

LETTER TO FAMILY

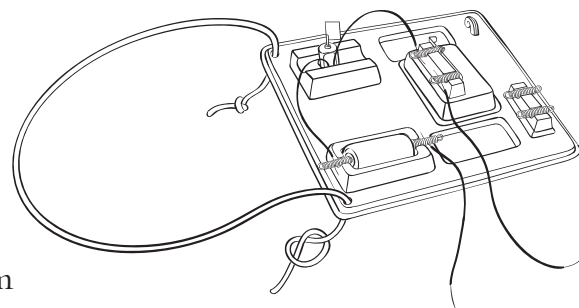
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Cut here and glue letter onto school letterhead before making copies.

Science News

Dear Family,

Our class is beginning a new science unit using the **FOSS Energy and Electromagnetism Module**. We will investigate energy, build electric circuits powered by D-cells (flashlight batteries), and explore electromagnetism and light.



You can increase your child's understanding and interest in energy and electromagnetism by asking him or her to talk about the investigations we are doing at school. Also, watch for Home/School Connection sheets that I will be sending home from time to time. These activities describe ways the whole family can look more closely at energy, energy conservation, and the uses of electricity and magnetism around your home. You may find energy at work running different appliances, magnets holding notes on the refrigerator or securing cabinets doors, and electromagnets in motors and speakers. It can be lots of fun to make inventories of magnets and electric appliances.

One thing we will stress in our study of energy and electromagnetism at school is safety. You may want to review your home safety rules for magnetism and electricity as well.

- Never put any object other than a certified plug into wall sockets.
- Do not open the case of an electrical appliance that has a cord and plug. Even if it is not plugged in, there is a risk of shock from static electricity.
- Do not bring magnets near computers or credit cards.

We are looking forward to many weeks of exciting investigations with energy and electromagnetism. If you have any questions or comments, or have expertise you would like to share with the class, please drop me a note. You can get more information on this module by going to www.FOSSweb.com.

Sincerely,

HOME/SCHOOL CONNECTION

Investigation 1: Energy and Circuits

Lightbulbs are rated by the amount of energy they consume as they work. The unit of electric power is the watt. Just because a lightbulb uses more electric power does not mean it is brighter.

Incandescent bulbs	Compact fluorescent bulbs	LED lamps
Energy inefficient	Energy efficient	Very energy efficient
Ninety percent of energy consumed is converted into wasted heat.	Initial cost is higher, but long life span saves money; less heat waste.	Price is high. No heat waste.
Short-lived and expensive to maintain.	Contains mercury so must be disposed of properly.	Very long service life. No toxic materials.

With the help of a grown-up, record the watt rating for each bulb you can easily check in your home. You may be surprised by the low wattage of the newer compact fluorescent bulbs (CFLs). Add up the total watts used by the lights you are able to check.

Safety Note: Only check bulbs that are turned off and cold.

Lightbulb location	Kind of bulb	Watt rating
Total watts		

HOME/SCHOOL CONNECTION

Investigation 2: Series and Parallel

Safety Note: Ask an adult to help you with this activity. Be sure to follow safety rules for electricity. Just look, don't touch!

If you have an old electronic toy or device such as a retired radio, calculator, remote control, walkie-talkie, or other small device that works on electricity, take a look inside. Look for advanced circuits to see where your knowledge of electricity can lead you.

Safety Rules

- Get approval from a parent before taking a device apart.
- Make sure the device is not working any more, does not have a cord or plug, and check that batteries are removed.
- Get help opening the case. Remember, safety first—don't force anything.
- Do not take apart large appliances, such as TVs.

Things to Look For and Do

1. You might be surprised to find very few wires. What kind of conductors are used in modern circuits in place of wires? Can you draw an example?

2. Can you find any familiar components like motors and lights? What function do they serve in the device?

NOTE: If you don't have an old electric device to take apart, draw a picture of **a circuit** with two lightbulbs in parallel **in series with** a third lightbulb. Think about it . . . it can be done.

HOME/SCHOOL CONNECTION

Investigation 3: The Force of Magnetism

Find out how magnets are used around the home. Some ways might be to hold kitchen cabinets closed, to keep a refrigerator door shut, or to stick things to the refrigerator door. Talk with your family about the magnets.

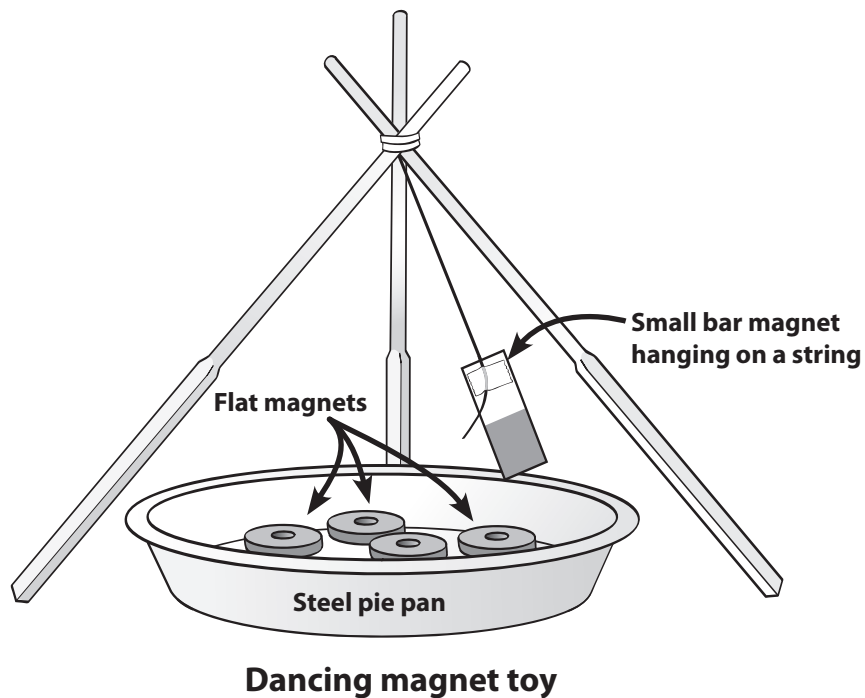
Can you think of another way to use magnets around the house?

Can you invent a magnet game?

Talk over some ideas with your family and try out some games, if you can.

Draw a picture of your invention to share with the class, and write a paragraph explaining what it does.

Here's one idea for a magnetic dancer.



HOME/SCHOOL CONNECTION

Investigation 4: Electromagnets

Safety Note: Ask an adult to help you with this activity. Be sure to follow safety rules about electricity. Just look, don't touch!

Home electricity is provided by the electric utility company in your community. One large wire brings the electricity into your home. The wire can come to your home from a power line strung on poles, or from a cable underground. Can you find where the main electricity wire comes to your home?

You might have several wires coming to your home. Which one is the electricity? The trick is to look for the electric meter. The main wire always comes to the electric meter first. Why is there a meter on the electric line?

The electricity next goes to a fuse box or circuit-breaker box. The electricity divides and goes to several locations in your home. Each fuse or circuit breaker is included in a different circuit. How many circuits are in your home?

Wires are hidden inside the walls of your home. We connect our electric lights and appliances to the electric power in the walls by plugging them into electric sockets. How do you think plugging a lamp into a socket completes a circuit to light the lamp? Draw a picture to show how you think it might work.

HOME/SCHOOL CONNECTION

Investigation 5: Light Insight

Safety Note: Never look directly at the Sun or reflect sunlight in a person's eyes. Both can damage eyes.

The Sun seems to move across the sky because Earth is turning on its axis. You can use a mirror to observe the movement. Here's how.

Find a window where light from the Sun shines in. Position a mirror to reflect sunlight onto a wall. Tape a piece of paper there. Mark the center of the reflection of the Sun. Wait 10 minutes and mark the center of the reflection again. Did the reflection move? Why?

