

Bulb Test Detectives

Classify materials by whether they allow electric current to move.

SC.5.P.11.2 "Identify and classify materials that conduct electricity and materials that do not."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each object that made the bulb light and circle each object that left the bulb dark, so you can sort conductors and nonconductors.

Elena's Circuit Test

- ① During a makers club challenge, Elena built a simple tester with a battery, a bulb, and two wire ends. She placed one object at a time between the wire ends. If electric current could move through the object, the loop was complete and the bulb lit. If current could not move through it, the bulb stayed dark. This test helped her sort materials by how they carried electricity.
- ② The copper penny, aluminum foil, and steel paper clip made the bulb light. Each contains a metal that lets electric current move easily. Elena classified these objects as conductors. Metal wires are often used inside circuits for the same reason. A conductor can provide a path for current, but the battery and the rest of the closed circuit are still needed to light the bulb.
- ③ The rubber band, plastic spoon, and dry wooden craft stick left the bulb dark. Elena classified them as nonconductors, also called insulators. Plastic and rubber are often used as coverings on handles and wires because they do not let current move through easily. Dry wood is also a nonconductor, although wet or dirty wood can allow some current to move. Material type, not an object's shape, guided Elena's sorting.

2

ANSWER WITH EVIDENCE

Use the passage

1

Which three objects did Elena classify as conductors?

2

Classify the plastic spoon and the steel paper clip. What evidence from the test supports each classification?

3

Why should Elena sort the objects by material type instead of by shape?

4

A wire has metal inside and plastic covering the outside. Classify the metal and the plastic as conductors or nonconductors.

3

YOUR TURN

Your own words

Fill in the table with two conductors and two nonconductors that are not named in the passage. For each item, explain how its material supports your classification.

ITEM OR MATERIAL	CLASSIFICATION	REASON

PART 1 • READ AND MARK

Underline each object that made the bulb light and circle each object that left the bulb dark, so you can sort conductors and nonconductors. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	Which three objects did Elena classify as conductors?	The copper penny, aluminum foil, and steel paper clip.
2	Classify the plastic spoon and the steel paper clip. What evidence from the test supports each classification?	The plastic spoon is a nonconductor because it left the bulb dark. The steel paper clip is a conductor because it made the bulb light.
3	Why should Elena sort the objects by material type instead of by shape?	Material type determines whether current can move through an object. An object's shape does not determine whether it conducts electricity.
4	A wire has metal inside and plastic covering the outside. Classify the metal and the plastic as conductors or nonconductors.	The metal is a conductor. The plastic covering is a nonconductor, or insulator.

PART 3 • YOUR TURN (SAMPLE ANSWER)

ITEM OR MATERIAL	CLASSIFICATION	REASON
Silver wire	Conductor	Silver is a metal that allows electric current to move easily.
Brass key	Conductor	Brass is a metal, so it conducts electricity.
Ceramic mug	Nonconductor	Ceramic does not allow electric current to move easily.
Cotton string	Nonconductor	Dry cotton does not allow electric current to move easily.

Accept conductor or nonconductor classifications when the student accurately identifies the material and gives a reasonable explanation based on whether current can move through it. Accept insulator as another name for nonconductor.