

## Charge It!

### Cross-Curricular Focus: Physical Science



Many people do not really understand how **electricity** works. They just know that when they need power to run an appliance, they have to plug it into the wall.

Energy comes from charged particles that are moving around. Have you ever rubbed a balloon against your clothes to make it stick? Have you held a balloon or a comb over someone's head to watch his hair stand up straight? That's static electricity and electrically charged particles. But these particles don't do much unless we control their energy.

**Static** electricity builds up on certain materials. Other materials, though, let electrical charges flow through them. This creates an electric current. Electric current travels very easily through metals like copper, gold, silver, and aluminum. We call materials that electric current flows through easily **conductors**. Water is also a good conductor of electricity. That's why electrical charges can travel through people, too. There is water in every cell of a person's body. Electric current can travel through these cells.

Since metal is a good conductor of electricity, electrical wires are often made out of metal. Wiring can also be made out of non-metal materials, such as graphite.

Conductors have to be enclosed in a material that is an **insulator**. Insulators do not allow electric current to pass through them. The rubber coating that you see on electrical cords covers the metal. The electric current stays inside the cord so we can direct the current to the appliance that needs power. Other good insulators are glass and some plastics.

Name: \_\_\_\_\_

Answer the following questions based on the reading passage. Don't forget to go back to the passage whenever necessary to find or confirm your answers.

1) What are two materials that are good conductors of electricity?

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2) How is static electricity different from electric current?

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3) What could happen if the rubber coating on a power cord is damaged?

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4) Is water a conductor or an insulator?

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5) In your own words, explain the difference between a conductor and an insulator.

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Name: Key

Answer the following questions based on the reading passage. Don't forget to go back to the passage whenever necessary to find or confirm your answers.

**Actual wording of answers may vary.**

1) What are two materials that are good conductors of electricity?

**metal and water**

2) How is static electricity different from electric current? **Static electricity is charged particles moving around in the air. Electric current is the controlled flow of charged particles.**

3) What could happen if the rubber coating on a power cord is damaged?

**The electric current could leave the conductor and not go where we want it to go.**

4) Is water a conductor or an insulator?

**a conductor**

5) In your own words, explain the difference between a conductor and an insulator.

**A conductor allows electric current to pass through it easily. An insulator does not.**