SUPERCHARGED
SCIENCE & MATH

High School Math

A Homeschool Guide

for Parents

Introduction

You don't need to be a math expert for your student to get an outstanding math education! We've put together a simple, stress-free guide to make sure your student stays on track with very little effort from you, the parent.

With the right knowledge, options, and suggestions, we will guide your student through a successful four years of math, no matter whether they love or struggle with math.

So how do we start?

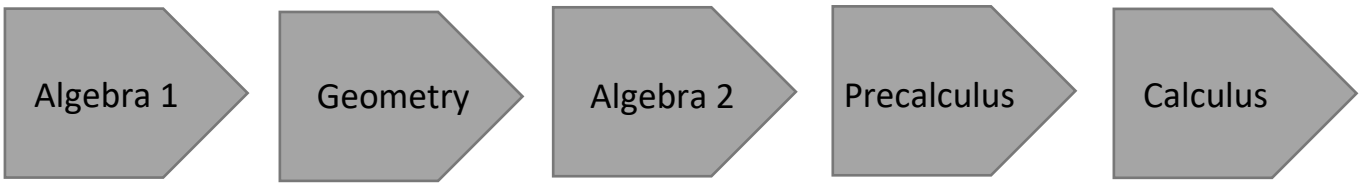
First, there's no one-size-fits-all approach to planning math education. The right path for your child depends on their aptitude for math, interest, and previous experiences with math, including your family's views about math. We'll also peek at what your student's plans are after high school, whether community college, a 4-year university, a 2-year certification, or something else entirely.

There are a few basic guidelines that can help ensure your child successfully navigates high school math. This guide is focused on traditional high school math pathways that satisfy the math requirements needed for most schools, states, and colleges. The suggestions will help fulfill graduation requirements and set your child up for success. These guidelines that will help clarify the confusion around planning a high school math program.

High School Math Basics

Students need to take math every year. For most high schools, students begin with where they left off from middle school and complete as much of the math courses in the chain below as they can in four years of high school.

Standard Progression for Middle & High School for Science/Engineering Students:

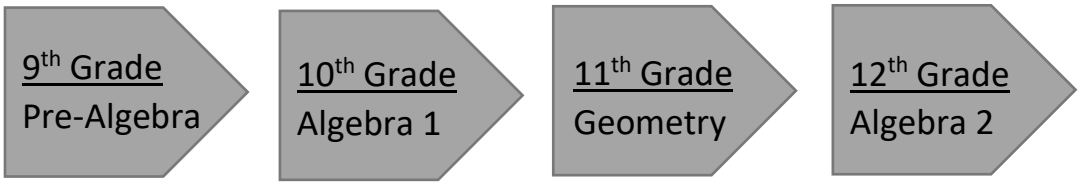


Students can begin their Algebra 1 coursework when they are ready, based on what they have mastered. Students need to be very comfortable with performing all four operations (addition, subtraction, multiplication, and division) with both fractions and decimals, and be fluent in handling ratios, proportion, and percent to be ready for Algebra 1.

College, universities, and technical training vocational schools usually require completion up through Algebra 2 to apply to their programs. At the very least, they usually want to see the completion of a full four years of math courses for high school.

If your student is starting their high school years with Pre-Algebra, their math course progression will look like this:

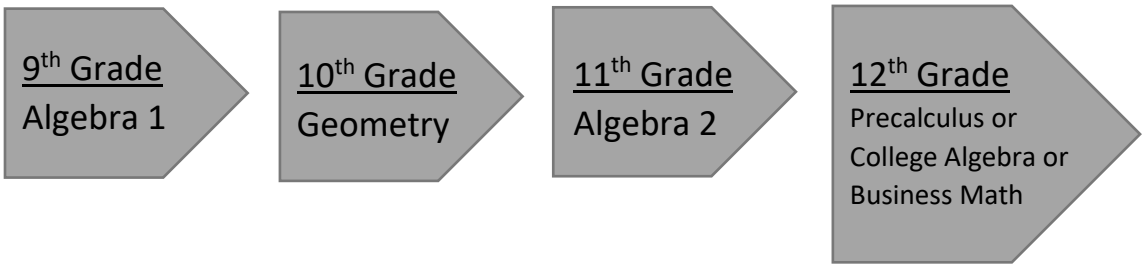
Starting 9th Grade with Pre-Algebra in High School:



This is the sequence for students that have not had any algebra prior to high school. There's not enough time to re-taking any coursework, so you'll need to be sure your student makes steady, consistent progress daily toward completing their yearly courses.

This progression is good for students that are not bound for science or engineering majors at colleges and universities.

Starting 9th Grade with Algebra 1 in High School:



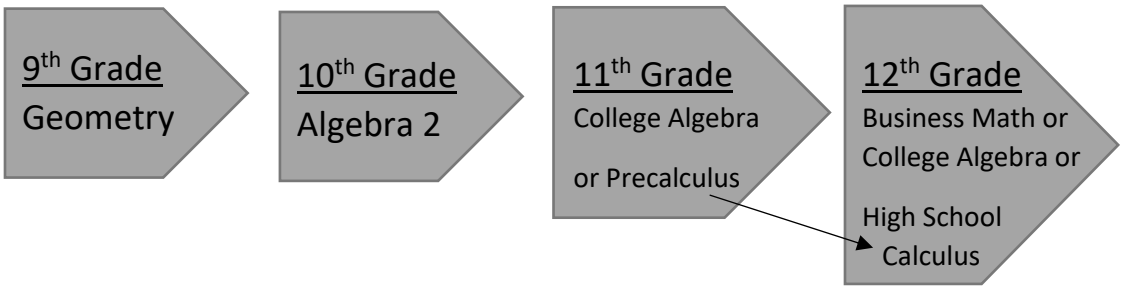
If your student has already completed Pre-Algebra in 8th grade, then they may start with Algebra 1 in high school, and they will finish Algebra 2 in 11th grade.

The fourth year (12th Grade) has three options:

- Precalculus – students will take this if they are interested in science or engineering studies in college
- College Algebra – this picks up where Algebra 2 leaves off; good for students interested in mathematics studies at college and universities
- Business Math (also called *Consumer Math* and *Commercial Math)* – practical math skills that are used in every day in marketing, commerce, and commercial businesses.

Note that interspersed in the progression are studies in other topics, such as probability, statistics, and logic. These are usually integrated throughout the four years at the discretion of the instructor.

Starting 9th Grade with Geometry in High School:



If your student has already completed Algebra 1 in 8th grade, then they may start with Geometry in high school, and they will finish Algebra 2 in 10th grade.

The third *and* fourth years (11th & 12th Grade) have options:

- 11th Grade:
    - Precalculus – students will take this if they are interested in science or engineering studies in college
    - College Algebra – this picks up where Algebra 2 leaves off; good for students interested in mathematics studies at college and universities
- 12th Grade:
    - Business Math (also called *Consumer Math* and *Commercial Math)* – practical math skills that are used in every day in marketing, commerce, and commercial businesses.
    - College Algebra – this picks up where Algebra 2 leaves off; good for students interested in mathematics studies at college and universities. If you already took this in 11th Grade, then you'll pick Business Math instead.

For students interested in science and engineering majors, it is highly recommended to take an **AP Prep Course** during the year you take Calculus if you plan to take the AP ("Advanced Placement") Exam. This is a separate test outside of any tests issued during your Calculus course. If you pass the AP test, you can get college credit for the high school course. Note that it's not a one-for-one credit, meaning that each year-long class of high school AP credit usually translates to either one semester or one quarter for *one class* in college.

Dual Enrollment is when a student takes a class at a local community college when they are still in high school. Depending on how you want this course to affect your GPA, you may opt to have it count toward your high school credits, college credits, or in some cases, *both.* Some universities will not accept credit for dual course enrollment if it's already being used for high school, so you will have to choose which one you'd rather have the credit go towards (high school or college).

High School Best Practices

1. **Daily Math Routine**
   Do math every day, 5 days every week. Do not skip a day.

   Practicing every day strengthens understanding, builds confidence, and prevents the frustration that comes with cramming or forgetting key skills. It also helps students develop essential habits like logical problem-solving, organization, and perseverance—skills that benefit them beyond math class. By making math a regular part of their routine, students can approach it with more ease and success, setting them up for long-term achievement.

   The daily math routine is designed for students to work through independently. It includes a (consumable) workbook, a math textbook and homework assignments (from both). The workbooks include guided notes to help students during lessons, exercises for skill reinforcement, and practice with new concepts. The math textbook goes deeper into the content by providing conceptual detailed explanations, theory and background, and reference material.

   In short, the math textbook teaches concepts, while the workbook strengthens skills through practice. Using both ensures that students not only understand the material but also retain and apply it effectively.

2. **Math Classes are small and bite-sized**
   Lessons with a teacher are 20-30 minutes long total, not hurried or rushed, and are completed fully before moving on to the next lesson. Math homework should take 30-60 minutes each day (plan to spend 30-90 minutes on math each day).

   In Class: The first 5-10 minutes, the teacher introduces a new math concept. The next 10 minutes, students take notes while the teacher is demonstrating the skill through example problems, and the last 10 minutes students start on the homework so the teacher can answer questions before they leave class for the day. Students will continue to work on homework after class, and attend the Study Hall option as appropriate.

   After Class: Students continue with their daily lessons on non-teacher days. Students don't cram, and they only do one lesson each day. They don't double-up and they don't rush. They feel relaxed enough to think about their assignments and relating math concepts to those that they already understand.

   Assignments are not completed unless all answers are checked, and all mistakes are corrected. Only after this will assignments be marked as complete.

3. **Students are actively engaged the entire time**
   Students have their workbook out, pencil in hand, and calculator at the ready. (Students work in a physical workbook, not with digitized media.)

   Students have turned off cell phones, media, and other distractions. They are doing what is asked on the video (live or recorded). Students that progress the quickest rewatch (after a live class) and *pause* the video, making sure they are thinking and working through the concepts in their notes and homework.

   Students copy down exactly as the teacher instructs, every single time. They don't shortcut, and they don't do the math only in their head. Students must train themselves to *think* using the methods that the teacher outlines in the lesson.

   Students must do the work themselves. They don't learn by passively watching someone else solve math problems, they need to actively think and perform the work required for class to make progress throughout the year.

4. **Total Immersion and Spaced Repetition** Total immersion builds a strong foundation, and spaced repetition retains and reinforces what students have learned.

   Math is like a sport – players must practice daily, over and over, shooting hoops until they can make it every single time. Students must work on a math problem multiple times, until they get it without making mistakes.

5. **Student Work is Clear, Logical and Communicated** Math is not just about getting the right answer—it's about showing the reasoning behind it in a way others can understand.

   Whether explaining a problem to a teacher, collaborating with peers, or preparing for real-world applications, students need to present their work in an organized and structured manner. This clarity helps others see their thought process, verify their understanding, and confirm that they have mastered the skill or assignment.

   Additionally, when students clearly write out their steps, they reinforce their own understanding and are more likely to catch mistakes. Strong math communication ensures that students don't just memorize procedures but truly grasp concepts and can apply them correctly. All work done by the student follows these guidelines.

   Math can't be learned in a vacuum or by reading a textbook alone. Students need to be actively engaged with peers, projects, and activities to bring these concepts to life.

Things I do NOT recommend doing:

When we hear about students taking extra math classes in the summer, doubling up or trying to do only half the work so they can go at twice the speed through the course, my first question is usually: *"What's the rush?"*

> If a student is that far behind, no amount of cramming is going to catch them up. Our brains simply can't process that rapidly in a way that really sticks (can *you* remember the things you studied right before the big test? How much of those things do you remember now?). When you think about it, will the difference of a year or two really matter in the long run?
>
> Why not take the time your student needs to really understand and make sense of the material now, when they have the time to devote to studies? They may not have this opportunity again once they get out in the work force.

Trying to do a crash course and learn math fast by doubling up on coursework or trying to catch up over summer holidays will set them *further behind*, not ahead, because you'll lose valuable time when your student starts to feel their confidence *decrease* and their belief about what they can do get *weaker*. The only way to make progress is to build on the student's confidence in their current abilities, in what they believe that they <u>*can*</u> do right now.

I had a teacher tell me once:
"If you learn it fast, you'll forget it fast."

Your student needs time to think and process the information in their math courses, especially in rigorous high school courses.

Instead, remember
"Slow is smooth, and smooth is fast."

In Closing…

I hope this gives you a good idea about what's coming in the high school years.

We work hard to get your student ready for any option that they choose after they finish their math work with us. There are so many great opportunities out there and even more ways to achieve them!

I highly recommend having a game plan, even if it's just a general outline, so you know your start and end points. You can figure out the rest in-between, but at least you know you are pointed in the right direction.

All the best to you and your family!

Aurora Lipper

Supercharged Math

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