

Changes of State (pages 76–81)

Changes Between Solid and Liquid (pages 77–78)

Key Concept: At its melting point, the particles of a solid substance are vibrating so fast that they break free from their fixed positions. At its freezing temperature, the particles of a liquid are moving so slowly that they begin to form regular patterns.

- When a solid changes to a liquid, the solid is **melting**. Solid ice melts in warm temperatures and forms liquid water.
- When a solid gains thermal energy, the particles of the solid move in place faster. When enough energy is added, the particles break away from their places.
- When a liquid changes to a solid, the liquid is **freezing**. Freezing is just the reverse of melting. Liquid water freezes in very cold temperatures and forms ice.
- When a liquid loses thermal energy, the particles of the liquid slow down. Over time, the particles move into fixed places. Then, the liquid becomes solid.

Answer the following questions. Use your textbook and the ideas above.

1. Read each word in the box. In each sentence below, fill in the correct word or words.

melting	freezing	thermal energy
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- a. When a liquid changes to a solid, the liquid is

_____.

- b. When a solid changes to a liquid, the solid is

_____.

Solids, Liquids, and Gases

2. Fill in the words in the table below to show the relationship between energy and the movement of particles.

Changes Between Solid and Liquid		
Change of State	Thermal Energy	Particles Move
Melting	added or gained	b. _____
Freezing	a. _____	slower

3. Is the following sentence true or false? When a liquid becomes a solid, it gains thermal energy. _____

Changes Between Liquid and Gas (pages 78–80)

Key Concept: Vaporization takes place when the particles in a liquid gain enough energy to form a gas. Condensation occurs when particles in a gas lose enough thermal energy to form a liquid.

- The change from a liquid to a gas is called **vaporization** (vay puh-rih ZAY shun). At high temperatures, water changes to water vapor. When a puddle of water disappears on a hot, sunny day, the water has changed to water vapor.
- When a liquid gains thermal energy, the particles of the liquid move faster. When enough energy is added, the particles spread far apart. Then, the liquid becomes a gas.