

Math+Science Connection

Intermediate Edition

Building Understanding and Excitement for Children

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Fauquier County Public Schools

Mrs. Ashley and Ms. Jenkins, Math & Science Supervisors

INFO BITS



Roll a pattern

A pair of dice is all you need for this pattern game. Let your child roll the dice and use the numbers to start a pattern for you to continue. If he rolls 2 and 5, he could say, "2, 5, 11, 23" (multiply by 2 and add 1). You would say, "47, 95, 191, 383." Now you roll the dice and begin a pattern for him.

Paper chain challenge

Challenge your youngster to engineer the longest possible paper chain using



only one piece of construction paper, scissors, and tape or glue. Encourage her to measure her finished chain. How could she redesign it to make it longer? For example, she might change the length or width of the strips.

Book Picks

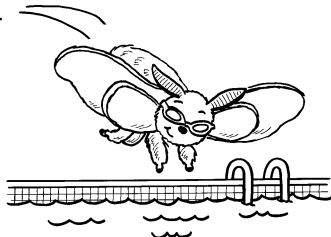
Follow along on a mysterious adventure while solving math and logic puzzles in *Math and Magic in Wonderland* (Lilac Mohr).

Your child can read about animals from all seven continents, from Australia's Tasmanian devil to Africa's Nile crocodile, in *The Animal Book* (Ruth Martin).

Just for fun

Q: Why did the moth take swimming lessons?

A: He wanted to learn the butterfly stroke.



Ready, set, math!

Coming right up: One fantastic year of math! Help your youngster plan for and celebrate success with these activities.

Poster of resolutions

Encourage your child to make math resolutions. *Examples:* "Double-check my math answers." "Ask questions when I don't understand something." She could cut construction paper into colorful geometric shapes, write a resolution on each, and glue the shapes on poster board.



Scrapbook of success

Suggest that your youngster start a scrapbook for her math papers. She can decorate a binder and add pockets for assignments she's proud of. Maybe she'll save a homework assignment she stuck with even though it was difficult or a test where she showed improvement. Throughout the year, she can flip through her binder to see her progress.

Jar of marbles

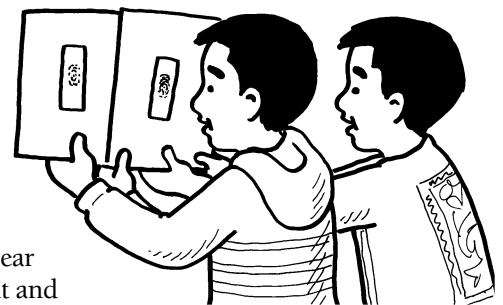
Let your child get a clear jar, marbles, and a notebook. Whenever she uses math *outside* of school, she can add a marble to her jar and write about the math in her notebook. ("I measured my little brother's height." "I multiplied fractions to double a muffin recipe.") She'll have a visual reminder of how useful math is—and an interesting list to read when the year is over!

Fingerprint analysis

Scientists have never discovered two identical fingerprints—not even among twins! Your child will learn about fingerprints with this investigation.

Have each family member use a pencil to shade in a dark circle on a sheet of paper, then press his finger into the circle. Now he should put clear tape on his finger to capture the print and carefully place the tape on a clean sheet of paper.

Using a magnifying glass, your youngster can look for fingerprint features like loops (bean shape), whorls (round), and arches (like a rainbow). Which one is most common in your family? Does anyone have a feature that no one else has?



Strategies for multiplication

As a child begins to learn and master multiplication, practicing with objects helps him visualize and learn the facts. Try these ideas.

Equal groups. Give your youngster a multiplication problem, perhaps 7×3 , and let him use school supplies to solve it. He could form equal groups (say, 7 piles of 3 crayons).



How many does he have in all? He can think $3 + 3 + 3 + 3 + 3 + 3 + 3 = 21$ or skip count 3, 6, 9, 12, 15, 18, 21 to find the answer.

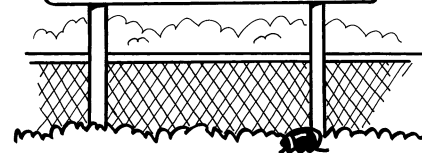
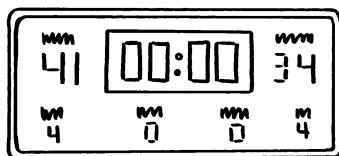
Arrays. A checkerboard is an example of an array, or a regular arrangement of rows and columns. If your child is solving $2 \times 6 = \underline{\quad}$, he can use checkers to cover a section of the board 2 squares tall and 6 squares wide. How many checkers did he use? (12) Or give him a certain number of checkers to make an array with (say, 24). Have him say the problem that matches (perhaps 6×4 or 3×8).



PARENT TO PARENT

Football math

Our family loves football season! As we started watching games together this year, I realized that our children could use the scores to play with math.



Each week, we look at the final scores in the newspaper and figure out ways they might have been earned. Last weekend, one score was 41 – 34. Our daughter said 41 points may have come from 5 touchdowns (each with an extra point) and 2 field goals: $(5 \times 7) + (2 \times 3) = 41$. Our son said you can also earn 41 points with 6 touchdowns if only 5 included an extra point: $(6 \times 6) + (5 \times 1) = 41$.

This activity has added a new level of fun to football season—and it's giving the kids a new way to use math.

OUR PURPOSE

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

Resources for Educators,
a division of CCH Incorporated
128 N. Royal Avenue • Front Royal, VA 22630
800-394-5052 • rfcustomer@wolterskluwer.com
www.rfeonline.com

SCIENCE LAB

A "centripetal" penny

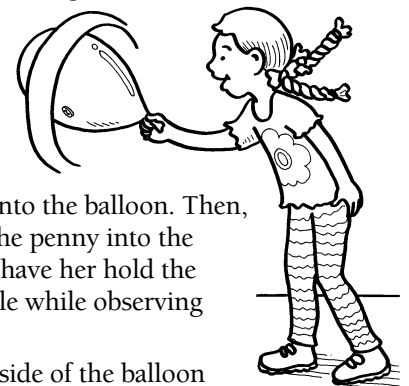
What do a rocket and a penny have in common? By themselves, not much—but when you add the right forces, their motion can be similar.

You'll need: light-colored balloon, penny

Here's how: Let your youngster put the penny into the balloon. Then, blow up the balloon for her (being sure to shake the penny into the bottom so it couldn't be inhaled), and tie it. Next, have her hold the tied end of the balloon and spin it rapidly in a circle while observing the penny's motion.

What happens? The penny spins around the inside of the balloon in a circular motion.

Why? Spinning the balloon in a circle creates *centripetal force*. The force pushes the penny to the sides of the balloon, and the balloon's shape keeps the penny moving in that circular direction. A rocket orbiting the Earth also has centripetal force, this time caused by gravity.



MATH CORNER

Grams in the balance

How many grams does a serving of your child's favorite cereal weigh? He can check the nutrition label to find out—the answer is right next to the serving size. Then, use the foods in your pantry to help him practice estimating weight.

1. Have your youngster make a scale. He should use yarn to tie two identical cups to opposite corners of a coat hanger. Then, he can put the hanger on a doorknob.
2. Let your child choose a food (say,



crackers), read the label to see how much a serving weighs (15 grams), and put 1 serving in the cup.

3. Ask your youngster to pick a different food and, without looking at the label, take out an amount that he estimates weighs the same as the crackers (perhaps 20 almonds).

4. He can place the almonds in the other cup to check his estimate, then add or subtract almonds to balance the scale.

5. Choose new foods, and do the activity again.