Math+Science Connection

Intermediate Edition

Building Understanding and Excitement for Children

March 2017

INFO BITS

Follow my math lead

Help your youngster practice adding and subtracting to 1,000. Say a number between 1 and 1,000, maybe 327. Then give her instructions like "add 200," and she says the result (527). Continue giving directions (subtract 30, add 50, subtract 100) until she reaches 1,000. Next, it's her turn to lead you to 1,000!

Colors of nature

As spring approaches, take a color-hunting walk. Your child may notice green buds or purple crocuses. Ask him to predict how the colors will change with the seasons. For instance, a tree could have pink blossoms in spring, green leaves in summer, orange leaves in fall, and bare brown branches in winter. Have him sketch what he sees now and return later to check his predictions.

Book picks

📘 *Tiger Math: Learning to Graph from a Baby Tiger* (Ann Whitehead Nagda and Cindy Bickel) tells the engaging story—with various graphs—of orphaned T.J. the tiger.

📘 Inspire your child's interest in astronomy with *The Kids Book of the Night Sky* (Ann Love and Jane Drake). Read it together, and then go outside to see the real stars.

Just for fun

Q: Why did the right angle go to the beach?

A: Because it was 90 degrees!

I did it in my head!

Math is easier and faster when your youngster can make calculations in his head. Give him practice with two strategies—the *associative property* and the *distributive property*—to transform pencil-and-paper problems into mental-math ones.

Group numbers

The associative property lets your child group numbers in addition or multiplication problems however he wants. Say he's adding 3 + 4 + 6. Have him try two ways:

- 3 + (4 + 6), or 3 + 10 = 13
- (3 + 4) + 6, or 7 + 6 = 13

He will probably prefer the first one—since adding 3 and 10 is easier than adding 7 and 6. Then, play this game with 3 dice. Take turns rolling the dice and writing the 3 numbers shown as a multiplication problem (2 x 4 x 5). Decide how to group them:

- (2 x 4) x 5, or 8 x 5 = 40
- 2 x (4 x 5), or 2 x 20 = 40

After four rounds, total your sums. The high score wins.

Break apart numbers

Thanks to the distributive property, your youngster can break apart larger numbers so they're easier to work with. Perhaps he wants to solve 5 x 46. He could use these steps:

1. Break 46 into 40 + 6.
2. Distribute the multiplication over the addition: (5 x 40) + (5 x 6).
3. Do the multiplication first, and then add the answers: 200 + 30 = 230.

Now give each other multiplication problems with a single-digit number and a double-digit number—and use the distributive property to solve them. 🎲

Create an "earthquake"

Your child can create a "shake table" to simulate what happens during an earthquake. Here's how.

Materials: 2 same-sized pieces of cardboard, 2 tennis balls, 2 rubber bands, tape, a ruler, a small toy

Help your youngster make a "sandwich" by putting the balls between the cardboard pieces, one at either end. Secure everything with rubber bands. Tape a ruler to the top cardboard as a handle, and place a toy on top.

Have your child wiggle the handle to cause an "earthquake." The toy will bounce or even fly off. In a real earthquake, underground moving plates come together (*converge*), push apart (*diverge*), and slide past each other (*transform*), shaking the people and buildings above ground. 🎲
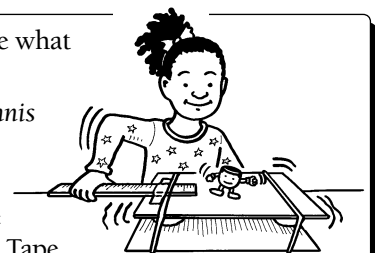
What's the best deal?

When you shop, you might check the unit price of items to find the best deal. Let your child work with decimals and division to turn unit pricing into a fun family game—and teach her about being a smart shopper.

Shop. Have your youngster record the prices and weights or quantities of 10 pairs of similar items. *Example:* a 36-pack of string cheese for $7.89 and a 24-pack of string cheese costing $5.75.

Display. Back at home, show the information for one pair of the items to everyone. Each player places a marker (coin, button) by the item she thinks is the better deal.

Calculate. Using paper and pencil or a calculator, each person should divide the cost by the quantity to find the unit cost of both items: $7.89 ÷ 36 = $0.22 per string cheese, compared with $5.75 ÷ 24 = $0.24 per string cheese.

Solve. The 36-pack of cheese is the better deal (it has a lower unit cost). Score a point if you estimated correctly. Continue playing with the remaining pairs of items. Whoever has the most points wins!

Q&A Reading, or maybe it's math

Q: *My son loves to read, but he's reluctant to practice math. Is there a way he could do both together?*

A: Absolutely! When he reads a library book, have him predict how many pages he will read in 10 minutes. He could use a timer to find out. (Remind him this isn't a race—he should read at his normal pace and enjoy the story.)

Can he use that answer to predict how many pages he will read in 30 minutes? If he read 4 pages in 10 minutes, he would multiply 4 x 3 to figure out that he would read 12 pages in 30 minutes.

Say he reads 30 minutes a day. How many days would it take him to finish the book? Your son would divide the number of pages in the book by the number he reads in 30 minutes. Now he will know when he needs another trip to the library!

SCIENCE LAB Shed some (sun)light on it

This sunny-day experiment lets your youngster "see" ultraviolet (UV) light.

You'll need: 2 clear glasses, measuring cup, tap water, tonic water, masking tape, marker, flashlight, black paper

Here's how: Have your child pour 2 cups tap water into one glass and 2 cups tonic water into the other, using tape and a marker to label both glasses. Hold black paper behind the glasses (to provide contrast) while he shines a flashlight on each one and observes the color of the water. Next, he can set the glasses outside in direct sunlight (again with black paper behind them) and observe.

What happens? With the flashlight shining, the water in both glasses appears clear. Outdoors, the tap water still looks clear, but the sunlight makes the tonic water glow light blue.

Why? Sunlight is made up of visible light and invisible UV light. Tonic water contains quinine, which absorbs UV light and converts it to blue light—allowing your child to see the UV light in the water!
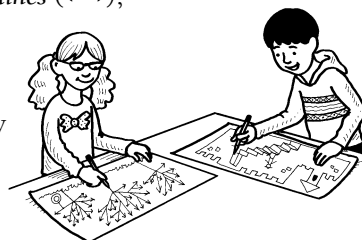
MATH CORNER Turn geometry into art

Combine geometry and art in this creative project for your youngster and her friends.

Suggest that they each draw a picture using as many different geometric symbols as they can, such as *points* (•), *line segments* (•—•), *rays* (•—→), *lines* (←→), *parallel lines* (=), and *perpendicular lines* (⊥). One child might draw a forest using rays, and another may draw a staircase with both parallel and perpendicular lines.

Let them trade pictures and take turns calling out a geometry term for each person to find. Can they locate a line segment or a ray, for example?

Then, suggest that everyone draw another picture, only this time one person calls out terms to use: "Draw 2 parallel lines. Draw 5 rays," and so on. They'll enjoy comparing their pictures to see what each other created.