



MULTIPLY YOUR CHILD'S SUCCESS

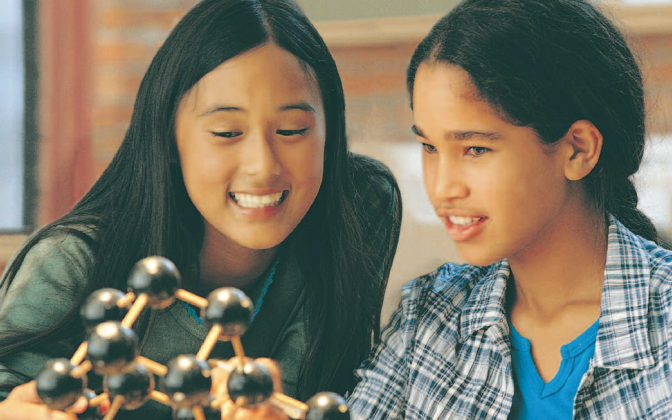
Math and Science

Can Make

Dreams

Come True

A PARENT'S GUIDE



Math and Science Are Where the Jobs Will Be

In today's high-tech world, math and science matter. Of the 10 fastest growing occupations, eight are science, math or technology-related. Whatever your child wants to do – join the military, join the workforce, or go on to college – math and science skills will be important. Become part of the equation to help your child succeed now and in the future.

SPECIAL THANKS to Georgia's Partnership for Reform in Science and Mathematics (PRISM) for the use of numerous recommendations from the "Math + Science = Success" pocket guide for parents and website.

math + science = success™

Many more suggestions for parents (how to find a tutor, summer tips, shopping guide) can be found at www.nationalmathandsciencesuccess.org.

As a parent, you have the power to make a tremendous difference in your child's success by staying informed and involved. Here are some ideas for how you can help support math and science skills from elementary school through high school.

ELEMENTARY SCHOOL

+ **Grades 1 through 6 (1 through 5 in some districts) are about creating interest.**

More than 60 percent of youngsters say they are interested in math and science before third grade, but that interest drops off as they enter middle school and even more in high school. It's vitally important for your child's future to keep the spirit of discovery growing about math and science as your child grows. If you can get your child excited about looking at the night sky or "banking" an allowance, then earth science or algebra will be that much easier and natural.

+ **Think and speak positively about math and science.** Never again say to your child, "I wasn't good in math either. Math is hard." Rather say, "Everyone needs to know about math and science in today's world. I sure wish I had studied it more." Encouragement and praise can be the first steps toward success.

+ **Get into the habit of asking your child, "What did you learn today?"** Let them teach you. You'll find out what they're learning and what they are most interested in – plus it will help them learn the information.

+ **Encourage your child to read for fun every day.** Good reading skills will be

essential to comprehending subjects from history to biology.

- + **Use home and leisure activities as “teachable moments.”** For very young children, anything can be counted – cookies, carrots, loose change on the table. Cooking requires math for measurements. Even the nutrition content listed on food products can be used for constructive comment on health science. Golf, tennis and bowling require math skills. Filling up your car with gas can provide lessons on how to multiply the price per gallon by the capacity of your tank.
- + **Take time for games that reinforce math skills and critical thinking skills.** Many of the older board games like Yahtzee, Monopoly, etc. combine math and strategy. Scrabble teaches addition for scoring as well as vocabulary. Sudoku can be fun for all ages.
- + **When your children are talking about what they want to be when they grow up, don’t miss the opportunity to guide them** through the skills that will be necessary for that job. Cowboys sell cattle on the Internet today. Firefighters need to know about heat and energy and chemicals. Farmers must know about everything from meteorology to plant genetics. Fashion designers need business sense (what’s 30 percent off?) and geometry as well as an eye for design. Engineers don’t just steer trains, they help construct beautiful buildings, gather the global data for hedge funds, and make new inventions work. Encourage hard work because Math and science make your children’s dreams possible.
- + **Take your youngsters to science museums and nature centers as often as you can.** They are full of life and creativity.

Many Nobel Prize winners say they were first inspired by visiting a science museum. Even if your children don't win a Nobel Prize, they can learn how to appreciate the wonders of the world around us.

+ **Pay attention to math and science teaching in your child's elementary school.**

Have you reviewed your child's science or math homework lately? Are assignments or projects creative and tied to real-life situations or your child's interests? Ask the PTO to schedule a presentation on the importance of strong math and science education so that parents will know what is being taught – and school leaders will see that parents want their children to get a good start in math and science.

FIFTH GRADE

+ **Fifth grade is “a biggie.” Often it is a “review and transition” year before middle school.**

The emphasis is on making sure your child has mastered necessary skills, including

problem solving. As Sherlock

Holmes would say, the step-by-step of

5 solving problems is elementary, so encourage your child to be a math detective at every chance – if Grandma gave you \$5 dollars, what could you buy for lunch? Or how many iPod downloads could you get?



+ **Reinforce the mindset that “It's okay if it's hard.”** Everyone from baseball players to boxers to bassoonists have to practice hard to learn the basics of their job. Your child should get the message that if they put their mind to it, they can go far in

math and science careers. If your child learns not to be afraid of a challenge, then half the battle is won.

SIXTH GRADE

- + **Make sure your child has a basic scientific calculator.** Today's world is digital.
- + **Incorporate math and science into afternoon and evening activities:** watch the Weather Channel, read science fiction, give your child a budget to work with, etc.
- + Your child will be studying things like energy, weather, probability, and fractions. Talk to him or her about what's going on in class. Even better, **have your child teach you.**
- + **Don't perpetuate the outdated cultural bias that girls aren't as good at math.** In countries where efforts have been made to eliminate gender bias, girls score as high as boys on national math tests and in the U.S. girls have closed the gap to four points. In recent years, girls have won the top honors in prestigious competitions such as the Intel International Science and Engineering Fair and the Siemens Competition in Math, Science and Technology. Your daughter could be the next great scientist or engineer.



- + **Ask your child's teacher for an assignment list**, so you're informed about homework, tests, and projects.
- + **If your child is caught up in the video game craze, turn that into an advantage – and set boundaries.** Encourage your child to learn about the math and probability that the best gamers employ. Encourage him or her to learn more about the computer science and animation necessary to create games. But keep in mind that research in the *Journal of Pediatrics* showed that weekday TV and videogames were strongly correlated with poor school performance. Homework should still be Job One.
- + **Remember that reading and writing skills are essential to mastering the schoolwork ahead.** The National Council of Teachers of English along with Phi Beta Kappa have considerable data showing that children who are read to in elementary school and who read in secondary grades enjoy more success in science, math, and other coursework in all 12 grades.

SEVENTH GRADE

- + **Make sure your child has a quiet, comfortable workspace at home.** Before key tests, make sure your child gets a good night's sleep – and eats a good breakfast.
- + **Have a discussion with your child about his or her interests.** Start discussing possible careers and what kind of preparation they require. Be sure to include options like math, science, engineering, and technology. Oceanographers, botanists, astronomers, oncologists, and physicists are today's explorers.

- + **Talk to teachers about whether or not your child is performing at grade level.** This is important, because if your child is not performing “at level” in math, science, and English, now’s the time to get some extra help. Likewise, if your child shows interest in math and science, now’s the time to ask about special opportunities for summer or advanced work.
- + **Ask teachers about the state tests your child will have to pass in order to be promoted.** Make sure your child is up to speed on the math, science and English areas that will be covered. Register your child to take Algebra I in the eighth grade. It’s essential preparation for courses to follow.
- + **Start looking for competitions that inspire your child’s creativity and intellect** – like science fairs, robotics competitions, solar car competitions and science bowls. They’ll gain just from entering.
- + **The middle school years can be a difficult transition for many students, physically, emotionally, and socially.** Take special care to listen and praise any and all progress. Resist the tendency of children at this stage to create distance between you and school and other activities.

EIGHTH GRADE

- + **Believe it or not, it’s decision time already.** Eighth grade is another “biggie,” a time for review and transition. As of 8th grade you and your child will need to start thinking about post-secondary plans. Take care to have conversations where your child will feel free to discuss interests and goals. Your child will need to take certain courses to be job ready and college ready. Your role is to be supportive and realistic.

- + **If your child has a specific career in mind, make sure he or she is taking the necessary math and science courses to make that choice possible.** Becoming a math and science teacher might be a good option – look for good role models in your school.
- + **Encourage your child to get involved in math and science-related extracurricular activities,** like science fair and Math or Science Club. Or check to see if challenging programs like Project Lead the Way®, which encourages youngsters to consider engineering as a career, are available in your area.

- + **Keep talking to teachers, and to your child.**

Stress the importance of taking as much math and science as possible in high school. Your child should take Algebra I



in the eighth grade to prepare for math courses to follow. Algebra is the gateway course for math and science literacy for all students, not just the academically gifted.

- + **Encourage your child to take Pre-AP or “honors” courses** – even if she or he is not planning on taking AP courses later. It’s a smart move to keep all options open and lay a foundation in middle school that allows for a variety of choices later. The Pre-AP program focuses on the knowledge, skills and habits that will help students achieve their potential. Students have the chance to work with specially trained teachers and gain study skills that will pay off in high school and more importantly, college.

NINTH GRADE

- + **If your state has required end-of-course tests, find out what your child needs to do well in math and science.** Ask teachers about the best way to prepare for the tests.
- + **This is the time to take Geometry**, part of the essential foundation to move forward in today's technologically competitive world. **Your child also should take Pre-AP Biology** to put them on a path to take both Chemistry and Physics before graduation.
- + **Have contact with ALL your child's teachers. Make sure you get a transcript at the end of each semester so you can keep track of courses and grade point average.** If possible, log on to your school's website to check grades during the semester. (Contact your school for the code.)
- + **Pay attention to attendance.** In ninth grade, it really starts to count.
- + **Encourage your child to tackle math like whatever they're most interested in**, and praise success – no matter how small.

TENTH GRADE

- + The standardized SAT and ACT tests are a major factor in college admissions. **In 10th grade your child should take the PSAT**, a warm-up for the SAT. There is a fee to take the test and the test is not offered on a school day, but it is important and good scores could count for scholarship money.
- + **Use PSAT results as an indicator of academic weakness or strength.** Ask teachers how to improve math, science, and English scores before the SAT or ACT.
- + **Most technical colleges also require a “pencil and paper” math test**, so all students need to keep basic math skills fresh.

- + **This is the time to take Algebra II**, another keystone for success in today's world. **Your child should also take Pre-AP Chemistry**, which is the prerequisite to all of the AP science courses.



- + **Start researching college, scholarship options or work-study options.** (Your school counselor can help.) Check math and science admission requirements for your top-choice colleges.
- + **Also research the AP scores required for college credit at your student's five favorite universities.** Now's the time to start thinking about AP courses – AP courses smooth the transition to college. College is expensive – your family can save money if your child earns college credit through the AP program. Additionally, the freshman classes at many universities can be large and impersonal – if your child takes advanced classes in high school, the classes will be smaller and your child will get the preparation to succeed in college.
- + Today's young people want to make the world a better place, improve the environment, create new energy sources, and improve healthcare for everyone – **build on that idealism by reminding them math and science are essential to solve all those challenges.**

ELEVENTH GRADE

- + **Talk to teachers about all the statewide tests that your child must take in order to graduate.** Ask your school about the best way to prepare.
- + **Make sure your child gets to school every single day.** At this stage, math and science move quickly and become progressively more challenging, so your child will want to keep up with the sequence of information and assignments.



- + **This is the time to take Algebra II, Pre-Calculus, or AP Statistics,** to acquire an even stronger math and science foundation. Usually students take Pre-AP or honor physics at this point. Students can also take a second science course such as AP biology or AP chemistry. This is the year most students start taking AP classes like AP English language or AP science.
- + **If your child is headed to a four-year college, ask school counselors about Advanced Placement courses versus dual-enrollment programs.** Both give college credit, but one option may be more appropriate than the other for your child.

Keep in mind; students who score 3, 4 or 5 on AP courses are three times more likely to earn a college degree than students who do not.

- + **College admission officers at highly selective universities report that they look at several aspects of a student's transcript** – the class rank, class schedules (how many challenging courses), the GPA, school and community activities, and leadership roles. Have your student check with the counselor about how class rank will be impacted if challenging courses are not included. Getting a strong base of knowledge in high school will make college much easier.
- + **Students going to four-year colleges should prepare for the SAT (or ACT) in the spring.** This is also the time to register for Advanced Placement exams and visit colleges.
- + **If your child is planning to go to college, make sure you are aware of all deadlines and plan ahead.** Help your child review college programs, financial aid, and scholarships.

TWELFTH GRADE

- + **Remind your child that senior year really does matter!** No matter what your child's plans, encourage him or her to keep taking challenging math, science, and English classes. It's a good time to add classes in Statistics or Calculus as well as AP Chemistry, AP Physics, AP Biology or AP Environmental Sciences.
- + **Finalize post-secondary plans** (four-year college, technical college, career, or armed services).

- + **If appropriate, encourage your child to prepare to take the fall SAT.** This is also when you and your child will send out college applications and apply for scholarships.
- + **Tell your child, “I’m proud of you.”** Make a big deal about high school graduation – and what your child is going to do on Monday after the graduation ceremony. Today’s global economy requires more education than ever before, so the world of discovery is just beginning.





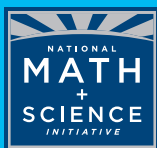
“What is this miracle that lies within the reach of nearly every family? It’s simple. All you have to do is start insisting that your children fully apply themselves to their studies – and commit yourself to doing your part. That means making sure they do all the work expected of them as well as their abilities allow. It also means making sure everything at home stands behind these principles and supports the idea of learning.”

—Daniel Akst, The Wall Street Journal

MISSION

NMSI's mission is to advance math and science education in the United States by expanding programs with proven results on a national scale in order to have a positive impact on America's 50 million student public school system.

NMSI is leveraging public-private cooperation thanks to funding from Exxon Mobil Corp., the Bill & Melinda Gates Foundation, and the Michael & Susan Dell Foundation, with generous in-kind assistance from IBM and Perot Systems.



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