



Why is algebra so important?

Algebra is known as a gatekeeper subject, so when should your child take it?



By GreatSchools Staff

Last fall results from national math exams stirred up a tempest in a standardized test. It turns out math scores rose more quickly *before* No Child Left Behind was implemented, and fourth-grade math scores haven't improved since 2007. As reported in the *New York Times*, the [achievement gap](#) remains a chasm between the haves and the have-nots.

What does this mean for your child? While pundits and politicians battle over the big issues, it's up to parents to stay on top of the little ones: their own kids' academic development. Make sure your tween or teen is on track for high school math with this guide to algebra.

Why algebra matters

It is frequently called the gatekeeper subject. It is used by professionals ranging from electricians to architects to computer scientists. It is no less than a civil right, says Robert Moses, founder of the [Algebra Project](#), which advocates for math literacy in public schools.

Basic algebra is the first in a series of higher-level math classes students need to succeed in college and life. Because many students fail to develop a solid math foundation, an alarming number of them graduate from high school unprepared for college or work. Many end up taking remedial math in college, which makes getting a degree a longer, costlier process than it is for their more prepared classmates. And it means they're less likely to complete a college-level math course. For middle-schoolers and their parents, the message is clear: It's easier to learn the math now than to relearn it later.

The first year of algebra is a prerequisite for all higher-level math: geometry, algebra II, trigonometry, and calculus. According to a [study](#) (pdf) by the educational nonprofit ACT, students who take algebra I, geometry, algebra II, and one additional high-level math course are much more likely to do well in college math.

Algebra is not just for the college-bound. Even high school graduates headed straight for the work force need the same math skills as college freshmen, the ACT found. This [study](#) looked at occupations that don't require a college degree but pay wages high enough to support a family of four. Researchers found that math and reading skills required to work as an electrician, plumber, or upholsterer were comparable to those needed to succeed in college.

Algebra is, in short, the gateway to success in the 21st century. What's more, when students make the transition from concrete arithmetic to the symbolic language of algebra, they develop abstract reasoning skills necessary to excel in math and science.

Algebra I: Learn it now or later?

Students typically take algebra in eighth or ninth grade. The benefit of studying it in eighth grade is that if your child takes the [PSAT](#) as a high school sophomore, she will have completed geometry. By the time she's ready to take the [SAT](#) or [ACT](#) as a junior, she will have completed algebra II, which is covered in both of these college admissions tests.

There's a growing movement to require algebra in seventh grade, but many seventh-graders aren't prepared for it, math educators say.

"Some kids get turned off of math because they start math too early," says Francis "Skip" Fennell, president of the [National Council of Teachers of Mathematics](#) (NCTM). If you're wondering whether your child is ready to advance, he recommends talking to her current teacher. The goal is for your child to learn algebra well and stay engaged in math, not to push her through the curriculum as quickly as possible.

Is your child on track?

Math curriculum varies widely from state to state, so it can be difficult to determine whether your child is getting the right preparation for higher-level courses. For a better sense of how your child's schoolwork compares, look up your state's [math standards](#). Or see what the NCTM [recommends](#) for preschool through high school.

[W. Stephen Wilson](#), a math professor at Johns Hopkins University, reviewed K-12 math standards nationwide for the [Thomas B. Fordham Institute](#) and has strong opinions about which offer the best guidance. He calls California's the "gold standard" and recommends that parents who want to make sure their kids are prepared for high school and college compare their curriculum to the [California standards](#).

The answer is in the homework

Wilson offers this advice to parents trying to evaluate their children's math instruction: "If a student isn't bringing home work that requires lots of manipulation and word problems, then there is probably a problem."

Fennell suggests talking to your child and her math teacher about how homework is used, specifically:

- Are homework assignments corrected and returned in a timely way?
- Is homework reviewed in class so students can learn from their mistakes?
- Does the teacher change the pace or direction of his or her instruction, based on student feedback?

You don't need to be a mathematician to ask good questions about your child's curriculum, Fennell adds. "Ask the teacher, 'Is it a repeat of math that should have already been mastered? When my child finishes this year, will he be ready for high school math?'"

Bill Moore directs Washington's [Transition Mathematics Project](#), which is working to better prepare students for college math. According to him, middle-schoolers need to have a solid foundation of "basic procedural skills that really make problem solving more fluid. There's a fundamental set of stuff that just has to be memorized, and then there's a sense of numbers, a sense of what's a reasonable answer."

Calculators: Tool or crutch?

How much should students rely on calculators? The issue has been debated by math teachers, university professors, and parents, but there is general agreement that calculators shouldn't be a substitute for learning basic arithmetic and standard algorithms. "In some cases," says Moore, "students go straight to calculators, and if the calculator says it's right, then it must be right."

"The calculator is an instructional tool," says Fennell. "It should support but not supplant anything. You don't use it for 6×7 ."

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