Parks Canada, as well as citizens living in the area. Parks Canada is a government agency committed to preserving and protecting national heritage, cultural sites, and environmental sites so that these areas can be enjoyed for present and future generations. Pam Veinotte, field superintendent of the park, believes that the urban setting "offers an unparalleled opportunity to meet [the park's] priority to meaningfully reach an increasingly diverse urban population."

Many people have expressed their concerns, however, that the increased human activity within Rouge Park may have some damaging consequences for the fragile ecosystem. This is especially worrisome because Rouge Park falls within a new Parks Canada designation, which is not yet protected by legislation. Parks Canada currently categorizes its protected sites into national parks, historic sites, and marine conservation areas, but the special characteristics of Rouge Park prevent it from falling within the national park category.

The idea of an urban park has sparked the interest of thousands of people. When Parks Canada released a proposed concept for the park, approximately 10,000 people, within a four-month time frame, wrote in offering advice and asking questions. A lot of effort has gone into preserving the land and natural habitats within Rouge Park and people care about the consequences of development or improper management.

continued

Assignment 5.3: Value Judgments (continued)



Source: Rouge Park. www.rougepark.com/explore/park_map.php.

continued

Assignment 5.3: Value Judgments (continued)

In 1988, Tom McMillian, Minister of the Environment, offered \$10 million of federal money to establish a park in Rouge Valley. The only issue was that the land is controlled by the municipal and provincial governments and, therefore, the money could not be used to carry out those plans. Six years later, the provincial government succeeded in creating a governing body called the Rouge Park Alliance. This meant that the Rouge Valley forest was now formally Rouge Park, which is significant because the park was now entitled to protected status.

Rouge National Urban Park offers a number of exciting opportunities for the public. Visitors can hike, camp, canoe, fish, swim, and go on picnics. It is also a great environment for some stunning photography shoots and, of course, to observe wildlife in their natural habitat. It is important to note, however, that agricultural land occupies about half of this space. The land, owned by the Toronto and Region Conservation Authority as well as the provincial and federal governments, is leased to farmers who plant cash crops, such as corn and soybeans.

Parks Canada spokesperson Geneviève Patenaude calls agriculture “an important element of the long-term vision” for the park, but says they are in discussions with farmers to develop environmental farm plans. Although maintaining farmland has many benefits and is important to many people, there are a number of environmentalists who would prefer to allow that land to be renaturalized and remain unoccupied. Jim Robb, a member of Friends of the Rouge Watershed, is one of those people and has expressed his concerns about leasing land to private owners when the park itself belongs to the public.

On the other hand, the park is still in its early stages of development. There are few facilities, and not a lot of money for wide-scale renaturalization. As of July 2013, the park has only 16 km of sanctioned trails, which does not include any bike trails. There are no bathroom facilities or drinking fountains, and there is no visitor centre nor facility for canoe rentals. The lack of funding has prevented the Rouge Valley Conservation Centre from carrying out a season-wide species inventory update since the 1990s and from maintaining and policing the hiking trails. On a positive note, there is a public transit route that can transport visitors from Greater Toronto to the park. Having the park accessible to the public is a high priority for Parks Canada.

However, there are still critics, such as Jim Robb, who are worried that increasing public access to the park might unintentionally undermine the ecological health of the site. Robb already believes that the ecology has been taken advantage of by farmers who, in the pursuit of profit, are leasing land within the park and making money from the interest. There is also the important issue of preserving the 600-metre-wide strip of land along the river bank of the Little Rouge River.

continued

Assignment 5.3: Value Judgments (continued)

Overall though, employees at the park believe that Parks Canada's involvement is a positive element and their efforts have attracted more visitors to the space, especially young people. After all, if the vision for Rouge Park is to act as a gateway to nature, then there must be people there to enjoy it and participate in the preservation efforts. In 2012, volunteers planted 100,000 saplings across the park. The goal is to maintain a balance between nature and the creation of a space for people to interact with the environment and enjoy all the positive aspects that the urban park has to offer. Parks Canada will have an important responsibility to manage the park according to the future legislation created by the federal government.

Source: Canadian Geographic Enterprises. "Canada's First National Urban Park." *National Parks*.
www.canadiangeographic.ca/magazine/ja13/rouge_national_urban_park.asp.
www.canadiangeographic.ca/magazine/ja13/rouge_national_urban_park2.asp.
www.canadiangeographic.ca/magazine/ja13/rouge_national_urban_park3.asp.
Used with permission.

MODULE 5 SUMMARY

This module has covered three important topics: industrialization, urbanization, and sustainability.

In the first lesson, you built upon your knowledge of the Industrial Revolution. You learned about the changes that occurred in industry and the global spread and impact of the Revolution. There were many important inventions and innovations during this time, and particular attention was given to improvements to the water wheel and the invention of the steam engine. Distribution and location factors of industry were discussed in addition to the problems of industrialization, the role of transnational corporations, the role of technology, and the effect of industrialization on politics, the economy, and the environment.

In Lesson 2, you learned about the development and growth of urbanization and the important rural-urban migration trend. The lesson identified economic and psychological factors as the most important pull factors to cities. Cities function according to the economies of density, scale, association, and extension. Also discussed were the limitations of growth, and the problem of slums and squatter settlements.

Lesson 3 focused on present and future challenges of increasing industrialization and urban growth and the importance of sustainability. There was an emphasis on the importance of critical thinking and making educated value judgments. The most significant trends identified were an increase in the global population, rapid growth in cities in the developing world, the impact of climate change, and the impact of globalization.



Submitting Assignments

It is now time for you to submit Assignments 5.1 to 5.3 to the Distance Learning Unit so that you can receive some feedback on how you are doing in this course. Remember that you must submit all the assignments in this course before you can receive your credit.

Make sure you have completed all parts of your Module 5 assignments and organize your material in the following order:

- Module 5 Cover Sheet (found at the end of the course Introduction)
- Assignment 5.1: Industrialization
- Assignment 5.2: Urban Planning for a City
- Assignment 5.3: Value Judgments

For instructions on submitting your assignments, refer to How to Submit Assignments in the course Introduction.



GRADE 12 WORLD
GEOGRAPHY: A HUMAN
PERSPECTIVE (40S)

Module 5
World Industrialization
and Urbanization

Learning Activity Answer Key

MODULE 5: WORLD INDUSTRIALIZATION AND URBANIZATION

Learning Activity 5.1: The History of the Industrial Revolution

1. What is the definition of industry?

Industry is defined as any economic activity concerned with the processing of raw materials and the manufacturing of goods in factories, but it can also include an industry where the commodities bought or sold are services, such as seen in the tourist industry or hospitality industry (hotels and conference centers).

2. What is the definition of the Industrial Revolution?

The Industrial Revolution is a period of massive economic, technological, social, and cultural change which affected humans to such an extent that it's often compared to the change from hunter-gathering to farming.

3. List three industrial and economic changes brought about by the Industrial Revolution.

Industrial and Economic Changes:

- Steam power was invented and was used to power factories and modes of transportation such as canals and then railways.
- Iron making techniques, metallurgy, and chemical production were improved.
- The textile industry was transformed by new machines allowing for much higher production at a lower cost.
- Better machining tools allowed for development of more and better machines.

4. List three social and cultural changes brought about by the Industrial Revolution.

Social and Cultural Changes:

- Rapid urbanization led to dense, cramped housing and deplorable living conditions with poor infrastructure.
- The education system was institutionalized.
- It led to the eventual development and growth of social safety nets.
- New city and factory cultures affected family and peer groups.
- There were debates to change laws regarding child labour, public health, and working conditions.

5. List two causes of the Industrial Revolution.

Causes of the Industrial Revolution:

- *Scientific advances in sanitation leading to less disease and lower infant mortality resulted in a higher population and a larger industrial workforce.*
- *The repurposing of land drove tenant farmers to urban centres.*
- *The use of machines freed people from the soil, allowing—or driving—the people into cities and manufacturing.*
- *There were proportionally large amounts of spare capital for investment, further driving industrial development.*
- *Inventions and the scientific revolution allowed for new technology.*
- *Colonial trade networks gave access to cheap natural resources.*
- *There was a culture of hard work, taking risks, and developing ideas.*

6. Explain the basic water mill technology.

Water mills work by harnessing the power of moving water to turn an axle. This rotational (rotary) motion was first used mainly to turn mill stones, but eventually to power a variety of labour saving devices from irrigation, to lumber mills, to preparing and spinning cotton. Figure 5.1 illustrates a basic water mill.

7. As best as you can, redraw the basic diagram of Watt's steam engine. Be sure to label the direction of the steam.

The drawing should look very similar to Figure 5.2.

Learning Activity 5.2: Industry in Your Community



Note: This learning activity requires that you complete some outside research. Use the Internet, an encyclopedia, a history book, and your local library. You may also find some useful information by simply talking to your learning partner or members of your community.

1. What area of Manitoba do you live in? Indicate the name of a community, town, city, or region.

Examples: Black River First Nations Community, Pilot Mound, Winnipeg, Interlake Region

Answers will vary.

2. What is a prominent industry on which this area relies? Briefly describe the industry.

Industries could include agriculture, forestry, mining, generation of electricity, transportation, steel, fishing, manufacturing, technology, aerospace, energy, life sciences, tourism, creative industry (music, movies, art, theatre, advertising, digital media), and so on.

A good resource to learn about the different industries in Winnipeg is www.economicdevelopmentwinnipeg.com/strategic-sectors.

If you do not live in the Winnipeg area, type in keywords, such as the name of the industry and the name of your community, into a search engine such as Google for online sources.

Answers will vary.

3. Write down a few points for each of the following questions:

- Does this industry provide a good or a service? Describe the good/service.
- Does this industry rely mostly on people, transportation, or power (energy)? Is it a combination of the three? Explain.
- What other factors can you identify that have supported this industry?

Example: Is it cheaper to operate this industry in your area compared to other places?

Example: Is the area accessible to outsiders?

Example: Is the industry supported by government funding? Is there any sort of local, provincial, national, or even international partnership involved?

Example: Does the industry rely on research, culture, infrastructure, etc.?

- Has this industry contributed to the region's sense of community? If yes, in what ways? If no, why do you think that is?
- How successful is the industry? Do you see a bright future for the business? Why or why not?

Answers will vary.

4. What is the level of development in this region? What connections can you make between the standard of life and the presence of this industry in this area?

Answers will vary.

5. Can you think of any new industries that would benefit your area? Which one(s)? Why might they succeed in your area?

Example: Building a greenhouse in northern Manitoba to grow fresh fruits and vegetables to sell to the local population.

Answers will vary.

Learning Activity 5.3: Location Factors

1. List and describe the two main factors that determine the larger-scale distribution of industries.
 - *Situation factors*
 - *Materials are transported to and from a factory.*
 - *Businesses seek out locations which make it easy and inexpensive to receive raw materials as well as to ship out finished goods to the consumers.*
 - *Site factors*
 - *Site factors result from the unique characteristics of a location.*
 - *Land, labour, and capital are the three traditional production factors that may vary among locations.*

2. Fill in the blanks in the following statements.

Materials-oriented production: Every industry uses *inputs (materials)* that vary from natural resources to other *manufactured goods*.

Market-oriented production: For many businesses, the best location is close to *markets*.

Transport-oriented production: There are *four modes of transportation: ship, rail, truck, and air*. Ship is cheapest, followed by train, then truck and most expensive is *air transport*.

Break-of-bulk-points are geographical locations where two or more modes of transport meet.

Energy-oriented production: Both the cost of *energy* and the *supply* are characteristics that must be considered in production.

Research-oriented production: Any type of higher technology or information-based service/production needs an *educated workforce*.

3. Which of the location factors of industry do you think is most important? Why?

Answers will vary.

Learning Activity 5.4: Problems and Effects of Industry

1. What is the biggest challenge of global modern industrialization?

Globally, perhaps the biggest challenge is the gap between supply and demand. With technological development, the capacity to manufacture goods has increased beyond consumer demand.

2. What is meant by **stagnant demand**?

In more developed nations, the slow population growth, minimal increases in spending power, and market saturation (people have all the appliances they need), have resulted in “flat” or stagnant demand.

3. What are the different industrial challenges faced by both developed and developing nations?

Developed nations are challenged to keep their industries competitive in an increasingly globalized economy, all the while dealing with their own distinctive geographical issues.

Developing nations are looking to reduce the difference in wealth between the developed nations and themselves. As such, they look to industrialization to expand their agriculturally dominated economies.

4. How do nations protect their markets? Provide three examples.

One way the developed nations protect their markets is by forming trading blocs where groups of countries cooperate in trade with each other, and compete against the other blocs. There are three main trading blocs.

- Western Hemisphere (i.e., North American Free Trade Agreement)
- Western Europe (i.e., European Union)
- East Asia

5. What are some disadvantages **and** advantages experienced by developing nations that are increasing their levels of industrialization?

There are three main disadvantages faced by developing nations.

- Developing industries are too far from the wealthy consumers of developed nations
- Inadequate infrastructure (transportation, education, communications, energy, no steel manufacturing)
- Few untapped foreign markets and small local markets that are too small, making it hard to compete with imports

Those are balanced by two main advantages specific to developing nations.

- They often have access to raw materials.
- They have inexpensive, abundant labour.

6. List two possible advantages and two possible disadvantages of industrialization.

Possible Advantages

- Provides employment
- Provides a greater use of the resources
- Provides a supply of goods for global markets

Possible Disadvantages

- Pollution is now being generated in the new areas.
- Mistakes can often lead to major disasters (Chernobyl).
- There is a rise in debt as money is borrowed to facilitate development projects.
- Profits and interest payments flow back to the lender nation (often a wealthy developed country).

7. List **two** ways the government influences industrial development and two ways industrial businesses can influence the government.

Government can influence industrial development as a

- business partner
- researcher
- banker
- educator
- facilitator (greater or lesser rules and regulations, subsidies to encourage/discourage growth, including such things as immigration policy to enhance a country's human resources)

Industry can influence the government through:

- lobbying politicians
- getting involved in the political process – i.e. financially supporting a political group, campaigning on their behalf, participating in fundraisers and other events
- providing economic support

Learning Activity 5.5: Urbanization

1. Complete the table below by providing three examples of economic “pull factors” and three examples of psychological “pull factors” that influence the movement to urban areas. Remember that there are a number of possible answers.

Economic “Pull Factors”	Psychological “Pull Factors”
<ul style="list-style-type: none"> ■ More job opportunities and potentially higher wages ■ Demand for educated and skilled workforce ■ More people with money willing to invest in entrepreneurs ■ Room and incentive to start up small businesses ■ Greater diversity in manufacturing and production of goods ■ Availability of public services 	<ul style="list-style-type: none"> ■ Can tap into many different social networks of people ■ Public places allow for social interactions ■ Many forms of entertainment and leisure activities ■ Social support and interest groups enrich lives ■ Sense of community, increased chance of finding a mate

2. Briefly explain the three historical types of migration.

Seasonal migration:

seasonal changes in climate and agricultural patterns force many rural workers to enter a city for part of the year to work.

Chain migration:

- *Stage 1: Random rural risk-takers get established in a city, typically working in a specialized area learned from the rural area (i.e.: leather work, brick-making), then play the role of contact/mentor to other family members who follow.*
- *Stage 2: Other members of rural communities make the move to larger cities to establish networks in their specialized area.*
- *Stage 3: City dwellers move to cities in other countries to expand the already established network.*

Fleeing circumstances:

Individuals and families are forced from their traditional rural homes by political factors (i.e., war), social factors (i.e., economic hardships) or environmental factors (i.e., natural disaster). These people choose the city because they believe that it is their best chance to seek improved economic opportunities.

3. What are the four fundamental economic factors that influence the growth of urban areas?

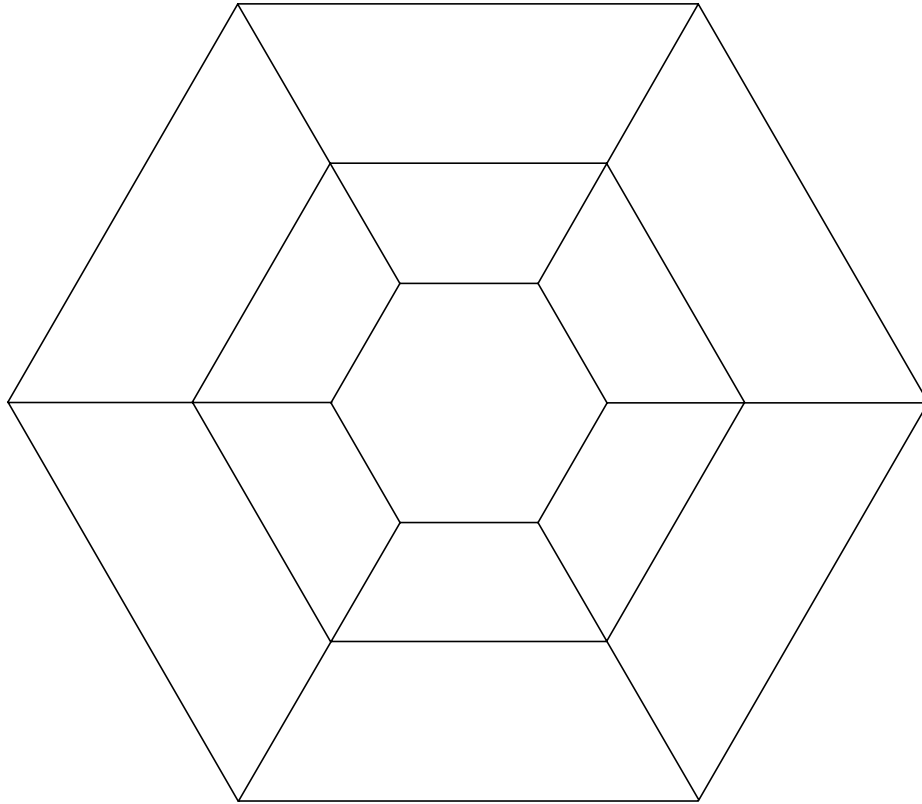
Density, Scale, Association, and Extension

4. One of the problems with urbanization is the formation of slums. Listed below are several difficulties and obstacles experienced by people living in slums. Explain at least one consequence for each.

Formation of Slums	
Difficulty/Obstacle	Consequence(s)
Poor quality and structurally unstable housing	This could cause problems with hydro, electricity, heating/cooling, poor air ventilation, insulation, flooding, rodents, etc
Overcrowded housing (more than three people sharing a room)	This could potentially result in embarrassing or uncomfortable situations, especially with teenagers who want to be independent and parents who have to give up their privacy; family members may have to sleep on the floor or crowd into beds that are too small or that are uncomfortable.
Difficulty living in a rented space for a long period of time	This makes it difficult to experience and develop a sense of place or belonging, to participate in any one community for long, and to develop a feeling of security.
Poor access to water	This causes obvious problems for cooking, cleaning, laundry, showering and toilets, and restricts drinking water, which can all lead to poor health and unsafe living conditions.
Lack of sanitation facilities	This can result in a number of diseases, sickness, and health concerns for people that may be life threatening based on age and complications with other health issues.

- 5 a) There are many challenges that migrants may face when they move to urban centres. List at least **five** of these challenges.
- Overcrowding, living in slum establishments
 - Lack of jobs, low wages, expensive housing
 - Crime and poverty
 - Pollution
 - Overpriced commodities, including food and water
 - Unsanitary living conditions
 - Lack of community
 - Discrimination from authorities

- b) Choose **one** of the challenges you identified and fill in the mind-map below. A mind-map is a tool that helps us to make connections between our ideas.
- At the centre of the mind-map, record the challenge (for example, pollution).
 - In the boxes around the centre, give examples of what this challenge might look like (for example, growing landfills).
 - In the outermost boxes, make a connection between the problem and the impact that it has on people (for example, children playing in landfills can get seriously hurt and/or sick).



Learning Activity 5.6: Critical Thinking

Read each dialogue and record your responses in your notes.

Dialogue 1

John: I don't think we should make any sacrifices to help poorer countries. They should look after themselves.

Meng: So you believe that people shouldn't get any charitable aid?

John: That's right. People should look after themselves.

Meng: Does that mean you wouldn't give any money to charities to help people who are blind or handicapped or mentally ill?

John: Well, no. That's different. Somebody has to help those people.

- a) What test is Meng using to challenge John? *New case test*
- b) Does John meet Meng's challenge appropriately? Explain your answer. *Answers will vary.*
- c) How would you meet Meng's challenge? *Answers will vary.*

Dialogue 2

Maria: I'm not going to help people in other countries. I've got enough problems of my own.

Terri: But suppose you were really poor and starving. Wouldn't you want someone to help you?

Maria: Mmm, I guess so.

- a) What test is Terri using to challenge Maria? *Role exchange test*
- b) Does Maria meet Terri's challenge appropriately? Explain your answer. *Answers will vary.*
- c) How would you meet Terri's challenge? *Answers will vary.*

Dialogue 3

Zena: We ought to contribute a quarter every week to help the starving people in the Sudan.

Jean: You mean you want everyone in this school to do that?

Zena: Yes, I do.

Jean: But what about the ones who can't afford to give a quarter every week?

Zena: I'd only want the people who can afford it to give, of course.

Jean: But what if they don't think giving a quarter is a good idea?

Zena: I'd still say they ought to give it because they can afford it.

a) What test is Jean using to challenge Zena's judgment?

Universal consequences test

b) Does Zena meet Jean's challenge appropriately? Explain your answer.

Answers will vary.

c) How would you meet Jean's challenge? *Answers will vary.*

Dialogue 4

Abdul: Do you really believe that everyone should have the right to do whatever he likes with his own money and to choose whether or not to give aid to developing countries?

Debbi: Yes, I think it should be an entirely personal decision.

Abdul: But if people did that, nobody would give aid.

Debbi: That's not true. Some people want to give aid, and so even if you agree with me and don't ask people to give, some of them will.

a) What test is Abdul using to challenge Debbi's judgment?

Universal consequences test

b) Does Debbi meet Abdul's challenge appropriately? Explain your answer.

Answers will vary.

c) How would you meet Abdul's challenge? *Answers will vary.*

Dialogue 5

Bill: I'd give money to help Ethiopia.

Jim: Would you give money to help the Sudanese?

Bill: No.

Jim: Why not?

Bill: Because the Sudanese can help themselves.

Jim: According to the news media, the Sudanese are just as poor as the Ethiopians.

Bill: I don't care. I still wouldn't give them money.

- a) What test is Jim using to challenge Bill's judgment? *New case test*
- b) Does Bill meet Jim's challenge appropriately? Explain your answer.
Answers will vary.
- c) How would you meet Jim's challenge? *Answers will vary.*

Learning Activity 5.7: Evaluating Different Perspectives

1. The following statement is neither negative nor positive, but it is factual:
"Cities in developing countries are growing at an increasingly fast pace and are characterized by a permanent, large, high density and diversified population."

Respond to this statement through the different perspectives of value judgments. Include both a positive response and a negative response for each perspective. There are many possible answers. The first one is done as an example for you to follow.

Evaluating Different Perspectives		
Perspective	Negative	Positive
Economic	Growing cities may offer more economic opportunities for some people, but most markets are unable to absorb the large surge of people. This results in widespread poverty and joblessness.	Rural migrants come to the city seeking jobs and better opportunities. Many people are able to improve their standard of living and experience an overall boost in happiness and well-being when they advance their education or economic standing.
Political	Larger cities require much more funding, law enforcement, and management. These factors can easily be overrun with corruption and scandal, which negatively impacts the local population.	Municipal politics play an integral role in the function and operation of cities. Effective policies and collaborative initiatives between the municipal government and local inhabitants result in better public services.
Legal	Many people who move to the city and do not have the means to support themselves experience discrimination or are taken advantage of by the legal, political, and economic systems in place. They suffer from the effects of disenfranchisement.	City inhabitants are required by law to pay municipal taxes. This entitles taxpayers to access basic services provided by the city, such as garbage collection and sewage maintenance, which are necessary to the function of the city as a whole.
Environmental	A larger population means that there are more people consuming disposable goods, driving cars, wasting water, and adding their waste to landfills. This increases the overall levels of pollution and is harmful to the environment.	The environment is an important issue for many people and there are often rallies, protests, and petitions aimed at changing policies that affect the environment, such as forcing companies to be more accountable for their environmental impact.
Ethical	In the city environment, there are very negative connotations towards people who suffer from poverty. A basic capitalist assumption (not fact) is that those who work hard and earn their money are rewarded, and those who do not (because of laziness) do not deserve to benefit from public services or monetary handouts (acts of charity). This attitude does not take circumstances into consideration and is very destructive towards developing empathy and a sense of community.	Cities are home to many people, who all have the right to buy and own land, start a business, work, play, and start a family in a safe and healthy environment. It is everyone's equal responsibility to make certain that they are abiding by the laws and living their lives in a manner that does not harm or endanger other citizens. This understanding is generally held by the majority of the population, which makes people feel more comfortable about living in large urban centres.

2. If you ever find yourself involved in a controversial issue regarding public policy that will effect most people in your community, you will need to consider all the options and understand all the factors at play before you decide which side of the issue you agree with. The quality of information you have can be determined by the following: (fill in the blanks)
- Based on *accurate* and adequate evidence.
 - Consider a *variety* of factors or criteria.
 - Represent a *variety* of *significant* interests.
 - Fairly assess the *pros* and *cons*.
 - Things are often more *complex* than they appear on the surface.
 - Having an *open* mind.
 - An awareness of *critical thinking* skills will help in justifying your personal support of complex issues.
 - Your own convictions will be strong and you will be less likely to be manipulated.
3. Summarize the future trends of industrialization.
- In *developed* nations, future industrialization is projected to become more *sustainable*.
 - Increasing *labour costs* are likely to result in an improvement in the *standard of living*.
 - Countries should avoid depending solely on the export of commodities, but use them locally in order to diversify the economy.
 - *Going green* is no longer an option for countries; it is a *necessity*.
 - Political will is usually the driving force behind development regardless of the location

4. Summarize the future trends of urbanization.
 - Urban characteristics are being spread over larger and larger areas, so that the traditional distinction between urban and rural is blurring.
 - Conditions are deteriorating for the urban poor.
 - Much of the urban growth will occur in small to medium-sized cities rather than the megacities.
 - These small to medium-sized cities tend to have more challenges providing comprehensive basic public services.
 - The challenge of managing this growth has led to changes in urban governance.
 - This has resulted in the shift of political power to the municipal from the national or provincial/state level.
 - The national and provincial/state levels of government need to support local governments.



GRADE 12 WORLD
GEOGRAPHY: A HUMAN
PERSPECTIVE (40S)

Module 5
World Industrialization
and Urbanization

Learning Activity Answer Key

MODULE 5: WORLD INDUSTRIALIZATION AND URBANIZATION

Learning Activity 5.1: The History of the Industrial Revolution

1. What is the definition of industry?

Industry is defined as any economic activity concerned with the processing of raw materials and the manufacturing of goods in factories, but it can also include an industry where the commodities bought or sold are services, such as seen in the tourist industry or hospitality industry (hotels and conference centers).

2. What is the definition of the Industrial Revolution?

The Industrial Revolution is a period of massive economic, technological, social, and cultural change which affected humans to such an extent that it's often compared to the change from hunter-gathering to farming.

3. List three industrial and economic changes brought about by the Industrial Revolution.

Industrial and Economic Changes:

- Steam power was invented and was used to power factories and modes of transportation such as canals and then railways.
- Iron making techniques, metallurgy, and chemical production were improved.
- The textile industry was transformed by new machines allowing for much higher production at a lower cost.
- Better machining tools allowed for development of more and better machines.

4. List three social and cultural changes brought about by the Industrial Revolution.

Social and Cultural Changes:

- Rapid urbanization led to dense, cramped housing and deplorable living conditions with poor infrastructure.
- The education system was institutionalized.
- It led to the eventual development and growth of social safety nets.
- New city and factory cultures affected family and peer groups.
- There were debates to change laws regarding child labour, public health, and working conditions.

5. List two causes of the Industrial Revolution.

Causes of the Industrial Revolution:

- *Scientific advances in sanitation leading to less disease and lower infant mortality resulted in a higher population and a larger industrial workforce.*
- *The repurposing of land drove tenant farmers to urban centres.*
- *The use of machines freed people from the soil, allowing—or driving—the people into cities and manufacturing.*
- *There were proportionally large amounts of spare capital for investment, further driving industrial development.*
- *Inventions and the scientific revolution allowed for new technology.*
- *Colonial trade networks gave access to cheap natural resources.*
- *There was a culture of hard work, taking risks, and developing ideas.*

6. Explain the basic water mill technology.

Water mills work by harnessing the power of moving water to turn an axle. This rotational (rotary) motion was first used mainly to turn mill stones, but eventually to power a variety of labour saving devices from irrigation, to lumber mills, to preparing and spinning cotton. Figure 5.1 illustrates a basic water mill.

7. As best as you can, redraw the basic diagram of Watt's steam engine. Be sure to label the direction of the steam.

The drawing should look very similar to Figure 5.2.

Learning Activity 5.2: Industry in Your Community



Note: This learning activity requires that you complete some outside research. Use the Internet, an encyclopedia, a history book, and your local library. You may also find some useful information by simply talking to your learning partner or members of your community.

1. What area of Manitoba do you live in? Indicate the name of a community, town, city, or region.

Examples: Black River First Nations Community, Pilot Mound, Winnipeg, Interlake Region

Answers will vary.

2. What is a prominent industry on which this area relies? Briefly describe the industry.

Industries could include agriculture, forestry, mining, generation of electricity, transportation, steel, fishing, manufacturing, technology, aerospace, energy, life sciences, tourism, creative industry (music, movies, art, theatre, advertising, digital media), and so on.

A good resource to learn about the different industries in Winnipeg is www.economicdevelopmentwinnipeg.com/strategic-sectors.

If you do not live in the Winnipeg area, type in keywords, such as the name of the industry and the name of your community, into a search engine such as Google for online sources.

Answers will vary.

3. Write down a few points for each of the following questions:

- Does this industry provide a good or a service? Describe the good/service.
- Does this industry rely mostly on people, transportation, or power (energy)? Is it a combination of the three? Explain.
- What other factors can you identify that have supported this industry?

Example: Is it cheaper to operate this industry in your area compared to other places?

Example: Is the area accessible to outsiders?

Example: Is the industry supported by government funding? Is there any sort of local, provincial, national, or even international partnership involved?

Example: Does the industry rely on research, culture, infrastructure, etc.?

- Has this industry contributed to the region's sense of community? If yes, in what ways? If no, why do you think that is?
- How successful is the industry? Do you see a bright future for the business? Why or why not?

Answers will vary.

4. What is the level of development in this region? What connections can you make between the standard of life and the presence of this industry in this area?

Answers will vary.

5. Can you think of any new industries that would benefit your area? Which one(s)? Why might they succeed in your area?

Example: Building a greenhouse in northern Manitoba to grow fresh fruits and vegetables to sell to the local population.

Answers will vary.

Learning Activity 5.3: Location Factors

1. List and describe the two main factors that determine the larger-scale distribution of industries.
 - *Situation factors*
 - *Materials are transported to and from a factory.*
 - *Businesses seek out locations which make it easy and inexpensive to receive raw materials as well as to ship out finished goods to the consumers.*
 - *Site factors*
 - *Site factors result from the unique characteristics of a location.*
 - *Land, labour, and capital are the three traditional production factors that may vary among locations.*

2. Fill in the blanks in the following statements.

Materials-oriented production: Every industry uses *inputs* (materials) that vary from natural resources to other *manufactured goods*.

Market-oriented production: For many businesses, the best location is close to *markets*.

Transport-oriented production: There are *four modes of transportation*: *ship, rail, truck, and air*. *Ship* is cheapest, followed by *train*, then *truck* and most expensive is *air transport*.

Break-of-bulk-points are geographical locations where two or more modes of transport meet.

Energy-oriented production: Both the cost of *energy* and the *supply* are characteristics that must be considered in production.

Research-oriented production: Any type of higher technology or information-based service/production needs an *educated workforce*.

3. Which of the location factors of industry do you think is most important? Why?

Answers will vary.

Learning Activity 5.4: Problems and Effects of Industry

1. What is the biggest challenge of global modern industrialization?

Globally, perhaps the biggest challenge is the gap between supply and demand. With technological development, the capacity to manufacture goods has increased beyond consumer demand.

2. What is meant by **stagnant demand**?

In more developed nations, the slow population growth, minimal increases in spending power, and market saturation (people have all the appliances they need), have resulted in “flat” or stagnant demand.

3. What are the different industrial challenges faced by both developed and developing nations?

Developed nations are challenged to keep their industries competitive in an increasingly globalized economy, all the while dealing with their own distinctive geographical issues.

Developing nations are looking to reduce the difference in wealth between the developed nations and themselves. As such, they look to industrialization to expand their agriculturally dominated economies.

4. How do nations protect their markets? Provide three examples.

One way the developed nations protect their markets is by forming trading blocs where groups of countries cooperate in trade with each other, and compete against the other blocs. There are three main trading blocs.

- Western Hemisphere (i.e., North American Free Trade Agreement)
- Western Europe (i.e., European Union)
- East Asia

5. What are some disadvantages **and** advantages experienced by developing nations that are increasing their levels of industrialization?

There are three main disadvantages faced by developing nations.

- Developing industries are too far from the wealthy consumers of developed nations
- Inadequate infrastructure (transportation, education, communications, energy, no steel manufacturing)
- Few untapped foreign markets and small local markets that are too small, making it hard to compete with imports

Those are balanced by two main advantages specific to developing nations.

- They often have access to raw materials.
- They have inexpensive, abundant labour.

6. List two possible advantages and two possible disadvantages of industrialization.

Possible Advantages

- Provides employment
- Provides a greater use of the resources
- Provides a supply of goods for global markets

Possible Disadvantages

- Pollution is now being generated in the new areas.
- Mistakes can often lead to major disasters (Chernobyl).
- There is a rise in debt as money is borrowed to facilitate development projects.
- Profits and interest payments flow back to the lender nation (often a wealthy developed country).

7. List **two** ways the government influences industrial development and two ways industrial businesses can influence the government.

Government can influence industrial development as a

- business partner
- researcher
- banker
- educator
- facilitator (greater or lesser rules and regulations, subsidies to encourage/discourage growth, including such things as immigration policy to enhance a country's human resources)

Industry can influence the government through:

- lobbying politicians
- getting involved in the political process – i.e. financially supporting a political group, campaigning on their behalf, participating in fundraisers and other events
- providing economic support

Learning Activity 5.5: Urbanization

1. Complete the table below by providing three examples of economic “pull factors” and three examples of psychological “pull factors” that influence the movement to urban areas. Remember that there are a number of possible answers.

Economic “Pull Factors”	Psychological “Pull Factors”
<ul style="list-style-type: none"> ■ More job opportunities and potentially higher wages ■ Demand for educated and skilled workforce ■ More people with money willing to invest in entrepreneurs ■ Room and incentive to start up small businesses ■ Greater diversity in manufacturing and production of goods ■ Availability of public services 	<ul style="list-style-type: none"> ■ Can tap into many different social networks of people ■ Public places allow for social interactions ■ Many forms of entertainment and leisure activities ■ Social support and interest groups enrich lives ■ Sense of community, increased chance of finding a mate

2. Briefly explain the three historical types of migration.

Seasonal migration:

seasonal changes in climate and agricultural patterns force many rural workers to enter a city for part of the year to work.

Chain migration:

- *Stage 1: Random rural risk-takers get established in a city, typically working in a specialized area learned from the rural area (i.e.: leather work, brick-making), then play the role of contact/mentor to other family members who follow.*
- *Stage 2: Other members of rural communities make the move to larger cities to establish networks in their specialized area.*
- *Stage 3: City dwellers move to cities in other countries to expand the already established network.*

Fleeing circumstances:

Individuals and families are forced from their traditional rural homes by political factors (i.e., war), social factors (i.e., economic hardships) or environmental factors (i.e., natural disaster). These people choose the city because they believe that it is their best chance to seek improved economic opportunities.

3. What are the four fundamental economic factors that influence the growth of urban areas?

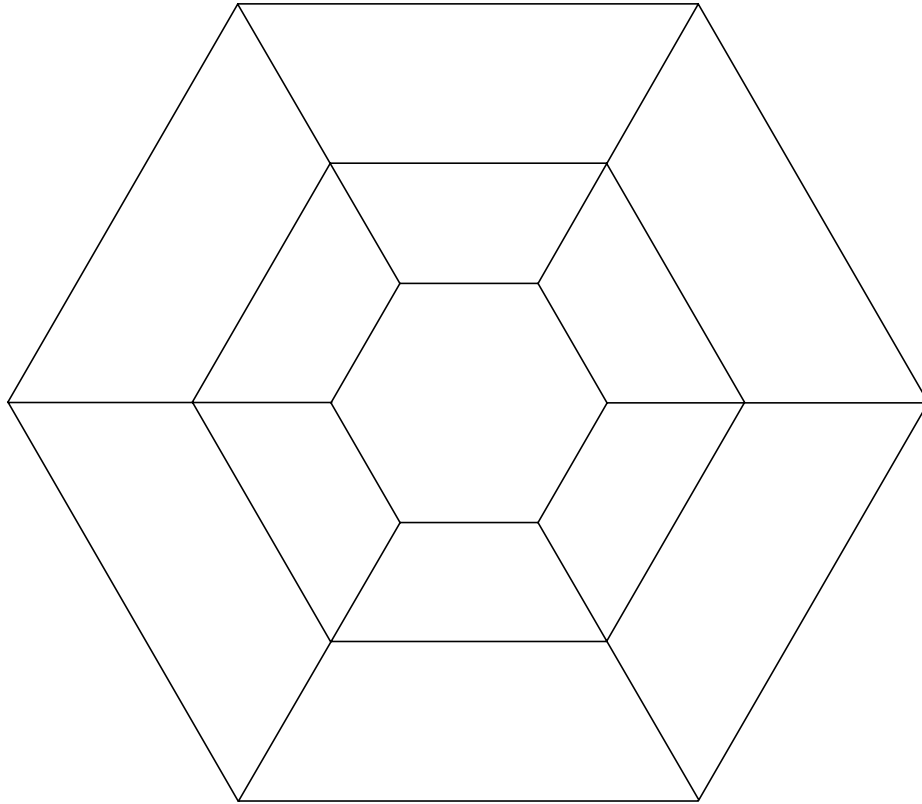
Density, Scale, Association, and Extension

4. One of the problems with urbanization is the formation of slums. Listed below are several difficulties and obstacles experienced by people living in slums. Explain at least one consequence for each.

Formation of Slums	
Difficulty/Obstacle	Consequence(s)
Poor quality and structurally unstable housing	This could cause problems with hydro, electricity, heating/cooling, poor air ventilation, insulation, flooding, rodents, etc
Overcrowded housing (more than three people sharing a room)	This could potentially result in embarrassing or uncomfortable situations, especially with teenagers who want to be independent and parents who have to give up their privacy; family members may have to sleep on the floor or crowd into beds that are too small or that are uncomfortable.
Difficulty living in a rented space for a long period of time	This makes it difficult to experience and develop a sense of place or belonging, to participate in any one community for long, and to develop a feeling of security.
Poor access to water	This causes obvious problems for cooking, cleaning, laundry, showering and toilets, and restricts drinking water, which can all lead to poor health and unsafe living conditions.
Lack of sanitation facilities	This can result in a number of diseases, sickness, and health concerns for people that may be life threatening based on age and complications with other health issues.

- 5 a) There are many challenges that migrants may face when they move to urban centres. List at least **five** of these challenges.
- Overcrowding, living in slum establishments
 - Lack of jobs, low wages, expensive housing
 - Crime and poverty
 - Pollution
 - Overpriced commodities, including food and water
 - Unsanitary living conditions
 - Lack of community
 - Discrimination from authorities

- b) Choose **one** of the challenges you identified and fill in the mind-map below. A mind-map is a tool that helps us to make connections between our ideas.
- At the centre of the mind-map, record the challenge (for example, pollution).
 - In the boxes around the centre, give examples of what this challenge might look like (for example, growing landfills).
 - In the outermost boxes, make a connection between the problem and the impact that it has on people (for example, children playing in landfills can get seriously hurt and/or sick).



Learning Activity 5.6: Critical Thinking

Read each dialogue and record your responses in your notes.

Dialogue 1

John: I don't think we should make any sacrifices to help poorer countries. They should look after themselves.

Meng: So you believe that people shouldn't get any charitable aid?

John: That's right. People should look after themselves.

Meng: Does that mean you wouldn't give any money to charities to help people who are blind or handicapped or mentally ill?

John: Well, no. That's different. Somebody has to help those people.

- a) What test is Meng using to challenge John? *New case test*
- b) Does John meet Meng's challenge appropriately? Explain your answer. *Answers will vary.*
- c) How would you meet Meng's challenge? *Answers will vary.*

Dialogue 2

Maria: I'm not going to help people in other countries. I've got enough problems of my own.

Terri: But suppose you were really poor and starving. Wouldn't you want someone to help you?

Maria: Mmm, I guess so.

- a) What test is Terri using to challenge Maria? *Role exchange test*
- b) Does Maria meet Terri's challenge appropriately? Explain your answer. *Answers will vary.*
- c) How would you meet Terri's challenge? *Answers will vary.*

Dialogue 3

Zena: We ought to contribute a quarter every week to help the starving people in the Sudan.

Jean: You mean you want everyone in this school to do that?

Zena: Yes, I do.

Jean: But what about the ones who can't afford to give a quarter every week?

Zena: I'd only want the people who can afford it to give, of course.

Jean: But what if they don't think giving a quarter is a good idea?

Zena: I'd still say they ought to give it because they can afford it.

a) What test is Jean using to challenge Zena's judgment?

Universal consequences test

b) Does Zena meet Jean's challenge appropriately? Explain your answer.

Answers will vary.

c) How would you meet Jean's challenge? *Answers will vary.*

Dialogue 4

Abdul: Do you really believe that everyone should have the right to do whatever he likes with his own money and to choose whether or not to give aid to developing countries?

Debbi: Yes, I think it should be an entirely personal decision.

Abdul: But if people did that, nobody would give aid.

Debbi: That's not true. Some people want to give aid, and so even if you agree with me and don't ask people to give, some of them will.

a) What test is Abdul using to challenge Debbi's judgment?

Universal consequences test

b) Does Debbi meet Abdul's challenge appropriately? Explain your answer.

Answers will vary.

c) How would you meet Abdul's challenge? *Answers will vary.*

Dialogue 5

Bill: I'd give money to help Ethiopia.

Jim: Would you give money to help the Sudanese?

Bill: No.

Jim: Why not?

Bill: Because the Sudanese can help themselves.

Jim: According to the news media, the Sudanese are just as poor as the Ethiopians.

Bill: I don't care. I still wouldn't give them money.

- a) What test is Jim using to challenge Bill's judgment? *New case test*
- b) Does Bill meet Jim's challenge appropriately? Explain your answer.
Answers will vary.
- c) How would you meet Jim's challenge? *Answers will vary.*

Learning Activity 5.7: Evaluating Different Perspectives

1. The following statement is neither negative nor positive, but it is factual:
"Cities in developing countries are growing at an increasingly fast pace and are characterized by a permanent, large, high density and diversified population."

Respond to this statement through the different perspectives of value judgments. Include both a positive response and a negative response for each perspective. There are many possible answers. The first one is done as an example for you to follow.

Evaluating Different Perspectives		
Perspective	Negative	Positive
Economic	Growing cities may offer more economic opportunities for some people, but most markets are unable to absorb the large surge of people. This results in widespread poverty and joblessness.	Rural migrants come to the city seeking jobs and better opportunities. Many people are able to improve their standard of living and experience an overall boost in happiness and well-being when they advance their education or economic standing.
Political	Larger cities require much more funding, law enforcement, and management. These factors can easily be overrun with corruption and scandal, which negatively impacts the local population.	Municipal politics play an integral role in the function and operation of cities. Effective policies and collaborative initiatives between the municipal government and local inhabitants result in better public services.
Legal	Many people who move to the city and do not have the means to support themselves experience discrimination or are taken advantage of by the legal, political, and economic systems in place. They suffer from the effects of disenfranchisement.	City inhabitants are required by law to pay municipal taxes. This entitles taxpayers to access basic services provided by the city, such as garbage collection and sewage maintenance, which are necessary to the function of the city as a whole.
Environmental	A larger population means that there are more people consuming disposable goods, driving cars, wasting water, and adding their waste to landfills. This increases the overall levels of pollution and is harmful to the environment.	The environment is an important issue for many people and there are often rallies, protests, and petitions aimed at changing policies that affect the environment, such as forcing companies to be more accountable for their environmental impact.
Ethical	In the city environment, there are very negative connotations towards people who suffer from poverty. A basic capitalist assumption (not fact) is that those who work hard and earn their money are rewarded, and those who do not (because of laziness) do not deserve to benefit from public services or monetary handouts (acts of charity). This attitude does not take circumstances into consideration and is very destructive towards developing empathy and a sense of community.	Cities are home to many people, who all have the right to buy and own land, start a business, work, play, and start a family in a safe and healthy environment. It is everyone's equal responsibility to make certain that they are abiding by the laws and living their lives in a manner that does not harm or endanger other citizens. This understanding is generally held by the majority of the population, which makes people feel more comfortable about living in large urban centres.

2. If you ever find yourself involved in a controversial issue regarding public policy that will effect most people in your community, you will need to consider all the options and understand all the factors at play before you decide which side of the issue you agree with. The quality of information you have can be determined by the following: (fill in the blanks)
 - Based on *accurate* and adequate evidence.
 - Consider a *variety* of factors or criteria.
 - Represent a *variety* of *significant interests*.
 - Fairly assess the *pros and cons*.
 - Things are often more *complex* than they appear on the surface.
 - Having an *open mind*.
 - An awareness of *critical thinking skills* will help in justifying your personal support of complex issues.
 - Your own convictions will be strong and you will be less likely to be *manipulated*.
3. Summarize the future trends of industrialization.
 - In *developed nations*, future industrialization is projected to become more *sustainable*.
 - Increasing *labour costs* are likely to result in an improvement in the *standard of living*.
 - Countries should avoid depending solely on the *export of commodities*, but use them locally in order to *diversify the economy*.
 - *Going green* is no longer an option for countries; it is a *necessity*.
 - Political will is usually the *driving force* behind development regardless of the *location*

4. Summarize the future trends of urbanization.
 - Urban characteristics are being spread over larger and larger areas, so that the traditional distinction between urban and rural is blurring.
 - Conditions are deteriorating for the urban poor.
 - Much of the urban growth will occur in small to medium-sized cities rather than the megacities.
 - These small to medium-sized cities tend to have more challenges providing comprehensive basic public services.
 - The challenge of managing this growth has led to changes in urban governance.
 - This has resulted in the shift of political power to the municipal from the national or provincial/state level.
 - The national and provincial/state levels of government need to support local governments.

GRADE 12 WORLD GEOGRAPHY: A HUMAN PERSPECTIVE (40S)

Module 6 World Interdependence



Note: Module 6 contains a number of images that are best viewed in colour. Colour versions of these images in PDF format are available in the learning management system. Students are issued a username and password at the time of registration. If Internet access is unavailable, a CD with these images is available upon request from the Distance Learning Unit.

MODULE 6: WORLD INTERDEPENDENCE

Introduction

In this brief and final module, you will focus on the big picture by examining the concept of interdependence. Most of your time will be spent on the final assignment. The purpose of this final module is to get you thinking about, and solidifying your understanding of, a range of geographical interactions and associations.

Reminders

- Let the computer graphics in the margins guide you through the module.
- Whenever you encounter difficulties, contact your tutor/marker. Don't let a roadblock keep you from working towards the completion of the course.

The main focus questions for this module are

Lesson 1
1. How are countries interdependent? What has caused interdependence? What are the implications?
2. Who and what promotes increasing interdependence? Why? What are the implications?
3. What are the advantages and disadvantages of greater independence?

Assignments in Module 6

You will complete only one assignment in this module. The purpose of this assignment is to be inclusive of the six fundamental geographical concepts that have been discussed throughout this course (sense of place, patterns and trends, graphical value judgments, geographical importance, evidence and interpretation, and interactions and associations). The research paper is an opportunity for you to further explore a topic that interests you and to review the information that pertains to this topic.

When you have completed the assignment for Module 6, submit your completed assignment to the Distance Learning Unit either by mail or electronically through the learning management system (LMS). The staff will forward your work to your tutor/marker.

Lesson	Assignment	Marks
1	Assignment 6.1: Research Paper	43

Writing Your Final Examination



You will write the final examination when you have completed Module 6 of this course. The final examination is based on Modules 4 to 6, and is worth 25 percent of your final mark in the course. To do well on the final examination, you should review all the work you complete in Modules 4 to 6, including all the learning activities and assignments. You will write the final examination under supervision.

LESSON 1: GLOBAL INTERDEPENDENCE

Lesson Focus

By the end of this lesson, you will

- Identify the cause and effect, and understand the different variables which complicate this relationship.
- Discover how the colonial context has defined the process of development.
- Examine the advantages and disadvantages of world interdependence.
- Encounter the Millennium Development Goals.

Introduction

This lesson looks at interdependence by examining the relationship between cause and effect and then applying that relationship to the post-colonial world context. The relationship between the former colonizing masters and colonized peoples is the basis upon which our current system of global economic trade and finance is built. World interdependence as it relates to human and physical geography has many advantages but can also pose many challenges to people, the environment, organizations, and governments around the world.

World Interdependence

The world is similar to a large family. Just as every family member is at a different level of maturity and development (physical, social, and emotional), every country in the world also exists at its own level of development, each with its own characteristics. Any given country is either dependent on the other members of the family (other countries) or influenced by the things they do.

Previously in the course, you studied the complex issues of interdependence. You examined the issues surrounding the Aral Sea and how the different countries in the region all had an impact on the degradation or recovery of the ecosystem. Another example was the global economic ripple effect that resulted from the March 2011 earthquake and tsunami off the coast of Japan. Every country that traded with Japan at that time had to deal with the negative effects that the earthquake and tsunami had on Japanese businesses.

Cause and Effect



It is important to understand the concepts of geographical interactions and associations. You can think of these interactions in terms of cause and effect.

Cause is a person or thing that gives rise to an action, phenomenon, or condition. **Effect** is a change that is a result or consequence of an action or other cause. The connection between cause and effect takes place over time—it is not immediate.

An important distinction to make is the difference between contributing factors and determining factors.

- **Contributing factors** have an influence on an issue or on the final result of an event, but they do not guarantee anything.
- **Determining factors** guarantee the final result of an event or issue.

An illustration of the difference between contributing and determining factors would be a competition to see who gets the highest mark on a quiz. Individual memory, background understanding, and amount of time spent reviewing the related material all contribute to an individual's success on the quiz, but they do not guarantee the highest mark. Getting the most correct answers does guarantee the highest mark, which makes this the determining factor in the competition. The cause is getting the most correct answers. The effect is winning the competition.

When you examine different aspects of world interdependence (social, political, economic, or environmental interactions between regions/groups), you need to be able to ascertain whether or not a cause directly contributed to a given result. To determine whether or not there is a connection, three conditions must be met.

1. **Evidence of difference:** The evidence should indicate that an effect has taken place, and that evidence must be associated with the cause under question.

Example: Say you are suffering from a headache. You take a painkiller and your headache disappears within an hour. The evidence of difference is that the headache you had is now gone. This evidence of difference is associated with the painkiller (cause) you took an hour earlier.

2. **Evidence of a causal connection:** The evidence should suggest that the association is not coincidental.

Example: Just because you check your email before lunch does not mean there's a connection between the lunch and email.

- Primary factors have a strong causal connection.

Example: Yesterday it snowed, and today the roads are icy.

- Secondary factors have a weak causal connection.

Example: Your stomach is sore today because you ate broccoli last night for dinner. There's a possibility that you may be allergic to broccoli, but the chances of this being true are insignificant.

- Peripheral factors are coincidences.

Example: Leonardo Dicaprio wins a Golden Globe award the same day you decide to re-watch your favourite movie in which he starred, *Titanic*. These two events are completely unrelated.

3. **Absence of alternative explanations:** Nothing other than the established causal factor could be used to explain the outcome.

Example: You drop your cellphone into a sink full of water and, consequently, your cellphone stops working.

Causal Relations and Factors



Causality (often called causation) is the relation between an event (cause) and a second event (effect) where the second event is understood as a consequence of the first. These relations can be interactive or associative and have a variety of sources and corresponding effects.

Interactive causal relations happen when two or more objects or phenomena engage with each other and have an effect on one another. An example of this might be interactions within an ecosystem, where the population of deer gets high enough to influence the growth of local vegetation. If the amount of vegetation is reduced, there may not be enough to support the deer population, and some deer may starve. Another example would be the interaction of forces in mutually influential processes such as what occurs in globalization in the areas of technology, trade, culture, and communication.

Associative causal relations happen when two or more factors operate with a common result. They don't influence each other, and they aren't affected by the results of the relationship. Weather is a good example because air temperature and air moisture content are two separate factors that combine to produce rain or snow.

The sources and effects of causal relations are many and can include

- **Internal factors:** An internal factor is a source without which the cause cannot take place. (e.g., Canada could not trade natural resources to other countries if Canada did not have any natural resources to begin with.)
- **External factors:** An external factor can affect the cause from the outside to change the result. (e.g., A change in the global market conditions, such as a drop or increase in the price of oil, will influence the amount of Canadian oil bought by other countries.)
- **Contributing factors:** A contributing factor is a factor that contributes to, but does not necessarily cause, an event to occur. (e.g., A strong wind can worsen the damage caused by a forest fire, but it did not necessarily cause the fire in the first place.)
- **Counteracting factors:** Sometimes referred to as mitigating factors, these factors work to delay or prevent an event from occurring. (e.g., Cool, rainy weather helps prevent forest fires.)

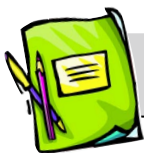


Mitigate means to make less severe or less painful (e.g., Applying a band-aid to a scrape mitigates the chances of the wound becoming infected.) or to lessen the gravity of an offense or mistake (e.g., He would have faced a longer prison sentence but the testimony from the witness mitigated the judge's ruling.).

- **Direct association** (x causes y): A direct association refers to a clear and unambiguous connection to the cause with no intervening factors involved. For example, running on a treadmill will cause a person to burn calories.
- **Indirect association** (x causes y , y causes z): An indirect association is due to the presence of another intermediate variable that is common to both variables. For example, if a student studies hard for a Chemistry test and does well, her parents will be happy. The student's successful studying practices directly affect her test score, but they also indirectly affect her parents' good mood.
- **Positive or negative impacts:** Impact refers to a marked effect or influence, which can be both positive and negative in nature. For example, the impact of a ban on commercial fishing in an area will have a negative impact on both the individual fisher as well as the local economy in the short-term but, in the long-term, the ecosystem will recover enhancing the probability of establishing a sustainable fishery, which is positive.

Events have different degrees of influence, but fall into three main categories.

- **Breadth or extent of effect** can be measured by looking at how many people, animals, acres of land, etc. the event affected across the board. The local effect of a parade on vehicle traffic for example will affect less people than the global effect of a flu virus pandemic.
- **Depth of effect** refers to how deeply the impact of the event is felt as well as the level of significance of the consequences. The effect of temporarily losing Internet coverage is quite superficial compared to the profound effect of a city-wide loss of power on a cold winter's day.
- **Duration of effects** refers to how long the effect of the event lingers after it has occurred. A huge snowfall in Winnipeg will temporarily affect the road quality until it is cleared away, but the city's annual spring flooding affects those residents living along the riverbank for weeks or months depending on the water damage that is caused by the flooding.



Learning Activity 6.1

Exploring Causality

1. Match the different factors of causality on the left to the correct example on the right.

Exploring Causality			
	Factors of Causality		Example
A	Internal factors are a source without which the cause cannot take place.		My brother stayed up late playing video games and did not get enough sleep. This affected his mood the next day at school.
B	Depth of effect refers to how deeply the impact of the event is felt as well as the level of significance of the consequences.		The 2011 tsunami in Japan physically and emotionally affected millions of people, if not everyone, in the country.
C	Determining factors guarantee the final result of an event or issue.		A huge snowstorm causes Air Canada to cancel all flights for the rest of the day.
D	Counteracting factors are sometimes referred to as mitigating factors and work to delay or prevent an event from occurring.		A change in fashion trends influences the style of clothing sold at department stores.
E	Direct association (x causes y) refers to a clear and unambiguous connection to the cause with no intervening factors involved.		Planting trees helps to prevent the desertification of a forest.
F	Contributing factors contribute to, but do not necessarily cause an event to occur.		I was satisfied when I received a decent mark on my math test (worth 2% of my overall grade), but I was ecstatic when I aced the final exam (worth 25% of my grade)!
G	Breadth or extent of effect can be measured by looking at how many people/animals/acres of land etc. the event affected across the board.		The draining of marshes increased the frequency and severity of flooding.
H	External factors can affect the cause from the outside to change the result.		Whichever team scores the most goals in a hockey game will win the game.
I	Indirect association (x causes y, y causes z) is due to the presence of another intermediate variable that is common to both variables.		Manitoba exports hydroelectricity to the United States because of the availability of surplus water-generated power.

continued

Learning Activity 6.1: Exploring Causality (continued)

2. In your own words, provide definitions for the following terms:
 - a) evidence of difference
 - b) evidence of a causal connection
 - c) interactive causal relations
 - d) associative causal relations
 3. Fill in the blanks in the statements below.
 - a) Primary causal connections have a _____ causal connection.
 - b) Secondary causal connections have a _____ causal connection.
 - c) Peripheral causal connections are _____.
-

Colonialism as a Cause of Economic Inequality between Countries



Colonialism primarily refers to the context of imperial expansion of Europe into the rest of the world, beginning in the 16th century. The development of navigation (sailing) technology allowed European colonizers to cross the ocean and establish settlements in the Americas, Australia, and parts of Africa and Asia, while still maintaining close political ties to their country of origin.

The colonists worked to develop a relationship of control over the Indigenous populations. A social, political, economic, and cultural hierarchy was enforced that fostered the notion that the European settlers were superior to the Indigenous populations in all areas of life. The Europeans had a moral mission to “civilize” the non-Western peoples, with the intent of helping the “inferior” societies advance and adopt Western culture, and what the Europeans perceived as a better system of government.

According to the World Health Organization, Indigenous populations are classified as “communities that live within, or are attached to, geographically distinct traditional habitats or ancestral territories, and who identify themselves as being part of a distinct cultural group, descended from groups present in the area before modern states were created and current borders defined. They generally maintain cultural and social identities, and social, economic, cultural and political institutions, separate from the mainstream or dominant society or culture.” www.who.int/topics/health_services_indigenous/en/

Module 1, Lesson 4, outlined the many inequalities between the more developed industrialized economies and the less developed emerging economies. Although the study of these differences can be complex, a great deal of attention has been focused on post-colonial theory, which pinpoints colonialism as the main cause of inequality today.

Post-colonial theory studies the effects of colonialism on societies in both the cultural and economic sense. Almost all of the less-developed countries today are former colonies of European empires. For centuries, the people and natural resources of these countries were exploited by the “mother” nation to ensure that the colonizing country benefitted from the wealth. Between the 15th and 18th centuries, power was tied to wealth and the economic prosperity of the nation was considered much more important than the needs of the Indigenous groups.

There are many problems in the colonial system, such as

- the distinction between superior and inferior racial/ethnic groups
- the assimilation of Indigenous cultures, which led to a loss of Indigenous language, culture, and community well-being
- reinforcing an exotic ‘otherness’, which later led to racist ‘otherness’
- direct and indirect forms of domination, such as use of language (e.g., savage Indians)
- exploitation of resources that belonged to Indigenous groups (these groups did not receive adequate compensation for this loss, nor did they accept the way resources were exploited)
- violent methods of coercion and control by the colonists
- Indigenous peoples’ loss of territory, which included a loss of rights in stewardship over the land

Although the European nations were made more powerful by their geographic expansion and accumulation of wealth (resources), the only way to advance that prosperity was to engage in trade with other nations. This brought about the global, economic trading system and industrialization, which has been discussed in previous modules. In the 20th century, colonies fought to liberate themselves. It has become obvious to many of the industrialized nations that it is much more beneficial for the independent states to set up special trading relationships with the former colonies and expand the developed economies by tapping into these new and large markets.

The problem with this post-colonial system is that it has created a huge economic gap between the more-developed and the less-developed countries. The economic system based on free-market principles disproportionately favours the wealthier countries over the developing countries. Although global trade and finance institutions claim to treat all countries equally, these institutions should really be focused on treating all countries equitably.

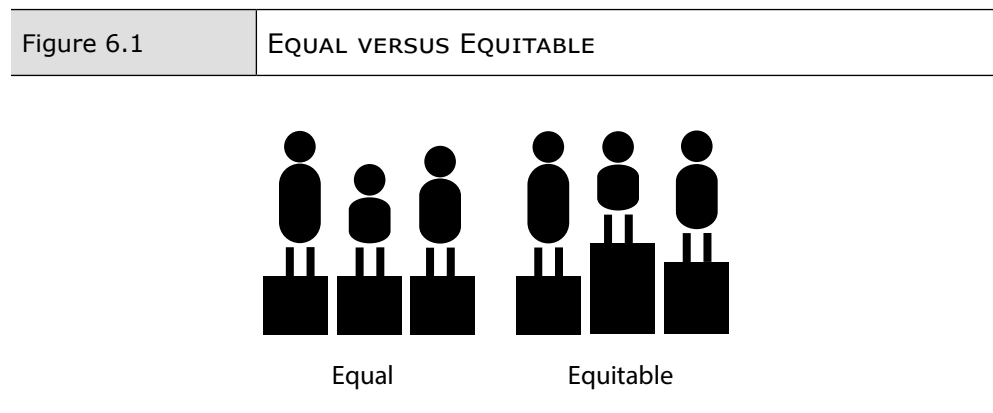


Inequality refers to the lack of equality between two or more subjects.

Inequity refers to a lack of fairness or justice between two or more subjects.

The less-developed countries are under pressure to play catch-up to the more-developed countries without the same resources, wealth, and power that developed countries gained during the colonial era. At this point, the rules of trade and industrialization have been set by the more-developed countries and the less-developed countries are severely disadvantaged in the game. These countries are not receiving the equitable help and support they need to prosper. The result is that the gap widens as the developed world continues to progress while the developing world is left behind.

The following example clearly distinguishes between the two concepts. Imagine that three young children are trying to look over their neighbour's fence. The children are all different heights, but none of them are tall enough to look over the fence. If you give each of them a wooden block to stand on (exact same shape and size), you would be treating them equally. To treat them equitably, you would have to give each of them a different-sized wooden block so that each child reaches the same height.



This is what needs to happen for the former colonies to break out of the cycle of economic dependence on the Western states. Each country needs a different-sized wooden block that supports each country differently, but ultimately allows each country to reclaim the resources, territories, and capital required to rebuild their domestic industries, which have been struggling after centuries of exploitation and violence.

The cultural, social, and political components of this struggle are equally important. These former colonies are divided in population where some citizens are descendants of the colonialists and others are Indigenous groups, struggling for an equal standing within their country. Realities for Indigenous groups, such as covert racism, poverty, and negative cultural identity, make it difficult for them to contribute economically. In addition, corrupt politicians often lead developing countries and provide little or no aid to the people who need it most. Disillusioned by the colonial system of domination and control, many of these corrupt governments have experimented with the self-sufficiency model of development rather than engaging in international trade. The advantages and disadvantages of this approach were outlined in Module 1.

The next section discusses interdependence between countries above and beyond the economic ties that connect the people of the world.

Interdependence between Countries

Interdependence is the result of countries and regions seeking mutually beneficial relationships with each other. When thinking about interdependence between countries, perhaps the first thing that comes to mind is trade and economic processes such as industrialization. Since the end of World War II, the global economic links have grown stronger and more complex, culminating in the globalization that people all over the world are experiencing today.

However, interdependence between countries is not simply restricted to trade and finance. It also involves military and peacekeeping operations, the sharing of information and communication technology, scientific collaboration, coordination of environmental protection plans, as well as the influence of the global arts, culture, and entertainment industries. Today, there are many more ways in which countries and individuals around the world are connecting, and sharing ideas and information.

Think about your own life—do you use the Internet to read international news articles or to share posts on social media sites? Do you enjoy travelling? Do you watch television shows or movies produced in the United States or in other countries? Do you enjoy eating exotic fruit? All of these small actions rely on the processes of globalization and interdependence and are often taken for granted until there is a glitch in the system and these commodities and luxuries are no longer available to us.

Relationships between nations form the foundation of interdependence. These relationships are political, as well as social and economic, and are constantly changing and evolving in response to external factors such as the economy, society, climate, and resource availability. In the future, interdependence will be influenced by energy availability, shifting population demographics, as well as changing cultural dynamics.

Globalization

As was discussed in Module 5, globalization refers to a process of worldwide integration of financial markets, international trade, and cultural exchange. The process is facilitated by technological advancements in transportation and telecommunications. The concept of globalization reflects the basic economic relationship between nations, which is mutually dependent upon social, cultural, and political associations. Globalization also results in increased interdependence among regions and nations.

One result of this increased level of connection is a greater awareness of the diversity in the world. This situation results in two general responses.

- **positive:** The diversity is embraced as an enriching and essential part of society.
- **negative:** Diversity is feared, and seen as a threat to local identity and autonomy (political and economic control).

There are many causes that have the effect of increasing interdependence among nations and regions. For instance

- Multinational corporations have replaced smaller businesses such as local banks and other financial institutions.
- Industrial growth has created environmental problems that the world must now work together to solve.
- Dependence on oil has focused world attention on the problems of supply and demand for this non-renewable energy source.

Aside from the whole issue of oil as a non-renewable resource and the peak oil crisis, the fluctuation of oil prices has had a major impact on the world. While increasingly high prices may benefit oil producing countries, it causes inflation in countries that are dependent on that oil. This has a “trickle-down” effect, increasing prices on goods and contributing to a debt crisis in some developing nations.

With regard to the debt crisis, the following is a good example of how interdependence in the banking sector can prompt domestic economic and political changes. The occasional slowing of the world economy prevents many developing nations from keeping up with loan payments. The International Monetary Fund (IMF) has negotiated deals between countries regarding repayments and, in exchange for lower interest rates, many developing nations have been forced to accept free-market principles such as limited government intervention in the economy and recognition of individual rights to life, liberty, property, and voluntary contractual exchange (the exchange of labour for wages, money for a product/service).

Financial markets reflect interdependence because fluctuations in one market have an effect on another. Examples of this were the problems many western markets faced when the Asian markets took a downturn in the 1990s and during the European debt crisis of the early 2010s.

Many nations have linked their economies officially by joining trade agreements or through treaty relationships. The European Union is an example of a group of countries working to create a unified economic system that operates on a single currency, the euro. The North American Free Trade Agreement (NAFTA) between Canada, the United States, and Mexico is another example of countries attempting to lower trade barriers and link their economies.

The rise of industrialization has caused numerous problems with the environment including

- acid rain caused by fossil fuel pollutions
- depletion of the ozone layer due to the use of chlorofluorocarbon (CFCs)
- global climate shifts
- deforestation, loss of biodiversity, and loss of arable land

These problems threaten all people; consequently, countries are working together to solve them. The challenge continues to be how to protect the environment without destroying the fragile economies of the developing nations.

Advantages and Disadvantages

As mentioned above, interdependence can be seen as positive or negative. This view changes according to individual and group perspectives.

As far as advantages go, the motivation behind economic interdependence is obviously the possibility of building wealth. The needs and wants of the population can be met through job creation, increased investment, new technology and materials, as well as diverse products and services. The UN and other international organizations believe that interdependence can also lead to mutual respect and peace-building relationships.

Disadvantages include conflicts arising between countries that refuse to cooperate as part of special projects or negotiations on account of their dissimilar values, political agendas, or social strategies. Different political systems attempting to build an interdependent relationship demand a certain level of tolerance and respect in order to be successful. Cultural identity issues may arise, similar to those seen between the USA and Canada. Different national philosophies in terms of social welfare issues may cause conflicts (again, the differences between the USA—Affordable Care Act (Obamacare)—and Canada—Universal Health Care—in terms of the healthcare system is one example), as could environmental issues. Any relationship is fraught with challenges and any of the above disadvantages regarding interdependence can result in political issues between nations and regions. This relationship can be made more taxing by faith-based differences between world religions as people migrate and establish diverse multicultural communities.

The potential advantages and disadvantages are also closely linked to the equality of the relationship. If each partner is equally dependent on the other for success, then there is an equal commitment to making the partnership successful with regard to economic, environmental, or political issues. The advantage to both partners is mainly in the sustainability of the relationship. The disadvantage is that not all of the support is as equitable as it needs to be and that decisions must take place on a democratic basis, which lengthens the process and makes it more likely to result in a compromise (which is not always the best solution). If the relationship isn't equitable or balanced between the parties, the decisions tend to be influenced by the more independent partner.

Making Progress: Millennium Development Goals

The Millennium Development Goals (MDGs) were established following the United Nations Millennium Summit in 2000. At the time, 189 member states and at least 23 international organizations committed to achieving these eight goals by the year 2015. The list of goals, in the order the UN hopes they will be achieved, is as follows:

1. To eradicate extreme poverty and hunger
2. To achieve universal primary education
3. To promote gender equality and empower women
4. To reduce child mortality rates
5. To improve maternal health
6. To combat HIV/AIDS, malaria, and other diseases
7. To ensure environmental sustainability
8. To develop a global partnership for development

Each of these goals has specific targets and deadlines to measure progress. The World Bank, the International Monetary Fund, and the African Development Bank have been working with countries to tackle the debt issue and reallocate resources to address issues of poverty, human development, and environmental sustainability.

The MDGs represent real-world problems that require urgent solutions. With that said, accomplishing these goals, although admirable, is an extremely challenging task that requires due diligence on the part of every member state committed to the cause. The task is made even more difficult when unexpected natural disasters or conflicts require immediate financial relief that could have otherwise gone into supporting the development strategy.

The most important task is to build local capacity and share solutions among global partners. In 2015, there is still much criticism and speculation that the United Nations group will be unable to achieve the level of success set out at the beginning of the millennium. The silver lining to this bleak situation is that greater awareness has been achieved at all levels of government regarding the importance of these goals and the need to arrive at viable and sustainable solutions for everyone's benefit.

Lesson Summary

Now that you have completed this lesson, you should be able to confidently talk about interdependence: what it is, how countries are interdependent, and why this interdependence exists in the first place. This lesson briefly discussed the long history of colonialism and the effects of post-colonialism on the developing world as well as the United Nations' eight Millennium Development Goals. Advantages and disadvantages of global interdependence and globalization were also presented. Based on past and current examples of interdependence, you should be able to explain who and what situations promote interdependence, and make educated guesses as to how and where it may appear in the future.

Notes



Assignment 6.1

Research Paper (43 marks)

Rationale

The purpose of a research essay is to produce a paper that demonstrates your ability to find and present information on a particular subject and back up your own ideas with facts that have been published elsewhere.

Task and Purpose

Your task is to write a research paper that integrates your chosen topic with one of the six fundamental geographical concepts. The purpose of this assignment is to demonstrate your degree of knowledge and understanding of the complex interaction between geographical concepts and real-world challenges and solutions.

This assignment will also help prepare you for some of the work you will need to complete if you intend to pursue a university or college education. Developing strong, independent research and writing skills is an asset that will benefit you now, as well as later on in your studies.



Note: Read through the instructions and rubric for this assignment in its entirety at least once before you start planning and writing your essay. You need to be aware of all of the requirements to ensure that you get the best mark possible.

Helpful Tips for Composing a Research Essay

1. **Keep track of your sources** as you start to compile information on your essay topic. This will save you time and frustration later. Remember this phrase when deciding whether you need to cite a source or not: *if it didn't come from you, give credit where credit is due.*
2. **Use reputable sources of information.** Question any source that cannot be confirmed elsewhere or that appears to represent only propaganda or someone's personal opinions. Reputable sources are published by experts, legitimate organizations or associations, or respected publishers and/or media enterprises.

continued

Assignment 6.1: Research Paper (continued)

3. **Narrow down your topic.** The topics you have learned about in this course have been narrowed down. Specific examples have been chosen to illustrate certain concepts and contextualize statements and other facts. You must now do the same with your given topic. The broader your scope of research, the more difficult it will be to compile the right information to support a specific thesis statement. In order to avoid becoming overwhelmed, consider focusing on one particular aspect of an issue.

For instance, you could

- Conduct a case study of one particular cultural group and their experiences with ethnocentrism.
- Examine the impact of one factor of development in a less developed country.
- Research a renewable or non-renewable energy source and its importance in a specific province, state, or country.
- Examine the effect of pollution on a particular body of water.
- Track the progress of a UN member state in regards to one of the millennium development goals.
- Research the conditions of a slum settlement.



These are just a handful of directions that your research paper can take. It is recommended that you discuss your ideas with your learning partner and/or your tutor/marker before you begin your research.

Steps to Writing a Research Paper

Stage One: Planning

Step 1. Choose a topic.

You must first choose a topic that was covered in the course, which is of interest to you.

The following topics were covered in the six modules of this course:



Note: If you have a topic in mind that was covered in the course but is not listed in the following table, it may be possible for you to pursue that option. Contact your tutor/marker for approval of the topic before you start your research.

continued

Assignment 6.1: Research Paper (continued)

Research Paper Topics	
Module	Topics
1 World Geography Overview	<ul style="list-style-type: none"> ■ Hospitable and inhospitable landscapes ■ Culture and ethnocentrism ■ Development: economic, social, and demographic factors
2 World Population	<ul style="list-style-type: none"> ■ Population demographics: temporal and spatial changes ■ Migration ■ Role of government in influencing population ■ Standard of living/quality of life ■ Challenges facing Indigenous groups ■ Sustainable population growth
3 World Food Supply	<ul style="list-style-type: none"> ■ Distribution of major crops ■ Social factors of food production <ul style="list-style-type: none"> ■ Infrastructure, economy, politics, resources ■ World hunger <ul style="list-style-type: none"> ■ Myths about hunger ■ Strategies to reduce hunger/famine ■ Food security ■ Challenges facing developing countries <ul style="list-style-type: none"> ■ Technology, supply and demand, standard of living, etc. ■ Food from water: fishing, aquaculture ■ Food from other sources: technological developments
4 World Resources, Energy, and Environment	<ul style="list-style-type: none"> ■ Resource distribution, allocation, and demands ■ Sources of renewable energy ■ Water ■ Domestic resource management (Dutch disease) ■ Resources in international waters (UNCLOS) ■ Energy, development, and quality of life ■ Energy reserves and consumption
5 World Industrialization and Urbanization	<ul style="list-style-type: none"> ■ Impact of the Industrial Revolution ■ Problems of industry <ul style="list-style-type: none"> ■ Industrial effects (pros and cons), advantages and disadvantages of globalization on industries ■ Role of technology in industry ■ Development and growth of urbanization ■ Limitations of growth <ul style="list-style-type: none"> ■ Unsanitary living conditions, “slums” ■ Challenges to the factors of urbanization ■ Sustainability in industrialization or urbanization
6 World Interdependence	<ul style="list-style-type: none"> ■ Colonialism ■ World interdependence ■ Advantages and disadvantages of globalization ■ Millennium Development Goals

continued

Assignment 6.1: Research Paper (continued)

Step 2. Choose a geographical concept.

You must then decide how you can examine one of the topics listed previously through the lens of **at least one** of the six fundamental geographical concepts.

The Six Fundamental Geographical Concepts

According to the document “Teaching About Geographical Thinking” by The Critical Thinking Consortium located at the University of British Columbia in Vancouver, there are six fundamental geographical concepts. Each of these concepts has been discussed at various points throughout the course and are essential when considering broad-based geographical issues.

Six Fundamental Geographical Concepts	
Module	Concept
1 Sense of Place	<ul style="list-style-type: none">■ Features which characterize the identity of a particular area■ Places are both unique as well as connected to other locations■ Regions are categorized using a range of defining characteristics (e.g., physical—vegetation, topography; cultural/social—ethnicity, language; functional—residential, commercial, industrial)■ Developing a sense of place involves recognizing commonalities and diversity in the physical and human geography■ It is important to avoid ethnocentric attitudes and stereotypes■ Local values, sensitivities, and unique practices must be honoured
2 Patterns and Trends	<ul style="list-style-type: none">■ Changes occur temporally (over time) and spatially (across distances)■ There is change and continuation in both the natural and human world■ Patterns and trends are most apparent when comparing regions, analyzing resource use, assessing communication and transportation technology, observing species and ecosystems, and monitoring shifting migration patterns and cultural demographics■ Patterns and trends are measured in a variety of units (e.g., volume, length, area, time, quantity)■ Geographic models can describe and predict patterns and trends over space and time, as well as the shallowness or depth of the possible effects

continued

Assignment 6.1: Research Paper (continued)

Six Fundamental Geographical Concepts (continued)	
Module	Concept
3 Graphical Value Judgments	<ul style="list-style-type: none"> ■ Value judgments represent individual or group beliefs about whether something is good/bad, right/wrong, effective/ineffective ■ These judgments can be made from economic, legal, political, ethnic, environmental, ethical, and regional perspectives, among others ■ All relevant information should be collected before a decision/judgment is made; judgments need to be valid and fair, based on a thorough understanding of an issue ■ Judgments need to be based on accurate evidence ■ Judgments must consider a number of factors/perspectives as well as a variety of interests and both positive and negative viewpoints
4 Geographical Importance	<ul style="list-style-type: none"> ■ Location is a key factor in how humans rate the importance of a place ■ Importance can be very specific, or broadly based ■ National, political boundaries are broadly accepted as important, but regional characteristics of importance may vary
5 Evidence and Interpretation	<ul style="list-style-type: none"> ■ Evidence is not the same as information ■ Geographic information becomes geographic evidence only when it is used to support arguments, reach conclusions, and explain phenomena ■ Geographic evidence is drawn from primary, secondary, and tertiary information sources ■ Evaluating the source of information is the key to assessing the validity and interpretation of the evidence (e.g., Is it recent data? Is it from a reputable source? Can it be verified from another source?)
6 Interactions and Associations	<ul style="list-style-type: none"> ■ Contributing factors do not guarantee an outcome but they do show evidence of a causal connection in the absence of other explanations ■ Determining factors do guarantee an outcome ■ Causal relations can be interactive such as when two or more phenomena have effects on each other but can also be associative as when two or more factors operate together to have a common result ■ Factors that cause change can have internal and external sources; they may also have effects that contribute to or counteract a phenomena ■ Effects can be direct or indirect, positive or negative ■ Events have different degrees of influence, including breadth and extent of impact/results, depth of impact/result, and shorter/longer periods of effect

continued

Assignment 6.1: Research Paper (continued)

Step 3. Describe how the two concepts are related.

Example: The issue of **myths related to world hunger** (topic) can be examined through the lens of **evidence and interpretation** (geographic concept). There are many objective facts that can be stated in relation to world hunger, but there are also many misperceptions about why people in certain areas of the world are suffering from hunger and famine. There are many reputable sources of information, such as the World Bank Group, which can provide accurate statistics on the status of world hunger. These statistics, however, do not tell us about the individual people who are suffering and how their lives are impacted by a lack of proper nutrition. These statistics do not reflect the political, environmental, or economic situation of a particular country, region, city, or town.

Step 4. Show evidence of two concepts.

Show evidence of planning by completing either the Know-Want to Know-Have Learned (KWL) Chart or the Idea Web found on the following pages.

continued

Assignment 6.1: Research Paper (continued)

KWL Chart	
What I know	
What I want to know	
What I will find out	
What I can check	
What I have learned	

continued

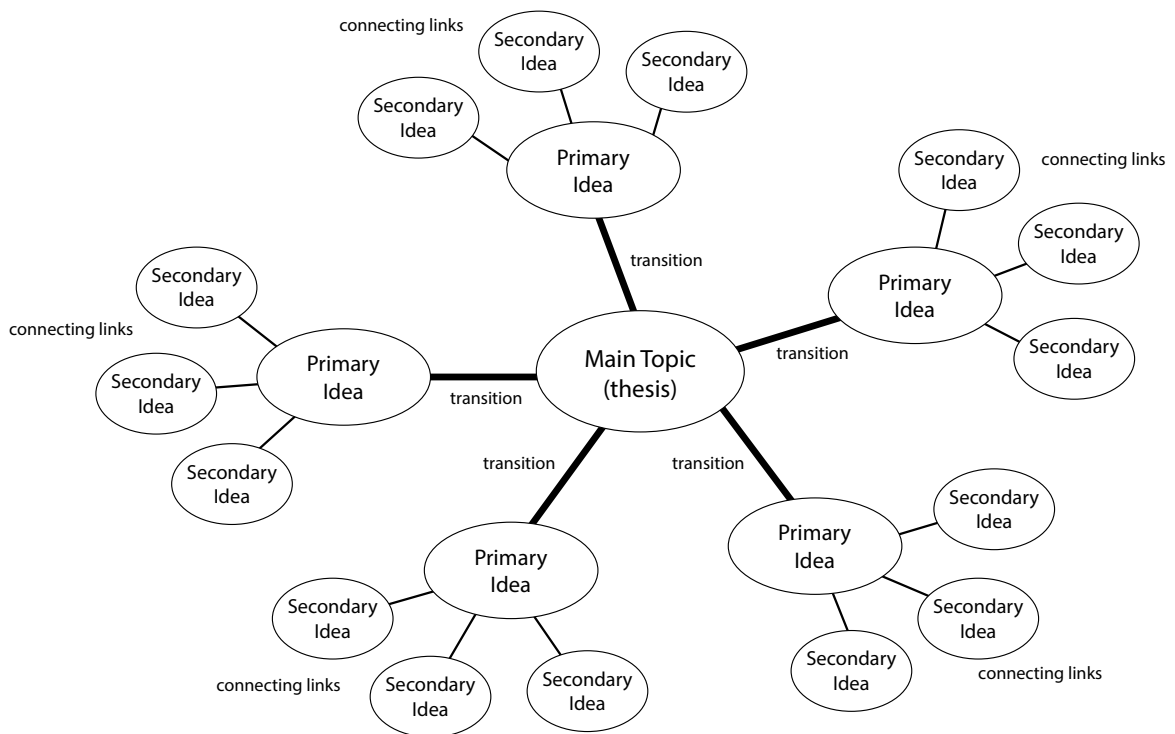
Assignment 6.1: Research Paper (continued)



Note: You can use the idea web template, modify it to fit your essay structure, or create your own. It is recommended that you have 3–5 primary ideas supported by several secondary ideas. Each idea should relate back to the main topic/thesis statement. The transitions between paragraphs should enhance the flow of your essay by connecting the ideas throughout.

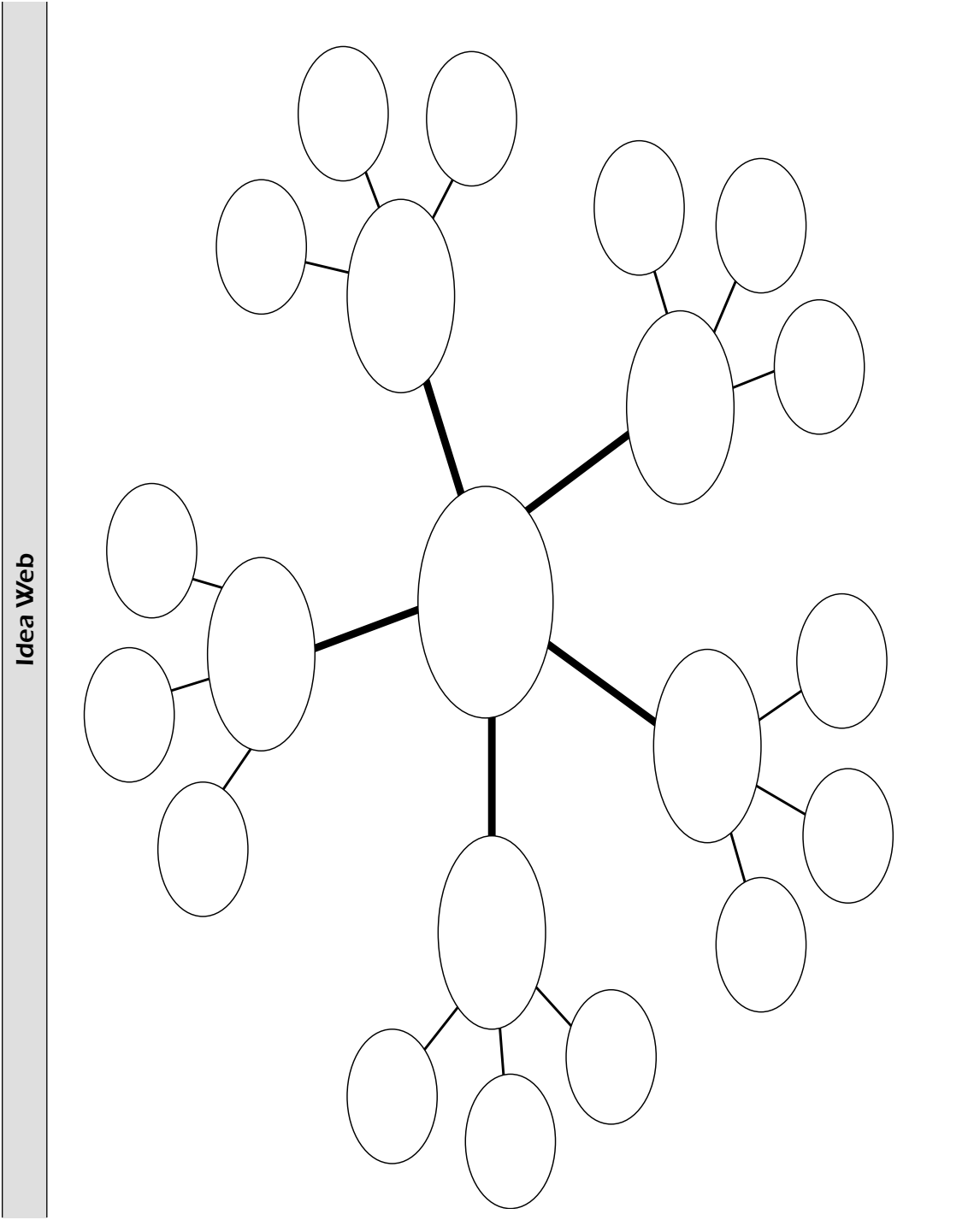
A sample idea web is shown below. You will find the template on the following page.

Idea Web



continued

Assignment 6.1: Research Paper (continued)



continued

Assignment 6.1: Research Paper (continued)

Stage Two: Pre-writing Tasks

Step 5. Develop a thesis.

Once you have identified how your topic and geographical concept relate and are intertwined, you must decide on the driving question or thesis statement for your paper. There are a variety of ways that you can approach your thesis statement, which is basically a question that you propose at the beginning of your paper and then attempt to answer throughout.

All of your research and writing should relate back to your thesis statement. The following are just a few examples of questions to get you thinking about the right kind of questions:

- What aspect of the topic do you want to know more about?
- Are there any connections you can make between your topic and local/national or international current events?
- Do you have a solution that you would like to propose for a specific problem?
- How can we, as individuals, contribute to the bettering of our society in relation to this topic?

Characteristics of a thesis statement

- A thesis statement is one or two sentences, usually found at the end of your introduction paragraph.
- Your thesis should explain to the reader the subject of the essay and how you will be interpreting that subject.
- It is NOT an observation. To turn your observation into an argument, you must explain WHY or HOW something is and come up with REASONS and CAUSES.
- The thesis statement is not meant to be an absolute answer—it is one possible answer.
- The rest of your paper will be organized into a persuasive argument to support your thesis statement.
- You can support your thesis with examples, quotations, statistics, graphs, etc.

Example of an observation: World hunger is a very significant problem in developing countries.

Example of a thesis: Hunger is a significant problem in *India*, a developing country, *because* of problems with food distribution *that are related* to India's geography and climate.

continued

Assignment 6.1: Research Paper (continued)

The rest of your paper will be organized into paragraphs which follow a logical argument to support your thesis statement **and** tie in the geographical concept.



Hint: You will find that any given topic can relate to one or more of the geographical concepts. In some cases, you could make an argument that includes all the geographical concepts. In the example given, hunger is related to evidence and interpretation, but it can also relate to geographical importance, patterns and trends, interactions and associations, as well as geographical value judgments.

Also, your research will be much more interesting if you include local, national, and international examples that relate to your topic.

Step 6. Create an outline for your paper.

- Include paragraph headings and subheadings.
- Paragraphs should be logically ordered with effective transitions.



Note: You may find as you start writing that you have to adjust your thesis statement. This is okay! It is only a very experienced writer who can settle on a thesis statement and then write out a perfect essay to support it. As you write and generate ideas, you may find that your paper will take on a direction other than what you originally intended. As long as you stick with your given topic, the outline you create should be flexible. Just make sure that your ideas work together to form a coherent and logical argument.

Stage Three: Writing

Step 7. Prepare an introduction.

- Capture the reader's interest (hook).
- Inform the reader of the areas to be investigated (sign posting).
- State your thesis.

continued

Assignment 6.1: Research Paper (continued)

Step 8. Write a draft of the body of the paper.

- Follow your outline and construct full paragraphs.
- Each body paragraph should begin with its own topic statement (primary idea) that includes key words or synonyms from the original thesis statement.
- Each topic statement should be followed by statements that support that topic (secondary ideas). They may include examples, factual ideas, explanations, or arguments to support the primary idea.
- Personal opinions on a topic are not valid in a research paper.
- Appropriate headings should separate the information into meaningful sections (i.e., causes, effects, goals, advantages, and disadvantages related to the topic).
- Text referencing must be used when using quotes, facts, illustrations, graphs, etc. within the research paper.

Stage Four: Revise and Submit a Final Draft

Step 9. Prepare a conclusion.

- Begin with a topic sentence, using key words or synonyms designed to sum up the major ideas contained in the body.
- Repeat, in condensed and combined form, the major points expressed in the body paragraphs to emphasize your arguments as they apply to your thesis.
- This, provided your arguments have been valid throughout, should leave the reader with a clear understanding and appreciation of your viewpoint.

Step 10. Revise your draft and submit a final copy to the Distance Learning Unit.

- Ensure that the first page of your paper is properly formatted according to MLA guidelines.
- Include an MLA formatted Works Cited page.

continued

Assignment 6.1: Research Paper (continued)

Format Requirements and Necessary Components

1. **Evidence of Planning:** Complete either the KWL chart or the Idea Web and submit it with the final draft of your paper.
2. **Margins:** Use one-inch top and bottom margins, a one and one-half inch left margin, and a one-inch right margin. If you have headers and footers, the top and bottom margins should be one-half inch.
3. **Page Numbering:** Number pages in the top right-hand corner of the page. The page number should include your last name (e.g., Smith 1).
4. **First Page Format:** In the upper left-hand corner of the first page, list your name, your tutor/marker's name, the name of the course, and the date. This information should be double-spaced.

Double space again and centre the title. Do not underline, italicize, or place your title in quotation marks. Write the title using standard title capitalization (e.g., *The Struggle Against Hunger in Rural India*).

Double space between the title and the first line of the text.

Please reference the *Purdue OWL MLA* formatting and style guide for more detailed instructions and a sample formatted paper, <https://owl.english.purdue.edu/owl/resource/747/01/>.

5. **Text:** The text should be typed, double-spaced, in Times New Roman, 12 point font.
6. **Length of Paper:** The paper should be 4 to 5 pages long, **not** including the appendices or Works Cited page.
7. **Sources of Information:** For this assignment, you are required to use 3 to 4 external sources of information (not including the information presented in this course package). These sources must be properly cited within the text of your paper as well as in a Works Cited page.

Basic format for in-text citations can be found at <https://owl.english.purdue.edu/owl/resource/747/02/>.

Basic format for an MLA Works Cited page can be found at <https://owl.english.purdue.edu/owl/resource/747/05/>.

It is also recommended that you reference Appendix D: Instructions for Creating a Bibliography.

continued

Assignment 6.1: Research Paper (continued)

8. **Appendices:** You are required to include a minimum of **three** illustrations, pictures, or statistical graphs to support your research. The maximum number of illustrations, pictures, or graphs you may include is **five**. This information can be included at the end of your paper as appendices. All illustrations, pictures, and graphs must be labelled and referred to in the text of your paper; and must be specific, relevant, explained, and cited correctly.
9. **Finishing:** If mailing the paper, it should be printed on unlined, white or recycled paper and should be stapled in the top left-hand corner. If electronically submitting the paper, it should be in Microsoft Word format and the file name should be as follows: lesson 1_mod 6_ assign1.doc.

Plagiarism

What is plagiarism?

Plagiarism is cheating. It is the wrongful act of taking the product of someone else's mind and presenting it as your own. To use another person's ideas or expressions in your writing without acknowledging the source is to plagiarize. Plagiarism constitutes "intellectual theft."

Certainly, plagiarism is morally and ethically wrong. Taking ideas and words from another to use as your own without permission or acknowledgement is stealing. Offering another person's ideas and words as your own in any assignment—a paper, a test, an examination, a poster, or an oral report—is lying. Disrespect for the intellectual integrity of the sources, your fellow students, or your teacher is insulting.

Remember, writing an original essay is an opportunity for you to express your own ideas, thoughts, and opinions in a clear and organized structure. It is important to support your ideas with facts and other academic sources, but your reader does not want to read a summary of someone else's argument. The reader is interested in what you have to say about a given topic. Be creative and have fun during the writing process!

continued

Assignment 6.1: Research Paper (continued)

What Constitutes Plagiarism?

- Buying or downloading a paper from a research service or a term-paper mill and offering it as your own
- Turning in another student's work as your own, with or without the student's knowledge
- Copying any portion of another's work without proper acknowledgement
- Copying material from a source and supplying proper documentation, but leaving out quotation marks or failing to indent properly
- Paraphrasing ideas and language from a source without proper documentation

How Do You Avoid Plagiarism?

Always give credit where credit is due. Citing a source means giving credit to someone or something when what you use is not your own original work. Cite your sources within your text and in a bibliography at the end of the paper (in-text referencing).

Sources should be cited when

- You use another person's idea, opinion, or theory.
- You use any facts, statistics, graphs, drawings, pictures, sounds, or any other piece of information that you found from other sources.
- You use quotations of another person's actual spoken or written words.
- You paraphrase (put in your own words) another person's spoken or written words.

Research Paper Rubric

Read through the rubric found on the following pages as you are writing your research paper to ensure that you are not missing any components. Include this rubric, your research paper, evidence of planning/organizational web, and the Module 6 Cover Sheet when you submit Assignment 6.1 to the Distance Learning Unit.

continued

Assignment 6.1: Research Paper (continued)

Marking Rubric for Assignment 6.1: Research Paper					
	0	1	2	3	_____ x 1
KWL chart/ Idea Web	KWL chart or Web not attempted.	KWL chart or Web is not well developed and is missing several topics and subtopics. Chart or Web is not clear, organized, readable, or neat.	KWL chart or Web is well developed and includes some topics and subtopics. Chart or Web is clear, organized, readable, and neat.	KWL chart or Web is well developed and includes all topics and subtopics. Chart or Web is clear, organized, readable, and neat.	
	0-2	3-4	5-6	7-8	_____ x 1
Purpose/ Quality of Information	The purpose or argument is generally unclear. Information has little or nothing to do with the main topic.	The central purpose or argument is not consistently clear throughout the paper. Information does not clearly relate to the main topic. No details and/or examples are given.	The writing has a clear purpose or argument, but may sometimes digress from it. Information clearly relates to the main topic. It provides 1-2 supporting details and/or examples.	Writer's central purpose or argument is readily apparent to the reader. Information clearly relates to the main topic. Includes several supporting details and/or examples.	
	0-2	3-4	5-6	7-8	_____ x 1
Content	Central purpose or argument is not clearly identified. Analysis is vague or not evident. Reader is confused or may be misinformed.	Information supports a central purpose or argument at times. Analysis is basic or general. Reader gains few insights.	Information provides reasonable support for a central purpose or argument and displays evidence of a basic analysis of a significant topic. Reader gains some insights.	Balanced presentation of relevant and legitimate information that clearly supports a central purpose or argument and shows a thoughtful, in-depth analysis of a significant topic. Reader gains important insights.	

continued

Assignment 6.1: Research Paper (continued)

Marking Rubric for Assignment 6.1: Research Paper (continued)					
	0–2	3–4	5–6	7–8	_____ x 1
Organization	There is no clear introduction of the topics/ structure of the paper. Many details are not in logical/ expected order. There is little sense that the writing is organized. The transitions between ideas are unclear or non-existent. The reader cannot identify a line of reasoning and loses interest. The conclusion is incomplete and/ or unfocused.	The introduction states the main topic, but does not adequately preview the structure of the paper nor is it particularly inviting to the reader. Some details are not in logical or expected order and this distracts the reader. Some transitions work well but connections between other ideas occasionally fail to make sense. The reader is fairly clear about what the writer intends. The conclusion does not adequately restate the learning.	The introduction is inviting, states the main topic, and previews the structure of the paper, but is not particularly inviting to the reader. Details are placed in a logical order, but the way in which they are presented/ introduced sometimes makes the writing less interesting. Transitions are usually clearly linked to each other. For the most part, the reader can follow the line of reasoning. Conclusion restates the learning.	The introduction is inviting, states the main topic, and previews the structure of the paper. Details are placed in a logical order and the way they are presented effectively keeps the interest of the reader. A variety of thoughtful transitions are used and clearly show how the ideas are connected. The reader can follow the line of reasoning. Conclusion is engaging and restates personal learning.	
	1	2	3	4	_____ x 1
In-text Citations	Many sources are suspect (not credible) AND/ OR not cited correctly. Many sources are not linked to the bibliography.	Most sources used for quotes, statistics, and facts are credible and cited correctly and/ or linked to the bibliography.	All sources used for quotes, statistics, and facts are credible and most are cited correctly and/ or linked to the bibliography.	All sources used for quotes, statistics, and facts are credible, cited correctly, and linked to the bibliography.	

continued

Assignment 6.1: Research Paper (continued)

Marking Rubric for Assignment 6.1: Research Paper (continued)					
	1	2	3	4	_____ x 1
Format and Composition	Author makes more than 4 errors in grammar or spelling that distract the reader from the content. Few format requirements are followed.	Author makes 3–4 errors in grammar or spelling that distract the reader from the content. Some format requirements are followed.	Author makes 1–2 errors in grammar or spelling that distract the reader from the content. Most format requirements are followed.	Author makes no errors in grammar or spelling that distract the reader from the content. All format requirements are followed.	
	1	2	3	4	_____ x 1
Illustrations, Pictures, Statistical Graphs	Text is not supported by illustrations, pictures, and statistical graphs, or evidence and examples are NOT relevant AND/OR are not explained.	Text is supported by one illustration, picture, or statistical graph, which is labelled and referred to in the text of the paper. The illustration, picture, or statistical graph is cited properly. The evidence and example is relevant and has an explanation that shows how the piece of evidence supports the author’s position.	Text is supported by two illustrations, pictures, or statistical graphs, which are labelled and referred to in the text of the paper. The illustrations, pictures, or statistical graphs are cited properly. Most of the evidence and examples are specific and relevant, and explanations are given that show how each piece of evidence supports the author’s position.	Text is supported by a minimum of three illustrations, pictures, or statistical graphs, which are labelled and referred to in the text of the paper. All illustrations, pictures, and statistical graphs are cited properly. All of the evidence and examples are specific and relevant, and explanations are given that show how each piece of evidence supports the author’s position.	
	1	2	3	4	_____ x 1
Works Cited	Done in incorrect format and/or has many errors. Includes less than 3 entries and no variety in sources.	Done in correct format with some errors. Includes less than 3 entries or no variety in sources.	Done in correct form with few errors. Includes 3–4 entries from sources which vary slightly.	Done in correct format with no errors. Includes 3–4 entries from a variety of sources.	
					Total: _____ / 43

Notes

MODULE 6 SUMMARY

Congratulations, you have finished Module 6, the final module in the course.

The new material you learned in this lesson focused on cause and effect, and the intricacies of global interdependence. As the phenomena of globalization continues to spread and the impact is felt more deeply around the world, the actions of individuals, groups, corporations, and governments are becoming increasingly interconnected. These relationships are social, political, and economic.

Perhaps the greatest areas of concern for all people and governments is the well-being of the economy, the sustainable health of the environment, and social welfare and peace among the diverse populations living side by side around the world. The lesson also provided you with a brief history of colonialism and discussion of the effects of European imperialism still being felt among the developing nations of the world today.



Submitting Your Assignments

It is now time for you to submit Assignment 6.1 to the Distance Learning Unit so that you can receive some feedback on how you are doing in this course. Remember that you must submit all the assignments in this course before you can receive your credit.

Make sure you have completed all parts of your Module 6 assignment and organize your material in the following order:

- Module 6 Cover Sheet (found at the end of the course Introduction)
- Assignment 6.1: Research Paper

For instructions on submitting your assignments, refer to How to Submit Assignments in the course Introduction.

Final Examination



The final examination for this course is worth 100 marks, or 25% of your final mark.

The exam will adhere to the following format:

Part A: True or False	1 mark \times 15 = 15 marks
Part B: Multiple Choice	1 mark \times 15 = 15 marks
Part C: Matching	1 mark \times 10 = 10 marks
Part D: Definitions and Connections	5 marks \times 5 = 25 marks
Part E: Short Answer	5 marks \times 3 = 15 marks
Part F: Long Answer	10 marks \times 2 = 20 marks

How to Study for your Final Examination

In order to succeed in your final examination, make sure that you review all of your learning activities and assignments, and all of the lessons in Modules 4 to 6.

There are different strategies you can use to study for this examination. For Parts A, B, and C of the examination, it would be extremely helpful to locate key words (highlighted in bold) throughout the modules and review them in the glossary.

Parts D, E, and F of the examination may cover the following concepts in greater detail than the first half of the examination. A breakdown of Modules 4, 5, and 6 follows.

Breakdown of Modules 4, 5, and 6			
Lesson	Module 4	Module 5	Module 6
1	<ul style="list-style-type: none"> ■ Renewable and non-renewable energy sources ■ Natural resources ■ R/P ratio ■ Biodiversity 	<ul style="list-style-type: none"> ■ Industrial Revolution: major aspects, causes, social and economic changes ■ Water wheel and Watt's steam engine ■ Location factors of industry ■ Role of transnational corporations and trading blocs ■ Industrialization in developed and developing countries ■ Pros and cons of industrial development and globalization 	<ul style="list-style-type: none"> ■ Causality ■ Globalization ■ Interdependence between nations ■ Colonialism ■ Equality vs. Equity ■ Millennium Development Goals
2	<ul style="list-style-type: none"> ■ Availability of fresh water ■ Water supply, development, restoration, and pollution ■ Evolution of water use and societal attitudes towards water ■ Government role in managing water 	<ul style="list-style-type: none"> ■ Migration ■ Factors of urban growth ■ Limits of urbanization ■ Economic factors of an urban network ■ Balassa-Samuelson effect 	
3	<ul style="list-style-type: none"> ■ Land reform/ ownership ■ Sanctions ■ Dutch Disease ■ UNCLOS 	<ul style="list-style-type: none"> ■ Critical thinking: role exchange, universal consequences, new cases tests ■ Geographical value judgments ■ Industrialization and urbanization sustainability 	

continued

Breakdown of Modules 4, 5, and 6 (continued)			
Lesson	Module 4	Module 5	Module 6
4	<ul style="list-style-type: none"> ■ Relationship between energy and power ■ 1970s oil shocks ■ Nuclear power ■ Smart Grid technology ■ Peak oil theory ■ Biofuels 		

In addition, reviewing key learning activities and assignments that cover any of the topics listed in the previous table is an effective way to practise writing short- and long-answer questions.

This may seem overwhelming because there are quite a few areas that are important to review. It helps to study strategically. Familiarize yourself with the main ideas, make connections between topics when relevant, and spend more time on topics that are frequently repeated throughout the modules.

You will complete this examination while being supervised by a proctor. You should already have made arrangements to have the examination sent to the proctor from the Distance Learning Unit. If you have not yet made arrangements to write it, then do so now. The instructions for doing so are provided in the Introduction to this module.

You will need to bring the following items to the examination: pens/pencils and scrap paper. A maximum of 3 hours is available to complete your midterm examination. When you have completed it, the proctor will then forward it for assessment. Good luck!



GRADE 12 WORLD
GEOGRAPHY: A HUMAN
PERSPECTIVE (40S)

Module 6
World Interdependence

Learning Activity Answer Key

MODULE 6: WORLD INTERDEPENDENCE

Learning Activity 6.1: Exploring Causality

- Match the different factors of causality on the left to the correct example on the right.

Exploring Causality			
	Factors of Causality		Example
A	Internal factors are a source without which the cause cannot take place.	I	My brother stayed up late playing video games and did not get enough sleep. This affected his mood the next day at school.
B	Depth of effect refers to how deeply the impact of the event is felt as well as the level of significance of the consequences.	G	The 2011 tsunami in Japan physically and emotionally affected millions of people, if not everyone, in the country.
C	Determining factors guarantee the final result of an event or issue.	E	A huge snowstorm causes Air Canada to cancel all flights for the rest of the day.
D	Counteracting factors are sometimes referred to as mitigating factors and work to delay or prevent an event from occurring.	H	A change in fashion trends influences the style of clothing sold at department stores.
E	Direct association (x causes y) refers to a clear and unambiguous connection to the cause with no intervening factors involved.	D	Planting trees helps to prevent the desertification of a forest.
F	Contributing factors contribute to, but do not necessarily cause an event to occur.	B	I was satisfied when I received a decent mark on my math test (worth 2% of my overall grade), but I was ecstatic when I aced the final exam (worth 25% of my grade)!
G	Breadth or extent of effect can be measured by looking at how many people/animals/acres of land etc. the event affected across the board.	F	The draining of marshes increased the frequency and severity of flooding.
H	External factors can affect the cause from the outside to change the result.	C	Whichever team scores the most goals in a hockey game will win the whole game.
I	Indirect association (x causes y , y causes z) is due to the presence of another intermediate variable that is common to both variables.	A	Manitoba exports hydro electricity to the United States because of our availability of surplus water-generated power.

2. In your own words, provide definitions for the following terms:

a) **evidence of difference**

The evidence should indicate that an effect has taken place and the evidence must be associated with the cause under question.

b) **evidence of a causal connection**

The evidence should suggest that the association is not coincidental and nothing other than the established causal factor could be used to explain the outcome.

c) **interactive causal relations**

Occurs when two or more phenomena interact and have an effect on one another such as when the population of deer influences the local vegetation or the interaction of mutually influential processes such as technology, trade, culture, and communication.

d) **associative causal relations**

These relations occur when two or more factors operate with a common result. The factors don't influence each other and they aren't affected by the results of the relationship.

3. Fill in the blanks in the statements below.

a) Primary causal connections have a *strong* causal connection.

b) Secondary causal connections have a *weak* causal connection.

c) Peripheral causal connections are *coincidences*.



GRADE 12 WORLD
GEOGRAPHY: A HUMAN
PERSPECTIVE (40S)

Module 6
World Interdependence

Learning Activity Answer Key

MODULE 6: WORLD INTERDEPENDENCE

Learning Activity 6.1: Exploring Causality

- Match the different factors of causality on the left to the correct example on the right.

Exploring Causality			
	Factors of Causality		Example
A	Internal factors are a source without which the cause cannot take place.	I	My brother stayed up late playing video games and did not get enough sleep. This affected his mood the next day at school.
B	Depth of effect refers to how deeply the impact of the event is felt as well as the level of significance of the consequences.	G	The 2011 tsunami in Japan physically and emotionally affected millions of people, if not everyone, in the country.
C	Determining factors guarantee the final result of an event or issue.	E	A huge snowstorm causes Air Canada to cancel all flights for the rest of the day.
D	Counteracting factors are sometimes referred to as mitigating factors and work to delay or prevent an event from occurring.	H	A change in fashion trends influences the style of clothing sold at department stores.
E	Direct association (x causes y) refers to a clear and unambiguous connection to the cause with no intervening factors involved.	D	Planting trees helps to prevent the desertification of a forest.
F	Contributing factors contribute to, but do not necessarily cause an event to occur.	B	I was satisfied when I received a decent mark on my math test (worth 2% of my overall grade), but I was ecstatic when I aced the final exam (worth 25% of my grade)!
G	Breadth or extent of effect can be measured by looking at how many people/animals/acres of land etc. the event affected across the board.	F	The draining of marshes increased the frequency and severity of flooding.
H	External factors can affect the cause from the outside to change the result.	C	Whichever team scores the most goals in a hockey game will win the whole game.
I	Indirect association (x causes y , y causes z) is due to the presence of another intermediate variable that is common to both variables.	A	Manitoba exports hydro electricity to the United States because of our availability of surplus water-generated power.

2. In your own words, provide definitions for the following terms:

a) **evidence of difference**

The evidence should indicate that an effect has taken place and the evidence must be associated with the cause under question.

b) **evidence of a causal connection**

The evidence should suggest that the association is not coincidental and nothing other than the established causal factor could be used to explain the outcome.

c) **interactive causal relations**

Occurs when two or more phenomena interact and have an effect on one another such as when the population of deer influences the local vegetation or the interaction of mutually influential processes such as technology, trade, culture, and communication.

d) **associative causal relations**

These relations occur when two or more factors operate with a common result. The factors don't influence each other and they aren't affected by the results of the relationship.

3. Fill in the blanks in the statements below.

a) Primary causal connections have a *strong* causal connection.

b) Secondary causal connections have a *weak* causal connection.

c) Peripheral causal connections are *coincidences*.

Final Examination



The final examination for this course is worth 100 marks, or 25% of your final mark.

The exam will adhere to the following format:

Part A: True or False	1 mark \times 15 = 15 marks
Part B: Multiple Choice	1 mark \times 15 = 15 marks
Part C: Matching	1 mark \times 10 = 10 marks
Part D: Definitions and Connections	5 marks \times 5 = 25 marks
Part E: Short Answer	5 marks \times 3 = 15 marks
Part F: Long Answer	10 marks \times 2 = 20 marks

How to Study for your Final Examination

In order to succeed in your final examination, make sure that you review all of your learning activities and assignments, and all of the lessons in Modules 4 to 6.

There are different strategies you can use to study for this examination. For Parts A, B, and C of the examination, it would be extremely helpful to locate key words (highlighted in bold) throughout the modules and review them in the glossary.

Parts D, E, and F of the examination may cover the following concepts in greater detail than the first half of the examination. A breakdown of Modules 4, 5, and 6 follows.

Breakdown of Modules 4, 5, and 6			
Lesson	Module 4	Module 5	Module 6
1	<ul style="list-style-type: none"> ■ Renewable and non-renewable energy sources ■ Natural resources ■ R/P ratio ■ Biodiversity 	<ul style="list-style-type: none"> ■ Industrial Revolution: major aspects, causes, social and economic changes ■ Water wheel and Watt's steam engine ■ Location factors of industry ■ Role of transnational corporations and trading blocs ■ Industrialization in developed and developing countries ■ Pros and cons of industrial development and globalization 	<ul style="list-style-type: none"> ■ Causality ■ Globalization ■ Interdependence between nations ■ Colonialism ■ Equality vs. Equity ■ Millennium Development Goals
2	<ul style="list-style-type: none"> ■ Availability of fresh water ■ Water supply, development, restoration, and pollution ■ Evolution of water use and societal attitudes towards water ■ Government role in managing water 	<ul style="list-style-type: none"> ■ Migration ■ Factors of urban growth ■ Limits of urbanization ■ Economic factors of an urban network ■ Balassa-Samuelson effect 	
3	<ul style="list-style-type: none"> ■ Land reform/ ownership ■ Sanctions ■ Dutch Disease ■ UNCLOS 	<ul style="list-style-type: none"> ■ Critical thinking: role exchange, universal consequences, new cases tests ■ Geographical value judgments ■ Industrialization and urbanization sustainability 	

continued

Breakdown of Modules 4, 5, and 6 (continued)			
Lesson	Module 4	Module 5	Module 6
4	<ul style="list-style-type: none"> ■ Relationship between energy and power ■ 1970s oil shocks ■ Nuclear power ■ Smart Grid technology ■ Peak oil theory ■ Biofuels 		

In addition, reviewing key learning activities and assignments that cover any of the topics listed in the previous table is an effective way to practise writing short- and long-answer questions.

This may seem overwhelming because there are quite a few areas that are important to review. It helps to study strategically. Familiarize yourself with the main ideas, make connections between topics when relevant, and spend more time on topics that are frequently repeated throughout the modules.

You will complete this examination while being supervised by a proctor. You should already have made arrangements to have the examination sent to the proctor from the Distance Learning Unit. If you have not yet made arrangements to write it, then do so now. The instructions for doing so are provided in the Introduction to this module.

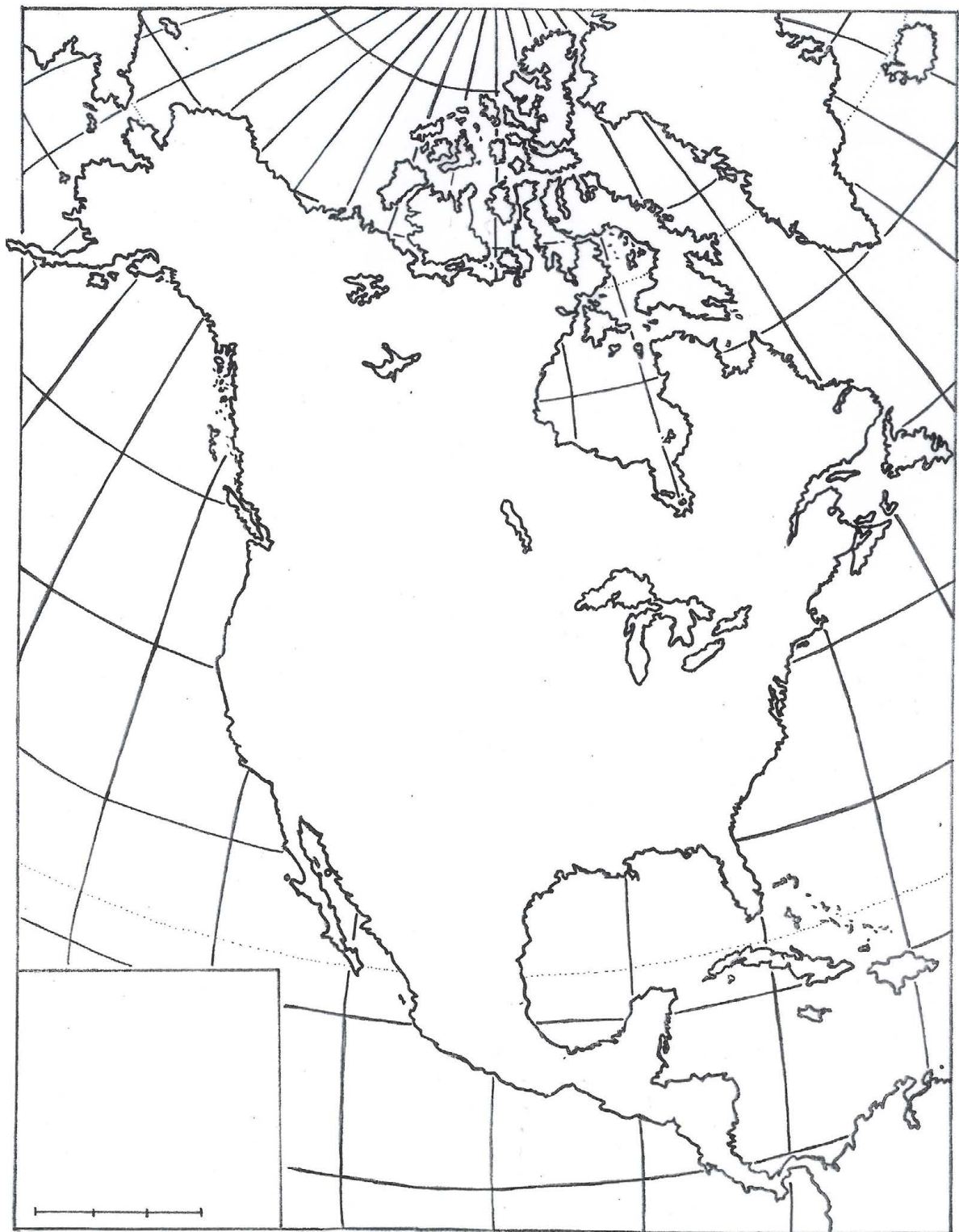
You will need to bring the following items to the examination: pens/pencils and scrap paper. A maximum of 3 hours is available to complete your midterm examination. When you have completed it, the proctor will then forward it for assessment. Good luck!



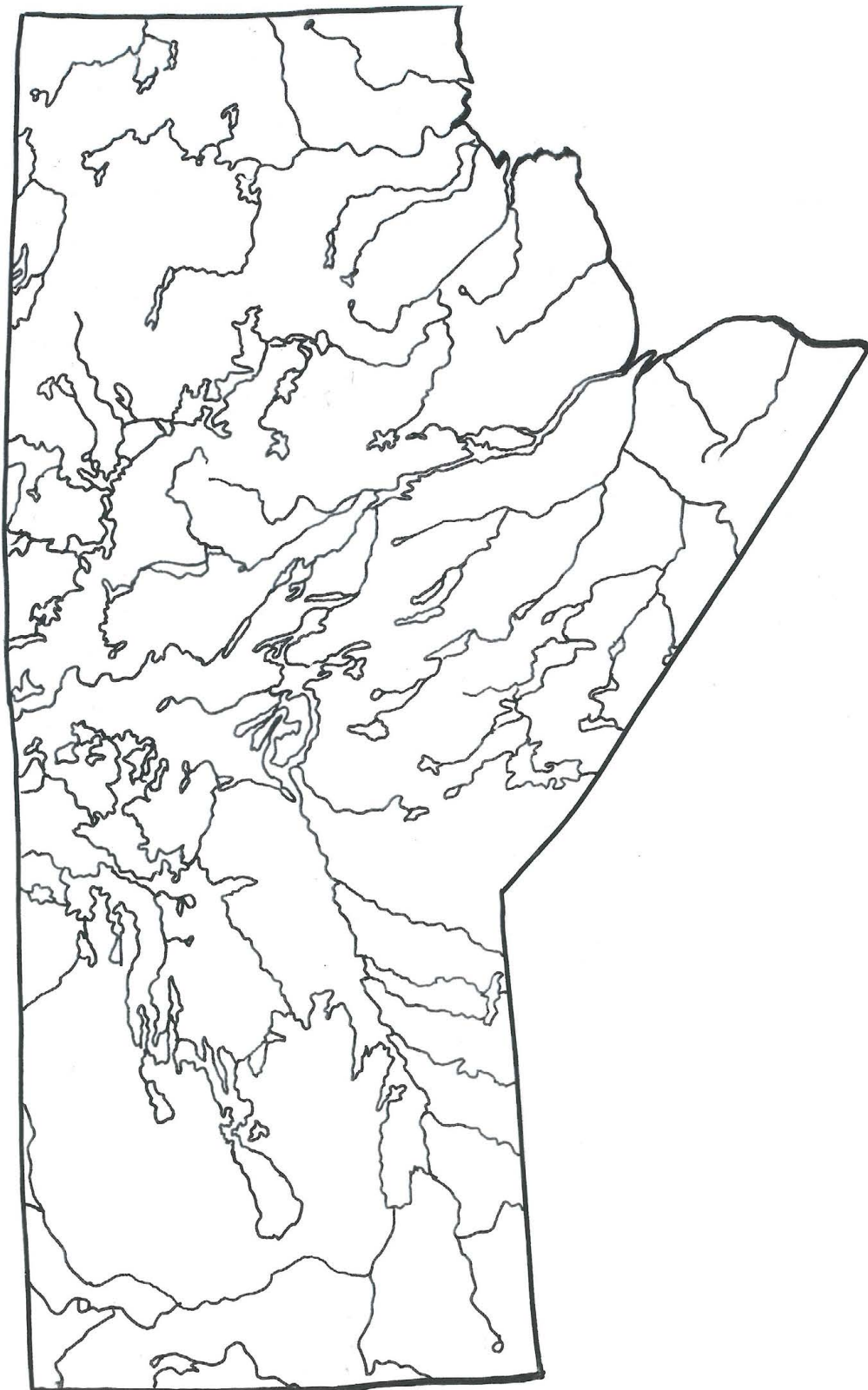
GRADE 12 WORLD
GEOGRAPHY: A HUMAN
PERSPECTIVE (40S)

Appendices

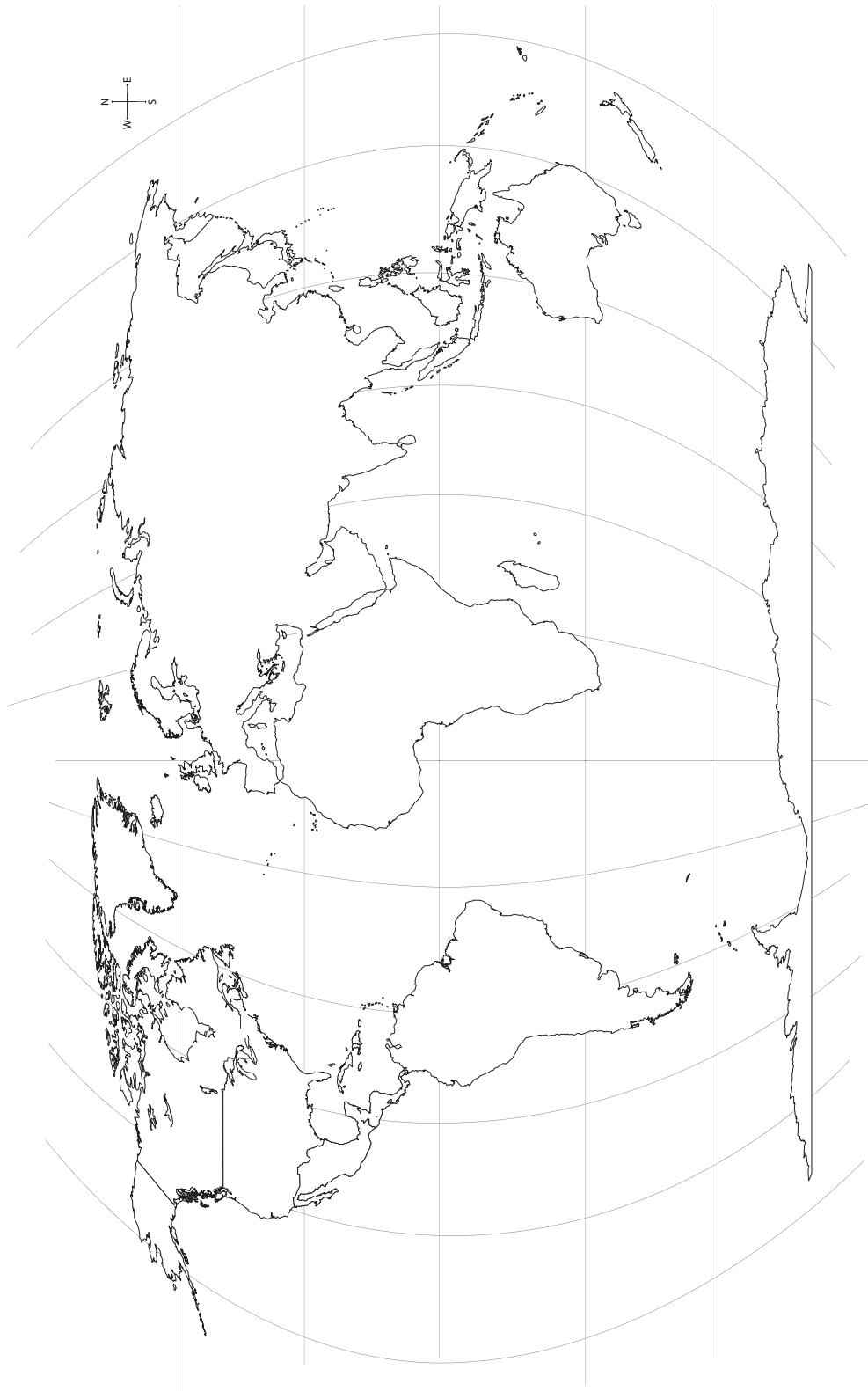
APPENDIX A: MAP OF NORTH AMERICA



APPENDIX B: MAP OF MANITOBA



APPENDIX C: MAP OF THE WORLD



APPENDIX D: 2011 CENSUS QUESTIONS

2011 CENSUS

2A

COMPLETE ONLINE AT

www.census2011.gc.ca

SECURE ACCESS CODE

Ce questionnaire est disponible en français 1-877-777-2011

Prov.	CD	CU	VN	VR line no.	CLD	Forms 3	Questionnaire No.
							of

Message from the Chief Statistician of Canada

The census has always provided a portrait of our people and the places in which we live. The 2011 Census will continue this tradition. To be part of this new portrait of Canada, please complete your census questionnaire within the next 10 days. To complete it online, use the website and the secure access code at the top of this page or, alternatively, complete and return the paper version in the enclosed envelope.

By law, every household must complete a census questionnaire. By the same law, your responses will be kept confidential. Census information is important for your community and is vital for planning services such as schools, daycare, police services and fire protection. Your information may be used by Statistics Canada in support of our other surveys or for analysis.

Thank you for your cooperation.

⊗ Complete your Census questionnaire:

- **ONLINE** at www.census2011.gc.ca by using the secure access code printed above.
- **ON PAPER**, please print using **C A P I T A L L E T T E R S**.

ANY QUESTIONS?

- www.census2011.gc.ca
- Call us free of charge 1-877-777-2011
- TTY users call 1-866-753-7083

This information is collected under the authority of the *Statistics Act*, R.S.C. 1985, c. S-19, and must be provided by law. CONFIDENTIAL WHEN COMPLETED

STEP A 1. Print your telephone number: () - -

2. Complete this section if there is no printed address in the address space above or if the printed address does not correspond to this dwelling.

No. and street or lot and concession Apt. no.

City, municipality, town, village, Indian reserve Province/territory Postal code

STEP B

1. How many persons usually live at this address as of May 10, 2011, including yourself? Include all persons who have their main residence at this address, even if they are temporarily away. See the instructions on page 3 (joint custody, students, permanent residents, secondary residence, etc.).

← Number of persons

2. Including yourself, list below all persons who usually live here. Begin the list with an adult followed, if applicable, by that person's spouse or common-law partner and by their children. Continue with all other persons who usually live at this address.

	FAMILY NAME	GIVEN NAME
Person 1	<input type="text"/>	<input type="text"/>
Person 2	<input type="text"/>	<input type="text"/>
Person 3	<input type="text"/>	<input type="text"/>
Person 4	<input type="text"/>	<input type="text"/>
Person 5	<input type="text"/>	<input type="text"/>
Person 6	<input type="text"/>	<input type="text"/>
Person 7	<input type="text"/>	<input type="text"/>
Person 8	<input type="text"/>	<input type="text"/>
Person 9	<input type="text"/>	<input type="text"/>
Person 10	<input type="text"/>	<input type="text"/>

STEP C

Did you leave anyone out of Step B because you were not sure the person should be listed? (For example, a person living at this address who has another home, a person temporarily away, etc.)

- No
 Yes → Specify the name, the relationship and the reason.

Name(s) and relationship

Reason

STEP D

1. Is anyone listed in Step B a farm operator who produces at least one agricultural product intended for sale? (Crops, livestock, milk, poultry, eggs, greenhouse or nursery products, Christmas trees, sod, honey, bees, maple syrup products, furs, etc.)

- No → Go to Step E Yes

2. Does this farm operator make the day-to-day management decisions related to the farm?

- No Yes

STEP E

Copy the names in Step B to Question 1, at the top of pages 4 to 7. Keep the same order.

If more than six persons live here, you will need an extra questionnaire; call 1-877-777-2011.

1. WHOM TO INCLUDE IN

**STEP
B**

- All persons who have their **main residence** at this address on May 10, 2011, including newborn babies, room-mates and persons who are temporarily away;
- **Canadian citizens, permanent residents** (landed immigrants), persons asking for **refugee status** (refugee claimants), persons from **another country** with a **work** or **study permit** and family members living here with them;
- Persons staying at this address temporarily on May 10, 2011 who have **no main residence elsewhere**.

2. WHERE TO INCLUDE PERSONS WITH MORE THAN ONE RESIDENCE

- **CHILDREN IN JOINT CUSTODY** should be included in the home of the parent where they live most of the time. Children who spend equal time with each parent should be included in the home of the parent with whom they are staying on May 10, 2011.
- **STUDENTS** who return to live with their parents during the year should be included at their parents' address, even if they live elsewhere while attending school or working at a summer job.
- **SPOUSES OR COMMON-LAW PARTNERS TEMPORARILY AWAY** who stay elsewhere while working or studying should be listed at the main residence of their family, if they return periodically.
- **PERSONS IN AN INSTITUTION** for **less than six months** (for example, in a home for the aged, a hospital or a prison) should be listed at their usual residence.

IF THIS ADDRESS IS:

- a **SECONDARY RESIDENCE** (such as a cottage) for **ALL PERSONS** who stayed here on May 10, 2011 (all these persons have their main residence elsewhere in Canada), mark this circle. Print your name, your telephone number and **your main residence address** at the bottom of this page. Do not answer other questions.
- a **DWELLING OCCUPIED ONLY BY RESIDENTS OF ANOTHER COUNTRY VISITING CANADA** (for example, on vacation or on a business trip), mark this circle. Print your name, your telephone number and **your country of residence** at the bottom of this page. Do not answer other questions.
- the **HOME OF A GOVERNMENT REPRESENTATIVE OF ANOTHER COUNTRY** (for example, embassy or high commission) and family members, mark this circle. Print your name, your telephone number and **the country that you represent** at the bottom of this page. Do not answer other questions.



Name

Telephone number

No. and street, city, province or territory/country

Mail this questionnaire in the enclosed envelope today.



1 NAME		PERSON 1	PERSON 2
<p>In the spaces provided, copy the names in the same order as in Step B. Then answer the following questions for each person.</p>		<p>Family name</p> <p>Given name</p>	<p>Family name</p> <p>Given name</p>
<p> Unfold and complete Questions 2 to 10 on pages 4, 5, 6 and 7 for each person.</p>			
<p>2 SEX</p>	<p><input type="radio"/> Male</p> <p><input type="radio"/> Female</p>	<p><input type="radio"/> Male</p> <p><input type="radio"/> Female</p>	
<p>3 DATE OF BIRTH AND AGE</p> <p>Day Month Year</p> <p>Example: <input type="text" value="23"/> <input type="text" value="02"/> <input type="text" value="1974"/> <i>If exact date is not known, enter best estimate.</i></p> <p>Age <input type="text" value="37"/> <i>For children under the age of 1, enter 0.</i></p>	<p>Day Month Year</p> <p><input type="text"/> <input type="text"/> <input type="text"/></p> <p>Age <input type="text"/></p>	<p>Day Month Year</p> <p><input type="text"/> <input type="text"/> <input type="text"/></p> <p>Age <input type="text"/></p>	
<p>4 MARITAL STATUS</p> <p>Mark "⊗" one circle only.</p>	<p><input type="radio"/> Never legally married</p> <p><input type="radio"/> Legally married (and not separated)</p> <p><input type="radio"/> Separated, but still legally married</p> <p><input type="radio"/> Divorced</p> <p><input type="radio"/> Widowed</p>	<p><input type="radio"/> Never legally married</p> <p><input type="radio"/> Legally married (and not separated)</p> <p><input type="radio"/> Separated, but still legally married</p> <p><input type="radio"/> Divorced</p> <p><input type="radio"/> Widowed</p>	
<p>5 Is this person living with a common-law partner?</p> <p><i>Common-law</i> refers to two people who live together as a couple but who are not legally married to each other.</p>	<p><input type="radio"/> Yes</p> <p><input type="radio"/> No</p>	<p><input type="radio"/> Yes</p> <p><input type="radio"/> No</p>	
<p>6 RELATIONSHIP TO PERSON 1</p> <p>For each person usually living here, describe his or her relationship to Person 1.</p> <p>Mark "⊗" or specify one response only.</p> <p>Adopted children should be considered sons and daughters.</p> <p>Children in joint custody should be included in the home of the parent where they live most of the time.</p> <p>Children who spend equal time with each parent should be included in the home of the parent with whom they are staying on May 10, 2011.</p> <p>For all children, please consider the relationship to Person 1 and Person 2.</p> <p>If none of the choices apply, specify this person's relationship to Person 1 under "Other".</p> <p>Examples of "Other" relationships to Person 1:</p> <ul style="list-style-type: none"> • brother-in-law or sister-in-law • niece or nephew • grandfather or grandmother • room-mate's son or daughter • lodger's husband or wife • employee • etc. 	<p><input checked="" type="radio"/> PERSON 1</p>	<p><input type="radio"/> Opposite-sex husband or wife of Person 1</p> <p><input type="radio"/> Opposite-sex common-law partner of Person 1</p> <p><input type="radio"/> Same-sex married spouse of Person 1</p> <p><input type="radio"/> Same-sex common-law partner of Person 1</p> <p><input type="radio"/> Son or daughter of Person 1 only</p> <p><input type="radio"/> Son-in-law or daughter-in-law of Person 1</p> <p><input type="radio"/> Grandchild of Person 1</p> <p><input type="radio"/> Father or mother of Person 1</p> <p><input type="radio"/> Father-in-law or mother-in-law of Person 1</p> <p><input type="radio"/> Brother or sister of Person 1</p> <p><input type="radio"/> Foster child</p> <p><input type="radio"/> Room-mate, lodger or boarder</p> <p>Other — Specify</p> <p><input type="text"/></p> <p><input type="text"/></p>	
<p> CONTINUE TO THE TOP OF PAGE 6.</p>			

Visit www.census2011.gc.ca
or call 1-877-777-2011, 8 a.m. to 8 p.m.

PERSON 3	PERSON 4	PERSON 5	PERSON 6
Family name	Family name	Family name	Family name
Given name	Given name	Given name	Given name
PERSON.			
<input type="radio"/> Male <input type="radio"/> Female	<input type="radio"/> Male <input type="radio"/> Female	<input type="radio"/> Male <input type="radio"/> Female	<input type="radio"/> Male <input type="radio"/> Female
Day Month Year <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	Day Month Year <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	Day Month Year <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	Day Month Year <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Age <input type="text"/> <input type="text"/> <input type="text"/>	Age <input type="text"/> <input type="text"/> <input type="text"/>	Age <input type="text"/> <input type="text"/> <input type="text"/>	Age <input type="text"/> <input type="text"/> <input type="text"/>
<input type="radio"/> Never legally married <input type="radio"/> Legally married (and not separated) <input type="radio"/> Separated, but still legally married <input type="radio"/> Divorced <input type="radio"/> Widowed	<input type="radio"/> Never legally married <input type="radio"/> Legally married (and not separated) <input type="radio"/> Separated, but still legally married <input type="radio"/> Divorced <input type="radio"/> Widowed	<input type="radio"/> Never legally married <input type="radio"/> Legally married (and not separated) <input type="radio"/> Separated, but still legally married <input type="radio"/> Divorced <input type="radio"/> Widowed	<input type="radio"/> Never legally married <input type="radio"/> Legally married (and not separated) <input type="radio"/> Separated, but still legally married <input type="radio"/> Divorced <input type="radio"/> Widowed
<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No
<input type="radio"/> Son or daughter of both Persons 1 and 2 <input type="radio"/> Son or daughter of Person 1 only <input type="radio"/> Son or daughter of Person 2 only <input type="radio"/> Son-in-law or daughter-in-law of Person 1 <input type="radio"/> Grandchild of Person 1 <input type="radio"/> Father or mother of Person 1 <input type="radio"/> Father-in-law or mother-in-law of Person 1 <input type="radio"/> Brother or sister of Person 1 <input type="radio"/> Foster child <input type="radio"/> Room-mate, lodger or boarder Other — <i>Specify</i> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="radio"/> Son or daughter of both Persons 1 and 2 <input type="radio"/> Son or daughter of Person 1 only <input type="radio"/> Son or daughter of Person 2 only <input type="radio"/> Son-in-law or daughter-in-law of Person 1 <input type="radio"/> Grandchild of Person 1 <input type="radio"/> Father or mother of Person 1 <input type="radio"/> Father-in-law or mother-in-law of Person 1 <input type="radio"/> Brother or sister of Person 1 <input type="radio"/> Foster child <input type="radio"/> Room-mate, lodger or boarder Other — <i>Specify</i> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="radio"/> Son or daughter of both Persons 1 and 2 <input type="radio"/> Son or daughter of Person 1 only <input type="radio"/> Son or daughter of Person 2 only <input type="radio"/> Son-in-law or daughter-in-law of Person 1 <input type="radio"/> Grandchild of Person 1 <input type="radio"/> Father or mother of Person 1 <input type="radio"/> Father-in-law or mother-in-law of Person 1 <input type="radio"/> Brother or sister of Person 1 <input type="radio"/> Foster child <input type="radio"/> Room-mate, lodger or boarder Other — <i>Specify</i> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="radio"/> Son or daughter of both Persons 1 and 2 <input type="radio"/> Son or daughter of Person 1 only <input type="radio"/> Son or daughter of Person 2 only <input type="radio"/> Son-in-law or daughter-in-law of Person 1 <input type="radio"/> Grandchild of Person 1 <input type="radio"/> Father or mother of Person 1 <input type="radio"/> Father-in-law or mother-in-law of Person 1 <input type="radio"/> Brother or sister of Person 1 <input type="radio"/> Foster child <input type="radio"/> Room-mate, lodger or boarder Other — <i>Specify</i> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>



NAME	PERSON 1	PERSON 2
<p>Repeat the name of each person in the same order. Then answer the following questions for each person.</p> <p>7 Can this person speak English or French well enough to conduct a conversation? Mark "⊗" one circle only.</p>	<p>Family name</p> <hr/> <p>Given name</p> <hr/> <p><input type="radio"/> English only <input type="radio"/> French only <input type="radio"/> Both English and French <input type="radio"/> Neither English nor French</p>	<p>Family name</p> <hr/> <p>Given name</p> <hr/> <p><input type="radio"/> English only <input type="radio"/> French only <input type="radio"/> Both English and French <input type="radio"/> Neither English nor French</p>
<p>8 (a) What language does this person speak most often at home?</p>	<p><input type="radio"/> English <input type="radio"/> French Other — <i>Specify</i></p> <p>□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □</p> <p>□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □</p>	<p><input type="radio"/> English <input type="radio"/> French Other — <i>Specify</i></p> <p>□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □</p> <p>□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □</p>
<p>(b) Does this person speak any other languages on a regular basis at home?</p>	<p><input type="radio"/> No <input type="radio"/> Yes, English <input type="radio"/> Yes, French Yes, Other — <i>Specify</i></p> <p>□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □</p> <p>□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □</p>	<p><input type="radio"/> No <input type="radio"/> Yes, English <input type="radio"/> Yes, French Yes, Other — <i>Specify</i></p> <p>□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □</p> <p>□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □</p>
<p>9 What is the language that this person first learned at home in childhood and still understands? <i>If this person no longer understands the first language learned, indicate the second language learned.</i></p>	<p><input type="radio"/> English <input type="radio"/> French Other — <i>Specify</i></p> <p>□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □</p> <p>□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □</p>	<p><input type="radio"/> English <input type="radio"/> French Other — <i>Specify</i></p> <p>□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □</p> <p>□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □</p>
<p>If you are answering on behalf of other people, please consult each person.</p>		
<p>10 This question is for all persons listed on the questionnaire. Only if you mark "YES" to this question will your census responses and family history be part of the historical record of Canada. A "YES" means your census responses will be available to family members and historical researchers, 92 years after the 2011 Census. If you mark "NO" or leave the answer blank, your census responses will never be made available to future generations.</p>		
<p>Does this person agree to make his or her 2011 Census information available in 2103 (92 years after the census)?</p>	<p><input type="radio"/> Yes <input type="radio"/> No</p>	<p><input type="radio"/> Yes <input type="radio"/> No</p>

Visit www.census2011.gc.ca
or call 1-877-777-2011, 8 a.m. to 8 p.m.

PERSON 3	PERSON 4	PERSON 5	PERSON 6
Family name	Family name	Family name	Family name
Given name	Given name	Given name	Given name
<input type="radio"/> English only <input type="radio"/> French only <input type="radio"/> Both English and French <input type="radio"/> Neither English nor French	<input type="radio"/> English only <input type="radio"/> French only <input type="radio"/> Both English and French <input type="radio"/> Neither English nor French	<input type="radio"/> English only <input type="radio"/> French only <input type="radio"/> Both English and French <input type="radio"/> Neither English nor French	<input type="radio"/> English only <input type="radio"/> French only <input type="radio"/> Both English and French <input type="radio"/> Neither English nor French
<input type="radio"/> English <input type="radio"/> French Other — Specify <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="radio"/> English <input type="radio"/> French Other — Specify <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="radio"/> English <input type="radio"/> French Other — Specify <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="radio"/> English <input type="radio"/> French Other — Specify <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
<input type="radio"/> No <input type="radio"/> Yes, English <input type="radio"/> Yes, French Yes, Other — Specify <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="radio"/> No <input type="radio"/> Yes, English <input type="radio"/> Yes, French Yes, Other — Specify <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="radio"/> No <input type="radio"/> Yes, English <input type="radio"/> Yes, French Yes, Other — Specify <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="radio"/> No <input type="radio"/> Yes, English <input type="radio"/> Yes, French Yes, Other — Specify <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
<input type="radio"/> English <input type="radio"/> French Other — Specify <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="radio"/> English <input type="radio"/> French Other — Specify <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="radio"/> English <input type="radio"/> French Other — Specify <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="radio"/> English <input type="radio"/> French Other — Specify <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
<p>s, in 2103.</p>			
<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No



**STEP
F**

If more than six persons live here, you will need an extra questionnaire; call 1-877-777-2011.

Please make sure that you have answered Questions 1 to 10.

You have now completed your questionnaire. Please mail it today.

If you have lost the return envelope, please mail the questionnaire to:
Statistics Canada, PO BOX 99998, STN FED-GOVT, Ottawa, ON K1A 9Z8.

Thank you for your cooperation.

COMMENTS

REASONS WHY WE ASK THE QUESTIONS

Steps A to D and Question 1 are asked to determine who should complete this questionnaire. Questions 2 to 6 are asked to learn about the living arrangements of people living in Canada. This information is used for planning social programs, such as Old Age Security and the Canada Child Tax Benefit. It is also used by towns and cities to plan a variety of services such as day care centres, schools, police and fire protection. Questions 7, 8 and 9 provide information to determine the need for language services in English and French according to the *Official Languages Act*, and are used to implement programs that protect the rights of Canadians under the *Canadian Charter of Rights and Freedoms*. Question 10 provides each person with the opportunity to make an informed decision about what happens to his or her personal census information in 92 years.

THE LAW PROTECTS WHAT YOU TELL US

The confidentiality of your census responses is protected by law. All Statistics Canada employees have taken an oath of secrecy. Your personal census information cannot be given to anyone outside Statistics Canada without your consent. This is your right.

Your census information will be retained in accordance with legislative requirements and will be stored securely. You can ask to see the information about yourself on your 2011 Census questionnaire after November 2011. To do this, write the Privacy Coordinator, Statistics Canada, 25th Floor, R.H. Coats Building, Ottawa, Ontario K1A 0T6.



APPENDIX E: HOW TO CITE REFERENCES

The following citing method is from a style called MLA, which is outlined in detail in the book *MLA Handbook for Writers of Research Papers*, published by the Modern Language Association. There are several different citation styles. If your tutor/marker tells you to cite differently, please respect this.

Quotations

When you want to use information or ideas that are written concisely and clearly and maybe even artfully (in especially vivid or inventive language) in the original source, you may quote the passage word for word.

Pretend that you want to use the underlined section of the following text in your essay. The text is found on page 439 of *Geographic Issues of the 21st Century*, by Bruce Clark and John Wallace.

Although you could survive without food for several weeks, you could not survive without water for more than a few days. Humans require about 2.5 litres per day of drinking water to remain healthy. In fact, two thirds of the human body is made of water.

In dry areas of the world, people view water as a resource more valuable than gold. In Canada, most people take water for granted. Studies show that the average Canadian uses about 330 litres per day for personal use.

If you use the exact words found in the book, you put quotation marks at the beginning and end of the text you are quoting. Write a lead-in to the quotation or integrate it into your sentence. After the quoted text, put an opening parenthesis, the author's name, a space, the page number on which the writing was found, and a closing parenthesis. Note the location of the period in the example that follows.

Water is so important to human survival that “in dry areas of the world, people view water as a resource more valuable than gold” (Clark and Wallace 439).

Paraphrasing

You can also paraphrase, or write this information in your own words. Paraphrasing is appropriate when you want to follow the basic ideas of a source, but you don't think the exact words are especially worth quoting.

After your paraphrase, you cite the author and page number in parentheses, as you do with quotations.

Example:

People need about two and a half litres of drinking water every day to stay in good health. People who live in dry areas of the world recognize the value of water, whereas in Canada, many people use vast amounts of water without even thinking about it (Clark and Wallace 439).

Bibliography

Each source (book, article, website, etc.) you use when writing your paper must be included in a bibliography.

- The bibliography is a section by itself.
- The sources are listed in alphabetical order by the last name of first author/editor.
- All book/journal/website names are in italics.
- All titles from sections (articles, chapters, poems, stories, etc.) within a larger work are in quotation marks (" ").

How to Cite Different Sources

Books: (example below by author Bruce Clark and John Wallace)

Author's/Editor's Last Name, First Name. *Title of the Book*. Publishing city, abbreviated province or state: Publisher Name, year published. Print.

Article: (example below by author Laura Snyder)

Author's/Editor's Last Name, First Name. "Article Title." *Title of the Journal or Newspaper*. Date published: page number(s) if available. Web/Print. Date you looked up the article (if it was on the web). <URL>.

Website: (The example below has a corporate author. It is an article on water scarcity.)

Author's/Editor's Last name, First Name. *Name of Site*. Name of Publisher/Sponsor of site, day month year of creation: pages of the article. Web. Date you looked up the article. <URL>.

Bibliography

Clark, Bruce, and John Wallace. *Geographic Issues of the 21st Century*. Don Mills, ON: Pearson Education Canada Inc., 2005. Print.

Snyder, Laura. "Water Scarcity Will Create Global Security Concerns." *Medical News Today*. 7 Oct. 2009. Web. 31 Aug. 2012. <www.medicalnewstoday.com/releases/166540.php>.

United Nations. *Water Scarcity*. United Nations, 2012. Web. 31 Aug. 2012. <www.un.org/waterforlifedecade/scarcity.shtml>.

The above is **not** a complete description or list of examples because using citations could be a lesson in itself. This is a quick guide to help you document your research ethically and efficiently. When in doubt, talk to your tutor/marker, librarian, family member, or teacher.

Where Do I Find Bibliographic Information?

The information you need for the bibliography should be found on the cover and inside the first few pages of the book. Look for the © symbol, which tells you the date the book was published. The publisher name and city are usually found there as well. On websites, look for links on the home page. You may have noticed that two of the above references did not provide all the requested information. For example, the article did not have page numbers to include, as there were no page numbers provided on the website. Try to find and include as much information as possible. If you cannot find all the information, write the citation as completely as you can with the information you have.

This is a basic guide for citing references. More details can be found on the Purdue Owl Site at <<http://owl.english.purdue.edu/>> or from your tutor/marker.

Notes



GRADE 12 WORLD
GEOGRAPHY: A HUMAN
PERSPECTIVE (40S)

Glossary

GLOSSARY

abiotic

non-living characteristics of an environment

agglomeration

a large connected urban area that includes a central city and the attached suburbs and/or adjacent cities or towns

agricultural production

refers to the volume/amount of agricultural products produced in a given area

alloys

a blend of metals, such as bronze, which is a mixture of copper and tin

anomalies

something that does not fit the pattern

anthropology

the comparative study of human societies and cultures, and their development

aquaculture

the “farming of aquatic organisms including fish, mollusks, crustaceans and aquatic plants. Farming implies some sort of intervention in the rearing process to enhance production, such as regular stocking, feeding, protection from predators, etc. Farming also implies individual or corporate ownership of the stock being cultivated” (United Nations Food and Agricultural Organization)

arable

land suitable for farming and cultivation

autocracy

a system of government in which one person rules with absolute power

biodiversity

refers to a variety of plant and animal life in a particular habitat

biome

the collection of all living things as well as the non-living resources in an area

biotic

living characteristics of an environment

boreal forest or taiga

the sometimes swampy, coniferous (evergreen) forest of mid to high northern latitudes, south of the tundra

break-of-bulk points

geographical locations where two or more modes of transport meet

capture fisheries

refers to catching wild fish as opposed to farmed fish

carrying capacity

of a region refers to how many resources are available to support life

cartogram

a map on which statistical information is shown in diagrammatic form

cartographer

a person whose job it is to create maps

causality

often called causation, refers to the relation between an event (cause) and a second event (the effect) where the second event is understood as a consequence of the first

cause

a person or thing that gives rise to an action, phenomenon, or condition

census

an official count or survey of a population, typically recording various details of individuals such as age, occupation, and language(s) spoken

chaparral

wet winters and dry summers, with shrubby thickets and small trees adapted to the dry summers

cohort

a five year age group, with the numbers for each gender and age group plotted on a two-sided graph called a population pyramid

colonialism

refers primarily to the context of imperial expansion of Europe into the rest of the world, beginning in the sixteenth century

commercial farming

the large scale production of crops for sale, intended for widespread distribution to wholesalers or retail outlets

commodities

any raw material or primary agricultural product that can be bought and sold

communism

a political theory derived from Karl Marx, advocating for an end to the class system and leading to a society in which all property is publicly owned, and each person works and is paid according to their abilities and needs

consolidation

to combine or merge a number of things into a more coherent or effective whole

container gardening

gardening in big pots/containers in areas where natural soil is contaminated, limited, or covered up

continuum

a gradient or line between opposite concepts.

country

“a nation with its own government, occupying a particular territory”
(*Oxford Dictionary*, 10th ed.)

correlation

“a mutual relationship or connection”
(*Oxford Dictionary*, 10th ed.)

culture

different types of human intellectual achievement that result in the art, customs, and social institutions of a particular nation, people, or other social group

Broadly defined: beliefs, customs, skills, religions, arts, and languages of a group of people. Narrowly defined: the arts, entertainment, and media (*Making Connections: Canada's Geography*, Glossary)

“the arts and other manifestations of human intellectual achievement regarded collectively” (*Oxford Dictionary*, 10th ed.)

demographic transition model

a simplified version of the stages through which birth and death rates change over time

demography

the statistical study of human populations

desert

an area of very low precipitation in hot or cold climate

desertification

where former agricultural land has degraded, through moisture loss and erosion, to desert-like conditions

development

the process of improving the living conditions, health, and prosperity of the population; it is always changing, usually for the better

diaspora

refers to a cultural group living outside of their country of origin

discipline

an organized body of topics, such as English, mathematics, and geography

doubling time

the time it takes for a population to double its present value

Dutch Disease

a term that was coined in 1977 by *The Economist* in reference to an economic crisis in the Netherlands in the 1970s

ecological sustainability

regarding development, exploitation, or agriculture, means to conserve an ecological balance by avoiding depletion of natural resources

economics

refers to the exchanging of money for goods and services, usually on a large scale such as the commerce within a country/region

effect

a change which is a result or consequence of an action or other cause

embargo

an official ban on trade or other commercial activity with a particular country

emigration

refers to the process of someone leaving their country of origin to live permanently in another country
(*Making Connections: Canada's Geography, Glossary*)

enfranchisement

the process whereby people gain control of their social and political rights

entomophagy

the practice and study of eating and growing insects

environment

all things related to the health and interactions of natural organisms within an ecologic zone on Earth. A study of the environment includes Earth's atmosphere, surface, underground areas, and oceans

ethnocentric

"evaluating other cultures according to preconceptions originating in one's own culture" (*Oxford Dictionary, 10th ed.*) or the belief that one culture is superior to another

expected value of crops

calculated by totaling the cost of production (fuel, fertilizer, and chemical) against the projected returns after the crop is sold (profit margin), as well as the added complexities of farm subsidies

famine

an extreme and a general scarcity of food, where there is hunger and starvation

farm subsidies

when the government pays the farmer per unit of crop produced or for each unit of land in cultivation

forest gardening

once established, it is a low-maintenance, highly productive collection of trees, shrubs, fungi, and perennial ground covers

geography

“the study of the earth’s physical features, resources, and climate, and the physical aspects of its population” (*Oxford Canadian Dictionary*)

globalization

refers to a process of worldwide integration of financial markets, international trade, and cultural exchange

grasslands

an area that is relatively dry, treeless, subject to seasonal temperature extremes

Gross Domestic Product

also referred to as the GDP, is the market value of all products and services produced in one year by the residents of a country

Gross National Income

also referred to as the GNI, is the adjusted US dollar value of a country’s final income in a year

high-technology

requires sophisticated equipment, advanced engineering techniques and is relatively expensive (<http://dictionary.reference.com/browse/high+technology?s=t&path=/>)

holistic

a perspective which is characterized by the understanding that the parts of something are intimately interconnected and explicable only by reference to the whole

hospitable landscapes

landscapes that allow us to live comfortably, with secure sources of food, water, and shelter; moderate climates; stability of land that allows for easy transportation; and space to expand as the population grows

Human Development Index (HDI)

a single statistic which measures the development level of countries by combining indicators of life expectancy, educational attainment, and income

human geography

the study of Earth’s population in terms of demography, culture, and the interaction of humans with their environment. Cultural elements include politics, religion, demographics, infrastructure, agricultural practices, and settlements

human rights

those rights that all humans should have, regardless of race, gender, religion, ethnicity, age, sexual orientation, political belief, nationality, intelligence, or disability

immigration

“refers to the process of moving permanently to a country other than one’s native country” (*Making Connections: Canada’s Geography, Glossary*)

industrial inertia

refers to a body at rest wishing to remain at the current condition until moved or altered by some external force (similar to a person staying in bed until forced to get up)

Industrial Revolution

refers to a period between 1760 and 1840 of massive economic, technological, social, and cultural changes

industrialization

the process of developing industries on a wide scale such as in a country or region

inequality

refers to the lack of equality between two or more subjects

inequity

refers to a lack of fairness or justice between two or more subjects

inflation

when the price of goods increases, but the value of money decreases

infrastructure

the combination of services in a community, including good roads, reliable hydro, sewer and water, police and fire protection, telephone, Internet, mobile phone networks, and other communications systems

land reform

involves the changing of laws, regulations, or customs regarding land ownership

land tenure

refers to when an individual holds, rather than owns, the land

literacy

defined by UNESCO as “the percentage of the population over 15 who can read and write to a basic standard”

livestock urban farming

refers to people farming animals (poultry, honeybees, fish) in an urban setting, such as backyards, parks, and abandoned warehouses or basements

low-technology

refers to technology that uses equipment or production techniques that are considered relatively unsophisticated and inexpensive (<http://dictionary.reference.com/browse/low+technology?s=t&path=/>)

malnutrition

a general, often long-term condition in which there is food, but it does not have sufficient nutrition—calories or kilojoules, protein, vitamins—to sustain a healthy body

map

a representation of the real world, used to show information about the physical characteristics of an area; it analyses, stores, and communicates spatially organized information, both on paper and in electronic form

mapping

the symbolic representation of location.

migration

“the movement of large numbers of people from one place to another” (*Making Connections: Canada’s Geography, Glossary*)

mitigate

to make less severe or less painful

nation

a large collective group of people united by common descent, history, culture, or language, inhabiting a particular country or territory

National Policy

implemented in 1879 by Canada’s first Prime Minister, Sir John A. MacDonald—a way of building the manufacturing capacity of eastern Canada through increased tariffs (taxes) on imported goods

Natural Resource Economics

deals with the supply, demand, and allocation of Earth's resources

natural resources

occur naturally within environments that exist relatively undisturbed by humanity, in natural form

needs

the things necessary for survival such as food, water, shelter, and companionship

net migration rate

the difference between people immigrating to a country and people emigrating from the same country

non-renewable resources

resources that exist in nature as a result of geological processes that have taken place over millions of years; non-renewable energy sources cannot be replenished or replaced; the majority of non-renewable energy sources are hydrocarbon fossil fuels (coal, petroleum, and natural gasoline)

overpopulation

biologically defined as too many of any organism for the carrying capacity of the region

pattern

an arrangement of features that is repeated or regular (*Discovering the Physical World, Glossary*)

peak oil

a theory stating that any finite resource (including oil) will have a beginning, a middle, and an end of production; oil production typically follows a bell-shaped curve when charted on a graph

permaculture

an approach to designing communities and agricultural systems that are based on, and modeled after, the relationships found in nature

physical elements

include all of the physical processes that shape the patterns of Earth's surface, such as topography, soil and minerals, plants and animals, weather, climate, surface and underground water

physical geography

the study of Earth's physical features, climate, and resources

plain

relatively low-lying land

plateau

level land at relatively high elevations

plate tectonics

"theory which states that the earth's outer shell consists of plates that move causing earthquakes, volcanoes, mountains and the formation of new crust." (*Making Connections, Canada's Geography, Glossary*)

The slow-moving plates of continental and oceanic crust slide along the plastic-like upper mantle (asthenosphere) and, where they collide, the resulting vibrations and shocks are known as earthquakes. The moving plates also create volcanoes and mountain ranges, and form new crust.

population dynamics

deals with the way populations are affected by birth and death rates, and by immigration and emigration. It includes topics such as aging populations or population decline

population pyramid

“a graph which depicts population distribution by age and sex” (*Making Connections, Canada’s Geography, Glossary*)

potential arable land

includes land presently used for other purposes such as grassland, forests, protected areas, buildings, infrastructure, etc. This land is, therefore, in most cases, not available for agricultural practices

rainforest

tropical areas with high rainfall and an abundance of plant and animal species

recession

occurs when growth during two consecutive quarters of an economic year is negative (each quarter is a three-month period).

regional geography

concerned with the interrelated characteristics of a particular area or region, such as the geography of Manitoba or of North America

region

the unit by which places are divided and studied, and can be defined physically and culturally

remediation

refers to the process of helping an area return to its natural state

renewable resources

resources that exist naturally, and can be used again (examples include oxygen, solar energy, fresh water, and biomass)

resources

those things necessary to help meet basic needs as well as help fulfill various wants

sanctions

measures taken by a country to persuade, force, or pressure another country to obey international rules of conduct or an international agreement

savanna

an area that is tropical or sub-tropical, with occasional trees/shrubs scattered in a grassland with the dry season in the winter or low sun period of the year

secularism

a social and political philosophy which separates all government institutions from religious institutions

sense of place

a combination of human and physical characteristics which make a place special and unique to each individual person; sense of place develops out of human experiences whereby a person may identify himself/herself in relation to a particular piece of land

smallholding farms

usually support single families by providing a mixture of cash crops and subsistence farming; many organic farms are smallholdings

socialism

a political and economic theory of social organization that advocates that the means of production, distribution, and exchange should be owned or regulated by the community as a whole (according to Marxist thought, socialism is the transition between capitalism and communism)

sociology

the study of the development, structure, and functioning of human society, including the study of social problems

spatial component

relating to space, placement, and relative location of objects/places

specialization

a narrow and limited method of production; it means being able to use equipment to do a small range of tasks with speed and efficiency

stakeholder

an individual (perhaps representing a company) who has an interest in a business and has/will invest(ed) money into that business

standard of living

refers to the level of wealth, comfort, goods, and necessities (stuff) available to the average person in a particular geographic area—a person's quality of life is closely related to their standard of living (www.investopedia.com/terms/s/standard-of-living.asp#axzz1aVRxA9r4)

standardization

a means to change (things) so that they are similar and consistent

state

a defined area with geopolitical boundaries (borders) organized into a political unit and ruled by an established government with control over its internal and foreign affairs

subsidy

a sum of money granted by the government or a public body to assist an industry or business so that the price of a commodity or service may remain low or competitive

subsistence farming

refers to self-sufficient farming in which farmers produce enough to support themselves and their families and have little to no margin of profit

sustainability

the approach to development that meets the needs of the present without negatively affecting the ability of future generations to meet their needs (*Making Connections, Canada's Geography, Glossary*)

systematic or topical approach

concerns the study of a set of the elements over a whole area or a restricted area—such as manufacturing geography or biogeography—the study of the ecosystems—plants and animals and their relationships to humans

technology

the application of scientific knowledge for practical purposes

temperate deciduous forest

moist temperate climate with leafy trees

temporal and spatial changes

changes of a population over time and space, respectively, in response to four main factors: birth, aging, death, and migration

topographic map

a map that shows physical elevation in the landscape

topsoil

the term often used when referring to quality soils that can support regular agricultural use

trading blocs

refer to groups of countries that cooperate in trade with each other, and compete against other blocs

tundra

cold, dry polar regions where only ground cover vegetation can grow in the very short growing season

transnational corporation

a company which operates in countries other than the one in which its headquarters are located

urban farming

the cultivation, processing, and distribution of food in and around a village, town, or city

urbanization

the process of people moving from a rural to an urban area

urbanologists

people who have studied all aspects of cities and urban areas, including their advantages and disadvantages, as well as the design and growth patterns of urban networks

vermicomposting

the composting of kitchen and household waste with the assistance of worms (usually red wigglers)

vertical gardening

provides a vertical space for plants to grow (in containers or elsewhere), thus increasing efficiency of production per unit area

wants

those things that we desire, but may not need for survival, that make our lives easier, more comfortable, and more enjoyable



GRADE 12 WORLD
GEOGRAPHY: A HUMAN
PERSPECTIVE (40S)

References

REFERENCES

- Alexander, Bill, Ethel Johnston, Taina Kanerva, and Paul Vanzant. *This Earth: Physical Geography and the Environment*. Toronto, ON: Emond Montgomery Publications, 2010. 32, fig. 1.3.5, 464, appendix A, 101, fig. 2.2.9, 102-103, fig. 2.2.11, 2.2.12 and 2.2.13, 109, fig. 2.3.1, 309, fig. 4.1.5, 69, fig. 1.6.3.
- Agriculture and Consumer Protection Department. "Meat and Meat Products." *Food and Agriculture Organization of the United Nations*. 1 Mar. 2013. <www.fao.org/ag/againfo/themes/en/meat/home.html>.
- AtaalSid, Muaz M. "Education in Sudan." *Sudan.net*. <www.sudan.net/education.php>.
- Annenberg Learner. "Unit 7: Agriculture//Section 2: Earth's Land Resources." *The Habitable Planet*. <<http://learner.org/courses/envsci/unit/text.php?unit=7&secNum=2>> .
- Aquaculture topics and activities. State of world aquaculture. Text by Rohana Subasinghe. In FAO Fisheries and Aquaculture Department [online]. Rome. Updated 27 May 2005. [Cited 18 November 2011]. <www.fao.org/fishery/topic/13540/en>.
- Barboza, David and Keith Bradsher. "Pollution From Chinese Coal Casts a Global Shadow." *New York Times*. 11 June, 2006. <www.nytimes.com/2006/06/11/business/worldbusiness/11chinacoal.html?pagewanted=all&_r=0>.
- Bradsher, Keith. "China Outpaces U.S. in Cleaner Coal-Fired Plants." *New York Times*. 10 May, 2009. <www.nytimes.com/2009/05/11/world/asia/11coal.html>.
- Briggs, K. *Human Geography: Concepts and Applications*. London, UK: Hodder and Stoughton, 1982. p. 59, 61. Print.
- Canadian Atlas Online. "The Greening of Sudbury." *Canadian Geographic*. <www.canadiangeographic.ca/atlas/themes.aspx?id=shield&sub=shield_features_greening&lang=En>.
- Canadian Council for Geographic Education. "10 Reasons Why Every Student Should Study Geography." n.d. <www.ccge.org/resources/why_geography/top10.asp>.
- Canadian Geographic. "Fishery." <www.canadiangeographic.ca/atlas/themes.aspx?id=fishery&sub=fishery_centuries_16th&lang=En>.

Canadian Geographic Enterprises. "Canada's First National Urban Park." *National Parks*. <www.canadiangeographic.ca/magazine/ja13/rouge_national_urban_park.asp>; <www.canadiangeographic.ca/magazine/ja13/rouge_national_urban_park2.asp>; <www.canadiangeographic.ca/magazine/ja13/rouge_national_urban_park3.asp>.

Central Intelligence Agency. *CIA World Factbook*.

<<https://www.cia.gov/library/publications/the-world-factbook/>>.

———. "The World Factbook: Country Comparison: Public Debt." 2012.

<<https://www.cia.gov/library/publications/the-world-factbook/rankorder/2186rank.html>>.

———. "The World Factbook: Sri Lanka." Dec 5, 2012.

<<https://www.cia.gov/library/publications/the-world-factbook/geos/ce.html>>.

China.org.cn. *State Issues on Major Figures of Population*.

<www.china.org.cn/english/2001/Mar/9792.htm>.

China Post News Staff. "Taiwan ranks 18th worldwide in human development: DGBAS." *The China Post*. 18 Jan, 2011. <www.chinapost.com.tw/taiwan/foreign-community/2011/01/18/288084/Taiwan-ranks.htm>.

Clark, Bruce W., John K. Wallace, and Kim M. Earle. *Making Connections: Canada's Geography*, 2nd edition. Toronto, ON: Pearson Canada, 2006.

CNN. "Riots, instability spreads as food prices skyrocket." 14 Apr. 2008.

<www.cnn.com/2008/WORLD/americas/04/14/world.food.crisis/index.html?s=PM:WORLD>.

Collins, Joseph and Frances Moore Lappé. *World Hunger: Twelve Myths*. New York, NY: Grove Press Inc., 1986. Print.

Common Agricultural Policy. "Agriculture & the Environment." European Commission. 3 July, 2012.

<http://ec.europa.eu/agriculture/envir/index_en.htm>.

The Concise Oxford Dictionary. 10th ed. New York, USA: Oxford Press, 1999. Print.

Countries and their Culture. "Sami."

<www.everyculture.com/wc/Norway-to-Russia/Sami.html>.

Croitoru, Lelia and Maria Sarraf. 2010. *The Cost of Environmental Degradation : Case Studies from the Middle East and North Africa*. © World Bank.

<<https://openknowledge.worldbank.org/handle/10986/2499>>.

Countrymeters.com. "Iran." Apr. 2013. <<http://countrymeters.info/en/Iran/>>.

———. "Jordan." Apr. 2013. <<http://countrymeters.info/en/Jordan/>>.

———. "Lebanon." Apr. 2013. <<http://countrymeters.info/en/Lebanon/>>.

- . “Morocco.” Apr. 2013. <<http://countrymeters.info/en/Morocco/>>.
- . “Tunisia.” Apr. 2013. <<http://countrymeters.info/en/Tunisia/>>.
- Deshpande, Girish. *The New Technologist*.
<<https://newtechnologist.wordpress.com/author/giridesh3/>>.
- Dictionary.com. <<http://dictionaryreference.com/browse/>>.
- Dunlop, Stewart. *Towards Tomorrow: Canada in a Changing World – Geography*. Toronto, ON: Harcourt Brace & Company, Canada, 1987. pp. 39, 40, 42, 71, 126. Print.
- E fusion. “Climate and Seasons.” *Sri Lanka: The Land*. 2002.
<www.mysrilanka.com/travel/theland/climate.htm>.
- The Economist. “The most surprising demographic crises.” 5 May, 2011.
<www.economist.com/node/18651512>.
- The End of the Line*. Dir. Rupert Murdoch. Based on the book by Charles Clover. Perf. Charles Clover, various. Aracne Pictures, 2009. Film.
- FAO Fisheries and Aquaculture Department. Marine Protected Areas as a Tool for Fisheries Management. Effects, benefits and costs of MPAs (as a fisheries management tool). FI Project Websites. Rome. Updated 26 April 2007. <www.fao.org/fishery/topic/16201/en>.
- Finland’s EU Presidency. *The European Model of Agriculture: Challenges Ahead*. Oulu, Finland: European Union, September 2006. Available online at
<www.euroqualityfiles.net/Documents%20EUAM%20and%20CEECAp/Europe/Future%20policy/oulu_european_model_agriculture_en.pdf>.
- Fischetti, Mark. “How to Double Global Food Production by 2050 and Reduce Environmental Damage.” *Scientific American*. 12 Oct. 2011.
<www.scientificamerican.com/article.cfm?id=foley-global-food-production-reduce-environmental-damage-maps>.
- The Fish Site. “Fish in the Global Food Chain: Challenges and Opportunities.” 8 Jul. 2009. <www.thefishsite.com/articles/718/fish-in-the-global-food-chain-challenges-and-opportunities>.
- Frank, K. T., et al. “Transient dynamics of an altered large marine ecosystem.” *Nature* 477. 86–89. <www.canadiangeographic.ca/atlas>.
- Geohive. “The Population of Continents, Regions and Countries.” 2010.
<www.geohive.com/earth/pop_region.aspx>.
- Gillis, Charlie. “Six out of 10 business-class immigrants who land in Quebec quickly take their money elsewhere.” *Maclean’s Magazine*. 19 Jan., 2011.
<<http://www2.macleans.ca/2011/01/19/youre-leaving-already/>>.

- Gledhill, John. "Historical Notes on Mexico's Land Reform." The University of Manchester, England.
<http://jg.socialsciences.manchester.ac.uk/Peasants/mexican_land_reform.html>.
- Hannell, Christine and Stewart Dunlop. *Discovering the Physical World*. Oxford University Press, 1999.
- Happy Planet Index. "About the HPI." <www.happyplanetindex.org/about/>.
- . "Canada's HPI Score." 18 Dec. 2013.
<www.happyplanetindex.org/countries/canada/>.
- Harrigan, Patrick. "Cultural Survival Trust of Sri Lanka." *Sri Lanka's Indigenous Wanniya-laeto: A Case History*. <<http://vedda.org/wanniyalaeto.htm>>.
- Hennessey, Regan. "Problems Faced by Farmers." *eHow*. 29 Apr. 2013.
<www.ehow.com/facts_5787300_problems-faced-farmers.html>.
- Hunger Notes. "2013 World Hunger and Poverty Facts and Statistics." *World Hunger Education Service*. 27 July. 2013.
<www.worldhunger.org/articles/Learn/world%20hunger%20facts%202002.htm>.
- The Hunger Project. "Community Centers for Meeting Basic Needs."
<www.thp.org/what_we_do/key_initiatives/community_centers/overview>.
- . "Methodology."
<www.thp.org/what_we_do/program_overview/methodology>.
- . "Service Delivery vs. Empowerment."
<www.thp.org/our-work/where-we-work/africa/epicenter-strategy>.
- Hutchings, Jeffrey A. and Robert W. Rangeley. "Correlates of recovery for Canadian Atlantic Cod (*Gadus morhua*)." *Canadian Journal of Zoology* 89 (9 May 2011): 386–400.
<http://myweb.dal.ca/jhutch/publications_pdfs/2011_hut_rang_cjz.pdf>.
- Ikerd, J.E. *Current Status and Future Trends in American Agriculture: Farming with Grass*. Columbia, MI: University of Missouri.
<<http://web.missouri.edu/ikerdj/papers/Oklahoma%20Farming%20with%20Grass%20-%20Status%20%20Trends.htm>>.
- Indiaonlinepages.com. "Mumbai's Population 2012." 2012.
<www.indiaonlinepages.com/population/mumbai-population.html>.
- International Energy Agency. *Key World Statistics*. <www.iea.org/>.
- Investopedia. "Standard of Living."
<www.investopedia.com/terms/s/standard-of-living.asp#axzz1aVRxA9r4>.

- Kunzig, Robert. "Population 7 Billion: How your world will change." *National Geographic*. Jan. 2011. <<http://ngm.nationalgeographic.com/2011/01/seven-billion/kunzig-text>>.
- Lappé, Frances Moore, and Joseph Collins. "World Food Production." *World Hunger: Twelve Myths*. New York, NY: Grove Press Inc., 1986.
- Manitoba Education, Citizenship and Youth. *Grade 12 Geography (40S): A Course for Independent Study*. Winnipeg, MB: Manitoba Education, Citizenship and Youth, 2009. pp. 56–58.
- National Geographic Society. "Map Maker Interactive." *National Geographic: Education*. Dec. 2012. <http://education.nationalgeographic.com/education/mapping/interactive-map/?ar_a=1>.
- . *Water: Our Thirsty World, A Special Issue*. <<http://ngm.nationalgeographic.com/2010/04/table-of-contents>>.
- The New York Times. "The World Food Crisis." 10 Apr. 2008. <www.nytimes.com/2008/04/10/opinion/10thu1.html?_r=2&>.
- Nickerson, Mike. "Genuine Progress Indicator." *The Sustainability Project/7th Generation Initiative*. <www.sustainwellbeing.net/gpi.html>.
- Olson, Liz. "State, Country and Nation." *InfoPlease*. 2007. <www.infoplease.com/world/statistics/state-country-nation.html#ixzz1RSjsHt8e>.
- Oxfam International. "Famine in Somalia: causes and solutions." July 2011. <www.oxfam.org/en/somalia/famine-somalia-causes-and-solutions>.
- Peakoil.com. "Exploring Hydrocarbon Depletion." <<http://peakoil.com/what-is-peak-oil>>.
- Pidwirny, Michael. "Elements of Geography." *Fundamentals of Physical Geography*, 2nd Edition. 2006. <www.physicalgeography.net/fundamentals/1b.html>.
- Planetary Visions Limited. "Historical Maps: The Aral Sea." <www.planetaryvisions.com/Project.php?pid=2224>.
- "Population Growth over Human History." 4 Jan., 2006. <www.globalchange.umich.edu/globalchange2/current/lectures/human_pop/human_pop.html>.
- Rennie, Steve. "Was Thomas Mulcair Right? New Report Supports "Dutch Disease" Claims." <<http://news.nationalpost.com/2012/05/30/was-thomas-mulcair-right-new-report-supports-dutch-disease-claims>>.
- Rosenberg, Matt. "India Likely to Surpass China in Population by 2030." *About.com Guide*. 1 Apr. 2011. <<http://geography.about.com/od/obtainpopulationdata/a/indiapopulation.htm>>.

- Rubenstein, James M. *The cultural landscape: an Introduction to Human Geography*. Upper Saddle River, NJ: Pearson Education, Inc., 2003. Print.
- Schulz, Klaus J., and Joseph A. Briskey. "Review of the Geology and Nonfuel Mineral Deposits of the World." United States Geological Survey. <<http://pubs.usgs.gov/of/2005/1294/index.htm>>.
- Sezak-Blatt, Aiyanna. "Edible Park Just Keeps on Giving." Asheville, NC: Mountain Xpress News. <<http://mountainx.com/news/>>. (March 30, 2010).
- Statistics Canada. 2011 Census of Population." <www.statcan.gc.ca/eng/>.
- . 2012. Winnipeg, Manitoba (Code 4611040) and Manitoba (Code 46) (table). Census Profile. 2011 Census. Statistics Canada Catalogue no. 98-316-XWE. Ottawa. Released October 24, 2012. <www12.statcan.gc.ca/census-recensement/2011/dp-pd/prof/index.cfm?Lang=E>.
- Stegeborn, Wiveca Ann-Chatrin. "Subsistence Hunting and Gathering." *The Wanniya-Laetto (Veddahs) of Sri Lanka*. Sept 1993. <<http://vedda.org/stegeborn.htm>>.
- Storyit.com. *Aesop's Fables*. "The City Mouse and the Country Mouse." <www.storyit.com/Classics/Stories/citycountrymouse.htm>.
- Suzuki, David. "The Fundamental Failure of Environmentalism." David Suzuki Foundation. <www.davidsuzuki.org/blogs/science-matters/2012/05/the-fundamental-failure-of-environmentalism/>.
- . "Shrinking Sea a Bleak Warning." David Suzuki Foundation. <www.davidsuzuki.org/publications/downloads/2000/Newsletter_summer00.pdf>.
- United Nations. "The criteria for the identification of the LDCs." 2002–2005. <www.un.org/special-rep/ohrlls/ldc/ldc%20criteria.htm>.
- . *Indicators of Sustainable Development: Guidelines and Methodology*. Economics and Social Affairs. New York, NY: United Nations, October 2007. Available online at <www.un.org/esa/sustdev/natlinfo/indicators/guidelines.pdf>.
- United Nations, Department of Economic and Social Affairs, Population Division (2012). *World Urbanization Prospects: the 2011 Revision, CD-ROM Edition*. <<http://esa.un.org/unup/CD-ROM/Urban-Agglomerations.htm>>.
- United Nations Development Programme (UNDP). "Human Development Index." *Human Development Reports*. <<http://hdr.undp.org/en/>>.
- . "Human Development Index (HDI)." 2011. <<http://hdr.undp.org/en/statistics/hdi/>>.
- United Nations Environment Programme. *Vital Water Graphics*. <www.unep.org/dewa/vitalwater/article167.html>.

- United Nations, Food and Agriculture Organization. "Natural Resources and Environment." <www.fao.org/nr/aboutnr/nrl/en/>.
- United Nations High Commissioner for Refugees. "World Directory of Minorities and Indigenous Peoples—Sri Lanka: Overview." *Minority Rights Group International*. 2007. <www.unhcr.org/refworld/docid/4954ce2c23.html>.
- University of Minnesota. "Institute on the Environment." 28 May, 2013. <<http://environment.umn.edu/>>.
- Van der Heyden, Johan. "The population of continents, regions and countries." *Geohive*. 2010. <<http://esa.un.org/unup/CD-ROM/Urban-Agglomerations.htm>>.
- Vanzant, Paul, et al. *This Earth: Physical Geography and the Environment*. Toronto, ON: Emond Montgomery Publications, 2010.
- White, K., B. O'Neil, B., and Z. Tzankova. *At a Crossroads: Will Aquaculture Fulfill the Promise of the Blue Revolution?* 2004. Sea Web.
- Wikipedia. "2007–2008 World Food Price Crises." 10 May, 2013. <http://en.wikipedia.org/wiki/2007-2008_world_food_price_crisis>.
- . "Demographic transition." 2013. <http://en.wikipedia.org/wiki/Demographic_transition>.
- . "Genuine Progress Indicator." 11 May, 2013. <http://en.wikipedia.org/wiki/Genuine_Progress_Indicator>.
- . "Greater Sudbury." 6 May, 2013. <http://en.wikipedia.org/wiki/Greater_Sudbury#Early_history>.
- . "Happy Planet Index." 16 Apr. 2012. <http://en.wikipedia.org/wiki/Happy_Planet_Index>.
- . "Hydroponics." 17 May, 2013. <<http://en.wikipedia.org/wiki/Hydroponics>>.
- . "Permaculture." 17 May, 2013. <<http://en.wikipedia.org/wiki/Permaculture>>.
- . "Sustainability." 21 May, 2013. <<http://en.wikipedia.org/wiki/Sustainability>>.
- . "World Population." 2011. <http://en.wikipedia.org/wiki/World_population> (25 Apr. 2013).
- Wikipedia Commons. "Public Debt Percent GDP World Map." 2010. <http://upload.wikimedia.org/wikipedia/commons/3/35/Public_debt_percent_gdp_world_map.PNG>.

- Williams, Roly. "Oscillating Cylinder." *Wikipedia*.
<http://en.wikipedia.org/wiki/File:Oscillating_cylinder.svg>.
- World Atlas. "How Many Countries?" July 2011.
<www.worldatlas.com/nations.htm>.
- World Bank. "How We Classify Countries." 2013.
<<http://data.worldbank.org/about/country-classifications>>.
- . "Population Density (people per sq/km) in India." *Trading Economics*. 2012.
<www.tradingeconomics.com/india/population-density-people-per-sq-km-wb-data.html>.
- World Health Education Service (WHES). <www.worldhunger.org/>.
- World Health Organization. "Future Trends in Demand, Food Availability and Consumption." *Global and Regional Food Consumption Patterns and Trends*. 2004.
<www.who.int/nutrition/topics/3_foodconsumption/en/index6.html>.
- World Vision International. "France: World Vision leader meets with President Sarkozy." 1 Dec. 2011. <<https://wvioaptus2.wvi.org/wvi/wviweb.nsf/updates/C41929E6E1B5F2068825793D005B6AE2?opendocument>>.
- . Murunga, Lucy. "Kenya: Malnutrition levels to increase further, report warns." 1 Dec. 2011. <<https://wvioaptus2.wvi.org/wvi/wviweb.nsf/updates/533FDF95202F4F0488257903005D3668?opendocument>>.
- . Nabirye, Davinah. "Uganda: Tom's life transformed by micro-loan." 29 Nov. 2011. <<https://wvioaptus2.wvi.org/wvi/wviweb.nsf/updates/E2472B1833082CD68825794100663FE3?open document>>.
- Xiaochun, Qiao. "Demographic Changes in China and Its Implications." Institute of Population Research, Peking University. 28 Apr. 2010.
<http://countryoffice.unfpa.org/thailand/drive/Day1_Session3_Qiao.pdf>.

Websites

The following websites are also referenced in the course. They are listed by module for your convenience. These websites contain additional information that complements the course content and offer further insight into a variety of topics.

Module 1: World Geography Overview

www.cgeducation.ca/resources/why_geography_jobs.asp

www.ccge.org

www.physicalgeography.net/fundamentals/1b.html

www.globalsoilmap.net

www.storyit.com/Classics/Stories/citycountrymouse.htm

www.worldatlas.com

www.infoplease.com/world/statistics/state-country-nation.html#ixzz1RSjsHt8e

www.worldbank.org/

http://upload.wikimedia.org/wikipedia/commons/thumb/0/0c/Public_debt_percent_gdp_world_map_%282010%29.svg/1024px-Public_debt_percent_gdp_world_map_%282010%29.svg.png

<https://www.cia.gov/library/publications/the-world-factbook/rankorder/2186rank.html>

www.un.org/en/documents/udhr/

http://hdr.undp.org/en/media/HDR_2011_EN_Table1.pdf

http://hdr.undp.org/en/media/HDR_2010_EN_TechNotes_reprint.pdf

<http://hdr.undp.org/en/statistics/hdi/>

www.undp.org

Module 2: World Population: Characteristics, Distribution, and Growth

www.statcan.gc.ca

www.china.org.cn/english/2001/Mar/1992.htm

www.gazette.gc.ca/rp-pr/p1/2010/2010-08-21/html/order-decret-eng.html

www.tradingeconomics.com/india/population-density-people-per-sq-km-wb-data.html

www.indiaonlinepages.com/population/mumbai-population.html

http://education.nationalgeographic.com/education/mapping/interactive-map/?ar_a=1

www.geohive.com/earth/pop_region.aspx

http://en.wikipedia.org/wiki/World_population

www.globalchange.umich.edu/globalchange2/current/lectures/human_pop/human_pop.html

www.columbia.edu/~msj42/PeopleandCulture.htm

www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/demo10a-eng.htm

www.cpirc.org/en/enev0403-1.htm

http://countryoffice.unfpa.org/thailand/drive/Day1_Session3_Qiao.pdf

www.economist.com/node/18651512

www.worldmapper.org

<https://www.cia.gov/library/publications/the-world-factbook/>

www.worldometers.info/

www.prb.org/Educators/TeachersGuides/HumanPopulation/Urbanization.aspx

<http://dictionary.reference.com/browse/secularism?s=t>

<http://hdr.undp.org/en/statistics/>

<http://alliance.la.asu.edu/geomath/GeoMath3/Maps/AAMapsNewFormat.html>

www.sudan.net/education.php

www.happyplanetindex.org/countries/canada/

www.mmf.mb.ca/

<http://pse5-esd5.ainc-inac.gc.ca/fnp/Main/index.aspx>

www.aadnc-aandc.gc.ca/Map/irs/mp/mp-html-eng.asp

Module 3: World Food Supply: Production and Distribution

<http://learner.org/courses/envsci/unit/text.php?unit=7&secNum=2>
<https://www.cia.gov/library/publications/the-world-factbook/>
www.ecifm.rdg.ac.uk/intensive&extensive.htm
<http://motspluriels.arts.uwa.edu.au/MP1500rs.html>
www.who.int/nutrition/topics/3_foodconsumption/en/index6.html
http://articles.cnn.com/2008-04-14/world/world.food.crisis_1_food-aid-food-prices-rice-prices?_s=PM:WORLD
www.nytimes.com/2008/04/10/opinion/10thu1.html?_r=0
http://en.wikipedia.org/wiki/2007-2008_world_food_price_crisis
www.thp.org
<https://wvioaptus2.wvi.org/wvi/wviweb.nsf/updates/E2472B1833082CD68825794100663FE3?opendocument>
<https://wvioaptus2.wvi.org/wvi/wviweb.nsf/updates/533FDF95202F4F0488257903005D3668?opendocument>
<https://wvioaptus2.wvi.org/wvi/wviweb.nsf/updates/C41929E6E1B5F2068825793D005B6AE2?opendocument>
www.ted.com/conversations/15192/we_can_t_stop_war_can_we_cont.html
www.grida.no/graphicslib/detail/trends-in-capture-fisheries-and-aquaculture_e3c4
www.fao.org/fishery/statistics/global-aquaculture-production/en
www.canadiangeographic.ca/atlas
www.un.org/esa/sustdev/natlinfo/indicators/guidelines.pdf
www.unep.org/dewa/vitalwater/article167.html
www.unep.org/dewa/vitalwater/article176.html
www.cityfarmer.org/sublivestock.html
<http://en.wikipedia.org/wiki/Permaculture>
<http://en.wikipedia.org/wiki/Hydroponics>
<http://en.wikipedia.org/wiki/Sustainability>
livepage.apple.com
<http://www.growing-algae.com/index.htm>
www.fooddrinkeurope.eu/industry-in-focus/topic/nanotechnology/
www.foodprocessing-technology.com/projects/algae-biosciences-arizona-facility-expansion/
http://insectsarefood.com/what_is_entomophagy.html
www.ontariocorn.org/classroom/products.html
www.fao.org
<http://faostat.fao.org/>
<http://mountainx.com/news/>

Module 4: World Resources, Energy, and the Environment

<http://pubs.usgs.gov/of/2005/1294/index.htm>

www.mapsofworld.com

www.ec.gc.ca/eau-water/

<http://ngm.nationalgeographic.com/2010/04/table-of-contents/>

http://jg.socialsciences.manchester.ac.uk/Peasants/mexican_land_reform.html

www.un.org/en/aboutun/index.shtml

http://en.wikipedia.org/wiki/International_sanctions#Military_sanctions

www.davidsuzuki.org/publications/downloads/2000/Newsletter_summer00.pdf

www.davidsuzuki.org/blogs/science-matters/2012/05/the-fundamental-failure-of-environmentalism/

www.planetaryvisions.com/Project.php?pid=2224

http://earthobservatory.nasa.gov/Features/WorldOfChange/aral_sea.php

<http://girish-deshpande.com/wp-content/uploads/2012/03/Smart-Grid-concept-image1.jpg>

<http://girish-deshpande.com/wp-content/uploads/2012/03/>

www.hydro.mb.ca/mybill/sample_bill.pdf

<http://en.wikipedia.org/wiki/OPEC>

www.opec.org/opec_web/en/17.htm

<http://new.abb.com/smartgrids/what-is-a-smart-grid>

<http://peakoil.com/what-is-peak-oil/>

www.iea.org

Module 5: World Industrialization and Urbanization

www.waterhistory.org/histories/waterwheels/
http://en.wikipedia.org/wiki/File:Oscillating_cylinder.svg
<http://hdr.undp.org/en/>
[http://en.wikipedia.org/wiki/List_of_countries_by_GDP_\(PPP\)](http://en.wikipedia.org/wiki/List_of_countries_by_GDP_(PPP))
www.economicdevelopmentwinnipeg.com/strategic-sectors
www.undp.org/content/india/en/home/operations/projects/environment_and_energy/sustainable_industrialization-buildingstakeholdercapacityandinvo/
www.sponsoravillage.ca/just-citizens/moral-principle-tests/role-exchange-test/
www.sponsoravillage.ca/just-citizens/moral-principle-tests/universal-consequences-test/
www.sponsoravillage.ca/just-citizens/moral-principle-tests/new-cases-test/
www.unmultimedia.org/
<http://web.missouri.edu/ikerdj/papers/Oklahoma%20Farming%20with%20Grass%20-%20Status%20%20Trends.htm>
www.rougepark.com/explore/park_map.php
<www.canadiangeographic.ca/magazine/ja13/rouge_national_urban_park.asp>
<www.canadiangeographic.ca/magazine/ja13/rouge_national_urban_park2.asp>
<www.canadiangeographic.ca/magazine/ja13/rouge_national_urban_park3.asp>

Module 6: World Interdependence

www.who.int/topics/health_services_indigenous/en/
<https://owl.english.purdue.edu/owl/resource/747/01/>
<https://owl.english.purdue.edu/owl/resource/747/02/>
<https://owl.english.purdue.edu/owl/resource/747/05/>

Notes