

Chapter 2 Section 1—WEATHER & CLIMATE /35

Section: Water in the Air

1. The condition of the atmosphere at a certain time and place is called the _____.

THE WATER CYCLE

- _____ 2. How does water get from the Earth's surface into the air?
- a. through precipitation
 - b. through condensation
 - c. through evaporation
 - d. through runoff
- _____ 3. Clouds form in the process of
- a. precipitation.
 - b. evaporation.
 - c. condensation.
 - d. runoff.
- _____ 4. Rain, snow, sleet, and hail are all forms of
- a. condensation.
 - b. evaporation.
 - c. precipitation.
 - d. runoff.
5. Water that flows across land and collects in rivers, streams, and the ocean is called _____.
6. What is the water cycle?

Directed Reading A *continued*

HUMIDITY

Match the correct definition with the correct term. Write the letter in the space provided.

- | | |
|--|-----------------------------|
| _____ 7. an instrument that measures relative humidity | a. humidity |
| _____ 8. the amount of water vapor in the air compared with the maximum it can hold at a given temperature | b. relative humidity |
| _____ 9. air that holds all the water it can at a given temperature | c. saturated |
| _____ 10. the amount of water vapor in the air | d. psychrometer |

11. What happens to air's ability to hold water vapor as the air gets warmer?

12. What is the relative humidity of air that holds all the water it can at a given temperature?

13. What happens to the relative humidity if the amount of water vapor in the air stays the same but the air gets cooler?

14. Explain how you would use a wet-bulb thermometer and a dry-bulb thermometer to find the relative humidity.

CONDENSATION

- _____ **15.** The change of state from a gas to a liquid is called
- a.** humidity.
 - b.** condensation.
 - c.** water vapor.
 - d.** saturation.

Directed Reading A *continued*

- _____ **16.** When air cools to a temperature at which it is saturated, the air has reached its
- a.** relative humidity.
 - b.** evaporation point.
 - c.** dew point.
 - d.** condensation point.

17. Why do water droplets form on the outside of a glass of ice water?

18. What are two ways in which air can become saturated?

(2pts)

CLOUDS

19. What is a cloud made of?

20. What are two ways in which clouds are classified?

(2pts)

Match the correct description with the correct term. Write the letter in the space provided.

- | | |
|---|-------------------------------|
| _____ 21. cover large areas and form in layers | a. cirrus clouds |
| _____ 22. found at high altitudes and form when the wind is strong | b. nimbostratus clouds |
| _____ 23. produce thunderstorms | c. cumulus clouds |
| _____ 24. have flat bottoms and often indicate fair weather | d. cumulonimbus clouds |
| _____ 25. produce continuous rain | e. stratus clouds |

Directed Reading A *continued*

Match the correct definition with the correct term. Write the letter in the space provided.

- | | |
|--|--------------------------|
| _____ 26. prefix for clouds at middle altitudes | a. <i>cirro-</i> |
| _____ 27. prefix for clouds at low altitudes | b. <i>strato-</i> |
| _____ 28. prefix for clouds at high altitudes | c. <i>alto-</i> |

PRECIPITATION

- _____ **29.** Water that returns to Earth in liquid or solid form is
- a.** precipitation.
 - b.** runoff.
 - c.** cloud formations.
 - d.** relative humidity.
- _____ **30.** A water droplet in a cloud becomes rain when its diameter increases to how many times its original size?
- a.** 10
 - b.** 5
 - c.** 50
 - d.** 100

31. How does sleet form?

32. How does snow form?

33. Why can hail become very large and heavy?

Chapter 2 Section 2—WEATHER & CLIMATE

Section: Air Masses and Fronts

1. What causes changes in the weather?

2. What is a large body of air that has similar temperature and moisture throughout called?

AIR MASSES

_____ 3. What are the two main characteristics of air masses?

- a. density and moisture
- b. mass and temperature
- c. moisture content and temperature
- d. shape and mass

4. On weather maps, a two-letter symbol system is used to describe the characteristics of each air mass. Give the four letters used in this system, and tell what each letter represents.

(4pts)

5. Name three places where polar air masses form and cause cold winter weather in the United States.

(3pts)

6. Which warm air mass that influences the weather in the United States develops over land?

7. Which air masses cause the hurricanes and thunderstorms that occur on the East Coast and in the Midwest?

Directed Reading A *continued*

FRONTS

- _____ 8. What usually happens when two types of air masses meet?
- a. Cold air rises.
 - b. Warm air rises.
 - c. The masses disappear.
 - d. Air from the two masses mixes together.
9. The boundary between air masses of different densities and usually different temperatures is called a _____.

Match the correct description with the correct term. Write the letter in the space provided.

- | | |
|---|---------------------|
| _____ 10. A warm air mass moves over a cold, denser air mass. | a. cold front |
| _____ 11. A warm air mass is caught between two colder air masses. | b. warm front |
| _____ 12. A cold air mass meets a warm air mass but the two remain separated. | c. occluded front |
| _____ 13. A cold air mass moves under a warm, less dense air mass. | d. stationary front |

14. Describe the typical weather brought by each front below.

Cold front: _____

(4pts)

Warm front: _____

Occluded front: _____

Stationary front: _____

AIR PRESSURE AND WEATHER

15. An area in the atmosphere that has lower pressure than the surrounding areas, with winds spiraling toward the center, is called a _____.

Directed Reading A *continued*

16. The rotation of air around a high-pressure center is called

a(n) _____.

17. How are cyclones formed?

18. How does a cyclone affect the weather?

19. How does an anticyclone affect the weather?

Chapter 2 Section 3—WEATHER & CLIMATE

Section: Severe Weather

1. Weather that can cause property damage and death is called _____.

THUNDERSTORMS

- _____ 2. Which of the following atmospheric conditions produces thunderstorms?
- a. warm, moist air near Earth's surface and an unstable atmosphere
 - b. cold, dry air near Earth's surface and an unstable atmosphere
 - c. an unstable atmosphere
 - d. warm, moist air near Earth's surface
- _____ 3. Which type of cloud would most likely produce a thunderstorm?
- a. stratus cloud
 - b. cirrus cloud
 - c. cumulus cloud
 - d. cumulonimbus cloud
4. A usually brief and heavy storm with rain, strong winds, lightning, and thunder is called a(n) _____.
5. An electric discharge between two oppositely charged surfaces is _____.
6. Name three places where lightning can happen.

(3pts)

7. The sound caused by air rapidly expanding along a lightning strike is called _____.
8. Name four dangerous conditions that severe thunderstorms can produce.

(4pts)

Directed Reading A *continued*

TORNADOES

_____ **9.** What is a destructive, rotating air column with very high wind speeds that touches the ground?

- a.** thunderstorm
- b.** tornado
- c.** severe thunderstorm
- d.** occluded front

_____ **10.** In what percent of thunderstorms do tornadoes occur?

- a.** 10%
- b.** 20%
- c.** 1%
- d.** 5%

11. What is the relationship between a funnel cloud and a tornado?

12. What causes a column of air spinning like a roll of toilet paper to turn to a vertical position?

13. What happens when the spinning column of air moves to the bottom of the cumulonimbus cloud?

14. Why do most tornadoes in the United States occur in the spring and early summer?

15. Why are tornadoes able to cause so much damage?

Directed Reading A *continued*

HURRICANES

- _____ **16.** In order to be called a hurricane, a storm must
- a.** cause much damage.
 - b.** travel thousands of miles.
 - c.** form over the Pacific Ocean.
 - d.** have wind speeds of at least 120 km/h.

- _____ **17.** What is a cyclone?
- a.** a tornado
 - b.** a storm in the Pacific Ocean
 - c.** a hurricane that forms over the Indian Ocean
 - d.** the second most powerful storm on Earth

- _____ **18.** Hurricanes do not form in higher latitudes because
- a.** the water is too warm.
 - b.** there is not enough wind.
 - c.** the water is too cold.
 - d.** they cannot travel that far.

- 19.** What causes a group of thunderstorms to become a hurricane?

- 20.** Where does the energy that fuels a hurricane come from?

- 21.** Why does a hurricane begin to die when it reaches land?

Match the correct description with the correct term. Write the letter in the space provided.

- | | |
|--|----------------------|
| _____ 22. clouds that spiral around the center of a hurricane | a. eye |
| | b. eye wall |
| _____ 23. cumulonimbus clouds that produce strong winds and heavy rains | c. rain bands |
| _____ 24. core of warm, calm air | |

Directed Reading A *continued*

25. In what two ways can a hurricane cause a great deal of damage?

(2pts)

SEVERE WEATHER SAFETY

_____ **26.** Which is NOT a safety measure during a thunderstorm?

- a. Stand near a tree.
- b. Stay low to the ground.
- c. Stay away from water.
- d. Listen to the radio.

_____ **27.** What does a tornado warning mean?

- a. that a tornado will strike your area soon
- b. that the possibility of a tornado exists
- c. that a tornado has been spotted
- d. that the weather is likely to produce tornadoes

_____ **28.** What is the most important safety measure during a hurricane?

- a. Get plenty of food and water.
- b. Leave your home.
- c. Board up your windows.
- d. Do not go outside.

Chapter 2 Section 4—WEATHER & CLIMATE

SECTION: FORECASTING THE WEATHER

1. How far ahead does a weather forecast predict the weather?

2. A person who makes weather predictions based on data on atmospheric conditions is a(n) _____.

WEATHER FORECASTING TECHNOLOGY

Match the correct description with the correct term. Write the letter in the space provided.

- | | |
|--|--------------------|
| _____ 3. measures wind direction | a. anemometer |
| _____ 4. carries electronic equipment that measures weather conditions above the Earth's surface | b. windsock |
| _____ 5. measures air pressure | c. barometer |
| _____ 6. measures air temperature | d. weather balloon |
| _____ 7. measures wind speed | e. thermometer |
| 8. Weather balloons carry equipment that measures | |

9. How do weather balloons send measurements to weather stations on the ground?

10. The liquid in a thermometer moves up the glass tube when the air temperature _____.

Directed Reading A *continued*

11. How does a barometer work?

12. The technology that shows the form, amount, and location of precipitation is called _____.

13. What is a special type of radar meteorologists could use to predict when a tornado might touch down?

14. As they orbit the Earth, _____ provide images of weather systems that we see on television weather reports.

WEATHER MAPS

15. Where does the National Weather Service get its information for its weather maps?

16. A representation of a weather station on a map is called a(n) _____.

17. The lines on a weather map that connect points of equal air pressure are _____.

18. What does an isobar that is a closed circle represent?

Activity

Vocabulary Activity—WEATHER & CLIMATE /17

After you finish reading the chapter, try this puzzle! Use the clues below to complete the crossword puzzle on the next page.

Across

1. amount of moisture the air contains compared with the maximum it can hold at a given temperature
4. area of lower pressure and winds that spiral toward the center
5. mercury-filled glass tube that measures air pressure
6. boundary between two air masses
8. an electric discharge between two oppositely charged surfaces
10. water in solid or liquid form that falls from the air to the Earth
12. line on a weather map connecting points of equal pressure
14. funnel cloud that touches the ground
15. amount of moisture in the air
16. condition of the atmosphere at a certain time and place
17. small, intense weather system with rain, strong winds, thunder, and lightning

Down

2. mercury-filled glass tube that measures air temperature
3. large, rotating tropical weather system with high-speed winds
4. when water vapor becomes a liquid
7. area of higher pressure with winds that spiral outward
9. collection of millions of tiny water droplets or ice crystals
11. rotating cups that measure wind speed
13. large body of air that has similar temperature and moisture throughout
14. sound that results from the rapid expansion of air along a lightning strike

Vocabulary Activity *continued*

