Intermediate Edition

Math+Science Connection

Building Understanding and Excitement for Children

January 2019

School District of La Crosse

INFO BITS

Guess my coins

Play 20 Questions to help your youngster remember coin values and practice adding them. Give a clue, such as "I have 3 coins in my pocket that total less than $1." She can ask up to 20 yes-or-no questions to determine which coins you have. *Examples:* "Are any 2 coins the same?" "Is the total less than 50 cents?"

Snowflake geometry

Here's a fun fact about snowflakes: Each central angle measures 60°.

Can your child figure out why? (The 6 points are arranged in a circle, a circle is 360°, and 360° ÷ 6 = 60°.) Let him put black paper in the freezer for 2 hours, catch snowflakes on it, and observe them under a magnifying glass. Or he could make craft-stick snowflakes and measure the angles with a protractor.

Book picks

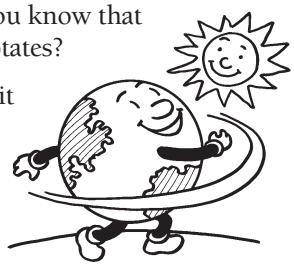
There are about 1 million granules of sugar in $\frac{1}{4}$ cup! Your child will learn this and other fascinating facts in *Millions, Billions, & Trillions: Understanding Big Numbers* (David A. Adler).

A jumping spider in space? *Nefertiti the Spidernaut* (Darcy Pattison) is the true story of a spider who visited the International Space Station for a science experiment.

Just for fun

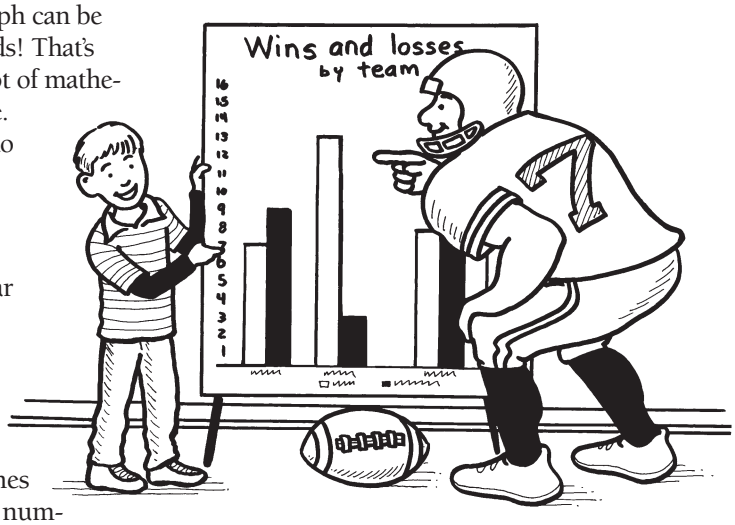
Tom: Did you know that the Earth rotates?

Annie: Yes, it makes my day!



A graph tells a story

Like a picture, a graph can be worth a thousand words! That's because it provides a lot of mathematical data at a glance. Encourage your child to use graphs like these to tell stories.



Sports scores

Now that the regular football season is over, suggest that your youngster make a bar graph showing wins and losses. He should write team names across the bottom and numbers representing games (1–16) up the left side.

For each team, he could fill in a green bar for wins and a yellow bar beside it for losses. Then, ask him questions like "How many more wins did your favorite team get than mine?"

Screen-time patterns

A line graph shows patterns over time. Each week for a month, encourage your child to graph the time he spends using electronics and the time being physically active. He could title his graph "Screen time vs. active time," then label the bottom with dates and the left side with time in 15-minute intervals. Have him plot each day's activities with a dot where the date intersects with the correct amount of time—and connect the dots as he goes.

After each week, he could report his findings. ("Screen time dropped steadily, and active time went up slightly. The biggest difference between screen time and active time on a single day was 1 hour and 15 minutes.")

Engineer a sled

Whoosh! What makes a sled zoom down a hill? Your youngster can test *friction* by engineering an indoor "sled."

Let your child wrap three index cards (sleds), each in a different material (plastic wrap, foil, waxed paper). On an uncarpeted surface, she can prop an upside-down cookie sheet against a stack of books. Have her predict which sled will slide the farthest off the ramp. Then, she can test each one and measure. (The material with the least friction—or resistance when sliding over a surface—will travel the farthest.)

The rules of divisibility

How can your child tell if a number will divide evenly into another number or if she'll get a remainder? Help her work on division and discover *divisibility rules* with these ideas.

Divisibility rules

A number is evenly divisible by:
2, if it's even
3, if the digits add up to 3, 6, or 9
4, if the last 2 digits are divisible by 4
5, if the last digit is 0 or 5
6, if it's divisible by 2 *and* 3
8, if the last 3 digits are divisible by 8
9, if its digits add up to 9

Know the rules. Ask your youngster to divide a few random numbers by 2. What do the ones that divide evenly have in common? (They're all even numbers.) Now let her do the same with 5. (They all end in 0 or 5.)

Avoid the remainders. Play this game where the low score wins. The first player rolls 3 dice to form a 3-digit number (say, 612). She says a number (2–9) that she thinks will divide into it evenly, then divides to check. If there's no remainder (612 ÷ 9 = 68), her score is 0. If there is (612 ÷ 8 = 76, remainder 4), the remainder (4) is her score. Once a player has 10 points, she's out. The last player left wins.

SCIENCE LAB

Dominoes: A chain reaction

Every time the sun warms the Earth or batteries power a flashlight, energy is being transferred. Your youngster will see energy transfer in action with this demonstration.

You'll need: dominoes, flat surface

Here's how: Have your child line up dominoes a short distance apart from each other. Using his finger, he should push the first domino into the one behind it.

What happens? The dominoes topple over, one after the other.

Why? The dominoes have *potential*, or stored, energy. When your youngster pushes the first domino, the potential energy turns into *kinetic* energy (energy of motion). A chain reaction resulted as energy transferred from one domino to the next, on down the line.

Q & A

Math "tricks"—or not?

Q: *My son is learning about fractions in school. I remember a trick I used when I was his age called the "butterfly method." Should I teach it to him?*

A: Instead, why not ask your son to teach *you* methods he's learning in math? They may be different from the way you learned. But if he can explain how to do the procedures and tell you why they work, then they will be effective for him.

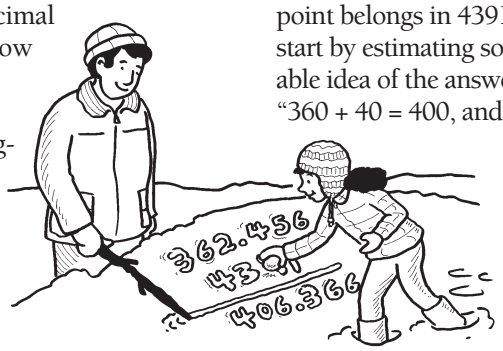
The downside to tricks and shortcuts like the butterfly method is that youngsters may skip the understanding and learning—and go straight to the answer. Your son needs an understanding of math concepts to know whether answers are in the right ballpark. Plus, future math lessons will make more sense if he gets the "why" behind what he's doing now.

MATH CORNER

Find the (decimal) point

One of the most important things for your child to remember when she adds and subtracts decimal numbers is to line up the decimal points correctly. Show her why with this activity.

Give your youngster an addition or subtraction equation with decimal points, leaving the decimal point out of one number.



Supply the answer—but it's up to her to figure out where the decimal point goes! *Example:* 362.456 + 4391 = 406.366.

Where does she think the decimal point belongs in 4391? Suggest that she start by estimating so she'll have a reasonable idea of the answer. She might think, "360 + 40 = 400, and 40 is close to 43, so I'll try 43.91." Then, she can add to check:

$$\begin{array}{r} 362.456 \\ +\ 43.91 \\ \hline 406.366 \end{array}$$

OUR PURPOSE

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

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