

Energy on the Move

Trace energy through motion, materials, and a simple circuit.

4.8 "Force, motion, and energy. The student knows that energy is everywhere and can be observed in cycles, patterns, and systems. The student is expected to: investigate and identify the transfer of energy by objects in motion, waves in water..."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each phrase that tells energy moving or being transferred, circle each conductor or insulator, and number 1, 2, and 3 beside the three steps electrical energy takes around the closed circuit.

Maya's Energy Investigation

- ① During a class investigation, Maya rolled a steel marble into a wooden block. The moving marble transferred energy to the block, and the block slid across the desk. At the water tray, she tapped one edge. Waves traveled across the water and made a floating cork bob. When Maya struck a tuning fork, its vibrations transferred energy through the air as sound to her ears.
- ② Heat is thermal energy moving from a warmer object to a cooler one. A metal spoon is a thermal conductor, so heat can move through it easily. A foam cup is a thermal insulator, so it slows heat transfer. Copper wire is an electrical conductor. Its material lets electrical energy move through it. The plastic coating around the wire is an electrical insulator that helps keep the energy on its path.
- ③ To light a tiny bulb, Maya connected a battery, wires, and bulb in one unbroken loop. Electrical energy traveled from the battery through a wire, through the bulb's filament, and back to the battery. This closed path is called a circuit. The filament resisted the flow of electrical energy and became hot. Because it became very hot, it produced thermal energy and light. A gap in the loop stopped the bulb from lighting.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 A rolling toy car bumps an empty paper cup. What energy transfer could make the cup move?

2 A drummer hits a drum. How can energy from the drum reach a listener?

3 Choose materials for two jobs: a handle that slows heat from a hot pan and a wire that carries electrical energy. Name the needed material type for each job.

4 A bulb circuit has a break in one wire. Predict what happens to the bulb and explain why.

3 YOUR TURN _____ Your own words

Draw a three-panel sketch of a battery-and-bulb circuit. In Panel 1, show a closed path with arrows, in Panel 2, label a conductor and an insulator, and in Panel 3, show and label the bulb's light and thermal energy.

PART 1 • READ AND MARK

Underline each phrase that tells energy moving or being transferred, circle each conductor or insulator, and number 1, 2, and 3 beside the three steps electrical energy takes around the closed circuit. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	A rolling toy car bumps an empty paper cup. What energy transfer could make the cup move?	The moving toy car transfers energy to the paper cup, causing the cup to move.
2	A drummer hits a drum. How can energy from the drum reach a listener?	The drum vibrates, transferring energy through the air as sound to the listener's ears.
3	Choose materials for two jobs: a handle that slows heat from a hot pan and a wire that carries electrical energy. Name the needed material type for each job.	The handle should use a thermal insulator. The wire should use an electrical conductor.
4	A bulb circuit has a break in one wire. Predict what happens to the bulb and explain why.	The bulb will not light because the break makes the path open. Electrical energy cannot travel around the complete closed circuit.

PART 3 • YOUR TURN (SAMPLE ANSWER)

Panel 1: A battery connects by copper wires to a bulb and back to the battery, with arrows around the unbroken loop. Panel 2: Copper wire is the conductor, and its plastic coating is the insulator. Panel 3: The hot bulb filament produces light energy and thermal energy.

Accept equivalent examples that correctly show energy transferred by moving objects, water waves, or sound vibrations. For the circuit sketch, require a complete loop, a correctly identified conductor and insulator, and labels for both light and thermal energy at the bulb.