

Math+Science Connection

Beginning Edition

Building excitement and success for young children

September 2011

Parkview Elementary
A S.T.E.M. Focused School

TOOLS & TIDBITS



Measure your hug

How big is your child's hug? Let her find out

by holding yarn from hand to outstretched hand. Cut the yarn, and then have her measure it. She might use markers ("My hug is 9 markers long"), or you could help her with a tape measure. *Idea:* Do this each year, and she can watch her hug grow!

Night critters

Here's an activity that lets your youngster observe bugs that are active at night. Hang a white sheet from a tree or clothesline. Go outside together after dark, and shine a flashlight on the sheet. As bugs land, your child can observe them. How many different kinds does he see?

Book picks

▣ In *Pigs Will Be Pigs: Fun with Math and Money* (Amy Axelrod), a family of hungry pigs eats all their groceries. Then, they search the house for money to go out to dinner. Youngsters can help them solve math problems along the way.

▣ From green buds in spring to white snow in winter, your child will love exploring the colors of the seasons in *Red Sings from Treetops: A Year in Colors*. A Caldecott Honor Book by Joyce Sidman.

Worth quoting

"The art and science of asking questions is the source of all knowledge."
Thomas Berger

Just for fun

Teacher:

Name six wild animals.

Eddie: Two lions and four tigers.



Math all day

From the time your child gets up until he goes to sleep, math can be part of his daily life. Show him fun ways to use math all day long.

Morning. Help your youngster tell the time when he wakes up. Talk about what time he has to leave for school and how many minutes he has to get ready. That will help him develop a sense of *elapsed time*. He can also check the temperature in the newspaper or read your thermometer if you have one hanging outside. Or he might help you count money for his lunch or your cup of coffee.

Afternoon. Let your child be the scorekeeper or banker when you play board games. Make a game out of counting the times you each dribble a basketball before shooting a basket. ("Who can dribble the most times?" "The fewest?") Or have him divide the cookies evenly when he has friends over for snacks.

Shape poetry

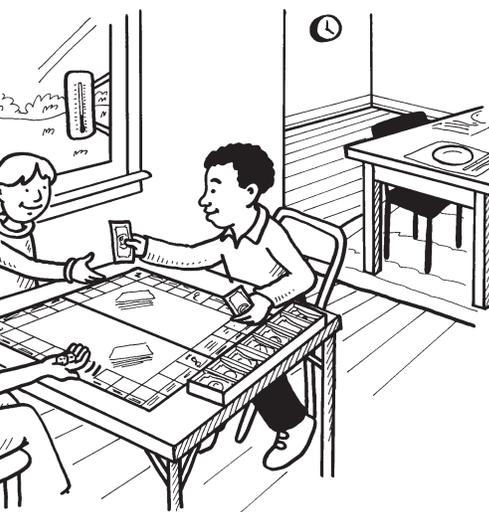
A round ball. A rectangular calculator. An oval mirror.

Encourage your youngster to find different-shaped objects and write about them in "shape poems." First, have her list a few objects. For each one, she can write the name ("picture frame"), the shape ("square"), and phrases describing it ("four sides," "four corners," "holds a picture").

Then, she can use the words to write a poem. On a piece of construction paper, have her draw the object's shape and carefully cut it out. Finally, she can copy her poem onto the shape.

Example:

Four sides, four corners,
It's called a square.
And guess what?
My picture is there!



Evening. While you're making dinner, your youngster can set the table. He'll practice counting, create patterns (fork, plate, spoon, fork, plate, spoon), and learn that the number of settings has to match the number of people. At cleanup time, try posing fun math challenges. ("Can you put away 3 red toys, 4 blue toys, and 5 green toys?" "Can you stack 9 + 4 blocks on the bottom shelf?") When it's bedtime, ask him how many pages are in his book. Better yet, pick out a math story to read before lights-out! 



Blending in

Why are animals all different colors? Your youngster can explore one reason with these fun activities that will teach her about *camouflage*.

Spot animals. Take a walk outside to notice creatures in their surroundings. You might point out a brown deer near a tree trunk or a green frog in the grass. Explain that some animals blend into the background to disguise themselves and stay safe. *Note:* You could also read books on the topic, like *What Color Is Camouflage?* (Carolyn Otto) or *Hiding in Forests* (Deborah Underwood).



Play hide-and-seek. Have your child close her eyes while you hide five stuffed animals around the house so they are camouflaged. A blue parrot might be tucked into a blue sofa cushion, or a white polar bear might go in the bathroom sink. After your child finds them all, she can hide stuffed animals for you to find.

Make pictures. Suggest that she draw or paint a forest, an ocean, a jungle, or a desert. She should add animals, making sure to include at least one that's camouflaged. For example, she might hide a brown bear in the woods. Can you find her camouflaged animal? Now make a hidden-animal picture for her.

Q & A Problem solving

Q: I've heard that parents can help their children become better "math thinkers." How can we do that in our family?

A: People think of math as just being about numbers, but it's also about problem solving. Encourage your children to be good problem solvers, and they'll be lifetime math thinkers!



Start by letting your youngsters come up with solutions to everyday problems. For example, if they're putting away leftovers and ask which container to use, have them figure it out themselves. Through trial and error—"This container is too small" or "This container is just right"—they'll see that they can find their own solutions.

Also, ask your children lots of questions, and give them time to think about their answers. You can encourage them to talk through their ideas, too. This will help them build reasoning skills. Plus, they're apt to see that there can be more than one right answer.

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SCIENCE LAB

Ice race

How fast does an ice cube melt? It depends on where it is! Let your child learn about states of matter and temperature with this experiment.

You'll need: 3 ice cubes, 3 bowls, a timer (watch, cell phone, stove clock)

Here's how: Have your youngster place each ice cube in a separate bowl and put one bowl in the refrigerator, one on the kitchen counter, and one in the sun. Ask him which cube he thinks will melt the fastest. The slowest? Help him time how long it takes each cube to melt.

What happens? The cube in the sun will melt the fastest, and the one in the refrigerator will take the longest.

Why? Higher temperatures speed up the melting process.

Idea: Put the bowls of melted ice into the freezer, and have your child predict whether they will turn back into ice cubes. (When the water refreezes, he'll see that they take the shapes of the bowls they're in.)



MATH CORNER

Math bingo

Here's a fun way to build math skills as you turn any night into family bingo night.

First, have each player create a bingo card with three rows and three columns. In each box, players should randomly write one number between 0 and 20. Then, give each person markers (buttons, pennies), and try these games:

- On separate index cards, write number words (zero through twenty). Shuffle the cards, and stack them upside down. Hold



up one card at a time. If a player has the matching numeral on her bingo card, she puts a marker on that square and says the number. The first one to fill her card wins.

- Write addition and subtraction problems on index cards. (*Note:* Make sure the problems can be answered by the numbers 0–20.) Call out the problems,

and players mark the square if they have the answer. The first to get three in a row yells, "Bingo!" Check her card against the problems, and play again.

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Sports math

Boost your child's math skills while you watch sports together. Ask him how many points the trailing team would need to tie or win. Then, have him calculate the touchdowns, baskets, goals, or runs needed. Older children could work out the possible combinations (touchdowns, extra points, field goals for football; three-pointers, regular baskets for basketball).

Learning about levers

With a piece of wood, a nail, and a hammer, your youngster can learn about a *lever*—a type of *simple machine* that uses force to move or lift an object. Hammer a nail into the wood, and ask her to try to remove it with her fingers. Then, show her how to carefully use the claw end of the hammer to remove the nail. She'll see that a lever makes the job easier.

Web picks

Take a virtual field trip to the Long Island Children's Museum. At www.licm.com/for_kids.php, your child can discover patterns, explore symmetry, and enjoy other math and science activities.

Find science experiments and articles at www.knowmag.ca, the online version of *Know: The Science Magazine for Curious Kids*. Topics include animals, the solar system, technology, and more.

Worth quoting

"Mathematics is the door and key to the sciences." Roger Bacon

Just for fun

Q: If you add 2 apples and 3 apples, what will you get?

A: A math problem!



All about zero

Sometimes zero means nothing, and sometimes it means something. Why do we need the number zero? Use these fun activities to show your youngster why zero is important!

Hunt for zero

Send your child on a search for zeroes. She might find them on a kitchen timer, a ruler, or a score in a newspaper. Then, let her make a "zero poster." She could draw a big zero on a poster board and decorate it with the examples she found. Talk about how zero can be used—as a starting point (ruler), an ending point (timer), or a way to say "nothing" (score).

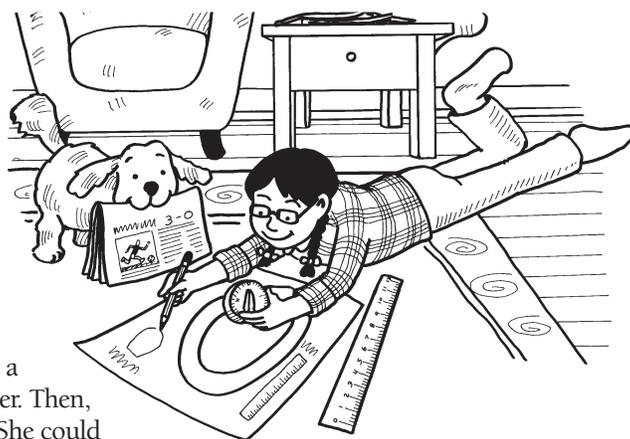
Hold that place

With pencil and paper, have your youngster write the numbers 2, 20, and 200 and read them aloud. Then, let her erase the zeroes and read the numbers again. (20 and 200 are gone!) Explain that zero is a *placeholder*—just as she might ask a friend to hold her place in line while she gets her jacket, the number zero can

hold a place in numbers (example: 20 has 2 in the tens column and 0 in the ones column—since there are no "ones," zero is used to hold a place in that column).

No more left!

Give your child three grapes, have her eat all three, and ask her how many are left (zero). Then, help her write the subtraction problem ($3 - 3 = 0$). Practice with a few more scenarios, and have her solve the subtraction problems ($5 - 5 = 0$, $9 - 9 = 0$). She'll learn that sometimes the answer to a math problem is zero. 🦋

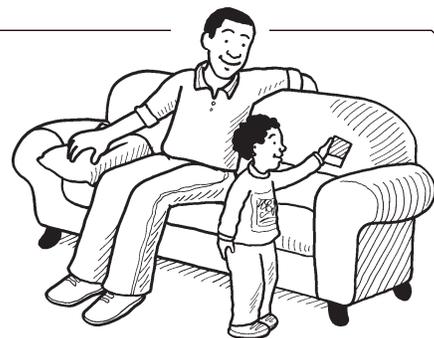


What color?

Teach your youngster to be a keen observer by encouraging him to notice subtle differences in colors. Try this idea.

At a hardware or home improvement store, let your child pick out a variety of paint strips. Cut the strips into individual colors, and put them in a small bag.

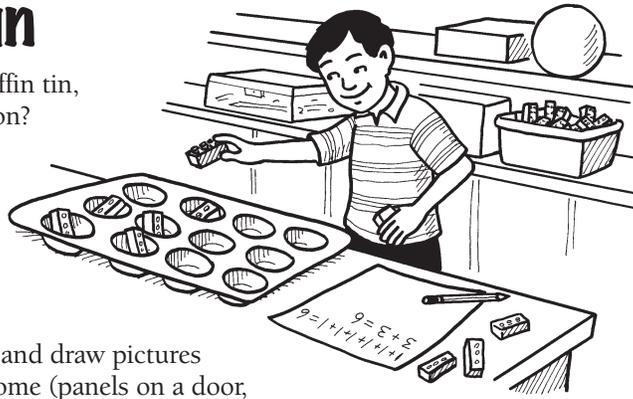
Then, have him pick one out and walk around your house or outside looking for objects that match the shade exactly. As he compares a dark green paint chip to your carpet, a sofa, or the grass, for example, he'll realize that there's a wide range of green—and that he has to look closely to find the differences! 🦋



An array of fun

What do a carton of eggs, a muffin tin, and window panes have in common? They're all examples of *arrays*—arrangements of objects organized into rows and columns. Use arrays to help build your child's understanding of grouping:

- Have your youngster find arrays and draw pictures of them. Suggest that he look at home (panels on a door, drawers on his dresser) or in stores (cupcakes at the bakery, toilet paper rolls in a package).



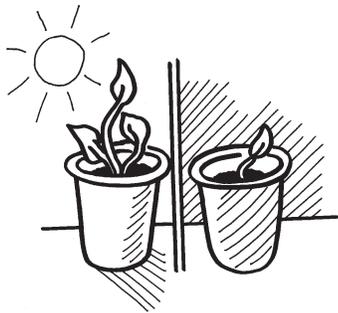
- Let him make his own arrays with a muffin tin and small objects (Legos, blueberries). For example, he could form an array with 2 rows of 3 Legos each. Ask him how many ways he can count the Legos (6 groups of 1, 2 groups of 3, 3 groups of 2). Then, help him write the addition problem for each grouping ($1 + 1 + 1 + 1 + 1 + 1 = 6$; $3 + 3 = 6$; $2 + 2 + 2 = 6$). *For older children:* Turn the groupings into multiplication problems: $6 \times 1 = 6$, $2 \times 3 = 6$, $3 \times 2 = 6$.

SCIENCE LAB

Plant growth

What do plants need to grow? With this simple experiment, your youngster will find out.

Materials: 2 plastic or paper cups, potting soil, 6 bean seeds, water



Help your child fill each cup $\frac{2}{3}$ full of potting soil and add 3 seeds to each one. Let her cover the seeds with more soil and moisten with water. She should put one cup in a sunny window and one in a darker place. Have her water the containers daily to keep the soil damp.

What happens? The plant in the sunny spot will grow faster and taller.

Why? Plants need sunlight as well as water and air to make the food that is necessary for them to grow.

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MATH CORNER

I know that number!

Here are two fun ways to spend time with your child and give him practice learning to recognize numbers.

Make a Dalmatian. Write the numbers 0–5 on separate index cards. Shuffle the cards, and place them facedown in a stack. Have each player draw an outline of a large dog on a sheet of paper. Take turns picking a card, saying the number out loud, and drawing that number of spots on your dog. When you've used all the cards, shuffle them and play again. Whose Dalmatian has the most spots after three rounds?

Go fishing. Give each player his own "fish bowl" (a clear bowl or plastic container). Then, put out a pile of "fish" (buttons or other small objects) and a stack of index cards numbered 0–10 (shuffled and facedown). To play, pick a card, and put that number of fish in your fish bowl. Return the card to the bottom of the stack. The first one to get 25 fish in his bowl wins. *Note:* Players can use paper and pencil to keep track of their fish.



PARENT TO PARENT

Math box

At back-to-school night, Becca's teacher had a great idea for helping children practice math at home. She suggested that we put together a portable "math box" to play with anytime.

I got a plastic tote box, and together Becca and I filled it with "things with numbers." She put in a deck of cards, dominoes, dice, and flash cards. I added a pencil, a notepad, and a small bag filled with beads.

Then, we thought of math games she could try. Becca suggested rolling three dice and arranging them from lowest to highest. I said she could add the dots on both sides of the dominoes. We wrote each idea on a separate piece of paper and stapled them into a "math idea book." Now she's using her math box in the car, in bed before she goes to sleep, and even at breakfast—and she likes playing with math!

