High performing Asian countries have a national mathematics curriculum, while the lower-performing U.S. and Australian mathematics curriculum is set at the state (Provincial) level.

In grade 4, the U.S. spends proportionally more time on data, a content area where Americans show relative strength. At grade 8, the U.S. spends more time on algebra, an area where we show relative strength, and less time on geometry, an area of relative weakness.

U.S. students are much less likely to have grade 4 math classes without calculators than are grade 4 students in most high-performing Asian countries.

In grade 8, lack of computers is less common in Japan, Korea, and Singapore than in Chinese Taipei and Hong Kong. Computer access in the U.S. falls between the Asian countries’ extremes.
Among industrialized countries, developed and high-performing Asian countries have a national mathematics curriculum; in the lower-performing U.S. and Australia the mathematics curriculum is set at the state (Provincial) level.

Although primary NCTM emphasis in grades K-5 is on numbers, a majority content emphasis is on other topics, including geometry, measurement, and data analysis and probability. The emphasis in grades 6-12 is on algebra and geometry.
Chart 26. Time Spent on 4th Grade Mathematics as a Percent of Total Instructional Time in the U.S. Compared to Selected Asian Countries: 2003

There is no consistent difference in the percent of instructional time devoted to mathematics between developed Asian systems and the U.S. at grade 4.

Chart 27. Time Spent on 8th Grade Mathematics as a Percent of Total Instructional Time in the U.S. Compared to Selected Asian Countries: 2003

There is no consistent difference in the percent of instructional time devoted to mathematics between developed Asian systems and the U.S. at grade 8.

Note: Chart Sources listed on pages 34 and 35.
Hong Kong and Singapore spend proportionally more time on numbers, the content area where they show relative strength (see chart 15). The U.S. spends relatively more time on data, a content area where Americans show relative strength (see chart 15).

At grade 8 Chinese Taipei and Japan spend proportionally more time on geometry, the content area where they show relative strength. The U.S. spends more time on algebra, an area where we show relative strength, (see chart 16) and less time on geometry, an area of relative weakness.
Chart 30. Percent of American 4th Grade Students with Calculators NOT Available Compared to Selected Asian Countries: 2003

U.S. students are more likely to have grade 4 math classes with calculators than are grade 4 students in most high-performing Asian countries.

Chart 31. Percent of American 8th Grade Students with Computers NOT Available Compared to Selected Asian Countries: 2003

In grade 8, lack of computers is less common in Japan, Korea, and Singapore than in Chinese Taipei and Hong Kong among developed Asian countries. Access in the U.S. falls between the Asian countries' extremes.

Note: Chart Sources listed on pages 34 and 35
Four out of five teachers are mathematics or mathematics education majors in Chinese Taipei, Japan, and Singapore compared with three out of five teachers in Australia and less than half the teachers in the U.S.

American teachers receive few opportunities to participate in math-related professional development. Only 6 percent of elementary school teachers and 10 percent of middle and high school teachers receive more that 24 hours worth of in-depth professional development in math annually. About half of teachers do not receive any such training over the course of a year, despite evidence that many teachers have a rudimentary knowledge of math content. Only four out of thirty-five states require teachers to score above the fiftieth percentile on the Praxis II exam in math in order to achieve certification. Eleven states accept teachers that score in the bottom quartile.
Although a majority of grade 4 teachers of mathematics in all selected countries don't have a degree with a mathematics emphasis, the proportion who do have one are considerably higher in Chinese Taipei, Hong Kong, and Singapore than in Australia or the United States.

Although a majority of grade 8 teachers of mathematics have a math education or math degree in all the selected countries, relatively more (4 out of 5) teachers are mathematics majors in Chinese Taipei, Japan, and Singapore compared with (3 out of 5) teachers in Australia and (less than half the teachers) in the U.S.
In 2003-04, half U.S. teachers of mathematics received no professional development focused on math content and three quarters received less than one day.

Note: Chart Sources listed on pages 34 and 35
Substantial differences in minimum math scores for passing the PRAXIS II exam used for teacher licensing in many states means students in some states are taught by teachers who have much greater mathematics content and pedagogical knowledge than students in other states.

Note: Chart Sources listed on pages 34 and 35.