

Electric Circuits

Grade 4 • SCIENCE • Analyzing simple series circuits and distinguishing conductors from insulators based on whether materials allow electric current to flow. • Standards: 4-PS3-2

Read each question about electric circuits carefully. Decide whether the circuit will work, whether the bulb will light, or whether the material is a conductor or insulator.

1. A battery is connected to a light bulb with copper wires in a complete loop. Will the bulb light up?
2. Maya tests a wooden stick by placing it in a circuit between the battery and bulb. The bulb does not light. Is wood a conductor or an insulator?
3. A circuit has a battery, wires, and a bulb, but one wire is not connected to the battery. Will the bulb light?
4. Carlos puts a metal paper clip into a circuit to test it. The bulb lights up brightly. Is the paper clip a conductor or an insulator?
5. A simple circuit has a battery, two wires, and a buzzer all connected in one loop. A plastic spoon is placed between the battery and buzzer. Will the buzzer make sound?
6. Liam builds a circuit with a battery, wires, and a small motor. He tests an aluminum foil strip by connecting it in the circuit. The motor spins. Is aluminum foil a conductor or an insulator?
7. A circuit contains a battery, copper wires, a switch, and a bulb all in one path. When the switch is open (off), will the bulb light?
8. Emma connects a battery to a bulb using one copper wire and one cotton string. Will the bulb light up?
9. A circuit has a battery, wires, and a bulb. When a steel nail is placed in the circuit, the bulb lights. When a rubber eraser replaces the nail, the bulb goes out. Which material is the insulator?

10. Jordan builds a circuit with a battery, three copper wires, and a small light. One wire connects the battery to the light, another connects the light back to the battery, and the third wire is lying on the table not connected to anything. Will the light turn on?

Answer Key — Electric Circuits

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

1. Yes (*The circuit is complete and copper is a conductor, so electricity flows and the bulb lights.*)
2. Insulator (*The bulb does not light because wood does not allow electricity to flow through it.*)
3. No (*The circuit is not complete because one wire is disconnected, so no electricity can flow.*)
4. Conductor (*The bulb lights because the metal paper clip allows electricity to flow through it.*)
5. No (*Plastic is an insulator and does not allow electricity to flow, so the buzzer will not work.*)
6. Conductor (*Aluminum foil allows electricity to flow, making it a conductor.*)
7. No (*An open switch breaks the circuit path, stopping the flow of electricity.*)
8. No (*Cotton string is an insulator, so the circuit is not complete and electricity cannot flow.*)
9. Rubber eraser (*The rubber eraser does not allow electricity to flow, making it an insulator.*)
10. Yes (*The two connected wires form a complete circuit loop, so the light will turn on. The third wire does not affect the circuit because it is not connected.*)