



Mathematics: the “Gatekeeper” classes

Just one quick look at what classes a high school student has taken can tell a savvy observer a lot about how far that student is likely to go, better than any crystal ball. Sound suspicious? Sound simplistic? Maybe—but it’s true. That savvy observer will be looking for math classes. Which math classes a student takes, in which year, and with what grade earned—these facts are the most reliable indicators about that student’s most likely college and career path.

Math counts for college

A lot of students in middle school and high school try to avoid math—they think it’s too boring or too hard; they ask “why do I need to learn this?!” But ask those same students if they plan to go on to college, and most of them will say “yes.” Something’s wrong in this picture! Here are the facts:

- **83 percent of high school students who take algebra and geometry enroll in college.** Fewer than 42 percent of high school students who don’t take those courses enroll in college.
- **Among low-income high school students, 71 percent of those taking algebra and geometry enroll in college.** Only 27 percent of those who don’t take those courses go on to college.

So math classes are good indicators of which high school students will actually go on to college. In fact, math skills are *required* for every type of post-

high-school training and education. Most colleges and universities expect students to have mastered certain math skills before they set foot on campus. Even a community or technical college with “open admissions” will test new students’ math ability to make sure they are ready for college-level academic work.

Students who didn’t learn math in middle school and high school will have to try to learn it in “remedial” or “developmental” classes in college—which can be a *major* waste of time, effort, and money.

Math counts for careers

Students who have good math skills have a *lot* more choices in college—and, more important, in their careers. Students who can’t handle math find their choices more and more limited; their math weaknesses divert them away from many high-demand, high-paying career paths.

In 1998, the National Research Council reported, “More than any other subject, mathematics filters students out of programs leading to scientific and professional careers. From high school through graduate school, on average, we lose half the students from mathematics each year.”

Math is the gatekeeper that lets people into careers—or keeps people out of them.

Yet more than half of teenagers lack the basic math skills necessary for today’s job market. And about

half of all high-schoolers—even the ones who say they intend to go into science and technology fields!—plan to quit math as soon as they’ve done the minimum required to graduate. This is scary, both for our kids and for our country.

Math levels out the playing field

Building up math skills is especially important for low-income, disadvantaged students. Minority students who master algebra and geometry in high school succeed in college at almost the same rate as white students.

Robert Moses, a well-known civil-rights activist, started “Project Algebra” in the 1980s to help students get the math training they need. He argues:

“Today the most urgent social issue affecting poor people and people of color is economic access. In today’s world, economic access and full citizenship depend crucially on math and science literacy. I believe that the absence of math literacy in urban and rural communities throughout this country is an issue as urgent as the lack of Black voters in Mississippi was in 1961.”

Math is power. Math opens doors. Math education is one of the best hopes for disadvantaged kids to improve their lives.

Math step-by-step

Learning math is a step-by-step process, with each stage building on the one before. Parents should be checking with teachers to make sure the students really understand the concepts at each level—otherwise, the next step could be harder to learn.

Here’s the usual sequence:

- elementary school: basic arithmetic
- middle school: introductory algebra; geometry
- high school: advanced algebra; trigonometry; pre-calculus; calculus (some students also take “math analysis” as the highest level HS course)

Take another look at middle-school math. These days it’s important for students to take basic algebra and geometry just as soon as they can—no later than eighth grade. Parents, don’t let your children put these classes off until high school, or they won’t have time to take all the math they should get!

What you and I can do to make a difference

We can make a real difference by recognizing the importance of math in our children’s lives—not just in their school years. Specifically, we can help by

- making sure our children take algebra & geometry as early as possible
- advising and encouraging them to keep taking challenging math classes throughout high school
- talking about how math relates to careers and to real-life situations our children are interested in
- helping them keep working to master a skill and reach a goal, even when it’s difficult

Finally, one of the best, most important things that parents can do is simply think carefully about what we say and do. “Math anxiety” can be inherited! Parents who were nervous about math themselves can easily pass that nervousness along unless they think about the messages they are sending.

When your son or daughter complains about how hard these classes are, do you respond with “Hey, I never liked math either, so I dropped it as soon as I could!”? ***Please don’t!*** That’s the wrong message!

Instead, it might be more helpful to say something like “I struggled with math too, so I stopped taking it. Since then I’ve learned that that wasn’t such a smart decision! Being uncomfortable with math has really limited the kinds of jobs I’ve been able to do. I wish I had stuck with it longer and learned more math when I was in school.”

That kind of answer says yes, I understand, math can be hard—but it’s going to be important in your whole life, so keep at it, go for the goal! And that’s the message that our children need to hear.

References

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