



Course Placement Series

Spotlight on High School Math Course Enrollment

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Executive Summary

The Tennessee Department of Education explored course enrollment patterns in an effort to better understand in which courses students are enrolling and whether course enrollment policies and procedures are promoting students' interests. This memo focuses on math course enrollment patterns throughout high school by following the 2013-14 twelfth grade cohort.

Key Points

- Requiring Tennessee high school students to receive four math credits led to a dramatic increase in the number of twelfth grade students taking four years of math courses. Prior to the policy, about 60 percent of twelfth graders enrolled in math. Now, over 90 percent do so.
- The most common math course enrollment pattern – Algebra I, Geometry, Algebra II, Bridge Math – was followed by 22 percent of the 2013-14 twelfth grade cohort.
- Over one-third of twelfth graders were enrolled in Bridge Math in 2013-14 and 2012-13.
- About 20 percent of the Bridge Math takers in 2012-13 scored above 19 on the math section of the ACT.
- With so many twelfth graders taking Bridge Math and others taking Algebra II, Geometry, or no math course, less than half of twelfth graders took an advanced math course beyond Algebra II.

Course Placement: Spotlight on High School Math Course Enrollment

How Many High School Math Courses Are Tennessee Students Taking?

To examine math course enrollment, we followed the 2013-14 twelfth grade cohort. This cohort was the second group of Tennessee high school students required to earn four math credits for graduation from a Tennessee public high school. These credits must include Algebra I, Geometry, and Algebra II or the equivalent, and another mathematics course beyond Algebra I. As shown in Figure 1, this policy change led to a dramatic increase in the number of twelfth grade students taking four years of math courses.¹

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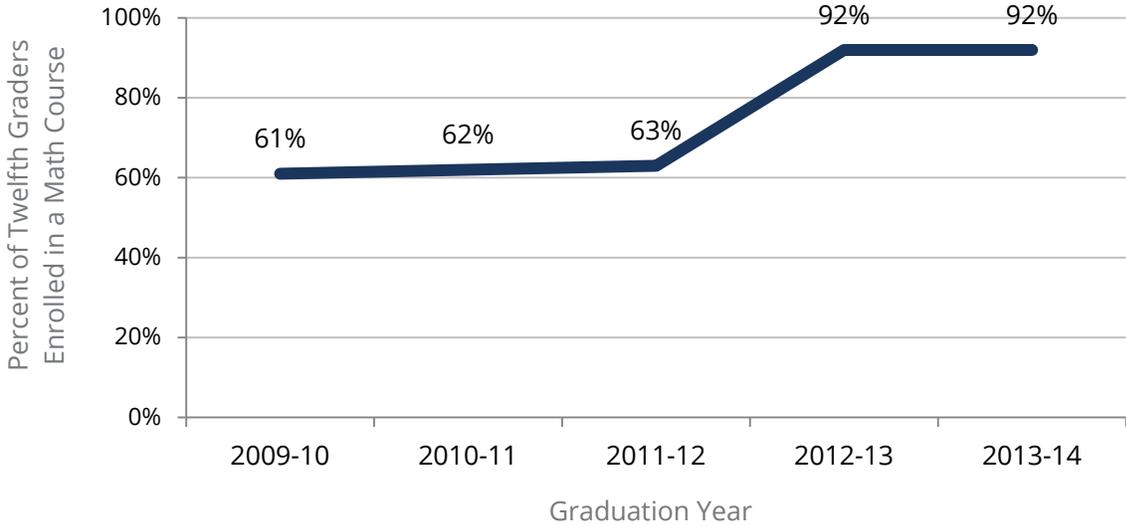


Figure 1. Percent of 12th Graders Enrolled in a Math Course over Time

¹ About half of students not taking a math course in their twelfth grade year were students with disabilities.

Which High School Math Courses Are Students Taking?

Of the students in the 2013-14 twelfth grade cohort with four years of math course enrollment data, most students (80 percent) took Algebra I in ninth grade, with the remainder mostly taking either Geometry (17 percent) or Algebra II (3 percent). In tenth grade, most students took Geometry (64 percent) or Algebra II (27 percent), but many students (7 percent) repeated Algebra I. By eleventh grade, there is more variation in which courses students take. The most common courses were Algebra II (62 percent), Pre-Calculus (14 percent), Geometry (13 percent), and Advanced Algebra and Trigonometry (AAT; 6 percent). The most popular course taken by twelfth graders was Bridge Math.

Figure 2 shows the most common math course enrollment patterns. The percentage in the twelfth grade year indicates the percentage of twelfth graders who followed the course pattern. For example, the most common pattern – Algebra I, Geometry, Algebra II, Bridge Math – was followed by 22 percent of the cohort. The four patterns in Figure 2 account for less than half of the patterns followed by the cohort. This is largely because there is a wide variation of math courses taken by students in their eleventh and twelfth grade years.

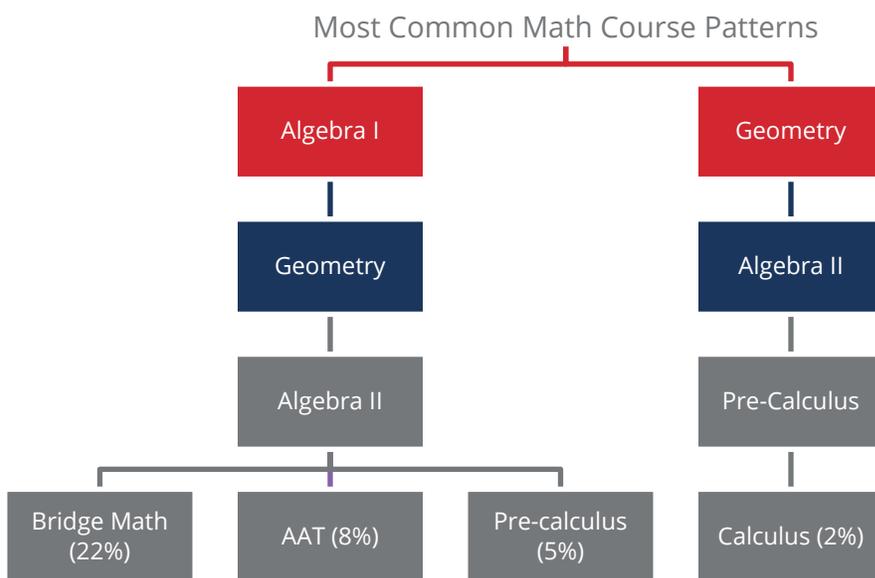


Figure 2. Most Common Math Course Enrollment Patterns for 2013-14 Twelfth Graders

Figure 3 shows the breakdown of courses taken by twelfth graders in 2013-14. Over one-third of twelfth graders were enrolled in Bridge Math in 2013-14 and 2012-13. Bridge Math is a remedial math course designed for students who have not scored 19 or higher on the ACT by the beginning of the senior year. Yet, about 20 percent of the Bridge Math takers in 2012-13 actually scored above 19 on the math section of the ACT.

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It is concerning both that so many students are enrolled in Bridge Math due to their ACT scores indicating a need for remediation and that about one-fifth of Bridge Math takers could be taking higher-level math courses. Research has found that taking advanced math courses beyond Algebra II has a direct impact on future earnings.² With so many students taking Bridge Math and others taking Algebra II, Geometry, or no math course, less than half of twelfth graders in the cohort were taking an advanced math course in twelfth grade.

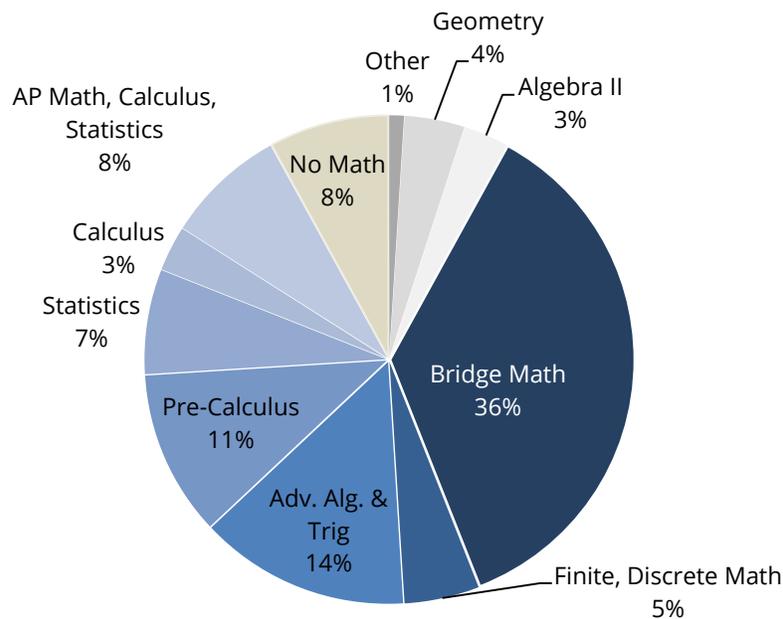


Figure 3. 2013-14 Twelfth Grade Math Course Enrollment

² Klepfur, K. & Hull, J. (2012). High school rigor and good advice: Setting up students to succeed. Alexandria, VA: Center for Public Education; Adelman, C. (2006). The toolbox revisited: Paths to degree completion from high school through college. Washington, DC: U.S. Department of Education.

Final Thoughts

Districts and schools should consider whether their current course placement policies and procedures regarding high school math prioritize students' interests. We acknowledge that increasing the number of students enrolled in advanced math courses in high school involves many factors such as teacher certification, student preparation and placement in math courses before high school, and the quality of instruction throughout high school math courses. Each of these areas represents a potential area of intervention for ensuring that each course taken by a student adds value to their learning experience.

While this data is reflective of course-taking patterns in high school, we acknowledge that our concerns are not limited to high school. The need for remedial math is not the sole result of one or two courses in high school, but the culmination of mathematical experiences beginning in the early grades.

For more details about your district or school's math course-taking patterns please contact your CORE office.