

- Special Report –

**Why Success In Mathematics Is
Important For Your Teen**

And How You Can Help Them Achieve It

It's Not Just About Numbers!

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Why Success In Mathematics Is Important For Your Teen

It's Not Just About Numbers!

Convincing high school students that success in demanding mathematics courses is important can be a hard sell. During my many years of teaching I heard over and over again the cry from frustrated students “When are we ever gonna use this stuff, anyway?”

In a minute I'll give you some statistics and studies that indicate the importance of learning mathematics. But first, I'd like to share a few thoughts and experiences from the 29 years I spent teaching high school math. Nothing really scientific at all, just some real life stuff. ☺

I think most math teachers will agree that the real importance of learning mathematics is not about numbers, but about the thinking skills it develops. Many parents also realize the value of “learning just for the sake of learning.”

Occasionally I would have parents say something like, “We don't know if Mary will pursue a field that uses mathematics or not, but we want her to take trigonometry to help sharpen her mind.” What wonderful insight those parents had concerning the value of learning mathematics!

Now please don't misunderstand when I say math isn't all about number manipulation. It is very, very important for students to learn and... do I dare say it...memorize...many things in mathematics, including multiplication tables, addition and subtraction facts, and rules and definitions.

And being able to use those number facts successfully is vital to achievement in later mathematics courses. Unfortunately, a student might have excellent “number” skills and still be lacking in analytical skills. Taking strong mathematics courses can help develop those deeper critical thinking skills.

Several years into my teaching career I came across a quote in an old geometry text that I was browsing. I thought it was so good that at the beginning of every school year after that I would have my geometry students write it at the top of the first page in their notebook.

I would preface this little requirement by saying something like, “Eventually we will get to some work in geometry this year that will make you wonder when you will ever use this stuff. So I’m going to answer that question for you right now.” Then I would give them the quote, **“If, for no other reason, studying geometry teaches one to think logically.”**

After the students had finished copying the quote in their notebooks, I would ask them when in day to day life they thought they would need to be able to think logically. Finding the football players in the class, I would ask, “Do you think Coach King will want you to think logically during the game Friday night?” Then to the cheerleaders, “When you’re planning the pep rally, would it help if you are able to think logically?” And to those students who had part-time jobs, “Do you need to be able to think logically in your job at McDonald’s?”

I always loved watching that gradual realization by the students that, yes, in all aspects of our lives, we need to be able to think logically. I assured them that studying geometry would help develop those skills. **Even though they might never have to do an actual geometry problem after the completion of the**

course, I tried to convince them they were developing critical thinking skills that would be valuable to them in whatever they chose to do.

Another interesting tidbit I picked up one summer during a conference I was attending about teaching high school geometry. The presenter told about a survey that had been conducted asking Deans of some top law schools in the country what attributes they looked for in applicants. Those law school officials said they liked to get applicants who had been successful in high school geometry courses. That success in high school geometry proved to be a good predictor of success in law school because both utilize the same kinds of reasoning and analytical skills.

Now for some professionally done research and statistics about the importance of learning mathematics. 😊

First, some interesting results from a survey conducted just last year by Texas Instruments, Inc. Eighty-percent of teens said they wanted to pursue careers in medicine, sports, science, education, business, military, law or architecture, and this same percentage of students said they believe that math is important for achieving their goals. **However, only half of those same students are planning to take advanced math classes beyond their schools' minimum requirements.**

David Mammano, founder and publisher of Next Step Magazine, a career resource guide for teens distributed in more than 21,000 high schools, said, "I have interviewed leaders in all of these fields on what they will look for in the next generation of professionals. They tell me that **having a strong math education**

is critical, particularly for developing important analytical and reasoning skills.”

“No matter what career they choose, the reality for teens is they’ve got to take challenging coursework in advanced math to be competitive in the professional world,” said Mammano.

Melendy Lovett, president of Texas Instruments Educational & Productivity Solutions business, states “The research is clear that **a strong math education provides many professional benefits to teens later in life.”**

A statement released by Texas Instruments on August 1, 2007, states that by the time today’s high school students are graduating from college, **6.3 million** jobs will require science, engineering or technical training. These statistics certainly indicate that today’s middle and high school students will need a strong math background to be competitive in the job market.

Gail Burrill, math teacher and former president of the National Council of Teachers of Mathematics, says that **families can make a difference in whether or not teens gain the math skills that are critical for their future success.** She offers the following advice for parents to help their children succeed.

1. Math is important regardless of what teens want to be in life.

People with strong math backgrounds are more likely to be employed and earn more, even if they have not gone to college. Math is also an important skill for people in all stages of life to make decisions about such issues as public initiatives, health or property management. Without taking a challenging math curriculum throughout high school, teens’ career options will

be seriously limited. Getting a strong foundation when children are younger allows them to succeed in math through their school years and beyond.

2. Support for math education starts at home.

Whether or not you enjoy math yourself, children need encouragement to learn that hard work and persistence are important for success. Be sure they attend school on a regular basis. Be positive and inquisitive—ask how things are going in class, encourage your children to work hard and help them find solutions for their difficulties. By becoming involved in your students' education and expressing your expectations, your children learn that their math education is a priority.

3. Provide resources when math gets tough.

Math can sometimes be tough for even the best students, so make sure your student has the right tools for success. For example, research shows that students do better in math when they use a graphing calculator at home and in class. For additional help with class work, check with your student's teacher to see if your school provides resources that can help, such as a resource hotline, organized study group, tutoring program, or after-school program.

Note from Linda: And even though you may feel like you can't help your teen when it comes to mathematics, I assure you that you can! Just keep reading, because I discuss exactly how you can do that later in this report. 😊

4. Find ways to show them that math is important in everyone's lives.

Showing students how to relate math to the "real world" will help them to understand why it's important. Figuring out the remaining cell phone minutes

on their monthly plan, how to balance their first check book or how to calculate their grades all require math skills. If students know that math can make their lives easier every day, they are more likely to want to learn.

5. Ensure that they take four years of high-quality math in high school.

All students should be enrolled in challenging, high-quality math courses. If your student is entering high school in the next few years, plan to work with a counselor to create a strategy that allows your child to take a challenging math course every year as part of an academic program that can open doors for career options. Review your child's course schedule for the next year and be sure he or she is in the right place in the math sequence to graduate prepared for post-secondary study.

And yet another recent study released on July 30, 2007, by the University of Virginia-Harvard University, finds high school grades in one science usually don't predict better college performance in other scientific disciplines – **except in math.**

The study found in that major exception, **students with better high school preparation in mathematics perform significantly better in college courses in biology, chemistry, and physics.**

Now, all this talk about developing analytical reasoning skills and the statistics showing the importance of learning mathematics may be convincing enough for parents. But as I said in the beginning of this report, it might be a bit tougher to convince your teen to take challenging math courses using these arguments.

Students might relate better to some real world examples of exactly how mathematics is used in specific careers. Math experts from the Sylvan Learning Centers spoke with professionals around the country who described how math plays an important role in their job. Following are some highlights from those interviews:

Anesthesiologist:

“Before dispensing any medication, I need to calculate my patient’s weight, height and body mass to prevent over or under medicating,” said Jeff Coston, D.O., anesthesiologist at Park Memorial Hospital in Asheville, TN. “Once the patient is medicated, I am constantly monitoring his blood pressure, heart rate, breathing and level of consciousness – I see numbers everyday on the job.”

Computer Game Programmer:

"I recently used my math skills to figure out how a camera should be placed in the new *Law & Order* game. The game has several 3D rendered scenes that the player explores to find evidence for their case. I used math to determine how to rig the camera in the middle of the scenes and to control its movement when a player interacts with the game," said Stephen Hodnicki, lead programmer, Legacy Interactive.

Nurse:

"I knew I wanted a career helping people, but I never thought math would fit into that equation because I thought only accountants and analysts used math on the job. Well, that's not true!" said Jennifer Wilson, nurse practitioner, Johns Hopkins Hospital. "I use math every day to evaluate a safe dosage of medication for each of my patients. It's crucial that my calculations are precise to provide safe care to my patients."

Sportscaster:

The role of a sportscaster isn't just commentating on the game. Much of what he does involves tracking players' performances from game to game during the year and throughout careers. A sportscaster calculates batting averages, earned run averages and other statistics that are basic mathematical foundations learned in elementary school.

Politician:

Math plays a key role in helping elected officials manage the budgets necessary to run our Federal, State, and local governments. Politicians determine the taxes that individuals must pay and in turn how these funds will be allocated to support the services and programs that are important to our communities. Another part of his job is using surveys and formulas to understand the issues that are important to his constituents.

Marine Captain:

"Math is extremely important to the Army and Marine Corps. As an infantry officer, I use maps, compasses and mathematics to help select the best route for my troops, the distance to our next destination and how long it will take to reach a specific location," said Captain Peter Pace, United States Marine Corps. "An error in route selection can get you lost, late or worse!"

Magician:

A magician needs math for a variety of tricks and responsibilities on the job. Many tricks involve understanding probability and counting cards. As well, if a magician wants to entertain a room full of people, he needs to calculate how much time he can spend with each person.

Architect:

An architect uses math to draw his designs for a house, a building or a bridge. His drawings need to be 100 percent accurate because a crew of builders and engineers will follow his plans to construct his designs. He will draw the beams and rafters used to support the foundation and everything he draws is drawn to scale.

Pastry Chef:

Professional baking often relies on a variety of weights and measurements. Sometimes recipes are given using the metric system that may require the chef to convert a specific number of grams to ounces. Or perhaps a chef is making desserts for 200 people by following a recipe that serves 12, so multiplication will definitely be needed.

Pilot:

To safely fly people between destinations, airline pilots must be able to quickly calculate various levels of math problems to determine flight paths, fuel requirements and the maximum weight requirements for a safe flight. Almost every button in a cockpit represents a different calculation that a pilot must understand. One wrong calculation can cause serious trouble for other pilots.

Teacher:

"As a former classroom teacher, math was important in every lesson I taught, but also, as the head of the class," said Richard E. Bavaria, Ph.D., vice president of education for Sylvan Learning Center. "In addition to marking papers, calculating test scores and class averages, problem solving was a part of my every day routine. Whether it was calculating the total cost to take my students on a field trip, or simply ensuring enough individual time for all of my students, I used many of the basic math skills I learned back in school."

Policeman:

To reconstruct traffic accidents, law enforcement officials use mathematical formulas to calculate vehicle speed, time and distance. Policemen must be very precise in their calculations because their findings are often presented in courtrooms to prove driver negligence, award property damages, to help accident victims and to improve highway safety.

Parents, please pass these career specific examples along to your teen if you think it might help to convince them of the importance of taking challenging math courses.

How You Can Help Your Teen Succeed In Mathematics

By now I hope you are convinced that success in mathematics is important to your teen's future. But, if you are like most parents you are still feeling inadequate when it comes to actually helping your teen achieve that success.

Take homework for instance. Most parents of teens have the erroneous belief that there is little, if anything, they can do to help with homework, especially in mathematics. In my years of teaching, I saw parents wanting to help but feeling completely helpless as to how or what they could do. Most felt that because they had limited mathematical knowledge themselves, they just couldn't help.

But, there really are some simple but effective strategies that any parent can follow to help their student succeed in any high school mathematics course. That's right, I said **any parent** can do these...regardless of what your own level of education might be. Let me show you what I mean.

Get your student to “talk” math with you. You don’t have to understand the subject matter; just gauge the responses you get. When you ask what is being studied, a reply such as “quadratic equations” or “polynomials” shouldn’t suffice. Even though that might indeed be the topic of the week, it demonstrates no understanding of the concepts at all.

Instead, strive for something along the lines of “We are studying quadratic equations and the different ways to solve them such as factoring, using the quadratic formula, and completing the square.” See the difference? Usually if a student can verbally express some concepts of the topic being presented, that indicates a fairly good understanding of what is being studied.

Closely monitoring your teen’s performance and progress in math courses is another thing you can do to help your student stay on the track to success. But **how** you monitor can make all the difference in the world in the results you get. In my [Parents Guide To Helping Your Teen Succeed in Mathematics](#) I discuss in detail how to make sure you get it right. I will tell you exactly how to communicate with the teacher and monitor progress so that you never have to worry about being surprised with the dreaded **bad report card!**

These are just a couple of the many strategies you can employ to help your teen when it comes to mathematics. And do you know when hiring a tutor should be considered and how to go about finding the best one for your teen? What to do when you clash with a teacher?

Getting through tough math courses doesn’t have to be a nightmare for you or your teen!

In my [Parents Guide](#) I address each of the above topics along with many others. I give you practical, step-by-step, no-nonsense strategies that you can start using immediately to help guide your teen in achieving the success in mathematics that is so important.

In closing, I urge you to be proactive in helping your teen understand the importance of taking and succeeding in challenging math courses in high school. And if you decide you need help in guiding them to that success, you can check out all that my Parents Guide offers at <http://parentsguidetohighschool.com/math.html>

All my best to you and your teen,



Linda Hinkle

P.S. Please feel free to pass this report along to family and friends. ☺