Intermediate Edition

Math+Science Connection

Building Understanding and Excitement for Children

March 2016

Cornelius Elementary School
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INFO BITS

Seeing fractions

Challenge your youngster to notice fractions in his daily life. It may be when he eats a quarter-pound ($\frac{1}{4}$ lb.) hamburger, spots a freeway exit in $\frac{1}{2}$ mile, or is measured at $55\frac{3}{4}''$ tall. Suggest that he keep a running list to see how many examples of fractions he finds in a day.

A better mousetrap

How can your child engineer a way to catch a mouse? She might prop

up a box on a pencil, put a stuffed animal (the "mouse") underneath, and pull the pencil away—making the box fall onto the mouse. Or maybe she will build a Lego maze with pretend cheese at the end. What else could she come up with?

Book picks

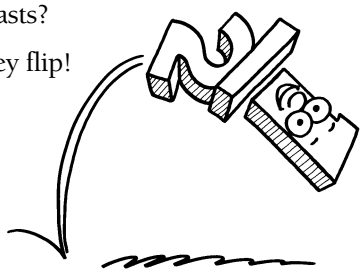
Math meets mystery when kid detectives use numbers to solve the case in *The Math Inspectors: The Case of the Claymore Diamond* (Daniel Kenney and Emily Boever).

Why Is the Sea Salty? And Other Questions About Oceans (Benjamin Richmond) explains how deep the ocean is, what causes waves, and other deep-sea curiosities. Part of the Good Question! series.

Just for fun

Q: How are reciprocal numbers like gymnasts?

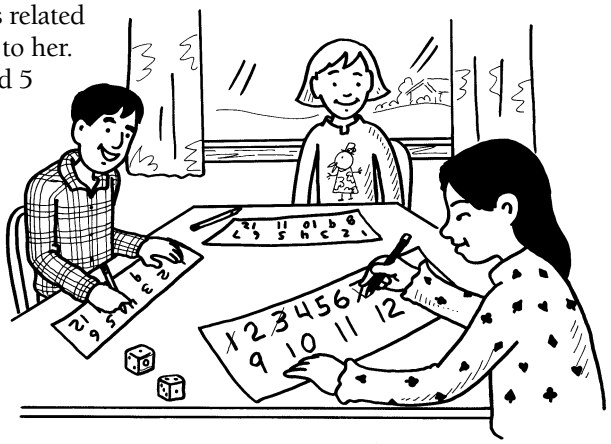
A: They flip!



Factors and multiples

Your child knows how she's related to you and how you're related to her. But does she know how 15 and 5 are related to each other?

Since 5 x 3 = 15, 5 is a *factor* of 15, and 15 is a *multiple* of 5. Factors multiply to form a number, while multiples are the result of one number times another. Your youngster can hunt for factors and multiples with these two games.



Eliminate the numbers

1. Each player writes the numbers 1–12 on a separate sheet of paper. Get two dice, and on one, place masking tape over the 3 and write 0.

2. Take turns rolling both dice to form a two-digit number (roll 1 and 2, and make 12 or 21). Then, cross off that number's factors on your paper. *Example:* For 21, cross off 1, 3, and 7 (since 1 x 21 = 21 and 3 x 7 = 21).

3. The winner is the first to cross off all her numbers.

Don't break the chain

1. Draw one 10 x 10 grid, and number the boxes 1–100. Using beans as tokens, place one on any square (say, 33).

2. The first player puts a bean on any factor or multiple of that number (for instance, 3, because 3 x 11 = 33).

3. The next player marks a factor or multiple of the new number (3). *Example:* Cover up 15, since 3 x 5 = 15. Keep taking turns, each time marking a factor or multiple of the last number played.

4. The last person who can make a move wins.

Change the variable

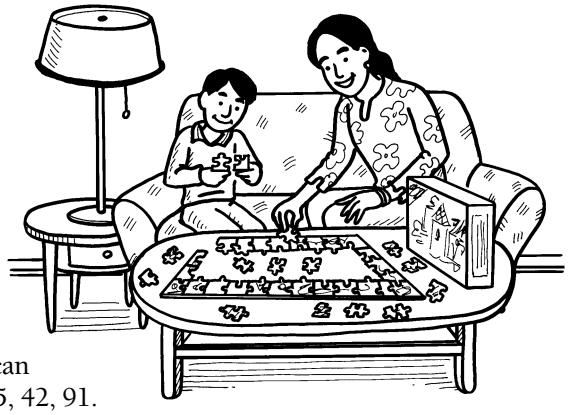
Scientific discoveries can happen when variables in an experiment are changed one at a time and the results are observed.

Let your youngster try changing a variable while making pancakes. He could divide the batter in half and leave the baking powder out of one batch. What does he observe when you cook them? (The ones without baking powder are flat.) Your child may conclude, "Baking powder must help the batter rise." Another time, he might change a variable like the cooking temperature or type of pan.

Tip: Make sure he knows that in any science experiment, it's important to change just one variable at a time and leave everything else *constant*. If he tests more than one thing, he wouldn't know which one caused a change.

Reason it out

Basic reasoning skills help your child with mathematical thinking. Stretch his reasoning skills with these fun activities—and you'll stretch his mathematical thinking, too.



Which number doesn't belong?

Give your youngster a string of numbers, and ask him which one doesn't belong. Any answer could be correct if he can justify his choice! For instance, list: 11, 555, 42, 91. He might say 555 is different because it has three digits while the others have two. Or perhaps he'll pick 42 because it's the only even number. Switch places, and let him list numbers for you.

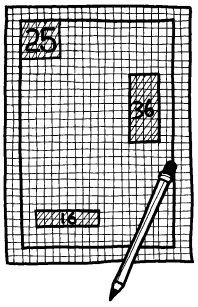
Which piece fits?

Work on a jigsaw puzzle together to help your child develop problem-solving strategies. What does he notice about the different pieces? He may spot flat sides, different numbers of knobs, and various colors or designs. When looking for a specific piece, he could figure out that it needs to have a knob on two adjacent sides and be mostly blue. Or maybe he needs a piece with no knobs and part of a cloud against blue sky.

MATH CORNER In the area

Your youngster will practice finding the area of rectangles with this fun game.

On separate sheets of graph paper, have each player outline a large rectangle, 20 squares across by 30 squares down. The object of the game is to cover the most area.



The first player rolls two dice. Then, she colors in a rectangle with length and width matching the numbers rolled and writes the area inside. If she rolls 5 and 6, for example, she would shade a rectangle 5 squares x 6 squares and write "30" inside. (*Note:* Area = length x width.)

Keep playing, fitting in rectangles on your sheet. Anytime a player can't make the rectangle fit, she should mark an X on the side. The game ends when a player has three Xs. Add up the areas you've covered (the numbers inside your rectangles). High score wins.

OUR PURPOSE

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

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SCIENCE LAB Goldilocks and the three plants

Plants need water, but what happens in drought or heavy-rain conditions? Use this experiment to find out.

You'll need: three same-type plants (one per pot), ruler, paper, tape, marker, water, colored pencils

Here's how: Ask your youngster to measure the plants' heights and label the pots: "too wet," "just right," and "too dry." Have her place the pots in a sunny spot. For two weeks, she should keep the too-wet plant wet and soggy, water the just-right plant to stay moist, and not water the too-dry plant at all. Then, she can measure the heights, sketch what each plant looks like, and jot notes.

What happens? The heavy-rain (too-wet) plant and the drought (too-dry) plant will be wilted, with yellow or brown leaves. The just-right plant will have grown the most and look healthy.

Why? Plants need water, but too much or too little will damage them. This is why plants may be lost in heavy rains or need irrigation in dry regions.

Q & A Getting to the STEM

Q: *My children's classes now go to STEM lab once a week. Can you tell me more about STEM and why it's important?*

A: STEM stands for Science, Technology, Engineering, and Math—and in today's complex world, these topics are important for your youngsters to understand. Exposing them early can open doors of possibility, including careers in these growing, well-paid fields.

You could foster their curiosity by asking about what they're doing in STEM lab. When they seem interested in a topic, such as chemistry, get library books and find experiments to do at home or through activities like Boy or Girl Scouts. Use a family walk to observe nature and count and graph objects, or engineer a "dam" in a stream. Or encourage them to practice coding with kid-friendly websites.

Your children may eventually choose careers outside of STEM, but in this information age, these topics are likely to influence whatever work they do.