Summer Learning Spotlight

Math

Early Childhood/ Elementary School Summer 2024

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There's no need for classrooms or desks to keep your child strengthening math skills all summer. Wherever you and your child are, there are games to play, summer activities to share and stories to read that will make learning math a fun part of every day.

Celebrate the Olympics by adding math to games

The Summer Olympics will be held July 26-August 11 this year. Get your child excited about the games—and about math—by combining math and favorite sports activities. Here's how:

- **Volleyball.** Have your child count to see how many times the two of you can hit a balloon back and forth. Practice skip counting by saying numbers only on every second, fifth or tenth hit.
- **Swimming.** Suggest keeping a log of the yards your child swims each time you go to the pool. In late August, have your child add the numbers—how far did your swimmer go?
- **Basketball.** Put your child in charge of scorekeeping—but change up the scoring to add a challenge! A basket might be worth seven points, a free throw, five, etc. Or, assign fractions instead so your child can practice adding them.
- **Track and field.** Give family members three attempts each at the long jump. Let your child measure each jump, find the average distance for each person and announce a winner.

Turn flash cards into summer fun

Knowing math facts by heart lets your child focus on problem-solving and other higher-level math skills. And research shows that using flash cards is an effective way to boost math recall. To turn flash card practice into summer fun:

- **Create your own.** Children may be more motivated to use cards they design. Your child might write 3 x 7 on one side of a card, then write 21 and draw 21 hearts or stars on the other side. When your child can recall a fact consistently, put that card away. Your child will be excited to watch the stack get smaller and smaller throughout the summer.
- **Play Math Go Fish.** Write problems and answers on separate cards. Deal seven cards to each player, and stack the rest. Players set aside any matches (6 x 4 and 24, for instance). Take turns requesting matches for remaining cards. ("I have 8 x 7. Does anyone have 56?") If no one has a match, a player must take a card from the stack. When the cards are gone, the player with the most matches wins.

Source: F.H.A. Ophuis-Cox and others, "The effect of retrieval practice on fluently retrieving multiplication facts in an authentic elementary school setting," *Applied Cognitive Psychology*, Wiley.

Be geometry spies

Playing a geometry version of I Spy is an exciting way to help your child practice describing features of shapes, like *sides*, *vertices* (corners) and *faces* (flat or curved surfaces of 3D shapes). For a beach towel, your child might say, "I spy a shape with four sides and four vertices. Its sides are not all equal." For a baseball, you could say, "I spy a 3-D shape with one face."

Graph some seasonal delights

Collecting and sharing data in graph form is an important math skill. To develop your elementary schooler's abilities this summer:

- **Have your child choose** a country that's competing in this year's Olympics and graph the gold, silver and bronze medals won.
- **Let your child collect** natural objects like seashells or rocks on your walks. Then, sort and place them in rows and columns on paper to make a graph.
- **Have your child survey** family and friends about favorite ice cream flavors and graph the results.

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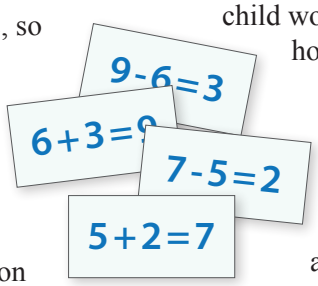
Explore the relationship between addition and subtraction

A solid understanding of the relationship between addition and subtraction will help your child solve math problems successfully. To build this important foundation:

- **Make up subtraction** story problems about summer activities. Challenge your child to say the related addition facts while solving them. For example, "We made 32 ounces of lemonade and we drank 20 ounces. How many ounces are left?" Your child would say, "20 + 12 = 32, so 32 – 20 = 12."
- **Play a matching game.** On index cards, write addition problems that your child knows. Then, make a subtraction card that relates to each addition card. For 5 + 2 = 7, make a card with 7 – 5 = 2 or 7 – 2 = 5. Lay the cards facedown in even rows and columns. Take turns flipping over two cards. Keep them if they match, and turn them back over if they don't. When all matches are made, the player with the most cards wins.
- **Draw a giant number line**—a horizontal line with evenly spaced numbers, 1-20—on the sidewalk with chalk. Call out subtraction problems and have your child hop to each answer. For 18 – 9, your child would stand on 18 and hop 9 spaces to land on 9. After solving each problem, encourage your child to say its "partner" (9 + 9) and hop forward to the answer (18).



Source: B.H. Ching, Ph.D., "A Key Predictor for Children's Success in Math," *Psychology Today*.

Hold family 'count-arounds'

Count around the picnic table or in the car. The first person says 1, the next says 2, and so on. Next, count by 2s, 5s and 10s. Or let your child pick a random number, like 11 or 57, and count on from there. Be sure to count backward, too—this prepares your child for subtraction. Older children can practice multiplication when you count by 7s, 9s, etc.

Sing a song of math together

Research shows that combining math with music can improve achievement. This summer, help your child make up math versions of familiar songs. To practice "doubles" facts, your child might use the tune from "The Farmer in the Dell" and sing, "1 + 1 is 2, 2 + 2 is 4, 3 + 3 is 6, and 4 + 4 is 8." Or, have your child choose challenging multiplication facts to replace the lyrics of "The Wheels on the Bus": "8 x 7 is 56 … 56 … 56. 8 x 7 is 56, all through the town!"

Source: A. Akin, "Let me make mathematics and music together: A meta-analysis of the causal role of music interventions on mathematics achievement," *Educational Studies*, Taylor & Francis.

Read engaging math-based books

Reading math-themed books builds your child's math *and* reading skills. Here are a few to try, along with related activities to incorporate into your summer adventures:

- ***The Doorbell Rang* by Pat Hutchins.** A mother bakes a dozen cookies for her children. As visitors arrive, the family divides the cookies into smaller and smaller shares. After reading, bake cookies and help your child get a feel for division by arranging them into groups of 4, 5, 6, and so on.
- ***The Greedy Triangle* by Marilyn Burns.** A triangle is tired of always being a slice of pizza or a sail on a boat. After visiting a "shapeshifter," it becomes a pentagon on a soccer ball, a hexagon in a beehive, and so on. Use this book to inspire your child to look for examples of shapes all around.
- ***Mammoth Math* by David Macaulay.** Real life is full of surprising examples of math—in nature, on maps, in computer games, and more. Your child will spot math everywhere you go after reading this book.

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