Intermediate Edition

Math+Science Connection

Building Understanding and Excitement for Children

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Jamestown Elementary School

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INFO BITS

Math palindromes

A palindromic number reads the same forward and backward, such as 424 or 123,321. Your youngster can stretch her math thinking by creating math problems with palindromes as the answers. *Examples:* 2 x 212 = 424, and 1,000,000 – 876,679 = 123,321.

Welcome, winter!

In the northern hemisphere, December 21 is the winter solstice—the first day of winter and the day with the fewest daylight hours of the year. Have your child look up sunrise and sunset times in the newspaper or online. What does he notice? (We get a little more sunlight each day after the winter solstice.)

Book picks

Your youngster will have fun calculating area in *The Original Area Mazes: 100 Addictive Puzzles to Solve with Simple Math—and Clever Logic!* (Naoki Inaba and Ryoichi Murakami).

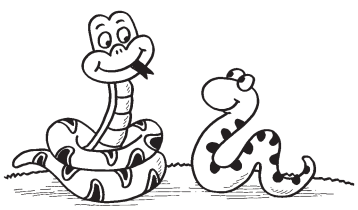
In addition to stunning photographs, *A Drop of Water: A Book of Science and Wonder* (Walter Wick) provides experiments to teach your child about the properties of water.

Just for fun

First snake: I hope I'm not venomous.

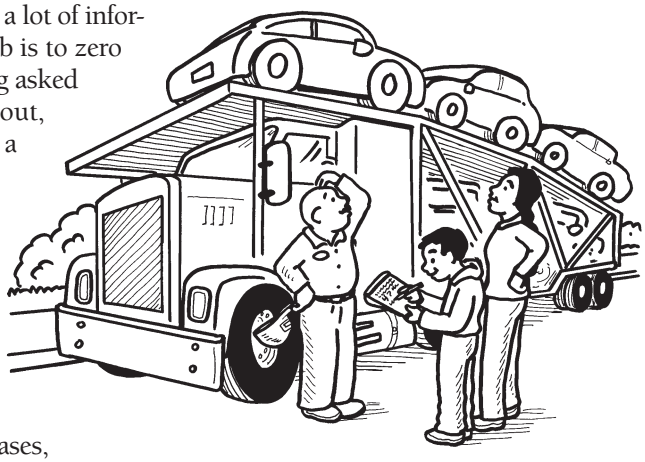
Second snake: Why?

First snake: I just bit my tongue!



Word problems? No problem!

A word problem contains a lot of information. Your youngster's job is to zero in on what exactly he's being asked to do. Once he figures that out, solving the problem may be a snap. Share these strategies.



List key details

Have your child read the entire problem and list facts it tells him. Say he needs to figure out how many trophies can be displayed in a school lobby. He could write, "2 display cases, 5 shelves per case, 6 trophies per shelf." Then he can solve: 2 x 5 x 6 = 60 trophies. *Variation:* Encourage him to draw a picture showing what he knows.

Use easier numbers

Suggest that your youngster replace larger numbers with smaller ones. He might use 35 and 7 for 3,540 and 789. Then he can focus on *how* to solve rather than on harder calculations. For instance, should he add, subtract, multiply, or divide? Once he understands the steps involved, he can swap the original numbers back in and solve.

Check for reasonableness

If a car carrier holds 10 cars, how many trips must the driver take to transport 47 cars? Encourage your child to pay close attention to the context of a problem. That will help him decide whether his answer makes sense. He may realize that while 47 ÷ 10 = 4, remainder 7, it isn't possible to take 4.7 trips. That means 5 trips are required.

Code a snowman

No computer is required for this wintry coding activity. Your child will learn basic computer programming as the two of you write code for each other to draw a snowman on graph paper.

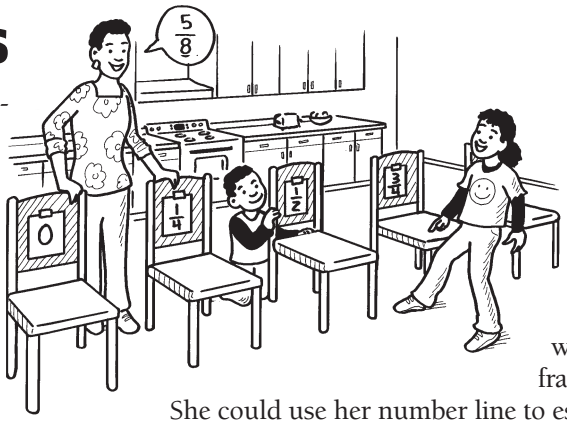
Make a key. List commands you'll use, such as ↓ = move down 1 square, → = move right 1 square, ■ = shade in the square, and ● = draw a circle.

Write code. Direct each other to draw the outline of a snowman by writing strings of commands from your key. Now add commands for decorating the snowman. *Example:* ● ↓ ● ↓ ● means make a column of three round buttons.

Follow. Trade codes and draw. Check each other's snowmen against your codes—do they match?

Use fraction benchmarks

What does $\frac{3}{8}$ of a sandwich look like? If your youngster compares it to a familiar fraction (a benchmark), she'll know it's close to $\frac{1}{2}$ of a sandwich. She can try these tips for visualizing benchmarks and using them to solve fraction problems.



Walk to benchmarks. Let your child line up five "benches" (perhaps kitchen chairs) equally spaced along a path. She should label them 0, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, and 1.

Take turns telling each other where to stand. *Example:* "Walk $\frac{5}{8}$ of the way down the path." Your youngster would think about which bench $\frac{5}{8}$ is closest to. ("Hmm, $\frac{5}{8}$ is close to $\frac{4}{8}$, which is $\frac{1}{2}$.") Then, she can find the right spot (halfway between $\frac{1}{2}$ and $\frac{3}{4}$).

Estimate with a number line. Have your child draw a number line with benchmarks at 0, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, and 1. Suggest that she fold her paper in half, then in half again. When she unfolds it, she can write the benchmark fractions on the fold lines.

She could use her number line to estimate before she adds fractions so she knows whether her answer is reasonable. Perhaps she is adding $\frac{1}{3} + \frac{1}{5}$. She might think, "$\frac{1}{3}$ is a little greater than $\frac{1}{4}$, and $\frac{1}{5}$ is a little less than $\frac{1}{4}$. And $\frac{1}{4} + \frac{1}{4} = \frac{1}{2}$, so the answer has to be close to $\frac{1}{2}$."

Q & A Be a persistent problem solver

Q: *My son gets frustrated when he can't figure out the answer to a math problem right away, especially if there are multiple steps. How can I help him?*

A: Try asking your youngster questions that help him think through the problem to find the solution.

What kinds of questions should you ask him? Try these: "Can you explain what you've done already?" "Where did you get stuck?" "What is the last step you understood?" "What do you think the next step might be?" "Is there another method you could try?"

And here's an idea to help him help himself. Suggest that he write each of those questions on a separate index card. The next time he's stuck, he can pull one out to get moving again.

Finally, let him know that mistakes are part of the learning process—and "sticking with it" will help him in all subjects.

OUR PURPOSE

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

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SCIENCE LAB Brr! Keeping animals warm

Whales and seals survive in very cold climates thanks in part to their layer of blubber (fat). Your child can feel how that natural insulation works with this experiment.

You'll need: 2 quart-size plastic bags, bowl of ice water, tablespoon measure, shortening (or margarine)

Here's how: Have your youngster put his hand in one bag and briefly plunge it into the bowl of ice water. How did it feel? Then, he should measure 8–12 tbsp. shortening into the second bag. Let him stick his bag-covered hand into the shortening-filled bag and squish the shortening around so it surrounds his hand through the plastic. How does his hand feel when he places it in the water this time?

What happens? In the first bag, his hand will feel very cold. But when his hand is protected by shortening, he won't feel much cold at all.

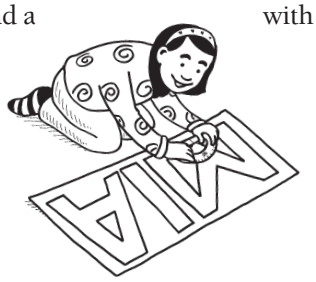
Why? The shortening acts like blubber, providing insulation that retains the heat from your child's hand—keeping his hand warm.

MATH CORNER The angles in my name

Letters contain lots of angles! Build your youngster's geometry skills with these games where family members find the angles in the letters of their names.

1. Each player uses a ruler and a pencil to write her name in large block capital letters. *Idea:* Let your child make one for your pet, too.

2. Now everyone measures each of their angles with a protractor and labels them. For instance, an I has four 90° (right) angles, and perhaps the top of an A has two 115° angles.



3. Each person adds up the total degrees of all the angles in her name. The person with the highest total wins.

Play again with the names of your favorite sports teams, foods, or colors. Your youngster can even do this activity with her spelling words.