

Bulb Bridge Detectives

Use a simple circuit to investigate common materials.

S5P2.c "Plan and carry out investigations on common materials to determine if they are insulators or conductors of electricity."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline the actions that make the test fair, and circle the two bulb observations that help you classify a material.

Testing a Circuit Gap

- ① Electricity moves through a complete path called a circuit. In a simple test circuit, a battery pack, wires, and a small bulb are connected with a gap between two wire ends. A test material can bridge that gap. If the bulb lights, the material lets electric current move through it. This material is a conductor. If the bulb stays off, it is an insulator.
- ② To make a fair investigation, use one low-voltage battery pack and the same bulb and wires for every trial. Test only one material at a time. Touch each sample to both wire ends in the same way, then observe the bulb. A metal paper clip may complete the circuit, but a plastic ruler may not. Record each observation before changing to the next sample.
- ③ Do not connect a test circuit to a wall outlet. Use classroom battery packs only, and ask an adult before testing an unknown item. Results show what happened in that circuit, so repeat a trial if a wire slips or the bulb does not work. A material that lights the bulb in repeated trials is a conductor. A material that does not light it is an insulator.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 You want to test a steel key. Where should you place the key in the circuit?

2 What three parts of the test circuit should stay the same during every trial?

3 A sample lights the bulb in repeated trials. How should you classify the sample?

4 During one trial, the bulb stays off and you notice that a wire is loose. What should you do before classifying the material?

3 YOUR TURN _____ Your own words

Plan and carry out a test of three safe common materials using the same battery pack, bulb, and wires each time. In the table, record your prediction, what the bulb does, and the material's classification.

MATERIAL	PREDICTION	BULB OBSERVATION	CLASSIFICATION

PART 1 • READ AND MARK

Underline the actions that make the test fair, and circle the two bulb observations that help you classify a material. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	You want to test a steel key. Where should you place the key in the circuit?	Place the key across the gap so it touches both wire ends.
2	What three parts of the test circuit should stay the same during every trial?	Use the same low-voltage battery pack, bulb, and wires.
3	A sample lights the bulb in repeated trials. How should you classify the sample?	It is a conductor.
4	During one trial, the bulb stays off and you notice that a wire is loose. What should you do before classifying the material?	Fix the loose wire and repeat the trial before classifying the material.

PART 3 • YOUR TURN (SAMPLE ANSWER)

MATERIAL	PREDICTION	BULB OBSERVATION	CLASSIFICATION
Aluminum foil	conductor	Bulb lights	conductor
Wooden craft stick	insulator	Bulb stays off	insulator
Plastic bottle cap	insulator	Bulb stays off	insulator

Accept any safe common materials and predictions. Classifications should match repeated bulb observations in a working circuit, with the same battery pack, bulb, and wires used for each trial.