Math+Science Connection

Intermediate Edition

Building Understanding and Excitement for Children

April 2014

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INFO BITS

Daily math time

Just as you might read to your youngster daily, try to take time for math every day, too. You could play dominoes, do brainteasers and puzzles, or try strategy games like mancala, backgammon, chess, or Mastermind. Weaving math into your day will let her know that you think math is important—and fun!

Go stargazing

Together, walk outside after dark to observe the stars. Take along black construction paper and white chalk so your child can sketch the constellations. Suggest that he indicate where they are in the sky and date his drawings. How do they change over time? *Idea:* Have him look up the constellations in a library book or online.

Web picks

🖥 Play games like Math Blaster and download free math apps at *jump start.com/parents/games/math-games*.

🖥 Your children can watch videos of kids doing science projects and then find experiments to do themselves at *pbskids.org/dragonflytv*.

Just for fun

Q: What has no fingers, but many rings?

A: A tree.

License plates = math fun

Wait until you see how much math your child can do with a license plate!

While riding in the car or walking down the street, have him write down a license plate as a number (removing any letters). For example, LS 4389 becomes 4,389. Then, try activities like these:

● Have him name the digit in the ones place (9), the tens place (8), the hundreds (3), and the thousands (4).

● Ask your youngster to rearrange the digits to make the largest (9,843) and smallest number possible (3,489). What's the difference between those two numbers? (9,843 – 3,489 = 6,354)

● Let him round the number to the closest 10 (4,390), 100 (4,400), and 1,000 (4,000).

● Challenge him to pick one of the digits to skip count by and go as high as he can. He might count by 3s (3, 6, 9) or 8s (8, 16, 24).

● See if your child can add the digits together in his head (4 + 3 + 8 + 9 = 24). Using pencil and paper, can he multiply them? (4 x 3 x 8 x 9 = 864)

● Tell him to use the digits to write equations with answers of 1 through 10. *Example:* 4 – 3 = **1**; 8 ÷ 4 = **2**; 9 ÷ 3 = **3**.

● Give each other math problems using all the numbers on the license plate. For instance: 4 x 3 – 8 + 9 = ? (13)

Racing jars

Which jar will win the race?

Give your youngster two empty jars (same size), and have her fill one with water and screw both lids on tightly. She can get a stack of books and make a ramp for the jars to race down. Ask her to predict which jar will reach the bottom first and which one will roll the farthest.

Then, she should place the jars at the top of the ramp and let go at the same time. Were her predictions correct?

(The water-filled jar will get down faster, but the empty jar will roll farther. That's because there is more friction between the heavier jar and the floor, causing it to slow down. So the empty jar wins the race!)
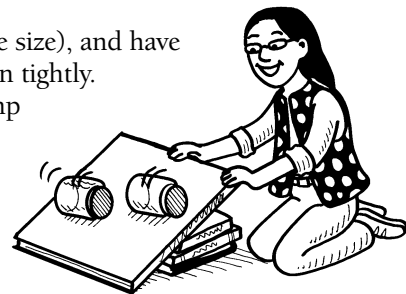
Function machine

A "function machine" is a clever way for your youngster to learn about number relationships.

It works like this: You feed in a number, use a "function"—or rule—inside the machine, and then figure out the answer. Follow these steps.

1. Together, think of rules that will tell the machine what to do. *Examples:* "Subtract 3." "Double the number and add 2." Have your child write each rule on a slip of paper and number 20 separate slips, 1–20.

2. Ask your youngster to build her machine. It could be as simple as an open shoebox with a slit on each side (marked "In" and "Out"). Or she might use cardboard boxes and tubes to make one that looks like a robot.

3. To use her machine, have her put one function slip inside, stack 5 number slips by "In," and place 5 blank slips by "Out." She can feed a number slip (3) into the machine, use the directions ("multiply by 3 and add 1"), and write the answer on a blank slip (10) to slide through the "Out" slit. After doing the 5 problems, she could try a new function slip, change numbers, and play again.

PARENT TO PARENT

The geometry of golf

My cousin mentioned a fun geometry project her daughter had done, and I thought my son Marcus would enjoy it, too. The idea is to use shapes and angles to design a mini-golf course.

Marcus sketched out each hole on a piece of poster board. He had the idea to use a different shape for each one. For instance, hole 1 was the "trapezoid hole," and number 2 was "rhombus."
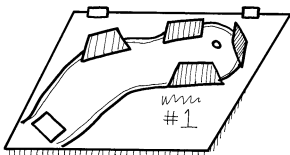
He also put angles into each design— for banking off shots just like on a real mini-golf course. I liked hearing him think aloud about whether to use right, acute, or obtuse angles.

Marcus liked creating his course on paper. Now we're going to go play a round of mini-golf so he can see what shapes and angles the course designers used!

SCIENCE LAB

A "rusty" experiment

Your youngster probably knows his bike will get rusty if he leaves it out in the rain. This experiment will explain why.

You'll need: steel wool pads, water, bowls

Here's how: Have your child put a steel wool pad in a shallow bowl and cover it with $\frac{2}{3}$ cup water. He should put a dry steel wool pad in a second bowl. Let him observe the pads for a week.

What happens? The wet pad will become rusty.

Why? Water makes steel or iron oxidize, and rust forms.

Idea: Suggest that he think about how to prevent rust. He could repeat the experiment, but this time coat three pads with different substances (*examples*: vegetable oil, nail polish, car wax). Which one works best? Finding ways to prevent rust is important for objects like cars, boats, and bridges. Of course, for his bike, the best idea is to keep it out of the rain!
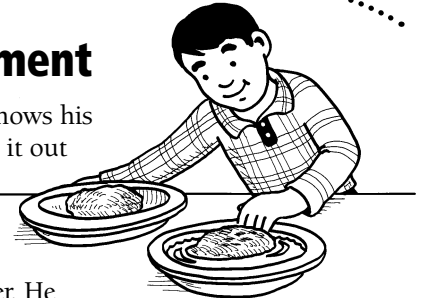
MATH CORNER

Play fraction games

Make fractions into family fun with these games.

Note: On separate index cards, have your youngster write fractions for halves ($\frac{1}{2}$), thirds ($\frac{1}{3}$, $\frac{2}{3}$), fourths ($\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$), fifths ($\frac{1}{5}$…), sixths ($\frac{1}{6}$…), eighths ($\frac{1}{8}$…), ninths ($\frac{1}{9}$…), tenths ($\frac{1}{10}$…), and twelfths ($\frac{1}{12}$…). Place the cards in a stack facedown.

Equals 1

The object of this game is to add fractions together to equal 1. Take turns drawing a card (keep all that you pick). When you have cards equaling 1 (*example*: $\frac{1}{4} + \frac{1}{2} + \frac{1}{4}$), lay down the set. Use up all the cards, and whoever makes the most sets wins.

More or less

Practice comparing fractions with this game. Each player draws a card and turns it over. The player with the bigger fraction keeps both cards. If the cards are equal, draw again, and high card takes all four. Wind up with the most cards, and you win.