

Math+Science Connection

Intermediate Edition

Building Understanding and Excitement for Children

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INFO BITS

Symmetry drawing

Ask your youngster to fold a piece of paper in half. Along the folded edge, have her write her name in bubble letters and color them in. Then, she can cut around the letters and unfold the paper. Suggest that she color the blank side to match—the two sides will be *symmetrical*, or mirror images of each other.



Chocolate-chip mining

With chocolate chip cookies and a toothpick, your child will learn how mining affects the earth. His goal is to remove the “minerals” (chips) with the least damage possible to the “earth” (cookie). *Note:* He may only “drill” down (no flipping the cookie over) to get to the minerals. Can he leave the “land” intact?

Web picks

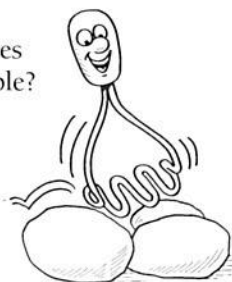
Visit mathgametime.com where your youngster can pick his grade and play games like Penguin Jump Multiplication and Puppy Chase Decimals.

Your child will learn about the sun, the planets, and more at spaceplace.nasa.gov. She'll find online games as well as out-of-this-world crafts and activities to do offline.

Just for fun

Q: How do you divide 6 potatoes among 15 people?

A: Mash them!



Let's compare fractions

Which is greater, $\frac{4}{7}$ or $\frac{5}{12}$? If your youngster has strategies for comparing fractions, he'll know that it's $\frac{4}{7}$! Here are strategies he can choose from to develop his “fraction sense.”

0, $\frac{1}{2}$, or 1?


This cooperative game encourages your child to use *benchmarks* like 0, $\frac{1}{2}$, and 1. Have him write these fractions on separate sticky notes: $\frac{1}{5}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{6}{10}$, $\frac{11}{12}$. Mix them up facedown, and let each player take a note to put on someone else's forehead (without showing that person the fraction).

Now, line up from smallest to greatest fraction—without speaking. Compare the fractions you see, and guide each other to the right spots. To compare, your youngster can decide whether each fraction is closest to 0 ($\frac{1}{2}$), a little less than $\frac{1}{2}$ ($\frac{3}{8}$), slightly more than $\frac{1}{2}$ ($\frac{6}{10}$), or closest to 1 ($\frac{11}{12}$). Remove your sticky notes—are you in the right order?



Number line match-up

A number line is a great visual way to compare fractions. Let your youngster cut out two strips of paper, fold one into fourths and the other into sixths, and unfold both. Have him label the fourths strip 0, $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$, $\frac{4}{4}$ and the sixths strip 0, $\frac{1}{6}$, $\frac{2}{6}$, $\frac{3}{6}$, $\frac{4}{6}$, $\frac{5}{6}$, $\frac{6}{6}$.


Take turns calling out one fraction from each strip (say, $\frac{3}{4}$ and $\frac{5}{6}$). The other person compares the number lines by placing one above the other to see which fraction is greater ($\frac{5}{6}$). *Idea:* Make more strips (thirds, fifths, eighths, tenths), and compare more fractions. 

Make a terrarium

Your child can create a terrarium to see the *water cycle* in action.

Give your youngster a clear glass or plastic container with a lid. Have her add a few inches of potting soil and plant several seeds (bean plants will grow quickly). Let her water the soil so it's damp (not soaked), then put the lid on tightly.

Place the terrarium in a sunny spot, and encourage your child to observe it each day. She'll notice water droplets forming on the inside of the container, on the soil, and on the plants when they start to grow.

Explain that the water evaporates (turns into a gas), condenses as droplets, and “rains” (turns into precipitation) onto the soil. This cycle keeps going and waters the plants. 



Play with patterns

Patterns help your youngster do multiplication and understand algebra formulas. Give her practice with these fun activities.

Skip count. With this two-player game, your child can practice skip counting to make patterns. Take turns rolling two dice. On your turn, set a timer for 30 seconds, start counting at the lower number rolled, and skip count by the higher number rolled. *Example:* Roll 2 and 5, and count, “2, 7, 12, 17.” Your score is the highest number you say correctly when the timer goes off. Play 5 rounds, keeping a running total of your scores. High score wins.



Find the hidden pattern. Draw a grid with 5 rows and 5 columns, and write a pattern for your youngster to discover. Perhaps you’ll “hide” a pattern like 4, 7, 10, 13, 16, 19. Write one number per square—in squares that touch horizontally, vertically, or diagonally. Now, “camouflage” the pattern by putting random numbers in the other boxes. Circle the number to start with, and tell your youngster to color in the boxes that make a pattern. Can she figure out your pattern (begin at 4, add 3)? Now let her make a camouflaged pattern for you to find. 📦



Q & A Watch the time fly

Q: My son Diego has learned to tell time. However, he struggles with problems where he has to figure out how much time has passed. Any suggestions?



A: With regular practice, your child can develop a good sense of *elapsed time* and become comfortable calculating it.

Be specific when you talk about time. Say it’s 7:24 a.m., and you need to leave at 8:00 a.m. Rather than saying, “We’re leaving in about half an hour,” tell him, “We’re leaving in 36 minutes—what time will that be?” He could think, “In 6 minutes, it will be 7:30, and in 30 more minutes, it will be 8:00.”

When you get in the car, check your GPS, and tell your son your arrival time. Can he tell you how long you’ll be on the road? Or if you’re taking a bus, train, or plane, have him look at the schedule and calculate how long your trip will last. 📦

SCIENCE LAB

What’s inside my bones?

Show your child why it’s important to drink his milk! This experiment demonstrates how the calcium in milk and other foods keeps his bones strong.

You’ll need: 2 chicken drumstick bones, 2 large clean jars with lids, white vinegar

Here’s how: Let your youngster examine the bones and describe how they feel (strong, hard). Now, have him put one bone in each jar. He should cover one bone with vinegar, leave the other bone dry, and screw the lids on tightly. In 3–4 days, have him take out the bones.

What happens? The bone that was in vinegar will be bendable and feel squishy. The dry bone will still be firm.

Why? The vinegar, an acid, dissolved the calcium in the bone, and all that’s left is bone tissue. Calcium is a mineral that gives bones their strength—without it, bones become soft. 📦



MATH CORNER

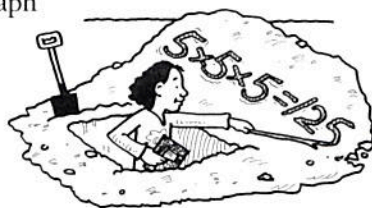
Keep a math journal

Encourage your youngster to write in a math journal at home, and she’ll gain new ways to think about math each day. In a notebook, she could:

- Graph data from her day. For instance, she could keep track of what she eats, then draw a colorful bar graph in her journal that shows which food group she ate from the most.
- Make up a math problem for a book she’s reading.

Suggest that she illustrate and solve it. For *Holes* by Louis Sachar, she might write, “Stanley dug a hole 5 ft. deep, 5 ft. wide, and 5 ft. long. How big was the hole?” (Answer: $5 \times 5 \times 5 = 125$ cubic ft.)

- Write about what she wants to be when she grows up, listing how she would use math in her career. *Hint:* She could ask you and other grown-ups what kinds of math you do in your job. 📦



OUR PURPOSE

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

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