

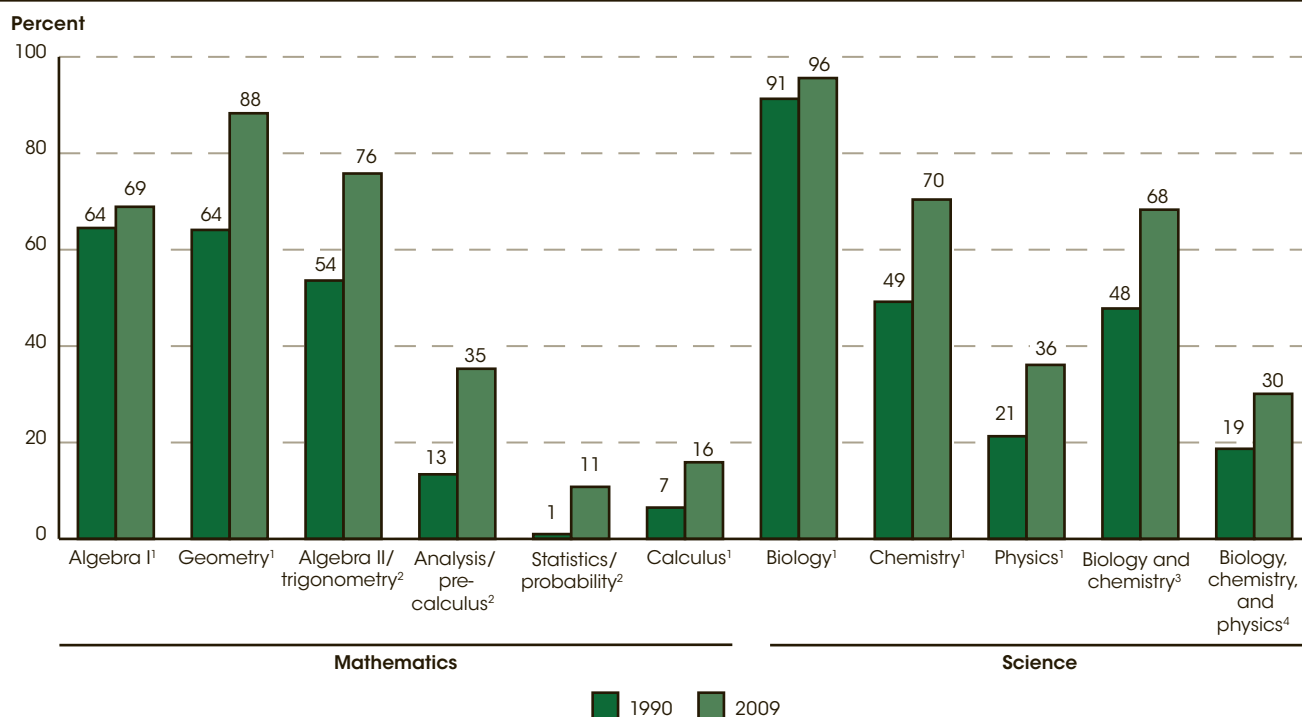
High School Coursetaking

The percentages of high school graduates who had taken mathematics courses in algebra I, geometry, algebra II/trigonometry, analysis/precalculus, statistics/probability, and calculus increased from 1990 to 2009. The percentages of high school graduates who had taken science courses in chemistry and physics also increased between 1990 and 2009.

In addition to administering student assessments, the National Assessment of Educational Progress (NAEP) periodically collects data on the transcripts of high school graduates. The transcript survey gathers information about the types of courses that graduates from regular and honors programs take, how many credits they earn,

their grade point averages, and the relationship between coursetaking patterns and achievement. The transcript data include information only about the coursework that graduates completed while they were enrolled in grades 9 through 12.

Figure 1. Percentage of high school graduates who completed selected mathematics and science courses in high school: 1990 and 2009



¹ Percentages are for students who earned at least one Carnegie credit.

² Percentages are for students who earned at least one-half of a Carnegie credit.

³ Percentages are for students who earned at least one Carnegie credit each in biology and chemistry.

⁴ Percentages are for students who earned at least one Carnegie credit each in biology, chemistry, and physics.

NOTE: For a transcript to be included in the analyses, the graduate had to receive either a standard or honors diploma.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Transcript Study (HSTS), 1990 and 2009. See *Digest of Education Statistics 2013*, table 225.40.

The percentages of high school graduates who had completed mathematics courses in algebra I, geometry, algebra II/trigonometry, analysis/precalculus, statistics/probability, and calculus increased between 1990 and 2009. For example, the percentage of graduates who had

completed calculus increased from 7 percent to 16 percent between 1990 and 2009. Similarly, the percentage of graduates who had completed algebra II/trigonometry increased from 54 percent to 76 percent.

Between 1990 and 2009, the percentages of high school graduates who had taken various mathematics courses generally increased across subgroups. For example, the percentage of Hispanic graduates completing calculus increased from 4 percent in 1990 to 9 percent in 2009. Also, the percentage of Hispanic graduates completing algebra II/trigonometry increased from 40 percent to 71 percent. Similarly, the percentage of Black graduates completing calculus during this period increased from 3 to 6 percent, and the percentage completing algebra II/trigonometry increased from 44 to 71 percent. Although there were increases in mathematics coursetaking across racial/ethnic groups during this period, gaps between groups remained in terms of the percentages of graduates completing courses. For example, in 2009 higher percentages of Asian/Pacific Islander (42 percent) and White graduates (18 percent) had taken calculus than had their Black (6 percent) and Hispanic peers (9 percent). In 2009, there was no measurable difference between the percentages of males and females who had taken calculus (16 percent each). However, the percentage of females who had taken algebra II/trigonometry (78 percent) was higher than that of male graduates (74 percent).

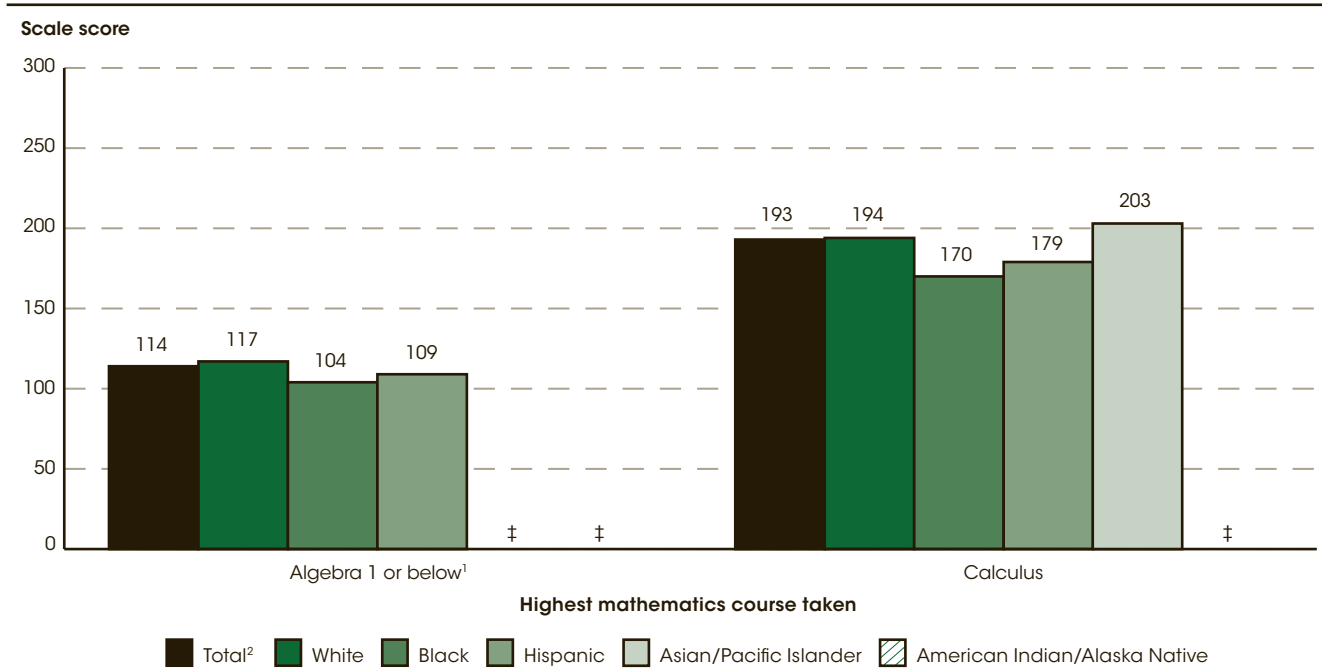
The percentages of high school graduates who had taken science courses in chemistry and physics also increased between 1990 and 2009. The percentage of graduates who had taken chemistry increased from 49 to 70 percent, and the percentage of graduates who had completed physics courses increased from 21 to 36 percent. The percentage of graduates who earned at least one credit in biology, chemistry, and physics increased from 19 percent in 1990 to 30 percent in 2009.

The general increases in science coursetaking in biology, chemistry, and physics between 1990 and 2009 were reflected by increases for students of most racial/ethnic

groups. For instance, the percentage of Hispanic graduates who had completed a chemistry course increased from 38 to 66 percent, and the percentage of Hispanic graduates who had completed at least one credit in biology, chemistry, and physics increased from 10 to 23 percent. Similarly, the percentage of Black graduates who had completed a chemistry course increased from 40 to 65 percent, and the percentage of Black graduates who had completed at least one credit in biology, chemistry, and physics increased from 12 to 22 percent. Although there were increases in coursetaking among student groups from 1990 to 2009, gaps between different subgroups in coursetaking remained. In 2009, a higher percentage of Asian (54 percent) and White (31 percent) graduates had completed the combination of biology, chemistry, and physics courses than had their Black and Hispanic peers (22 percent and 23 percent, respectively). A higher percentage of males (39 percent) than of females (33 percent) had completed a physics class in 2009; however, a higher percentage of females (73 percent) than of males (67 percent) had taken chemistry.

A higher percentage of 2009 graduates from private schools (85 percent) had taken courses in algebra II/trigonometry than had graduates from traditional public schools (75 percent), and a higher percentage of graduates from private schools (23 percent) had taken courses in calculus than had graduates from public schools (15 percent). Also, a higher percentage of private high school graduates (44 percent) had taken at least one credit in biology, chemistry, and physics than had graduates from traditional public schools (29 percent). A higher percentage of graduates from city (32 percent) and suburban (39 percent) schools had taken courses in biology, chemistry, and physics than had graduates from schools in towns (19 percent) or rural areas (20 percent).

Figure 2. Average National Assessment of Educational Progress (NAEP) 12th-grade mathematics scale scores of high school graduates, by highest mathematics course taken and race/ethnicity: 2009



‡ Reporting standards not met (too few cases for a reliable estimate).

¹ Includes basic math, general math, applied math, pre-algebra, and algebra I.

² Includes other racial/ethnic groups not shown separately and cases that were missing information on race/ethnicity and/or sex of student.

NOTE: The scale of the NAEP mathematics assessment for grade 12 ranges from 0 to 300. For a transcript to be included in the analyses, the graduate had to receive either a standard or honors diploma. Race categories exclude persons of Hispanic ethnicity. Reporting standards were not met for American Indian/Alaska Native estimates; therefore, data for this racial group are not shown in the figure.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2009 Mathematics Assessment; and High School Transcript Study (HSTS), 2009. See *Digest of Education Statistics 2013*, table 222.40.

In 2009, higher average scale scores on the National Assessment of Educational Progress (NAEP) 12th-grade mathematics assessment were associated with higher levels of high school mathematics coursetaking. For example, graduates who had taken only algebra I or below had an average scale score of 114 (on a scale of 0–300), whereas graduates who had taken calculus had an average scale score of 193. In addition, among those students who had completed specific mathematics courses, there were differences across demographic subgroups. For graduates who had taken calculus, the average scale score was higher for males than for females (197 vs. 190). Average

scale scores were also higher for students who had taken calculus who were Asian/Pacific Islander (203) and White (194) than for their Hispanic (179) and Black (170) peers. Among students who had taken calculus, the average scale score for those who had attended low-poverty schools (schools in which 0 to 25 percent of students receive, or are eligible to receive, free or reduced-price lunch under the National School Lunch Program) was 199, compared with a score of 163 for their peers at high-poverty schools (schools in which 75 to 100 percent of students receive, or are eligible to receive, free or reduced-price lunch).

Reference tables: *Digest of Education Statistics 2013*, tables 222.40 and 225.40

Related indicators: A Closer Look at High School Students in the United States Over the Last 20 Years [*The Condition of Education 2012 Special Analysis*]

Glossary: Free or reduced-price lunch, Private school, Public school or institution