Summer Learning Spotlight

Math

Middle/High School
Summer 2025

THE PARENT INSTITUTE®

Summer is here! Time for fun, friends and … math? Yes, math! We're ditching the dull drills and diving into exciting summer activities that will help keep your teen's math skills sharp and make learning enjoyable.

Enjoy family math contests

Promote math this summer by challenging your teen to friendly competitions! Here are some to try:

- **Estimation Extravaganza.** Take turns posing estimation questions, both at home and on summer adventures. *How high is the mountain peak your family just hiked? How many kernels are on that ear of corn? How many shells will fit in the beach pail?* Each person submits an estimate, then your teen verifies the actual answer by calculating or researching. The person with the closest estimate issues the next challenge.
- **Game Tournament.** Select a game that involves math skills. Then, organize a family tournament, either single or double elimination. Have your teen manage the scoring and track wins and losses.

- **Mental Math Championship.** Who can solve problems in their head the fastest? One person says a problem, such as 4,500 ÷ 15, and everyone races to find the solution. Ask your teen to verify answers using a calculator. Finally, have everyone share the strategy they used, such as rounding to numbers that are easier to work with or removing zeroes from bigger numbers, calculating, then putting the zeroes back.

Make it clear that you're a math fan

Your attitude toward math is contagious. This summer, talk with your teen about how math can:

- **Boost brainpower.** Doing math builds neural pathways in the brain that help with reasoning, recognizing patterns and logical thinking. So, if you hear, "I'll never use this math in real life," point out that your teen *will* use the brainpower gained from learning it.
- **Expand career options.** Talk about ways that you, relatives and family friends use math on the job. If possible, show your teen concrete examples of the math you do, such as a spreadsheet or a report that contains graphs.
- **Make daily life easier.** Ask your teen to determine which is more cost-effective: taking a train or bus on a family trip, or driving. Your teen will need to compare fares with the costs of gas, tolls and parking. When shopping, consider unit prices and expiration dates when deciding whether to buy products in bulk. "Let's estimate how much orange juice we might actually drink before this carton expires."

Source: G. Zacharopoulos and others, "The Impact of a Lack of Mathematical Education on Brain Development and Future Attainment", PNAS, National Academy of Sciences.

Have your sports fan try some World Cup math

Kick off the men's soccer World Cup, hosted by the United States this summer, with a little sports-related math. Your teen can choose teams to root for and keep track of statistics and standings. Also have your teen research the 12 stadiums that will house World Cup games and then answer some questions that involve calculations: *What is the average ticket price for each stadium? How many people can each stadium hold? How much money will be made on ticket sales if every game sells out?*

Ask for a lesson

Boost math retention during the break by having your teen teach something to you. Your teen can:

1. **Review** last year's math material and select a concept.
2. **Explain** the concept using sample problems, diagrams or activities.
3. **Give** you a quiz and grade it.

This teaching process—explaining, demonstrating, evaluating—will cement the concept in your teen's long-term memory.

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Have some summer fun with finance

Combine summer fun with money management to help your teen practice real-world math. To provide experience with budgeting, prioritizing and saving, have your teen:

- **Plan a summer event.** Involve your teen in creating a budget for a backyard cookout, a beach trip or a visit to a national park. Have your teen explore cost-saving options like having a potluck, bringing your own gear or visiting on free admission days. During the event or trip, put your teen in charge of tracking expenses to ensure you stay within your budget.
- **Hold a yard sale.** Help your teen organize a small yard sale or participate in a neighborhood sale. Your teen can choose items to sell, like outgrown clothing, books and toys, and do research to set fair prices. On the day of the sale, make sure your teen has coins and bills for making change, and a way to track sales and profits, like a notepad or laptop.
- **Announce a grocery challenge.** Who can plan the healthiest summer meals for your family within a set budget? First, agree on what counts as healthy. For instance, maybe a meal must include one serving each of lean protein, whole grains and vegetables for each person. Then, have each person write a menu, list ingredients and research prices using store flyers and apps to find the best deals.

Create a math scrapbook

Help your teen discover creative ways to use math by creating a math scrapbook. Suggest that your teen include math poems, famous artwork with symmetrical compositions or geometric shapes, and even inventions—and then add captions that explain the math concepts used. Your teen might also create original art incorporating math. Or, include sheet music for favorite songs (or original compositions) with your teen's analysis of the tempo, chord progression and meter.

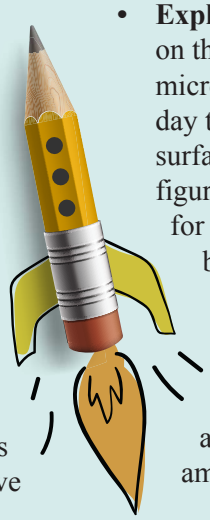
Use math to make a summer fitness plan

Does your teen know that athletes use math to improve their performance? Encourage your teen to set fitness goals, like doing a certain number of reps with weights, running a 5K in a chosen time frame, or swimming more efficiently.

Then, have your teen create a plan and track progress using math. For example, at the pool, your teen can calculate *stroke rate* by dividing the time it takes to swim one lap by the number of strokes used. Lowering that rate will make swimming easier. Your teen might determine the stroke rate for various swimming strokes (freestyle, butterfly) and record data throughout the summer.

Blast off with space-inspired math

There's a lot of math involved in space exploration. Use rocket launches this summer to encourage your teen to do some space-related math. Here's how:



- **Determine travel time.** Your teen will need to research how fast a spacecraft typically travels and how many miles away the destinations are.
- **Calculate body weight.** Objects, including people, weigh six times more on Earth than on the moon because the moon's gravity is about 1/6 that of Earth's. Have your teen research gravity on Mars and calculate your family's weights on its surface, too.
- **Explore time differences.** Time on the moon passes about 57 microseconds faster per Earth day than it does on the Earth's surface. Challenge your teen to figure out how long it would take for an astronaut on the moon to be one second older than if they had stayed on Earth. Have your teen research Mars and figure out how much the astronaut would age on that planet in the same amount of time.

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