Intermediate Edition

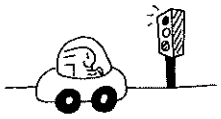
Math+Science Connection

Building Understanding and Excitement for Children

December 2018

Brookhaven School District

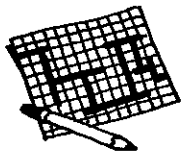
Funded through Title I



INFO BITS

Parallel or perpendicular?

Sitting back-to-back with your youngster, try to draw similar designs on graph paper. Take turns giving each other clues using the words *parallel* and *perpendicular*.



Examples: "I'm drawing a set of vertical parallel line segments 3 squares long" or "I'm drawing a pair of perpendicular line segments 5 squares long." After each turn, compare your drawings.

My star journal

Let your youngster observe constellations and draw familiar parts (Big Dipper, Orion's belt) in a "star journal." She could note where each one appears ("above our big oak tree"), then check them weekly at the same time of night. Why do they move? (They don't! As the Earth orbits the sun, we see the constellations in different parts of the sky.)

Web picks

Logic games like Zippy Boxes, Hex Blocks, and Maze Collapse are just a few of the challenges your child will enjoy at *mathplayground.com/logicgames.html*.

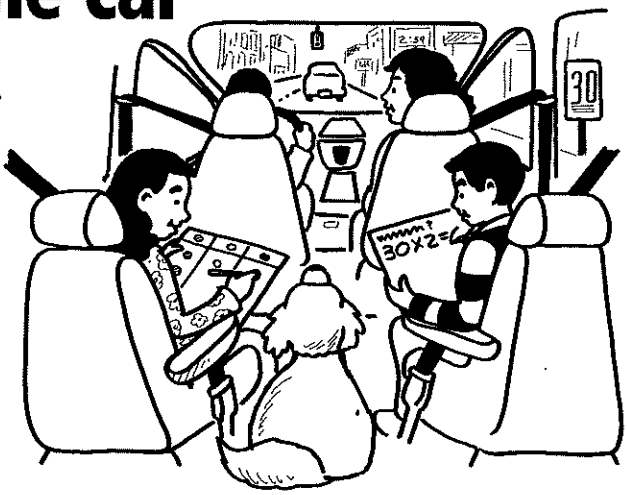
When your youngster visits *kineticcity.com*, she'll find cool science activities, experiments, and projects to do online *and* offline.

Just for fun

Q: What has no fingers but many rings?

A: A tree!

Math in the car



From speed limit signs to traffic lights to license plates, the world outside your car windows is full of opportunities for your child to practice math. The next time you drive her to a lesson or run errands, try these activities.

Speed limits

Give each other problems involving distance or time. If you pass a 30 mph sign, you might ask your youngster, "How far will we go in 2 hours at a constant 30 mph?" (30 x 2 = 60 miles). Or say, "How long will it take to drive 15 miles?" *Answer:* 30 minutes. 15 is half of 30. If it takes 60 minutes to go 30 miles, it takes half of 60 minutes (30 minutes) to go 15 miles.

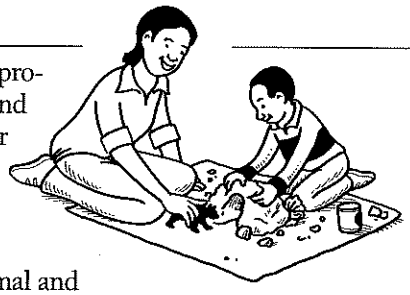
Traffic lights

Suggest that your child graph red, yellow, and green lights. She could divide a sheet of paper into columns for each color. Each time you stop at a red or yellow light or go through a green one, she can make a colored circle in the matching column. Now have her tell you what fraction of the lights was each color. *Example:* "There were 4 red lights and 16 lights in all. $4 \div 16 = 0.25$, or $\frac{1}{4}$. So $\frac{1}{4}$ of the lights were red."

License plates

Encourage your youngster to copy down the digits on license plates. See who can use them to make an equation that gets as close to 100 as possible. For 3, 2, and 7, she might find $27 \times 3 = 81$. Play again, this time trying to get as close to 0 as possible: $7 - (3 \times 2) = 1$.

Animal homes



Just like people, animals need homes that provide them with basic necessities like shelter and access to food and water. Help your youngster learn about animal homes with these ideas.

- **Write an ad.** Together, look at real estate ads in a newspaper to see what they include. Then, each of you can secretly choose an animal and write an ad for its home. Can you guess each other's animals? *Example:* "Tall tree in a tropical rain forest. Many trees nearby for swinging. Plenty of leaves, fruit, seeds, nuts, insects, and spiders available for food." (*Answer:* monkey)

- **Build a home.** Let your child pick an animal and create a model of its home. For instance, he might make a bear's den out of clay. He could set it on brown construction paper and add rocks from outside and trees made of clay.

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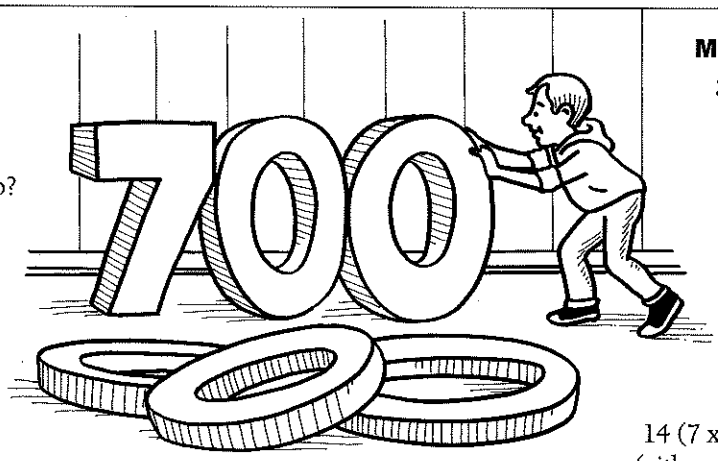
Zero: More than nothing



What's so special about zero? Here are ways your child can discover some of the roles it plays.

Placeholder. The difference between 1 and 10 is all about zero. That's because zeroes bump numbers to different places, from ones to tens, and even to millions. Let your youngster pick any digit (say, 7), and take turns naming a number it could become with the help of one or more zeroes. *Examples:* 70, 700, or 7,000,000.

Multiplication property. This game shows your child what happens when he multiplies by zero. Get two dice, cover the 5 and 6 on each die with tape, and write 0 on the tape. On your first turn, roll the dice and add to get your score (roll 3 and 4, and score 7). On each additional turn, multiply the sum of the dice by your previous score. So if your second roll is 2 and 0 (2), your score is 14 (7 x 2 = 14). Take up to 10 turns (either player can quit at any time), but watch out! Any number multiplied by 0 is 0, so if you roll double 0s, you lose (0 + 0 = 0, and 14 x 0 = 0). Highest score wins.

SCIENCE LAB Instant ice

Your youngster will delight at the way water turns to ice before her very eyes!

You'll need: six bottles of water, freezer, timer, ice cubes, bowl

Here's how: Have your child lay the bottles of water on their sides in the freezer and set a timer for 2 hours. When time's up, let her put an ice cube into a bowl, then take one bottle from the freezer and slowly pour the water over the ice.

What happens? The water immediately turns to ice, forming a column on top of the ice cube. *Tip:* If it doesn't work, try it with an additional bottle every 5 minutes until it does.

Why? Water forms crystals when it freezes. By removing the almost-frozen water from the freezer at the 2-hour mark, your youngster catches it just before the crystals form. However, when the water touches the ice, that's the last push it needs—it freezes instantly.

OUR PURPOSE

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

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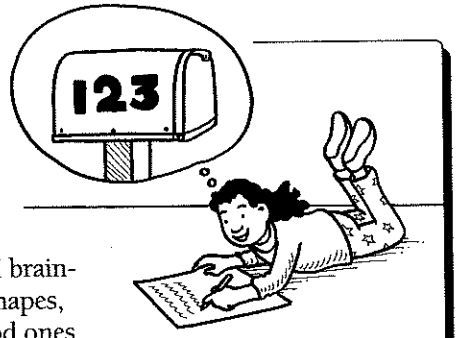
PARENT TO PARENT Math + writing



My daughter Hannah loves creative writing, and she also loves math. I asked her teacher if there was a way she could do both at the same time.

The teacher suggested that Hannah and I brainstorm "story starters" involving numbers, shapes, time, or money. We came up with some good ones like "Once upon a time, there was a boy named Dave Ision who lived at 123 Numerator Lane." Hannah wrote a funny story about the division problems of the "Ision" family.

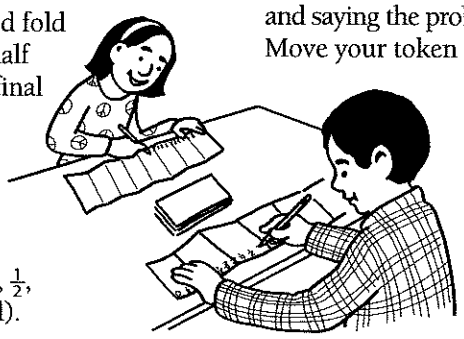
Also, the teacher told me about haiku, a type of Japanese poetry with five syllables in the first line, seven in the second, and five in the third. I encouraged Hannah to try a math haiku, and here's what she wrote: "Multiplication / Opposite of division / Back and forth they go." She's having fun writing about math, and I'm enjoying reading her work!

MATH CORNER Fractions on the line

Race down the number line with this game that lets your child add fractions.

Materials: *one long strip of paper for each player, pencil, six index cards, one game token per person*

1. Each player should fold his strip in half, in half again, and in half a final time. Unfold, and number the ends and creases (0–8). Between each pair of whole numbers, write the fractions $\frac{1}{4}$, $\frac{1}{2}$, and $\frac{3}{4}$ (evenly spaced).



2. On separate index cards, ask your youngster to write $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, $1\frac{1}{4}$, $1\frac{1}{2}$, and $1\frac{3}{4}$. Stack the cards facedown, and have players put their tokens on their strips at zero.

3. Take turns drawing a card ($\frac{3}{4}$), adding the fraction to the number you're on (0), and saying the problem aloud ("$0 + \frac{3}{4} = \frac{3}{4}$"). Move your token onto the sum.

4. On every fourth turn, *subtract* the fraction you draw, and move backward to the difference.

5. The first player to reach 8 wins.