

Math+Science Connection

Intermediate Edition

Building Understanding and Excitement for Children

December 2014



INFO BITS

Check the receipt

Looking over receipts is not only good consumer practice, it's also good math practice! Put your child in charge of this important task for your family. When you make a purchase or eat at a restaurant, ask him to estimate the total and make sure the sum on the receipt is reasonable. If not, he should look for mistakes or missing items.

Fly a plane

Suggest that your youngster be a test pilot—of paper airplanes, that is.

Have her fold the same design from the same size of various types of paper (notebook paper, a magazine page, poster board, cardboard). Standing at one spot, she should toss each plane forward. Then, she could measure which one went farthest to see which material worked best.

Web picks

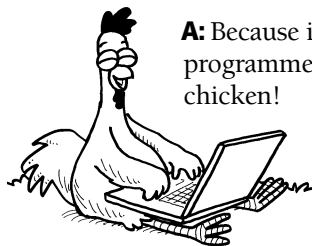
☞ Sheppardsoftware.com/math.htm is filled with fun math games, from Math Mahjong to multiplication Fruit Splat, and more.

☞ Your child can track the migration of birds and butterflies and watch far-away animals via live cam at learner.org/jnorth.

Just for fun

Q: Why did the computer cross the road?

A: Because it was programmed by the chicken!



A. J. Whittenberg Elementary School of Engineering
Dr. Megan D. Mitchell-Hoefer, Principal

Algebra: Pattern power

Creating and recognizing patterns is a big part of algebra. Give your youngster a leg up in the classroom by doing activities like these at home.

Riddle me this

Pose number riddles to each other—the other person has to figure out the pattern and supply the next number.

Think of a math rule, such as “add 4” or “multiply by 2.” Then, give a riddle: “My first three numbers are 1, 5, and 9. What comes next?” (Answer: 13.) Or, “My first three numbers are 2, 4, 8. What comes next?” (Answer: 16.) *Tip:* Suggest that your child use paper and pencil or small objects to work out the patterns.

Arrange tables

Let your youngster see how patterns progress by figuring out the table arrangements for your holiday dinner.

Have her make a square “table” with 4 toothpicks and a “person” (a raisin) seated at each side. What happens if she connects additional square tables so that

each one shares a side with the table beside it? (For each table, she'll add 3 toothpicks, but only 2 seats.) To work out the pattern showing how many people could be seated, she can make a two-column chart with the number of tables and number of people. (Answer: The number of tables $\times 2 + 2$.)

Bonus: Suggest that she use toothpicks to work out patterns for tables that are rectangles, triangles, or hexagons. 📐



What shape is the moon?

Encourage your child to learn about our closest neighbor in space by tracking the moon's phases.

Have him start with a new moon—where the moon's lit side faces away from earth and isn't visible. (*Tip:* Calendars often list new moons.) Then, he could sketch the moon's shape each night for two weeks, until the full moon.

To help your youngster understand what he's observing, try this. Using contrasting colors of play dough, he should make two balls, flatten one side of each, and press them together to form one “moon.” If he holds the moon with the dark side in front of him and slowly turns it, he will see the phases. Can he match his sketches to his model? 🌕




X marks the spot

Play hide-and-seek on paper to give your child practice in finding *coordinates*—a skill that will help him read graphs and maps. Here's how.

1. On separate sheets of graph paper, have him create two identical “treasure maps.” He should draw a right angle six boxes tall and six boxes wide. Then, he can number the lines along the x-axis (horizontal line) 0–6 and the lines up the y-axis (vertical line) 0–6.


2. On your map, secretly mark a “treasure”—three points in a row, a column, or a diagonal line. For example, one point



pairs until he finds the treasure. Now it's time for your child to hide a treasure for you to find! 

might be (1, 5)—count 1 box across and 5 boxes up—and the other points would be (2, 5) and (3, 5). Your youngster will track his guesses on the other map.

3. Have him guess an *ordered pair* like “3, 2” (one number on the x-axis and one on the y-axis that names a point). If that is part of the treasure, say “yes,” and he marks the point with an X. If not, he marks it with an O.

4. Let him keep guessing ordered pairs until he finds the treasure. Now it's time for your child to hide a treasure for you to find! 


PARENT TO PARENT

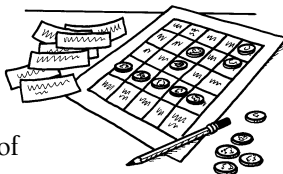
“Time” to play

My daughter, Sara, kept asking me time questions, like what time it would be in 45 minutes or how many minutes were between the end of soccer practice and dinner. I was telling my neighbor about this, and she recommended that we practice *elapsed time* with a family bingo game.

I asked Sara to make bingo cards with five columns and five rows.

Then, on slips of paper, she wrote questions, such as “It’s 7:35. How many minutes until 7:50?” and “The casserole takes 50 minutes. When should we put it in the oven to eat at 6:30?” We worked together to find the answers, and she wrote them in different places on each card.

To play, someone reads the questions, and we put a penny on the answer on our card. The first person with five in a row wins. Sara loves that she made the game, and I’ve noticed she’s starting to answer her own time questions. 




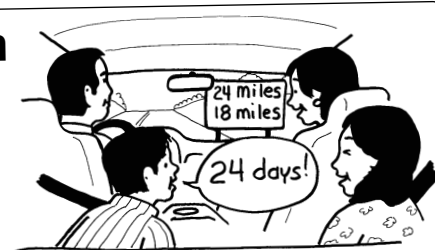
MATH CORNER

Road-trip math

What do 5 miles and 5 dollars have in common? Why, the number 5! But that’s where the similarity ends. Use this silly car activity to help your child understand the importance of including the *unit* when he solves math problems.

To start, ask everyone to watch for numbers on signs or billboards. When someone spots one, he can tell everyone else the number and the unit to go with it (*examples*: 12 miles to an exit, open 24 hours). Then he gets to change the unit to make it silly. He might say it is 12 days to the next exit. Someone else might say the restaurant is open 24 minutes.

Remind your youngster of this game when he does math homework—he’ll understand why he needs to include the correct unit as part of his answer. 



SCIENCE LAB

A burst of color


Your youngster will love watching this colorful chemical reaction.

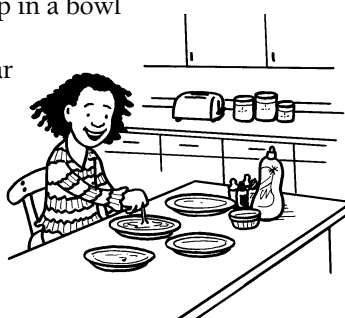
You’ll need: milk (whole, 2 percent, and skim), three shallow bowls, four food colorings, cotton swabs, dish soap (Dawn works best)

Here’s how: Let your child pour whole milk $\frac{1}{4}$ inch deep in a bowl and squeeze a drop of each food coloring near the center. Without stirring, she should dip a cotton swab into the milk. Next, she can dip the other end into dish soap and then into the

milk. Have her repeat the experiment with the other two types of milk.

What happens? When the plain swabs touch the milk, nothing changes. But the soapy ends make the colors dance around in the whole milk. The colors move somewhat in the 2 percent milk and only a little in the skim.

Why? The dish soap weakens the chemical bonds of proteins and fats, which then race around the bowl trying to make new bonds. Since whole milk has the most fat, more movement occurs. Skim milk, having the least fat, moves the least. 



OUR PURPOSE

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

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