Intermediate Edition

Math+Science Connection

Building Understanding and Excitement for Children

November 2019

Title I

Prince William County Public Schools

INFO BITS

Geometry George

Play this version of "Simon Says" to help your child practice geometry terms. Take turns giving each other instructions like "Geometry George says, 'Draw perpendicular lines'" or "Geometry George says, 'Hold your arms parallel.'" If you follow the instructions when the person doesn't say "Geometry George," you're out!

Have a heart

Your youngster's heart pumps more than 1 gallon of blood every minute! To see how hard it works, she can pretend a gallon jug is a heart. Poke a hole in it, and insert a straw (an "artery"). Then, let her fill the jug with water, replace the lid, and squeeze it over a sink. How much water can she pump out through the straw in 1 minute?

Book picks

Rumpelstiltskin has returned—with a magic multiplying stick. In *Multiplying Menace: The Revenge of Rumpelstiltskin* (Pam Calvert), a boy must use math to defeat the fairy tale villain.

When the Sun Goes Dark (Andrew Fraknoi and Dennis Schatz) explains what happens during a total eclipse of the sun.

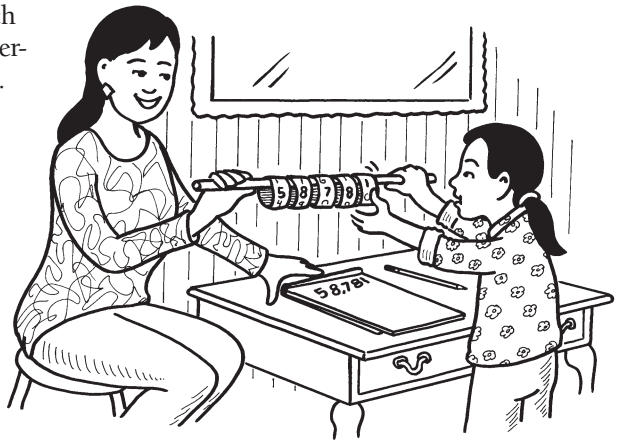
Just for fun

Q: When do giraffes have eight feet?

A: When there are two of them.

A place for each number

While $1, $10, and $100 each start with 1, your child would certainly rather have $100 than $1. The 1 in $100 is worth more—since a digit's value depends on its place in a number. Try these place value activities to bring this concept to life.



See the value

Ask your youngster to pick any three-digit number (perhaps 263) and name something close to the value of each digit. She might say she ran 200 meters in PE (hundreds place), a tissue box has 60 tissues (tens place), and there are 3 people in the room (ones place). Although 2 is less than 6 and 3, its place in 263 gives it the greatest value.

Rotate the rings

Your child can read large numbers with this place value tool. Help her cut a paper towel tube into five rings and write the digits 0–9 around each ring. Now ask her to slide the rings onto a stick or ruler, rotate them a few times, and read any number whose digits are lined up in front of her. *Example:* "Fifty-eight thousand seven hundred eighty one" for 58,781.

Rearrange the digits

Make the biggest six-digit number to win this game. Use playing cards, ace (1) through 9. Each person draws six cards and arranges them faceup in the order drawn. On each turn, a player makes her number larger by swapping places for any two of her cards. (For 351,642, switch 6 and 3 to make 651,342.) After three turns, the player with the highest number wins.

Two kinds of energy

What's the difference between a ball in your youngster's hands and a ball that's flying through the air? The ball he's holding has *potential* (stored) energy. The one in the air has *kinetic* energy—it's in motion. Let him explore these two types of energy.

1. Potential. Help your child find examples of potential energy. He might spot a squirrel ready to scamper up a tree, a toy car at the top of a ramp, or a ceiling fan that's turned off.

2. Kinetic. Can he turn potential energy into kinetic energy? For instance, he could push the car down the ramp or turn on the fan. The squirrel? He's on his own!

Fall-themed graphs

Pie, acorns, pinecones … encourage your youngster to use fall's treasures to practice graphing.

Slices of pie

Let your child cut a paper plate into one slice per family member. Each person labels his slice with his favorite kind of pie and colors it (red for apple, orange for pumpkin). Now your youngster can glue the slices onto a second paper plate, putting slices with the same answer next to each other. It's a pie graph about pie! Ask questions he could answer by analyzing the data in his graph: "Which pie is most popular?" "What fraction of people chose pumpkin?"

Natural objects

Have your youngster gather items from the ground and show his findings on a *scaled picture graph*. This type of graph uses one picture to represent a chosen number of objects. Have him draw a key, for example:

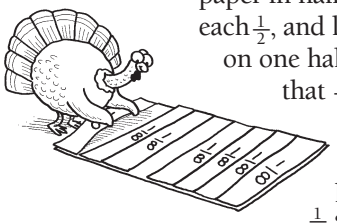
= 5 acorns = 5 leaves

So if he collected 20 acorns and 15 leaves, he would draw a graph with 4 acorns (4 x 5 = 20) and 3 leaves (3 x 5 = 15).

MATH CORNER Prove it!

My daughter Amanda was making careless mistakes on her math homework, so we made up an activity we call "Prove it." She has to find a creative way to prove that her answers are correct.

When she solved $\frac{1}{2} + \frac{3}{8} = \frac{7}{8}$, for example, Amanda cut one piece of paper into 8 equal parts and labeled each strip $\frac{1}{8}$. Then, she folded a second piece of paper in half, labeled each $\frac{1}{2}$, and laid 4 strips on one half to show that $\frac{4}{8} = \frac{1}{2}$.



Finally, Amanda put 3 of the $\frac{1}{8}$ strips on the other half and counted to show that $\frac{7}{8}$ was correct.

For an assignment about the commutative property (which states that you can add or multiply numbers in any order and get the same answer), I asked her to prove that 9 x 5 = 5 x 9. So she drew 9 rows of 5 stars each. When she turned her paper sideways to show 5 rows of 9 stars, she proved that there were still 45 stars.

Our activity is helping Amanda to correct her mistakes—and learn from them—as she goes.

OUR PURPOSE

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

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SCIENCE LAB Sundial time

In ancient times, sundials were used to tell time. Your youngster can see how as she builds her own clock on a sunny day.

You'll need: *straight stick, clock, rocks, permanent marker, patch of soil*

Here's how: On a sunny weekend morning, when the clock strikes the hour (say, 7 a.m.), have your child push the stick vertically into the ground. She should place a rock in the stick's shadow and use the marker to write the time on it. As the clock strikes each additional hour, she should write the times on the rocks and place them around the stick. She'll notice that the rocks need to be placed closer together as the sun gets higher in the sky and farther apart again as it gets lower.

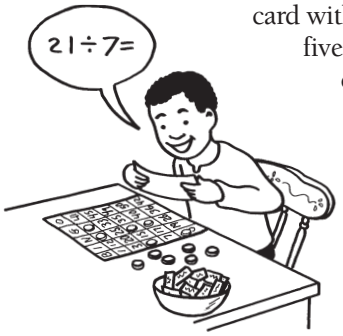
What happens? The sundial will let your youngster tell time. For instance, if the shadow falls about halfway between the 1 p.m. and 2 p.m. rocks, it's about 1:30 p.m.

Why? With Earth's rotation, the position of the stick's shadow changes over time with the position of the sun.

PARENT TO PARENT Bingo night, division–style

Turn bingo night into an evening of family math fun. Making—and playing—this game will help your child work on division facts.

First, everyone can make bingo cards out of construction paper (draw grids with 6 rows and 5 columns and put the letters "B-I-N-G-O" across the top boxes). Then, each person writes random numbers on his card: 1–10 under B, 11–20 under I, 21–30 under N, 31–40 under G, and 41–50 under O.



On separate slips of paper, write 50 division problems whose answers are between 1 and 50 (21 ÷ 7 = __, 300 ÷ 6 = __). Put all the slips in a bowl.

To play, the caller pulls out slips one at a time and reads the problem. Each player should cover the answer on his card with a token. The first to get five in a row (down, across, or diagonal) calls "Bingo!" As a check, he says the math problems and answers aloud. If they're all correct, he wins that round. Trade cards, and play again.