

MATH GPS

CHART
YOUR
COURSE



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MIDDLE & HIGH SCHOOL MATH

The knowledge and skills students need to be prepared for mathematics in college, career, and life are woven throughout mathematics standards in every state.

Some of the highest priority content for college and career readiness comes from mathematics concepts taught in grades 6-8. This body of material includes powerfully useful proficiencies such as applying ratio reasoning in real-world and mathematical problems, computing fluently with positive and negative fractions and decimals, and solving real-world and mathematical problems involving angle measure, area, surface area, and volume.

MILITARY-CONNECTED STUDENT ENROLLMENT

Military-connected students might have difficulty adjusting to curriculum and instructional methods, especially in the area of mathematics, because instructional strategies and mathematical language often differs from school to school. Among educators, differences in curricular exposure were frequently mentioned in statements about the need

for rapid assessment and remediation for military-connected students. Teachers frequently referred to the need to matriculate records and state standards across school systems. Educators should be aware that military-connected students have been in different school systems, sometimes in a different state or country, so their background knowledge may be different, especially in elementary school.

Source: Schoolwide Impact of Military-connected Student Enrollment: Educators' Perceptions Joanna K. Garner, Pamela L. Arnold, and John Nunne Children & Schools Advance Access published February 7, 2014

ORGANIZATION OF MATH COURSES

Middle school can begin for some students as early as fifth grade. Prior to middle school, most math programs generally build purposely from prekindergarten or kindergarten. As the student moves to secondary mathematics, however, the kinds of teaching and the nature of courses will change.

Due to different school and state requirements for course credits and course materials, frequent moves pose additional challenges for academic achievement and graduation by transferring students. (Hall, 2008).

Source: Hall, L. K. (2008). Counseling military families: What mental health professionals need to know. New York, NY: Routledge.

THREE CRITICAL CONCEPTS

1 MATH EVERY YEAR

Study after study proves that including math in students' schedules every year has multiple benefits. A "gap year" in math can cause a student to forget essential math skills and struggle later when that knowledge is needed.

2 APPROPRIATELY RIGOROUS MATH CLASSES

The brain is like a muscle that becomes stronger with exercise, so students who take challenging classes retain greater knowledge and apply it more than students who elect to take undemanding classes. Taking more rigorous math courses increases learning and results in higher scores.

3 PORTABLE MATH

Because military children move 2-3 times more often than their civilian counterparts, they may take math classes in multiple schools and districts. Some math classes work well only within the context of a planned progression of courses or in one system. Problems may occur when classes have vague titles. Before moving, parents can:

1. Keep a copy of all class syllabi especially if moving mid-year
2. If student is taking a high school level mathematics course in middle school, get the teacher's contact information and credentials which might aid in transfer of credit and/or appropriate placement

Mobility often results in exposure to different curriculums and instructional techniques, thus putting military-connected students at risk of gaps in knowledge and skills (Engel, Gallagher, & Lyle, 2006).

Engel, R. C., Gallagher, L. B., & Lyle, D. S. (2006). Military deployments and children's academic achievement: Evidence from Department of Defense Education Activity Schools. Retrieved from <http://s3.documentcloud.org/documents/205139/deployments-and-dodea.pdf>

When does **SECONDARY MATH** start?

Military families know that schools and school districts have unique rules and definitions. Some states and school systems require students to begin the study of Algebra I or Integrated Math 1 – the first official secondary math courses – in the 9th grade, some in the 8th grade, and others allow students to start even earlier. Beginning the study of secondary math in the 8th grade may allow students to enroll in advanced mathematics, such as AP Calculus or AP Statistics, before they graduate from high school. In the past, many students missed this advantage, which opens many possibilities for students, especially those interested pursuing a math-intensive major in college or a career.

ELEMENTARY SCHOOL *Arithmetic*

Middle school math once was an extension of elementary arithmetic, but today many middle schools offer courses containing rich and important math concepts which connect elementary mathematics to algebra and beyond. This prepares students to succeed in high school math courses by building the solid math skills that comfortably move students ahead. If weaknesses exist, however, they may be addressed in optional ways: waiting until 9th grade to begin secondary math, taking summer school, and/or tutoring.

MIDDLE SCHOOL *Algebra and Enrichment Topics*

Too many students who begin their secondary math career in 8th grade do not take math classes every year in high school. After a year or more away from math, these students are seriously disadvantaged in college or the workplace. If a high school does not offer 4 years of math, beginning high school math in the 8th grade may create a problem. Dual enrollment in a college course may alleviate that glitch.

The Achieve Pathways Group
endorses the notion that all
students who are ready for
rigorous high school
mathematics in eighth grade
should take such courses like
Algebra I or Mathematics I.

Source: *Achieve. (2010). Closing the expectations gap 2010. Washington, DC: Achieve.*

WAYS TO *Accelerate* HIGH SCHOOL STUDENTS IN *Mathematics*

MAKING Good Math Choices

In many instances, there are fewer choices to make today about which math class to take than there were ten years ago. Now all middle and high school students are expected to complete a rigorous, relevant, and challenging math program through, at a minimum, Algebra II or its integrated equivalent. Beyond that level, students and their families need to consider carefully college and/or career paths after high school by addressing these questions:

Is the student interested in a career in a math-intensive field such as engineering or medicine?

How about a less math-intensive career, such as business, a social science, or the arts?

Is a certificate or work place training program, such as those offered by community colleges or private businesses, of interest?

Many students are not sure which math path to take, especially in middle school or the early years of high school. Interests can vary and expand over time, and math may become a more vital component of the new interest. For these reasons, experts recommend taking the most rigorous math classes possible. It is important to remember that strong math skills expand options in careers and life.

Middle School Acceleration

There are critical choices to make when middle school students are given the opportunity to study high school mathematics in lieu of traditional middle school math classes. All students who are ready should be encouraged to move into rigorous classes, while less prepared students can build the foundation for success in their high school math by enrolling in traditional middle school math classes.

Once on this “accelerated” pathway, which may include compact courses, it is important to remember these guidelines from the *Achieve Pathways Group*:

GUIDELINES

1. Compacted courses should include the same Common Core State Standards as the non-compacted courses. Compacting material too much could result in the loss of mathematical concepts.
2. Decisions to accelerate students into the Common Core State Standards for high school mathematics before ninth grade should not be rushed. Placing students into tracks too early should be avoided at all costs.
3. Decisions to accelerate students into high school mathematics before ninth grade should be based on solid evidence of student learning. The decision to accelerate should be a joint decision between school and family.
4. A menu of challenging options should be available for students after their third year of mathematics – and all students should be strongly encouraged to take mathematics in all years of high school.

ALGEBRA

The Crossroads

Algebra plays a critical role in secondary math because it deals with abstract thinking. It is a prerequisite for advanced math classes, including geometry, trigonometry, and calculus. In integrated math classes, as well, algebraic thinking is foundational.

Throughout elementary school and into middle school, students learn increasingly challenging computational skills with whole numbers, fractions, and decimals. Ideally, these students receive their first exposure to algebra as they explore and describe patterns and make predictions and generalizations. One essential area for algebra preparation is the understanding of proportional relationships, in which one factor increases or decreases as another factor changes.

If a student has been predicting what comes next, working with proportional growth, or describing patterns mathematically, the development of the skills and thought processes needed to make generalizations about numbers and solve complex problems have already begun. This is the heart of algebra. Algebra teaches students to connect the specific skills and concepts they learned in elementary and middle school math with more abstract statements, properties, and techniques to solve complex problems.

Reports show, science, technology, engineering and math degrees have become incrementally more common for both men and women over the last decade.

According to a report from the National Student Clearinghouse, driven by a growth in the “hard sciences” – such as computer science, engineering, and physical and biological sciences – the prevalence of STEM degrees increased between 2004 and 2014 at the Bachelor’s, Master’s and Doctoral levels.”

Retrieved from <https://www.usnews.com/news/articles/2015/01/27/more-students-earning-degrees-in-stem-fields-report-shows> by Allie Bidwell, Staff Writer | Jan. 27, 2015 More Students Earning STEM Degrees, Report Shows.

Interested in
SCIENCE?
Interested in
MATH.

Preparing for a Math Intensive College Major

Any student entering college to major in a math-intensive field needs to take at a minimum first-year calculus as a college freshman. Doing so will allow sequential enrollment in math-based courses in computer science, engineering, science, and other fields immediately, rather than delaying these courses.

To enter a college or university at this level, the student should have completed at least pre-calculus or its equivalent in high school. To learn more about what possible course paths there are in middle school and high school to reach these math-intensive career goals, please see When Does Secondary Math Start? on page 4, and Mathematics – Possible Paths for Grades 7-12 on page 12. Learn more about College Readiness on page 20.

“Believe it or not, encouraging children to learn science is not like getting them to eat their vegetables. Studies show that youngsters naturally like science.”

Sally Ride, President and CEO of Sally Ride Science, and Professor of Physics Emerita at the University of California - San Diego

In an article entitled *How to Raise a Rocket Scientist*, Sally Ride – President & CEO of Sally Ride Science, Professor of Physics Emeriti at the University of California-San Diego, and America’s first woman in space – talks about the job of “parents, educators, and Americans to inspire and educate the next generation of cancer researchers, environmental engineers, and even rocket scientists” with science and math. “After all,” she says, “80% of jobs in the next decade will require some knowledge of math, science, or technology.”

What can families do? First, watch what you say – don’t give the impression that because you weren’t good at something, your children won’t be either. Second, encourage and reward – plan a family celebration for academic achievements. Third, take a family field trip to places that are both fun and educational, such as science museums. Finally, use current events to emphasize science and math in daily life and conversation. “Think of it,” Ride says, “as a daily way to invest in your children’s future.”

Supporting MATH LEARNING at Home

FAMILIES CAN WORK TOGETHER TO SUPPORT LEARNING IN MATH
AND ALL OTHER SUBJECTS BY ESTABLISHING A FEW HABITS:



1 CREATING A HOMEWORK ZONE

- A seat at the kitchen table or a desk in a bedroom
- Have necessary supplies on hand
- Select and observe a specific time for homework. Keep distractions out of this area.



2 TALKING ABOUT SCHOOL REGULARLY AND CASUALLY

- Discuss regularly and pleasantly
- Ask specific questions about the day, like if anyone has a funny story about their school day



3 KEEPING AN UP-TO-DATE FAMILY CALENDAR

- Post dates of important school events: open houses, conferences, quizzes, tests, as well as school, family and community activities, all on a large calendar.



4 BEING PHYSICALLY AND MENTALLY PREPARED

- In addition to supporting the completion of homework and studying for tests, families can also support learning by encouraging students to take care of themselves.
- Students need a good night's sleep, a healthy breakfast and regular meals, and regular exercise to provide the brain and body with the fuel needed to absorb and retain information.

MATH SUPPLIES AT HOME

Families may find it helpful to have a set of age appropriate math supplies at home in their “homework zone” for students to work with during homework time.. The following is a list of possible supplies parents could keep at home for students to use for math homework: **manipulatives | mechanical pencils | graph paper/engineering paper | protractor | compass | transparent ruler | calculator/graphing calculator.** Your classroom teacher can help pinpoint supplies to keep at home.



REMEMBER:

Positive interaction between parents and educators help students to develop mutually beneficial relationships.

WHAT PARENTS CAN DO REGULARLY

Parents can actively encourage the development of math skills in the following ways:

Anticipate and Encourage.

Although state requirements for math vary, a family's plan should be to include math in the student's schedule every year their child is in school and keep track of the math courses taken in middle school and high school.

Engage and Communicate.

Parents should meet all of their child's teachers at the beginning of each school year or when enrolling in a new school. During the year, parents can continue to touch base with teachers through conferences, calls, emails, and on the school or teacher's website.

Practice Math Inform

Support math learning at home by casually illustrating examples of math used in everyday life, such as percent, proportion, fractions, and rate of movement.

Avoid Hidden Messages.

Paying attention to how math is discussed at home. Each person experiences math differently, so avoid blanket statements such as “I wasn't good at math either, so of course you are having problems,” or “This is a piece of cake!”

Advocate.

Parents can support success in math and every other academic subject by being a compelling advocate for the student. Because military parents serve a special role as the one constant in their child's frequently changing life, a student needs to know there is always a caring person to speak out.

Math Homework Tips for Parents

- Encourage your student to use a daily math assignment book.
- At the beginning of the year, ask your student's teacher for a list of suggestions that will enable you to help your child with math homework.
- Check with your student daily about his homework.
- If your student is experiencing problems in math, contact the teacher to learn whether he is working at grade level and what can be done at home or at school to help improve academic success.
- Request that your student's teacher schedule after-school math tutoring sessions if your student needs help.
- Use household chores such as cooking and repair activities as opportunities for reinforcing math learning.
- Try to be aware of how your student is being taught math, and don't teach strategies and shortcuts that conflict with the approach the teacher is using.



MATHEMATICS ✈️

possible paths Grades 7 to 12

The following charts below illustrate a few of the many possible paths students might pursue from grades 7 through 12, with the expectation that they will study a challenging and appropriate mathematics course every year of high school. Note that some schools offer Algebra I, geometry, and Algebra II, while some offer Integrated Mathematics 1, 2, 3. Course names for either of these paths might vary, and some schools will offer different options. For example, Algebra II is often called Advanced Algebra and may or may not include trigonometry. Pre-calculus includes trigonometry and most of the content of courses sometimes called Math Analysis and Analytic Geometry. The paths below represent the most commonly seen paths and courses.

SELECTION POSSIBILITIES – GRADES 7-12 (6-YEAR PROGRAM)

GRADE 7	GRADE 8	GRADE 9	GRADE 10	GRADE 11	GRADE 12
Algebra I/Int. Math 1	Geometry/Int. Math 2	Algebra II/Int. Math 3	Pre-calculus	AB Calculus	BC Calculus
Algebra I/Int. Math 1	Geometry/Int. Math 2	Algebra II/Int. Math 3	Pre-calculus	AB Calculus	AP Statistics
Algebra I/Int. Math 1	Geometry/Int. Math 2	Algebra II/Int. Math 3	Pre-calculus	AB Calculus	Alternative 6th-yr option*
Algebra I/Int. Math 1	Geometry/Int. Math 2	Algebra II/Int. Math 3	Pre-calculus	AP Statistics	Alternative 6th-yr option*

SELECTION POSSIBILITIES – GRADES 8-12 (5-YEAR PROGRAM)

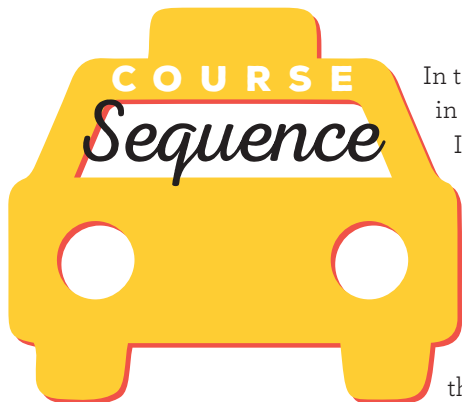
GRADE 8	GRADE 9	GRADE 10	GRADE 11	GRADE 12
Algebra I/Int. Math 1	Geometry/Int. Math 2	Algebra II/Int. Math 3	Pre-calculus	AP Calculus
Algebra I/Int. Math 1	Geometry/Int. Math 2	Algebra II/Int. Math 3	Pre-calculus	AP Statistics
Algebra I/Int. Math 1	Geometry/Int. Math 2	Algebra II/Int. Math 3	Pre-calculus	Alternative 5th-yr option*
Algebra I/Int. Math 1	Geometry/Int. Math 2		AP Statistics	Alternative 5th-yr option*

SELECTION POSSIBILITIES - GRADES 9-12 (4-YEAR PROGRAM)

GRADE 9	GRADE 10	GRADE 11	GRADE 12
Algebra I/Int. Math 1	Geometry/Int. Math 2	Algebra II/Int. Math 3	Pre-calculus
Algebra I/Int. Math 1	Geometry/Int. Math 2	Algebra II/Int. Math 3	AP Statistics
Algebra I/Int. Math 1	Geometry/Int. Math 2	Algebra II/Int. Math 3	Alternative 4th-yr option

***Note:** Alternative 4th-, 5th-, or 6th-year options might include Statistics, Discrete Math, Financial Literacy, Quantitative Reasoning, or courses that combine such topics. Students should be wary of any course offered as an alternative if it provides remediation over lower-level skills or over the state test. Instead of remediation, or in addition to such a low-level course, students might consider a mathematics course that provides opportunities to use and extend what they know. Also, note that the terms 4th, 5th, or 6th-year option might include a course taken at any year in high school, after Algebra II or its equivalent.





well, neither the traditional course arrangement nor the integrated arrangement is better or worse, higher or lower than the other. Either the algebra/geometry sequence or an integrated math sequence should prepare students to progress to statistics or pre-calculus in preparation for a variety of higher-level options.

Learning objectives addressed in the classes are available by reviewing the state's mathematics standards. Links to all of the state standards in math and other subjects are available at:

Educationworld.com/standards and Corestandards.org/standards-in-your-state

“OVER THE LAST DECADE, JOBS IN SCIENCE, TECHNOLOGY, ENGINEERING AND MATH HAVE GROWN AT THREE TIMES THE RATE OF OTHER JOBS, ACCORDING TO THE U.S. DEPARTMENT OF COMMERCE.”

DIFFERENT COLLEGE MAJOR, TECHNICAL, OR JOB-RELATED PROGRAMS

Here is where the math choices multiply. Depending on individual interests and strengths, there may be more beneficial courses than a pre-calculus class leading to calculus. Many schools now offer classes in statistics, discrete math, math models, quantitative reasoning, or financial literacy.

For a more complete listing of math needed for different college majors, technical or job-related majors, see:

Khake.com/page56.html

In the United States, high school math is usually organized in one of two ways: by discrete course, such as Algebra I, Geometry, and Algebra II; or by courses which integrate mathematics content from those courses, such as Integrated Math 1, 2, and 3. The exact content of the integrated courses may change from state to state, from school to school, and sometimes even from classroom to classroom, yet the major learning objectives in the first series of courses, no matter what their names, are fairly consistent. If the courses are taught



MATH BEYOND ALGEBRA II

Other classes after Algebra II are important as students move through high school. Of course, students should also have studied geometry, and may study statistics. As with Algebra I and II, these may be offered as individual courses or addressed within integrated math courses. A school may also offer discrete math or financial literacy, both useful in some college and career paths. Parents should confer with their student and a guidance counselor to select the appropriate math classes beyond Algebra II.

APPROACHES TO Math Content

Comparisons of the traditional and integrated approaches to math highlight their advantages and disadvantages.

Differences likely to occur across the algebra/geometry sequence include the following:

How much the courses include topics from statistics and probability.

Whether students are tracked into advanced, regular, and remedial versions of a course.

If the courses are “functions-based,” that is, if students examine relationships and patterns between variables, often through models.

The integrated math sequence can prepare students for multiple options, but gaps and overlaps may be caused by:

Inconsistency in how schools or states define integrated math,

Organizational issues between schools about the topics of functions-based sequences,

Movement of a student from an integrated into a discrete sequence, or vice versa.

Please see the **MOVING WITH MATH CHECKLIST** on page 25 for tips on making any move go more smoothly.



In some schools, a course may simply focus on preparation for the state test, rather than on the actual content of algebra or geometry. Content of the course is important for college and the workplace.

Visit Corestandards.org to review the common state standards for math.

Assistive TECHNOLOGY

Graphing tools are typically digital tools that help kids graph the path created by an equation. For example, $y = x^2$ would be graphed as a parabola.

Equation-solving tools, unlike calculators, are digital tools that help kids work with equations, but don't actually solve the problems. They help kids, especially algebra students, figure out how to solve a problem like x in $4 + x = 11$.

"Although high percentages of K-12 teachers at all levels value and teach the skill of executing mathematics processes without the aid of technology, most of them also teach students how to use calculators to perform computations and graph equations, and teachers in later grades commonly allow students to use calculators on classroom exams."

ACT NATIONAL CURRICULUM SURVEY 2016 PG. 13

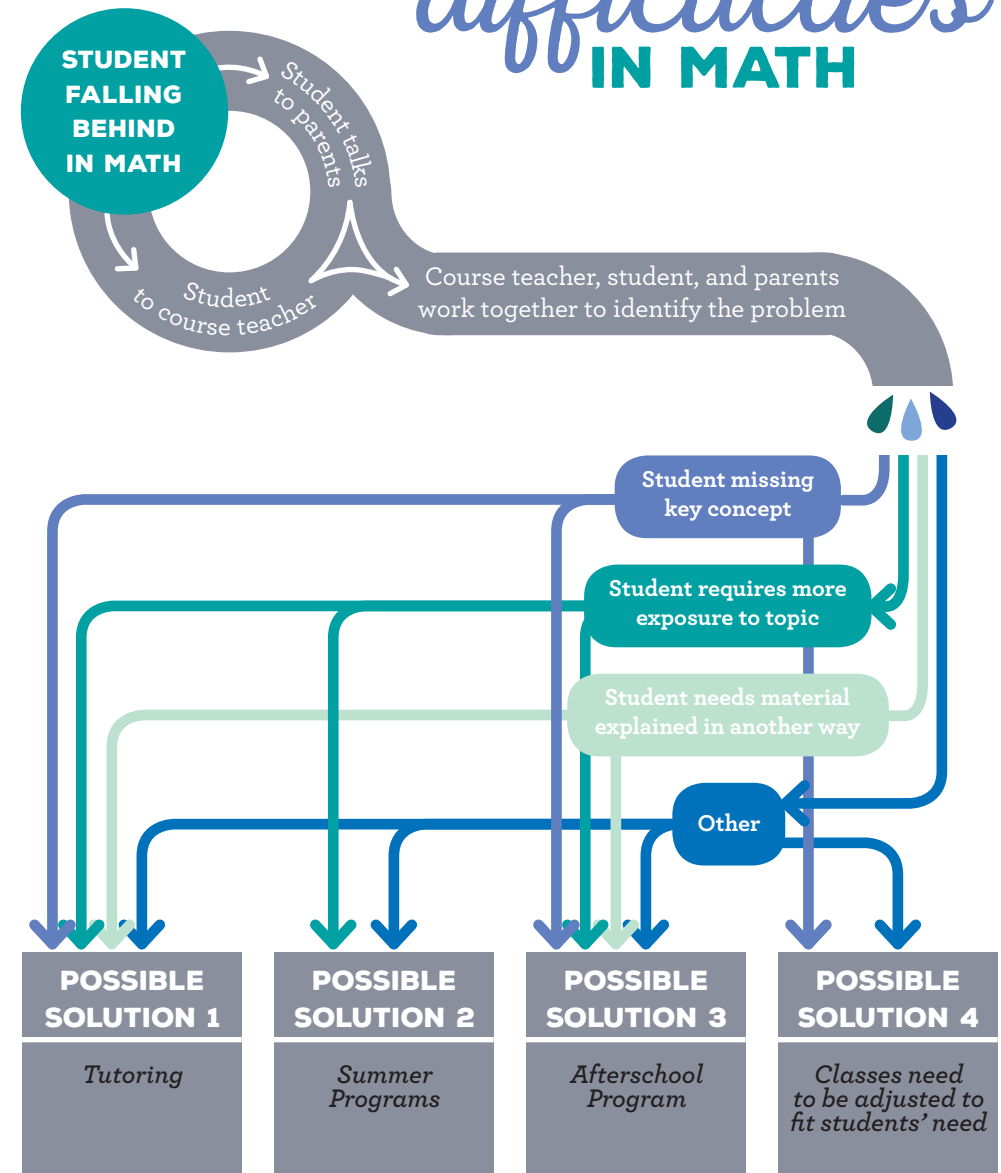
Graphic organizers either digital or on paper, help students break down and lay out the steps for solving math problems. A graphic organizer for a word problem may have spaces for students to write and keep track of important numbers thus helping students think through what the question is asking.

Text-to-speech (TTS) features read aloud numbers and calculations to students when they are solving math problems and is commonly combined with other tools, like a talking calculator.


"Although high percentages of K-12 teachers at all levels value and teach the skill of executing mathematics processes without the aid of technology, most of them also teach students how to use calculators to perform computations and graph equations, and teachers in later grades commonly allow students to use calculators on classroom exams."

ACT NATIONAL CURRICULUM SURVEY 2016 PG. 13

ENCOUNTERING difficulties IN MATH



There is increasing evidence that nearly all students can succeed in challenging high school math courses with appropriate and timely support. [Helpful Math Resources](#) on pages 22 and 23 lists some beneficial websites.



COLLEGE AND CAREER readiness

“...the goal should be to provide support so that all students can be considered college and career ready by the end of eleventh grade, ending their high school career with one of several high-quality mathematical courses that allows them the opportunity to deepen their understanding of the college- and career-ready standards.”

From **Common Core State Standards for Mathematics: Appendix A: Designing High School Mathematics Courses Based on the Common Core State Standards**

College and career readiness is defined by researchers as the level of preparation a student needs in order to enroll and succeed in credit-bearing general education courses that meet baccalaureate degree requirements without the need for remediation. College ready students complete entry level courses at a proficiency level high enough to experience success in the next course in a series or apply the course knowledge to another context.¹

There are a variety of math paths students can take to reach the “college and career ready line” goal mentioned in the **Common Core State Standards for Mathematics**. Some students will move faster than others; some will need additional support. Below is a typical U.S. pathway.

COURSES IN HIGHER LEVEL MATHEMATICS:

Precalculus, Calculus, Advanced Statistics, Discrete Mathematics, Advanced Quantitative Reasoning, or courses designed for career technical programs of study.

TRADITIONAL PATHWAY

Typical in the U.S.

High School Algebra I >> **Geometry** >> **Algebra II**

INTEGRATED PATHWAY

Typical Outside the U.S.

Mathematics I >> **Mathematics II** >> **Algebra II**

ADVANCED MATH OPTIONS

ADVANCED PLACEMENT®

Advanced Placement or AP classes are offered in more than 30 subjects for students in high school. Students who take an AP course and the related AP exam may earn college credit or the ability to bypass beginning college courses with a qualifying exam score. More than 90% of US colleges grant college credit, advanced placement, or both on the basis of AP Exam scores above their locally established cut score. If the school does not offer AP courses, independent study is also an option. Visit APstudent.collegeboard.org home to learn more.

INTERNATIONAL BACCALAUREATE (IB)

The International Baccalaureate Diploma and/or Certificate Programme(s) also offer high school juniors and seniors courses in 4 math subjects: IB Further Mathematics Standard Level (SL), IB Mathematics Higher Level (HL), IB Mathematics Standard Level (SL), and IB Mathematical Studies Standard Level (SL). Course content ranges from pre-calculus to geometry. Students who take an IB course and the related IB exam also can earn college credit or the ability to bypass beginning college courses with a qualifying exam score. For more information visit IBO.org

DUAL OR CONCURRENT ENROLLMENT

Dual or concurrent enrollment is an option by which high school students can enroll in college level classes while still enrolled in high school. These courses may be offered at the student’s high school, a local community college, a four-year university, or online, and are generally taught by a qualified high school teacher or a college instructor. Funding may be a concern for families who may be asked to pay some, or even all, of the costs of dual enrollment which could include tuition, fees, books, and transportation. This will depend on state, school district, and higher education institution policies and agreements. Visit the state education site for information on programs in your state.



Facets of College Readiness

Key Cognitive Strategies

Academic Behaviors | Key Content

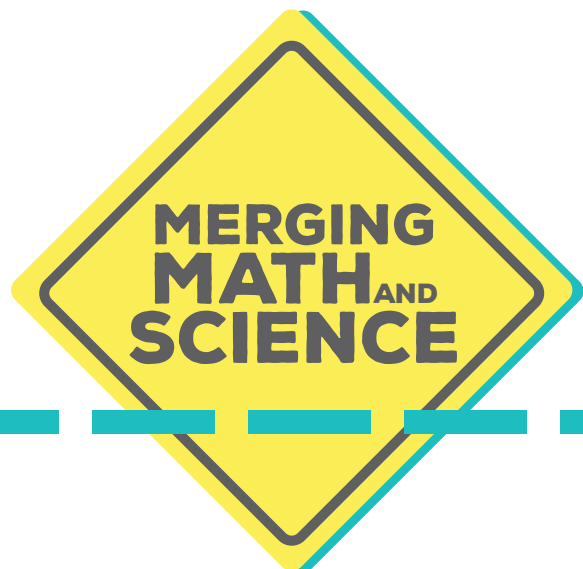
Contextual Skills & Awareness

College and career readiness are not just defined by the classes students take. According to **Redefining College Readiness**, there are many facets to college and career readiness.

Parents can encourage the development of these facets outside of the classroom in many ways.

- *Encourage students to use math where it interests them. Students may enjoy math competitions or enjoy math in other subjects such as science, computers, and robotics.*
- *Focus on developing resiliency and important life skills. These may include knowing when and where to seek help, how to study, working in groups, and prioritizing tasks.*
- *Be prepared for bumps in the road. Typically, fifth through ninth graders struggle with the following math concepts: fractions, percent, ratio, and decimals. Review these basic concepts.*

¹ Charis McGaughy, “Texas College and Career Readiness Initiative Overview: Standards and implementation,” Texas Higher Education Coordinating Board, Educational Policy Improvement Center (2009): www.theccb.state.tx.us.



Many careers include a blending of math and science. In fact, mathematics is the language of science. Examples of careers that require the combination of math and science content knowledge include medical fields, civil engineering, real estate, air traffic control, banking, and city planning. The connections between math and science should be emphasized by both educators and parents as students enroll in courses and learn the concepts present in the core standards.

NEWS/RAYTHEON STEM INDEX SHOWS UPTICK IN HIRING, EDUCATION

By Alan Neuhauser and Lindsey Cook May 17, 2016

In 2015, the number of graduates who earned masters' and doctorate degrees in STEM rose by 6 percent. Computer jobs once again hold the top seven positions for highest number of employees, with applications software engineers and computer support specialists topping the list. Jobs for computer systems analysts, systems software engineers, and computer and information systems managers are also on the rise.

"While the STEM Index shows that computer science is a top STEM career choice, the need for cyber talent has never been greater."

DAVID WAJSGRAS, PRESIDENT OF RAYTHEON INTELLIGENCE, INFORMATION AND SERVICES.

USNews.com/news/articles/2016-05-17/the-new-stem-index-2016



MOVING WITH MATH Checklist

HERE ARE SOME TIME-TESTED
TIPS TO MAKE SURE THAT A MOVE
DOES NOT DERAIL YOUR STUDENT'S
ACADEMIC PROGRESS.



- Make sure you have a copy of the current school's course descriptions.
- Make a copy of the cover and table of contents of your child's textbooks.
- Ask the student's current math teacher for a copy of the class syllabus and the names of the corresponding sections of the textbooks. If moving mid-year, note where instruction ended.
- Gather copies of the homework problems, quizzes, and tests from the current math teacher to show the new school the types of math problems that were being solved.
- Make sure you have copies of a current IEP or accommodation plans for students with special needs.
- Make sure you have current information and documentation on special programs, advanced opportunities, and/or competitions (math, science, robotics, technology).
- Request a current copy of your child's transcript to date, standardized test scores, documented volunteer hours, and an explanation of the current school's GPA scale and calculation scheme.
- Request at least one recommendation, preferably from a math or science teacher.
- Call ahead to the new school to obtain the most recent school calendar. School starting dates and vacations vary widely. Since many schools require students to attend class a specific number of days, unnecessarily missing school days while traveling can mean that a student may be retained.

IF YOU ARE MOVING DURING THE SCHOOL YEAR, VISIT THE MCEC WEBSITE AT

MilitaryChild.org



HELPFUL MATH RESOURCES

Below is a list and brief description of some of the most useful sites recommended by math experts.

Khan Academy | [KhanAcademy.org](https://www.khanacademy.org)

Khan Academy is a not-for-profit site with over 1200 YouTube videos covering everything from basic arithmetic and algebra to differential equations, physics, chemistry, biology and finance, recorded by Salman Khan. He says, "I teach the way that I wish I was taught. The lectures are coming from me, an actual human being who is fascinated by the world around him. The concepts are conveyed as they are understood by me, not as they are written in a textbook developed by an educational bureaucracy. Viewers know that it is the labor of love of one somewhat quirky and determined man who has a passion for learning and teaching."

MATHMOVESU[®] | [Raytheon.com/responsibility/stem](https://www.raytheon.com/responsibility/stem)

Raytheon believes in offering students from diverse backgrounds the opportunity for a robust education in math and science. Through MathMovesU initiatives, Raytheon works with students from elementary school through college, supports educators and policymakers, and promotes racial and gender equality within STEM fields.

Math Playground | [MathPlayground.com](https://www.mathplayground.com)

Teachers passionate about math created this site. Activities are geared for students from elementary school through middle school. Math games, logic puzzles, and word problems are just some of the fascinating interactive components which all clearly show the essential skills and common core connection for each activity.

Mathway | [Mathway.com](https://www.mathway.com)

Mathway provides students with the tools they need to understand and solve their math problems. With millions of users and billions of problems solved, Mathway is the #1 problem solving resource available for students, parents, and teachers.

BOYS & GIRLS CLUB OF AMERICA[®] | [Raytheon.com/responsibility/armed-services/boys_girls_clubs](https://www.raytheon.com/responsibility/armed-services/boys_girls_clubs)

Raytheon joined Boys & Girls Clubs of America as a great futures partner to establish Centers of Innovation on or near U.S. military installations that serve a high concentration of military families. At the Centers of Innovation, students work with dedicated STEM staff and Raytheon mentors to develop skills and critical thinking through real-world STEM applications. Located on or near U.S. military installations in nine U.S. cities and Ramstein Air Base in Germany, the Centers of Innovation help young people explore robotics, rocketry and 3-D printing; interact with flight simulators; learn to code; and collaborate on projects to improve their communities.

MATHCOUNTS[®] | [MathCounts.org](https://www.mathcounts.org)

Every year, nearly 100,000 middle-school students and more than 17,000 volunteers participate in MATHCOUNTS, a national competition program that promotes mathematics achievement with middle-school students across the U.S. The program culminates in the Raytheon MATHCOUNTS National Competition, which brings together 224 middle-school Mathletes[®] from all 50 states, D.C., U.S. territories and schools from the Departments of Defense and State. The Mathcounts website also features of the week for additional math activities or extra practice, a math video challenge and a National Math Club.

TUTOR.COM | [Tutor.com/military](https://www.tutor.com/military)

This program allows eligible students (grades K-12) and service members in U.S. military families to connect to a live tutor online 24 hours a day, 7 days a week for one-to-one help with homework, studying, test prep, proofreading and more at no cost. Students can get personalized help in 40 Math, Science, Social Studies, English and World Language subjects, including Algebra, Statistics, Biology, Essay Writing, Spanish, German and French. Tutor.com for U.S. Military Families is funded by the U.S. Department of Defense and Coast Guard Mutual Assistance.

Core Math Tools | [NCTM.org/coremathtools](https://www.nctm.org/coremathtools)

Core Math Tools is a downloadable suite of interactive software tools for algebra and functions, geometry and trigonometry, and statistics and probability. The tools are appropriate for use with any high school mathematics curriculum and compatible with the Common Core State Standards for Mathematics in terms of content and mathematical practices.

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Resources

MilitaryChild.org/professionals/transition-resources

MilitaryChild.org/parents-and-students/resources

MilitaryChild.org/ask-aunt-peggie



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