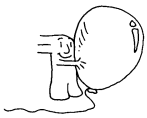
Intermediate Edition

Math+Science Connection

Building Understanding and Excitement for Children

April 2017

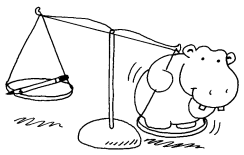
South Seneca Elementary School
Mr. Adam Rundell, Principal



INFO BITS

Grams or kilograms?

Help your youngster get used to metric measurement with this activity. Have him cut out magazine pictures of various items (pencil, coin, car, hippopotamus). Can he sort them according to which he would measure in grams vs. kilograms? *Hint:* A paper clip = 1 gram, and a small laptop = 1 kilogram. So he'd weigh objects with less mass (pencil) in grams and use kilograms for those with more (car).



Make a hypothesis

When a scientist does an experiment, she starts by writing a hypothesis—an "if-then" sentence that predicts what will happen. Encourage your child to practice this by making and testing her own hypotheses. *Example:* "If I put 1 cup of hot water and 1 cup of cold water in the freezer, then the cold water will freeze first."

Web picks

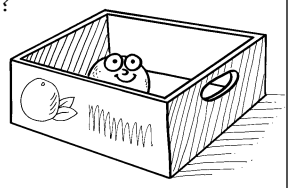
Your youngster can work on multiplication facts, use logical thinking to solve brainteasers, and more at *mathisfun.com*.

At *sciencebug.org*, your child will find activities galore. He might search for spiders, measure the age of a tree, or "install" a solar panel.

Just for fun

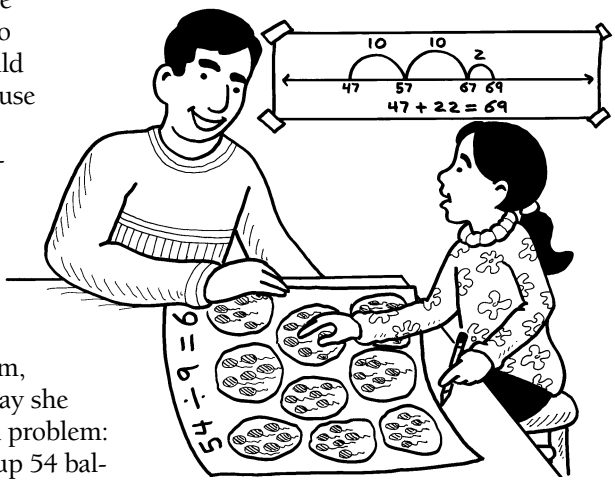
Q: How many oranges can you put in an empty box?

A: One. After that, it's not empty anymore!



Explain your thinking

In school, your child may be asked to justify her solutions to math problems. This helps build mathematical thinking—because it shows her how math makes sense. Plus, it boosts her confidence in her own math abilities. Let your youngster prove her math answers to you with these ideas.



Draw a picture

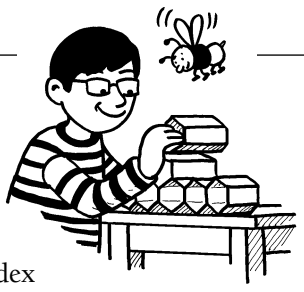
After solving a word problem, your child could illustrate it. Say she solved 54 ÷ 9 = 6 for this word problem: "Shawna has 9 hours to blow up 54 balloons for a dance. How many balloons should she blow up each hour?" Your youngster might draw 9 circles to represent the hours, and then 6 balloons in each circle. Then, she can skip count the balloons by 6s to prove that 9 x 6 = 54, so 54 ÷ 9 = 6.

Jump a number line

Suggest that your child draw an open number line—a horizontal line with arrows on both ends—and use it to show a problem she solved, say 47 + 22 = 69. She would write the first number (47) toward the left end of the line. To show her thinking, she could label curves for each "jump" she made: 10 to go from 47 to 57, another 10 (57 to 67), and 2 (67 to 69). Then, she can write 69 and tell you how she got the answer.

Tip: Encourage your youngster to practice with a math buddy. She and a friend might do homework together and then take turns proving their answers. They'll likely learn new strategies from each other!

"Bee" an engineer



Your youngster can think like an engineer by learning from "natural engineers" like bees.

Bees build honeycombs that are strong and use space effectively for their larvae, honey, and pollen. How do they do it?

Challenge your child to engineer his own honeycombs from index cards. Suggest that he first curve index cards into circles and tape them together into a honeycomb. Then, have him fold index cards into hexagons and join those into a honeycomb. What observations can he make?

He'll notice that the circles leave gaps, while the hexagons don't. Bees design their honeycombs with hexagons—the geometry behind the structure means no wasted space!

Paper-plate fractions

Let your youngster divide paper plates into equal parts for an easy way to understand and compare fractions. Try this game.

1. Have your child cut four paper plates into different fractions: halves, quarters, thirds, and sixths. He should label each piece ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{6}$). Drop all the fraction pieces in a bag, and shake them up. Give each player a whole paper plate.

2. Take turns drawing a fraction piece from the bag. The object is to cover your plate—exactly.

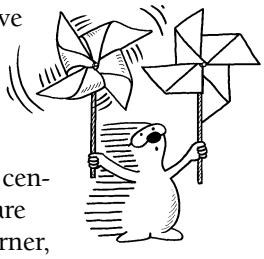
So if you get $\frac{1}{2}$, you might use another $\frac{1}{2}$ or two $\frac{1}{4}$ pieces to complete your plate. If you pick $\frac{1}{6}$, you could use a combination of $\frac{1}{3}$ and $\frac{1}{6}$ pieces. If you can't use the piece you draw, put it back in the bag, and your turn ends.

3. The first person to cover his plate wins. As your youngster compares and chooses pieces to fill the plate, he'll be learning about equivalent fractions.

SCIENCE LAB The power of wind

On a blustery day, show your child how to capture the wind's energy with this pinwheel experiment.

You'll need: *2 squares of paper, pencil, scissors, 2 pushpins, 2 straws*



Here's how: Have your youngster make two pinwheels. For each, she can draw a small circle in the center of a paper square and, from each corner, cut halfway to the circle. She should curve the flaps of one pinwheel into the center and fold the other pinwheel's flaps flat. Help her stick a pushpin through the center points of each pinwheel and into a straw. Now let her hold her pinwheels outside in the wind (or blow on them inside).

What happens? The first pinwheel's blades rotate in the wind. The flattened one does not spin.

Why? The curved paper catches the wind and causes the pinwheel to spin. Giant windmills, called turbines, work the same way by capturing the wind with their curved blades.

OUR PURPOSE

To provide busy parents with practical ways to promote their children's math and science skills.

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PARENT TO PARENT Using math on the job

When my daughter Sophia was doing math homework the other night, she said she wouldn't need to know math when she grows up to be a hair stylist.

I let her know that wasn't the case! "People use math all the time in all different jobs," I told Sophia. So she could see this for herself, I encouraged her to ask family members about their jobs. She learned that Aunt Susan, a baker, uses math when she weighs ingredients, changes quantities in recipes, and calculates servings. Her cousin Terry, a carpenter, has to figure out how much wood to order for a job and then measure the pieces before cutting them.

Their answers have helped Sophia see why math is important. At her last haircut, she even asked our own hair stylist if she uses math on the job. "Of course," Jeannette said. "How else would I know what it means to cut an inch from your hair?"

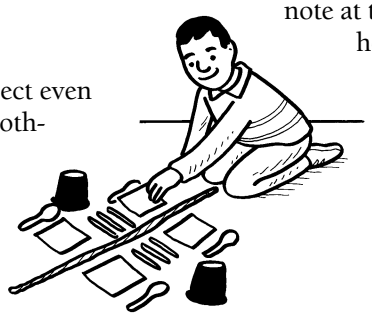
MATH CORNER It's a mirror image

Mirror, mirror on the wall, who can make the best symmetrical design of all?

Have fun turning household objects into symmetrical, or mirror-image, creations with this activity.

Set up

Ask your child to collect even numbers of items like toothpicks, cups, spoons, and sticky notes. He can lay down a ruler or a piece of string—that's his *line of symmetry.*



Create

On one side, he could arrange a few objects. Then, he should place identical items on the other side in a mirror image. For instance, if he put a sticky note at the top right of one side, he would add a sticky note at the top left of the other side.

Idea: Suggest that he think of it like this: If he folded half of his arrangement over on the other half, everything would match perfectly.