Chapter 4

ENRICHMENT

Use with Section 2

• Physical and Chemical Properties

Things Are Heating Up . . .

Burning a piece of wood causes a chemical change to occur. The matter in the wood changes to produce gases and charcoal. Heat can cause many kinds of chemical changes, but not all changes caused by heat are chemical changes. Often, heat causes a physical change.

Heating or cooling materials can change their state from solid to liquid, liquid to gas, or back again. These changes in the state of matter are physical changes. When water freezes or melts, a physical change has occurred.

Most materials expand when they are heated and contract as they cool. Two exceptions to this rule are water and rubber. These substances expand when they are cooled and contract when they are heated. For example, when water freezes, it expands to fill a larger space than the liquid water did.

Use this information and what you already know about matter to answer the questions below.

1. Why should you never put a full, sealed bottle of water in the freezer?

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2. Why are many bridges built with gaps (called expansion joints) in them?

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3. Think about it. . . why should you never pour hot liquids into a cold drinking glass?

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