

# Math+Science Connection

Intermediate Edition

Building Understanding and Excitement for Children

January 2012

Holyoke Public Schools

## INFO BITS

### My day in numbers

Challenge your youngster to come up with two numbers related to his day—one that's a decimal and one that's a fraction. *Example:* "My lunch cost \$2.25." "I turned  $9\frac{3}{4}$  years old today." Then, it's your turn to come up with two of your own (or maybe he can help you!).

### Float an orange

Have your child drop an orange in a bowl of water (it will float) and then peel the orange and try again (this time it sinks). Next, ask her to try creating a "peel" that will allow it to float again. In the process, she'll conduct scientific testing and learn which materials float or sink.

### Book picks

Does your youngster know where the name Google came from? In *G Is for Googol* (David Schwartz), she'll learn about the number "googol" and many other math terms.

*The Periodic Table: Elements with Style!* by Simon Basher introduces young scientists to chemical elements in a clever way. Each cartoon-style entry is written by the element itself.

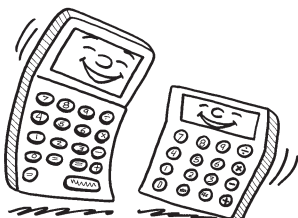
### Worth quoting

"The only way of finding the limits of the possible is by going beyond them into the impossible." *Arthur C. Clarke*

### Just for fun

**Q:** What did one calculator say to the other?

**A:** You can count on me.



## Multiplication and me

Learning to multiply is more than memorizing times tables. Help your youngster understand multiplication and become comfortable with the facts by sharing these strategies.

### Multiply with toys

Use your child's toys to practice multiplication. If she collects toy animals, you could ask, "How many legs do 4 horses have?" or "How many wings do 6 butterflies have?" She can count the legs or wings to figure out the math. For example, she could "skip count" the horses' legs by 4s (4, 8, 12, 16) to see that  $4 \times 4 = 16$ . Then, she can give you problems to solve.

### Use what you know

Encourage your youngster to look for clues that will help her solve multiplication problems. For  $8 \times 7$ , for instance, she might consider what other facts she knows in the 7 times table. If she knows  $10 \times 7 = 70$ , she could subtract 2 groups of 7 to get the answer ( $70 - 14 = 56$ , so  $8 \times 7 = 56$ ). Or maybe she knows that 4 groups of 7 equals 28. Then, she would



double that answer ( $28 + 28 = 56$ ), so  $8 \times 7 = 56$ .

### Shake and score

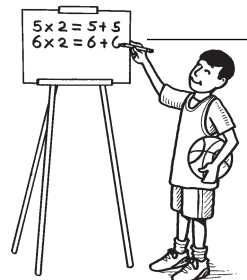
Have your child write the numbers 1–12 in the cups of an empty egg carton. Let her put two beads (or other small objects) inside, close the lid, and shake. Open the lid, and let her multiply the two numbers where the beads landed. That's her score. Take turns shaking and multiplying. After 10 rounds, the high score wins. *Tip:* She can check her answers on a multiplication table or calculator.

## Learn quick facts

Your child will feel a sense of accomplishment by mastering sets of multiplication facts. You can help him learn a few sets by asking him questions like these:

- What happens if you multiply a number by 0? (Any number multiplied by 0 equals 0.  $1 \times 0 = 0$ ,  $2 \times 0 = 0$ , and so on.)
- What happens if you multiply a number by 1? (Every number multiplied by 1 equals itself.  $1 \times 3 = 3$ ,  $1 \times 4 = 4$ , and so on.)
- What happens if you multiply a number by 2? (Multiplying a number by 2 is the same as adding it to itself.  $5 \times 2 = 5 + 5$ , or 10;  $6 \times 2 = 6 + 6$ , or 12.)

*Tip:* Numbers can be multiplied in any order ( $3 \times 2$  has the same answer as  $2 \times 3$ ). Remind your child that when he learns one set of multiplication facts, he really knows two! This is called the *commutative property*.




# Snow day

Snow is not only pretty to look at and fun to play in, it's a science and math activity waiting to happen! Try these ideas.

**Investigate a snowflake.** The next time it snows, show your child how to capture a snowflake. Have him place a mirror on a sheet of cardboard and put it outside, along with a can of hair spray and a lid (from a sauce pot). When the mirror is very cold, he should spray it with hair spray, catch a few flakes on the mirror, and cover it with the lid. After an hour, he can bring it inside and use a magnifying glass to study the prints left on the mirror. How is each one unique (shape, size)?



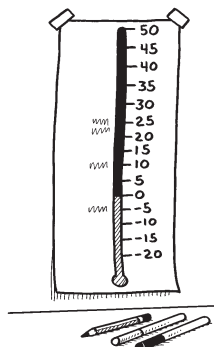
**Measure a snowfall.** When snow is predicted, have your youngster check the amount expected. Then, let him put a tall, empty can outside to collect the snow. After it stops, he can use a ruler to measure the amount. How does it compare to the forecast? Next, have him predict the height of the water in the can when the snow melts. Again, he can measure the result and figure out the difference. *Idea:* If he wonders why the water is lower, explain that snowflake points take up extra room and trap air inside. Have him walk around with his arms sticking out—he'll see that he takes up more room than if he walks around with his arms down. 




## MATH CORNER Negative numbers

“Brrr. It’s minus 5 degrees in Alaska!” Winter is a good time to practice using negative numbers, or numbers that are below zero—like that temperature in Alaska. Try this activity.

Have your child draw a “thermometer” with a zero in the center. He can mark off numbers in 5-degree increments above zero (5, 10, 15, 20) and below zero (–5, –10, –15, –20). *Idea:* Suggest that he color the “mercury” black




above the zero mark and red below zero. That will help him see the difference between positive (above zero) and negative (below zero) numbers.

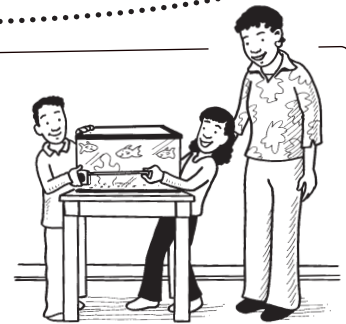
Then, have him check the newspaper or look online for temperatures across the country or around the world. He can plot temperatures that he finds above and below zero. Can he figure out the difference between the highest and the lowest temperatures he recorded? 

## Q & A Ask math questions

**Q:** I’ve never felt comfortable with math. How should I talk to my children about what they’re learning in math class?

**A:** Try to show enthusiasm for what your children are doing in math by talking to them about it. You might ask them each day at dinner or homework time what they studied in math that day. Let them explain the concepts they’re working on, and ask follow-up questions. For example, if they’re learning to measure perimeter, you might ask how to figure the perimeter of the coffee table, a book, or other objects at home. Then, have them show you.

When they finish their homework, you could suggest that they go over a few problems. You might ask what method they used to solve a problem or how a certain math formula works. As they explain it to you, they’ll be reinforcing their own skills. And they’ll be proud to be teaching you something! 



## SCIENCE LAB Acid or base?


Your youngster can use red cabbage to make an “indicator” to determine whether a substance is an acid or a base.

*You’ll need:* 2 cups shredded red cabbage; boiling water; coffee filter; 2 glass containers; household substances such as baking soda, lemon juice, vinegar, seltzer water; paper cups

*Here’s how:* Have her place the red cabbage in a glass bowl and carefully pour in boiling water to cover it. Let it soak for 20 minutes.

Then, help her strain the liquid by pouring it through a coffee filter into a glass jar (hold it over the sink). The liquid in the jar will be the indicator. To test the substances, she can put each one in a separate cup and add some indicator.

*What happens?* The indicator will turn pink if the substance is an acid. It will turn blue or green if it’s a base.

*Why?* Red cabbage has a pigment called flavin that is a natural pH indicator and changes colors according to how acidic a substance is. 



**OUR PURPOSE**

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

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