Math+Science Connection

Intermediate Edition

Building Understanding and Excitement for Children   January 2021

Gadsden City Schools

My favorite number

Suggest that your child survey family members about their favorite numbers (1–10) and see how her data compares to this fun fact: 7 is the most common favorite number. She can make a picture graph or bar graph to show the results and share them with everyone. Was 7 the most popular number?

Center of mass

Have your youngster sit on a chair with his feet together, flat on the floor. Place your thumb on his forehead—can he stand up without pushing against your thumb? His center of mass (the point at which his weight is most concentrated) is over the seat. To stand, he must lean forward to shift his center of mass.

Book picks

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

📕 Discover how wildlife survives harsh climates and freezing temperatures in *Winter Bees & Other Poems of the Cold* (Joyce Sidman).

Just for fun

Q: How can you make a line longer without touching it?

**A:** Draw a shorter line next to it. Now the first one is longer.
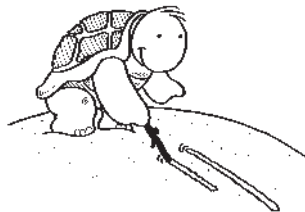
Fractions make my day

If your youngster reads for 2 hours, that's a fraction of his day ($\frac{2}{24}$, or $\frac{1}{12}$) well spent! Here's how to weave fractions into his whole day.

Reading time

Encourage your child to create a fraction bookmark. He can draw lines to divide a strip of cardboard into equal sections, one for each chapter in a book he plans to read. When he finishes a chapter, he gets to color one section of the bookmark before sticking it into his book. Can he tell you what fraction of the book he has read?
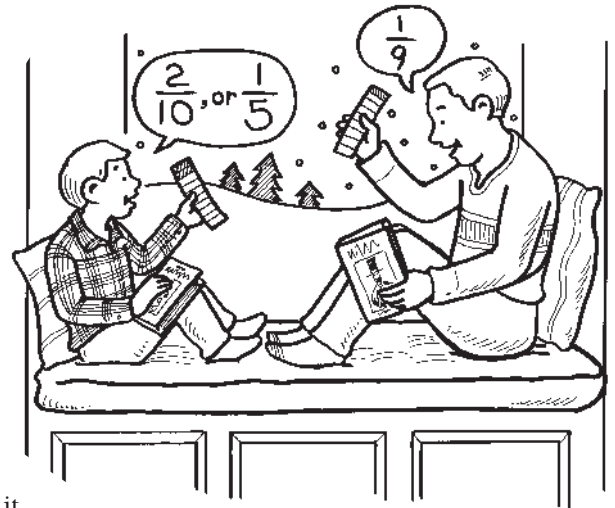
Snack time

Make fruit salad with your youngster. Before eating, have him count how many pieces of each type of fruit are in his bowl. *Example:* 7 grapes, 5 mandarin orange segments, 3 banana slices, 2 apple chunks. Now he could add to find the total number of pieces (7 + 5 + 3 + 2 = 17) and say what fraction of his serving each fruit makes up (grapes = $\frac{7}{17}$, oranges = $\frac{5}{17}$).

Game time

Invite fractions to family game night. Play Scrabble, assigning fractional values to letters. Ten-point letters like Z and Q could be worth more (maybe $2\frac{1}{2}$ points) and 1-point letters like A and S worth less (perhaps $\frac{1}{4}$ point). Your child will add fractions to calculate scores. Or play bingo with fractions instead of numbers. Equivalent fractions count—so if $\frac{4}{5}$ is called, a player could put a chip on $\frac{8}{10}$. 📦

What's in an ecosystem?

Let your child take an up-close look at an ecosystem—a community of living and nonliving things—with this activity.

In your backyard or at a park, help your youngster spread a blanket on the ground. She can lie down and examine the ground through a magnifying glass. Encourage her to draw and label what she observes, perhaps, rocks, grass, plants, soil, and insects.

Then, suggest that she think about how everything is related (insects eat plants, plants grow in soil). She could draw arrows from the insect to the plant and from the plant to the soil. 📦

Hands-on solid shapes

Help your youngster grasp 3-D, or solid shapes, and find real-life examples with this idea.

1. Collect. Have your child label a separate container for each of these 3-D geometric shapes: rectangular prism, cylinder, cone, cube. Each of you can choose a container and gather household objects in that 3-D shape. She might find a tissue box (rectangular prism), an oatmeal canister (cylinder), a paperweight that's cone-shaped, and a die (cube).

2. Make. Encourage your youngster to build solid shapes out of 2-D shapes. She can look at a solid shape (perhaps a can of beans that's a cylinder), and think about which 2-D shapes it includes (1 rectangle, 2 circles). Then, she could cut the flat shapes from paper and cardboard and use duct tape to make a cylinder. She'll learn which 2-D shapes make up each 3-D one.

Q&A Explain your math thinking

Q: *On math assignments, my son has to explain how he gets the answers. He always says, "Because I know." Why does he need to explain?*

A: Tell your son that his teacher wants to know what's going on inside his head when he does math! Reading his explanations tells the teacher whether your child understands the steps involved in getting the answer. Plus, explaining math thinking will often lead your youngster to correct his mistakes.
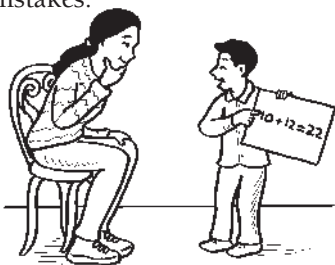
Ask your son to pretend you don't know anything about math and he needs to teach you to solve the problem. His explanation might go something like this: "10 + 12 = 22 because 10 + 10 = 20, 12 is 2 more than 10, and 20 + 2 = 22." Then, encourage him to write down what he said.

MATH CORNER Parentheses first

Play this game to help your child solve equations with parentheses.

Materials: index cards, pencils, paper, 2 dice, timer

Have each person make a set of index cards with the numbers 0–9, signs for the four operations (+, −, ×, ÷), and opening and closing parentheses. Roll the dice, and use the numbers rolled to create a two-digit number (say, 56 or 65).

Set a timer for 5 minutes. Each person arranges her cards to form equations equaling that number and lists the equations on her paper. Every equation must include parentheses and at least two different signs (remind your youngster that problems in parentheses are solved first). For 56, your child might make "8 × (3 + 4)" and "(10 × 5) + 6."

When time's up, trade papers, and check each other's math. Get the most correct equations to win the round and roll the dice for the next round.
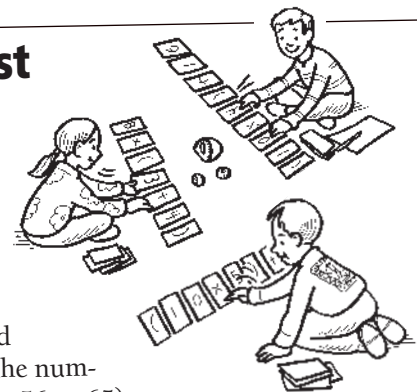
SCIENCE LAB A frosty experiment

Your youngster can make frost with this indoor experiment that lets him explore the science of condensation.

You'll need: two metal bowls or empty soup cans (rinsed, labels removed), ice, water, measuring cup, salt, timer

Here's how: Have your child fill each bowl with $\frac{1}{2}$ cup cold water and 6 ice cubes. He should add $\frac{1}{4}$ cup salt to one bowl and stir. Encourage him to observe the outside of the bowls. What does he notice after 5 minutes? 10 minutes?

What happens? Water droplets collect on the bowl containing only water and ice. Frost forms on the bowl with ice and salt water.

Why? Salt makes ice melt faster and lowers water temperature, so the bowl containing salt is colder than the bowl with just water and ice. Water from the air formed condensation on the outside of both bowls, and on the colder bowl, the condensation froze—now it's frost!