

Math+Science Connection

Building Understanding and Excitement for Children

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Woodrow Elementary School

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INFO BITS

Storytime = math time

Read books together, and turn the plots into math problems. For *The Three Little Pigs*, you could talk about how many bricks the pig would need and how much they would cost. Or figure out how he could raise the money. *Example:* If the pig earns \$5 an hour, how many hours would he have to work to pay \$100 for bricks?

Making mountains

Have your youngster overlap two sheets of construction paper and spread sand (or dirt) over the seam. Holding down the top sheet with one hand, he should slowly push the other sheet underneath. What happens to the sand? (It will start to mound.) He has just demonstrated how underground movements help form mountain ranges over time.

Book picks

With clever stories and comic-style drawings, *Fractals, Googols, and Other Mathematical Tales* (Theoni Pappas) teaches various math concepts.

Awesome Ocean Science (Cindy A. Littlefield) includes at-home activities and fascinating facts about the underwater world.

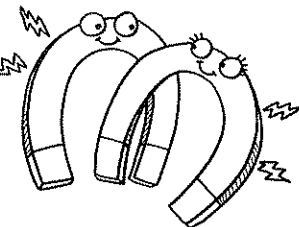
Worth quoting

"Get outside every day. Miracles are waiting everywhere." *Regina Brett*

Just for fun

Q: What did one magnet say to the other?

A: "I find you very attractive!"



Estimate first

Making estimates can keep your youngster from giving the wrong answer on math homework or tests. That's because if he estimates first and then his answer is wildly different, he will know something is wrong.

But becoming a good estimator takes practice! Try these ideas.


Change. Let your child pay for purchases and estimate how much change he should get back. Say he's buying one item for \$5.95 and another for \$3.25 and gives the cashier \$20. He could think, " $\$6 + \$3 = \$9$," and estimate that he'll get \$11 back. If the cashier hands him \$1, he'll realize there's a mistake.

Strategies. Encourage him to try different methods for different problems. He might round numbers (rather than $293 + 421$, he could add $300 + 400$). Or he could group pairs of rounded numbers. If he's adding $\$9.30 + \$3.25 + \$12.97 + \8.99 , he can group the first two ($\$9 + \$3 = \$12$) and the last two ($\$13 + \$9 = \22). Then, he would



add $\$12 + \$22 = \$34$, which gives him a good idea of the actual total (\$34.51).


Calculator. Estimating can alert your youngster to typing errors. For 80×56 , he might estimate that he'll get a 4-digit number ending in zero. If he sees 448 instead, he'll know he typed 8 instead of 80. Suggest that he take his estimation a step further and estimate the first digit (4, since $8 \times 5 = 40$). Then, if he gets 2,800, he would know it was wrong.

Tip: Point out that the goal of estimating is not to find the exact answer—but to get one that is reasonable. 

Investigate advertising claims

Does your child believe everything she sees on commercials or reads in ads? Let her put on her scientist "hat" to figure out if a product "really does that!"

First, have her choose an advertising claim to test. Maybe a detergent promises to remove lipstick stains or a chewing gum's flavor is supposed to "last longer." She can set up an experiment, record the data, and decide if the statement is true.

To test the detergent, for instance, she might rub lipstick on an old T-shirt and then wash it. Did the stain come out? For the chewing gum, she could chew several brands and time how long the flavor lasts. As she conducts these experiments, she'll practice science skills—and learn to be a smart consumer. 



Math Jeopardy

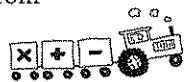
Usually, your child has to give the answers to math problems. With this Jeopardy game, she sees the answers and has to come up with the questions!

Start by making a game board together. Divide a poster board into 24 boxes (four columns and six rows). In each top box, write a math category: Addition, Subtraction, Multiplication, and Division. Then, put a random number in each square, choosing an assortment of 1-digit, 2-digit, 3-digit, or larger numbers. Finally, cover each number with a sticky note and assign dollar values from \$100 to \$500 down each column.



To play, take turns selecting a category and a box (“I’ll take Division for \$200”). The contestant has to make up a math problem using the number that’s uncovered (for 27, she might say, “ $27 \div 3 = 9$ ”). If her math is correct, she keeps the sticky note; if not, it goes back on the board. Continue taking turns until all the notes are removed. Add up your dollar amounts—the high score wins.

Note: Each box could have several correct problems. For another way to play, have contestants name two or three ways to use the number in the box. 📦



Q & A Prove it!

Q: In school, my daughter has to “prove” that her math answers are right. How can I help her work on that at home?

A: Proving answers is an important way for your child to understand her “math thinking.” At this age, children may say they “just knew it.” But to move on to higher math skills, they need to know the steps they’re taking to find the answers.



When your daughter does math homework, ask her to prove a few answers to you. She could explain out loud what she did in her head. Or she might draw pictures or use objects to act out the problems.

Another idea is to use “math buddies.” She and a friend could do the same problem and then explain to each other how they solved it. Your child will see that people can use different strategies to get the same answer, which will help build her math thinking as well. 📦

OUR PURPOSE

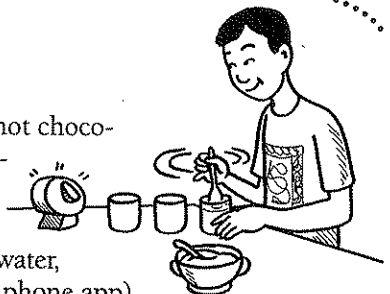
To provide busy parents with practical ways to promote their children’s math and science skills.

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SCIENCE LAB

Hot and cold

Your youngster might make hot chocolate with cocoa powder or a cold drink with orange-flavored granules. Let him conduct this experiment so he can learn what happens as he stirs.



You’ll need: 3 glasses (all the same size), sugar, water, spoon, timer (a watch with a second hand or a cell phone app)

Here’s how: Have your child fill the first glass $\frac{2}{3}$ full with very cold water and add 2 heaping tsp. sugar. He should stir until the sugar dissolves, timing how long it takes. Next, he can fill another glass $\frac{2}{3}$ full with room-temperature water and follow the same procedure. Finally, help him carefully fill the last glass $\frac{2}{3}$ full with very hot water and repeat the experiment.

What happens? The hotter the water, the faster the sugar dissolves.

Why? Water and sugar, along with everything else in the universe, are made of particles that are constantly moving. Certain solids will dissolve in liquids and form a *solution*. Warmer water has more energy, so the particles move around faster and mix together more quickly.

Idea: Try the experiment with other materials, such as salt or baking soda. Do the results change? 📦

MATH CORNER

It’s a match

Guess what’s hiding in your child’s sock drawer? A fun math activity.

Put two black socks and two white socks in a bag, and ask him how many socks he would need to pull out to be guaranteed a pair. (The answer is 3.) Next, add two red socks. How many would he have to take out now to be assured a match? (4) And if you added two green socks? (5)

He will have to problem-solve to make his predictions. Suggest that he lay out two pairs of socks and pull one from each—and then pull one more sock. He will see that the third sock would make a match. What happens if he lays out three pairs and tries again?

After he does this with various numbers of pairs, ask if he can figure out the math rule that will solve the problem every time (divide the total number of socks by 2 and add 1). 📦

