Math+Science Connection

Intermediate Edition

Building Understanding and Excitement for Children

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Jamestown Elementary School

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Take a perimeter walk

Build your child's "measurement sense" with this outdoor activity. Let her estimate the number of heel-to-toe steps it will take her to walk the perimeter of your yard or a playground. Then, she can count her steps to check. To calculate the perimeter in inches, she could measure her step size in inches and multiply that by her number of steps.

Nature's carvings

Water and wind gradually erode, or wear away, rocks and soil to create amazing natural wonders. Outdoors or in photographs, help your youngster find examples (caves, canyons, river gorges). Then, have him model erosion by making a "mountain" of dirt and gently blowing on it through a straw or pouring water over it. How does it change?

Book picks

📘 The Number Investigators are gearing up for their school math bee, which is in 14 days—or 1,209,600 seconds—in the story of *Charlotte Morgan and the Great Big Math Problem* (Martin Tiller).

📘 Your child will discover interesting ways to combine science and art in *STEAM Lab for Kids: 52 Creative Hands-On Projects for Exploring Science, Technology, Engineering, Art, and Math* (Liz Lee Heinecke).

Just for fun

Q: How does a monster count to 100?

A: On his fingers and toes.
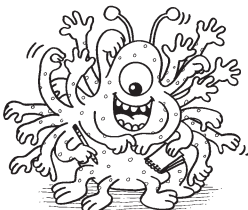
Everyday fractions

Does your child know why a 25-cent coin is called a quarter? It's one quarter, or $\frac{1}{4}$, of a dollar. Help him discover fractions like that all around him with these ideas.

Spot 'em

Challenge your youngster to look (and listen) for fractions at home and on the go. He might pour juice from a $\frac{1}{2}$-gallon carton, attend a game with four quarters, or see a freeway sign for an exit in $\frac{3}{4}$ mile. Or perhaps he'll hear you say, "It's a quarter to seven" or "I'm a third of the way through my book."

Fold 'em

Turn laundry time into fraction time. Let your child fold a towel in half and then in half again. Ask him how it's folded now (into fourths). What happens if he folds a towel into thirds and then in half? (It's folded into sixths.) To see the fractions more easily, suggest that he make the same folds in paper. Then, he can unfold to see the creases. How could he fold and get eighths? Twelfths?

Show 'em

Quarters are great tools for modeling fractions. Gather a few, and ask your youngster to show you $\frac{3}{4}$ of a dollar (3 quarters) or $1\frac{1}{2}$ dollars (6 quarters is $\frac{6}{4}$ or $\frac{3}{2}$ or $1\frac{1}{2}$). Now have him tell you a fraction to show in quarters. 🔲

Good vibrations (for spiders)

A spider's web helps it gather food and stay safe from predators. Your youngster can learn how by building a model of a web.

Help her stretch yarn tightly between two chairs, weaving and tying the strands into a web. Have your child hold one strand and close her eyes while you pluck a different strand—first gently, and then harder. Does she feel the difference?

Spiders sense different vibrations in their webs. The vibrations may signal danger, rain, or even another spider. Other vibrations mean it's dinnertime—a bug has been caught in the web. And spiders know the difference! 🔲

Shapes with a purpose

Engineers often use triangles as supports in bridges and buildings, while bees use hexagons to construct their honeycombs. These activities will encourage your youngster to explore the practical side of shapes.

Triangles. A triangle is considered a sturdy shape for building. To see why, let your child bend one drinking straw into a triangle and another into a square, taping each shape's ends together. Now have her try to carefully transform each one into a different shape—without bending its sides. The square can become a parallelogram, but the triangle stays rigid.

Hexagons. Bees use hexagons to build their honeycombs so they can store the most honey possible. Your youngster can see how by drawing a few rows of hexagons linked together and then a few rows of circles side by side. She'll see how the hexagons share sides with no wasted space between them, but the circles leave lots of gaps.

MATH CORNER — In my head

Practicing mental math is fun with this variation on a popular road-trip game.

Take turns naming an item to take on a trip and telling how many you'd take. ("I'm going on a trip, and I'm taking 24 grapes. That's 24 items in all.") Your youngster repeats your item and adds her own. ("I'm going on a trip, and I'm taking 24 grapes and 6 shirts. That's 30 items.")

Keep playing until someone forgets an item or adds incorrectly. If you make it to 100 items without a mistake, everyone wins!

Variation: Include multiplication with statements like, "I'm going on a trip, and I'm taking 10 pairs of socks. 2 x 10 = 20. That's 20 items."

SCIENCE LAB — Fascinating friction

Your child can slide down a playground slide much more easily than he can slide down a grassy hill. That's because the smooth metal surface creates less friction—the resistance of movement when two surfaces rub together. Let him try this experiment to see how friction works.
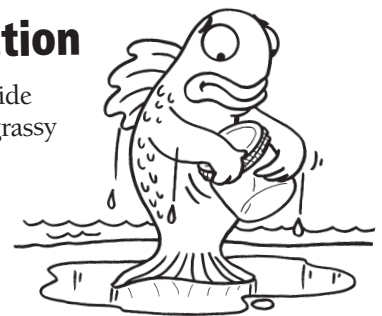
You'll need: screw-top jar with lid, soap, water

Here's how: Screw the lid on the jar as tightly as you can. Then, your youngster should wet his hands with soap and water and try to unscrew the jar. Next, have him rinse and dry his hands and the jar—and try again.

What happens? The jar is easier to open when his hands are dry.

Why? The friction between his hands and the lid helps him unscrew it. The water and soap reduced that friction, so his hands slipped instead of gripping the lid to remove it.

Q&A — Math and science extracurriculars

Q: *My son is trying to choose an after-school activity. He loves math and science—any ideas for extracurriculars related to those subjects?*
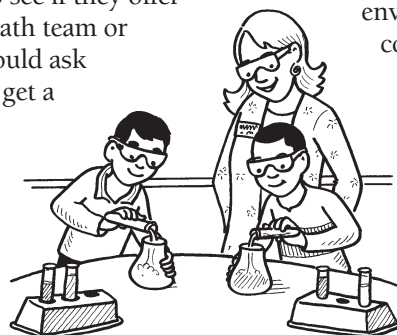
A: Start by calling your son's school or visiting the website to see if they offer any activities like a math team or science club. Or he could ask a teacher to help him get a new group started.

Also, check the public library, the parks and recreation department, and nature centers. You may find STEM classes, chess clubs, or nature programs about plants or animals.

If he joins Scouts, he could earn merit badges in everything from astronomy to chemistry to forestry. Or consider your local 4-H club, where kids explore the environment, agriculture, computer science, and more.

Idea: Suggest that your child ask a friend or two to join a group or club with him. He'll have someone he knows there, and you may be able to carpool with the other parents.