

Summer Learning Spotlight

Math

Early Childhood/
Elementary School
Summer 2023

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Math: Parent talk matters

A new study shows that family conversations about math have a positive impact on children's achievement. Talking about numbers and everyday uses for math helps your child feel that math is familiar and important.

To create confidence and excitement as you talk about math this summer:

- **Model a positive attitude.** Even if you struggled with math in school or believe you're not good at math, stay positive when you talk to your child. Say, "I love a good math challenge" or "That is a tough problem, but I bet you can figure out a way to solve it!"
- **Talk about ways** you use math. Tell your child, "My cash drawer was balanced at the end of my shift" or "I saved four dollars on a tank of gas by comparing prices."
- **Imagine a day *without* math.** Your family might come up with ideas like "We wouldn't know when to wake up if



we didn't have clocks" and "Dinner might not taste very good if we couldn't measure the ingredients."

- **Include numbers** in conversations. Say, "We need seven forks" rather than "Get the forks out." Or say, "It's 95 degrees" instead of "It's hot."
- **Reinforce** what your child does correctly. If your child used the right strategy to solve a problem but made a careless calculation error, you could say, "You knew exactly how to tackle that problem. Be sure to double-check your work."

Sources: "The Way You Talk to Your Child About Math Matters," Science Daily. "Positive Attitude Toward Math Predicts Math Achievement in Kids," Science Daily.

Create a family estimation station

"About how many blueberries are in that container?" Estimation builds number sense, stretches mental math muscles and helps your child determine whether math answers are reasonable. But learning to make accurate estimates takes practice. A family estimation station can help.

Fill a clear container with small objects (paper clips, erasers, cereal pieces, etc). Place it on a table with a pencil, slips of paper and an empty tissue box.

Have family members write down their estimates and put them in the box. Then let your child dump out the items and count to see whose estimate was closest.

The winner gets to choose what to refill the jar with. The best part will be watching as your child's estimates become more accurate throughout the summer!

Do star-spangled math

Celebrate the Fourth of July with math inspired by the American flag. Your child will practice several math skills—and get to know the flag a little better. Together, look closely at the flag and:

- **Count stars and stripes.** Your child will count 50 stars (one for each state) and 13 stripes (one for each original colony).
- **Spot patterns.** What pattern do the stripes make? The number of stars in each row and each column form a pattern, too—can your child spot it?
- **Create math problems.** Find different ways to add the rows of stars to get 50. Your child might say that there are 5 rows

of 6 stars and 4 rows of 5 stars ($5 \times 6 = 30$, $4 \times 5 = 20$, and $30 + 20 = 50$).

- **Find shapes.** Challenge your child to count the rectangles on the flag. How many are there? (The flag itself is a rectangle, and so is the blue portion that contains the stars. Each stripe is a rectangle, too.)

Build your child's math fluency

Being fluent in a language includes knowing different ways to say the same thing, like “How are you?” and “How’s it going?” Being fluent in math is similar—it includes the ability to think flexibly, use multiple strategies to solve problems and understand relationships. To improve your child’s math fluency:

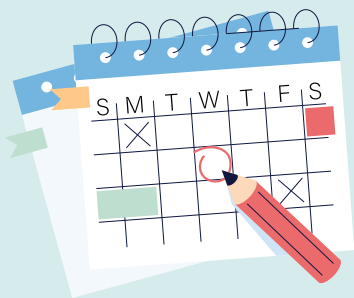
- **Ask questions** like “How did you solve that problem?” and “Can you think of a different way to solve it?” Pose problems to the entire family, and ask each person to share their approach to solving it.
- **Practice math vocabulary** so your child knows the difference between a *product* and a *quotient*, and that a *plane* isn’t just something that flies. Instead of “What’s the answer to that division problem?” ask “What’s the quotient?”

- **Point out relationships.** Have your child use subtraction to check answers to addition problems and vice versa. For example, $14 + 14 = 28$ and $28 - 14 = 14$. This works for multiplication and division, too: $30 \times 2 = 60$ and $60 \div 2 = 30$. Also, help your child to link fractions and decimals. If your child measures $\frac{1}{4}$ cup of sugar, ask, “What decimal would that be?” When you pay \$1.50 at the snack bar, ask, “What fraction of a dollar equals 50 cents?”



The calendar is a math tool

Your child may be familiar with “calendar time” in school. A calendar is an ideal tool for learning to recognize numbers and count. It’s also great for helping children understand concepts of time, like *yesterday*, *today*, *tomorrow*, *in two weeks*, etc. You can do math with a calendar at home, too.



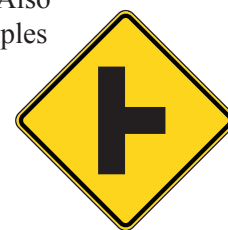
Print out blank calendar pages or help your child draw grids. Filling in dates is a fun way for your child to practice writing numbers. Your child can add special events (birthdays, holidays, family activities, etc.).

Display the calendar, and start each day with a little math at breakfast. Have your child announce the date. (“Today is Sunday, July 30, 2023.”) Ask math questions like “How many days are there until Labor Day?” or “How many Fridays were in June this year?”

Travel with math

From numbers and patterns to shapes and lines, the world is full of math. Pass the time your family spends on the road this summer by looking for examples. (Your child may want to carry a pencil and a small notebook.) Here are some possibilities:

- **Count** fire hydrants, green cars, dogs being walked, etc. For an added challenge, have your child find ways to skip count. If your child counts the dogs’ legs, that would be 4, 8, 12, 16, etc.
- **Identify numbers on signs.** Can your child find a number with 5 in the tens place? Hundreds place? Can anyone spot fractions or decimals, like 2.5 miles to the visitor center?
- **Do mental math** by adding or multiplying numbers on license plates. Share your strategies. (“I multiplied $5 \times 3 = 15$, then $15 \times 2 = 30$.”) Did different family members use different strategies?
- **Have fun with geometry.** Hunt for flat and 3-D shapes. A stop sign is a hexagon, a column on a building is a cylinder, etc. Also look for examples of parallel lines (power lines, white stripes on the highway) and perpendicular lines (traffic intersection, railroad crossing sign).



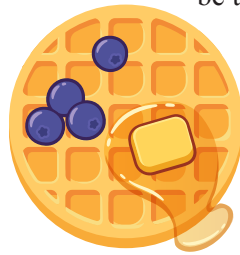
Practice identifying the operation

Often, word problems don't come right out and tell your child whether to add, subtract, multiply or divide. Students need to learn how to spot clues that indicate which operation to select. To give your child practice, pose word problems that require:

- **Addition.** Questions like "How many *in all*?" or "What is the *total*?" often call for addition. Give your child problems like "It's 33 miles to Grandma and Grandpa's house and 33 miles home. How many miles will we travel in all?"
- **Subtraction.** If your child is asked to compare amounts, subtraction is probably the operation to choose. Ask your child questions like "*How many more* seashells are in this pile than in that one?"
- **Multiplication.** Problems about groups of items often

call for multiplication. Say to your child, "There are 48 *rows of* six seats. How many seats are there?"

- **Division.** When a problem is about sharing, it may be time to divide.



Tell your child, "There are three waffles and 27 blueberries. Each waffle gets *the same number of* blueberries. How many blueberries do you need per waffle?"

Note: Remind your child to read an entire problem before choosing an operation. It's not enough to scan for words that may (or may not) be clues! Solving a word problem might also require more than one operation.

Add math to outdoor games

Here are some ways to make math a natural part of games your child plays outside:

- **Jump rope or hula-hooping.** Have your child count each jump or rotation.
- **Simon Says.** Say, "Simon says do $6 + 7$ jumping jacks" or "Take $10 \div 2$ hops forward."
- **Water balloon toss.** With sidewalk chalk, draw a giant target on the driveway or a blacktop. Write a math problem in each circle. Throw water balloons at the problems, and solve each one you hit.



- **Shooting baskets.** Assign a fractional value to each type of shot (free throw = $\frac{1}{4}$ point, 2-pointer = $\frac{1}{2}$ point, 3-pointer = $\frac{3}{4}$ point). Your child will practice adding fractions while keeping score.

Have fun with all kinds of graphs

What kind of books did your child read most often this summer? How many times did your child go swimming? Making graphs helps your child practice recording and analyzing data—and answer the question, "What did you do this summer?" Encourage your child to graph:

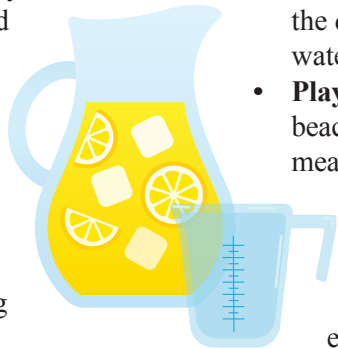
- **Books.** Your child can graph types of books read, with one column for fiction and another for nonfiction. Or get more specific: science fiction, realistic fiction, mysteries, biographies, graphic novels, etc.
- **Outings.** Suggest graphing the number of times your child swims, bikes, hikes, camps, visits grandparents or other relatives, etc.
- **Weather.** Your child can use a graph to keep track of weather events like thunderstorms, hailstorms, rainbows, 100+ degree days, etc.
- **Food.** Have your child interview family and friends to find out their favorite ice cream flavors, fruits, pizza toppings, etc., then graph the results.
- **Daylight.** Are the days getting longer or shorter? Show your child how to look up sunrise and sunset times. Once a week, your child can record the data on a graph.



Make time for measuring

Inspire your child to practice measuring *volume*, *circumference* and *weight* with these summer-themed ideas:

- **Set up a lemonade stand** (real or pretend). Make lemonade, letting your child measure and stir together ingredients. You'll need 1 cup lemon juice, 1 cup sugar and 1 ½ quarts cold water. Then enjoy a refreshing summer treat.
- **Investigate a watermelon.** Encourage your child to estimate and then measure the circumference (distance around the middle) and weight of a watermelon. Your child can wrap yarn around the widest



part of the melon's middle, then stretch out the yarn and measure its length with a ruler. Next, weigh your child on a scale, then weigh your child holding the watermelon. Have your child calculate the difference to find the watermelon's weight.

- **Play in the sand.** At the beach or in a sandbox, provide measuring cups and spoons as well as containers of various shapes and sizes. Your child can figure out how many tablespoons equal 1 cup, or experiment to see whether a tall, narrow container holds more or less than a short, wide one. *Variation:* Make an "indoor sandbox." Fill a baking dish with sand from a craft store, or substitute salt or sugar.

Support effort on summer school math assignments

It's not easy for students to attend school and do assignments during the summer. But it's a reality for many children in the wake of the pandemic. If your child is one of them:

- **Provide a regular time** and place to complete schoolwork. One idea that works well for summer is to have your child take a break from being outdoors during the hottest part of the day. Your child can choose a cool, comfortable spot indoors that's stocked with supplies and free from distractions.
- **Answer questions**—but avoid doing the work for your child. If you spot a wrong answer, ask, "How did you get that answer?" Explaining the process can help your child catch and fix the mistake.
- **Ask for help** if your child struggles with assignments. Talk to your child's summer school teacher about resources and strategies to try.

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Go on a fraction picnic

If your elementary schooler thinks fractions are no picnic, this fun family outing may convince your child to think again! Pick a nice day to visit the park and:

- **Pack fractional foods.** Cut some foods into *equal parts* and divide others into *equal groups*. Use math vocabulary while you pack: "I'm cutting my sandwich into *halves* and yours into *quarters*." "Let's divide the carrot sticks into three equal groups. Each person gets *one-third* of the carrots."
- **Compare fractions** while you eat. Point out that $\frac{1}{2}$ of your sandwich is equal to $\frac{2}{4}$ of your child's or that $\frac{2}{8}$ of your child's apple is equal to $\frac{1}{4}$ of yours. Ask, "How could we divide the blanket to make equal space for each person?" and "What fraction of the picnic tables are being used?"
- **Play a fraction card game.** Bring playing cards. Remove the jokers and face cards, and deal the rest evenly among the players. Each player turns over two cards and decides which is the *numerator* (top number) and which is the *denominator* (bottom number). The person with the largest fraction gets all the cards. Play until no cards are left. The player with the most cards wins.

