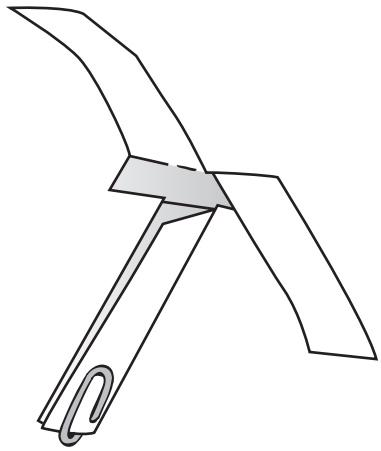
LETTER TO FAMILY

Cut here and paste onto school letterhead before making copies.

Science News

Dear Family,



We are studying physics and chemistry in a new unit, **Motion and Matter**. We will be studying forces and what happens when they are balanced and unbalanced. We will observe and compare how magnets attract and repel, how gravity always pulls toward Earth's center, and how the motion of objects can change when they roll and spin. We will be looking for patterns in order to make predictions about things that move. We will then move on to some basic chemistry to find out what happens when two substances are mixed. We will communicate orally and in writing the things we discover. The processes of observing, communicating, and comparing are important thinking processes that your child will use during our investigation of motion and matter.

Our goal is to lay a foundation for more advanced inquiry into the concepts of physical science as students continue their studies in the future. And in the process of finding out about these topics, we will be exercising the science practices that are at the core of the scientific enterprise. We'll put what we've learned about force and motion into action, and learn about engineering practices when we design and redesign rolling carts to meet a variety of challenges.

Your child might be interested in trying some things at home. If you have any kind of building sets, craft sticks, or other odds and ends, including old CDs or DVDs for wheels, your child might be interested in continuing cart design at home. You can also make a zoomer toy as described in the home/school connection I'll be sending home in a few weeks.

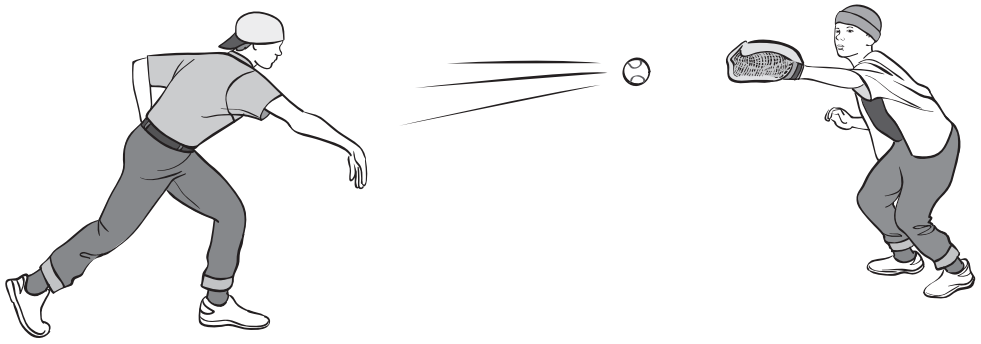
We're looking forward to our new unit on forces, motion, and engineering that will provide lots of learning and lots of fun! You can get more information on this module by going to www.FOSSweb.com.

Sincerely,

HOME/SCHOOL CONNECTION

Investigation 1: Forces

Go to the park and play a game of "catch." Talk about the different forces involved in throwing and catching a ball.



When are the forces balanced?

When are the forces unbalanced?

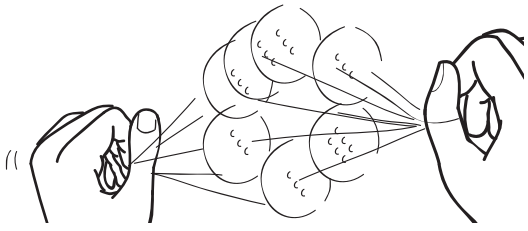
Explain what it means when we say, "the forces are unbalanced."

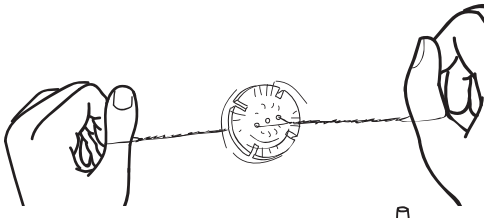
Draw and label a picture to show where the forces are and how they change during the game.

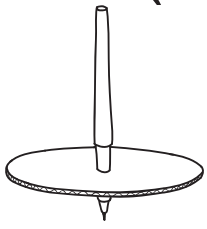
HOME/SCHOOL CONNECTION

Investigation 2: Patterns of Motion

Zoomers. Traditional zoomers are made from a button and a piece of string or strong thread. The string is strung through two button holes and tied to make a loop. The button will spin when you twirl it around to put a twist in the string and pull it tight to unwind.







Top. Cut a 13 or 15 cm (5 or 6 inch) piece of cardboard. Poke a hole in the center big enough for a pencil or felt-tip pen.

Try this!

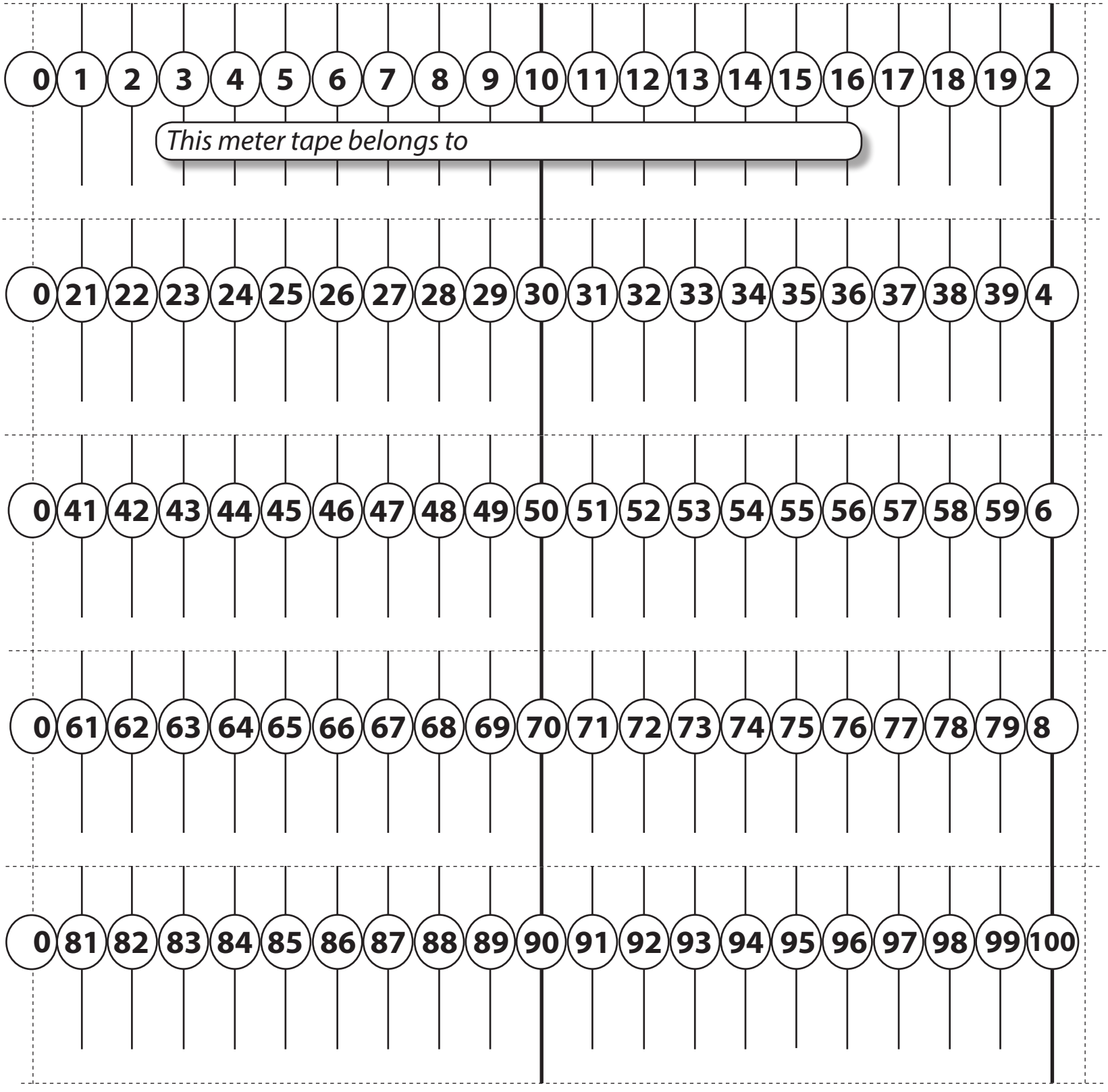
- Add more cardboard disks to the top.
- Compare zoomers made with a big button and with a little one.
- Add a spinning design to a top or zoomer. (The best way to see the spinning design on a zoomer is to change the position of the zoomer. Bring one hand in front of your face. Move the other hand away from you. Make the zoomer go fast or slow. Watch the design change.)
- Make tops from different materials.
- Be curious!—try anything you can think of!

What did you make? What did you try? What happened?

HOME/SCHOOL CONNECTION A

Investigation 3: Engineering

Paper Meter Tape



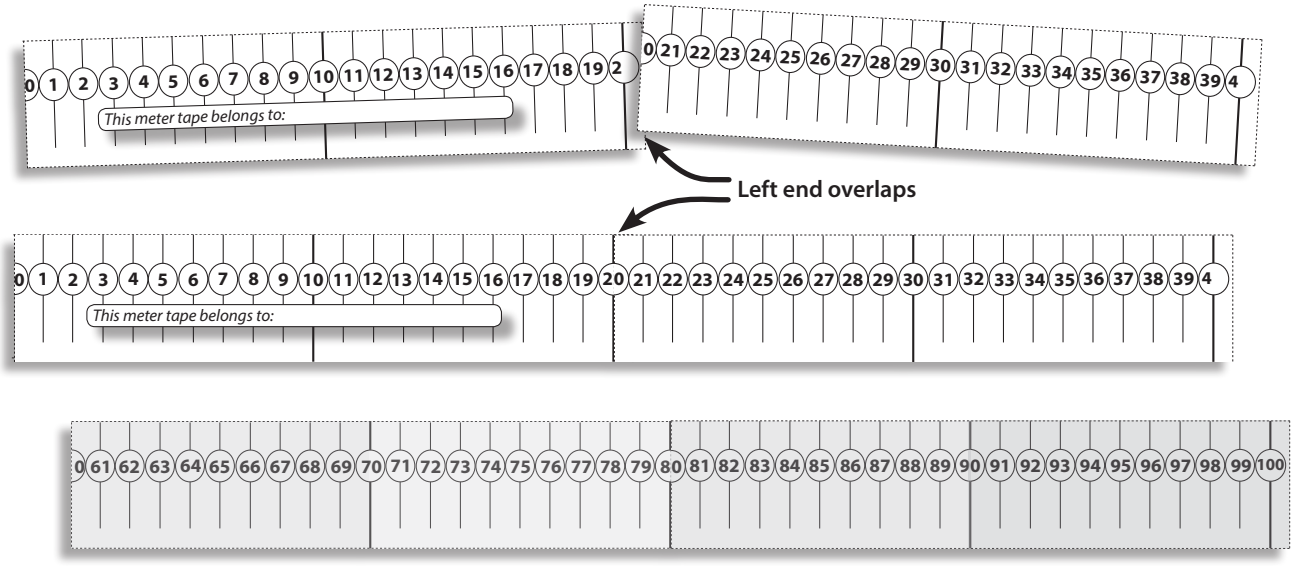
HOME/SCHOOL CONNECTION B

Investigation 3: Engineering

Directions for making the paper meter tape.

1. Cut out the five meter-tape pieces from the *Paper Meter Tape* sheet. Cut on the dashed lines.

2. Align the pieces as shown. Place the sections in numerical order. Tape the overlapping ends, front and back.



3. Use the meter tape to measure things at home.

4. Discuss these questions with family members.

   - How do you place the meter tape next to objects when you want to measure something less than a meter? What unit should you use to report your measurement?

   - What do you do when you want to measure something that is more than a meter long? What unit or units should you use to report these measurements?

HOME/SCHOOL CONNECTION

Investigation 4: Mixtures

How does temperature affect how much sugar will dissolve in water?

Materials

- Sugar
- Room-temperature water
- Ice water
- Hot tap water (not boiling)

3 Clear containers
1 Measuring spoon (5 mL or teaspoon)
1 Measuring cup
1 Mixing spoon

Procedure

1. Measure 100 mL (1/2 cup) room-temperature water into one clear container.
2. Measure one level 5 mL spoon (1 teaspoon) of sugar, and put it into the water.
3. Use the mixing spoon to mix the sugar until it has all dissolved. (How do you know it has all dissolved?)
4. Continue to add and mix spoonfuls of sugar until no more sugar dissolves (when you start to see non-dissolved sugar on the bottom of the pan).
5. Record your data in the table below.
6. Predict how many spoonfuls of sugar will dissolve in ice water and in hot water. (Do you think there will be a difference? Why?)
7. Repeat Steps 1–5, using ice water, and then using hot water.
8. In the last column of the table, record the difference, if any, in number of spoonfuls of sugar when mixed with water at different temperatures.
9. Answer the questions below the table.

Water temperature	Prediction (spoonfuls of sugar)	Actual (spoonfuls of sugar)	Difference (compared to room-temperature water)
Room temperature			
Ice water			
Hot water			

How did the amount of sugar you could dissolve change when you used different temperatures of water?

What is the relationship between water temperature and amount of sugar that will dissolve?