

LETTER TO PARENTS

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SCIENCE NEWS

Dear Parents,

Our class is beginning a new science unit using the **FOSS Environments Module**. We will investigate several different plants and animals to discover the environments that support their well-being, and attempt to determine the optimum environments for some of the organisms.

The news is full of discussions of the environment—environmental issues, environmental protection, environmental activism, and more. Environmental issues are complex because environments are complex. Our studies will not range into issues, but will deal with the more fundamental question: What is an ecosystem?



Ecosystems can be analyzed in terms of the nonliving components (temperature, moisture, light, and so forth) and living components (organisms). This analysis can take time and often requires close observation and interpretation of results. The interactions among the organisms and the interactions of the organisms with the nonliving environment is the study of ecology. We expect to work with lots of plants and animals to start understanding how organisms flourish when provided with an environment that is just right for them.

Watch for Home/School Connection sheets that I will be sending home from time to time. The activities described on them suggest ways you and your child can extend the environmental inquiry into your home, neighborhood, and community. If possible, take a family field trip to a local aquatic environment to see what lives there and to ponder the environmental factors that affect the organisms there. At another time you might set up a specialized environment in your home to raise Sea Monkeys (brine shrimp), or embark on a minisafari, looking into microenvironments to see what insects and their kin are living nearby. Perhaps your discoveries will start some family discussions about environments and ecosystems.

We're looking forward to weeks of fun with organisms and their environments! You can get more information on this module by going to www.fossweb.com/CA. If you have questions or comments, or have expertise you would like to share with the class, please drop me a note.

HOME/SCHOOL CONNECTION

INVESTIGATION 1: TERRESTRIAL ENVIRONMENTS

THE LIVING AND NONLIVING ENVIRONMENT

Make a list of the living and nonliving environmental factors found in and around your home.

LIVING

NONLIVING

Discuss the list with a family member. Does he or she agree? Select one item you disagree on. Write a brief explanation telling why you think the environmental factor is living or nonliving.

HOME/SCHOOL CONNECTION

INVESTIGATION 2: ISOPODS AND BEETLES

INSECT SAFARI

Insects live just about everywhere. Go on a safari in and around your home or into the neighborhood to look for insects. Hopefully, you will discover insects that are fun and interesting to observe, like butterflies, bees, moths, grasshoppers, and ladybugs. On the other hand, you could see less welcome insects, like ants, flies, mosquitoes, and roaches.

You might also encounter some small animals that are not insects, but live in the same environments, like centipedes, millipedes, isopods, spiders, and worms.

Safety Note: While most insects, spiders, and other small animals are harmless, some can sting (ants, wasps, bees), and some can bite (spiders, centipedes). Observe the animals without touching them (for your safety) and without disturbing them (for their safety and well-being).

Organize the results of your safari in one of two ways.

- If you find only one or two critters, identify them and describe their environments as best you can. Try to identify both living and nonliving factors in the organisms' environments.
- If you go to an environment and find a number of insects and their kin living there, write a description of the environment (e.g. dark, moist, cool). Then list (or draw) all the different animals living there.

HOME/SCHOOL CONNECTION

INVESTIGATION 3: AQUATIC ENVIRONMENTS

EXPLORING AQUATIC ENVIRONMENTS

Aquatic environments are home to fascinating and diverse organisms. Aquatic systems can be as grand as a lake or ocean, or as ordinary as a mud puddle or neglected bucket of water. If you have the opportunity, visit an aquatic environment, like a beach, pond, stream, or canal. Use a collecting net to see what plants and animals are living in, on, and near the water. Draw pictures to share with the rest of your class.

If that is not possible, search around your home and neighborhood for miniaquatic systems, like puddles, gutters with standing water, or buckets left out to fill with water. Get down close and look carefully. Maybe scoop some water into a white-bottomed container like half of a milk carton or a plastic bowl.

1. Describe how one plant or animal is influenced by a **nonliving** factor in the aquatic environment.

2. Describe how one plant or animal is influenced by a **living** factor in the aquatic environment.

3. Describe an example of environmental preferences that you observed in the aquatic environment.

If no natural aquatic environments are easy to get to, get a map of the area in which you live. Locate the aquatic environments nearby. List them in groups based on the kind of aquatic environments you locate: stream environments, lake environments, and so forth. Use the reverse side of this paper to make your lists.

HOME/SCHOOL CONNECTION

INVESTIGATION 4: BRINE SHRIMP HATCHING

SEA MONKEYS UNVEILED!

The novelty critters advertised as Sea Monkeys in the back of some popular comic books and magazines are actually brine shrimp. You now know the optimum concentration of salt for hatching the brine shrimp eggs. But what is the proper environment to keep them alive and growing? Read on.

In their natural environment, which is salt lakes (like the Great Salt Lake or Mono Lake) or ocean bays (like San Francisco Bay), the mix of salts is fairly complex. The mix is certainly more complex than just table salt in water. Biologists who study brine shrimp have come up with a recipe for a more complete saltwater environment for the shrimp.

Metric units, using liter beaker and metric measuring spoons

1 liter	pure water
20 ml	rock salt (or other noniodized salt)
5 ml	Epsom salts
2 ml	baking soda

English units, using measuring cup and teaspoon (1 teaspoon is about 5 ml)

4 cups	pure water
4 teaspoons	rock salt (or other noniodized salt)
1 teaspoon	Epsom salts
1/2 teaspoon	baking soda

Stir up this brew. Let it sit in a container (like a cutoff 2-liter soda bottle) for a day or so to mellow. After the brine shrimp hatch, dump them into the new environment, hatching water and all.

Mark the water level with a piece of tape or a permanent-pen marker. As the sea level goes down (evaporation), bring it back to starting level by adding plain water. Why plain water? Only the water evaporates, not the salts. If you renewed the level with salt water, soon the salt concentration would be too great for the brine shrimp to live.

You can keep the colony in a sunny window. The shrimp will need to eat. So dissolve a tiny pinch (I do mean a very little bit) of yeast in a little water. Put a tiny bit of the solution into the brine shrimp container. Give the whole business a gentle stir to distribute the yeast throughout the environment. You can store the remaining yeast solution in the refrigerator. Feed the brine shrimp a bit of yeast solution every few days. Don't get the water too cloudy.

Good luck! But don't expect your Sea Monkeys to hang by their tails or eat bananas. As you now know, they are aquatic crustaceans, not arboreal mammals (animals that live in trees).

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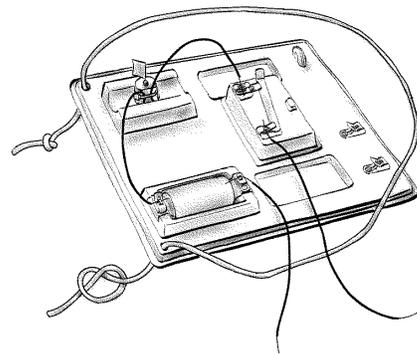
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SCIENCE NEWS

Dear Parents,

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

You can increase your child's understanding and interest in magnetism and electricity by asking him or her to talk about the investigations we are doing at school. Also, watch for Home/School Connections sheets that I will be sending home from time to time. These activities describe ways the whole family can look more closely at magnetism and electricity around your home. You may find **magnets** holding notes on the refrigerator or keeping cabinets closed; **electricity** powering lamps, telephones, and flashlights; and **electromagnets** in motors and speakers. It can be lots of fun to make inventories of magnets and electric appliances.



To help your child investigate circuitry, you could provide an old broken small device for him or her to take apart. You can explore the device together to discover how it is wired and where connections are made.

One thing we will stress in our study of magnetism and electricity 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 electric device that has a power cord.
- Do not bring magnets near computers, videotapes, or audio recordings.

We are looking forward to many weeks of exciting investigations with this Magnetism and Electricity Module. If you have any questions or comments, or have expertise you would like to share with the class, please drop me a note.

To learn more about the FOSS Magnetism and Electricity Module and how it is aligned to the California Science Content Standards, go to www.fossweb.com/CA and click on the grade four modules. There are a number of resources available on-line for you and your child.

HOME/SCHOOL CONNECTION

INVESTIGATION 1: THE FORCE

MAGNETS AT HOME

How are permanent magnets used around your home?

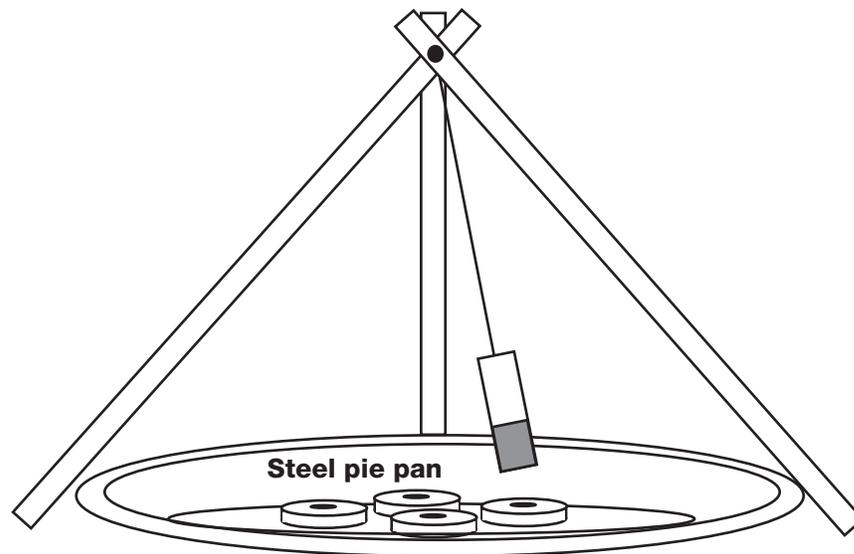
Places to check for magnets:

- Compasses
- Note holders on the refrigerator
- Cabinet and refrigerator door closers
- Toolboxes

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 some games out if you can. Draw a picture of your invention to share with the class. Write a paragraph explaining what your invention does.



Swinging magnet game

HOME/SCHOOL CONNECTION

INVESTIGATION 2: MAKING CONNECTIONS

WHERE IS THE ELECTRICITY?

Where is the electricity in your home? Take a tour and count the number of

- Lights
- Appliances that use electricity
- Wall outlets where you can plug things in
- Wall switches for turning on lights

Be sure to talk with your family about safety when using electric appliances. Write your family safety rules below.

HOME/SCHOOL CONNECTION

INVESTIGATION 3: ADVANCED CONNECTIONS

WHAT IS INSIDE AN ELECTRONIC APPLIANCE?

Do you have an old, broken radio, portable tape player, calculator, cassette player, remote control, or walkie-talkie? Or what about most anything else 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 unplugged and batteries are removed.
- Get help opening the case. Remember, safety first.
- NO televisions, please. They can be dangerous to explore.

Things to look for and do

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

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

Make drawings of one or two of the most common components you find.

NOTE: What if you do not have an old device to take apart? Draw a schematic of *one circuit* with two lightbulbs in parallel *in series with* a third lightbulb. Think about it...it can be done.

HOME/SCHOOL CONNECTION

INVESTIGATION 4: CURRENT ATTRACTIONS

Safety Note

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

FUSES AND CIRCUIT BREAKERS

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 may 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 schematic to show how you think it might work.

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SCIENCE NEWS

Dear Parents,

Our class is beginning a new science unit using the **FOSS Solid Earth Module**. We will investigate a selection of the most common rocks and minerals that make up Earth's crust, and learn some techniques that geologists use to identify them.

Geology requires analysis. To develop analytical skills and techniques, we will first investigate simulated rocks called mock rocks. We will observe them, break them apart, dissolve them in water, and evaporate the liquid to discover the ingredients from which our rocks are made. We will then move on to real **rocks** and **minerals**, using scratch tools and acid (vinegar) to test for specific minerals. Finally we will look at granite, the base rock from which continents are made, and analyze the minerals it contains.



Later we will look at examples of the three kinds of rock found on Earth, igneous, metamorphic, and sedimentary, and discover the fundamental processes that give rise to each group. We'll consider how one kind of rock can be transformed into another in a succession of processes known as the rock cycle.

Through stream-table investigations we will explore erosion and deposition. We will study how changes in the earth can be due to slow processes such as erosion, as well as rapid processes, such as landslides, volcanic eruptions, and earthquakes.

You can increase your child's understanding and interest in earth materials by asking him or her to talk about the investigations we are doing at school. You and your child may want to start a rock collection, or visit the library or (if possible) a rock and mineral display, to expand your rock and mineral knowledge. A visit to a landscape materials center or a jewelry store (gems are minerals) can expose the broad range of uses for earth materials.

Watch for Home/School Connection sheets that I will be sending home from time to time. These describe ways the whole family can look more closely at rocks and minerals around your home. Your child will be asked to bring a rock or mineral to class for a few weeks to begin a class collection. He or she may choose to bring a special sample you picked up on a family outing, or a rock collected right around the neighborhood.

We're looking forward to weeks of fun with rocks and minerals and landforms! If you have questions or comments, or have expertise you would like to share with the class, please drop me a note.

Name _____

Date _____

HOME/SCHOOL CONNECTION

INVESTIGATION 2: SCRATCH TEST

BIRTHSTONES

Tell your family what you learned about birthstones and the difference between rocks and minerals.

Ask your family and friends when their birthday is. See if they know their birthstone. (If they don't, you can tell them!) Complete the chart below. Then make a bar graph to show which month has the most birthdays.

- January..... Garnet
- February Amethyst
- March Aquamarine
- AprilDiamond
- May Emerald
- June.....Alexandrite
- July Ruby
- August Peridot
- September.....Sapphire
- October Opal
- November..... Topaz
- December..... Turquoise

	Name of person	Birthday month
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
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Garnet	Amethyst	Aquamarine	Diamond	Emerald	Alexandrite	Ruby	Peridot	Sapphire	Opal	Topaz	Turquoise

HOME/SCHOOL CONNECTION**INVESTIGATION 4: TAKE IT FOR GRANITE****EARTH MATERIALS HUNT**

Use the clues to find items around your house that are made of earth materials.

See if you can find something made from bauxite. Bauxite (aluminum) can be refined into a very thin metal good for packaging liquids.

See if you can find something beautiful that someone might wear that is made from an earth material.

Sometimes people use earth materials to make lamps and other decorative items for the home. Can you find something like that?

Look at the thermometer you use to find out if you have a fever when you're sick. Which part of the thermometer do you think is made from earth materials?

Look outside. Can you find something that you walk on every day that is made from earth materials?

Can you think of a place that you have visited that had some interesting rocks or minerals? What is the name of the place? What was so interesting?

There is an earth material that most people eat all the time. Imagine that! Its mineral name is halite. It's shaped like little white cubes, and you use it a lot in cooking.
