

Math+Science Connection

Beginning Edition

Building excitement and success for young children

February 2010

John Paul II Catholic School

TOOLS & TIDBITS



How many outfits?

Put out three of your child's shirts and two pairs of his pants. Ask, "How many different outfits can you make?" Let him check his prediction by drawing the clothes in different combinations. He'll learn to estimate possibilities based on what he sees and to use problem-solving skills to reach a conclusion. (Answer: six outfits)

Hole in a bag

Let your youngster fill a plastic zipper bag half full of water and close it. Then, help her poke a sharpened pencil through the bag and out the other side. Does the water spill out? No! That's because plastic is made of *polymers* (a chemical compound that makes the bag stretchy), and the polymers immediately seal back around the pencil.

Web picks

This math site is chock-full of activities to let your child practice key skills. She can try logic games, put together jigsaw puzzles, match math symbols, play checkers, and more. www.mathisfun.com/games/index.html

Your young astronomer can learn about the stars, moon, planets, and space travel at this NASA Web site. Includes games, activities, facts, and questions. <http://starchild.gsfc.nasa.gov/docs/StarChild/StarChild.html>

Worth quoting

"Somewhere, something incredible is waiting to be known." Carl Sagan

Just for fun

Q: What goes up and never comes down?

A: Your age!



It's a set!


Sometimes things are arranged in 2s, and sometimes they are in 3s, 4s, or 5s. Teach your child to use these groups—called sets—to help her count, multiply, and divide.

Find sets. Your youngster can see what sets look like by dividing a poster board into sections for 2s, 3s, 4s, and 5s and labeling each one. She can draw sets or glue examples cut from old magazines on each section. Her 2s section might show pairs of earrings, mittens, and shoes. For 5s, she could include 5 dolls, 5 smiley faces, and a foot with 5 toes. Have her draw a circle around each set so she can visualize the groups.

Count and multiply. Gather a pile of small objects, such as paper clips. Call out a number (3), and each of you race to make as many sets of 3 as you can. Have your child count the total number of paper clips by using the sets to




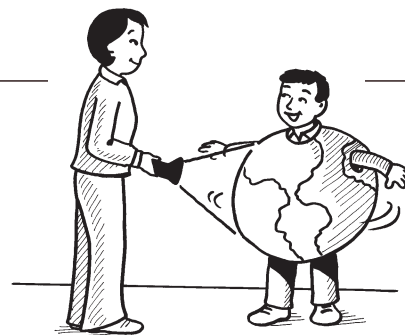
skip-count by 3 ("3, 6, 9, 12"). She'll find the total (12) and also learn that 4 sets of 3 = 12, or $4 \times 3 = 12$. Play again with different numbers.

Divide. Next, help your youngster learn to divide by using sets. Give her 15 buttons, and ask her to make groups of 5. She'll see how many sets of 5 are in 15 (3). Then, have her arrange the buttons into 3 equal groups. Let her count the number in each group (5), and help her say the number sentence: "15 divided into 3 groups equals 5." 

Day and night

Your child knows that he plays during the day and sleeps at night, but does he know what causes day and night? Help him find out with this simple demonstration.

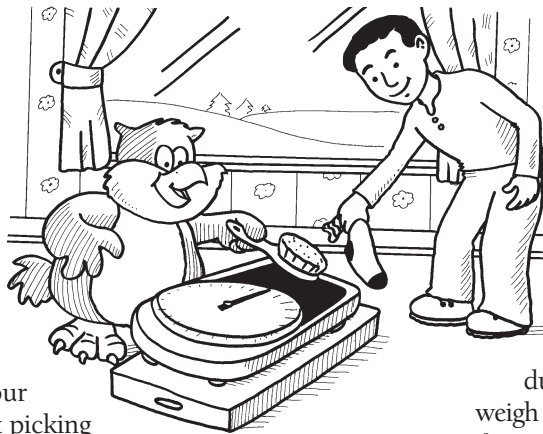
Let him stand with his arms outstretched while you face him and shine a flashlight toward his middle. He is the Earth, and you are the sun. Have him turn slowly around. When he sees the light, it is daytime. When his back is to you, it is nighttime. You can explain that the Earth turns around once every 24 hours—that's a whole day—and it's nighttime when his part of the Earth is not facing the sun. 



How much does it weigh?

Which one is heavier? What does one pound look like? Use these activities to build your youngster's thinking skills as he explores the weight of everyday objects.

At home. Together, gather various household objects. *Examples:* hairbrush, dictionary, stuffed animal, sock, briefcase. Ask your child to point to two objects and—without picking them up—say which one is heavier. After he guesses, he can pick up the objects, one in each hand. Which feels heavier? Help him check by weighing the



objects (on a kitchen or bathroom scale). Encourage him to report the results by comparing the items: "The dictionary is *heavier* than the hairbrush." "The stuffed animal is *lighter* than Dad's briefcase."

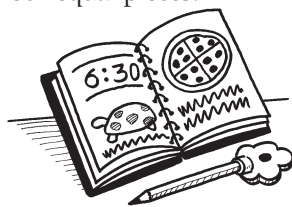
In the grocery store. Show your child the one-pound mark on a produce scale. Then, ask him to help you weigh fruits and vegetables. For instance, he can put lemons on the scale one by one until they weigh about one pound (*note:* a little over or under is okay). Have him repeat this with produce of different sizes and shapes (lettuce, bananas, radishes, apples). He'll see that a pound can be all different sizes, shapes, and numbers of objects.

MATH CORNER

Math journal

Encourage your child to think about math throughout the week by keeping a math journal. Give her a small notebook, and try these ideas:

- Ask her to record her day in math. She might write the numbers that are on the digital clock when she gets up, draw the pattern of dishes on the breakfast table (bowl, spoon, bowl, spoon), or sketch the pizza you have for dinner and divide it into four equal pieces.



- When you read aloud, make up a math problem, and have your youngster put the answer in her journal. You might point to a picture and say, "There are three dogs. How many legs do they have altogether?" She can draw three dogs and count the legs (12). Or read "The Tortoise and the Hare," and ask her to draw the animal that was slower. *Tip:* Have her add a sentence summarizing her answers, too: "The tortoise was slower."

PARENT TO PARENT

The science of painting

My sister is a kindergarten teacher, and she recently gave me a great way for my daughter Ava to "experiment" when she paints.

She suggested that I surprise Ava by changing one object a day at her easel and that I should say we're "changing a *variable*." For example, one day I replaced her paintbrush with a feather. Other days I put out wallpaper, aluminum foil, or cardboard for her to paint on instead of paper. Occasionally, I "hide" something in her paint like glitter or baby powder.

Our mystery paint game has been a great science lesson for Ava. Each day I say, "I think you might want to paint a picture—something is different!" After she experiments with the new material, I have her describe it. When she painted on egg cartons, she said it was "bumpy," and when I put sand in her paint, she called it "rough." She's learning about texture—and also about how one small change can change a lot!



SCIENCE LAB

Runaway pepper

How can you make pepper run away? Your youngster will see with this fun experiment.

You'll need: small bowl, water, ground black pepper, toothpicks, liquid dishwashing soap

Here's how: Let your child fill the bowl with water and sprinkle pepper on top. Have him dip a toothpick into the peppery water. Then, help him put a drop of dishwashing detergent onto a toothpick and stick that into the center of the water.

What happens? When he dips in a plain toothpick, nothing changes. But when he uses the soap-coated toothpick, the pepper immediately scatters to the sides of the bowl.

Why? *Surface tension* causes water molecules to stick together. The soap breaks the surface tension, causing the pepper to quickly move to the edges of the bowl.



OUR PURPOSE

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

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