

# Math+Science Connection

Beginning Edition

Building Excitement and Success for Young Children

September 2016



## TOOLS & TIDBITS

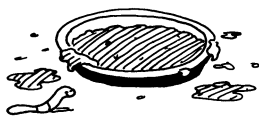
### Measure your name

Ask your youngster how long his name is.

He'll probably tell you the number of letters, which is one way of measuring. But what if he wrote it down and measured it with paper clips or dry macaroni? How many paper clips long is his name? Have him write his name larger and smaller. How do his measurements change?

### Mud pies

Science learning can occur anywhere, even in a patch of mud. Encourage your child to pose questions while she squishes mud between her fingers. She might wonder what will happen to her mud pies overnight. What if it rains? Or what would the mud's texture feel like if she added sand? Let her experiment and observe what happens.



### Book picks

▣ *One Hundred Hungry Ants* (Elinor J. Pinczes) will delight your youngster as he follows these silly ants intent on dividing into smaller and smaller groups.

▣ Whether exploring plants, ice, or engineering, your child will find something to love in *The Curious Kid's Science Book: 100+ Creative Hands-on Activities for Ages 4–8* (Asia Citro).

## Just for fun

**Q:** How do fish pay for things?

**A:** With sand dollars.



## Down—and up—for the count

Counting crayons, counting toys, counting girls, counting boys—this is just the beginning of a life full of numbers! Try these clever counting activities with your youngster.

### Number stack

Use blocks and a die for this fun counting game. The first player rolls the die and stacks that number of blocks, counting as she goes. (Roll a 4, stack 4 blocks, and say, “1, 2, 3, 4.”) The next player rolls and counts to make her own stack. Keep rolling and adding. After three rounds, who has the highest tower?



grab, estimate, and count. Learning to estimate will help her see if her math answers make sense. *Tip:* When she's comfortable estimating up to 10 objects, try again with 20.

### A whole handful

Fill a bag with 10 small items (pom-poms, marshmallows, beads). Let your child reach in and grab a handful. Have her look at the handful, estimate how many she grabbed, and write down the number. Then, she can count the objects. How close was her estimate? Put the items back, and now it's your turn to

### Forward and back

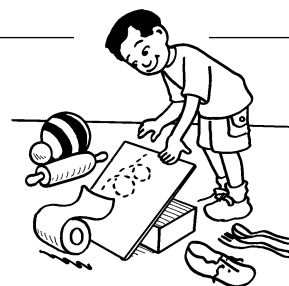
Name any two-digit number. Challenge your youngster to count the next three numbers (for 17, she would count “18, 19, 20”). Then, ask her to count *backward* three numbers from your original number (“16, 15, 14”). Now she names a number for you to count from, forward and backward. 🦋

## On a roll

Will a dinner roll actually roll down a hill? What about a fork? Let your child play junior scientist by classifying (sorting into groups) objects by whether or not they roll.

Suggest he build a ramp by propping one end of a cookie sheet on a box. Together, gather household items like rolls, silverware, toilet paper, cards, shoes, and balls.

Have him predict which items will roll. He should place the items, one by one, at the top of his ramp and let go. Which ones roll? After he sorts the objects into two piles—those that roll and those that don't—ask him what's similar about each group. He might say the ones that roll have rounded edges, while the ones that don't roll have straight edges. 🦋



# Stay in shape

Exercising your youngster's thinking muscles by identifying shapes and their characteristics is a great way to pass time.

● **I can spy it.** At home or on the go, play I Spy with shapes. Your child might spot a sign and say, "I spy a circle." Then, you try to identify what he's spying. Now it's your turn to spy a shape and have him find the object.



● **I can move it.** Let your youngster draw a game board with 20 squares, marking the ends "Start" and "Finish." On separate scraps of paper, have him draw a square, rectangle, triangle, and pentagon. Put the scraps facedown. On each turn, a player picks a slip, counts the shape's sides, and moves a token that number. For example, if you get a triangle, you would move 3 spaces. First to the finish line wins.

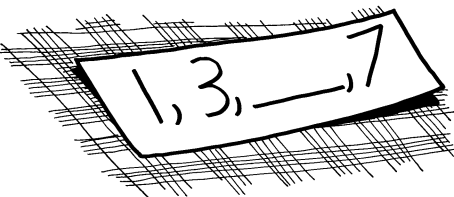
*Variation:* Add shapes like trapezoids and hexagons. Or move by the number of vertices (corners)—your child will see that the number of vertices equals the number of sides.



## Q & A Follow my pattern

**Q:** My daughter is learning about patterns at school. What are some ways to practice with her at home?

**A:** Working with patterns will help your child think logically and also prepare her for more complex math like multiplication and algebra later on.



Ask your daughter to act out a noisy-wiggle pattern of actions and sounds—and then you have to figure out what goes next. She could clap, jump, jump, whistle, clap, jump, jump. You would continue her pattern by doing what's next (whistling). Take turns making up fun patterns for each other to complete.

Make patterns with numbers, too. You could say, "1, 3, 5" and ask what comes next (7). Or write down a pattern and leave a blank: 1, 3, —, 7. She supplies the "5" to complete the sequence.

## SCIENCE LAB

### Something smells good

Your child will learn how her sense of smell affects taste in this yummy experiment.

**You'll need:** two flavors of pudding or yogurt, blindfold, spoons

**Here's how:** Blindfold your youngster so she can't see the food, and have her pinch her nose. Then give her a taste of each flavor. Ask her if she can identify the flavors.

**What happens?** It will be hard for her to tell the difference between the two foods.

**Why?** The brain uses taste *and* smell to recognize what we're eating. When the sense of smell is blocked, the brain often can't tell the difference between foods of similar textures.

**Idea:** Have your child unplug her nose partway through eating—can she identify the flavors now? Try again with the blindfold only. Or do the experiment with food that has a different texture, such as fruit chews or jelly beans.



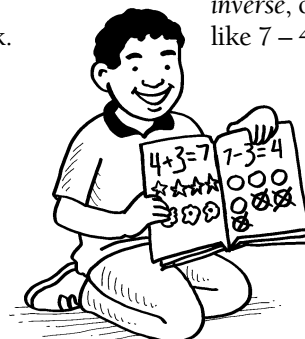
## MATH CORNER

### The pluses and minuses

Hot and cold... day and night... addition and subtraction. Show your youngster how addition and subtraction are opposites when he makes this book.

Help him stack several pieces of paper together, fold them in half, and staple them together along the crease. On a left-hand page, he can write and illustrate an addition problem, such as

$4 + 3 = 7$ , using stickers, drawings, or thumbprints. On the facing right-hand page, have him write and illustrate an *inverse*, or opposite, subtraction problem like  $7 - 4 = 3$  or  $7 - 3 = 4$ .



Encourage your child to fill the other pages with more inverse problems, perhaps  $5 + 6 = 11$  and  $11 - 6 = 5$ , or  $8 + 8 = 16$  and  $16 - 8 = 8$ . When he finishes, he can read his addition and subtraction book to you!

## OUR PURPOSE

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

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www.rfeonline.com  
ISSN 1942-910X

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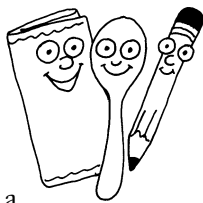
October 2016



## TOOLS & TIDBITS

### Who's on first?

To teach your child about *ordinal numbers* (first, second, third), have her gather household items, and give her directions for lining them up. *Example:* "Put the napkin first, the spoon second, and the pencil third." For a bigger challenge, try this: "Put napkins first and third. Place a spoon second and a pencil fourth." Did she follow the right order? (napkin, spoon, napkin, pencil)



### Nature's colors

Pick up paint sample strips at a hardware store, and take a "paint sample" walk outdoors. Can your youngster spot objects in nature that match the various shades of greens, browns, and other colors on the paint strips? Let him make as many matches as possible. What's his favorite color in nature?

### Web picks

At [aplusmath.com](http://aplusmath.com), your child can enjoy extra math practice with bingo, hidden-picture games, and more.

Ask away! Your youngster will find answers to questions like "Why does my cereal make a popping noise?" and be able to pose questions of her own at [askdruniverse.wsu.edu](http://askdruniverse.wsu.edu).

## Just for fun

**Q:** What's your first clue that there's an elephant in your fridge?

**A:** The door won't close!



## Egg-cellent numbers

The more your child plays with numbers, the more comfortable he'll become with them.

For these activities, help your youngster number 12 sticky notes 1–12, and let him randomly put one into each cup of an empty egg carton.



### Match the number

Give your child a pile of dry beans, and encourage him to fill each cup with the number of beans shown on the sticker. For instance, he would count 3 beans into the cup labeled "3." He will practice one-to-one correspondence of numbers.

### Move up or down

Have your youngster toss a penny into the egg carton. Whichever number it lands on, ask him what number is 1 more. What is 2 more? (If it lands on 4, then 1 more is 5, and 2 more is 6.) Another time, ask what number is 1 less or 2 less. This builds a sense of number

value and leads nicely into adding and subtracting.

### Fill the carton

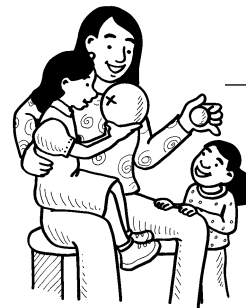
Gather 2 dice, tokens, and an egg carton (numbered 1–12) for each player. The first player rolls 2 dice and either adds the numbers shown or subtracts one from the other. With a roll of 4 and 2, he could make 6 ( $4 + 2 = 6$ ) or 2 ( $4 - 2 = 2$ ). He then puts a token in the 6 cup or the 2 cup. Play continues until one player wins by filling all the cups in his carton. 🦋

## Moon and stars hide-and-seek

Now you see them, now you don't! Where does your youngster think the moon and stars go when she can't see them?

**Moon:** Suggest your child place two different-sized balls side by side. The larger one is "Earth," and she should mark an X on the ball for where she is on the planet. Now slowly rotate the "moon" around "Earth"—and let her notice how she couldn't see the moon when it's on the opposite side from her X.

**Stars:** Have your youngster shine a flashlight outside in bright sunshine. What does she notice? (It's hard to see the beam.) Let her try again indoors in a dark closet. Now the flashlight's beam is bright. Since the stars are far away, their light is faint to us on Earth, and the sun's light outshines them during the day. But at night, when it's dark, we can see the stars twinkle. 🦋




# Size it up

Is a bicycle big? Ask your child that question, and she could answer yes or no—it's bigger than a dog, but it's smaller than a house. It works the same with numbers. For instance, 20 is bigger than 2, but smaller than 100. Use these ideas for comparing sizes.

**Animals.** Have your youngster cut pictures of animals out of old magazines. Shake them in a bag, and each person closes her eyes and takes one. Whoever has the largest animal (actual size, not picture size) scores a point. Play until you've used all your



line up 5 beads on one row and 8 beads below it.) Ask her which is smaller (5) and which is greater (8). *Idea:* Make it harder by picking 3 or more numbers. 

pictures—high score wins. Repeat, but this time get points for the smallest animal. *Note:* If you're not sure, look up animal sizes in books or online.

**Numbers.** Help your child number 20 slips of paper 1–20. Turn them facedown, and let her pick two numbers. Then, have her line up beads or paper clips evenly to make each number. (For 5 and 8, she would



## PARENT TO PARENT


### Read me a story

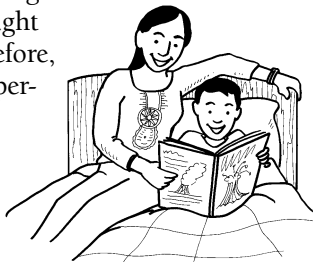
My son's teacher had a great idea at back-to-school night. She said, "Why not include math and science in your bedtime reading?"

I hadn't thought about that before, but it made perfect sense.

We let Ryan pick out library books about numbers, shapes,

nature, space, and other math and science topics. So far we've read about volcanoes and patterns in nature, and we've even used our reasoning skills to solve a math mystery. Some books give us ideas for experiments that we do on the weekends.

This has become a fun way to build on the math and science that Ryan is learning in school. Plus, he's picking up new vocabulary—and enjoying reading nonfiction books! 




## MATH CORNER

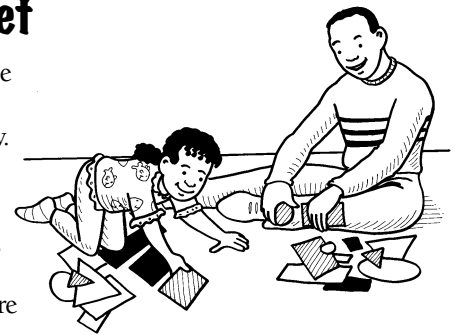
### Geometry rocket

Your youngster will have a blast building her own rocket—one attribute at a time. Here's how.

**1.** Together, cut out 12 shapes from blue construction paper: 3 squares, 3 triangles, 3 circles, and 3 rectangles—a small, a medium, and a large one for each shape. Then, do the same thing with two more colors. When you're done, you'll have 12 shapes of each color.

**2.** Let your child begin her rocket by placing any shape on the floor. Take turns adding to it by changing only one *attribute* (color, size, or shape) at a time. If you started with a large blue square, your youngster could add a medium blue square or a large red square, for instance. Keep going until your rocket is as tall as you want.

*Variation:* Lay down one shape for the top and another for the bottom of the rocket. See how many pieces it takes her to connect them. 



## SCIENCE LAB

### The pull of gravity

Isaac Newton is said to have discovered the law of gravity when he saw an apple fall from a tree. Your child can discover gravity for himself with this experiment.

**You'll need:** ball, pitcher of water, toy car


**Here's how:** Pose these questions, and have your youngster draw a picture of what he thinks will happen in each case.

1. Where will a ball go if you throw it in the air?
2. Where will water go if you tip the pitcher into a sink?
3. Where will the car go if you push it off a table?

Then, let him act out each scenario.

**What happens?** The ball will go up a short distance, but then fall to the earth. The water will flow down into the sink, and the car will fall to the floor.

**Why?** As Newton realized, gravity will pull each object to the center of the earth, even if we start by throwing or pushing it in another direction.

**Extension:** What else can your child find that demonstrates the pull of gravity? 



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www.rfeonline.com  
ISSN 1942-910X