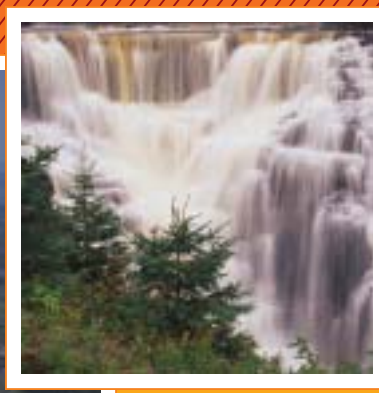
UNIT 1

Five Themes of Geography

The movement, region, and location themes in geography



The region, environment, and interaction themes in geography

Someone thinking in terms of geography would interpret these photos in a different way from someone might who is thinking of moving. A geographer sees certain themes, for example, different places, each with its own *location*. Each place is connected to other places by the *movement* of people, products, and information. Places closely linked together are often in the same area, or *region*. Every place has a physical *environment*, where people face both challenges and opportunities. Geographers call this meeting of people and their surroundings *interaction*.

Unit Expectations

This unit will explore the question,
How does geography view the world?

What You Will Learn in This Unit

- What are the five themes of geography?
- How can I use these themes to study environmental issues?
- What are the different points of view on environmental issues?
- How can I gather, analyze, and report on information using geographic sources?
- How can I draw and interpret information using maps?

CHAPTER 1

Place and Movement

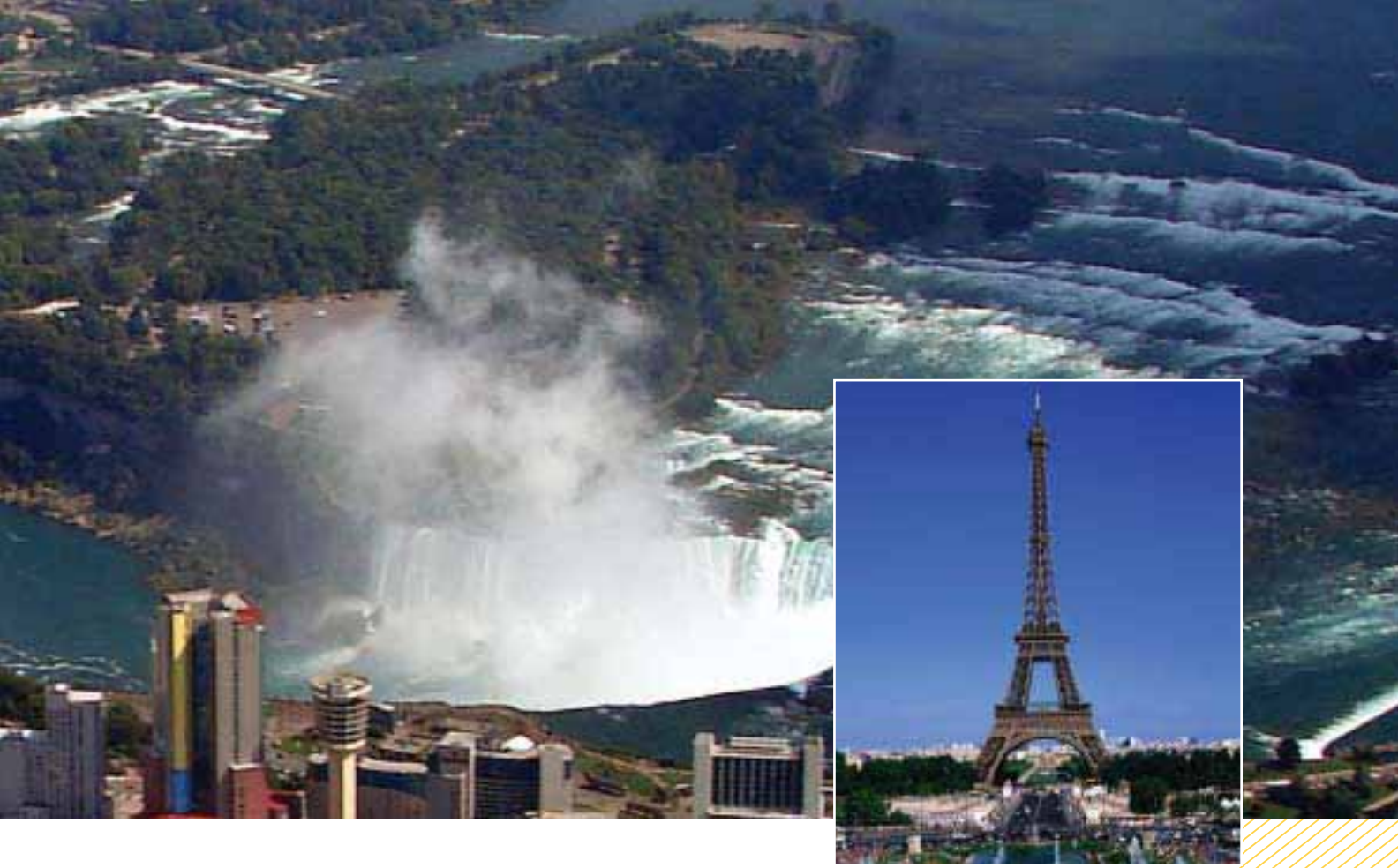
Niagara Falls, Ontario, and Paris, France, are easy to identify because of their familiar landmarks.

Before READING

Making Connections

Use rapid writing to describe a place you know. It may be a specific location, such as your home, or a more general area, such as a city you visited. Include as many details as you can. Why do you think you remember it so well?

Place is one of the most important words in geography. The world is filled with unique places, some of them large and others small. Every place has a location, a description by which it can be found. For each big city, such as Toronto, there are many tiny crossroads communities, such as Punkeydoodles Corners. This is an actual community in southwestern Ontario, between the cities of Kitchener and Stratford. No one is quite sure who first called it Punkeydoodles Corners, but long ago the place was a stagecoach stop with an inn, some businesses, and a post office. Today, a few houses and a funny name are all that remain. It still has a sense of place, but just barely. The places shown here are much better known.



What You Will Learn in This Chapter

- What is the geographic idea of place/location?
- How can the geographic idea of movement help me to understand the connections between places?
- What are the geographic terms related to place/location and movement?
- How can I interpret place/location and movement by reading a map?

Thinking About LITERACY

This chapter will explain new meanings of words you already use. It will focus on new vocabulary and why it is important. You will also learn how to visualize to connect with what you are reading.

Start a vocabulary sort chart of boldfaced words in the text and other words you don't know. Take point-form notes on the importance of the word or concept.

See page S 5 in the Skills Tool Kit for help with vocabulary.

Word List	How I Use It	Geography Use	Importance to Learning Geography	Drawing or Way to Remember New Meaning
Place	Somewhere I can find something	A place is a part of the earth that is separate or different from other parts		

Places Are Unique

You are an individual, right? There is nobody else exactly like you in appearance, ability, and personality. The friends of identical twins can tell them apart. Just as each person has a unique character, each part of the earth has a special "sense of place." A **place** is a part of the earth that can be recognized as separate or different from other parts. Each place is a unique combination of natural physical characteristics (for example, landforms and bodies of water) and human-made features (for example, roads and buildings). Punkeydoodles Corners is unique because of its odd name. Niagara Falls and Paris have their widely recognized natural or human **landmarks**: the Horseshoe Falls and the Eiffel Tower.

WORDS MATTER

place a bounded area; a locality such as a town or a city

landmark an object or landform that identifies a place

During READING

Checkpoint

Why are the words *place* and *landmarks* boldfaced in this paragraph?

What would make each of these places unique?

Places come in many sizes, from a single room to the Pacific Ocean. Since places occur on the earth's surface, they are of special interest to **geography**. This subject focuses on the relationship between people and the earth. Geographers often study conditions at different places on the planet. Since the days of the ancient Greeks, explorers have wanted to learn the characteristics of different parts of the world. In fact, the word "geography" comes from two ancient Greek words, "geo" (of the earth) and "graphica" (descriptions). *National Geographic* magazine has used maps, graphs, pictures, and words to describe places on earth for more than a century.

WORDS MATTER

geography the study of the earth's surface and people's relationship to it

In 1986, Sharon Wood became the first Canadian woman to reach the summit of Mount Everest.

WORLD RECORDS

The Highest Place

Mount Everest is the highest place on earth. Standing 8848 metres, it towers nearly 9 kilometres above the level of the Indian Ocean. Mount Everest is part of the Himalayan mountain range in southern Asia. This gigantic landmark of rock, ice, and snow was first climbed in 1953 by Sir Edmund Hillary and his Sherpa guide, Tenzing Norgay. Hundreds of adventurers have attempted the ultimate quest—Mount Everest's summit. Some of them have paid with their lives.

THINKING It Over

1. List, in order of size, eight types of geographic places, with an example for each. Start with a room and end with an ocean. (Hint: A city will fall somewhere near the middle.) *k*
2. Work with a partner to pick two pictures of places from this unit. (Don't choose Paris or Niagara Falls.) For each one, make a list of a) the natural, or physical, features and b) human-made characteristics that make the place unique. *k*
3. Describe the natural and the human-made features of the most interesting place you have ever experienced. See if your partner can guess the name of the place. *t* *c*

Where in the World?

WORDS MATTER

relative location description of a place in relation to other places, using landmarks, distance, or compass directions

During READING

Checkpoint

Which instructions (in the chart below) do you find easiest? Sketch a line map to your favourite place for a friend, showing the landmarks or streets.

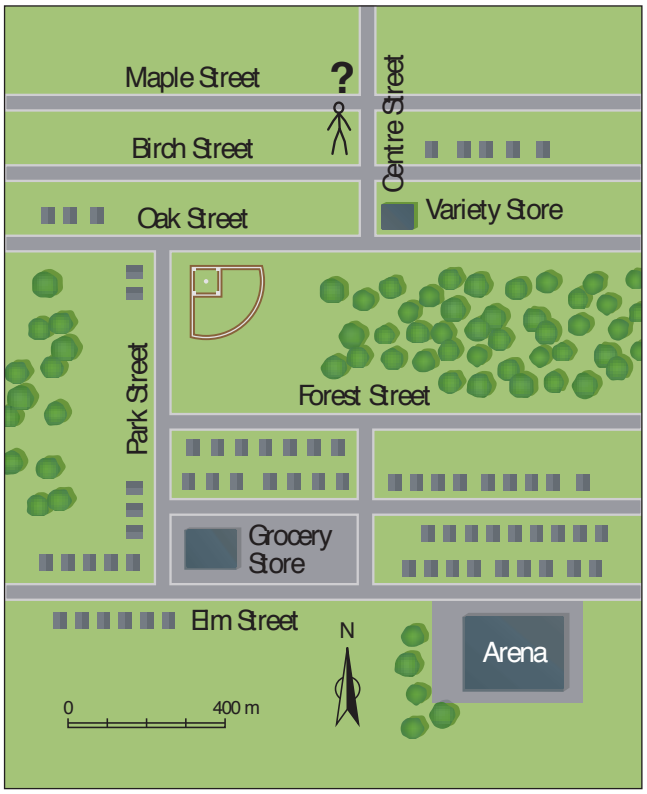
"Where?" is the geographer's favourite question. In this section, you will learn how to answer "Where?" questions using two methods: relative location and absolute location.

Relative Location

You might describe the location of your home like this: "It's at the first corner, just past the park." This is called **relative location**, because where you live is related to another place, the park. Some people give relative location by using familiar landmarks and directions such as "right," "left," or "straight ahead." Others use street names, compass directions, and some idea of distance.

Use the neighbourhood map below to find out how you use relative location. Read the two sets of directions to the arena. Which one seems clearer to you? Would you rather combine both approaches in your own unique style? Try it out.

Where's the arena? How do I get there?

Using Simple Directions and Landmarks	The Location of the Arena	Using Compass Direction and Distance
1. When you come to the variety store, turn to your right.		1. Walk one block south to Oak Street.
2. Walk past the baseball park, then turn to your left.		2. Turn west at Oak Street and go another block.
3. At the end of the street you'll see a big grocery store.		3. At Park Street, turn south and walk three blocks.
4. Make a left there.		4. Turn east at the end of Park Street and go one and a half more blocks.
5. Watch for the arena up ahead on the other side of the street.		5. The arena is on the south side of Elm Street.

Absolute Location

If you have used a road map, an atlas, or a GPS (Global Positioning System) unit, you already know about **absolute location**. It is the location of a place independent of any other place. The system of latitude and longitude is an example of absolute location.

WORDS MATTER

absolute location a description of a place independent of any other place

Latitude and Longitude

Suppose that a classmate was flying from Canada to visit relatives "down under" in Australia. The flight origin and destination locations would be listed this way in an atlas.

Imaginary lines of latitude and longitude show the absolute locations of these two cities.

Place	Atlas Page	Latitude	Longitude
Toronto, Canada	64	43.40° N	79.23° W
Sydney, Australia	159	33.55° S	151.10° E

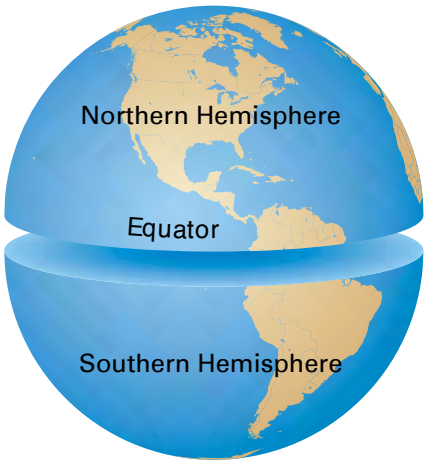
GPS units have become a popular way to find location.

Four Hemispheres

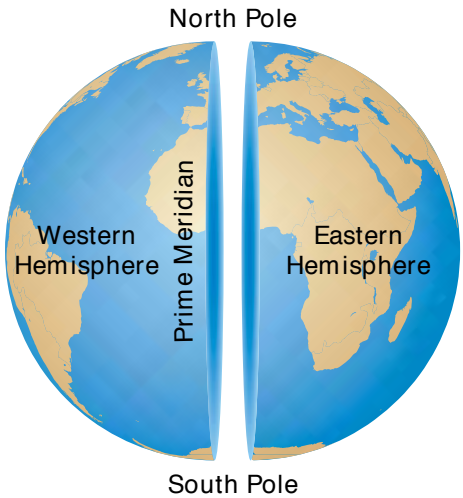
You cut an orange in half in different ways. To squeeze orange juice, you slice it across the middle. To eat it in sections, you cut it from top to bottom. Geographers also divide the world into halves, with each part called a **hemisphere**. The northern, southern, western, and eastern hemispheres are the source of the N, S, W, and E in the chart above.

WORDS MATTER

hemisphere half of a sphere or globe, especially the earth



The northern and southern hemispheres are divided by the equator, an imaginary line at the widest part of the earth.



The eastern and western hemispheres are divided by the prime meridian, an imaginary line between the earth's poles.

Latitude Location

WORDS MATTER

latitude distance, north or south, from the equator

You could make orange slices by cutting pieces across the orange, parallel to its widest part. Geographers divide the earth's surface like this, with **latitude** lines running parallel to the equator. North latitudes are numbered from 0° at the equator to 90° N at the North Pole. South latitudes are numbered from 0° at the equator to 90° S at the South Pole.

Longitude Location

WORDS MATTER

longitude distance, east or west, from the prime meridian

You could make orange segments by cutting pieces from one end of the orange to the other. Geographers divide the earth's surface like this, with **longitude** lines stretching between the North Pole and the South Pole. These run east or west of the prime meridian, a measured line passing through the Greenwich Observatory in England. East and west longitude lines are both numbered from 0° at the prime meridian to 180° at the international date line. This line cuts through the Pacific Ocean, a convenient place to start a new day in the world time zone system.

WEB LINK

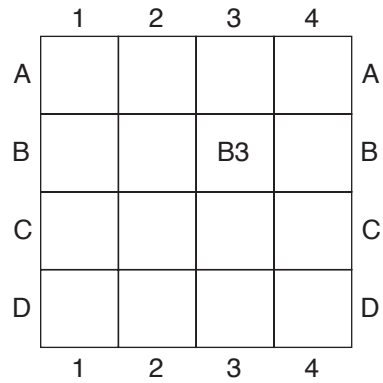
For more information on latitude and longitude, visit www.pearsoned.ca/on7geography.

Alphanumeric Location

Alphanumeric location is a second way to find absolute location. It is a simple system that uses an **alphanumeric grid** with a combination of letters and numbers. Fine lines cross the map from top to bottom and from side to side. They form a checkerboard-like grid to identify each square. You will practise using this location method on page G 13.

WORDS MATTER

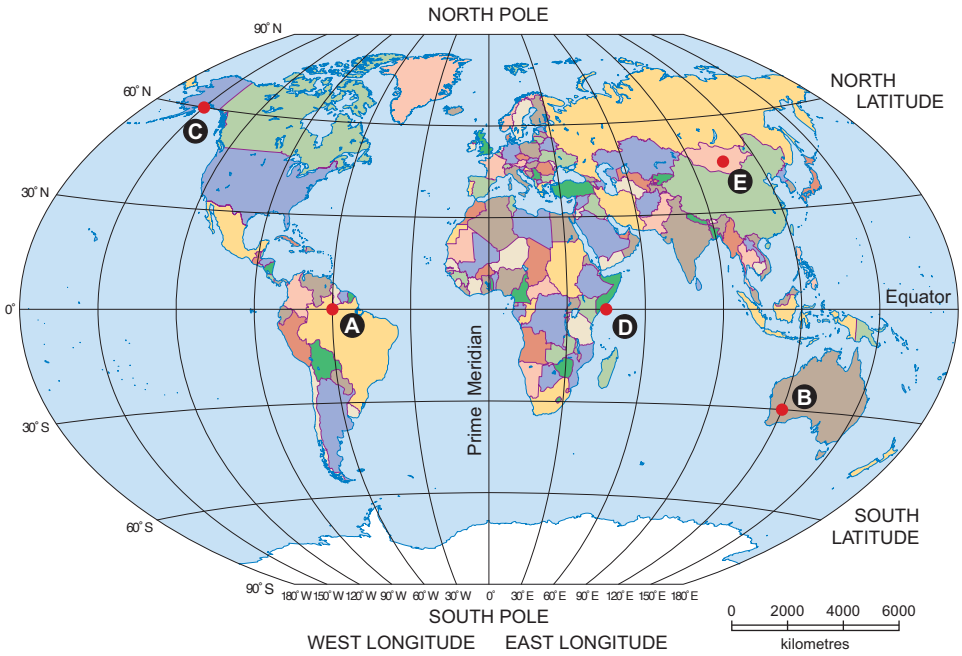
alphanumeric grid lines that divide a map into squares, with numbers along the top and bottom and letters along the sides



THINKING It Over

1. Write short descriptions of the locations of your home and the school. *t* *c*
2. Record the latitude and longitude location of points A, B, C, D, and E on the map. *m*
3. On a larger copy of this map, locate and label these cities: *m*

a) Toronto, ON, 44° N, 79° W	e) Cape Town, South Africa, 34° S, 18° E
b) St. John's, NL, 47° N, 52° W	f) Sydney, Australia, 34° S, 151° E
c) London, England, 52° N, 0° (longitude)	g) Buenos Aires, Argentina, 35° S, 59° W
d) Mexico City, 19° N, 99° W	h) Tokyo, Japan, 36° N, 140° E



GEO SKILL

Read a Map

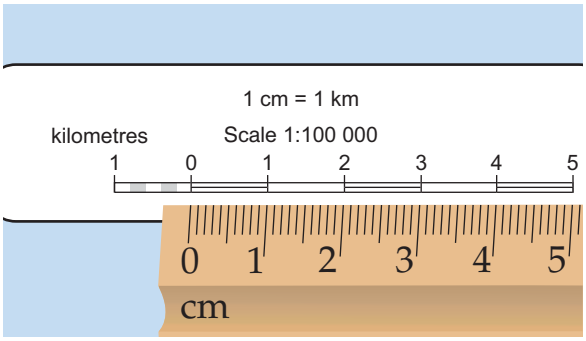
A map shows a simplified view of the earth (or some part of it) from directly overhead. Here's how to read one step by step.

Step 1: Find Map Location

Check to see which of the absolute location methods the map uses. This map has an alphanumeric grid.

Step 2: Measure Map Distance

Look for a map scale that shows earth distance. It might be shown as a statement scale; for example, 1 cm = 1 km. This means that each centimetre on the map shows one kilometre on the ground. This map uses a line scale, easy to measure with a ruler.



Step 3: Find Map Direction

The top edge of most maps stands at north. Look for either a simple arrow or a compass rose, often but not always, near the top of the map.

WORDS MATTER

compass rose a four-pointed or eight-pointed symbol showing the major directions of the compass

Step 4: Interpret the Map Legend

Use the legend to learn the meanings of three types of symbols on the map.

Area Colours	Line Symbols	Point Symbols
Used for larger areas such as natural features, lakes, parks, and cities	May connect places (roads, railroads, rivers) or divide them (boundaries)	Uses small designs for towns, campgrounds, and other human activities

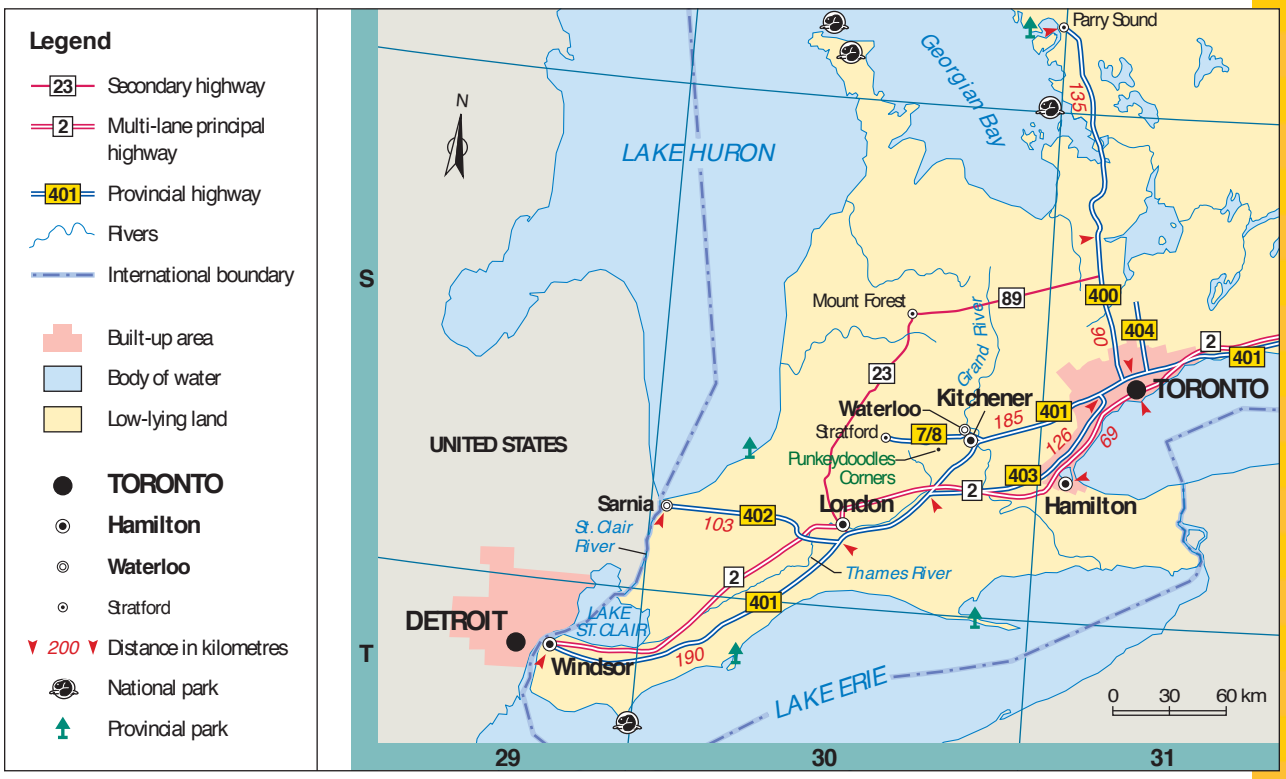
APPLY It

1. If you are flying from London, ON, what is the compass direction to: i) Sarnia, ii) Windsor, iii) Waterloo, iv) Hamilton? *m*
2. Give the grid locations of the five cities in Question 1. *m*
3. How many kilometres would each of these flights travel? Measure the distances from and to the centre of each city. From London, ON to i) Windsor, ii) Sarnia, iii) Waterloo, iv) Hamilton. *m*
4. a) Describe the relative locations of: i) Lake St. Clair and ii) Punkeydoodles Corners *m*

   b) How many different 400-series highways are shown on this map? *m*

   c) Name the five largest Ontario cities shown on the map. *m*

   d) Sketch and label a map to show how these five cities are linked by the 400-series highways. *m*

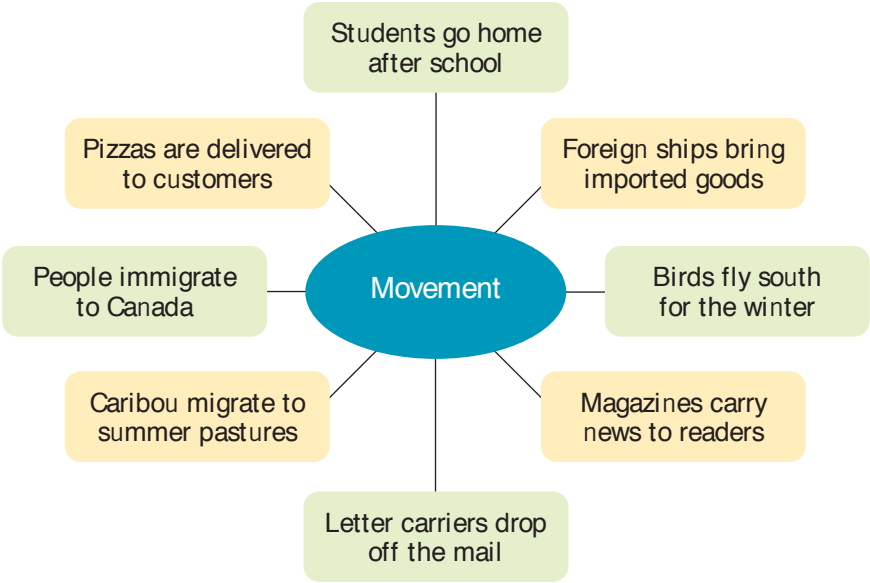


A World in Motion

WORDS MATTER

movement the flow of people, products, information, and elements of nature

How did you get to school this morning? Did you walk, ride a bike, take a bus, or get a ride? However you travelled, this **movement** took you from one place (home) to another (school). Movement connects places at different locations. It is one of the five geographic themes, and refers to the flow of people, products, and information. Movement includes migration in the natural world too. The web below shows all four of these motions.



During READING

Checkpoint

Use the sentences before and after a boldfaced word to help you understand the meaning. This is using *context*. Make notes about boldfaced words.

Geographers look at movement in two ways. They see **systems**, that is, a pattern of routes that connect places together. People build networks of highways to carry people to and from work. Nature develops river systems to carry water to the ocean. **Flow** measures the volume of people, products, information, and other things that move along a system. For example, planners measure traffic flow to decide where more lanes are needed on roads and highways. Scientists measure the water volume in rivers to predict flood periods.

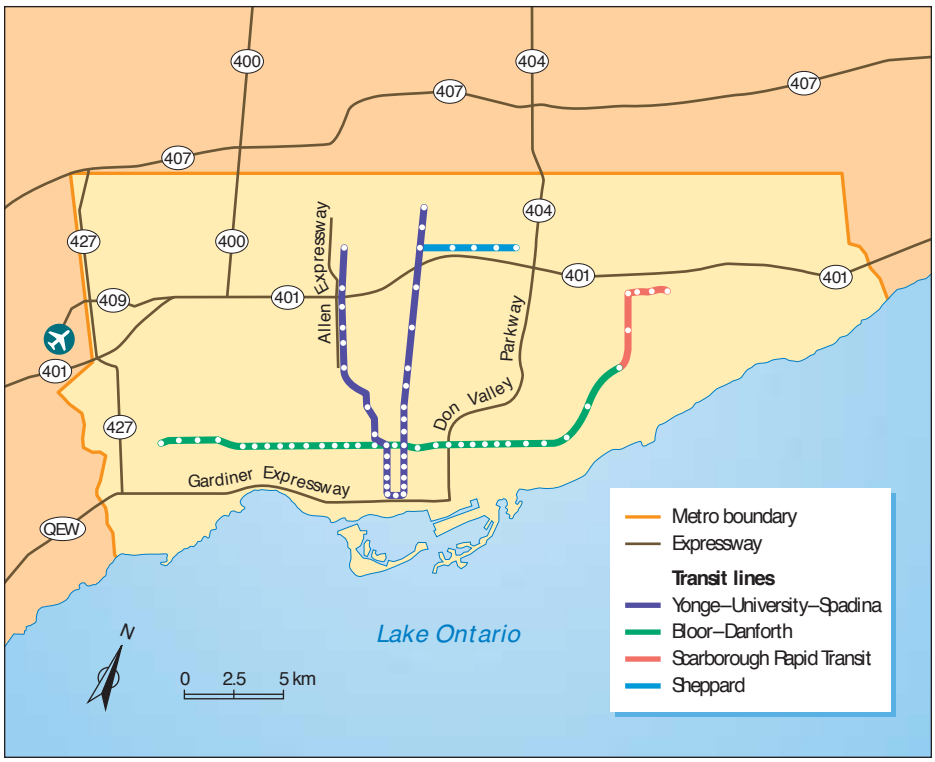
The movement theme can be applied to many geographic questions. What is the best way to get around a city? What is the most efficient way to bring freight to customers? How does wireless technology move information? You will examine these questions in the next five pages.

Moving People

Friday at last! Rick Westermann turned his BMW onto Highway 404 and headed for Toronto. By the time he reached east–west Highway 401, commuter traffic was down to its usual crawl. He was still far from his downtown office, at least 45 more minutes away. For the fifth time this week, Rick considered that there must be a better way. He told himself that next week he would try parking at the top of the Yonge Street subway line, and riding public transportation the rest of the way to work. It had to be better than wasting time in another traffic jam.

A better way to get to work.

Rush-hour traffic on Toronto's Highway 401.



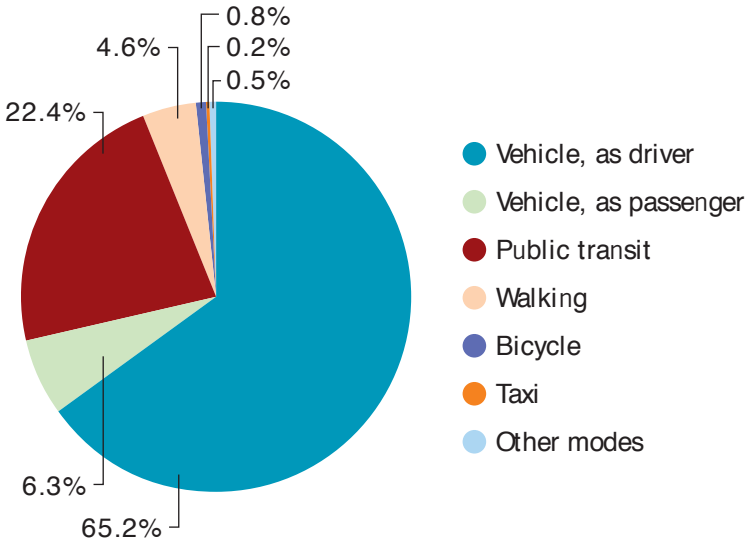
Describe the patterns of Toronto's transport systems.

WORDS MATTER

public transit transportation systems that include buses, subway trains, streetcars, and commuter trains

The following Monday morning, Rick could be found on the Don Valley Parkway, caught in traffic again. Old habits die hard. Personal vehicles offer a level of privacy, comfort, and convenience that many commuters cling to, in spite of the high cost of gasoline, parking, and car repairs. About two-thirds of those who work in Metro Toronto drive to their job. Less than a quarter use **public transit**. In many parts of the world, these fractions are reversed, with public transit the favoured way to travel in cities.

Transportation to Work, Metro Toronto, 2001



What percentage of Torontonians arrive at work by vehicle?

Public Transit to Work, Top Six Canadian Cities

Top Six Metro Areas	Population, 2005	Percentage of Workers Using Public Transit
Toronto*	5 304 000	22.4
Montreal*	3 636 000	21.7
Vancouver	2 208 000	11.5
Ottawa–Gatineau	1 149 000	18.5
Calgary	1 060 000	13.2
Edmonton	1 016 000	8.6

* Subway systems

How does a subway system affect the use of public transit?

Toronto has been more successful than other Canadian cities in getting people to use public transit. The city's public transportation system has operated street railcars since 1921, and completed the first stage of its underground subway line in 1954. In 2005, the Toronto Transit Commission celebrated its 25 billionth passenger. This total is about four times greater than the population of the earth!

During READING

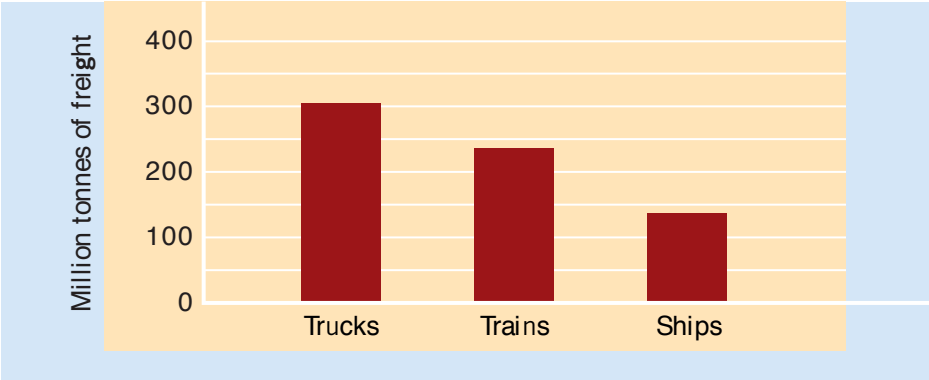
Checkpoint

What words tell us that the author wants us to see that it is important for people to use public transit?

Moving Products

The movement of products connects places to one another. Airplanes carry passengers, but they also deliver cargo or airdrop emergency food supplies to disaster areas. Energy flows through oil and natural gas pipelines and high-voltage electric power systems. Trucks, trains, and ships compete for most of the freight business.

Three Freight Competitors, Canada, 2003



The **container freight system** is a good example of movement. Products are packed into metal containers that look something like dumpsters. These containers can be stacked on the deck of a ship or clipped onto flatbed railcars or truck trailers. Special hoists lift the containers between different types of transport at container terminals. There are real benefits to this system:

- *security*: containers remain locked
- *cost*: no need to handle the contents of the container, saving time and human resources
- *time*: cargoes are delivered faster
- *tracking*: computers track container movement
- *global*: containers come in standard sizes, so contents do not have to be loaded into different containers as they move from one country to another

WORDS MATTER

container freight system
a system for moving products that uses standard-sized metal boxes that attach to trucks, trains, and ships

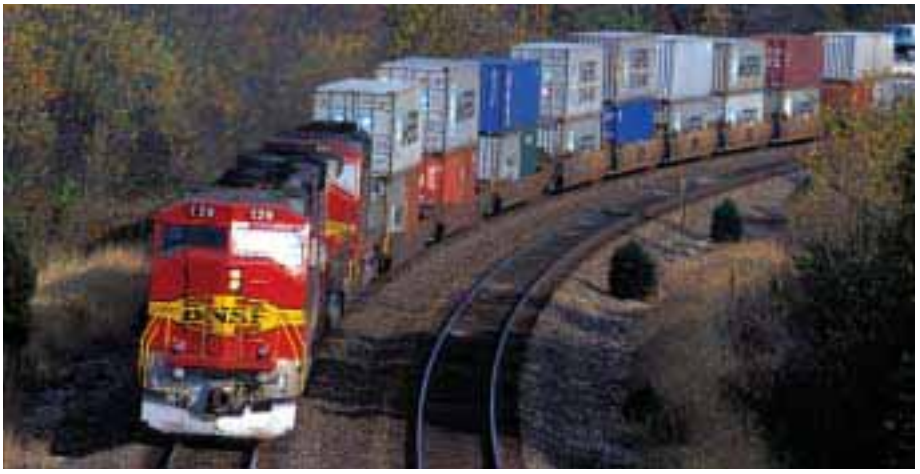
Three Freight Competitors

Trucks

Trucks can go almost anywhere, even over winter ice roads in the Far North. They are ideal for carrying manufactured goods and packaged products. Trucks handle standardized freight containers and can provide overnight "just-in-time" delivery for manufacturers such as Ontario's automobile assembly plants. Trucks are heavy energy users and their weight is very tough on roads. Heavy truck traffic is a problem along most major highways.

Trains

Freight makes up 90 percent of the railway business in Canada. Trains are the best way to carry materials such as coal, iron ore, potash (for fertilizer), wheat, lumber, and huge rolls of paper. Often these products are being carried to ports for shipment within Canada and overseas. Special train cars carry container freight and new automobiles. Trains are more energy-efficient than trucks, but can only follow fixed routes.



Ships

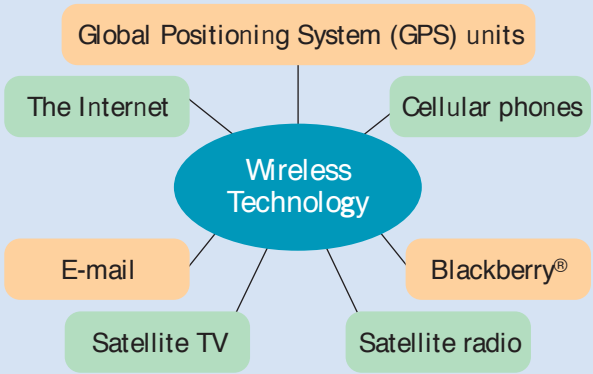
Much of the shipping within Canada takes place at a few ocean ports and along the Great Lakes system. Ships can load and unload huge volumes of the bulkiest raw materials, such as oil, coal, iron ore, limestone, and wheat. They also handle international container freight. Ships are the most energy-efficient form of transport, but they are limited by freeze-up during the Canadian winter.

ZOOM IN

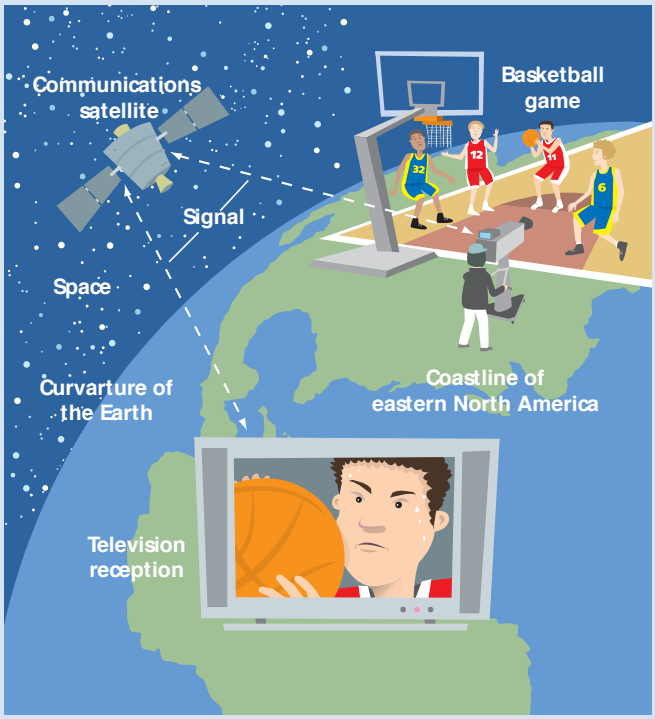
Wireless Technology

You are bombarded with information every day. Wireless technologies, computer-based systems that operate using only signal waves, are the key to information flows. Technology is expanding so quickly that successful new media products, such as the iPod® and the Blackberry®, become widely used very quickly. People wonder how they ever lived without the new technology—until something even better comes along!

South Korea is probably the most advanced high-tech society in the world at present. Working parents use their office computer to check on the kids after school, by interfacing with a tiny computer webcam built into the refrigerator door. Many South Koreans use their cellphones for shopping, online banking, and place-to-place travel (GPS). Wireless technology is the key to this ever-expanding "information superhighway"—and satellites make wireless technology possible.



Which of the examples shown in this diagram have you used before? Give some other examples of wireless technology that could be added to the web.



THINKING It Over

1. Record two examples each for people, product, and information flows that you have personally experienced today. Compare your examples to those of another student. *k*
2. Construct a graph to show all or part of the information in the number table "Public Transit to Work, Top Six Canadian Cities." See page S 8 in the Skills Tool Kit for help with graphs. *t* *c*
3. What is holding Rick Westermann back from using public transit? Outline three different approaches to getting him off the highway and into the subway system. Use the Toronto map and pie chart to help you. *t* *c*
4. Work with a partner to complete a Pros, Cons, Questions chart to summarize three competing freight carriers—trucks, trains, and ships. *t* *c*

CHAPTER IN BRIEF

After READING

Tie It Together

Compare your notes to the "Chapter in Brief" summary. What have you learned about place and movement? Why is it important to know this when we study geography?

This chapter introduced two common themes that geographers investigate—place/location and movement. You saw that there are many types of places in the world, each with its own location. This position can be determined using either relative location or absolute location methods. You practised both by using maps. In this chapter, you learned that movement connects places, using transportation and communications systems. People, products, and information link places on earth, sometimes by using satellite-based technology.

Word List	How I Use It	Geography Use	Importance to Learning Geography	Drawing or Way to Remember New Meaning
Place	Somewhere I can find something	A place is a part of the earth that is separate or different from other parts		

PUTTING It All Together

Interpret the map and photo on the next page to identify characteristics of this unique place in Greece.

1. Use the map to write a detailed description of the relative location of the island. Include place names and direction. t c
2. Use the photo to record the following information about this place:
   a) its physical features
   b) its human-made features
   c) evidence of geography's movement theme t c k
3. Describe the physical and human characteristics that make this place both unique and popular with tourists. t c a
4. Construct a Venn diagram to compare this place to your own community. c

Mykonos Town on the Greek island of Mykonos.

The location of the Greek village shown in the photograph.

CHAPTER 2

Environment and Interaction

Why has the beluga whale become an endangered species?

Before READING

Making Connections

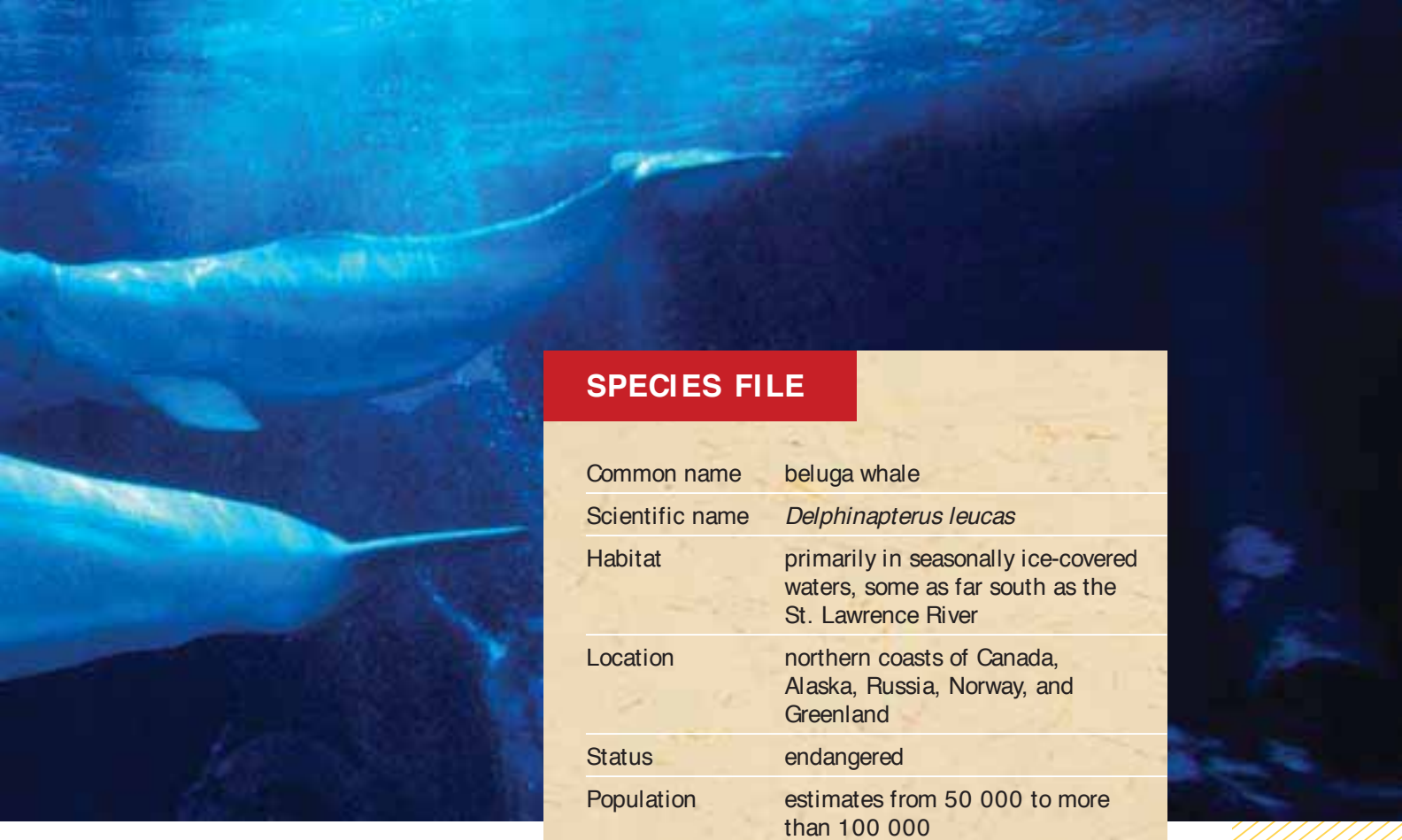
You find the schoolground covered in litter. Does this bother you? Why? List some solutions to the problem.

WORDS MATTER

endangered species a plant or animal species that is at risk of becoming extinct

environment physical surroundings and conditions

The beluga whale and many exotic animals, such as beautiful tropical birds, are directly threatened by hunting. Many are trapped live for sale to collectors. However, for most **endangered species** and other wildlife, the real problem is environmental. The habitats where they live are often damaged or completely destroyed by human activity. Their physical **environment** can be ruined by settlement, agriculture, transportation routes, and other changes. Forests have been cleared, lakes and streams polluted, and wetlands filled. The 100 000 or so remaining beluga whales are the survivors of a much larger population.



SPECIES FILE

Common name	beluga whale
Scientific name	*Delphinapterus leucas*
Habitat	primarily in seasonally ice-covered waters, some as far south as the St. Lawrence River
Location	northern coasts of Canada, Alaska, Russia, Norway, and Greenland
Status	endangered
Population	estimates from 50 000 to more than 100 000

What You Will Learn in This Chapter

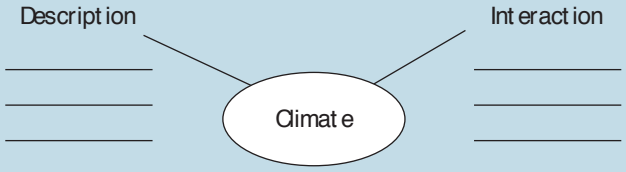
- What are the geographic themes of environment and interaction?
- How do I form questions to investigate environmental issues?
- How can I produce an interview presenting a viewpoint about an issue?
- How can I show how different people have conflicting views on an issue?
- How could I produce a news report on the depletion of a resource?
- How can I interpret information from a thematic map?

Thinking About LITERACY

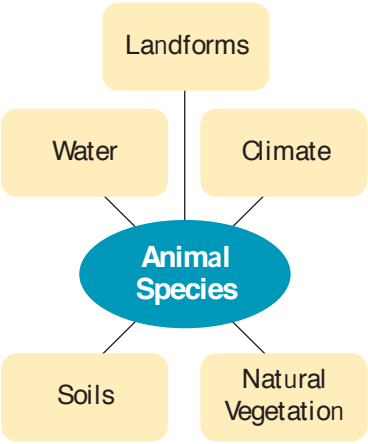
This chapter will focus on note-taking. It is important to know how to take notes.

Different subjects require us to take different types of notes. In geography, for example, we get information from pictures, graphs, charts, and maps, as well as words.

At the end of this chapter, you will use your notes and the organizer below to review what you have learned or to tell a friend what she or he missed while away from class.



Five Environmental Factors



All living things are affected by their environment. You respond to two different types of environment: your physical and your social surroundings. For example, the weather probably influences what you decide to wear to school, while your friendships will affect whom you spend the most time with. It is different in the animal kingdom. Fish may swim together in schools and some mammals may congregate in packs, but all depend directly on their natural environment for survival. This includes landforms, climate, water, soils, and natural vegetation. We'll look briefly at each of these environmental factors in connection with different wildlife species.

Bighorn mountain sheep live where few other animals can go.

Landforms

Earth's surface is crumpled up in some places and worn away in others. Volcanoes, earthquakes, and other mountain-building forces have raised land from beneath the ocean. Wind, water, and ice have torn it back down. Ocean depths, plains, hills, and mountains are the result of four billion years of formation. (You will learn more about this in Chapter 4.) Living things—plants, animals, and people—survive in very diverse landform regions. One remarkable species is the bighorn mountain sheep, which lives high in the Rocky Mountains. This sure-footed mammal's balance and agility take it where few other species can reach.

Climate

Climate is the long-term average of weather conditions at a particular place. Global temperatures range from tropical heat to polar cold. Moisture varies from humid rainforest conditions to dry desert environments. Weather extremes include raging hurricanes, tornadoes, and blizzards, as well as simmering heat waves. (You will learn about weather and climate in Chapter 5.) Living things have developed natural adaptations to a wide range of conditions. For example, Antarctic penguins can go without eating for three months or more during the –80° C winter. By gathering close together, they stay warm enough to survive until temperatures "warm up" to –20° C.

During READING

Checkpoint

Notes should be in short form and in your own words (just enough to remind you what you read). Write three point-form notes about climate.

Water

About three-quarters of the surface of the earth is covered by water, most of it salty ocean. Humpback whales, shown here, are among the largest animals on earth, even though they eat only tiny plant and fish life. Every day, they filter several tonnes of seawater through their unusual ribbed throat, trapping up to 2500 kilograms of food. There is a fixed amount of water on earth and in the **atmosphere** above, but it is constantly recycled through natural processes. Most species need fresh water to survive; for example, people should drink approximately two litres daily.

WORDS MATTER

atmosphere the layer of gases that surrounds the earth

Soils

Much of the land area of the earth is covered with a thin layer of soil material. It is usually a mixture of worn rock particles and decayed organic material from natural vegetation. Human settlement and agriculture are generally concentrated in those regions of the earth with thick, fertile soils. (You will learn more about agriculture in Chapter 6.) Living species can use the soil to adapt to their environment. Colonies of meerkats live in a world of burrows under the Kalahari Desert in southern Africa. This protects them from predators and the desert's extremes of daytime heat and nighttime cold.

Heroes and Villains | *The Green Team Challenge*

Every year, *Canadian Geographic* magazine rewards individuals and groups in Canada for supporting the environment. In 2005, Grade 7 students at École Secondaire de Rivière-du-Loup in Québec received a $1000 award for their work with a local stream.

Science teacher Alain Renaud takes his students into a nearby stream and wetland to learn about the environment. They collect information and identify a problem. Then they devise solutions to restore what needs help. Students raised fish from eggs in large aquariums and transferred them to the stream. They also grew trees from seedlings at school and planted them to shade the stream's bank.

Groups in various parts of Canada are concerned about preserving wetlands.

WORDS MATTER

natural vegetation plants that have not been introduced by humans

herbivores animals that rely on plants as their food source

carnivores living things that eat meat

degraded spoiled, reduced in quality

Can you see an animal hiding in this natural vegetation?

Natural Vegetation

Forests, grasslands, wetlands, and Arctic tundra show the variety of **natural vegetation** that has developed in response to climate and soil conditions. People use natural vegetation for food, for building materials, and for many other purposes. **Herbivores** eat plants; **carnivores** often use vegetation to hide from their prey. For example, the Bengal tiger often hunts for big game in tall grasslands, where its striped coat acts as camouflage.

These five environmental factors shape the survival of plant and animal species. Human activity often threatens habitats (for example, through pollution of water by oil spills or improper waste disposal). However, people sometimes restore **degraded** habitats and return them to a more natural state. That's the good news.

THINKING It Over

1. Make a copy of the web organizer on page G 24. Use information about the species in this section to add point-form notes to the web. *k*
2. For each part of the web, identify a different way in which human activity can threaten animal species. *k* *t*

Hotel guests were alarmed by angry shouting as cod fishers tried to push their way into a meeting room. Meanwhile, Canadian Fisheries Minister John Crosbie made a hasty retreat out a back door. At a July 2, 1992, press conference in St. John's, Newfoundland, he had announced a two-year suspension of cod fishing. The cod had been overfished and needed time to recover.

WEB LINK
For more information about cod fishing and the cod moratorium, visit www.pearsoned.ca/on7geography.

The cod never did return. Limited fishing was allowed a few times during the 1990s, with no success. Finally, on April 24, 2003, the government of Canada closed the Newfoundland and Labrador cod fishery indefinitely. Cod stocks were estimated at only 1 percent of their historic levels. Although the cod fishery involved Canada's whole east coast, Newfoundland and Labrador relied on it far more than the other Atlantic provinces and were much more affected by the depletion of the resource. Fortunately, since then the province has been able to develop other resources—oil and nickel—to replace its traditional fishing industry.

What Happened to the Fish?

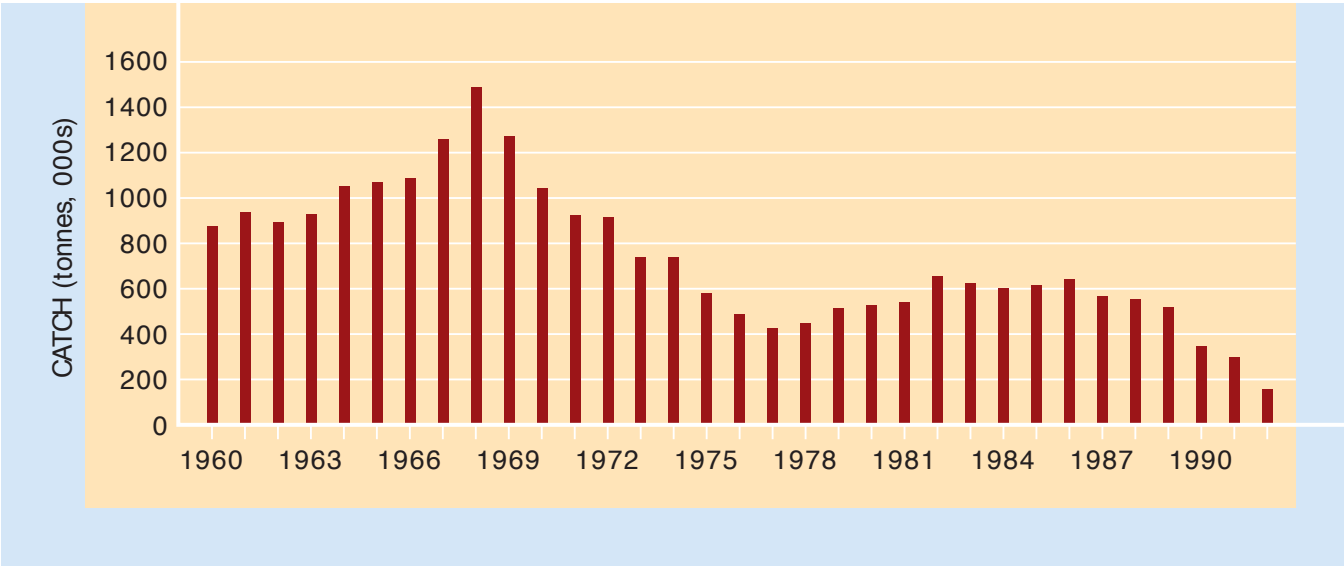
Cod once flourished around Newfoundland and southern Labrador. Large numbers lived on the Grand Banks, the relatively shallow ocean beyond the island. After 1500, European ships fished each summer close to shore. Gradually small, permanent communities were built along the Atlantic coast. Inshore fishers used small boats to fish close to shore, returning daily with their modest catch. After 1950, much bigger boats were built and equipped with the latest technology. Offshore fishers used sound waves to find large schools of fish out on the Grand Banks. Powerful machines handled huge nets that were dragged along the sea floor where the cod feed. Catches rose sharply, but government scientists were confident that fish supplies would remain strong.

WORDS MATTER

inshore fishers fishers that fish with small boats relatively close to the shore

offshore fishers fishers that fish the deeper waters away from the shore and use larger boats and more powerful equipment and technology

Cod Catch in Canada's Atlantic Fishery, 1960–1992



What overall pattern do you see on this graph? Suggest reasons.

Even larger ships came from Europe and other countries. They fished undisturbed within sight of Canada because nations could claim control of the ocean only 5 kilometres out to sea. After the 1982 United Nations Law of the Sea Conference, countries extended some control to 370 kilometres offshore. The Canadian government set limits to foreign catches on the Grand Banks, but between 1986 and 1992, Europeans took an extra half million tonnes! By 1989, scientists finally realized that cod stocks were in danger. It was already too late.

Local fishers used small boats to travel daily to the inshore cod fisheries.

Modern factory trawlers are actually floating fish-processing plants that can stay at sea for several months. What effect has technology had on this industry?

ZOOM IN

Effects of Closing the Fishery

These are actual interviews done in Atlantic fishing communities.

Offshore Fisher
I considered going away, but where would I go? I have no skills other than being a dragger man [offshore fisher]. I have a house down here that's not paid yet. If I had to complete the payments on this one and … go somewhere else with my family, what am I going to do? So this is the sort of desperation.

Fish Plant Worker
While we were working at the fish plant, we were making good money, and we were taking home sometimes $600 or $700 a week.… I had to go on TAGS [The Atlantic Groundfish Strategy, emergency payments that ended in 1999]. And it was only a little bit, like $200. So I had to cope with what there was, with a family and bills.

Local Business Owner
I mean, this place in the fall used to boom. The trucks would be all over the place. Any night of the week … there were people. In restaurants … open all night long. You could tell this place was alive.… Last fall … it was scary.… You would wonder if there was anybody alive.

Government Counsellor
Many of these people have been fishing for 20, 25 years.… It's their way of life. They did the job. They did it well. And just like that, it's taken out of their hands.… And you try to explain to them that the economy is changing. They don't want to hear that. They just want to hear that they can go back fishing.

Why would it be difficult for people in isolated communities to cope with cod depletion?

During READING

Checkpoint
In your notes, write the question you think each of the people quotations above was asked. Use the information in the quotes to write a one-sentence answer.

Environmental Opportunities

Like a suspense-filled movie, the environment saved the day just as the cod fishery collapsed. Oil under the Atlantic Ocean, and nickel in Labrador have breathed new life into the province.

Oil Under the Atlantic

As the Grand Banks fishery became depleted, oil was discovered in the same place. In 1984, test drilling found large deposits about 300 kilometres east of St. John's. Environmental conditions there are tough for drilling. The fog-bound ocean is clogged by icebergs and torn by fierce winter storms. But the resource is rich, and, by 1997, oil companies began to tap the Hibernia deposits. Extraction will continue until 2015, perhaps longer.

Plenty of work came just as the cod fishery closed. The world's biggest drill platform was built in Bull Arm, Newfoundland. Almost 2500 people worked on the Gravity Base Structure (GBS), big enough to sit on the ocean floor, 80 metres below the surface. Others built the Placentia Bay port, where tankers carry crude oil from the GBS platform. Today, there are fewer jobs, but Hibernia oil pumps millions of dollars into the province.

Why were many of the Hibernia jobs just temporary?

Nickel from Labrador

In 1993, two prospectors in a helicopter spotted landforms indicating mineral ore along the remote Labrador coast. The Discovery Hill deposits were so large that giant nickel company Inco paid $5 billion for the claims in 1996. Located at Voisey's Bay (see the map on page G 33) are 32 million tonnes of mineral reserves. Much more is expected as exploration continues. There is enough nickel ore near the surface for open-pit mining to continue until 2018, before going underground.

Before Inco could start mining, the company had to guarantee job priority to local Aboriginal peoples and provincial residents. By 2005, the mine was open, along with a nearby plant to concentrate the nickel ore before shipping it. A refinery is planned for Long Harbour, Newfoundland, by 2009. Already, more than 1000 people are working on the project, 80 percent of them from the priority groups. The environment has revived the economy of Newfoundland and Labrador.

WORDS MATTER

ore rock that contains enough mineral content to make mining worthwhile

open-pit mining removal of ore by digging directly into deposits near the surface

A large mining project like Voisey's Bay provides economic benefits besides jobs, such as tax revenues and opportunities for businesses that serve the mine and its workers.

THINKING It Over

1. Make a web chart to show three different reasons for the disappearance of cod. Record two facts for each reason. *k*
2. Make a timeline using eight dates for the Hibernia and Voisey's Bay information. *k*
3. Write a paragraph explaining how important the environment always has been to the people of Newfoundland and Labrador. *t* *c*
4. Imagine that you have just interviewed one of the people quoted in Zoom In. Write a news story that gives the person's views about the closing of the fishery. Combine your interview with others to produce a newsletter or short television report about the cod crisis. *t* *c* *a*

GEO SKILL

Interpret a Thematic Map

In 1912, the *Titanic* was the largest ocean vessel ever built. Many believed that the passenger ship was unsinkable. But on its first voyage, *Titanic* struck an iceberg off Newfoundland and quickly sank. More than 1500 of the 2200 passengers died.

WORDS MATTER

thematic map a map that shows information about a particular topic

relief the height of land and the depth of the ocean

How deep is the ocean where the *Titanic* sank? You could use a thematic map to find out. A theme is a topic, and a thematic map shows information about a topic such as relief. More topics for thematic maps include the distribution of population, forests, orchards, and other observable information. Here is how to use the relief map on the facing page to investigate the most famous of all shipwrecks.

Step 1

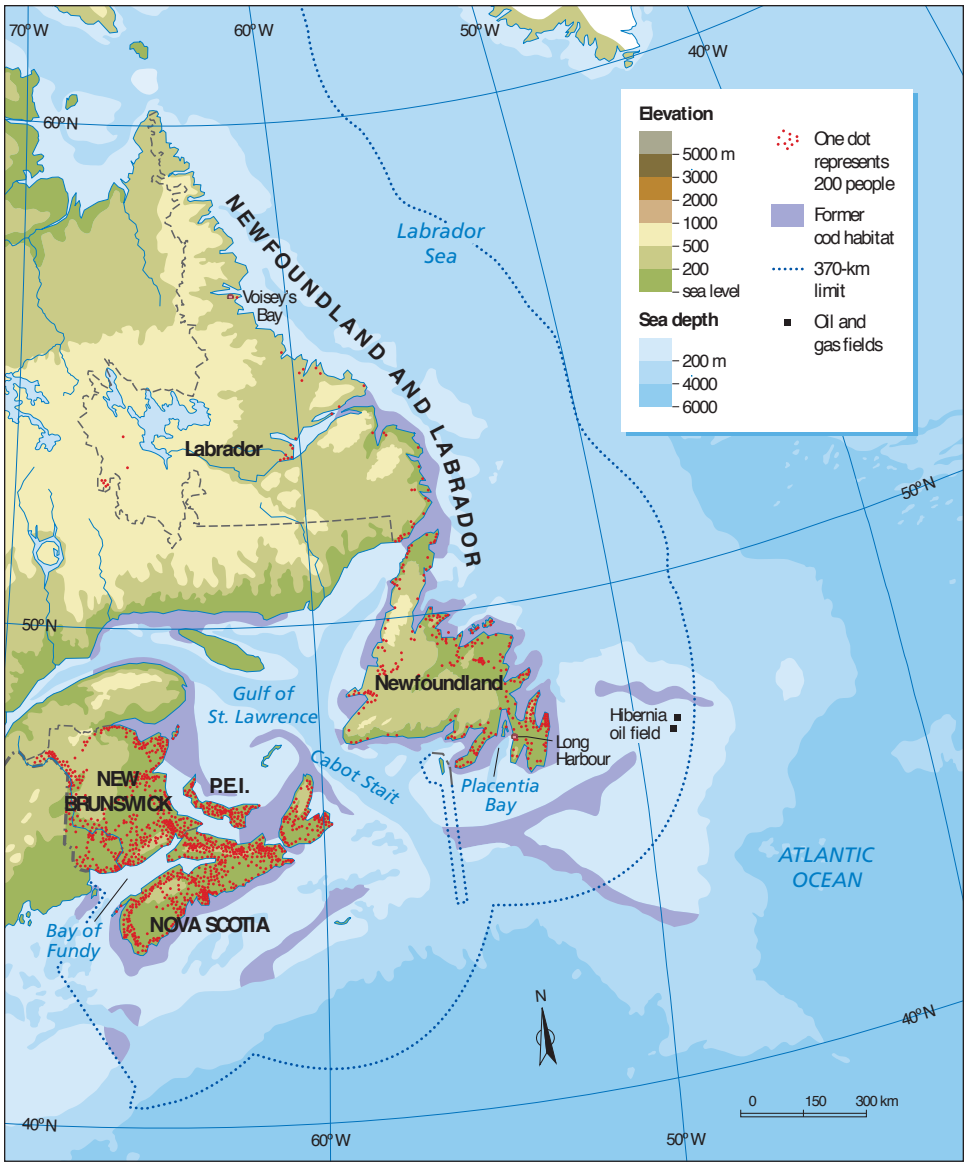
Become familiar with the map and its legend. Identify the topic and the region the map covers. Check to see which method(s) the map uses to show relative or absolute location. Finally, examine the legend to see which area, line, and point symbols are used.

Step 2

Find the specific information you need by using the map and legend. The *Titanic* sank at about 42° N latitude and 50° W longitude. When you locate this position on the map, you will see that it falls on a particular shade of blue. By matching this colour to the legend, you can see that the *Titanic* was found between 200 metres and 4000 metres below sea level.

Step 3

Examine the map to identify more general patterns. Look at other shades of blue near the *Titanic* site. Is the ocean shallower or deeper there? This will give you a much better sense of the shipwreck's depth. Make an estimate, and check the last page of this chapter for the actual answer.



Atlantic resource locations: fish, petroleum, and nickel

APPLY It

1. Describe the areas favoured by the Northern cod. Refer to both relative location and ocean depth. Identify cod fishing areas that were depleted by international fleets. Which map symbols did you use to make this decision? *m*
2. Describe the general pattern of Newfoundland and Labrador population. Explain why this pattern occurred. *m*
3. Give the absolute and relative locations of a) the Hibernia oil field, b) the Voisey's Bay nickel deposits. Use your finger to trace routes between these resources and their island destinations. *m*

Interaction in Geography

WORDS MATTER

interaction the act or process of having an effect on each other

Geography focuses on the relationship between people and the earth. The interaction theme in geography highlights this connection. The earth gives people opportunities to provide themselves with necessities: food, water, clothing, heat, and shelter. Scientifically advanced societies, such as our own, have altered the environment as we've used it to satisfy our wants. For example, we clear forests for farming and build port cities at natural harbours. We use waterfalls and dam up rivers to create electricity, and we blast transportation tunnels through mountains. The interaction theme includes opportunities humans take to make use of the environment.

This theme also deals with challenges in people's interaction with the earth. One type of challenge centres on different opinions about using the earth's resources. Another challenge is the incredibly destructive power of the earth. Volcanoes, earthquakes, and mudslides can sweep away whole communities in minutes. Tornadoes, hurricanes, and blizzards unleash great devastation.

WORLD RECORDS

The Worst Storm in Two Centuries

In October 1998, Hurricane Mitch caused terrible damage and loss of life in Central America. More than 11 000 people died, and at least 3 million were left homeless. Damage exceeded $5 billion. Mitch was a Category 5 hurricane, the most serious kind. Winds reached 290 kilometres per hour, and the coastal storm surge raised waves 6 metres high.

The greatest damage came as the hurricane dumped 1 to 2 metres of rain over Central America. Massive mudslides and floods wiped out entire communities.

Hurricane Mitch approaches Mexico's Yucatan Peninsula on October 26, 1998. A Category 5 hurricane can cause enormous destruction over a wide area.

Interaction as Opportunity

To have an opportunity means to have a choice. If friends asked you to a favourite event, you'd probably choose to go. You'd take the opportunity. The interaction theme is much like that.

At one time, geographers believed that the physical environment determined people's lives and their choices. But they underestimated human ability to overcome obstacles. The ancient Romans built long aqueducts to carry water down from the mountains. Long ago, Chinese and other Asian societies learned to farm on the sides of very steep hills where there was rich soil. They built flat, terraced fields, little stepped plots on which they could grow rice in the most rugged terrain. Both examples show that people can turn environmental obstacles into opportunities.

During READING

Checkpoint

Make notes on what these photos tell about how humans turn environmental obstacles into opportunities.

An aqueduct in Segovia, Spain, and terraced hillside farms in the mountains of Long Ji, Guangxi Province, China. Roman and Chinese societies turned environmental obstacles into opportunities.

Cultural Landscapes

Today, geographers believe that the earth offers many possibilities to supply human needs. People may or may not choose to take advantage of these opportunities. That choice depends upon the inventiveness of their society. Both the Romans and the Chinese used their technical skills to change the physical environment so they could use the water or the fertile soils that the earth had provided. Both societies created cultural landscapes. Whenever societies use their inventions and skills to farm or mine, to build cities, or for any such activity, a cultural landscape is created.

WORDS MATTER

cultural landscape the mark that humans leave on the earth's surface

WEB LINK

For more information on cultural landscapes, visit www.pearsoned.ca/on7geography.

WORDS MATTER

urban place somewhere with at least 1000 people clustered close to one another

Urban Landscapes

Most Canadians live in urban places. This is very different from the rural society of a century ago. Urban landscapes are the result of great changes to the physical environment. Forests were cut down, hills were levelled, and valleys were bridged. Streams may have been dammed or diverted into drainage canals. At places like Vancouver, British Columbia, shorelines have been straightened and lined with docks and warehouses. As the city spread outward, office towers of steel and glass reached upward. This urban landscape is a type of cultural landscape that is common in modern Canadian society.

Vancouver's urban landscape contrasts with the surrounding physical landscape.

THINKING It Over

1. In your own words, explain the meaning of i) the environment theme, ii) the interaction theme. Why are they hard to separate? *k*
2. How does Hurricane Mitch show the interaction theme? *k*
3. How does building a housing subdivision show the interaction theme? *k*
4. What is a cultural landscape? Apply the term to all three photos in this section. *t* *k*
5. Work with a partner or a small group. Brainstorm a list of ways people have changed the local environment to create a cultural landscape. *t* *c*

Interaction As Challenge

One challenge of interaction is to balance conflicting opinions about using the environment. Some want to use the environment for profit, while others want to protect it to maintain a way of life. Read this news story to spot different opinions about the issue.

WORDS MATTER

clear-cut logging practices where all the trees in an area are cut down

managing the forest using the forest wisely

Protesters Block the Trans-Canada

There Is Dispute over Clear-Cut Logging

Kenora, Ont. (CP) – A long-standing dispute over clear-cut logging practices near a northern Ontario aboriginal reserve came to a head Thursday as some 100 protesters erected a blockade on the Trans-Canada Highway. . . .

The protesters accuse logging companies Weyerhaeuser Corp. and Abitibi-Consolidated Inc. of clear-cutting on traditional native lands near the Grassy Narrows reserve—despite opposition from reserve residents.

The work has made it harder for the residents to engage in hunting and other traditional activities and animal habitats have been destroyed, said Grassy Narrows spokesman Joe Fobister.

"It's destroying our way of life, it's destroying who we are, period. It has to stop." Fobister said. "These companies clear-cut large amounts of our land and we receive no economic benefits." Protesters blame the Ontario government for not doing enough to seriously address their concerns, David Sone of the Rainforest Action Network said.

"They've filed every kind of legal proceeding and every kind of official complaint possible, and there's been absolutely no response from the [Ontario Premier Dalton] McGuinty government or from Weyerhaeuser or Abitibi Corp."

Ontario Aboriginal Affairs Minister David Ramsay said that talks with the First Nation have been ongoing since 2004 but that the province hasn't made the progress it had hoped . . . .

"We [Ontario government] are determined to work with [the First Nations] and find a way that we can work together in managing the forests."

Source: *The Observer,* (newspaper) Sarnia ON, July 15, 2006, p. B8.

During READING

Checkpoint

News reports are often told from only one or two points of view. Whose voices (opinions) do we hear in this story? Which side of the protest do you think is treated more fairly? Why?

The Whiskey Jack Forest Dispute

The whiskey jack is a bird that gives its name to a forest area in northwestern Ontario. The news story you just read highlights a dispute in the Whiskey Jack Forest area. It has been going on since the late 1990s. That is when Abitibi-Consolidated began cutting wood in the area for Weyerhaeuser to use at its nearby Kenora and Dryden, Ontario, paper mills.

WEB LINK
For more information about the logging and forest industry, visit www.pearsoned.ca/on7geography.

The logging goes on close to the Grassy Narrows First Nation reserve. The land being logged is Crown Land, owned by the Province of Ontario, but leased to logging companies for timber cutting. Forest companies must submit a forest management plan to the province, showing how they will use their forest lease in a responsible way. The protesters don't think clear-cutting should be allowed here.

The Whiskey Jack Forest Conflict

Against Clear-Cut Logging	In the Middle	Support Clear-Cut Practices
Grassy Narrows First Nations	Government of Ontario	Weyerhaeuser Corp.
Rainforest Action Network	Ontario Provincial Police	Abitibi-Consolidated Inc.

Who opposes clear-cut logging in the Whiskey Jack Forest area?

Why Forest Companies Clear-Cut

Many forest companies are international giants that must operate cheaply in order to survive against their competitors. They bring well-paying jobs to Ontario. They use clear-cutting because

- it is the cheapest way to operate, resulting in low-cost products for consumers
- it is the safest method for the loggers themselves because trees are felled in one direction
- it is easy to replant the cut area with seedlings of one fast-growing species of tree

Why Conservationists Oppose Clear-Cuts

Many people believe that the benefits of forest industry jobs need to be balanced with the environmental damage that clear-cut logging causes. Some people are directly affected by this damage. They oppose clear-cutting because

- it is destructive to animal habitats and causes erosion that chokes streams with mud
- it interrupts the traditional aboriginal way of life in the forest, that is, hunting and fishing
- the replanted forests are vulnerable to disease because they are composed of just one species of tree

Interaction with the environment can take many different forms. The Province of Ontario is attempting to bring both sides of the issue together in a better management plan for the Whiskey Jack Forest area. How can they do this? We do need lumber, and people need jobs. You will learn more about alternatives to clear-cutting in Chapter 7.

During READING

Checkpoint

What does the term *giant* mean? What happens when we add it to the word *international*?

THINKING It Over

1. Why did the protest take place? Do you approve of this sort of activity or not? Discuss your views with a partner. *k*
2. Work with others to either write out or role-play a conversation among three people: a logging company executive, a conservationist, and a provincial government official. See page S 12 for help in examining points of view. *t* *c*

PLAY

Climb for the Environment

Try this easy-to-play game. Take turns rolling one die to see who can be the first to reach the top of the game board. A chart beside it tells you whether you have climbed up or fallen down.

Materials

- one die
- game board
- playing pieces
- chance factors chart

Square	"Climb Up"
3	You and your teacher organize an Environment Club at the school.
11	You convince the principal to support paper recycling at school.
14	A conservationist comes to speak against clear-cutting forests.
25	Your club plants trees and shrubs along the side of the school yard.
30	The club is nominated for a *Canadian Geographic* award.

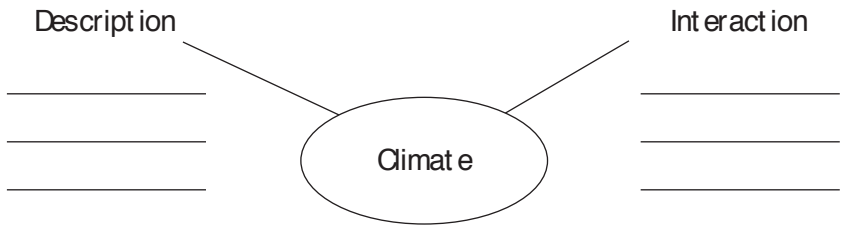
Square	"Fall Down"
6	Forest company information sites don't include all the facts.
9	Many students lose interest in the Environment Club meetings.
18	A few parents working for forest firms want the club shut down.
22	You find that not all teachers and students are recycling scrap paper.
33	Careless students break some newly planted trees while playing.

THINKING It Over

1. Why might this game be helpful to someone thinking of starting an Environment Club? t c
2. Brainstorm a list of activities and projects that a school Environment Club could do. t c

CHAPTER IN BRIEF

This chapter showed two themes: environment and interaction. You learned that animals rely on the physical environment for their needs. However, human activity often destroys animal habitats. You also saw how humans interact with their physical surroundings. They use their skills to take advantage of opportunities offered by the earth.



After READING

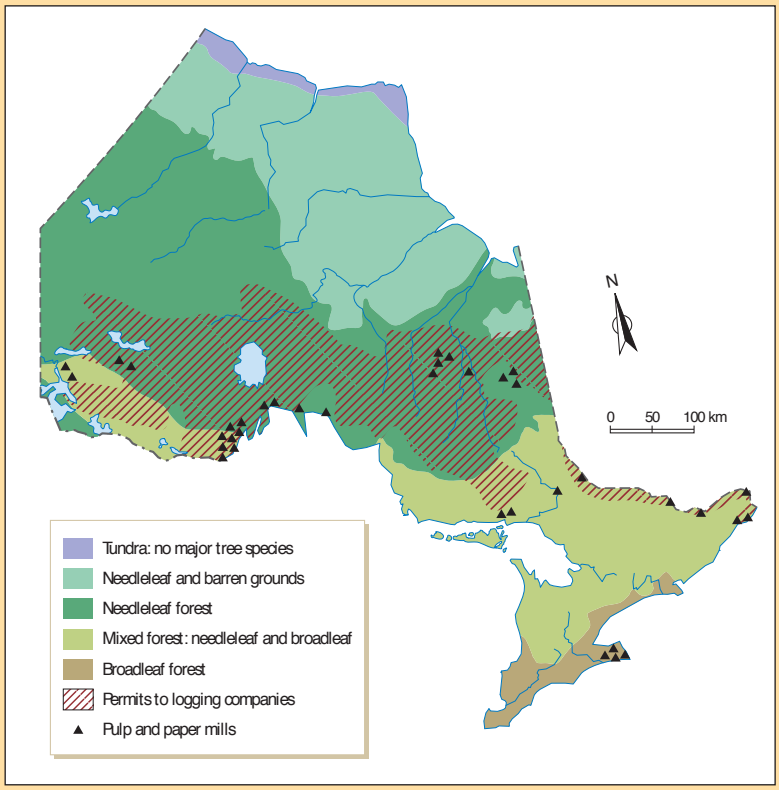
Tie It Together

Using your notes, write an e-mail, a note, or a text message to a classmate who missed this chapter. Explain what you learned. Include new terms and definitions. You could use an organizer like this one to organize your notes.

Depth of *Titanic* shipwreck: 3835 m

PUTTING It All Together

1. How does Ontario's natural vegetation change from north to south? Explain which reason accounts for this pattern: a) landforms? b) climate? or c) water bodies? t c
2. How does this map show each of these geographic themes: a) environment, b) interaction? t c
3. Make a chart to compare the views of logging companies and conservationists about forest cutting. k i c a



CHAPTER 3

Regions

Before READING

Making Connections

Think about school competitions. The first games are usually within your school's region. The second level is between regions. What regions would your school play against?

Do you think of these scenes when you hear the term "Middle East"? This region is often in the news, with conflicts in Iraq and Israel, and with Iran dominating world affairs. Most Canadians don't know the region very well, even though it is called "the crossroads of the continents." It is hard for people to figure out exactly where the Middle East region begins and ends!

In some ways, the Middle East region is very different from Canada. For one thing, a great distance separates the two places. The large photo shows physical and human characteristics quite unlike those found here. However, apart from the palm trees, the smaller photo looks like streets in Toronto, Montréal, or Vancouver. More and more Canadians have a Middle Eastern heritage, creating strong social connections between the two places. Furthermore, several countries in the region are leading oil exporters, an economic link that makes the Middle East important to Canada.

What You Will Learn in This Chapter

- What is the geographic theme of region?
- How do different types of physical and human regions compare?
- How can I compose questions to guide research on an issue?
- How can I use information from primary and secondary sources?
- How can I create a map of a small area?

Thinking About LITERACY

A photo is a type of text. It is one type of primary document. A primary document is first-hand information.

We need special strategies to read pictures. In this chapter, you will use the strategies of reading the caption and asking questions.

Use a chart like this one to study the photos.

	Describe	Analyze	Interpret	Critically Assess
Photo 1				
Photo 2				

What Is a Region?

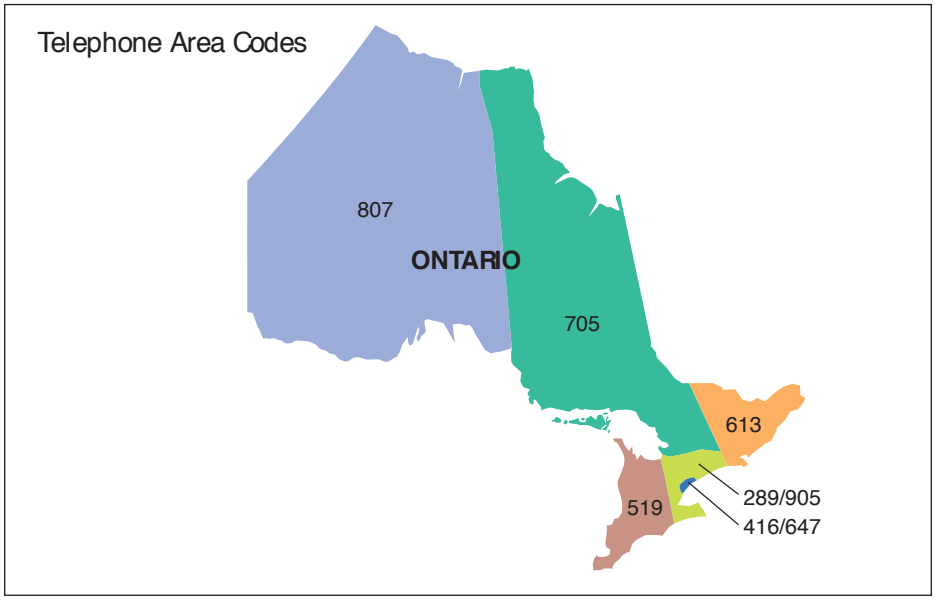
In Chapter 1, you learned about the geographic idea of place. It is a location with unique physical and human characteristics—such as your school. Region is a similar concept, except that it involves a larger area of the earth. Each of the following examples of a region suggests an area that is not only unique but is also larger than any single place. This chapter will help you to understand how and why geographers use the region theme.

WORDS MATTER

region a part of the earth's surface that has similar characteristics throughout its extent

Regions

A **region** is a part of the earth's surface with similar characteristics throughout its extent. The theme is used to simplify complex ideas about different parts of the world. Some regions are created entirely by people. For example, Ontario is divided into several telephone area codes; punching in those first three digits for a long distance call is the common characteristic in each of these human regions.



Why are some calling regions so much smaller than others?

During READING

Checkpoint

To paraphrase means to rewrite information in your own words. Write one sentence that paraphrases the information that tells the difference between human regions and physical regions.

A physical region is based on features of the earth itself. Just say "the Rockies," and most people think of rugged, snow-capped mountains. Related images of waterfalls, bears, and ski resorts also come to mind, because these are all strong characteristics of the Rocky Mountain region. They help to make it different from the flatter land of the neighbouring Prairie region to the east.

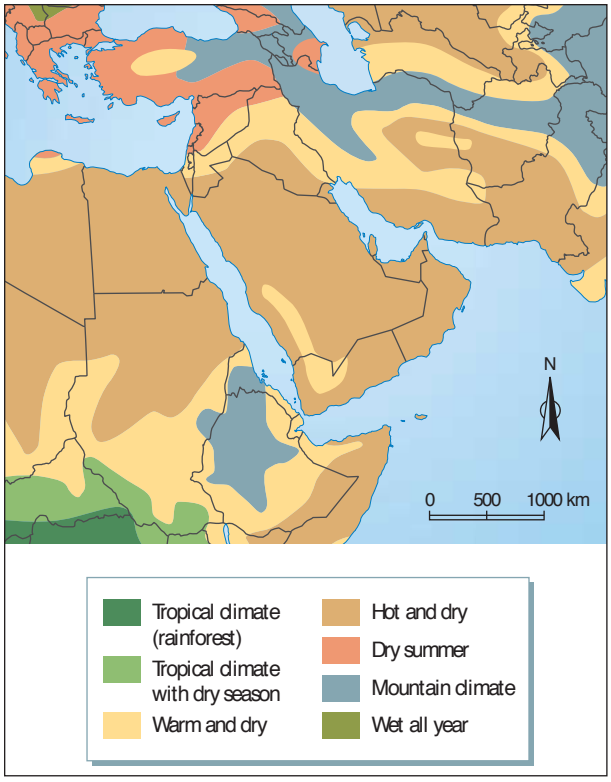
Back to the Middle East

Regions often combine both physical and human characteristics, such as mountains and ski resorts in the Rockies. The Middle East has strong physical and human features that help set it apart as a region. You've already learned that it is located at a "crossroads" where the continents of Africa, Asia, and Europe meet. Much of the trading in the ancient world passed through the region. Although it wasn't called the Middle East until about a century ago, the region certainly was in the middle of things. By 1900, diplomats in Britain and France were viewing Asia as "the East." Distant China and Japan were part of the Far East, and countries closer to Europe were termed either the Near East or the Middle East. Confusing, isn't it? The regions were much too general.

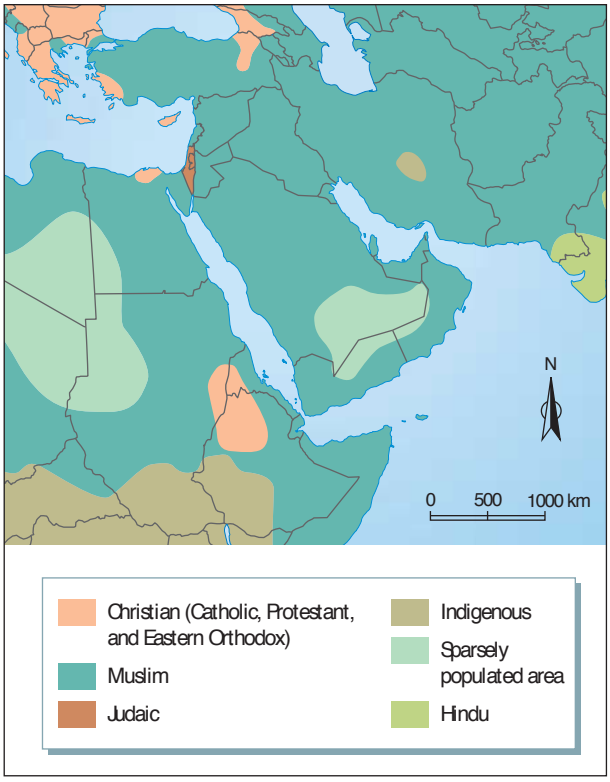
During READING

Checkpoint

Mountains are physical characteristics; ski resorts are human characteristics. Explain why.



Climate zones in the Middle East.

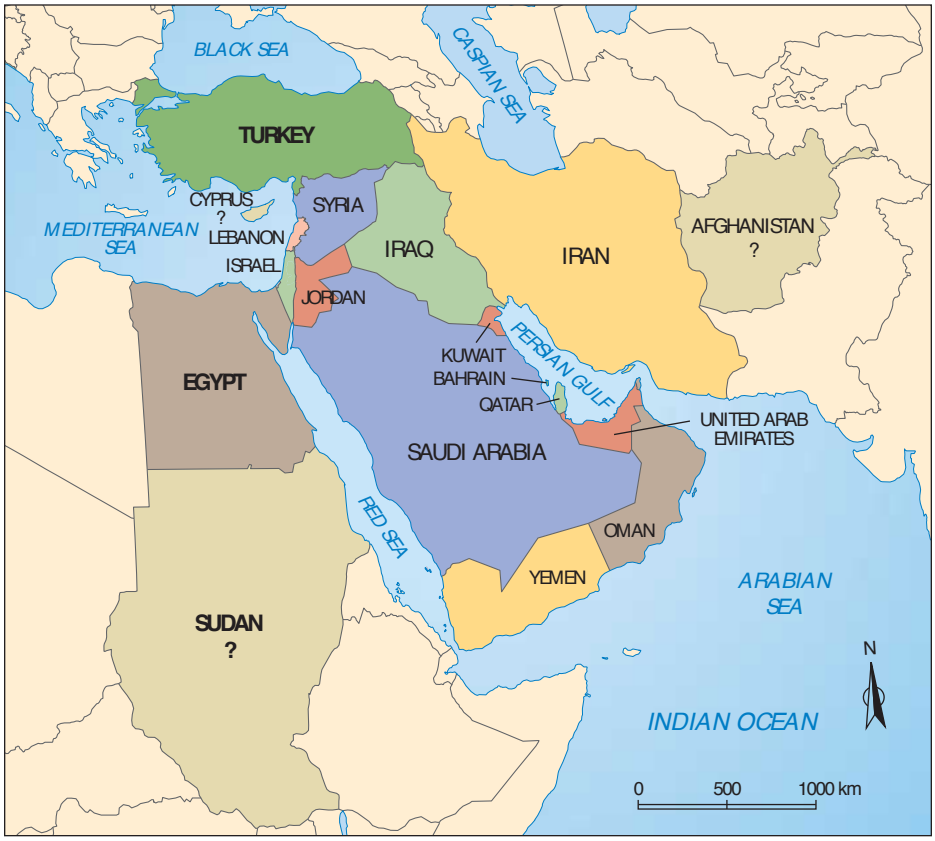


Religions of the Middle East.

The Middle East does have some distinct physical and human characteristics to identify it as a region. These can be seen on maps of climate and religion. Much of the region is dry, and most inhabitants (more than 90 percent) are Muslim. Many of the world's leading oil-producing countries are also located in the region, notably Saudi Arabia, Iran, and Iraq. Most of the oil fields are clustered close to the Persian Gulf. Climate, culture, and oil provide useful impressions of a very complicated part of the world.

WEB LINK
For more information on different regions of the world, visit www.pearsoned.ca/on7geography.

There is even disagreement about which countries are part of the Middle East region. That is because there is no clear boundary. An interrupted circle of water around the area could act as the regional boundary. You can see it on the map below. However, these limits would exclude both Egypt and Iran, always thought of as Middle Eastern countries. Should Cyprus, Sudan, and Afghanistan be included in the region? In this chapter, you will learn that it is often difficult to mark the outer edge of a region.



The Middle East Region. Should the countries indicated with question marks (?) be considered part of this region?

THINKING It Over

1. a) How is a region similar to a place? How do regions and places differ? *k*

   b) Why is it hard to identify the boundary of the Middle East? *k*

2. Use a print or electronic atlas to label the countries of the Middle East on an outline map. Add the surrounding waters. *m*

3. Collect pictures of the region to identify more of its physical and cultural characteristics. Make a display of your findings. *c*

Scientists isolate cells of the body and examine them with a microscope. In the same way, geographers divide the earth's surface into smaller regions and study them closely. Both aim for a better understanding of something very complicated. The region theme helps geographers simplify a complex world. For example, the world has many different surface features, such as mountains, plains, and lowlands. Atlases contain landform maps for each continent. Other maps illustrate different physical regions, including climates, waters, soils, and natural vegetation.

Precise Boundaries: Watershed Regions

Have you ever camped in Ontario? If you have, it may have been at a park operated by one of the province's regional **conservation authorities**. Conservation authorities protect all aspects of the environment, from the hills where the river begins to the lowlands ending at the river's mouth. They maintain many areas of parkland in southern Ontario.

WORDS MATTER

conservation authority an organization that manages the lands around a river system

Ontario's conservation authorities provide the opportunity to camp in the province's protected wilderness areas.

During READING

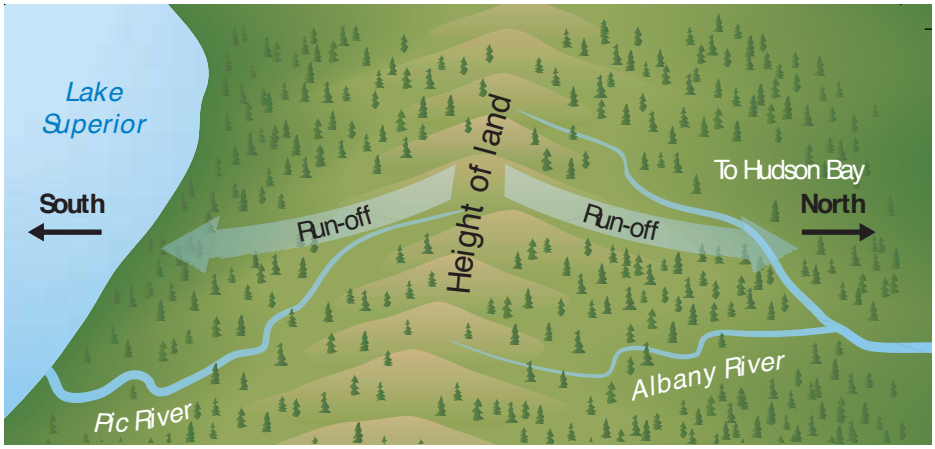
Checkpoint

How can you tell when it is worth spending time looking at a picture? If the picture gives extra information about the concept, look closely and take notes. If it is an example, write a point-form note of what is shown, and move on. Which type of picture is this one?

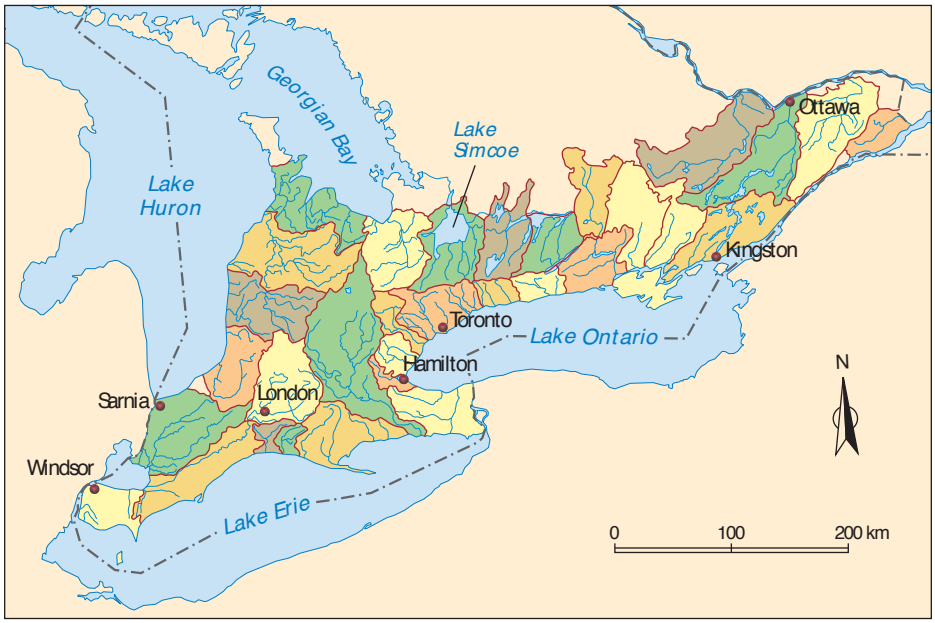
WORDS MATTER

watershed an area drained by the waters of a river system

A **watershed** is an area drained by a river system. Each watershed is a physical region, separated from other watersheds by the higher land between them. A conservation authority might manage one watershed or a group of them. For example, the Metro Toronto Region Conservation Authority (MTRCA) is responsible for the Humber, Don, and Rouge River watersheds. The diagram below shows that in northern Ontario, elevated land north of Lake Superior divides river systems. Some rivers, such as the Albany, flow north to Hudson Bay, while others, such as the Pic River, go south into Lake Superior. Boundaries between watershed regions are easy to determine. A line is simply drawn along the height of land from which water runs away in opposite directions.



A watershed region.



How are the boundaries between watersheds drawn?

Transition Zones: Natural Vegetation Regions

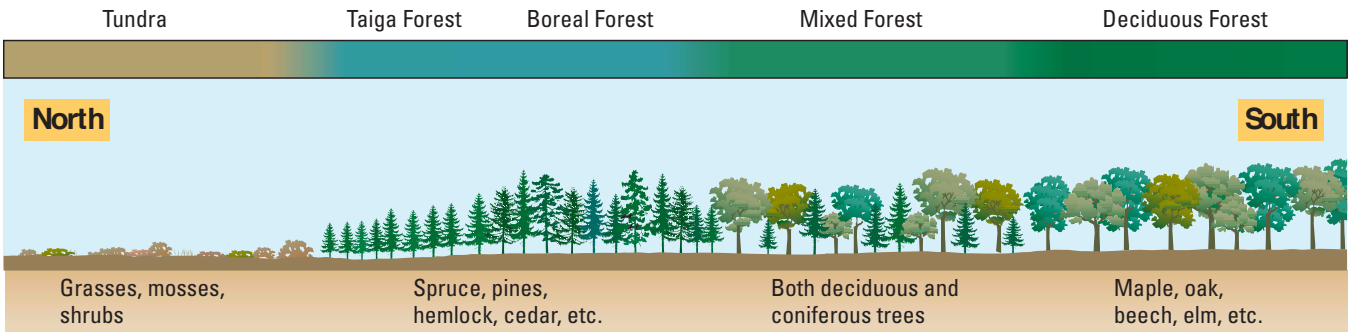
Most boundaries between physical regions are not as precise as a watershed. Instead, there is a gradual change from one region to another that is hard to notice from observation. For example, the Rocky Mountains are separated from the Prairies by a zone of foothills. As the name suggests, these are hills at the foot (or base) of the mountains. They are a **transition zone**.

WORDS MATTER

transition zone an area through which one physical region gradually gives way to another

What changes in the physical environment mark the Rocky Mountains foothills transition zone?

In the same way, natural vegetation patterns change gradually through transition zones. You can see this on the map of forest regions in Chapter 2 (page G 41). Ontario is so large that its climate changes a great deal from south to north. This has resulted in wide bands of different types of natural vegetation across the province.



From south to north, Ontario's natural vegetation patterns change dramatically. What is the main geographic factor that affects where certain vegetation types grow?

The warm southern part of the province was once covered with **broadleaf forest**. Large areas of northern Ontario feature **coniferous forest**. Conifers can survive much colder temperatures than broadleaf trees, such as maple and oak. Between these two forest regions is a transition zone with both species, called the Mixed Forest Region. North of the coniferous forests, there is another transition zone, as forests gradually give way to **tundra**.

WORDS MATTER

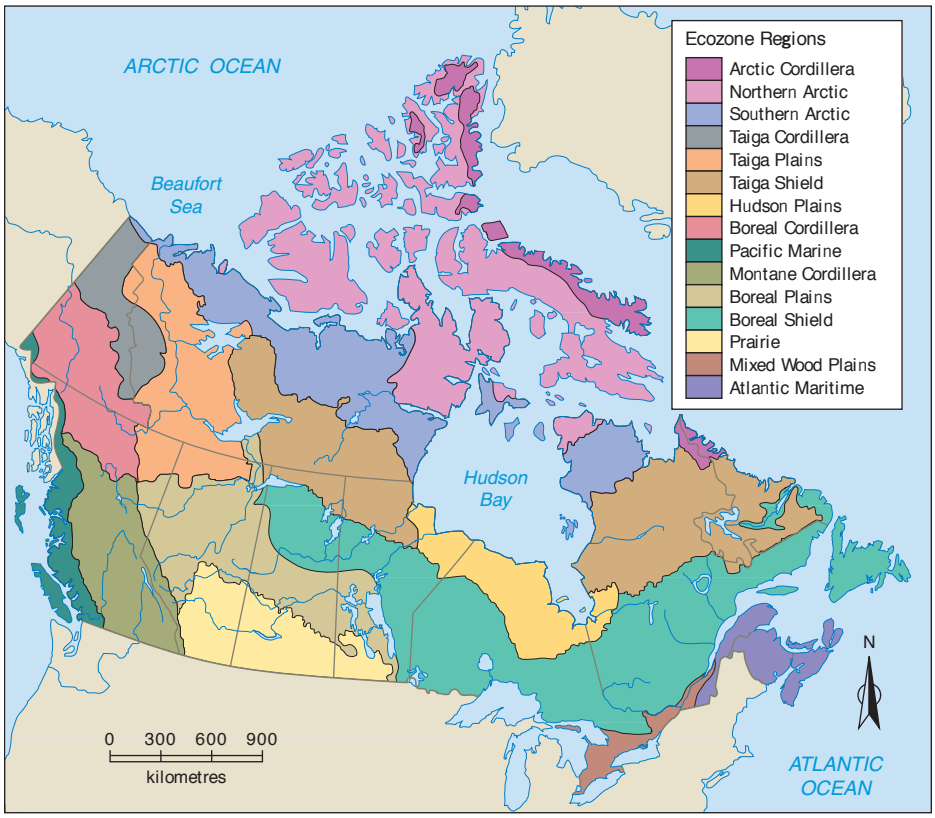
broadleaf forest forest of trees that lose their leaves as winter approaches

coniferous forest forest of trees with needles and that drop their seeds in cones

tundra a region of low shrubs and other hardy plants suited to short summers and extreme winter cold

Ecozone Regions

Physical regions can have sharp boundaries, or they can pass through gradual transition zones. So far, you have seen only areas based on one type of feature, such as landforms or rivers or natural vegetation. Drawing regional boundaries becomes harder when different environmental factors are combined. The lines on the map below may look precise, but actually are quite imaginary. The regional characteristics are strongest in the middle of each zone and gradually fade toward the boundary lines.



Canada's ecozones.

WORDS MATTER

ecozone a region identified by several factors, including landforms, climate, soil, and natural vegetation

In recent years, Canadian geographers have used combinations of physical characteristics to identify **ecozones**. Because each ecozone has different environmental conditions, it supports a unique community of living things, including people. Ecozones help focus the attention of conservationists on environmental issues and protection across all of Canada. For example, Parks Canada has almost completed creating at least one large national park in all 15 ecozones.

WEB LINK

For more information on ecozones, visit www.pearsoned.ca/on7geography.

ZOOM IN

The Boreal Shield Ecozone

The map on the opposite page shows that Ontario has three ecozones, roughly divided north to south: the Hudson Plains, Boreal Shield, and Mixed Wood Plains. The Boreal Shield is the largest ecozone in the province and in Canada. It arches across six provinces. This ecozone contains many natural resources, such as lumber, minerals, wildlife, and fresh water. It is also very important for outdoor recreation and summer tourism.

Pressures to develop the region result in many environmental problems. Forest clearing, water pollution, and urban growth threaten parts of the Boreal Shield. These issues are especially important along the southern edge of the region, close to the most heavily populated areas of Canada. Ontario's Algonquin Provincial Park is the largest protected area in the region.

The Boreal Shield ecozone supports moose as well as many other forms of Canadian wildlife.

Canada's Boreal Shield region includes bare rocky areas and large expanses of forest.

The Shield also offers many opportunities for recreation. Describe typical characteristics of the Boreal Shield ecozone.

THINKING It Over

1. How are boundaries between river systems and natural vegetation regions different? k
2. How do conservationists make use of watersheds and ecozones? Why is this important? k i
3. Make a message poster showing either a conservation area or a national park. c

GEO SKILL

Creating a Small Area Map

Imagine that your family is interested in building a new home. You could start to plan by drawing an architectural drawing of a house that would suit your family. An architectural drawing is a map of a building.

Here are four steps to make a good map of this small area (or any other one).

Step 1: Lay Out the Map Page

Use a computer drawing program or a pencil, a ruler, and unlined paper. First, decide the best way to orient the page to fit the shape of the map area. Then, choose where you will put the legend. Draw a frame for the map near the outer edge of the page to make your map look more attractive. You can add grid lines (in a different colour from what you will use for the map itself) to help you position items.

Step 2: Draw the Basic Map Outlines

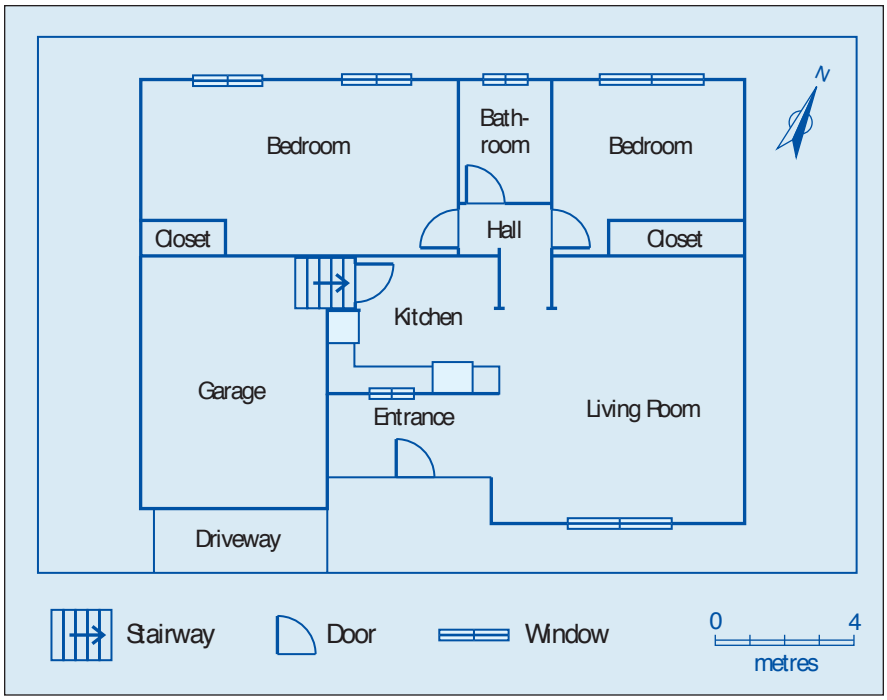
Imagine that you are looking down on the house from directly overhead. Draw straight lines for the outline of the house and garage. Then, add the inside walls to divide the house into rooms. With maps, always work with the most important lines first.

Step 3: Add Details to the Map

After the walls are drawn, begin to add in smaller objects that will stay in place (at least most of the time). This includes bathroom fixtures and major appliances. Letter key details (e.g., "Kitchen") using only one style of printing across the page.

Step 4: Complete the Map Conventions

A convention means the normal way of doing things. Finish your map by adding a title, a legend, a compass rose, and a scale (if distance has been measured). In the map legend, use area, line, and point symbols for different types of information.



In which room of this house would you spend the most time?

Find the living room window on the floor plan.

APPLY It

1. Measure the length and width of your classroom, or some other convenient small area. *m*
2. Take some time to observe the permanent details of the small area. Then, draw a rough sketch map to guide you in making your final copy. *m*
3. Follow the steps on the previous page to draw a detailed map of the area you measured and sketched. *m*

During READING

Checkpoint

Write a paragraph to describe the same details you mapped. Which was easier? Which gives a better concept of what the area you described looks like?

Human Regions

Is there a chair at your home that is old and worn, but oh so comfortable? Perhaps you have some jeans like that too—a bit tattered, but still a perfect fit. *Form* is what the furniture or jeans look like. *Function* is how they work. Keep this in mind when you look at two types of regions: formal and functional. The first type is identified by its characteristics; the second type operates in a particular way.

During READING

Checkpoint
Use your picture-reading skills on this diagram.

How do the terms *form* and *function* apply to this image?

WORDS MATTER

formal region an area with at least one characteristic that is common throughout the area

What Is a Formal Region?

You live in several **formal regions** at the same time, some large and some small. There is the continent, the country, and the province. Closer to home, you live in either a rural township or an urban municipality (such as the town of Markham). Many formal regions are identified by their landforms, climate, waters, soils, or natural vegetation. That is because each of these physical regions has at least one common characteristic.

Political areas are formal human regions. Their boundaries can be drawn using various methods. Some boundary lines follow natural separations, such as mountain peaks, rivers, the middle of lakes, or the edge of oceans. Sometimes latitude or longitude lines are used. Often the political boundary is a surveyed line drawn long ago. The province of Ontario is a political region, with boundaries drawn using several methods. Every method mentioned in this paragraph has shaped Canada's political boundaries.

Find different methods used to divide Ontario from other formal regions.

What Is a Functional Region?

The parts of a **functional region** work together for a purpose. Most functional regions are human regions (although a watershed could be considered functional because the river system carries water from the area). For example, to improve service, telephone area codes divide Ontario into several functional regions. Canada's postal code system also creates functional regions. It divides the whole country into small regions and assigns a letters-and-numbers code to each region to help speed up mail delivery.

WORDS MATTER

functional region an area identified by what occurs within it

How do these photos illustrate functional regions?

Functional regions often have an important central point, such as the big mail-sorting stations scattered across Canada. Your school is at the middle of a small learning region, drawing students from the surrounding area. The boundaries of the school region can be identified by home addresses. Sometimes, information or services go out from the central point to the surrounding region. Television and radio signals, and pizza and newspaper deliveries all create functional regions. Their boundaries change, based on technology, advertising, and customer tastes.

IN MY WORLD

Different Types of Regions

You live within many human regions. Use the following chart to investigate formal and functional regions that surround your home. Which of these regions are large in scale? Which of them are small in scale, that is, limited to the local area?

Formal Regions	Functional Regions
Give examples to show how your community is part of each region represented here.	Give examples to show how your community is part of each region represented here.
Federal and provincial political ridings	Delivery of various products
Local government boundaries	A map of an area you travelled in yesterday
School board districts	Reception of various media services

Urban Regions

Do you live in a place where at least 1000 people are clustered together in a fairly compact area? That's defined as urban, and such a place is home to four out of five Canadians. During the past century, there has been a huge population shift from the countryside. This is called **urbanization**, a worldwide trend. Villages, towns, cities, and **metropolitan areas** have formal political boundaries. But, in many cases their populations and their functions have spilled far into the surrounding region. **Urban sprawl** is the common name for this occurrence.

WORDS MATTER

urbanization a population shift from the countryside to cities

metropolitan area a city and the urban areas surrounding it

urban sprawl the irregular growth of a town or city over a large area

Rural and Urban Population in Canada, 1901–2001

Date	Urban %	Rural %
1901	37	63
1921	49	51
1941	54	46
1961	70	30
1981	76	24
2001	80	20

The Golden Horseshoe is a built-up area that curves horseshoe-like around the west end of Lake Ontario. (The "golden" part of the name reflects the economic importance of the region.) More than 7 million people live in this small area, almost 20 percent of Canada's total population. A further 115 000 arrive every year. At this rate, the Golden Horseshoe will have a population of 11 million by 2031. The Greater Toronto Area (GTA) is the most heavily populated part of this region. You can see it as a thick bulge on the map on the next page. It already has 5 million people, and threatens to cover the surrounding countryside with housing, shopping malls, and industries.

Environmentalists play an important part in directing the growth of urban regions such as the GTA. Groups of concerned citizens and planners have been asking questions that challenge unchecked urban sprawl. They want urban regions to be good places to live, where people remain connected to the surrounding environment.

WEB LINK •
For more information on urbanization and the environment, visit www.pearsoned.ca/on7geography.

Challenges in Urban Growth
How to protect watersheds, forests, and wildlife in the region
How to preserve good farmland to feed the region
How to provide recreational land for a growing population
How to prevent a continuous zone of urban development

Concerned citizens protest against urban sprawl in the GTA.

Exploring Points of View

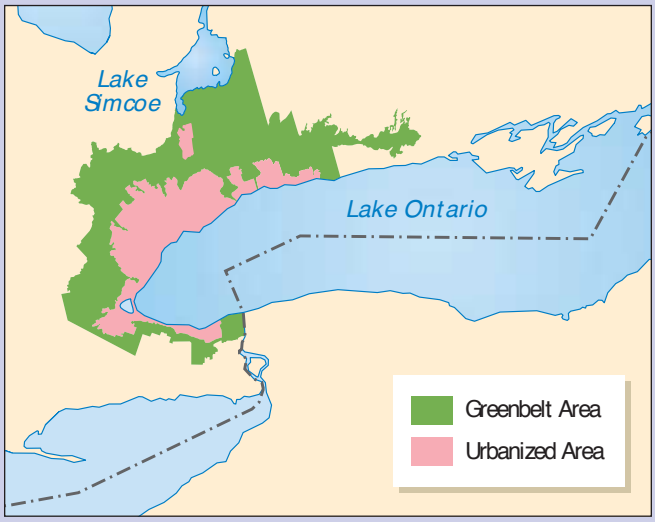
Will Ontario's Greenbelt Plan Work?

In February of 2005, many of the environmentalists' concerns were addressed. The Ontario government created the Greenbelt, a 720 000-hectare zone of protected space, stretching 325 kilometres from Niagara Falls to Peterborough. Plenty of advice and pressure came from the Ontario Greenbelt Alliance, six dozen citizen groups concerned about the environment. The Greenbelt region, shown on the map, encircles the Golden Horseshoe urban region. Future urban growth is strictly regulated. This will prevent uncontrolled urban sprawl, while protecting forests, waters, wildlife, and agricultural lands.

The Greenbelt region had been opposed by home builders and farmers interested in selling their land for development. Many of them still believe that the plan will cause a shortage of land for development and drive up home prices. However, the plan is very popular right now. A November 2006 survey found that 89 percent of Greater Toronto Area residents favour the Greenbelt region.

What is your opinion? Discuss the following questions with a partner. Then write a paragraph explaining your opinion:

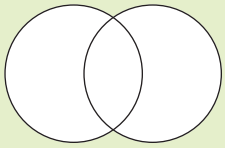
- Do environmental and citizens' groups have too much power?
- Should farmers be able to sell their land to developers if they want to do so?
- Will the Greenbelt Plan stop urban sprawl, or will it just make housing unaffordable?



Map of Ontario's Greenbelt Plan.

THINKING It Over

1. Make a Venn diagram to compare formal and functional regions. Include some good examples on the left and right side of the diagram. t c



2. Construct a graph to show urban growth in Canada. When did urbanization increase most rapidly? Suggest possible reasons for this. See page S 8 for help with graphs. t c
3. a) Use "In My World" to identify different human regions in your area. k u

   b) Write three good environmental questions related to the future of your local area. See page S 4 for help with questions. t c

CHAPTER IN BRIEF

In the first two chapters of this unit, you learned about four geographic themes. They were place/location, movement, environment, and interaction. This chapter focused on the region theme. It brings the other four together. For example, each region has a location and a "sense of place" to identify it. Formal regions often display unique environmental factors, while functional regions feature the movement of people, products, or information to a surrounding area. Within each region, people interact with their physical surroundings.

You learned that regions are used to simplify a complicated world. The term "Middle East" provides mental pictures for one part of the earth. You saw that some regions are used to plan and protect the environment. Watersheds, ecozones, and Ontario's Greenbelt reduce the harmful effects that people can have on the earth.

Photo Information Chart

	Describe	Analyze	Interpret	Critically Assess
Photo 1				
Photo 2				

After READING

Tie It Together

Use information from your photo chart (shown here) and notes from your answers to margin checkpoints to create a summary of the chapter.

PUTTING It All Together

A. In this chapter, you practised making a map of a small area. Now, sharpen your pencil, and get an eraser, a ruler, and unlined paper; or return to your computer drawing program. You will be creating a neat and accurate map, using geographic map-making conventions.

1. Closely observe either the inside of your school or the outside area around it. Make a rough sketch as a guide to your finished map. t c
2. Review the steps to Creating a Small Area Map on pages G 52–53. Then, create an overhead plan of the school or school area. Remember to leave space for a frame and a legend. t c

B. You also learned about the concept of region.

1. What is a region? What is the difference between a formal region and a functional region? Describe examples of each type of region in the area surrounding your school. k
2. Use examples from this chapter to write a paragraph showing how regions are used to approach environmental issues. t c

Back to the Big Idea

You have learned that a geographer interprets pictures differently than a person who is thinking of moving to a place might do. A geographer will see location, movement, environment, interaction, and region. You expanded upon these themes, and applied them to investigating environmental issues. You practised making and reading maps.

Now that you have finished the unit, review what you recorded in your organizers and use these questions as a guide:

- What examples of the five themes of geography can you now see in the opening photographs?
- What examples can you think of to show the five themes of geography in your local community?

Show That You Know

You are trying to convince people to move to your community. You will make promotional materials to highlight the unique characteristics of your home town. In this assignment, you must apply the five geographic themes and map-making skills. What would attract people to move to your local area? See how convincing you can be.

Step 1

Identify the geographic theme for which you will become the local community expert.

Tip: If you are working as part of a production team, each person will be responsible for researching one particular geographic theme.

Step 2

Decide which method you will use to promote the local area as a place to live. These could include print format (poster, brochure, slide show, video, storyboard) and electronic presentations (computer slide show, video).

Tip: Before you start, review "Using Primary and Secondary Sources" on page S 10. Be sure to include your own observations, such as photographs or video, and comments by local people. Remember that you are looking at the local area as a geographer, focused on one geographic theme. You can include your school as part of the research (for example, school buses as part of the movement theme).

Step 3

Research your geographic theme by using a variety of information sources about the local community.

Step 4

Construct a map of the local community or the immediate area around the school. Use it to show characteristics of one or more geographic themes that would attract people to live in the community.

Tip: For example, you could draw a map and legend for local transportation routes, such as public buses. If you are using an electronic format, fit the map into your slide show or video. Include it as part of any print format display.

Step 5

Communicate your completed research and map work in a way that brings out the best "image" of your community. Be sure to use correct geographic subject vocabulary. (See page S 5.)