Math+Science Connection

Building Understanding and Excitement for Children

Trenton Catholic Acad-Lower School
Mrs. Anne Reap, Principal

INFO BITS

Open-door angles

Doors in your house are the perfect place for hands-on practice with angles. Take turns opening or closing a door and asking, "Acute, right, or obtuse?" Partially open a door, and it's an acute angle. Open it straight out, and it's a right angle. Open it wider, and it's obtuse.

Habitat for rent

Help your child think about what animals need to survive (shelter, food, water). Then, have her choose an animal (monkey) and write a classified ad for a home that will meet its needs. *Example:* "Tall tree in a tropical rain forest. Large river nearby for drinking. Plenty of leaves, fruit, and insects to eat."

Book picks

📖 *The Man Who Counted: A Collection of Mathematical Adventures* (Malba Tahan) combines an adventure story with interesting math puzzles.

📖 Learning about the solar system is fun when planets tell the story themselves. Dan Green's *Astronomy: Out of This World!* contains fascinating facts and details along with cartoon illustrations your youngster is sure to love.

Just for fun

Q: What has three feet but no legs or arms?

A: A yard.
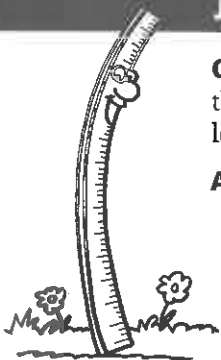
Fractions of fun

Understanding fractions is much easier when your child can visualize them. Here are ideas to help her see—and use—fractions.

Keep a diary. Show her that fractions are a part of everyday life. For a week, have her record and illustrate each one she notices. For instance, she might write, "We had a half day of school today," or "Mom asked for $1\frac{1}{3}$ pounds of turkey at the store." How many examples can she find and draw?

Play a game. Have each player cut a sheet of construction paper into six horizontal strips. She should leave the first one whole and then cut the second one in half (fold it, and cut along the fold), and the others into thirds, fourths, sixths, and eighths. With bits of masking tape, label a die: $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{6}$, $\frac{1}{8}$, and "wild." To play, roll the die, and lay the matching piece of paper on your whole strip (for "wild," choose any piece). The goal is to be the first one to fill your strip without overlapping any pieces (*example:* $\frac{1}{2}+\frac{1}{4}+\frac{1}{4}$ = 1 whole strip).

Put in order. Together, make a set of fraction cards, with one fraction per index card ($\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$, 2). Shuffle the cards, and see how quickly your youngster can put them in order. Then, while she closes her eyes, lay the cards in order but leave out a few. Give her the missing cards, and have her put them where they go. 🎲

Look at me!

Help your youngster learn about the science of *optics* with this mealtime activity.

Have him look at himself in a clean spoon. What happens if he looks in the bowl of the spoon? (He's upside down.) What happens on the other side? (He's right side up.)

Next, have him bring his finger toward the spoon and watch what happens on each side. The bowl (the *concave* side) will magnify his finger, or make it look larger. The back (the *convex* side) will make his finger look smaller. Ask your child how scientists might use this information to make eyeglasses, cameras, or telescopes.

*Tip:* He can remember which side is which by thinking of concave as "caves in." 🎲
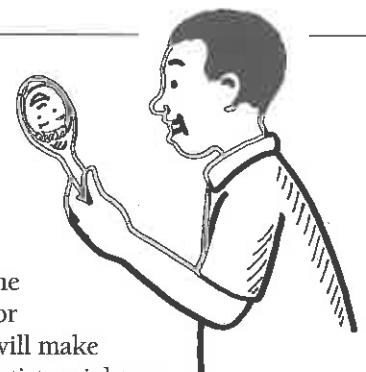
Multiply and divide

Learning to multiply and divide can be more about *thinking* than memorizing. Strategies like these can help your child practice.

Make it fun

Practice using toys or food. If your child collects toy animals, you might ask, "How many legs do 4 horses have?" He can "skip count" the legs by 4s (4, 8, 12, 16) to see that 4 x 4 = 16. If he has 17 pretzels and wants to give 3 friends an equal amount, he can "deal them out." He'll see that each person gets 5, and there are 2 left over. (17 ÷ 3 = 5, remainder 2)

4, 8, 12...
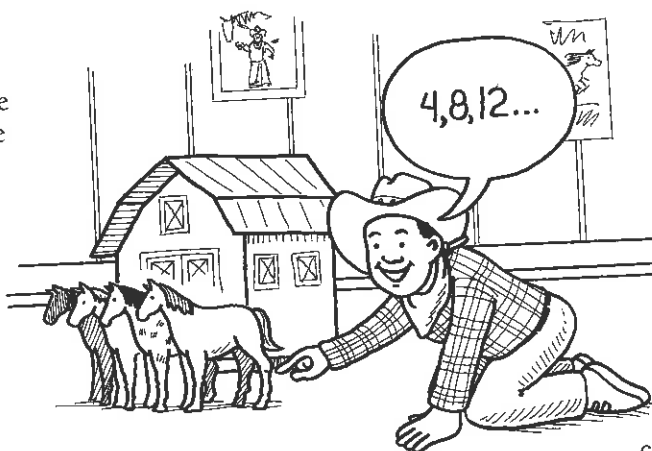
Use what you know

Encourage your youngster to look for clues to help him solve problems. For 8 x 7, he could consider other facts he knows. "I know 4 groups of 7 = 28. I need 8 groups, so I can double that answer. If 28 + 28 = 56, then 8 x 7 = 56." For 30 ÷ 5, he might say, "I know 10 ÷ 5 = 2. There are three 10s in 30, and 3 x 2 = 6. So 30 ÷ 5 must be 6."

Q&A Ask math questions

Q: *I've never felt comfortable with math. How should I talk to my children about what they're learning in math class?*

A: Try to show enthusiasm for what your youngsters are doing in math. You might ask them each day at dinner or homework time what they studied in math that day. Let them explain the concepts they're working on, and follow up with questions. For instance, if they're learning about decimals, you could ask how decimal points are used in money (they separate the parts of a dollar from the whole dollar).
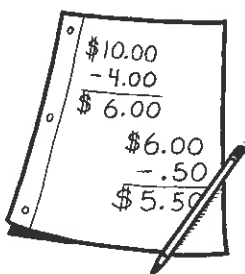
Then, when your children finish their homework, have them show you how they solved a few problems. As they explain their methods to you, they'll be reinforcing their own skills. And they'll be proud to be teaching you something!

$10.00
− 4.00
$ 6.00

$6.00
− .50
$5.50

MATH CORNER Find, build, compute

What do a shoebox, book, and refrigerator have in common? They are all rectangular prisms, or solid shapes with rectangles for their faces (sides). Encourage your child to explore geometry with this common shape.

Volume. Let her build a rectangular prism out of dice, sugar cubes, or same-sized Legos. Her model should be solid, with no hidden spaces. When she finishes, have her figure out the volume (count the cubes along the height, width, and length, and multiply the three numbers together). To check her math, she can take apart her structure and count all the cubes.

Dimensions. Give your youngster 36 blocks, and see how many different sizes of rectangular prisms she can build. Have her record dimensions of each one. *Examples:* 2 x 2 x 9 and 2 x 3 x 6. What do the sets have in common? (Each product equals 36.)
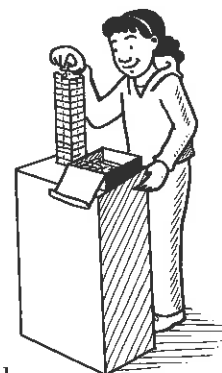
SCIENCE LAB Save your breath

Your youngster can inflate a balloon without using his breath. A chemical reaction will do the job for him!
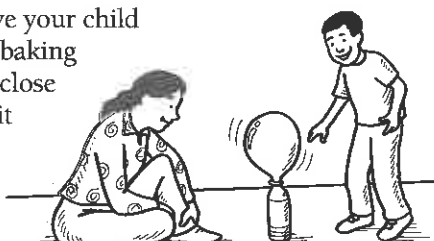
You'll need: empty plastic soda bottle (20 fl. oz.), ¼ cup water, 1 tsp. baking soda, uninflated balloon, lemon juice

Here's how: Have your child add the water and baking soda to the bottle, close the cap, and swirl it around until the water is cloudy. Then, help him stretch out the balloon and place the opening over the top of the bottle, leaving a small space. He should very quickly add a little lemon juice, seal the balloon completely over the bottle, and shake lightly.

What happens? The balloon inflates.

Why? When you mix an acid (lemon juice) with a base (baking soda), they create carbon dioxide. The molecules spread out as the gas forms, pushing against the walls of the balloon and causing it to inflate.