

## SECTION 4.1 CLIMATE IS A LONG-TERM WEATHER PATTERN.

## 4.1 Reading Study Guide A

**BIG IDEA** Climates are long-term weather patterns that may change over time.

**KEY CONCEPT** Climate is a long-term weather pattern.

### Vocabulary

**climate** the usual weather conditions in a place over a long period

**latitude** the distance in degrees north or south of the equator

**marine climate** occurs near the ocean, usually along the west coast of a continent

**continental climate** occurs in the interior of a continent

**ocean current** a stream of water that flows through the ocean in a regular pattern

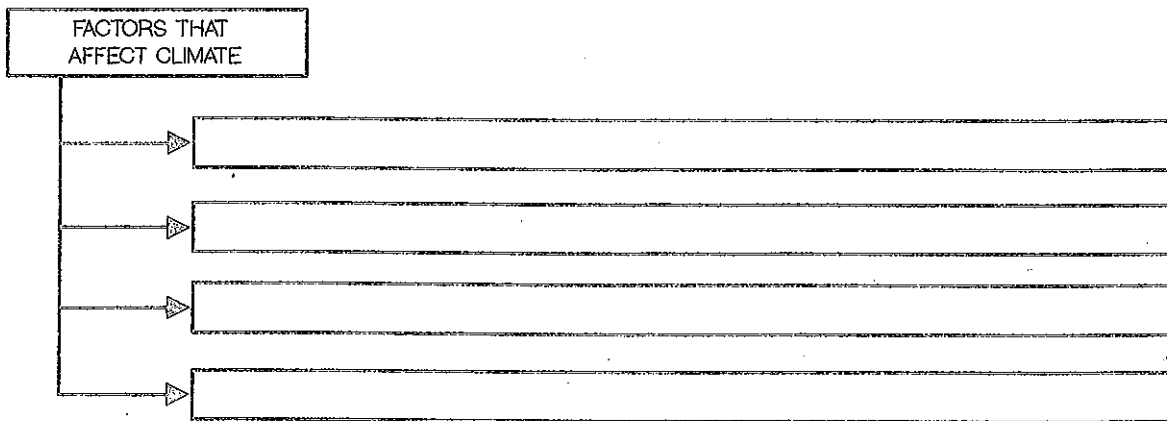
**season** a period of the year associated with specific weather conditions

### Review

1. The location at the bottom of a mountain is usually warmer than a location at the top of a mountain. This happens because the temperature \_\_\_\_\_ as altitude \_\_\_\_\_.

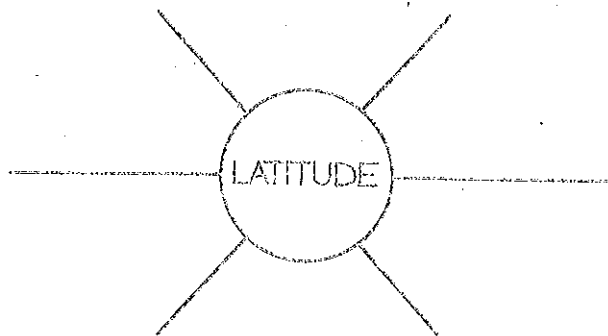
### Take Notes

1. Geography affects climate. (p. 117)
2. Meteorologists focus on two main factors when classifying climates. These factors are \_\_\_\_\_ and \_\_\_\_\_.
3. Complete the diagram. Label the boxes with the four factors that affect climate.



## A. Latitude (p. 118)

2. Complete the description wheel for *latitude*.



## B. Altitude (p. 118)

5. Places near the equator are generally warm. How is it possible to find snow covering the top of a mountain located near the equator?

\_\_\_\_\_

## C. Large Bodies of Water (p. 120)

6. Complete the chart comparing marine and continental climates.

	Marine Climates	Continental Climates
Location		
Temperature		
Seasons		

## D. Ocean Currents (p. 121)

Look at the map on page 121.

7. What color are currents that bring warm water? \_\_\_\_\_
8. What color are currents that bring cold water? \_\_\_\_\_
9. Does the gulf stream current bring warm or cold water? \_\_\_\_\_

## III. Seasonal changes are part of climate. (p. 122)

10. What are seasons?

\_\_\_\_\_

## A. Temperature and Precipitation Patterns (pp. 122-123)

11. In different seasons, the amount of \_\_\_\_\_ that different parts of Earth receive from the Sun changes.
12. Which season has the fewest hours of sunlight? \_\_\_\_\_

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Hour: \_\_\_\_\_

### Section 4.1 Review Questions

1. What is the connection between latitude and temperature? \_\_\_\_\_  
\_\_\_\_\_
2. How are marine climates different from continental climates? \_\_\_\_\_  
\_\_\_\_\_
3. Which seasons have the longest and the shortest periods of daytime? \_\_\_\_\_  
\_\_\_\_\_
4. Explain the difference between climate and weather. \_\_\_\_\_  
\_\_\_\_\_
5. Complete the chart showing how latitude, altitude, large bodies of water and ocean currents **affect climate**.

Latitude	Altitude	Large Body of Water	Ocean Currents

6. How does the length of daytime change with each season? \_\_\_\_\_  
\_\_\_\_\_
7. PREDICT: How would a region's climate change if a cold-water ocean current stopped flowing past it? \_\_\_\_\_  
\_\_\_\_\_
8. IDENTIFY THE CAUSE: What geographical factors might cause a region to have a narrow temperature range and mild weather all year? \_\_\_\_\_  
\_\_\_\_\_
9. INFER: Suggest specific climate characteristics that might make the owners of a vacation resort decide to advertise the average annual temperature rather than provide temperature averages for each month or season. \_\_\_\_\_  
\_\_\_\_\_

## SECTION

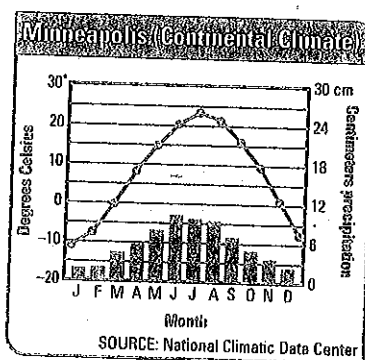
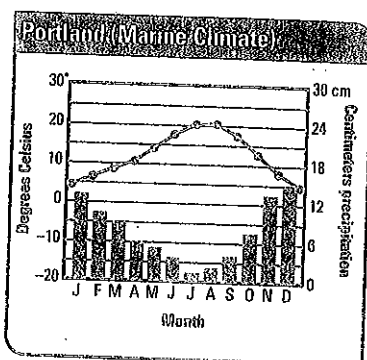
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# 4.1 Reinforcing Key Concepts

**BIG IDEA** Climates are long-term weather patterns that may change over time.

**KEY CONCEPT** Climate is a long-term weather pattern.

1. Geography affects climate. Land and water do not heat up and cool down at the same rate. Because of the different heating and cooling rates, regions on the coast have different temperature patterns than regions that are farther inland. Study the graphs, which show the temperatures (lines) and amounts of precipitation (bars) in Portland (a coastal city) and Minneapolis (an inland city).



SOURCE: National Climatic Data Center

- a. What are the highest and lowest average temperatures during the year for Minneapolis? For Portland?

- b. Explain the relationship between precipitation and temperature during the year in Portland. How is the relationship between precipitation and temperature different in Minneapolis than in Portland?

2. Seasonal changes are part of climate. Seasons occur because the amounts of energy that the Northern Hemisphere and the Southern Hemisphere receive from the Sun change over the course of a year. A student wrote these notes about the seasons. Circle the notes that are correct.

In the Northern Hemisphere, daytime is longest on December 21.

In the Northern Hemisphere, summer begins around June 21.

On the first day of spring, day and night have equal lengths.

Temperature patterns are not a feature of climate.

In some regions, seasonal changes determine when plants can grow.

In almost every climate, summer is the driest season.