Intermediate Edition

Math+Science Connection

Building Understanding and Excitement for Children

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Region #12 Elementary Schools
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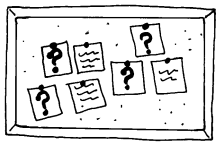
INFO BITS

Counting by 7s

Suggest your child count out loud by 7s. The catch is—she needs to start at 17. As she counts (17, 24, 31), ask her how she's figuring it out in her head. She might say, "I added 3 to 17 and then added 4 more." Try giving her different starting points and numbers to count by to keep her thinking mathematically!

Wall of questions

Asking questions is common for children, and it's critical for scientists. Foster curiosity by having your youngster create a "Question Wall" where he tacks up science questions and—when he finds them—the answers. He may wonder, "Why do cheetahs run so fast?" or "How do rockets lift off?" He can look up information or do experiments, and soon he'll have a collage filled with scientific facts.



Book picks

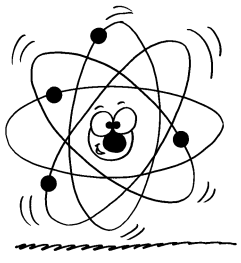
Geometry, logic, division, and measurement come together for fun in *The Everything Kids' Math Puzzles Book* (Meg, Glenn, and Sean Clemens).

Science Experiments You Can Eat (Vicki Cobb) presents tasty ways to learn the science behind gelatin or how sugar decomposes to make caramel syrup.

Just for fun

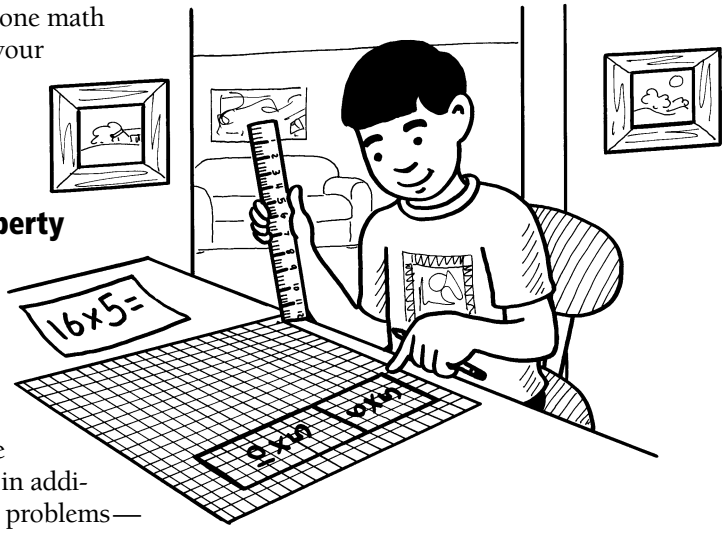
Q: Why can't you trust atoms?

A: Because they make up everything!



Try it this way—or that way!

Having more than one math strategy to use helps your youngster solve problems more easily and gives him confidence. Suggest these two.



Commutative property

You might commute to work. In math, *commuting* means moving around numbers rather than people. Your child can change the order of numbers in addition or multiplication problems—no matter how many numbers he's adding or multiplying—and get the same answer.

Encourage him to turn this concept into a strategy: He could re-order numbers within a problem to make it easier to solve. *Example:* Change 112 + 66 + 8 to 112 + 8 + 66 because 112 + 8 = 120, and then 120 + 66 = 186.

Area model

When multiplying two numbers, suggest your youngster draw a rectangle on graph paper to match the problem. For 4 x 8, he would make a rectangle that is 4 rows by 8 columns. Then, he could count the squares inside to see that 4 x 8 = 32.

With larger numbers, he can divide the rectangle into smaller chunks that are easier to multiply in his head. Say he's solving 16 x 5. He might draw a rectangle 16 rows by 5 columns and then mark a line to divide the 16 rows into 10 rows and 6 rows. He now has two rectangles (10 x 5 and 6 x 5) that are easier to multiply in his head—and then add to get his answer (10 x 5 = 50, 6 x 5 = 30, and 50 + 30 = 80).

"A day in the life of..."

In school your child often writes about herself, maybe even about what she does in a day. But has she ever considered what a day is like for a volcano or a frog?

Let her choose something she's interested in and write a creative story about its "day." If volcanoes fascinate her, she might build one with baking soda and vinegar and then draw a cartoon about what she witnessed. "The first thing Victor Volcano noticed in the morning was that the earth was shaking. 'Hmm… I may blow my top today!'" Encourage her to include details like a diagram of a volcano or a list of famous volcanoes.

Can you repeat that?

Creating and recognizing patterns is an important skill that prepares your child for algebra. It's also a fun activity.

Shapes. Start with two shapes (circles, squares) and make a pattern for your youngster to complete. For instance, you could draw □○○□○□○○□○_ _ _ _ _. She'll have to figure out how long the pattern is (5 shapes) to complete it (□○○□○). Take turns giving each other long patterns with shapes or designs.

Numbers. This time, give your child a pattern with numbers that involves a two-step rule—two operations that have to be applied in a row. *Example:* 2, 6, 5, 15, 14. She will have to identify your rule (x 3, –1) to determine the next two numbers (42, 41). Now let her think of a two-part rule and give you a number pattern to solve.

SCIENCE LAB Indoor rainbows

Let your child make his own rainbow—on paper.

You'll need: water, plastic plate, paper, clear nail polish

Here's how: Have your youngster put water in the plate ($\frac{1}{8}$″ to $\frac{1}{4}$″ deep) and submerge a piece of paper. Help him drip several drops of nail polish into the water over the paper. Then, ask him to pull the paper out of the water—catching the film of polish as he brings it up. When the paper dries, he should look at it in the light, moving it around at different angles.

What happens? He will notice a rainbow of colors.

Why? The nail polish and water combine for a chemical reaction that forms a thin film on the paper. When light, which is made up of multiple colors, bounces off the film, it separates into different colors.

Extension: Suggest that he try this with paper of different colors or textures. Do the results change?

OUR PURPOSE

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

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Q & A We have a situation here

Q: *My son Zach gets confused by word problems. How could we help him?*

A: Suggest that he think of them as "situations." Can he draw or describe what's happening? What comes first? What's next?

For example, "John makes birdhouses. He made 7 birdhouses with 21 pieces of wood. How many pieces of wood would he need for 10 birdhouses?"

Your child might think through the problem like this:

1. "The situation is about John making birdhouses."

2. "First, John makes 7 birdhouses with 21 pieces of wood."

3. "I'll draw that or write it like 21 pieces of wood ÷ 7 birdhouses = 3 pieces of wood for each birdhouse." *Tip:* Labels remind him of the situation.

4. "How much wood is needed for 10 birdhouses? 3 pieces of wood x 10 birdhouses = 30 pieces of wood in all."

If he talks and draws his way through each word problem, he'll better understand the situation.

MATH CORNER That says volumes

Volume is about how much space an object takes up or can hold. Here's a great way for your child to understand this concept.

Measure boxes

Have your youngster and a friend gather empty rectangular containers (cereal box, shoebox, brownie mix box). Using a ruler, each child should measure the height, length, and width of each box and write the dimensions, rounded to whole numbers, on separate sticky notes (12″, 8″, 2″). Then, they should trade their notes. Can they match the sticky notes to the right objects?

Calculate and compare

Next, the friends could determine the volume of each item by multiplying the three numbers together (volume = height x length x width). To help them *see* how the volumes compare, they might line up the objects from smallest to largest volume.

Idea: Let them fill the largest container with popcorn and pour the popcorn from one container to the next, noticing how much fits. They can enjoy snacking on the pieces that spill over!