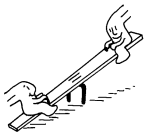
Intermediate Edition

Math+Science Connection

Building Understanding and Excitement for Children

April 2019



INFO BITS

Freeze and solve

Dance up a (math) storm with this game! Play music while your child and his friends dance. When you stop the music, everyone freezes. Call out a problem (3 x 7), and the first player to say the correct answer (21) is unfrozen. Then, he gives the next problem.

Ramp it up (and down)

Let your youngster see why an *inclined plane* (ramp) is useful. Have her prop cardboard against a staircase and experiment to find out which is easier: pushing a block up the stairs or up the ramp? Which lands more smoothly, a block pushed down the stairs or down the ramp? Anyone using a stroller or wheelchair knows the ramp works better—up and down!

Web picks

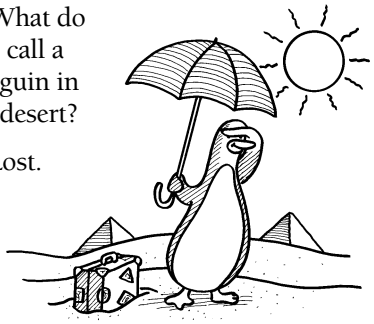
Visit *momath.org/activities* to find virtual and hands-on math activities. Your child can solve online brainteasers or follow instructions to make puzzles and shapes offline.

Your youngster will learn about glaciers, play an energy conservation game, or discover how to make s'mores in your own solar oven at *climatekids.nasa.gov.*

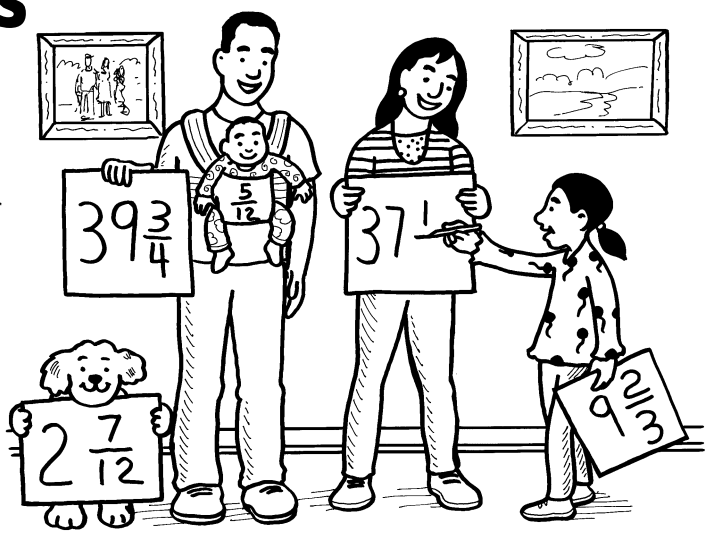
Just for fun

Q: What do you call a penguin in the desert?

A: Lost.



Mixing it up with mixed numbers



If 3 is a whole number and $\frac{2}{3}$ is a fraction, what is $3\frac{2}{3}$? It's a *mixed number*, or a combination of a whole number and a fraction. Here are fun ways your child can work with mixed numbers.

Convert a recipe

Notice mixed numbers in a recipe? Perhaps a muffin recipe calls for $1\frac{3}{4}$ cups milk. Ask your youngster to help you double the recipe, and she'll practice adding mixed numbers.

Have her use small measuring cups to pour $1\frac{3}{4}$ cups milk twice into a larger measuring cup. She'll see that $1\frac{3}{4} + 1\frac{3}{4} = 3\frac{1}{2}$ cups. Or on paper, she might add the whole numbers ($1 + 1 = 2$) and then the fractions ($\frac{3}{4} + \frac{3}{4} = \frac{6}{4} = \frac{3}{2}$, or $1\frac{1}{2}$), and add the totals ($2 + 1\frac{1}{2} = 3\frac{1}{2}$). Now make the doubled recipe together.

Calculate your age

How old is your child—as a mixed number? First, she could round her age to the nearest month (say, 9 years, 8 months). Since 1 year = 12 months, she's $9\frac{8}{12}$, or $9\frac{2}{3}$, years old.

Now let her figure out how old everyone else in your family is in mixed numbers and list them, oldest to youngest. *Idea:* Celebrate half and quarter birthdays with $\frac{1}{2}$ or $\frac{1}{4}$ of a cake!

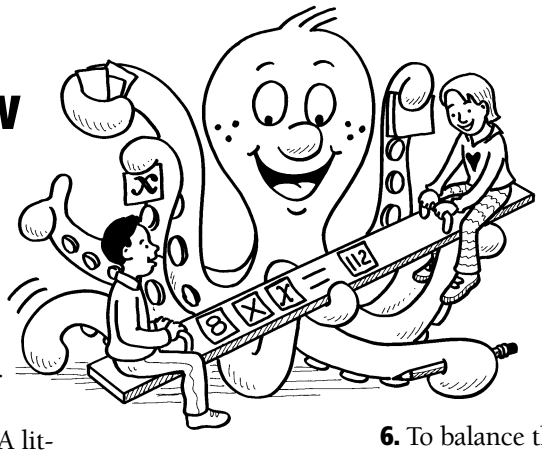
Design a space lander

Your youngster may imagine space travel to be in his future. Let him use his engineering skills now to design a safe landing device for his flight.

What materials will he use? Perhaps he'll put marshmallows (the "astronauts") in a paper cup (the "spaceship"). To help the ship land gently, he could experiment with cardboard, straws, and rubber bands.

Challenge him to drop his landing device from various heights to see what happens. Does it land right-side up without ejecting the astronauts? He can redesign and retest until he has perfected his landing.

Balance the algebra seesaw



Encourage your child to think of an algebra problem as a seesaw that he needs to balance. Here's how.

1. On a sheet of paper, have your youngster draw a seesaw with an equal sign in the middle.

2. Take turns giving each other math problems. You might say, "A little octopus has 8 arms. His whole family has 112 arms. How many octopuses are in his family?"

3. To make this an algebra problem, your child should write an equation to solve for x (the missing element, in this case the total number of octopuses). He could write $8 \times x = 112$, with each number and symbol on a separate sticky note.

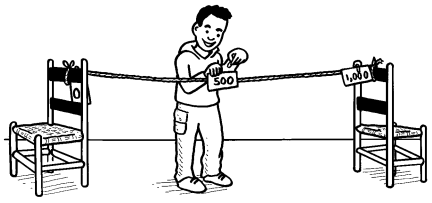
4. Let him place the sticky notes on the seesaw on either side of the equal sign. So 8, ×, and *x* go on one side, and 112 belongs on the other.

5. Next, he needs to get *x* alone on one side. *Tip:* Ask, "What could you do on both sides of the equation to get the *x* by itself?" (Divide by 8, since multiplication is the opposite of division. Now his seesaw says $x = 112 \div 8$.)

6. To balance the seesaw, your youngster can solve for *x* ($112 \div 8 = 14$). So $x = 14$—there are 14 octopuses in the family. Then, let him give you a problem to balance and solve.

MATH CORNER How big is a thousand?

Is 124 a big number or a small one? That depends on what number your youngster compares it to. Boost his number sense with this activity.



Make a number line. Let your child stretch yarn across a room and tie the ends to separate chairs. Then, have him write 0 and 1,000 on two index cards and clip them to opposite ends of the yarn.

Estimate markers. Suggest that he write 250, 500, and 750 on other cards. He can place them along his number line, estimating a quarter of the way, halfway, and three-quarters of the way from 0 to 1,000.

Fill it up. Take turns giving each other a card with a random number like 124. Where does it go? Even though 124 is a lot if your youngster is counting pennies or puppies, he'll see it's not so big when he compares it to 1,000!

OUR PURPOSE

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

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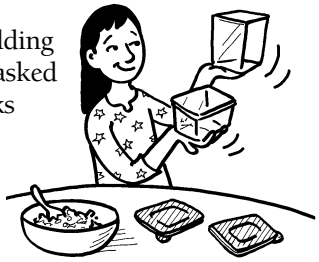
PARENT TO PARENT Spatial reasoning: How things fit



While volunteering in my daughter Talia's classroom, I noticed a set of building blocks. Since you usually see those in younger grades, I asked her teacher about them. Mrs. Foster explained that blocks improve kids' spatial reasoning skills and that visualizing sizes and shapes helps them with math.

The teacher said Talia could work on spatial sense at home by choosing containers for leftovers, loading the dishwasher, or organizing cabinets. So now Talia is in charge of putting away leftovers after dinner. At first she tried containers that were too big or too small. But after doing this a few times, she has gotten better at estimating how much space food will take up.

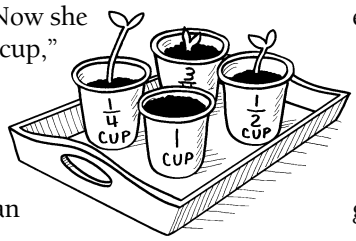
Recently, I asked Talia to help me pack a box of goodies for her uncle, who is deployed overseas. As we worked, we experimented with arranging and rotating items to make them fit. With her help, we were able to add more treats than I expected.

SCIENCE LAB Seed race

How deep should seeds be planted to sprout the fastest? Your child will find out with this experiment.

You'll need: four 16-oz. paper or plastic cups, measuring cups, potting soil, eight fast-growing seeds (radish, marigold), marker, water, paper, pencil

Here's how: Let your youngster measure $\frac{1}{3}$ cup soil into each cup and place two seeds on top. Now she should label the cups "$\frac{1}{4}$ cup," "$\frac{1}{2}$ cup," "$\frac{3}{4}$ cup," and "1 cup," and measure the corresponding amount of additional soil into each cup. She can place the cups on a tray in a sunny spot and water them as needed to keep the soil damp. Have her observe the cups and record changes for two weeks.



What happens? The sprouts from seeds topped with $\frac{1}{4}$ cup of soil should appear first. Those covered with 1 cup of soil may not reach the surface at all.

Why? A seed contains just enough energy to sprout and start growing toward the surface. If the journey is too far, the sprout may die before it ever pokes through the surface and gets a chance to grow into a plant.