LETTER TO FAMILY

Cut here and paste onto school letterhead before making copies.

Science News

Dear Family,

Our class is beginning a new science unit using the **FOSS Living Systems Module**. We will be looking at a number of life science concepts from the standpoint of a system—a collection of interacting parts. We will start with ecosystems and describe the feeding relationships in food chains and food webs involving producers (plants and algae), consumers, and decomposers. To investigate the role of decomposers, we will set up redworm habitats and provide organic materials in the form of shredded moist newspaper with a small amount of selected fresh kitchen scraps and leaf litter integrated into the habitat. We will observe the action of the redworms for 8 weeks and analyze the result of their activity at the end of the module.

We will also investigate transport systems in multicellular organisms that provide each cell with food, water, gas exchange, and waste removal. Students will learn about the structures, functions, and interactions of the digestive, circulatory, and respiratory systems in humans. We will build model heart systems and investigate vital capacity of our lungs. Students will learn about the vascular system in plants (xylem and phloem), and they will compare that system for moving water, minerals, and sugar to the transport system in humans. They will also be introduced to the process of photosynthesis. Students will be designing and conducting controlled experiments to investigate some of these systems: use of sugar by yeast cells and light by sprouting wheat seeds.

We will also learn about the central nervous system in humans and compare it to other animals. With the focus on systems, we will investigate stimulus/response in human response time and in animal communication and behavior. We will also be looking at instinctive behavior, such as that exhibited by migrating monarch butterflies.

Watch for the home/school connection sheets I will be sending home with your child. These suggest ways for the whole family to investigate interesting aspects of our life science study. In addition, you and your child can visit the FOSS website (www.fossweb.com), where there are instructional activities, interactive simulations, and resources related to the Living Systems Module.

If you have any questions or comments, please drop me a note or come in and visit our class. We are looking forward to many weeks of exciting investigations.

Sincerely,

HOME/SCHOOL CONNECTION

Investigation 1: Systems

The redworm or red wiggler (*Eisenia fetida*) is a very thin and relatively small earthworm, about 3–8 centimeters (cm) long. This is the common species of redworm used in vermicomposting. Although the redworms are small, they can shred and consume nearly half their weight in food every day. They eat decaying leaves and other decaying plant parts that have been broken down by the action of bacteria, fungi, and microorganisms. Actually, their main food source is the bacteria, fungi, and other microorganisms on the decaying plant matter, but they also consume the organic matter on which the microorganisms live. In worm bins, redworms feed on grass clippings and kitchen scraps, including vegetables, fruit, egg shells, coffee grounds, paper, and cardboard.

Here are some of the kinds of kitchen waste that redworms eat: potato peels; coffee grounds with filters; tea bags; apple cores; crushed egg shells; stale bread; parings of cucumber, carrots, squash, lettuce, melon rinds, and so forth. If potatoes are used, they should be cooked.

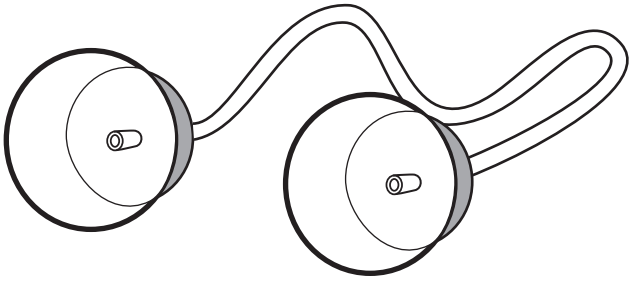
Here are some of the things that are not good for redworms: meat, fat, oil.

Make a list of the kitchen waste that your home produces that redworms could eat and would be good to use in a worm bin. Keep the list for at least a week.

HOME/SCHOOL CONNECTION

Investigation 2: Nutrient Systems

Listen to your body's internal systems—they make sounds. Use a stethoscope to listen if you have one. You can make a simple listening device with two small plastic cups and a short piece of plastic tubing.



Ask an adult to use a nail to make a small hole in the bottom of both cups. Force the tubing into the holes. It should fit very tightly.

Put the mouth of one cup over the thing you want to hear. Put the other cup over your ear. Listen to your heart, lungs, stomach, intestines, your throat swallowing, and your teeth chewing.

Research these questions, by using reliable sources.

Everyone gets the hiccups. (Babies get them a lot.) What causes hiccups? What system(s) are they related to? What are some remedies for hiccups?

You have felt and heard your own stomach growl. When does it growl? What makes it growl? What system is involved?

Everyone burps now and then. (Babies burp a lot.) What is going on when you burp? What system is involved?

What is a sneeze? What system is involved?

HOME/SCHOOL CONNECTION

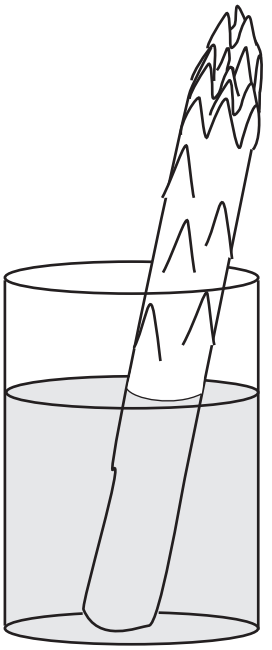
Investigation 3: Transport Systems

Celery stalks have vascular bundles. The xylem tubes transport water from the roots (base of the stem) to the leaves. This is how the cells in the celery leaves get water and minerals to stay alive.

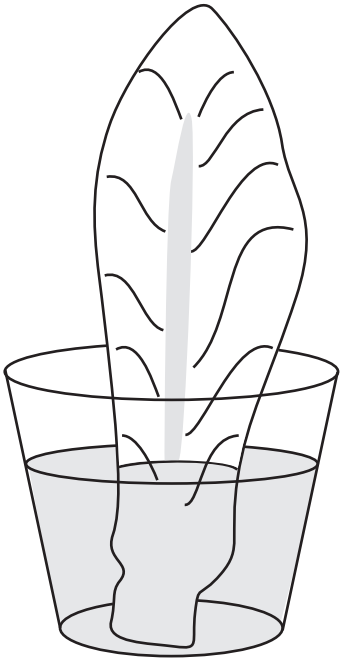
Do other vegetables transport water? You can use colored water to find out.

Visit the produce section when you are at the market. Get a few things to test. Try different kinds of cabbage and lettuce, green onions and leeks, asparagus, and other interesting things. Bring the results of your investigations to school to share.

Cabbage



Asparagus

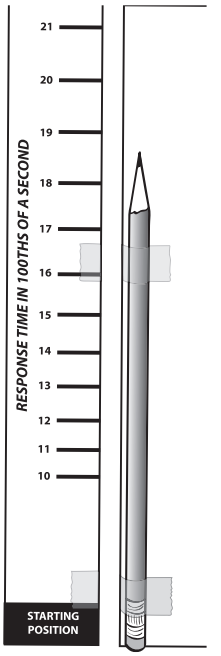


Romaine

HOME/SCHOOL CONNECTION A

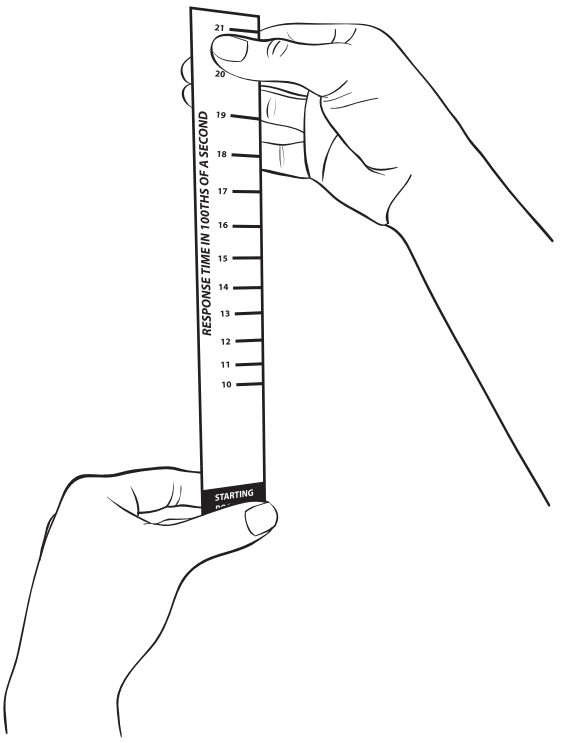
Investigation 4: Sensory Systems

It is possible to find out how quickly you can respond to a visual stimulus by using a response timer. Tape a pencil to the back of the response timer (paper/strips), as shown in the illustration. The eraser end of the pencil should be flush with the starting-position end of the strip.



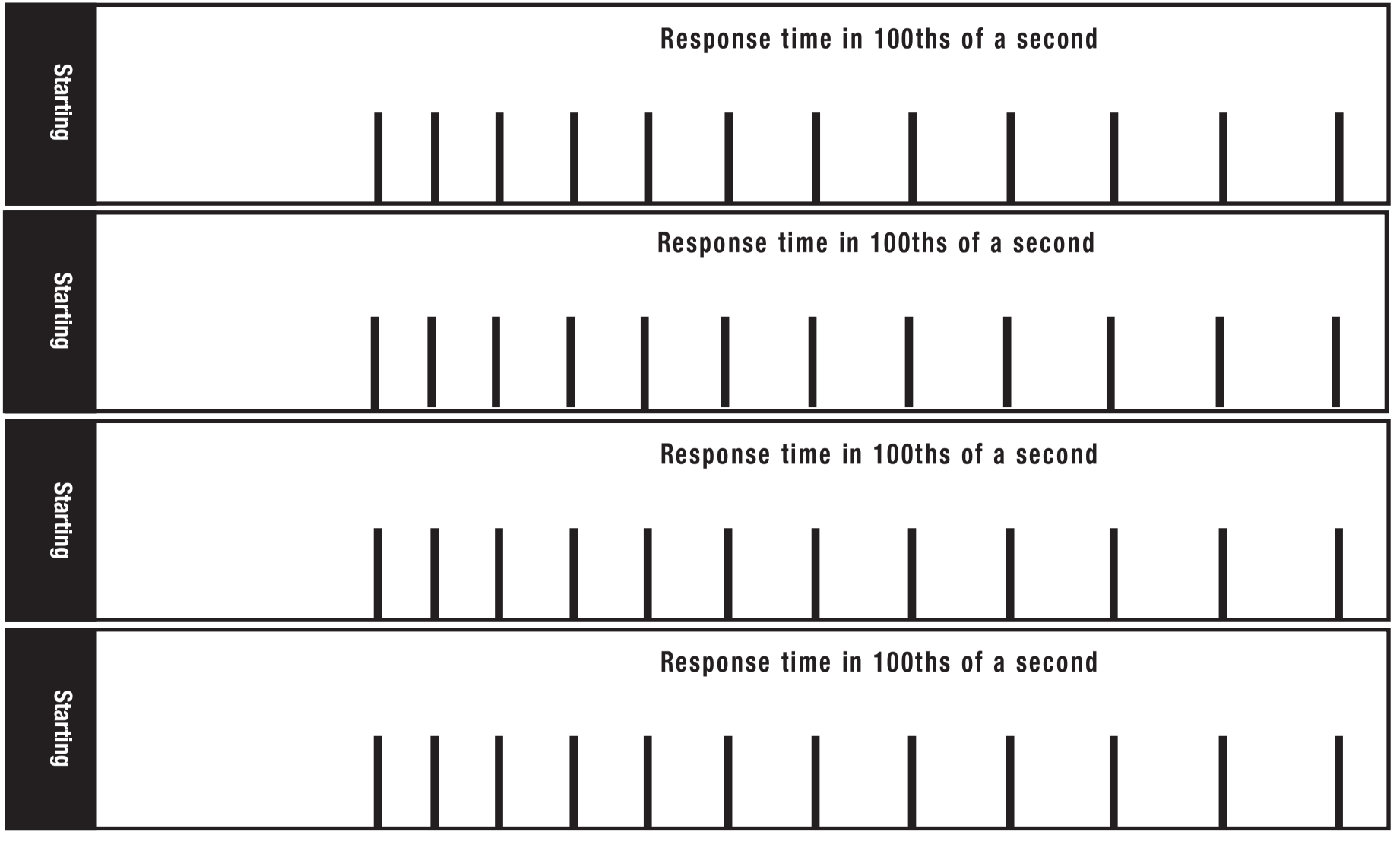
To use the timer, you need two people.

1. One person holds up the timer by the top of the paper strip.
2. A second person, the catcher, positions her or his fingers over the words "starting position," ready to catch the response time the instant it begins to fall.
3. When the catcher sees the strip start to fall, he or she catches it and notes the number under his or her thumb. The number represents the number of 100ths of a second it took to respond.
4. Record on the record sheet your response times for five trials with both your left and right hands. Average the results to get your average response time.
5. Compare the response times for your left and right hands. Explain why you think one hand responds faster than the other.



HOME/SCHOOL CONNECTION B

Investigation 4: Sensory Systems



HOME/SCHOOL CONNECTION C

Investigation 4: Sensory Systems

Find out how fast your hand can respond. Start with a visual stimulus. Test your left and right hands five times. Record your response time after each drop.

Stimulus _____

Response _____ hand

Drop	Time
1	
2	
3	
4	
5	
Total	

Average _____

Stimulus _____

Response _____ hand

Drop	Time
1	
2	
3	
4	
5	
Total	

Average _____

Calculate the average response time for each hand. Write the averages on the lines under the totals.

Which hand had the faster response time? _____

Explain why you think that hand responded faster.

_____

_____

_____