Intermediate Edition

Math+Science Connection

Building Understanding and Excitement for Children

March 2014

Title I / Learning Assistance Programs
Stanwood-Camano School District

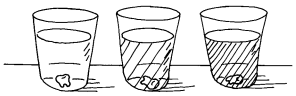
INFO BITS

Are we there yet?

When your youngster asks how much longer something will take, have him figure it out. He can use the information he knows, such as how long you've been on the road and how long the car ride is supposed to be. *Example:* "We drove a third of the way in 10 minutes. How long should the next two-thirds take?" (20 minutes)

Teeth and soda

Let your child see for herself the effects of soda on her teeth.



She can use baby teeth you might have saved or use eggshells (rinsed, dried), since they have calcium like teeth do. Have her soak one in water, one in orange juice, and one in cola. How do the teeth look after a week? A month?

Book picks

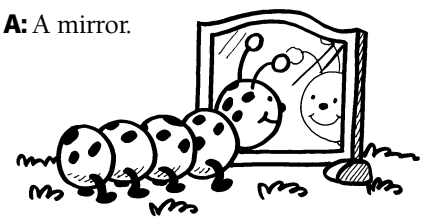
Find problem-solving projects about number sequences in *Fibonacci Fun: Fascinating Activities with Intriguing Numbers* (Trudi Hammel Garland).

The Everything Kids' Astronomy Book (Kathi Wagner) is filled with interesting facts about planets, galaxies, life in outer space, and more.

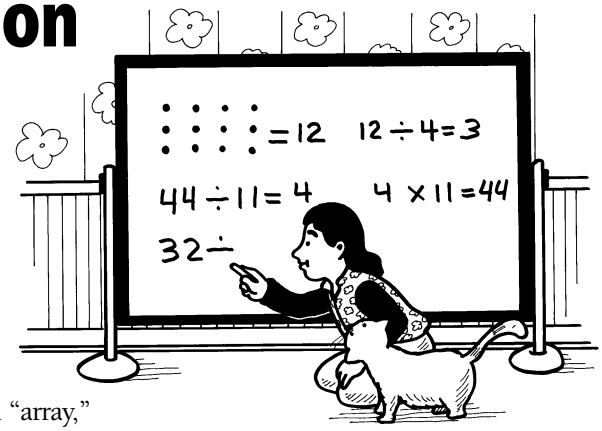
Just for fun

Q: What turns everything around, but doesn't move?

A: A mirror.



Division: The opposite of multiplication



Once your child gets comfortable with multiplication, division won't be far behind. That's because division is the *inverse*, or the opposite, of multiplication. Here are ways she can use multiplication to practice division.

Make arrays

Have your youngster make an "array," or an arrangement to represent a multiplication problem. For instance, she could draw 4 rows of 3 dots to show 4 x 3 = 12. Then, she can use the same array to represent a division problem (12 ÷ 4 = 3). *Idea:* Help her bring the arrays to life by turning them into word problems together. *Example:* "Twelve kids went bowling, and four could be in a lane. How many lanes did they need?" (3)

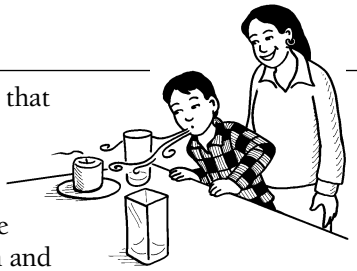
Flip problems

Talk about how multiplication can "undo" division and division can "undo" multiplication. Say her homework problem is 44 ÷ 11. She might change it to a multiplication problem and think, "What number x 11 = 44?" The answer (4) is also the answer to her division problem. *Hint:* If your child doesn't know the answer, she could draw groups of 11 until she has 44—she'll see that she needed to draw 4 groups of 11.

Do a final check

Multiplication is the perfect way to check answers to division problems, and vice versa. Ask your youngster to make up division problems that have *quotients* (answers) of each number 1–20. For instance, 56 ÷ 7 would give her one for the number 8 (56 ÷ 7 = 8). She can check the answer for each problem by doing the multiplication (8 x 7 = 56). Since the numbers match, her division problem is correct.

How the wind blows



With this experiment, your youngster will learn that wind doesn't always move in a straight line!

Light a candle and put a square object (a vase, a box) between the candle and your child. Ask him to try to blow out the candle (he won't be able to). Then, put a round drinking glass between him and the candle, and have him try again. This time, the flame will go out.

Can your youngster say why? You could explain that when he blows out the candle, he is creating wind, and wind is able to move around curved objects. The Earth's rotation also causes wind to curve—known as the *Coriolis effect*.

Find the median

When dealing with series of numbers, your youngster will sometimes have to find the median—or middle number. Try these ideas for practice.

Organize your family

At family get-togethers, have him line up relatives by height to find the person at the median height. After they line up, he can ask the two on the ends to sit down, then the next two, and then the next. The last person standing is the median. *Note:* If the number of family members is even, the median will be the average of the height of the two in the middle.

Play a card game

Remove the face cards from a deck, and deal five cards to each player. Players should put their cards in numerical order to find the median in their hands. That number is their score for the round. *Example:* If you are dealt 7, 4, 3, 6, 8, you would arrange them into 3, 4, 6, 7, 8. The median—and your score—would be 6 (the card in the middle). Next round, deal seven cards. For the final round, deal nine cards. After those three rounds, add your scores together, and the high number wins.

Q & A Just use a calculator?

Q: *My children have asked why they need to learn math facts when we have calculators. What should I say?*

A: That is a great question. Kids often feel they don't need to master math facts when a calculator could do the work for them. But the reality is they'll need to know basic math facts for daily life.

Plus, memorizing the facts helps them understand what numbers make up other numbers—which is important for more advanced math. For instance, they should know that 48 is made of 12 x 4 or 6 x 8.

You might also tell them that if they know their facts, they'll solve problems faster in their heads anyway. If they don't believe you, time them doing the same problem with and without a calculator. They'll see that punching in "3 x 5 =" takes longer than doing it in their heads!

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 • rfecustomer@wolterskluwer.com
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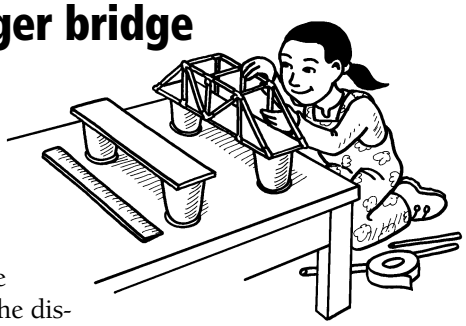
SCIENCE LAB Build a stronger bridge

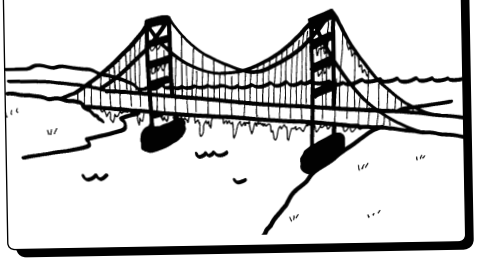


Which bridge is the best one for the job? Let your child find out with this engineering project.

● **Design.** Have her set up two "bodies of water" for her bridges to span (the space between two plastic cups, for instance). She should measure with a ruler to make sure the distances are the same. Then, have her draw designs and gather household materials. She might lay cardboard across one span for a *beam* bridge. For the other, she could tape together straws into connecting triangles to create a *truss* bridge.

Why bridges freeze quickly

When you drive over a bridge, point out the sign warning "Bridges freeze before roads." Then, ask your youngster to think about why that would be. (*Answer:* Ground temperatures are warmer than air temperatures in winter. On bridges, cold air hits from above and below. On regular roads, however, heat is trapped underneath and keeps the surface warm longer.)



● **Test.** Now your youngster should see which bridge is stronger. She can place a paper cup on the center of each and add pennies, one at a time, until the bridge touches the "water" (sags in the middle) or collapses. Encourage her to record notes about the design, materials, and number of pennies supported.

● **Redesign.** Suggest that she try different materials and retest. For instance, your child might build a beam bridge with index cards or a truss bridge with craft sticks. She could continue testing and redesigning until she has the strongest model possible—just like real engineers do.

Variations: Have her shorten or lengthen the span. Do the results change? Or she can build other types of bridges, such as *arch* or *suspension*, and test them on the same spans.