

Electricity

Conductors and Insulators

(Lesson 7)

Background: (What you're studying today) Now that you have some understanding of circuits and how they work, you will be looking at the parts of a circuit. **Conductors** and **Insulators** are important parts of a circuit. **Conductors** are materials in a circuit that **allow electricity to travel through** to the other side of the circuit. **Insulators** are materials that the **electricity cannot pass through**. Today, you will be testing a variety of materials to find out if they are conductors or insulators. Remember, the electricity must flow through the material if it is a conductor. If the material is an insulator, it will stop the flow of electricity.

Question: (What you want to find out) Which materials will work as conductors and allow the electricity to pass through and light the bulb, and which materials will work as insulators by stopping the flow of electricity?

Hypothesis: (Prediction) I think the materials marked "On" are conductors and will let the electricity pass through to turn the light on. The materials marked "Off" are insulators and will not allow the electricity to pass through to light the bulb. (Fill in "On" or "Off" for each item.)

Material	On/Off	Material	On/Off	Material	On/Off
1. Golf Tee		6. Plastic Screen		11. Marble	
2. Soda Straw		7. Chalk		12. Pipe Cleaner	
3. Brass Screw		8. Pencil Stub		13. Copper Wire	
4. Paper Clip		9. Brass Fastener		14. Aluminum Wire	
5. Aluminum Screen		10. Wire Nail			

Materials: (What you'll need) 1 circuit tester (see page 17) bag of materials

Procedure: (Numbered steps needed to complete the investigation)

- Build the circuit tester as shown on page 17 of the Student Activity Book and test it to make sure it is working. The light should go on when the bare ends of the two loose wires touch.
- Touch the golf tee with the bare ends of both loose wires and observe whether or not the electricity passes through the golf tee and lights up the bulb.
- If the light goes on, the electricity is passing through the golf tee and the golf tee is a conductor. If the light does not go on, the electricity has been stopped by the golf tee. It is an insulator. Record your data.
- Repeat steps 1-3 with the other 13 materials.

Data: (What happened)

Material	On/Off	Material	On/Off	Material	On/Off
1. Golf Tee		6. Plastic Screen		11. Marble	
2. Soda Straw		7. Chalk		12. Pipe Cleaner	
3. Brass Screw		8. Pencil Stub		13. Copper Wire	
4. Paper Clip		9. Brass Fastener		14. Aluminum Wire	
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Conclusion: (What you learned) My hypothesis was **proven** **disproven** because these materials were conductors of electricity and allowed the bulb to turn on.

These items acted like insulators to stop the flow of electricity and keep the bulb off.

Discussion: (What else can you say?)

1. Sort all the materials that worked as conductors into one pile and all the materials that worked as insulators into another pile. Look carefully at the two piles.

- How are the items in the conductor pile alike?
- Do the materials in the insulator pile have anything in common?

2. In general, what kinds of materials do you think would make good conductors of electricity?

