Math✚Science Connection

Intermediate Edition

Building Understanding and Excitement for Children

September 2020

INFO BITS

Jigsaw geometry

Do a jigsaw puzzle together, then let your child find its perimeter and area. First, have her measure each side and add the four measurements to get the perimeter (24 + 24 + 18 + 18 = 84 inches). For the area, she should multiply length x width (24 x 18 = 432 square inches). Without checking the box or counting each piece, can she use math to say how many pieces are in the perimeter? The whole puzzle?
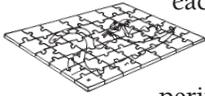
Family stargazing

Head outdoors on a clear night to observe the sky with your youngster. You could take along a library book or download a free app to identify stars, constellations, or planets. *Idea:* Encourage him to sketch the night sky and connect stars to create and name his own constellation.

Book picks

📖 The little girl in *Math Curse* (Jon Scieszka and Lane Smith) finds math everywhere. She adds words, subtracts shoes, and even puts math symbols in her art project.

📖 Your child can make glowing clothes, dancing bubbles, silly putty, and more with the help of *Real Chemistry Experiments: 40 Exciting STEAM Activities for Kids* (Edward P. Zovinka).

Just for fun

Q: Why was the equal sign so humble?

A: Because it knew it wasn't less than or greater than anything else.
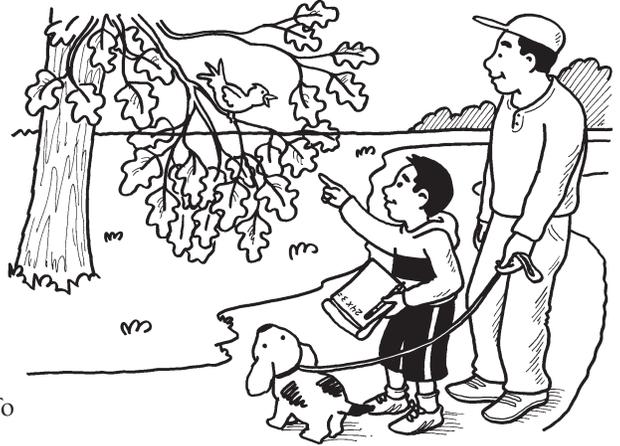
Math in nature

Right outside your door is a math "classroom" for your youngster. Try these ideas for practicing math while enjoying nature.

Estimate the leaves

How many leaves are on that tree? Your child could count the leaves on a small branch (say, 24) and the branches on a limb (3), and multiply (24 x 3 = 72). To estimate the total number of leaves on the tree, he can estimate the number of limbs (maybe 22) and multiply by the number of leaves per limb (22 x 72 = 1,584). He'll see how estimating and multiplying are helpful when he can't count things one by one.

Tell a story

Ask your youngster to make up and solve story problems based on what he sees outside, perhaps bees buzzing from flower to flower. *Example:* "One day, Miss Bee buzzed around collecting pollen. She visited 240 flowers in 2 hours and spent the same amount of time on each flower. How many flowers did she visit per minute?" (240 flowers ÷ 120 minutes = 2 flowers per minute)

Add it up

Help your child use natural materials as place value tools. He might find small pebbles ("ones"), medium-size rocks ("tens"), and large rocks ("hundreds"). Then, let him arrange them to form an addition problem like 132 + 259. He can add them, trading tens for ones and hundreds for tens when necessary. He'll end up with 3 large rocks, 9 medium rocks, and 1 pebble—or 391. 📦

Cover your sneeze!

Does your child know how far a sneeze can travel? Easily 6 feet or more! This activity will show her why covering up a sneeze helps stop the spread of germs.

Have your youngster fill a spray bottle with water and line up six pieces of 9-inch by 12-inch construction paper on the floor, end to end. Now she can stand at one end of the 6-foot line of paper, spray the water, and see where droplets land. Are there wet spots on all the papers?

Let your child try again with fresh sheets of paper, this time covering the nozzle with her hand. The droplets don't go far at all. Now she'll see that she should cover her own sneezes with a tissue (or sneeze into her elbow if she doesn't have a tissue). 📦
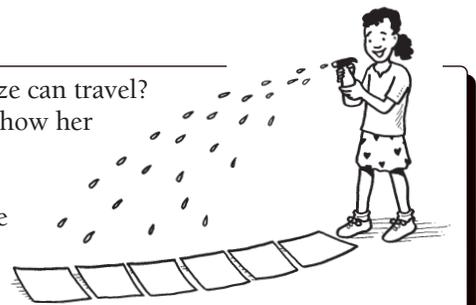
Part of a whole, part of a group

A fraction can describe part of a whole ("I ate $\frac{1}{6}$ of the pizza") or part of a group ("$\frac{3}{10}$ of the beads are green"). These activities will help your youngster work with both types of fractions.

Play dough. Let your child make a play-dough pizza and cut it into equal slices. Then, she can use a toothpick to label each piece with a fraction that tells what part of the whole it is.

If her pizza has 8 slices, she would carve $\frac{1}{8}$ into each one. Now she can roll out the dough, divide it into a different number of slices, and write new fractions.

Beads. Have your youngster sort 20 beads by color. What fraction of the group is each color? She can find out by writing the number of each color (the numerator, or top number) over the number in the group (the denominator). Say she has 5 blue beads ($\frac{5}{20}$), 9 yellow beads ($\frac{9}{20}$), and 6 red beads ($\frac{6}{20}$). If she adds the three fractions, her answer will equal $\frac{20}{20}$, or 1—because all the parts together equal the group.

SCIENCE LAB — Musical science

To tune a violin or cello, a musician must loosen or tighten the strings. How does that affect the instruments' sounds? Let your child make his very own string instrument to find out!

You'll need: empty rectangular tissue box, four identical rubber bands

Here's how: Let your child stretch the rubber bands around the box crosswise. Have him play the instrument by plucking the "strings" over the box opening, listening to the sound they make. Now he can remove the strings, stretch them lengthwise around the box, and pluck them again.

What happens? Plucking the looser strings (those stretched crosswise) creates a lower pitch than plucking the tighter ones (those that are stretched lengthwise).

Why? Plucking the strings causes vibrations that produce sound. Looser strings vibrate less frequently, while tighter ones vibrate more frequently. The more frequent the vibration, the higher the pitch.

MATH CORNER — Multiplication is in the cards

Watch the fun multiply in this game that lets your youngster practice multiplication facts.

1. Remove the face cards from a deck of playing cards and shuffle the rest (ace = 1). Arrange them faceup to create an S-shaped game-board path.

2. Start at one end of the path. Take turns rolling two dice (say, 3 and 4) and moving a game token that number of cards (7).

3. Multiply the sum of the dice by the value of the card you land on for your score. If you land on a 5, you would say "7 x 5 = 35" and score 35 points.

4. Keep rolling, multiplying, and adding to your score until everyone reaches the end of the path (exact count not required). High score wins.

Variation: For a bigger challenge, include jacks (11) and queens (12).
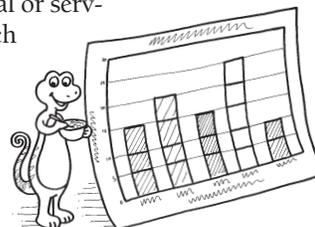
Q&A — What can I graph?

Q: *My son always enjoys making graphs in school. Any suggestions for creating graphs at home?*

A: Your child can turn almost anything your family does into a graph! For one month, suggest that he track the foods everyone eats for breakfast or the kinds of exercises they do. He could make a tally mark for each bowl of cereal or serving of eggs eaten, or for each time someone runs or rides a bike.

As he collects data, he can put it into a bar graph. He should divide a sheet of paper into rows and columns and write breakfast foods or exercises across the bottom. Next, he'll need to decide what the scale will be (say, 1 square = 5 servings of a food) and write numbers (0, 5, 10, 15, 20, 25, 30) up the left side.

From time to time, ask your son questions like "Which kind of breakfast food have we eaten the most of so far?" or "How many more times did we run than ride bikes this week?" He'll see what's most common—and help you know what to buy at the grocery store.