Intermediate Edition

Math+Science Connection

Building Understanding and Excitement for Children

November 2017

Klamath Falls City Schools
Title I

INFO BITS

Here's my method

As your youngster does math homework, periodically ask him, "Can you explain how you solved that?" For 13 x 7, he might say that 10 x 7 = 70 and 3 x 7 = 21, then 70 + 21 = 91. Explaining his reasoning helps him understand his own ideas—and discover any errors in his thinking.

"What kind of matter am I?"

Use this family activity to help your child visualize molecules in solids, liquids, and gases. First, everyone pretends to be a solid—stand close together.

Now be a liquid: Molecules are packed more loosely, so step a little farther apart and make "flowy" movements. Finally, mimic a gas, where molecules float more freely around the room.

Book picks

The Secret Coders (Gene Luen Yang) is a graphic novel mystery that also shows your youngster how to write computer code.

What makes us sneeze? Your child will find out in *Sneeze!* (Alexandra Siy). Includes photos and interesting facts about sneezing.

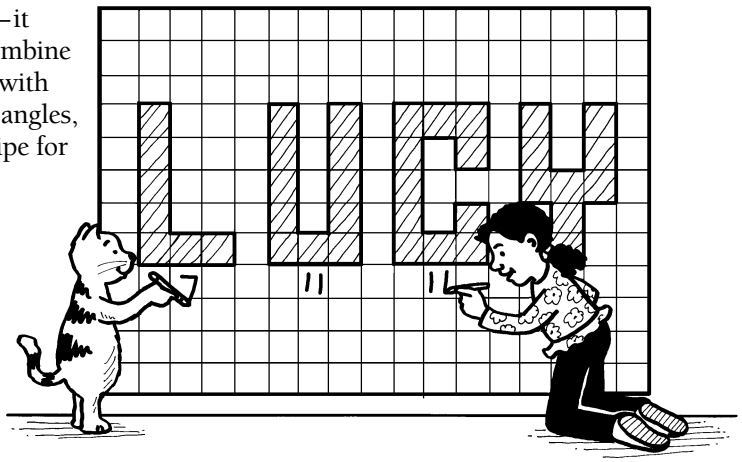
Just for fun

Q: How does a porcupine play leapfrog?

A: Very carefully.

The geometry of my name

Children love the sound of their own name—it belongs to them. Combine this natural interest with area, perimeter, and angles, and you've got a recipe for geometry fun!



Measure area and perimeter

Encourage your youngster to write her name in block letters on graph paper and shade in the squares. An L might have 5 squares going up and 2 more at the bottom going across. How many squares did she use? (7) When she has finished her whole name, she can calculate its area by counting the square units in each letter and adding them together. (The area of L is 7 square units.)

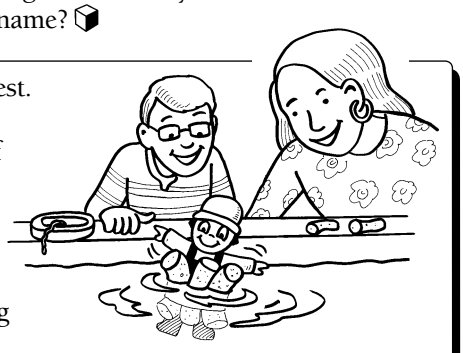
Next, she could find the perimeter by "walking around" each letter in her name, counting how many sides of the squares it takes. The perimeter of the L, for instance, is 16.

Find the angles

The letters of your child's name offer a fun way to practice spotting different kinds of angles. Suggest that she write her name on regular paper in all capital letters. Does she see any 90° angles? (They appear where *perpendicular* lines meet in letters like L, T, and E.) How about acute angles (less than 90°) and obtuse angles (greater than 90°)?

She could draw a circle around each right angle, a square around each acute angle, and a triangle around each obtuse angle. How many of each are in her name?

Design a life vest



Every passenger on a boat needs a life vest. Ask your youngster to imagine his favorite action figure on a canoe ride. What kind of life vest could your child engineer to keep it afloat?

Let your youngster gather materials he thinks would float and build a toy-sized life vest. He might connect foam or packing peanuts with string and tape, for example.

To test his design, he should fit the life vest onto his action figure and drop it into a sink or bathtub full of water. Does it stay afloat? If not, he can remove or add elements, one at a time. He will be redesigning and testing—just like a real engineer does.

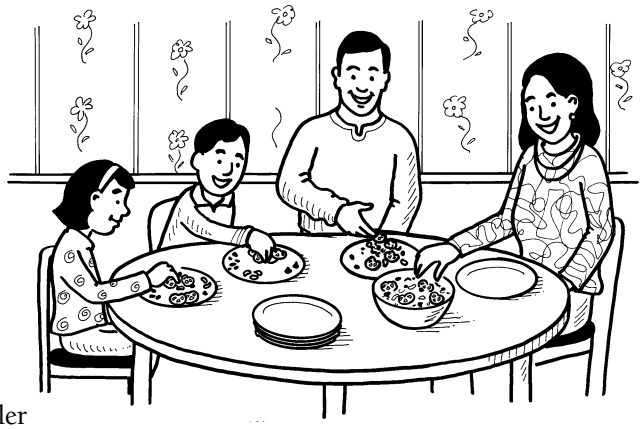
Break down fractions

Q: *What's in $\frac{3}{4}$?*

A: $\frac{1}{4}$, $\frac{2}{4}$, and a bunch of other fractions!

These ideas will let your youngster practice breaking down—or *decomposing*—bigger fractions into their smaller parts.

A fraction forest. With this forest, your youngster will see at a glance all of the smaller fractions inside larger ones. Ask him to draw several tree trunks and write a "1" on each. For every tree, he could add branches labeled with fractions that add up to 1. For instance, he might draw 2 branches from one trunk and label each $\frac{1}{2}$. Or on another trunk, he might draw 3 branches, each labeled $\frac{1}{2}$, $\frac{1}{4}$, and $\frac{1}{4}$.



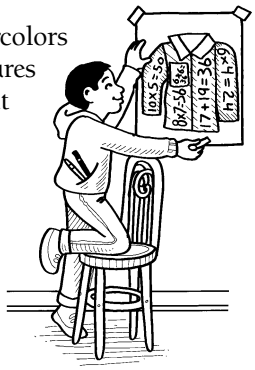
A fraction of trail mix. Have each family member put a handful of trail mix on a separate paper plate. Count your pieces, sort them by ingredient, and count each type. What fractions does your trail mix break down into? Label each ingredient with a fraction showing its part of the total. *Example:* For 6 raisins, 3 peanuts, 2 chocolate chips, and 5 pretzels, write $\frac{6}{16} + \frac{3}{16} + \frac{2}{16} + \frac{5}{16} = \frac{16}{16}$ (or 1). Compare your plates—your child will see that everyone's answer equals 1. *Tip:* Encourage your child to simplify the fractions and write the equation again: $\frac{3}{8} + \frac{3}{16} + \frac{1}{8} + \frac{5}{16} = 1$.

MATH CORNER Paint by equation

This art activity will give your youngster extra practice with math facts.

Each of you draws an object on a sheet of paper, perhaps a house, car, or shirt. In each section of the picture (roof, door, sleeve), write any equation (8 x 7 = __, 17 + 19 = __). Then, swap papers, and fill in the answers. (*Note:* Let him check the answers with a calculator.)

Next, use watercolors to paint your pictures based on a key that he comes up with for the answers.



Example:

- 0–20 = blue
- 21–40 = red
- 41–60 = yellow
- 61–80 = green
- 81–100 = purple
- More than 100 = orange

When the pictures dry, he could hang them up as study tools.

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 A graphing party

My daughter Anika had a homework assignment to take a survey and graph the results. She and her friends decided to work on the assignment together, and they turned it into a "graphing party."

They wrote survey questions about favorite things like ice cream treats and types of movies. Then, they surveyed friends and family. To decide what kind of graph to make, Anika wrote "bar graph" and "picture graph" on separate scraps of paper and turned them facedown. Each child chose one and created that type of graph.

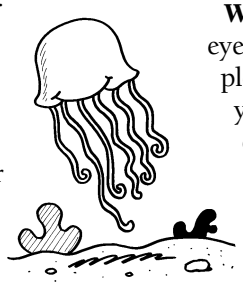
Anika made the bars on her graph look like ice cream sandwiches, and another child created a picture graph with movie tickets in each row. They analyzed their graphs to find the top choices (banana splits and comedies)—and then enjoyed ice cream while watching a movie!

SCIENCE LAB See like a jellyfish

Different animals have different ways of seeing. A jellyfish has simple eyes called eyespots that detect only light and darkness. Your child can try this experiment to see like a jellyfish does.

You'll need: flashlight

Here's how: In a windowless room, shut the door, and have your youngster close her eyes. Shine the flashlight on the floor in front of her, and move it slowly in a path around the room. Without opening her eyes, she should try to walk around, following the path of the light.



What happens? Your child won't be able to see the details of the room, but she can use the light to get around.

Why? The light penetrates her eyelids because they are not completely opaque. Although your youngster's eyes are very different from a jellyfish's eyes, this activity gives her an idea of how jellyfish see—they're able to navigate by recognizing variations in light.