

Directed Reading A

Section: Three States of Matter

1. What are the three most familiar states of matter?

2. What is a state of matter?

PARTICLES OF MATTER

3. Matter is made up of _____ and _____.

Match the correct description with the correct state of matter. Write the letter in the space provided.

- | | |
|--|------------------|
| _____ 4. Particles do not move fast enough to overcome the strong attraction between them. | a. solid |
| _____ 5. Particles move independently of each other. | b. liquid |
| _____ 6. Particles are close together but can slide past one another. | c. gas |
| _____ 7. Particles are close together and vibrate in place. | |
| _____ 8. Particles move fast enough to overcome nearly all of the attraction between them. | |

SOLIDS

- _____ 9. The particles of matter that make up a solid
- a.** have a weaker attraction than those of a liquid.
 - b.** do not move at all.
 - c.** do not move fast enough to overcome the force of attraction.
 - d.** move from place to place.

Directed Reading A *continued*

10. What is a solid?

11. How are the particles in a crystalline solid arranged?

12. How are the particles in an amorphous solid arranged?

LIQUIDS

13. How do the particles of a liquid make it possible to pour juice into a glass?

14. A beaker and a cylinder each contain 350 mL of juice. What does this show you about the properties of a liquid?

15. Liquids tend to form spherical droplets because of _____ tension.

16. Water has a lower _____ than honey.

GASES

17. What is a gas?

18. How is it possible for one tank of helium to fill 700 balloons?

Answer Key

Directed Reading A

SECTION: THREE STATES OF MATTER

- The three most familiar states of matter are solid, liquid, and gas.
- A state of matter is a physical form in which a substance can exist.
- atoms; molecules
- A
- C
- B
- A
- C
- C
- A solid is the state of matter that has a definite shape and volume.
- The particles in a crystalline solid are in an orderly, three-dimensional arrangement, in a repeating pattern of rows.
- The particles in an amorphous solid do not have a special arrangement. Each particle is in one place, but the particles are not arranged in a pattern.
- The particles in the liquid move quickly and slide past each other until the liquid takes the shape of the glass.
- It shows that even when liquids change shape, they don't change volume.
- surface
- viscosity
- A gas is the state of matter that has no definite shape or volume.
- The cylinder contains helium particles that are forced close together. As helium enters the balloon, the atoms spread out, and the amount of empty space in the gas increases.

SECTION: BEHAVIOR OF GASES

- C
- temperature
- The particles of gas in the balloon will have less energy, and the particles of gas will not push as hard on the walls of the balloon.
- volume
- container

- pressure
- The pressure is greater in the basketball because it contains more particles of gas in the same volume. More particles of gas hit the inside of the basketball. This makes the force on the inside surface increase, which produces greater pressure.
- B
- C
- Boyle's law
- As the balloon rises, the pressure of the gas decreases as the volume increases. The balloon would pop if it were completely filled before being released.
- Charles's law
- Charles's law

SECTION: CHANGES OF STATE

- A
- change of state
- melting, freezing, evaporation, condensation, sublimation
- No; gallium's melting point is lower than your body temperature. It would melt in your hand.
- melting point
- endothermic
- freezing point
- If energy is added, melting occurs. If energy is removed, freezing occurs.
- exothermic
- C
- D
- B
- A
- atmospheric pressure; boiling point
- condensation
- boiling point
- clump together
- It's called "dry ice" because it doesn't melt. It changes from a solid directly into a gas through sublimation.
- sublimation
- temperature
- change of state