

Math+Science Connection

Intermediate Edition

Building Understanding and Excitement for Children

May 2015



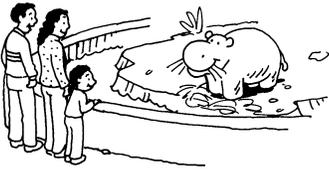
INFO BITS

Build a better building

Encourage your youngster and his friends to gather materials to build a fun structure outside. They might get sticks, rocks, cans, boxes, straws, and other objects. Have them draw up plans and build a fort, tunnel, or teepee, for instance. How could they make it taller, sturdier, or more interesting? They can use their ideas to redesign and rebuild.

Take a science vacation

Turn any family excursion into a science adventure! At the zoo, your child



might notice animals' eating habits. If you're headed to the mountains, she could observe plants and trees at different elevations. Going to the beach? Have her look for tracks of birds or crabs.

Book picks

📖 *Go Figure: A Totally Cool Book About Numbers* (Johnny Ball) contains math patterns, puzzles, and ancient ways of writing numbers.

📖 Create an underwater volcano, learn how a boat floats, or make stalactites with *Just Add Water: Science Projects You Can Sink, Squirt, Splash, Sail* (Scholastic).

Just for fun

Q: Since two's company and three's a crowd, what are four and five?

A: Nine.



A. J. Whittenberg Elementary School of Engineering
Dr. Megan D. Mitchell-Hoefer, Principal

Summer = math fun

Summertime means fun, and that fun can include outdoor activities like these to keep your child's math skills sharp while school is out.

Hit the target

Have your youngster fill water balloons and create five targets with hula hoops or sidewalk chalk. On each balloon, use a marker to write a missing-number equation ($54 + _ = 93$, $72 \div _ = 9$). Then, write the solutions (39, 8) on separate slips of paper, and place one in each target. Your child answers the problems by throwing the balloons into the right targets—splat!



Soak it up

Cool things off and learn about liquid measurements with this relay race. Give each team a pail of water and a sponge, and place a 1-cup measuring cup and a quart container opposite them. The first runner soaks his sponge, runs to squeeze the water into his measuring cup, and runs back. The next person does the

same. Fill the cup, dump it into the quart container, and start over. The first team to fill its quart wins—and the kids will see how many cups equal a quart (4).

Find the area

Let your child experiment with area and perimeter by making "fences." He can lay down 12 toothpicks to fence in different-sized rectangles. His perimeter will always be 12, but the area (length x width) will vary. For instance, a 2 x 4 rectangle has an area of 8 square units, while a 1 x 5 one has 5 square units. Which rectangle creates the smallest or largest area? Next, have him try with 24 toothpicks. 📦

See the math

Does your youngster realize that day-to-day life is filled with math? Challenge her to a contest to see who can come up with the most examples in a week. Jot down instances like these.

✓ **Getting gas.** Compare per-gallon prices. Figure out how many miles you can travel on a full tank.

✓ **Shopping.** Calculate discounts. Round prices. Estimate a total. Count money. Figure out sales tax.

✓ **Cooking.** Measure ingredients. Double a recipe. Set the oven temperature. Time how long to cook dinner. 📦



Lemonade for sale!

Give your child a chance to display her math skills—and earn money—by running a lemonade stand. Try these steps.

1. Get supplies. Go shopping together so your youngster can price supplies. She could compare the cost of buying lemons and sugar vs. a mix. Show her the paper cup selections (brands, serving sizes, number of cups per bag), and have her determine the best deal.

2. Figure out cost per serving. Ask your youngster to compute how many servings each batch of lemonade will make



(number of ounces per batch ÷ number of ounces each paper cup holds). Then, she should divide her total supply cost by that number of servings (for example, $\$25 \div 100$ servings = 25 cents per serving).

3. Determine a price. Now she'll want to add in some profit. How much does your child think customers would be willing to pay for lemonade? Encourage her to plug in different prices and figure out what her profit would be.

4. Set up shop. Finally, it's time to make signs, mix up her lemonade, put out a table and chairs, and go into business! 

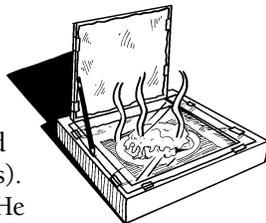
SCIENCE LAB

Make a solar oven

The sun's energy can heat a sidewalk, so why not use it to melt cheese for nachos?

You'll need: empty pizza box, knife, plastic wrap, tape, tinfoil, black paper, paper plate, tortilla chips, grated cheese, pencil

Here's how: Help your child carefully cut a flap in the box's lid (1 inch from edges). Fold this flap up. He should tape plastic wrap over the hole left in the lid. Then, he can tape foil to the bottom of the flap and inside all box surfaces and finally tape black paper onto the inside bottom. Now, have him put chips and cheese on the plate and into the "oven." Using the pencil to prop open the lid, he can leave his solar oven in the sun on a hot day.



What happens? The inside of the oven will eventually get hot enough to melt the cheese.

Why? The sun's rays reflect off the foil into the box. There, the trapped air heats up, and the black paper absorbs the heat. 

OUR PURPOSE

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

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Q & A

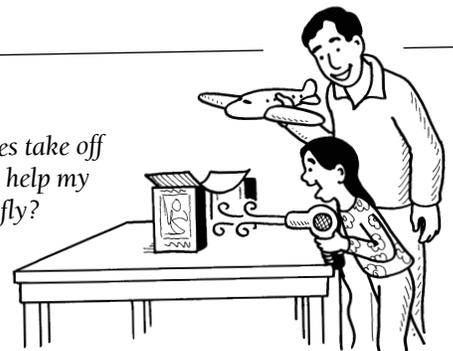
Flying high

Q: Our family likes to watch planes take off from a nearby airport. How can I help my daughter understand how planes fly?

A: Try doing a few simple experiments together. First, ask her to put her palms together and push with equal force from both sides—they won't move. Now tell her to push with just her left hand. Her hands will move right, where there's lower pressure (since she's not pushing on that side).

Second, illustrate that when air is in motion, it has lower pressure (Bernoulli's principle). Have your child place two books on a table, 6 inches apart, with a paper on top between them. Use a hair dryer (set on low) to blow air underneath the paper. The paper dips down (in a U) toward the moving air, where there's lower pressure.

Explain that an airplane's wing is rounded on top, forcing the air to move faster over it. Since the air moves faster, it creates lower pressure, and the plane moves up toward that lower pressure. 



MATH CORNER

Our secret decoder

You and your youngster can exchange secret messages using a mathematical code. Here's how.

Ask your child to write the alphabet down the left side of a sheet of paper. Then, have him assign a random number to each letter. *Examples:* A = 4, B = 12, C = 28, K = 22.



Now, use the code to write messages to each other. For each letter, substitute an equation (addition, subtraction, multiplication, or division) that equals the number. Separate each problem with a comma and each word with a slash. For instance, to spell the word *back*, your child could write: $8 + 4$, $12 \div 3$, 7×4 , $32 - 10$.

Do the math to decode the message—and write a new one. 