

# Chapter Review

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## USING KEY TERMS

For each pair of terms, explain how the meanings of the terms differ.

1. *solid* and *liquid*

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2. *Boyle's law* and *Charles's law*

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3. *evaporation* and *boiling*

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4. *condensation* and *sublimation*

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## UNDERSTANDING KEY IDEAS

### Multiple Choice

- \_\_\_\_\_ 5. Which of the following statements best describes the particles of a liquid?
- a. The particles are far apart and moving fast.
  - b. The particles are close together but moving past each other.
  - c. The particles are far apart and moving slowly.
  - d. The particles are closely packed and vibrating in place.
- \_\_\_\_\_ 6. Which of the following statements describes what happens as the temperature of a gas in a balloon increases?
- a. The speed of the particles decreases.
  - b. The volume of the gas increases, and the speed of the particles increases.
  - c. The volume of the gas decreases.
  - d. The pressure of the gas decreases.
- \_\_\_\_\_ 7. Boiling points and freezing points are examples of
- a. chemical properties.
  - b. physical properties.
  - c. energy.
  - d. matter.



Chapter Review *continued***MATH SKILLS**

15. Kate placed 100 mL of water in five different pans, placed the pans on a windowsill for a week, and measured how much water evaporated from each pan. Draw a graph of her data, which is shown below. Place surface area on the x-axis and volume evaporated on the y-axis. Is the graph linear or nonlinear? What does this information tell you?

| Pan number                      | 1  | 2  | 3  | 4  | 5  |
|---------------------------------|----|----|----|----|----|
| Surface area (cm <sup>2</sup> ) | 44 | 82 | 20 | 30 | 65 |
| Volume evaporated (mL)          | 42 | 79 | 19 | 29 | 62 |

**CRITICAL THINKING**

16. **Concept Mapping** Use the following terms to create a concept map: *states of matter, solid, liquid, gas, changes of state, freezing, evaporation, condensation, and melting.*

**Chapter Review** *continued*

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17. **Analyzing Ideas** Water can be split to form two new substances, hydrogen and oxygen. Is this a change of state? Explain your answer.

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18. **Applying Concepts** After taking a shower, you notice that small droplets of water cover the mirror. Explain how this happens. Be sure to describe where the water comes from and the changes it goes through.

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19. **Analyzing Methods** To protect their crops during freezing temperatures, orange growers spray water onto the trees and allow it to freeze. In terms of energy lost and energy gained, explain why this practice protects the oranges from damage.

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20. **Making Inferences** At sea level, water boils at  $100^{\circ}\text{C}$ , while methane boils at  $-161^{\circ}\text{C}$ . Which of these substances has a stronger force of attraction between its particles? Explain your reasoning.

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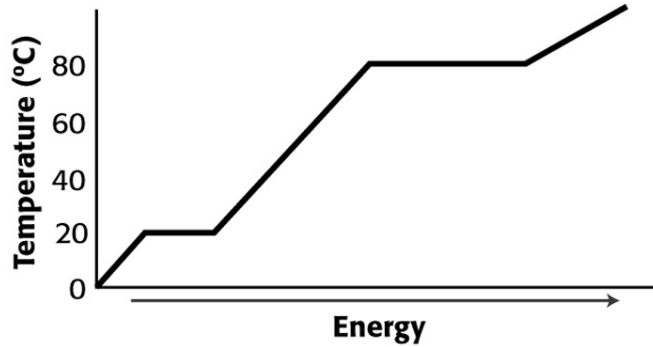
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### INTERPRETING GRAPHICS

Use the graph below to answer the questions that follow.



21. What is the boiling point of the substance? What is the melting point?

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22. Which state is present at 30°C?

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23. How will the substance change if energy is added to the liquid at 20°C?

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