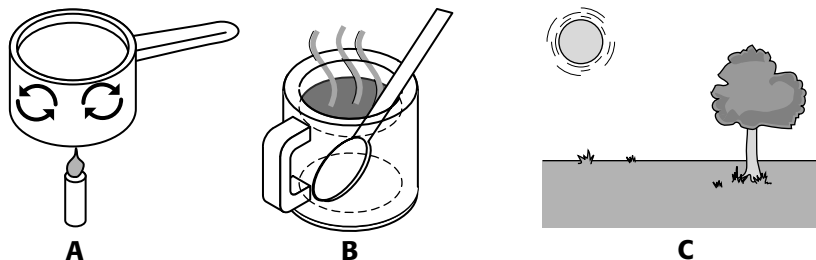


**S8P2.d** Describe how heat can be **transferred** through matter by the collisions of atoms (conduction) or through space (radiation). In a liquid or gas, currents will **facilitate** the **transfer** of heat (convection).

## STANDARD REVIEW

Heat is carried from one thing to another in several different ways. Heat can travel through space by radiation. When atoms bump into each other, they transfer heat; this transfer is called conduction. In liquids and gases, molecules of similar temperature move in groups, forming currents. This process is called convection. These currents help carry heat energy.

How would you determine the heat capacity of a substance using mass, specific heat, and temperature? The specific heat of a substance is the quantity of heat required to raise the temperature of a unit mass by  $1^{\circ}\text{C}$ . Specific heat is a characteristic of a particular substance, regardless of its mass. The heat capacity is a measure of the ability of an object to store heat. It is calculated by multiplying the mass of the object by its specific heat.



## STANDARD PRACTICE

**Directions** Using the Standard Review and what you have studied, read each question and circle the letter of the best response. Use a separate sheet of paper to record your response to open-response questions.

- Mercury has a specific heat of  $140 \text{ J/kg}\cdot\text{K}$ . How much energy is required to raise the temperature of 2 kg of mercury by  $1^{\circ}\text{C}$ ?**
  - $70 \text{ J}/^{\circ}\text{C}$
  - 140 J
  - 280 J
  - $280 \text{ J}/^{\circ}\text{C}$

- 2. Which of the following is NOT an use for radioactive isotopes?**
  - A. as tracers for diagnosing disease
  - B. as an additive to paints to increase durability
  - C. as a way to treat forms of cancer
  - D. as a way to study biochemical processes in plants
  
- 3. Two objects at different temperatures are in contact. Which of the following happens to their thermal energy?**
  - A. Their thermal energies remain the same.
  - B. Thermal energy passes from the cooler object to the warmer object.
  - C. Thermal energy passes from the warmer object to the cooler object.
  - D. Thermal energy passes back and forth equally between the two objects.
  
- 4. What occurrences in Earth's atmosphere, hydrosphere, and lithosphere demonstrate the process of heat convection, conduction, and radiation?**
  
- 5. Explain how heat affects matter during a change of state.**