

# The Adventure Begins

Studying a territory helps us better understand the world around us. Do you know how to read and interpret a map? How familiar are you with the cardinal points? What do you know about Canada's other provinces and territories? What is a natural hazard? You can find the answers to all these questions and more in geography.



A photo of the Earth taken by the Terra Satellite





### **Mount Everest**

This mountain chain in the Himalayas was formed millions of years ago following the collision of two tectonic plates. Its highest peak, Mount Everest, rises to an altitude of 8850 metres. Researchers say that the mountain will continue to rise by three to five millimetres each year because these plates are still moving.



**Baie Saint-Paul in Charlevoix, a typical Québec town**





## 0.1 The agricultural region of Berthier-sur-Mer in Québec

Farming plays an important role in Québec's economy.

# INTRODUCTION AT A GLANCE

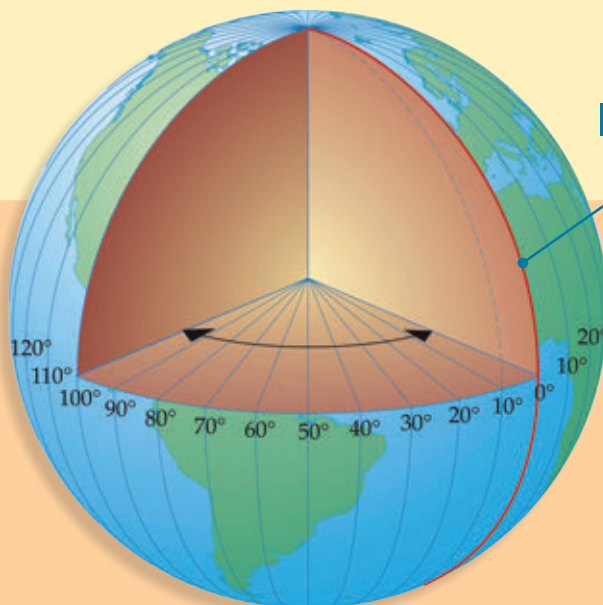
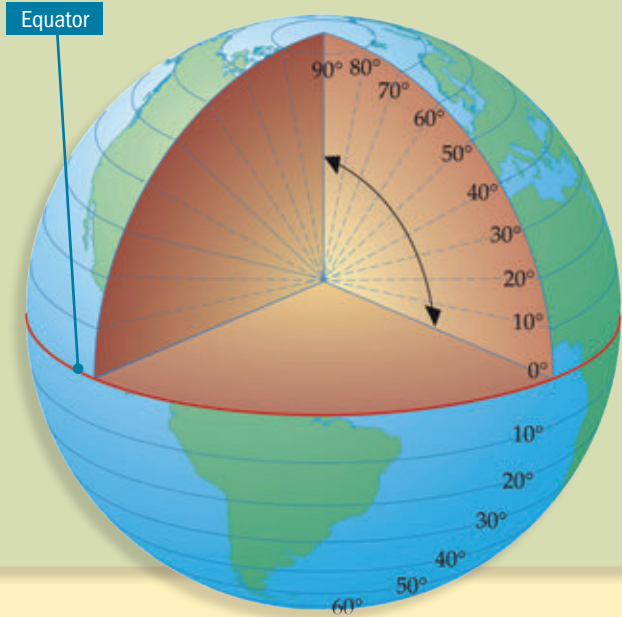
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# The World Map

## Geographic Coordinates and Cardinal Points

To help us figure out where we are on Earth, geographers have divided the planet with imaginary lines called parallels and meridians.

- The parallels—also known as “lines of latitude”—are horizontal lines that start at the equator. The equator is the line that divides the Earth into two hemispheres: the Northern Hemisphere and the Southern Hemisphere. The main parallels are numbered from  $0^{\circ}$  to  $90^{\circ}$  on both sides of the equator. The parallel at the equator is  $0^{\circ}$ . The distance between parallels is the same everywhere, but their circumference gets smaller as you get closer to the Earth’s poles. Latitude is measured from  $0^{\circ}$  to  $90^{\circ}$ N in the Northern Hemisphere and from  $0^{\circ}$  to  $90^{\circ}$ S in the Southern Hemisphere.



- The meridians—also known as “lines of longitude”—are vertical lines that form half-circles connecting the North and South Poles. The Greenwich meridian, which runs through Great Britain, is considered  $0^{\circ}$ . The planet has 360 meridians in total. Because the planet is almost a perfect sphere, these meridians are all at equal distances from each other at the equator. The closer you get to the poles, however, the smaller the distance between the meridians becomes. Longitude is measured from  $0^{\circ}$  to  $180^{\circ}$ E to the east of Greenwich and from  $0^{\circ}$  to  $180^{\circ}$ W to the west of Greenwich.

### A closer look

If you stand with one foot on either side of the Greenwich meridian, you would literally be standing where East meets West.



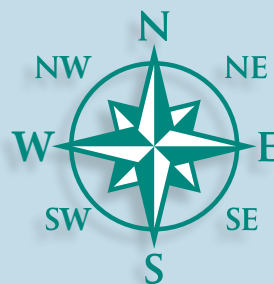


## 0.2

### Geographic coordinates for North and Central America

- Geographic coordinates, which are determined by the latitude (parallels) and the longitude (meridians), tell us where places are located on the planet. The latitude coordinate is always given first, followed by the longitude coordinate. For example, Montréal is located at 45°N and 73°W.

- A compass rose shows the cardinal points: north, south, east and west. North is always at the top on a map, but should still be indicated for good measure. South is therefore at the bottom (at the opposite end); east is on the right and west is on the left. Maps often have only one arrow indicating north.





1. Use the political map of North America on page 7 of your Mini Atlas to answer the following questions on latitudes, longitudes and geographic coordinates.

a) What is the latitude of the city of Philadelphia? 40°N

b) What is the latitude of the city of Winnipeg? 50°N

c) What is the longitude of the city of Toronto? 79°W

d) What is the longitude of the city of Pittsburgh? 81°W

e) In which hemisphere is this map located?

In the Northern Hemisphere.

f) Give the complete geographic coordinates for the city of Denver.

39°N, 105°W → 39 degrees North latitude and 105 degrees West longitude.

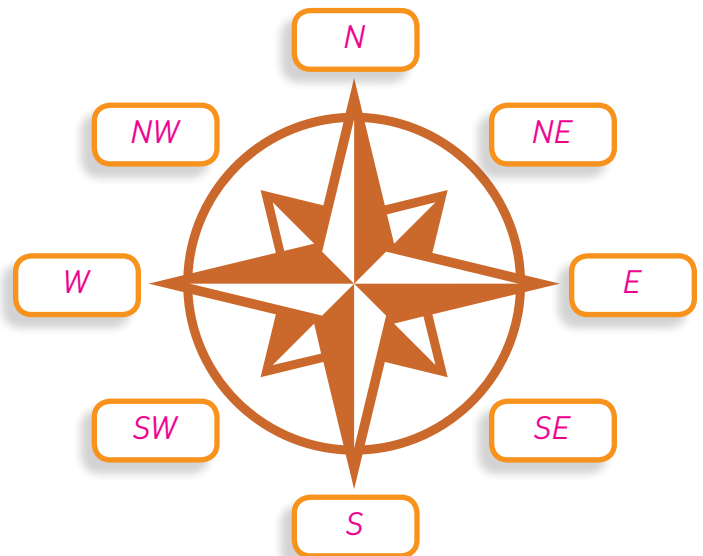
g) Give the complete geographic coordinates for the city of Anchorage.

62°N, 149°W → 62 degrees North latitude and 149 degrees West longitude.

h) Give the complete geographic coordinates for the city of New Orleans.

30°N, 91°W → 30 degrees North latitude and 91 degrees West longitude.

2. Complete the compass rose by filling in the missing abbreviations for the cardinal points. Write the main cardinal points in red and the secondary cardinal points in green.





## The continents



3. With the help of a compass rose, answer the questions below.

a) Which continent is to the:

- south of Europe? Africa.
- east of South America? Africa.
- northeast of Africa? Asia.
- southeast of South America? Antarctica.
- west of Europe? North America.

b) Which ocean is to the:

- south of Asia? Indian Ocean.
- west of Central America? Pacific Ocean.
- north of Europe? Arctic Ocean.
- east of Asia? Pacific Ocean.
- west of Europe? Atlantic Ocean.



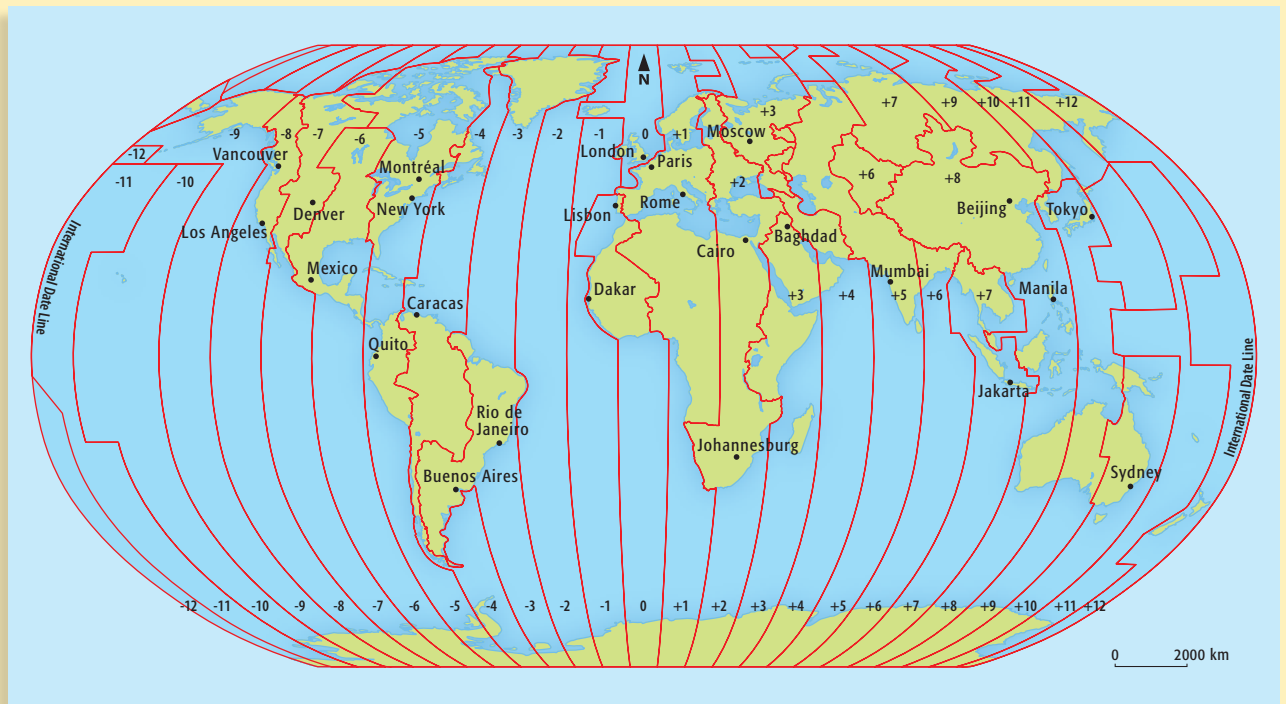
# Time Zones

Our planet is divided into 24 different time zones. Canada has a total of six time zones.

- ▶ When we travel east from a specific point of origin, the time advances by one hour for each time zone crossed.
- ▶ When we travel west from a specific point of origin, the time goes back by one hour for each time zone crossed.
- ▶ For example, if it is 1 p.m. in Paris, it is 7 a.m. in New York. In other words, there is a six-hour time difference between Paris and New York.

## 0.4

### Time zones



Note: The lines indicating the time zones have been simplified to make them easier to understand.

1. Use the time zone map above to answer the following questions.

- |  |                   |
|--|-------------------|
| a) If it is 9 p.m. in New York, what time is it in Moscow?         | <u>5 a.m.</u>     |
| b) If it is 8:30 a.m. in Sydney, what time is it in Paris?         | <u>11:30 p.m.</u> |
| c) If it is 7:15 a.m. in Cairo, what time is it in Mexico?         | <u>11:15 a.m.</u> |
| d) If it is 12:45 p.m. in Caracas, what time is it in Los Angeles? | <u>8:45 a.m.</u>  |
| e) If it is 6 a.m. in Beijing, what time is it in Tokyo?           | <u>7 a.m.</u>     |



## Types of Maps

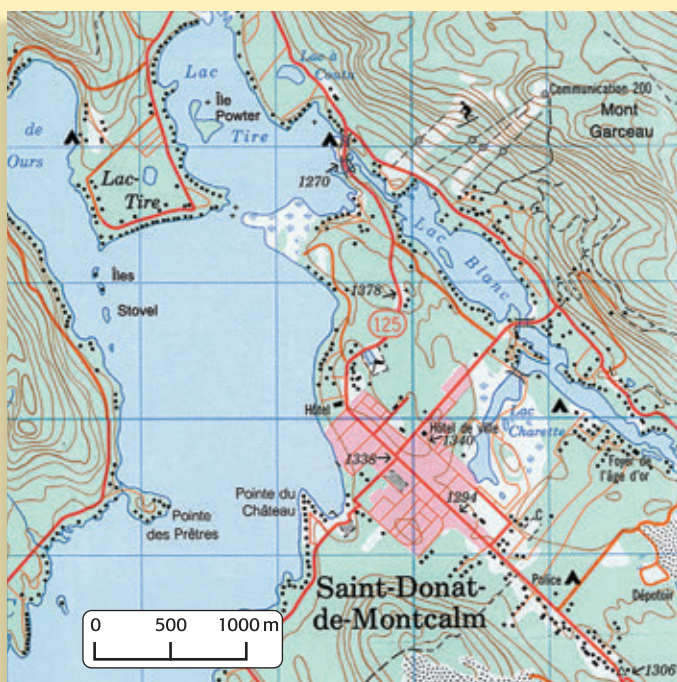
There are different types of maps to help us determine where we are or to calculate the distance between where we are and where we want to go. The most common ones are topographical maps, thematic maps and road maps.

### Topographical Maps

This type of map includes contour lines to show the shape and elevation of ground relief—the closer the contour lines (brown lines on the map) are together, the steeper the slope of the land. These maps are used to create thematic maps.

0.5

**Detail of a topographical map of Saint-Donat-de-Montcalm**



Source: Ministry of Energy, Mines and Resources, Canada.

**1.** Use this map of Saint-Donat-de-Montcalm to answer the following questions.

a) What is the title of the map?

*Detail of a topographical map of Saint-Donat-de-Montcalm.*

b) What is the scale of the map? *1 cm equals 500 metres.*

c) What is the highest mountain? *Mont Garceau.*

d) How does the map show a high elevation?

*The closer the contour lines are together, the steeper the slope of the land.*

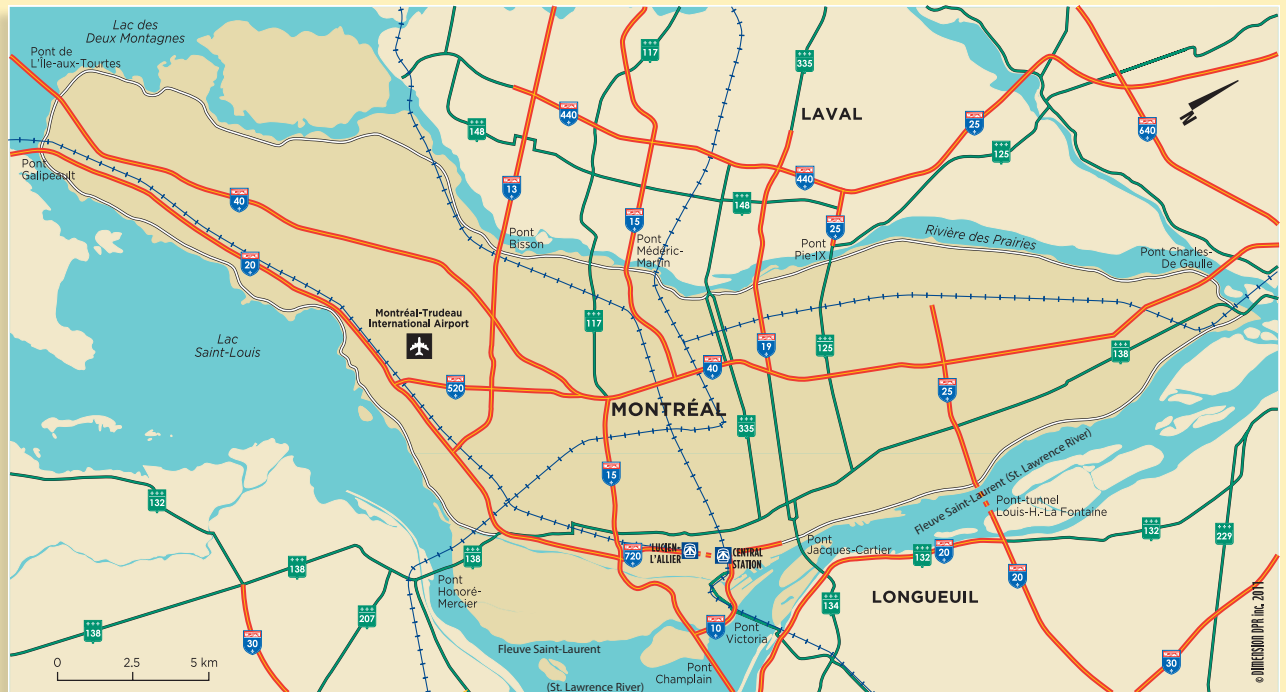
**TB**

## Thematic Maps

This type of map highlights the features of a city, such as its road networks, pedestrian and bike paths, residential neighbourhoods, commercial and industrial areas, parks, municipal buildings, public transit networks, etc.

### 0.6

#### Road access to Île de Montréal



1. Examine the map above and answer the following questions.

TB

- a) What is the title of the map?

*Road access to Île de Montréal.*

- b) What is the scale of the map? *1 cm equals 2.5 km.*

- c) Which highways are on Île de Montréal?

*Highways 10, 13, 15, 19, 20, 25, 40, 520 and 720.*

- d) Which bridges link Île de Montréal and Laval?

*Pont Bisson, Pont Médéric-Martin and Pont Pie-IX.*

- e) Which lake is northwest of Île de Montréal?

*Lac des Deux Montagnes.*

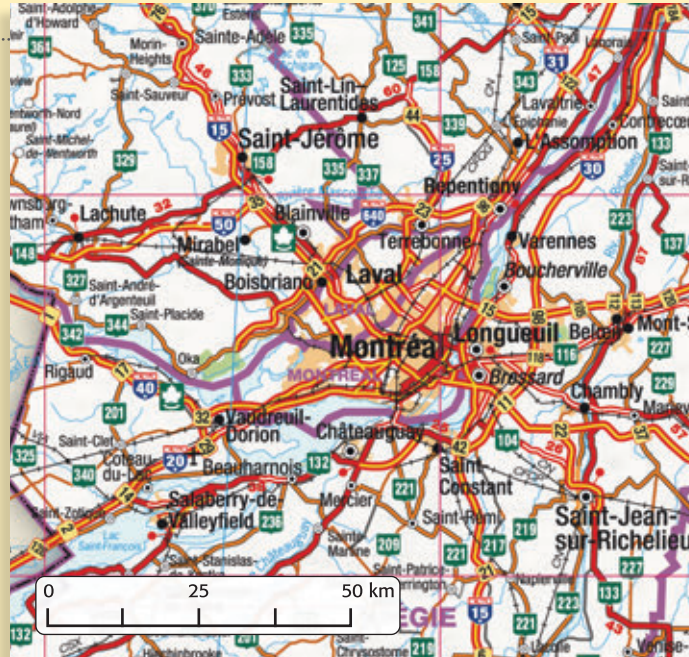


## Road Maps

This type of map shows the man-made features of a territory, such as cities and towns and the roads that serve them. It can also be used to calculate distances between places. The map's scale is very important for calculating the number of kilometres to travel between places. This type of map makes travelling by car much easier.

0.7

### Road map of Montréal and the surrounding region



Source: La Presse archives.

1. Use the road map of the Montréal metropolitan region and answer the following questions.

a) What is the title of the map?

*Road map of Montréal and the surrounding region.*

b) What is the scale of the map? *2 cm equals 25 kilometres.*

c) List the numbers of the eight highways shown on the map.

*30, 31, 25, 640, 50, 15, 40, 20.*

d) How can we distinguish the highways from the roads?

*Highways are indicated with a wide yellow line bordered by two red lines. The highway number is also written in white on a dark blue background with a white and red symbol.*

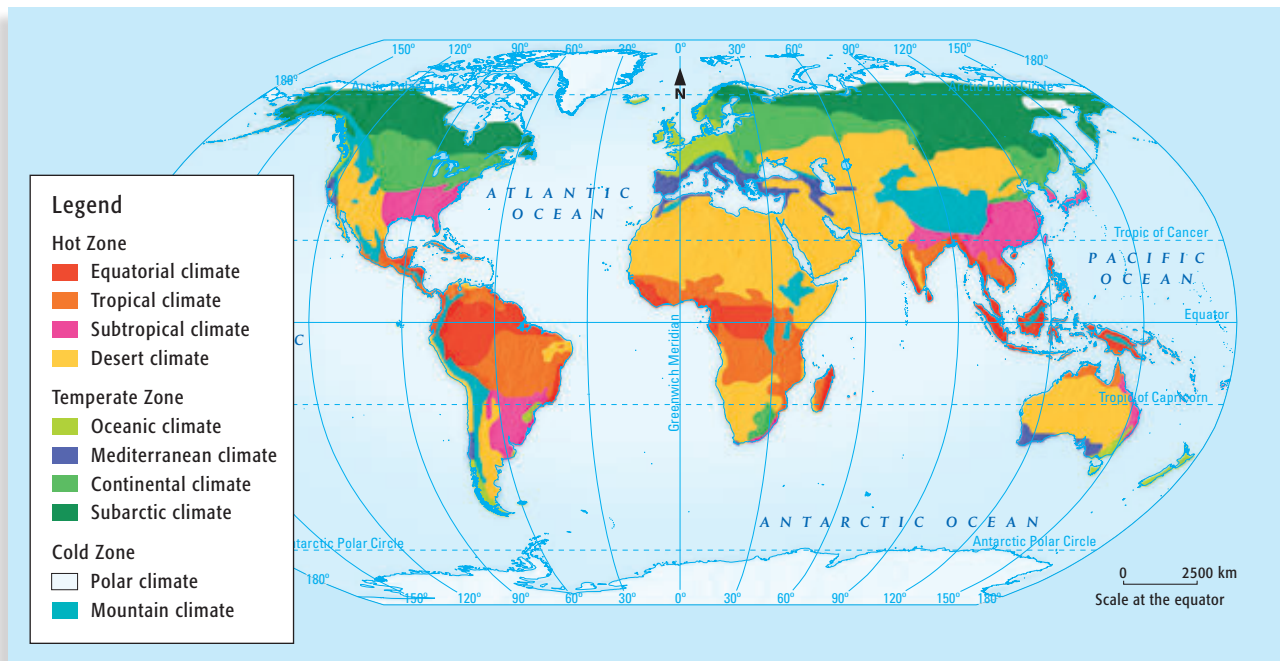
## Climatic Maps

From its poles to the equator, the Earth is a mosaic of climates. There are three main climatic zones: the hot zone, the temperate zone and the cold zone. Each zone has its own unique climates.

1. Examine the climatic map below and answer the questions.

0.8

### The climates



a) What is the title of the map? The climates.

b) What three climatic zones are shown?

The hot zone, the temperate zone and the cold zone.

c) What element allows us to understand the map? The legend.

d) Which climate is found in southern Québec? The continental climate.

e) In which hemisphere is there a mostly temperate zone?

In the Northern Hemisphere.

2. Indicate where the following are located:

a) The temperate zone: Between the Arctic Polar Circle and the Tropic of Cancer.

b) The cold zone: Beyond the Arctic and Antarctic Polar Circles.



# Canada

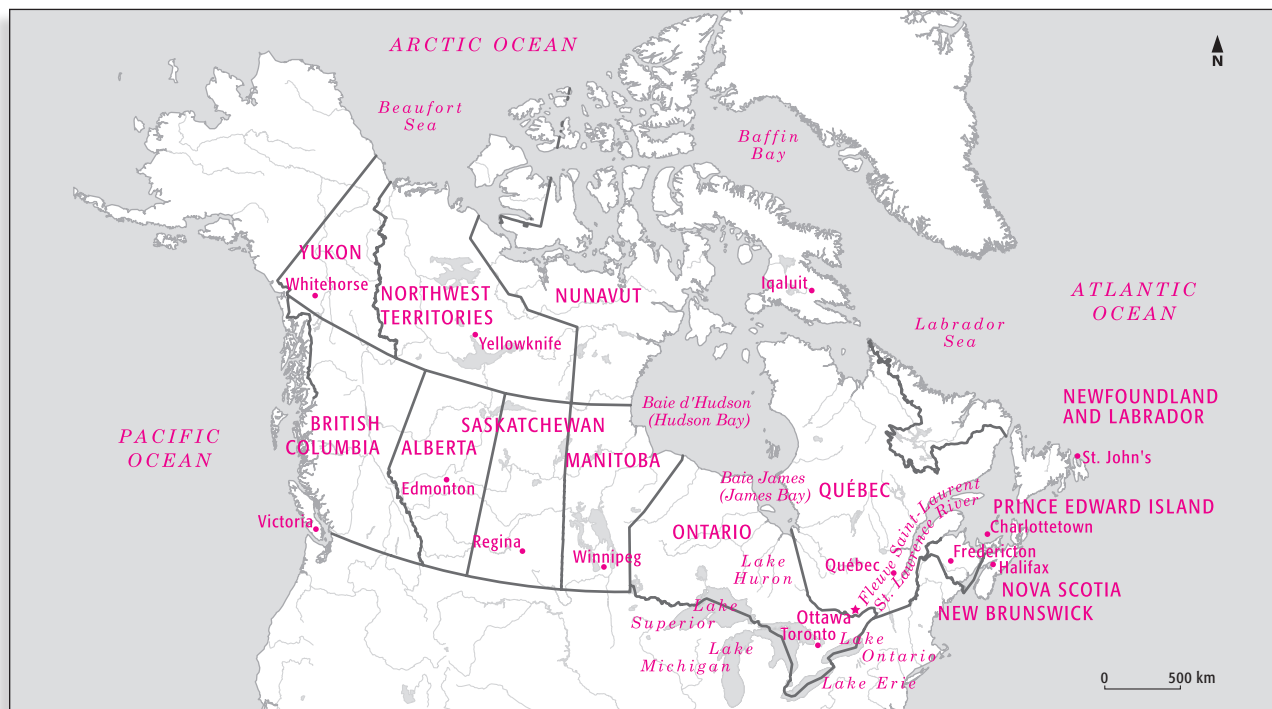
Canada has 10 provinces and three territories. Its 9 984 670 square kilometres make it the second-largest country in the world.



## Political Canada

1. Complete the blank map of Canada by following the steps below. Pay close attention to spelling; some words should be written in upper case letters. Consult your Mini Atlas if needed.
  - a) Write in the names of the 10 provinces and three territories in upper-case letters.
  - b) Indicate where the capitals of the 10 provinces and three territories are located on the map with a black dot and write in their names.
  - c) Indicate where the capital of Canada is located with a black star (\*) and write in its name.

Title: *The political map of Canada*



- d) Add the following bodies of water in the correct locations.

- PACIFIC OCEAN • ARCTIC OCEAN • ATLANTIC OCEAN
- Labrador Sea • Beaufort Sea • Baie d'Hudson (Hudson Bay)
- Baie James (James Bay) • Baffin Bay • Fleuve Saint-Laurent (St. Lawrence River)
- Lake Ontario • Lake Erie • Lake Huron • Lake Michigan • Lake Superior

- e) Give the map a title.

# ID Cards of the Canadian Provinces and Territories

## British Columbia

**PROVINCE** British Columbia  
**CAPITAL** Victoria  
**AREA** 987 800 km<sup>2</sup>  
**POPULATION** 4 510 900 inhab.  
**OFFICIAL LANGUAGE** English  
**NATURAL RESOURCES** Forestry (timber), market gardening, fishing, mining.  
**UNIQUE FEATURES** Presence of the Western Cordillera.  
**OFFICIAL FLAG**



## Alberta

**PROVINCE** Alberta  
**CAPITAL** Edmonton  
**AREA** 661 190 km<sup>2</sup>  
**POPULATION** 3 724 800 inhab.  
**OFFICIAL LANGUAGE** English  
**NATURAL RESOURCES** Agriculture (cattle farming), hydrocarbons (oil sands, oil, natural gas), mining.  
**UNIQUE FEATURES** Presence of the Western Cordillera.  
**OFFICIAL FLAG**



## Saskatchewan

**PROVINCE** Saskatchewan  
**CAPITAL** Regina  
**AREA** 652 330 km<sup>2</sup>  
**POPULATION** 1 041 700 inhab.  
**OFFICIAL LANGUAGE** English  
**NATURAL RESOURCES** Agriculture (wheat, soybean), potash mining.  
**OFFICIAL FLAG**



## Manitoba

**PROVINCE** Manitoba  
**CAPITAL** Winnipeg  
**AREA** 649 350 km<sup>2</sup>  
**POPULATION** 1 232 700 inhab.  
**OFFICIAL LANGUAGE** English  
**NATURAL RESOURCES** Agriculture (wheat, soybean), mining.  
**OFFICIAL FLAG**



## Ontario

**PROVINCE** Ontario  
**CAPITAL** Toronto  
**AREA** 1 068 580 km<sup>2</sup>  
**POPULATION** 13 167 900 inhab.  
**OFFICIAL LANGUAGE** English  
**NATURAL RESOURCES** Agriculture (dairy farming, pig farming, poultry farming, market gardening), forestry, mining.  
**OFFICIAL FLAG**



## Québec

**PROVINCE** Québec  
**CAPITAL** Québec  
**AREA** 1 540 680 km<sup>2</sup>  
**POPULATION** 7 886 100 inhab.  
**OFFICIAL LANGUAGE** French  
**NATURAL RESOURCES** Hydroelectricity, agriculture (dairy farming, pig farming, poultry farming, corn), forestry (pulp and paper), mining (iron, gold, copper).  
**OFFICIAL FLAG**





## New Brunswick

**PROVINCE** New Brunswick

**CAPITAL** Fredericton

**AREA** 73 440 km<sup>2</sup>

**POPULATION** 751 300 inhab.

**OFFICIAL LANGUAGES** English and French

**NATURAL RESOURCES** Fishing, forestry, market gardening, hydrocarbons (oil and natural gas).

**OFFICIAL FLAG**



## Nova Scotia

**PROVINCE** Nova Scotia

**CAPITAL** Halifax

**AREA** 55 490 km<sup>2</sup>

**POPULATION** 940 500 inhab.

**LANGUAGE** English

**NATURAL RESOURCES** Fishing, forestry, market gardening, hydrocarbons (oil and natural gas).

**OFFICIAL FLAG**



## Newfoundland and Labrador

**PROVINCE** Newfoundland and Labrador

**CAPITAL** St. John's

**AREA** 405 720 km<sup>2</sup>

**POPULATION** 510 900 inhab.

**LANGUAGE** English

**NATURAL RESOURCES** Fishing, mining, hydroelectricity, hydrocarbons (oil and natural gas).

**OFFICIAL FLAG**



## Prince Edward Island

**PROVINCE** Prince Edward Island

**CAPITAL** Charlottetown

**AREA** 5560 km<sup>2</sup>

**POPULATION** 141 600 inhab.

**LANGUAGE** English

**NATURAL RESOURCES** Fishing, market gardening.

**OFFICIAL FLAG**



## Yukon

**TERRITORY** Yukon

**CAPITAL** Whitehorse

**AREA** 483 450 km<sup>2</sup>

**POPULATION** 34 246 inhab.

**OFFICIAL LANGUAGES** English and French

**NATURAL RESOURCES** Mining.

**OFFICIAL FLAG**



## Nunavut

**TERRITORY** Nunavut

**CAPITAL** Iqaluit

**AREA** 1 936 113 km<sup>2</sup>

**POPULATION** 32 900 inhab.

**OFFICIAL LANGUAGES** English, French and Inuktitut

**NATURAL RESOURCES** Mining.

**OFFICIAL FLAG**



## Northwest Territories

**TERRITORY** Northwest Territories

**CAPITAL** Yellowknife

**AREA** 3 426 320 km<sup>2</sup>

**POPULATION** 43 528 inhab.

**OFFICIAL LANGUAGES** English and French

**NATURAL RESOURCES** Mining.

**OFFICIAL FLAG**



# The Earth's Internal Structure

The Earth is made up of several layers of varying thickness and composition.

## The Lithosphere (or Crust)

This is the thinnest layer. It is between 0 and 70 km thick and is made up of solid materials. It represents 1% of the Earth's total mass. The lithosphere contains the tectonic plates that float on the Earth's mantle. Its temperature varies from  $-89^{\circ}\text{C}$  to  $58^{\circ}\text{C}$ .

## The Mantle

This is the layer beneath the lithosphere. It is between 70 and 2900 km deep.

The mantle represents 80% of the Earth's mass. It is made up of a viscous substance called magma. Temperature variations in the mantle cause the tectonic plates on the Earth's crust to shift. Its temperature is around  $3000^{\circ}\text{C}$ .

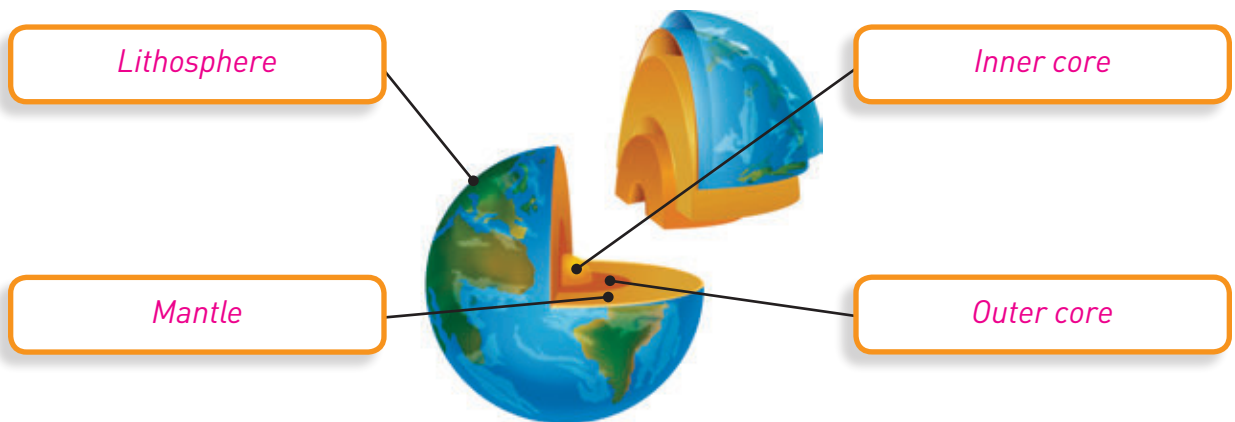
## The Inner Core

This layer is made up of solid materials. It is between 5200 and 6370 km deep. Its temperature is around  $4200^{\circ}\text{C}$ .

## The Outer Core

This layer is made up of a liquid substance. It is between 2900 and 5200 km deep. Its temperature is around  $3500^{\circ}\text{C}$ .

1. Indicate the Earth's different layers in the illustration below.



2. What am I?

a) I am made up of solid materials and can be found in the centre of the Earth.

The inner core.

b) I am made up of tectonic plates.

The lithosphere.

c) I am made up of a viscous substance and I create convection currents due to variations in my temperature.

The mantle.

d) I am the Earth's thinnest layer.

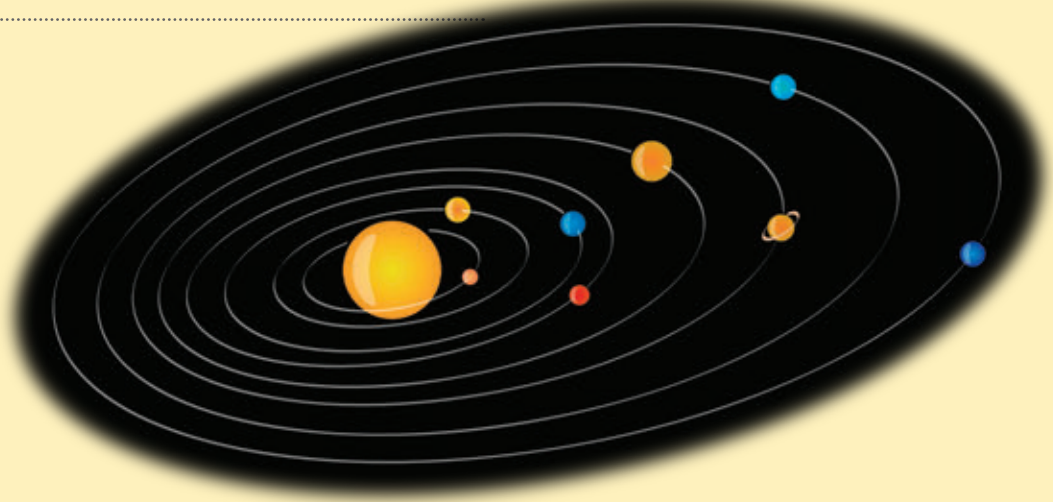
The lithosphere.

# The Solar System and Our Changing Seasons

The Earth is part of a solar system that contains a star—the Sun—and eight planets. And the solar system is part of something even larger: a galaxy. Our galaxy is called the Milky Way. It is just one of the billions of galaxies in the universe.

0.9

The solar system



## A closer look

It takes the Earth 24 hours to make a complete rotation on its axis. While one half of the planet is facing the sun (day), the other half is in complete darkness (night).

0.10

Day turning into night



As the Earth rotates on its axis, it is also orbiting around the Sun. It takes the Earth 365 days—or one year—to complete one full revolution around the Sun. Due to the Earth's inclination on its axis, not all countries have the same seasons at the same time of the year. For example, when it's summer in Canada, it's winter in Australia.

In the Northern Hemisphere, the four seasons begin on the following days:

- Summer solstice:  
June 20 or 21 → the longest day of the year (brightness).
- Winter solstice:  
December 21 or 22 → the longest night of the year (darkness).
- Spring equinox:  
March 20 or 21 → day and night of equal length.
- Fall equinox:  
September 22 or 23 → day and night of equal length.



1. a) If spring begins in the Northern Hemisphere around March 21, which season begins in the Southern Hemisphere?

Fall.

b) If winter begins on June 21 in New Zealand, which season starts in Mexico?

Summer.

c) On what day of the year does Canada receive the most sunlight?

Around June 21.

d) What do we call the time when the summer or winter season begins?

The solstice.

e) What do we call the time when the spring or fall season begins?

The equinox.

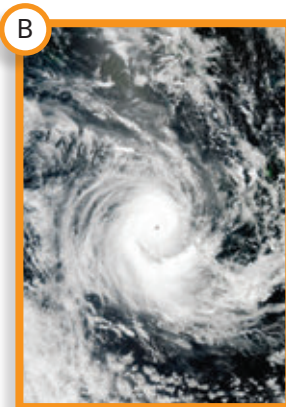
2. Explain why December 22 is the shortest day in the Northern Hemisphere.

This is the day when the Northern Hemisphere is farthest from the Sun.

## Natural Hazards

Natural hazards are natural phenomena that occur in inhabited places and cause human and material damage. People have to learn how to deal with natural hazards and take preventive measures to avoid disasters.

1. Match each picture with its title.



Landslide:

C

Flood:

D

Hurricane:

B

Earthquake:

A

2. Read the newspaper headlines below and state whether the article is about a meteorological or geological hazard.

a) **Flooding sweeps through Australia:  
8 dead and 72 missing**

*Meteorological hazard.*

c) **Major landslide in Mexico**

*Geological risk.*

b) **Earthquake in Québec and Ontario:  
property damage, but claims no victims**

*Geological risk.*

d) **Hurricane Dean intensifies over  
the Caribbean**

*Meteorological hazard.*

## Making Sketches

1. Examine the photo on the next page to make a sketch. But first, answer the following questions.

TB

a) What is the purpose of this sketch?

*To highlight the features of tornadoes such as their shape and colour.*

*To show the type of landscape on which tornadoes form.*

b) What are the essential elements to include in the sketch?

*The shape and colour of the tornado, the presence of clouds, the landscape and the surrounding vegetation.*

c) What do we see in the three parts of the photo?

Background → *A cloud mass, the upper part of the tornado.*

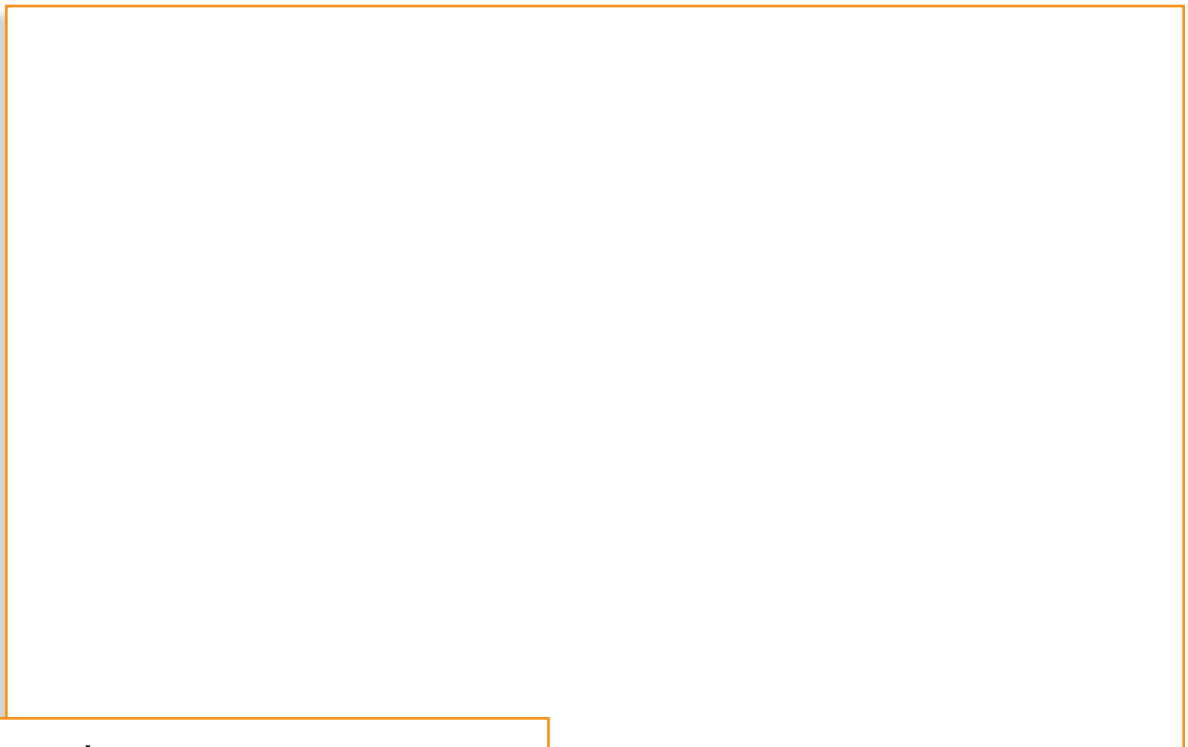
Middle ground → *The lower part of the tornado, the lower part of the cloud mass, a second tornado, some clear sky.*

Foreground → *The ground and vegetation.*



2. Make a geographical sketch of the main elements in the photo. Use simple symbols to make your sketch and identify them in a legend. Add a title.

Title: *Two tornadoes on a plain*



**Legend**



# Interpreting Tables and Graphs

## How Do We Interpret a Table?

1. Read the table below and answer the questions.

TB

### 0.11 Global education rates in 2005

PARTS OF THE WORLD	PRIMARY EDUCATION	SECONDARY EDUCATION	POST-SECONDARY EDUCATION
Africa	67%	30%	8%
North and Central America	94%	74%	26%
South America	97%	71%	29%
Asia	87%	69%	27%
Europe	95%	88%	52%
Oceania	91%	72%	31%

Source: UNESCO Institute for Statistics, 2005; Canadian International Development Agency, 2005.

a) What is the subject of the table?

*The subject of the table is global education rates in 2005.*

b) What do the rows and columns in the table tell us?

*They give the parts of the world according to the continent and the three levels of education: elementary, secondary and post-secondary.*

c) What unit of measurement is used to present the data in the table?

*Percentages are used to give the proportion of people who have completed each level of education.*

d) What is the type of data presented in the table?

*The data is numerical (percentages for the levels of education) and written (parts of the world)*

e) What comparisons can you make using this table?

*The data in the table can be used to compare the percentage of people who have completed different levels of schooling according to the continent in which they live.*

f) Analyze the data for Africa and Europe.

Africa: *67% of Africans have completed their elementary school education, 30% have completed their secondary school education and 8% have completed their post-secondary education.*

Europe: *95% of Europeans have completed their elementary school education 88% have completed their secondary school education and 52% have completed their post-secondary education.*

g) After analyzing the table, what conclusions can you make about education rates in the world?

*Answers will vary but can include: With the exception of Africa, all the continents have a high rate of elementary school education. The same goes for secondary school education, although Europe has a higher rate than the other continents. With regard to post-secondary education, Europe has a much higher graduation rate than the other continents. Africa is ranked last and Europe is ranked first.*

2. What are the sources of the information presented in the table?

*UNESCO Institute for Statistics, 2005, and Canadian International Development Agency, 2005.*

## How Do We Interpret a Graph?

TB

1. Examine the circle graph on the right and answer the following questions.

a) What is the subject of the circle graph?

*Energy production in Canada.*

b) What unit of measurement is used to present the data in the circle graph?

*Percentages are used to show the amount of energy production of Canadian provinces.*

c) What type of data is presented in the circle graph?

*The data is numerical (percentages of all the energy-producing provinces) and written (the names of the provinces).*

d) What comparisons can you make from this graph?

*The provinces of Western Canada produce the most energy, particularly Alberta. It produces 64% of all the energy in Canada. Eastern Canada produces very little energy.*

e) After analyzing the graph, what conclusions can you make about energy production in Canada?

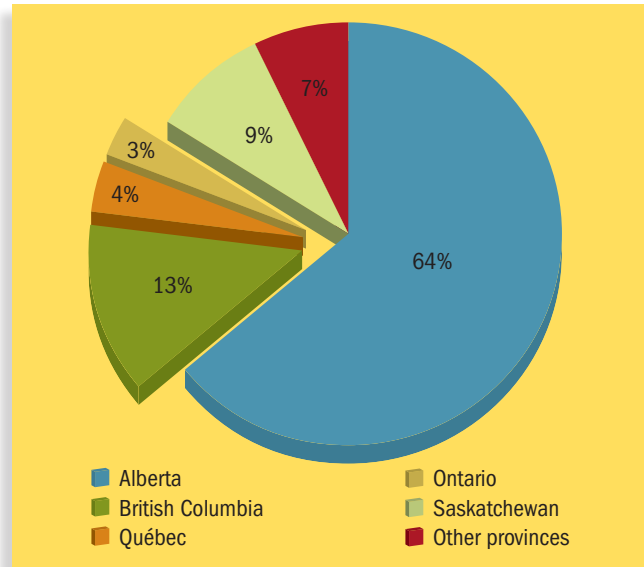
*Alberta is the main energy-producing province in Canada. Eastern Canada is very far behind the provinces of Western Canada.*

f) What are the sources of the data presented in the circle graph?

*Statistics Canada, 2006.*

0.12

**Energy production in Canada in 2004**



Source: Statistics Canada, 2006.



# Interpreting Visual Documents

TB

1. Examine the following photo and answer the questions below.

0.13

**The Imperial Geyser  
at Yellowstone  
National Park,  
Wyoming, United States**  
This photo was taken in  
the spring.



- a) What is the title of the document?

*The Imperial Geyser at Yellowstone National Park, Wyoming, United States.*

- b) What type of document is this?

*It is a photograph, a direct image of reality.*

- c) Give the origin, date, author and source of the visual document.

*This photograph was taken sometime in the spring in the present day. The author and the exact date of the photo are unknown.*

- d) What is the main subject of the visual document?

*A geyser erupting at Yellowstone National Park in the United States.*

2. Describe the elements shown in the visual document.

*We see an erupting geyser, water of a white and bluish colour, rocks, hills and vegetation.*