

Name _____

Number _____

Date _____

Guided Reading Ch. 19: Climate and Climate Change

19-1: What Causes Climate?

1. The average, year-after-year conditions of temperature, precipitation, winds and clouds in an area is the _____.
2. What are the two main factors that influence climate?
3. What are the main factors that influence temperature?
4. List the three temperature zones on Earth's surface that are based on latitude.
5. Is the following sentence true or false? Areas at high altitudes have cool climates no matter what their latitude.

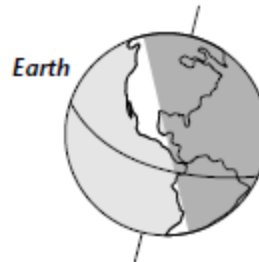
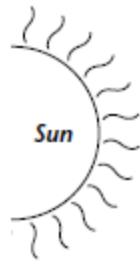
Match the type of climate with its description.

Type of Front

How it Forms

6. _____ marine climate a. Relatively warm winters and cool summers.
7. _____ continental climate b. Cold winters and warm or hot summers.
8. Circle the letter of each statement that is true about how ocean currents influence climates.
 - a. Ocean currents influence many marine climates.
 - b. Only warm ocean currents influence climates.
 - c. The North Atlantic Drift gives Ireland a warm climate for its latitude.
 - d. The California current gives the West Coast a warm climate for its latitude.
9. List the two main factors that affect precipitation.

10. Circle the letter of each sentence that is true about the effect of mountain ranges on precipitation.
- Precipitation falls mainly on the leeward side of mountains.
 - The windward side of mountains is in a rain shadow.
 - As air rises to pass over a mountain range, its water vapor condenses, forming clouds.
 - Precipitation usually falls on the side of the mountains that the oncoming wind hits.
11. Is the following sentence true or false? Winds blowing inland from oceans carry less water than winds blowing from land.
12. The climate of a small specific area is a(n) _____.
13. What are some natural features that can result in a microclimate?
14. Is the following sentence true or false? It is colder in the winter in the Northern Hemisphere because the Earth is farther from the sun then.
15. When Earth is in the position shown in the drawing, what season is it in the Northern Hemisphere?



16. Circle the letter of each sentence that is true about Earth's axis.
- The axis always points the same direction.
 - The north end of the axis is tilted away from the sun all year.
 - When it is summer in the Southern Hemisphere, the south end of the axis is tilted toward the sun.
 - In March and November, neither end of the axis is tilted toward the sun.

19-2: Climate Regions

1. What are the two major factors that scientists use to classify climates?

2. List the five major climate regions.

3. Is the following sentence true or false? A highland climate can occur within any of the other climate regions.

4. What are the two types of Tropical rainy climates?

5. Circle the letter of each sentence that is true about a tropical wet climate.
 - a. It has heavy rainfall year-round.
 - b. It is hot year-round.
 - c. Rain forests grow in this type of climate.
 - d. Florida has this type of climate.

6. Circle the letter of each sentence that is true about a tropical wet-and-dry climate.
 - a. It has a rainy season and a dry season.
 - b. It is hot year-round.
 - c. Grasslands grow in this type of climate.
 - d. Hawaii has this type of climate.

7. Arid regions, which get less than 25 centimeters of rain every year, are also called _____.

8. An area that is dry but gets enough rainfall for short grasses and low bushes to grow is called a(n) _____.

9. The steppe region of the United States is the _____.

10. Complete the compare/contrast table.

Temperate Marine Climates		
Type of Climate	Characteristics	Region Where It Is Found
	Cool and wet	Pacific Northwest
	Warm and dry	Southern coast of California
	Warm and wet	Southeastern United States

11. Circle the letter of each sentence that is true about temperate continental climates.
 - a. They are found in both Northern and Southern hemispheres.
 - b. They are greatly influenced by oceans.
 - c. They have extremes of temperature.
 - d. They are found in the northeastern United States.

12. Is the following sentence true or false? Humid continental climates receive less precipitation in summer than in winter.

13. What are summers and winters like in subarctic climates?

14. Is the following sentence true or false? The polar climate is the coldest climate region.

15. Complete the compare/contrast table.

Polar Climates		
Type of Climate	Warmest Temperature	Organisms Found There
	0° C (freezing)	Only lichens and a few low plants
Tundra		Many kinds of plants and animals

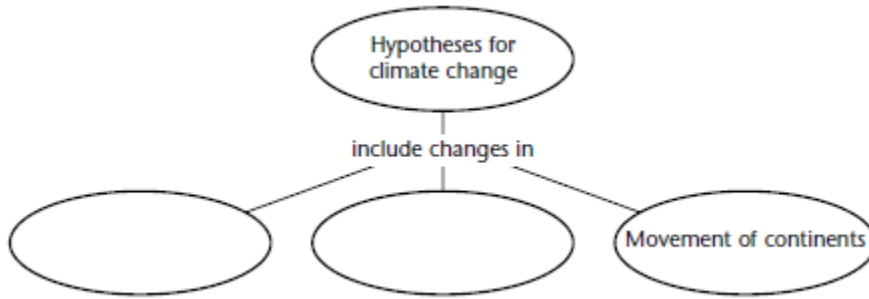
16. How do highland climates differ from climates of the regions that surround them?

17. The climate above the tree line is like that of the _____.

19-3: Long-Term Changes in Climate

- Circle the letter of each choice that provides evidence of ancient climates.
a. fossils b. tree rings c. pollen records d. weather maps
- Is the following sentence true or false? A thin tree ring indicates that the year was warm or wet.
- Circle the letter of each sentence that is true about the ice ages.
a. When occurred, glaciers covered Earth's entire surface.
b. There have been at least six major ice ages in the past two million years.
c. Each of the major ice ages lasted 100,000 years or longer.
d. The most recent major ice age ended about 105,000 years ago.
- Is the following sentence true or false? Some scientists think that we are now in a warm period between ice ages.
- Why was the sea level lower during the ice ages?

6. Complete the concept map.



7. What changes in Earth's position may have affected climates?

8. Circle the letter of each sentence that is true about sunspots.

- They are dark, cooler regions on the surface of the sun.
- They increase and decrease in 100-year cycles.
- They could be caused by changes in the sun's energy output.
- They are known to be the chief cause of the ice ages.

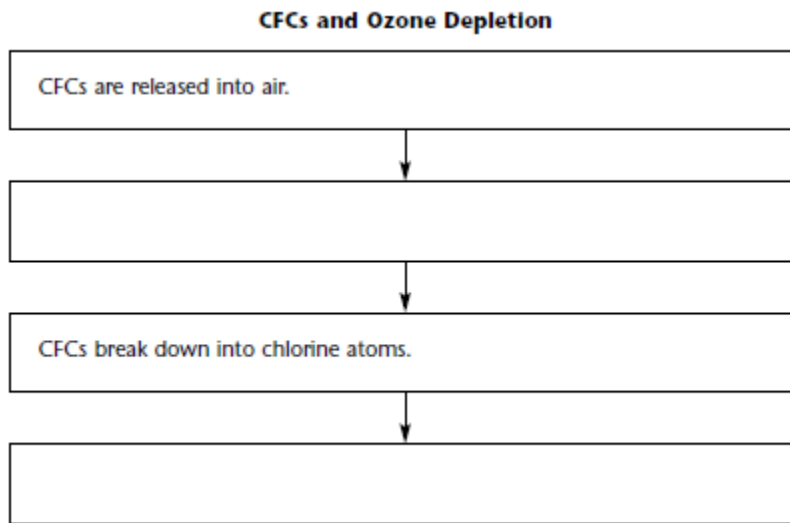
19-4: Global Changes in the Atmosphere

1. Is the following sentence true or false? Over the last 120 years, the average temperature of the troposphere has risen by about 5°C.

Match the term with its definition.

- | Term | Definition |
|---|---|
| 2. _____ greenhouse effect | a. Process by which Earth's atmosphere traps solar energy. |
| 3. _____ global warming | b. Gradual increase in the temperature of Earth's atmosphere. |
| 4. Gases in the atmosphere that trap solar energy are called _____. | |
| 5. What are some greenhouse gases? | |
| 6. Is the following sentence true or false? The amount of carbon dioxide in the air has been steadily increasing. | |

7. Is the following sentence true or false? Everyone agrees about the causes of global warming.
8. How might changes in solar energy affect Earth's climate?
9. Is the following sentence true or false? Ozone in the stratosphere filters out much of the harmful ultraviolet radiation from the sun.
10. Is the following sentence true or false? The ozone layer over Antarctica is growing thinner.
11. What are chlorofluorocarbons, or CFCs?
12. Complete the flowchart.



13. With a decrease in ozone, the amount of ultraviolet radiation reaching Earth's surface would _____.
14. What have the United States and other countries done to try to prevent ozone depletion?