Intermediate Edition

# Math+Science Connection

Building Understanding and Excitement for Children

January 2020

Title I

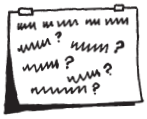
## INFO BITS

### That's my number!

Give your youngster practice reading big numbers with this idea. Have him look at a phone keypad and say the number that goes with the letters of his name. *Example:* Isaac = 47,222. Can he make a word or write a short note using the digits in your phone number?

### Our "wonder board"

Encourage your child to write "What we wonder about science…" on a poster board and display it where family members can write questions.



She might write "Do hibernating animals stay asleep all winter?" or "Why do we close our eyes when we sneeze?" Then, go to the library or look online to find answers together.

### Book picks

A knight and a lady learn all about fractions when they go shopping in *Sir Cumference and the Fracton Faire* (Cindy Neuschwander).

*Case Closed? Nine Mysteries Unlocked by Modern Science* (Susan Hughes) follows curious scientists who shed light on ancient mysteries using DNA, CAT scans, and more.

### Just for fun

**Q:** What did the mouse say at the science fair?

**A:** "I trained this student so well that when I run through the maze, he brings me a snack!"

# Comparing volume

Would your child rather have a cup of pennies or a bucket of pennies? The bucket! Its volume is greater, so it holds more pennies. These activities will help her learn about volume.

### Arrange cups

Gather several cups of different shapes and sizes. By eyeballing their volumes, your youngster should try to arrange them from least to greatest. To check the order, let her fill the first cup with water and pour it into the second, fill the second cup and pour it into the third, and so on. If a cup won't hold all the water, she'll need to rearrange.

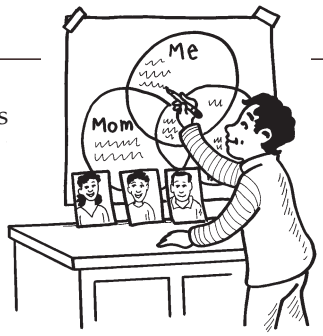
### Serve popcorn

Help your child use paper and tape to create two bags—one tall and narrow and the other short and wide. Now pop popcorn and ask her to predict which bag will hold the most. She could count the kernels as she fills the bags. She'll discover that height, width, and depth together determine volume. *Idea:* Play "popcorn stand." Each family member can make and fill a bag.

### Count squares

Suggest that your youngster wrap graph paper around a small object (dish sponge, remote control). Let her count the rows and columns of squares to find the item's dimensions (rounded to the nearest square). *Example:* length = 24 squares, width = 8 squares, height = 1 square. Then, she can multiply the three numbers to get the total *cubic units* (24 x 8 x 1 = 192 cubic units).

## Trace your traits



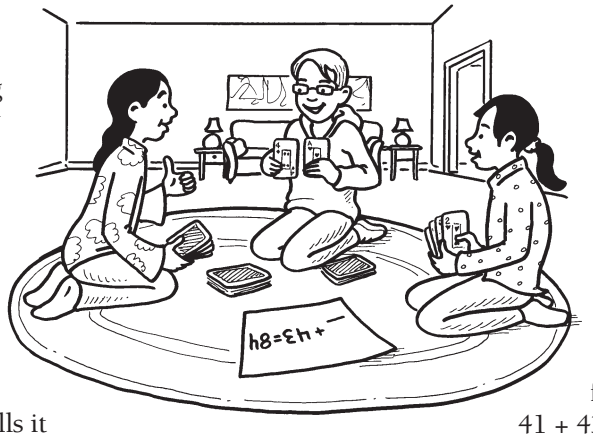

Where did your child get his curly hair or cheek dimple? This investigation lets him use Venn diagrams to compare inherited traits and explore genetics.

Have your youngster draw three overlapping circles and label one "Me," one "Mom," and one "Dad." In the shared space, he should write shared physical traits. In each person's separate space, he can list traits the others don't have, such as brown hair, attached earlobes, or left-handedness.

Now suggest that he make diagrams to compare his traits with his grandparents, siblings, aunts, uncles, and cousins. He'll likely see patterns emerge, like curly hair on Mom's side or dimples on Dad's.

# Algebra games

Finding the missing number is a big part of algebra. Your youngster can play these games to practice.




**Find the factor.** Have your child and a friend each secretly write a number (1–12) on a separate slip of paper. Look at both numbers (perhaps 12 and 4), multiply them, and say the product (48). Each player uses the product and his own number to figure out his opponent's number. Whoever calls it out first wins the round. If your youngster wrote 12, he might think, "12 x 4 = 48" or "48 ÷ 12 = 4." Play until someone wins five rounds.

**Fill in the blank.** Remove the 10s and face cards from a deck of playing cards (ace = 1, joker = 0). Deal four cards to each player, and stack the rest facedown. On paper, write a double-digit addition problem, leaving out one addend ( __ + 43 = 84). Players solve the problem in their heads or on paper and then try to collect the cards that form the answer (4 and ace, since 41 + 43 = 84). On each turn, draw one card from the stack and discard one card from your hand. The first person to get a 4 and an ace wins the round.

## MATH CORNER Happy leap year!

There aren't 365 days in a year—there are 365.242189! That extra 0.242189 adds up over time, so we have a leap year to keep our calendar accurate. Let your child celebrate the fact that 2020 is a leap year with these fun math problems:

- What fraction is close to 0.242189? ($\frac{1}{4}$) Since $\frac{1}{4}$ x 4 = 1, we add 1 extra day every 4 years—February 29.

- Which other years are leap years? *Hint:* The number of the year must be evenly divisible by 4, but it can't be evenly divisible by 100 unless it's also evenly divisible by 400.

- How many leap years has your youngster experienced in his life? Was he born in a leap year?

**OUR PURPOSE**

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

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## PARENT TO PARENT Do math, save money

My daughter Maisie has started saying that she doesn't need math "in real life." So I decided to take her grocery shopping to show her how math can help us save money.

I gave Maisie a $15 budget, and she filled our cart with spaghetti ($1.49), sauce ($2.99), lean ground beef ($4.68), grated cheese ($3.99), and bagged salad ($2.49). When she added everything up, she realized she was 64 cents over budget and didn't have enough money for dessert and tax.

I pointed out ways to save like buying store-brand spaghetti and sauce, choosing turkey instead of beef, and getting a block of cheese to grate ourselves.

Maisie got her total under $15, and she had enough for ice cream and tax. Next I'll show her how math will help her buy more clothes for less money.

## SCIENCE LAB Water on the run

Which water droplet will travel faster—cold or hot? Your youngster can see how *surface tension* works with this race that's also a science experiment.

***You'll need:*** tape, wax paper, $\frac{1}{8}$ tsp. measuring spoon, water, two drinking straws

***Here's how:*** Tape wax paper to a table. Now let your child put two $\frac{1}{8}$ tsp. droplets of tap water, one cold and one hot, at one end of the paper. On "go," each of you uses a straw to blow a droplet to the opposite end.

***What happens?*** The cold droplet wins because it stays together better. The hot droplet breaks into multiple tiny droplets that take longer to blow across the paper.

***Why?*** Water molecules cling to each other—a property called surface tension. When water is heated, its molecules are separated, weakening the surface tension. That's a bad thing when it comes to winning this race, but a good thing when it comes to washing dishes, as the molecules work their way into nooks and crannies to help remove food. (Soap also reduces surface tension, making hot, soapy water ideal for dishwashing!)