

# Teaching Kids Why Math Matters

Day in and day out, math teachers hear the same question: “Why do I need to learn this?” Math teacher Peter Caryotakis has two answers for his students. “Because someday your children will ask you for help with their homework,” is his funny (but accurate) reply. He follows up with a more serious answer: “Because knowing math will keep as many doors as possible open in your future.”

Math teachers all over the country have their favorite answers to this timeless question, reasons that demonstrate why math matters. In a nutshell, these reasons can be summed up by three words: Personal, Practical, and Patriotic.

## Personal Reasons to Learn Math:

A person's success in life depends on how well she can solve problems. No matter what her career or life situation, she'll find satisfaction and reward by knowing how to tackle challenges head on. And while kids can't possibly practice every problem they'll ever have in life, there is a class in school that can help them learn how to think logically: math. Doing a math problem helps practice the problem-solving steps that apply to everyday situations: define the problem, think of ways to solve it, implement a solution, and evaluate the results.

Why do people go to the gym to ride the stationary bike? It's not so that they can compete in the stationary bike Olympics, it's to build up their endurance and strength to make the rest of their lives easier and more enjoyable. Math is like a gym for your brain. You may never need to use the quadratic equation in your adult life, but the process of learning it boosts your brainpower. By practicing how to solve mathematical problems, you optimize your ability to make complex decisions down the road.

In a speech entitled, “Teaching and Learning Algebra based on Neuroscience/Cognitive Science Research,” Math Professor Ed Laughbaum cited neuroscientist Dr. Richard Restak: “...intelligence is plastic and modifiable. All of our experiences result in the formation of neuronal circuits. The richer, more varied, and more challenging the experiences, the more elaborate the neuronal circuits.”<sup>[1]</sup> Studying abstract concepts like Algebra forces your brain to think in new ways, building the connections it will need to understand whatever problems the future might bring.

## Practical Reasons to Learn Math:

Sometimes, not knowing basic math can cause a lot of trouble. Caryotakis offered this real-life example as a reason to learn basic math: “If your car has two gallons of gas, and thirty miles to travel, will you make it?” Not knowing the answer could lead to a long walk home.

Here are some other situations where making the wrong calculations could lead to embarrassing or even life-threatening consequences:

- You're going to visit Canada, and the forecast is for 32 degrees Celsius. Should you pack snow boots or flip-flops?
- Your child needs fever medication at 3:00 in the morning. The package says to give two teaspoons to a sixty-pound child. If your child weighs forty pounds, how much should he have?
- You and 8 friends went out to dinner, and they've asked you to divide the \$177 bill. If you want to tip the waiter 20%, how much does each person owe?



- You want to paint five bedrooms, each measuring 14 feet by 16 feet. How many gallons of paint will you need?
- You want to get a thirty-year, fixed mortgage for \$200,000. Is it better to get one at 5.6% with no points, or at 5.3% with two points?
- Joe's Peanut Butter costs \$3.50 per pound. The store brand costs 23 cents per ounce. Which is a better deal?

It's moments like those when adults wish they'd paid attention in math class.

### **Patriotic Reasons to Learn Math:**

In her book *Why Math Matters*, Professor Jo Boaler argues that the future of our economy depends on our children getting a quality math education: "American students do not achieve well and they do not choose to study mathematics beyond basic courses, a situation that presents serious risks to the future medical, scientific, and technological advancement of society."

The twentieth-century economic success of the United States was fueled by advances in science and technology, from Ford's Model T to Apple's Macintosh. Designing, building, and selling these technologies provided the jobs that have given us the world's highest standard of living. And yet, the number of American students who choose math-related majors is falling, while the number is increasing in other countries.[2]

To explore the reasons for this disparity, I spoke with Babak Darafshi, an electrical engineer who was born in Iran but earned his degrees in the United States. "The attitude when I was growing up, and to some extent still, is biased towards the prestige of engineers and doctors in the society," he explained. "This is generally true in many places outside of the US (developing or developed countries like China, India, Brazil, Korea, Taiwan). Math and physics as well as sciences are mandatory, considered 'bread and butter' areas of education and emphasized more heavily through high school at a more advanced level than even freshman college year in the US." These other countries understand that rigorous math and science education is critical in creating the jobs that drive an economy, a perspective that our country is starting to lose.

In a recent speech about our troubled economy, President Obama remarked that "One of the changes that I would like to see...is once again seeing our best and our brightest commit themselves to making things. Engineers. Scientists. Innovators...building and making things that we can export to other countries." If students are to meet the President's goals, parents and educators must find ways to make mathematics appealing to children. In doing so, they will encourage them to pursue the careers that will once again secure America's position as an innovative and economic leader.

---

[1] Restak, R. M. (2003). *The new brain: How the modern age is rewiring your mind*. Rodale Books.

[2] *Science and Engineering Indicators*, National Science Board, 2004.