

How Energy Moves

Grade 5 • SCIENCE • Students practice identifying how energy can transfer through collisions, heat flow, and simple electric circuits. • Standards: 4-PS3-2

Read each situation carefully and identify how energy is transferred. Write your answer on the line provided.

1. A hot bowl of soup sits on the kitchen table. The soup cools down while the air around it gets slightly warmer. How does energy move in this situation?
2. A soccer ball rolling across the grass bumps into a tennis ball that is sitting still. The tennis ball starts rolling. How did energy move?
3. Maria holds a cold ice pack against her warm arm after playing basketball. Her arm feels cooler. In which direction does heat energy flow?
4. A battery is connected to a small light bulb with wires, forming a complete circuit. The bulb lights up. How does energy move in this circuit?
5. Two marbles roll toward each other and collide. After the collision, both marbles roll away in opposite directions. What happened to the energy during the collision?
6. A metal spoon sits in a cup of hot cocoa. After a few minutes, the handle of the spoon feels warm. Explain how energy moved from the cocoa to the spoon handle.
7. A battery, two wires, and a buzzer are arranged in a circle with no gaps. The buzzer makes sound. What would happen to the energy transfer if one wire was disconnected?
8. A bowling ball moving at high speed hits stationary pins, causing them to scatter. The bowling ball slows down after the collision. Where did some of the bowling ball's energy go?
9. On a cold morning, Carlos wraps his cold hands around a warm mug of apple cider. After a minute, his hands feel warmer and the cider feels slightly cooler. Describe the complete energy transfer that occurred.

10. A complete circuit contains a battery, wires, a motor, and a small fan blade attached to the motor. When the circuit is closed, the fan spins. Trace the path of energy from its source to its final form.

Answer Key — How Energy Moves

For the teacher / parent. Do not distribute with the worksheet.

1. Energy moves from the hot soup to the cooler air. *(Heat energy always flows from warmer objects to cooler objects.)*
2. Energy transferred from the soccer ball to the tennis ball through the collision. *(Energy transfers between objects when they collide.)*
3. Heat energy flows from Maria's warm arm to the cold ice pack. *(Heat flows from the warmer object (arm) to the cooler object (ice pack).)*
4. Energy transfers from the battery through the wires to the light bulb. *(In a closed circuit, electrical energy flows from the battery through the circuit to the bulb.)*
5. Energy transferred between the marbles during the collision. *(When objects collide, energy is transferred from one object to another.)*
6. Heat energy flowed from the hot cocoa through the metal spoon to the cooler handle. *(Heat flows from hot to cold through the metal, which conducts thermal energy.)*
7. Energy would stop transferring and the buzzer would stop making sound because the circuit would be open. *(An open circuit breaks the path, stopping the flow of electrical energy.)*
8. Some of the bowling ball's energy transferred to the pins, causing them to move. *(Energy transferred from the moving ball to the pins during the collision, which is why the ball slowed down.)*
9. Heat energy flowed from the warmer cider through the mug to Carlos's cooler hands until the temperatures became more similar. *(Heat transfers from hot to cold until thermal equilibrium is approached.)*
10. Energy starts in the battery, transfers through the wires to the motor, and the motor converts it to motion energy that spins the fan blade. *(Electrical energy from the battery flows through the closed circuit to the motor, which converts it to mechanical energy.)*