

# Math + Science Connection

Intermediate Edition

Building Understanding and Excitement for Children

September 2013

District School Board of Pasco County  
Title I

## INFO BITS



### Multiplication name tags

Get playful with math by having family members wear multiplication facts to dinner. Each person can write a multiplication problem ( $3 \times 6$ ) on a sticky note and put it on his shirt. Then, address each other by the *product* (the answer): “18, would you please pass the ketchup?”

### Extracurricular activities

Help your youngster build interest in math and science by joining an after-school program. Her school might have a math club, a hands-on science program, or a chess club, for example. Ask in the office, or look at the school’s website together.

### Book picks

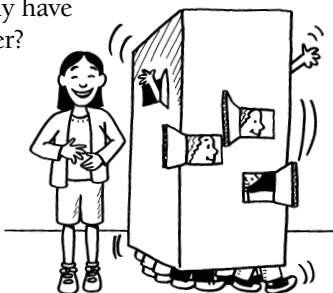
▣ *Arithmetricks: 50 Easy Ways to Add, Subtract, Multiply, and Divide Without a Calculator* (Edward H. Julius) will have your child doing math in his head—and loving it!

▣ Introduce your youngster to a pioneering environmentalist and her world of nature in *Listening to Crickets: A Story about Rachel Carson* (Candice F. Ransom).

### Just for fun

? A family has seven daughters, and each daughter has a brother. How many children does the family have altogether?

Eight!



## Practice math thinking

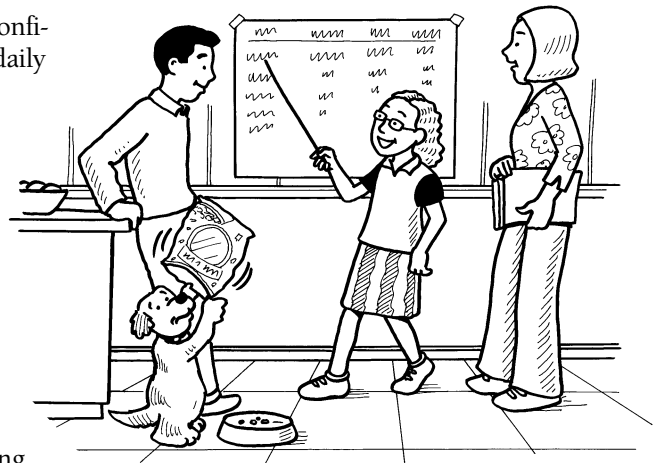
To help your child feel confident about math, give her daily opportunities like these to practice *mathematical reasoning*—or making sense of numbers.

### Price comparisons

Need more dog food or printer paper? Ask your youngster to see if she can get a better deal at a store or online. She will have to consider the cost of sales tax and shipping, as well as any store coupons or online discounts you have. When she makes her recommendation, let her explain her reasoning.

### A reasonable guess

Estimating is an important part of mathematical reasoning. Have your child estimate the price of an amusement park outing for your family. She could use *benchmark numbers* (5, 50, 100) to help her add, and she’ll have to decide if her answers are reasonable.



### Deductive reasoning

Encourage your youngster to use what she knows to work backward. If you drive by a farm, you might say, “I see horses and chickens. If there are 30 heads and 80 feet, how many horses and chickens are there?” Have her explain her thinking: “I know there are 30 animals because they all have heads. I also know horses have four feet and chickens have two feet...”  
*Note:* Take along pencil and paper so she can sketch and work out the problem. ▣

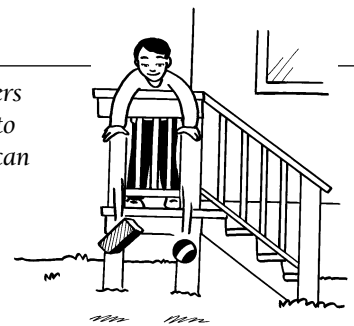
## Ask open-ended questions

### Q & A

**Q:** At back-to-school night, my son’s teachers said they give more open-ended questions to students than when I was in school. How can I help my son with this at home?

**A:** You can support your youngster by posing lots of questions and encouraging him to problem solve—and to ask his own questions. For instance, you might say, “I’ve turned the number 7 into 16. How did I do that?” He can figure out the *rule* you used (“times 2, plus 2,” so  $7 \times 2 + 2 = 16$ ) or come up with one of his own (“plus 10, minus 1,” or  $7 + 10 - 1 = 16$ ). Then, he could make up a problem for you.

Also, suggest open-ended science activities. Have him drop two objects from the same height, and ask what affects the time it takes them to hit the ground. He can use the evidence he gathers to create another experiment. ▣



# Fractions from nature


Making “fraction sticks” is a fun way to practice fraction skills while spending time outdoors. Here’s how.

**Make fraction sets.** Together, hunt for thin sticks that are about 2 feet long. Each of you should keep one stick whole and break others into different parts of a whole. *Examples:* two equal pieces for halves, three pieces for thirds, four pieces for fourths, six pieces for sixths, and so on.



**Label the parts.** Line up each of your sets on a sidewalk or playground blacktop—your child will see that the sticks are still equal lengths even though they’re made up of different parts. Let him use chalk to label the fractions ( $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{3}$ ,  $\frac{1}{6}$ ).

**Trade fractions.** Take turns trading for equal fractions. You might say,

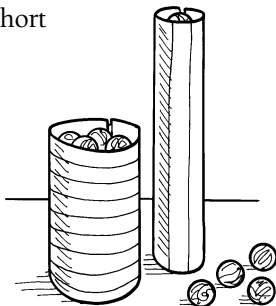
“I’d like pieces that equal  $\frac{1}{3}$ ”—you would give him a  $\frac{1}{3}$  stick, and he could hand you  $\frac{1}{6} + \frac{1}{6}$ . Then, he might ask you for  $\frac{3}{4}$ , and you can give him  $\frac{1}{2} + \frac{1}{4}$ . 


## MATH CORNER Measuring volume

Which popcorn container does your youngster want at the movies? Have her do this activity to find out!

Ask her to roll two index cards into cylinders—one vertically and one horizontally—so the edges just touch, and tape them closed. One cylinder will be tall and skinny, and the other one short and wide.

Then, have her predict how many (same-size) marbles each tube could hold. Will the totals be the same? To test her prediction, let her fill each tube with marbles and count. How can she explain the result?



Your child may be surprised to find the shorter, wider cylinder holds more. That’s because the radius of a cylinder has a greater effect on its *volume*—the amount of space inside a 3-D object—than its height does. So when she’s ordering popcorn, she might prefer the shorter, wider cylinder to the taller, skinnier one! 

### OUR PURPOSE

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

Resources for Educators,  
a division of CCH Incorporated  
128 N. Royal Avenue • Front Royal, VA 22630  
540-636-4280 • rfeustomer@wolterskluwer.com  
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## SCIENCE LAB Blue skies

Since your child was little, she has probably asked you why the sky is blue. This experiment will help her discover the reason.

**You’ll need:** tall (clear) glass, water,  $\frac{1}{2}$  tsp. measure, milk, spoon, flashlight

**Here’s how:** Have her fill the glass about  $\frac{3}{4}$  full with water, add  $\frac{1}{2}$  tsp. milk, and stir. Then, she should shine the flashlight straight down into the liquid. Tell her to look through the side of the glass and observe the color.

**What happens?** The water appears blue.

**Why?** When the flashlight beam bounces off the milk particles, blue is reflected. On earth, sunlight shines through our atmosphere and bounces off particles of air and dust. Again, blue is the color most likely to be reflected and scatter around—making our sky look blue. In outer space, there is no air and little dust to bounce off of, so everything is dark. 



## Why do my feet stink?

After running around all day, your child’s feet may not smell too good. Share these facts and ideas to explore the science behind stinky feet:

- We sweat to cool our body down. To see how this works, have your youngster lick the back of his hand and then blow on it. What does he feel? (A cooling sensation.) Sweat works the same way—in a process called *evaporative cooling*, our body cools down from the water evaporating on our skin.



- Feet each have 250,000 sweat glands that can produce up to  $\frac{1}{2}$  cup of sweat a day! All that sweat gets smelly when it mixes with the bacteria that live on our skin and is trapped inside socks and shoes.

- Suggest that your child try experiments to control the smell. He might wear different socks, change socks during the day, or wash his feet with various soaps. Like any good scientist, he should change only one *variable* at a time and record his findings. 