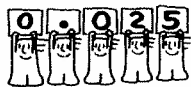


Math+Science Connection

Building Understanding and Excitement for Children

October 2014

Title I / Learning Assistance Programs

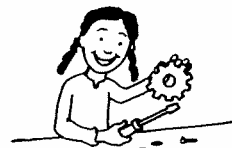


INFO BITS

I'm bored!

Next time your youngster says he's bored, suggest that he create a game. He might try a card game or a board game. What would the rules be? How would a turn end? Would he need to use dice? How could he make the game fair? Thinking logically like this will help him practice mathematical reasoning.

Find simple machines



Let your child take apart a broken appliance or toy and look for

simple machines. She might find a gear (a wheel and axle) in a bike, for example. This is a fun way to see how simple machines are used to make things work. *Note:* The six simple machines are the inclined plane, lever, wheel and axle, wedge, screw, and pulley.

Web picks

At mnrussbaum.com/mathgames, your youngster will find cool games—all sorted by age range—for practicing math skills.

Have your child see what it's like to be a marine biologist, find ideas for science fair projects, and discover more at kids.usa.gov/science.

Just for fun

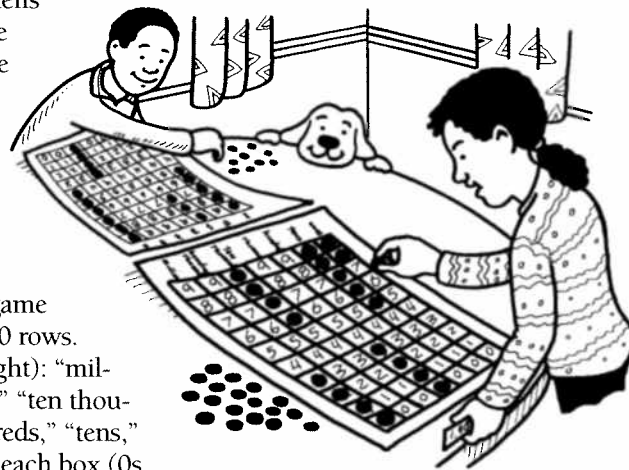
Q: What did the earth say after the earthquake?

A: "Sorry, my fault!"



Playing with place value

Whether a digit fills the tens place or the thousands place makes a big difference in the value of a number. After all, would you rather have \$50 or \$5,000? Use these games to explore place value.



Base 10 Battleship

1. Have each player draw a game board with 7 columns and 10 rows. Label the columns (left to right): "millions," "hundred thousands," "ten thousands," "thousands," "hundreds," "tens," and "ones." Finally, number each box (0s in the bottom row, 1s in the second row, and so on to 9s for the top row).
2. Secretly write a seven-digit number on scrap paper. The object is to guess your opponent's number first.
3. Take turns guessing a digit. The other person answers either "yes," "higher," or "lower," and you place tokens on the digits ruled out. *Example:* If you ask, "Is your tens place a 3?" and the person says "lower," you would cover up 3–9 in your tens column. Figure out the other person's number first, and you win.

Top number

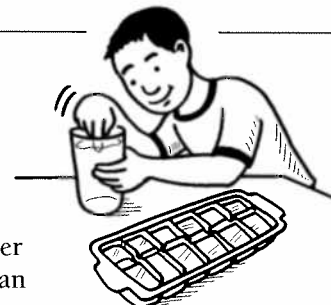
1. Each person numbers 10 slips of paper, 0–9. Turn all the slips facedown, and mix them up.
2. Every player takes five slips and lines them up in a row. Turn them over to read the five-digit number created. Whose is the highest? Then, switch two of your digits to create a higher number (if you have 36,819, swap 3 and 9 to make 96,813). High number wins.
3. Shuffle the slips, and play again. *Idea:* Create the smallest number. Or make the highest (or lowest) even or odd number. 🎲

Ice to water

What actually happens when you put an ice cube in water (besides making your drink cold)? This simple activity will demonstrate the chemistry principle of *equilibrium*.

Let your child use his finger to test the temperature of an ice cube and of a glass of tap water. Then, have him drop the cube in the water and test the water again after the ice melts. (The water will be cooler than before, but not as cold as the cube was.)

Explain that the ice cools the water, but also that the warmer water heats the ice. When everything is the same temperature, it has reached equilibrium—a state where all parts are balanced, or the same. 🎲



Rate of speed

How fast can your youngster move through an obstacle course? With a tape measure and a little math know-how, he can find out.

Ready. Ask him to design an indoor or outdoor obstacle course. Have him measure the course distance, including the path around or through any obstacles.

Get set. Then, let your child and his friends take turns “running” the course different ways (walking, hopping, running). Using a stopwatch or cell phone timer, they should record how long each one takes.



Go. Now, since they know the length and time, they can determine their speed. For each “run,” they should divide the course length by the time it took to complete it. *Example:* $80 \text{ feet} \div 2 \text{ minutes} = 40 \text{ feet per minute}$.

How else could your youngster use this formula? If he wants to know the speed of a car, for instance, he would divide the distance

driven by the time it took to drive that distance. Can he calculate the average speed for the trip? *Idea:* Have him figure out how fast a worm, snail, or his baby brother crawls. Who would win that race? 📦



MATH CORNER

Count by 0.25

If your child can count by 3s, 5s, or other numbers, she can learn to count by different decimals, too. Becoming more comfortable with decimals will help her with math concepts in general, but also with handling money. Try these ideas:



- First, ask her to relate the decimal to something she’s familiar with. To count by 0.10, she could think about a dime—it’s 10 cents, or \$0.10. How much would two dimes be? (\$0.20) Using this strategy, can she keep counting by 0.10?

- Once your youngster has mastered counting by 0.10, she could try other decimals, such as 0.05 (which is the same as 5 cents, or a nickel) or 0.25 (like a quarter). *Hint:* It may help her to visualize what she’s doing, so gather change for her to count with. 📦

OUR PURPOSE

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

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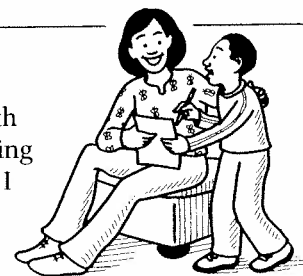
PARENT TO PARENT

Homework help

My son, Jacob, always enjoyed math until last year. But then he started getting stuck on homework problems and becoming frustrated. I was hesitant to help him, since I thought I might confuse him by doing it differently than how he’s learning in class.

I spoke with his teacher about my concerns. She suggested that when Jacob is stuck, *he* should teach *me* how to do as much of the problem as he can. Often talking it out will help him understand it, she said.

We’ve been trying this, and it really helps. Not only does Jacob seem to understand more, he’s also becoming more confident. Plus, I’m learning how they are solving problems at school. Whenever Jacob has a problem he can’t explain to me, he asks his teacher the next day—and then comes back and explains it to me! 📦



SCIENCE LAB

Where did the green go?

This experiment uncovers a surprising fact: When leaves change color in the fall, it’s really the green going away and the colors that were there all along coming out.

You’ll need: green leaves, small jar, rubbing alcohol, wooden spoon, foil, small bowl, water, coffee filter, scissors

Here’s how: Have your child tear the leaves into the jar, cover with alcohol, and mash with the spoon. Cover with foil, and place the jar in a bowl

filled with hot water. After 30 minutes, she should cut a strip from the filter, remove the foil, and dangle the filter into the alcohol. Let it sit for an hour.

What happens? Lines of different colors will travel up the filter.

Why? Green leaf color comes from the chemical *chlorophyll*, which helps make food for trees in spring and summer. In fall, chlorophyll is no longer produced, so the hidden colors (yellow, orange, red) can be seen. 📦

