

Directed Reading 20.3 (ODD)

Section: Precipitation

1. Any moisture that falls from the air to Earth's surface is called _____.

2. List four major types of precipitation.

FORMS OF PRECIPITATION

In the space provided, write the letter of the definition that best matches the term or phrase.

_____ 3. rain

_____ 4. drizzle

_____ 5. snow

_____ 6. sleet

_____ 7. glaze ice

_____ 8. ice storm

_____ 9. hail

a. solid precipitation consisting of ice particles

b. solid precipitation in the form of lumps of ice

c. rain that freezes when it strikes a surface near the ground

d. clear ice pellets formed when rain falls through a layer of freezing air

e. liquid precipitation

f. rain consisting of drops smaller than 0.5 mm in diameter

g. the condition that produces glaze ice

10. What size are normal raindrops?

11. What is the most common form of solid precipitation?

12. What are three forms in which snow can fall?

Directed Reading *continued*

13. How do snowflakes change in size as the temperature goes below 0 °C?

14. In what kind of clouds does hail usually form?

15. Describe how hail forms and falls to the ground.

16. Why is hail potentially harmful?

CAUSES OF PRECIPITATION

_____ 17. The diameter of most cloud droplets is about
a. 5 mm. c. 100 μm.
b. 20 μm. d. 20 mm.

_____ 18. What must happen in order for a cloud droplet to fall as precipitation?
a. It must freeze.
b. It must decrease in size by about 10 times.
c. It must increase in size by about 100 times.
d. It must warm up.

_____ 19. What two processes cause cloud droplets to fall to Earth?
a. coalescence and ultracooling
b. coagulation and supercooling
c. coalescence and supercooling
d. coagulation and superwarming

_____ 20. What happens in the process of coalescence?
a. Small droplets slow down as they fall.
b. Small droplets combine to form larger droplets.
c. Small droplets break up into smaller droplets.
d. Large droplets divide into smaller droplets.

_____ 21. During supercooling, a substance becomes extremely cold and
a. changes to a solid.
b. changes to a gas.
c. changes to a liquid.
d. does not change its state.

Directed Reading *continued*

- _____ 22. What is NOT true of freezing nuclei?
- a. They are a form of precipitation.
 - b. They are suspended in the air.
 - c. They are solid particles.
 - d. They are similar to ice in structure.
- _____ 23. Why don't supercooled water droplets freeze?
- a. They are too cold.
 - b. They are too large.
 - c. There are not enough freezing nuclei available.
 - d. There are too many solid particles in the air.
- _____ 24. What does water vapor from supercooled water droplets do?
- a. It condenses on ice crystals that have formed on freezing nuclei.
 - b. It evaporates from the freezing nuclei.
 - c. Water vapor from the droplets evaporates.
 - d. Water vapor makes ice crystals increase in size.
- _____ 25. Which of the following are created by the process of supercooling?
- a. drizzle and rain
 - b. sleet and hail
 - c. glaze ice and snow
 - d. snow and rain

MEASURING PRECIPITATION

26. What is the name of an instrument used to measure rainfall?
- _____
27. In one type of rain gauge, a funnel fills a divided bucket, and then tips and sets off a(n) _____ that records the amount of rain.
28. What instrument measures snow depth?
- _____
29. About how much snow does it take to produce 1 cm of water?
- _____
30. What does Doppler radar measure?
- _____
31. How does Doppler radar work?
- _____
- _____
- _____

Directed Reading *continued*

32. Name three things that meteorologists can determine with Doppler radar.

33. How can Doppler radar save lives?

WEATHER MODIFICATION

_____ 34. The process in which freezing or condensation nuclei are introduced into a cloud to cause rain is called

- a. rain seeding.
- b. cloud seeding.
- c. precipitation growing.
- d. nuclei dropping.

_____ 35. Which of the following are introduced into a cloud to cause rain because they resemble ice crystals?

- a. snowflakes
- b. hailstones
- c. carbon monoxide pellets
- d. silver iodide crystals

_____ 36. The substance dropped from aircraft to cool cloud droplets and cause ice crystals to form is

- a. powdered dry ice.
- b. sleet.
- c. water vapor.
- d. snow.

37. List three ways in which cloud seeding materials are released.

38. Can cloud seeding cause a significant increase in precipitation?

39. What are two ways in which cloud seeding could help people?

