

Electrical activity card



Grades 4–6

This electrical safety activity card is intended to be used along with our age-appropriate booklets, teacher's guides and other resources located at e-smartonline.net/xcelenergy.

Safety quiz



Test your students' electrical safety IQ. Download and print our age-appropriate safety test online at e-smartonline.net/xcelenergy.

It quizzes students on safety issues around lightning, outlets, appliances, power lines and more. Discuss and compare their responses to the correct answers. Then, learn more about these topics by ordering our booklets, reading them with your class and performing the activities.

Fun Fact

A bolt of lightning can measure up to three million (3,000,000) volts and lasts less than one second. It has enough electricity to power 200,000 homes.

Vocabulary

Put the following words on the board and discuss what they mean. Go further with your class by discovering more about these topics online at e-smartonline.net/xcelenergy.

- Electricity
- Circuit
- Conductor
- Insulation
- Generation
- Watt
- Ground Fault Circuit Interrupters (GFCI),
- Transformer
- Shock

Joke

Q: Why did the foolish gardener plant a light bulb in the ground?

A: He thought he would grow a power plant.

Experiment

You've seen pictures or videos of powerful electromagnets at junkyards. When the electricity is turned on, the electromagnet picks up metal. Then, when the electricity is turned off, the metal drops to the ground. You can make a small version of an electromagnet in the classroom. Please make sure an adult is supervising this experiment.



MATERIALS

- One 1.5 volt dry battery
- One large nail
- 36 inches of thin insulated copper wire
- Wire cutter

DIRECTIONS

1. Wrap the wire around the nail, starting about a half inch from the top.
2. Wind the wire, without overlapping, to a half inch from the bottom. Leave 6 to 12 inches of unwound wire at each end.

3. Have the teacher strip 1 inch of insulation from each end of the wire.
4. Connect the bare ends of the wire to the battery. When the current is passing through the coil, the nail will be turned into an electromagnet that can pick up paper clips or other small metal objects.
5. Disconnect one of the wires from the battery and see how the nail no longer acts as a magnet.

Brought to you by:



Electrical activity card



Grades K–3

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Safety quiz

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Joke

Q: Do wind turbines like baseball?

A: Oh yes, they're big fans.

Fun fact

Electricity travels at the speed of light, which is more than 186,000 miles per second. If you had a lamp on the moon connected to a switch in your house, it would take only 1.26 seconds for the lamp to turn on, even though it's nearly 240,000 miles way.

Vocabulary

Put the following words on the board and discuss what they mean. Go further with your class by discovering more about these topics online at e-smartonline.net/xcelenergy.

- Electricity
- Power plant
- Power outage
- Lightning

- Plug
- Outlet
- Power line
- Electric appliance

Experiment

This experiment is a good way to introduce the idea of electrical circuits to young children—by comparing the simple circuit of a battery power source, aluminum foil and light bulb to a bigger circuit of a power plant, power line and light in your home. Also, it's a great way to engage in discussion about the importance of electricity in our daily lives. Talk about the need of having a flashlight that works during an outage, as well as how we use electricity every day including flashlights, TVs, stoves and refrigerators.



MATERIALS

- One new battery
- Flashlight bulb
- Aluminum foil

DIRECTIONS

1. Cut or tear a small strip of aluminum foil. It should be about an inch longer than the height of the battery.
2. Put one end of the aluminum foil strip on the bottom of the battery (the flat end). Hold it in place by pressing the bottom of the battery against a flat surface.
3. Place the tip of the flashlight bulb on the top of the battery, making sure it touches the little bump.
4. Take the other end of the aluminum foil and touch it to the side of the bulb (the screw-in part).

5. Does the bulb light up? If it does, then the bulb is not burned out and you know the battery in your flashlight is probably dead. If the bulb doesn't light up, then you know the bulb is burned out.
6. The battery could also be dead so repeat the experiment, using the battery from your flashlight and a flashlight bulb that you know works. If the bulb doesn't light up, then you know that battery is also dead.

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