

Math+Science Connection

Building Understanding and Excitement for Children

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Frog Pond Math and Science Connection

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INFO BITS

Estimate your time

Did you know that estimating can help your child manage his time? If he has 10 similar math problems for homework and the first one took 2 minutes and 50 seconds, he can estimate he needs a half-hour for the rest (3 minutes \times 9 problems = 27 minutes). *Tip:* Suggest that he remember this when figuring how long to spend on each section of a test.

Science in the news

Encourage your youngster to see the science going on around us every day. Together, look through newspapers, magazines, or online news sites, and point out articles about extreme weather, new medicines, or development of a robot. *Idea:* She could save interesting articles and keep them in a journal. They just may provide inspiration for a future career!



Book picks

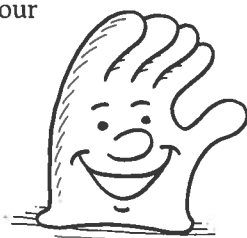
Your child will enjoy the lift-the-flap fun of *Mesmerizing Math* (Jonathan Litton) with creative examples of decimals, prime numbers, and build-your-own 3-D shapes.

See how animals big and small help each other in *How to Clean a Hippopotamus: A Look at Unusual Animal Partnerships* (Steve Jenkins and Robin Page).

Just for fun

Q: What has four fingers and a thumb but isn't alive?

A: A glove!



Egg-citing fractions

Egg cartons are not only a safe place to store eggs, they're also a perfect place for your youngster to work with fractions. Suggest these activities.

Materials: 22 index cards, marker, and an empty egg carton and counters (buttons, dry beans) for each person. On each index card, write a fraction with a denominator of 2, 3, 4, 6, or 12 (examples: $\frac{1}{2}$, $\frac{2}{3}$, $\frac{3}{4}$, $\frac{5}{6}$, $\frac{6}{12}$).

Fraction War

Stack the cards facedown. Each player draws a card and uses counters to make that fraction in her carton (the carton is the *whole*). If the card is $\frac{5}{12}$, put a counter in 5 of the 12 sections. The person with the most counters—and therefore the bigger fraction—keeps the card. If it's a tie, draw again. Keep playing, and the person who collects the most cards wins.


Try this: If the denominator isn't 12, use yarn to divide your carton into halves, thirds, quarters, or sixths. So for $\frac{1}{4}$, lay yarn down the middle lengthwise and again crosswise. Your child will see that



$\frac{1}{4} = 3$ sections out of 12, so she would need 3 counters.

Equivalent fractions

Ask your youngster to predict how many *equivalent fractions* are in the deck—these will fill the same number of egg carton sections since they have the same value. Then, she could work her way through the cards, recording the number of sections filled for each fraction. For instance, $\frac{1}{2}$, $\frac{2}{4}$, $\frac{3}{6}$, and $\frac{6}{12}$ would all fill 6 of the 12 sections—so they're equivalent fractions.


Variation: How many different fractions can she make using a 6-section or an 18-section egg carton? 

Star light, star bright

Stars are fascinating to children and adults alike!

On a clear evening, step outside together and spot the brightest lights. Can your youngster tell if they are stars or planets? (*Hint:* Stars twinkle, planets don't.) If he finds a planet, it's probably Venus, Jupiter, or Saturn because they are bright and fairly white. Mars is bright, too, but red.

Have your child look for the Big Dipper. *Interesting fact:* The two stars that form the outer edge of the dipper's bowl point to Polaris—known as the North Star because it marks the way due north.

To help identify what you see, download free astronomy apps, use star charts in library books, or check online for what's visible in the sky now. Also, your area may have an astronomy club that offers free viewing with telescopes. 



The "right" angle

Right angles—L-shaped, or 90° angles—are not just for math class. Help your child discover just how common these angles are with these ideas.

Hunt for angles


Start by having him notice the right angles at the corners of a piece of paper. He can snip off one corner and use it as a guide to find right angles at home. How quickly can he find 10? He might locate them in a bathroom mirror, a drawer, or a cracker. Typically, what shape are the objects? (Rectangular)



Make a road map

On a window or whiteboard, criss-cross strips of masking tape into a road map. Let your youngster use dry-erase markers to label the right angles formed. *Note:* Parallel streets run the same direction and will never cross, but perpendicular ones cross to form right angles.

Search the alphabet

How many right angles are in the alphabet? On graph paper, have your child write the uppercase letters from A to Z. He can circle all the right angles and count the total. Then, he could use a different color to mark acute angles (less than 90°) and another color to label obtuse angles (greater than 90°). What's the most common angle in the alphabet? 

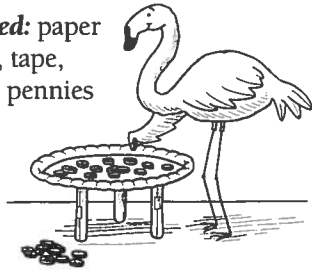
SCIENCE LAB

Bird bones

It might surprise your youngster to learn that many bird bones are hollow—and yet those hollow bones support a bird without any trouble. Let her try this experiment to see how strong hollow "bones" can be.


You'll need: paper (8½" x 11"), tape, paper plate, pennies

Here's how: Have your child roll three pieces of



paper into 1" hollow tubes and tape each one closed. Next, she should stand the tubes up and balance the paper plate on top. Ask her to predict how many pennies the "hollow bones" will hold before collapsing. Let her add pennies, one at a time, spreading them around to keep them balanced.

What happens? The "bones" will not collapse.

Why? The outer portion of a bird's bones is strong and dense, just like the multiple layers of paper made into a cylinder here. 



MATH CORNER

Name the number

Play a simple guessing game to help your youngster become more familiar—and comfortable—with place value.

Have your child secretly pick and write down a five-digit number. Then, she should give clues about each digit. They could be math problems or tied to numbers in the real world.

Say her number is 78,936. Her clues might be: "The digit in the thousands place is the number of tentacles on an octopus." "The digit in the ones place is even and greater than 4 but less than 8." "The tens digit is the number of sides of a triangle." "The hundreds digit is the answer to 795 – 786." "The digit in the ten thousands place rhymes with eleven." Name her number, and then swap roles.

Note: Players can use scratch paper to work out the answers. 




Q & A Graphing for answers

Q: My son, Liam, had to graph data for a math project and complained about how long it took. How can I show him why graphing is useful?

A: Here's a fun activity that's perfect for a family gathering. Have Liam ask everyone to name three things they are thankful for.

Then, he should turn the data into a colorful bar graph. On a separate sheet, he can write a paragraph about the results. ("Two people were thankful for pumpkin pie, and three people were thankful for family.")

Gather everyone around the table, and let Liam give one side copies of the graph and the other side copies of the paragraph—facedown. Everyone turns over their papers at once, and then he poses questions like "Which answers each got one vote?" or "How many people said 'health?'"

Guess what he'll find? The graph side will get the answers first! Now when he makes a graph for school, he'll know why graphing is a clearer way to represent data. 



OUR PURPOSE

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

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