CHAPTER 6

Standards Study Guide

The BIG Idea Matter can undergo a physical change from one state to another as an increase or decrease in thermal energy changes the motion of the particles.

Lesson 1 Solids, Liquids, and Gases

3.d, 3.e

Main Idea **The state of matter depends on the motion of its particles.**

- All particles in matter are moving in random motion.
- Particles in matter can exert attractive forces on each other.
- Solids have a fixed shape and volume.
- Particles in a solid vibrate about a fixed location.
- Liquids have a fixed volume but no fixed shape.
- Particles in a liquid can slide past each other.
- Gases have no fixed shape or volume.
- The particles in a gas move independently of each other.

- **gas** (p. 258)
- **liquid** (p. 257)
- **random motion** (p. 255)
- **solid** (p. 256)

Lesson 2 Changes in States of Matter

3.d, 3.e, 9.e, 9.g

Main Idea **Changes in energy can cause matter to change from one state to another.**

- Temperature is a measure of the average kinetic energy of all the particles in a material.
- Heating a material adds thermal energy, and cooling it removes thermal energy.
- Adding thermal energy can change either the state of matter or its temperature.
- A substance changes from a solid to a liquid at its melting point.
- A substance changes from a liquid to a solid at its freezing point.
- Vaporization can occur as boiling or evaporation.
- A change from a liquid to a gas occurs within a liquid at its boiling point.
- Condensation is the change from a gas to a liquid.
- Sublimation is the direct change of a solid to a gas.
- Deposition is the direct change from a gas to a solid.

- **boiling** (p. 267)
- **boiling point** (p. 267)
- **condensation** (p. 269)
- **deposition** (p. 272)
- **evaporation** (p. 268)
- **freezing point** (p. 266)
- **melting point** (p. 265)
- **sublimation** (p. 272)
- **temperature** (p. 262)
- **thermal energy** (p. 263)
- **vaporization** (p. 267)

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