

### *Key Findings: Canada, England, Italy, Japan, Russian Federation, United States*

---

In 1999, U.S. eighth-grade students had a mean score of 502 in mathematics on the Repeat of the Third International Mathematics and Science Study (TIMSS-R). The average score of U.S. eighth-grade students was lower than the average scores of students in Japan (579), Canada (531) and the Russian Federation (526). However, eighth-grade students in the United States attained a higher average mathematics score than their counterparts in Italy (479). No difference was detected between the average scores of eighth-grade students in the United States and in England (figure 16a).

U.S. eighth-grade students had a lower mean score in science than their counterparts in Japan (550), Canada (533), and England (538). Eighth-grade students in the United States had higher average scores than their counterparts in Italy (493). No difference was detected between the mean scores of U.S. and Russian eighth-graders in science (figure 16b).

### *Definition and Methodology*

---

The top 10 percent benchmark of mathematics achievement represents students who can organize information, make generalizations, and explain solution strategies in non-routine problem solv-

ing situations. About 9 percent of U.S. eighth-graders scored in the top 10 percent of the TIMSS-R international benchmarks in mathematics in 1999. A smaller proportion of U.S. eighth-graders reached the benchmark than eighth-graders in Japan, where 33 percent of eighth-graders reached this benchmark; a higher proportion of U.S. eighth-graders reached this benchmark than eighth-graders in Italy. No differences were detected in the proportion of eighth-graders who reached the benchmark in the United States, compared to Canada, the Russian Federation, and England (figure 16c).

Fifteen percent of U.S. eighth-graders scored in the top 10 percent of the TIMSS-R international benchmarks in science in 1999. A higher proportion of U.S. eighth-graders reached this benchmark than eighth-graders in Italy. No differences were detected in the proportion of eighth-graders who reached this benchmark in the United States, compared to Japan, England, the Russian Federation, and Canada.

The top 10 percent benchmark of science achievement represents students who demonstrate a grasp of some complex and abstract science concepts.

**Table 16a. Average scale scores of eighth-grade students in mathematics achievement, by country: 1999**

Country	Scale score
Canada	531
England*	496
Italy	479
Japan	579
Russian Federation	526
United States	502

\*Met guidelines for sample participation rates only after replacement schools were included.

NOTE: Dark shading represents a statistically higher score than the U.S. score; light shading represents a lower score. No shading shows no statistical difference from the U.S. score.

SOURCE: International Association for the Evaluation of Educational Achievement, *TIMSS 1999 International Mathematics Report: Findings from IEA's Repeat of the Third International Mathematics and Science Study at the Eighth Grade*, 2000, Exhibit 1.1.

**Table 16b. Average scale scores of eighth-grade students in science achievement, by country: 1999**

Country	Scale score
Canada	533
England*	538
Italy	493
Japan	550
Russian Federation	529
United States	515

\*Met guidelines for sample participation rates only after replacement schools were included.

NOTE: Dark shading represents a statistically higher score than the U.S. score; light shading represents a lower score. No shading shows no statistical difference from the U.S. score.

SOURCE: International Association for the Evaluation of Educational Achievement, *TIMSS 1999 International Science Report: Findings from IEA's Repeat of the Third International Mathematics and Science Study at the Eighth Grade*, 2000, Exhibit 1.1.

**Table 16c. Percentage of eighth-grade students reaching the top 10 percent benchmark of the TIMSS-R International Benchmarks of mathematics and science achievement, by country: 1999**

Country	Mathematics	Country	Science
Canada	12	Canada	14
England	7	England	19
Italy	5	Italy	7
Japan	33	Japan	19
Russian Federation	15	Russian Federation	17
United States	9	United States	15

NOTE: Dark shading represents a statistically higher score than the U.S. score; light shading represents a lower score. No shading shows no statistical difference from the U.S. score.

SOURCE: International Association for the Evaluation of Educational Achievement, *TIMSS 1999 International Mathematics Report: Findings from IEA's Repeat of the Third International Mathematics and Science Study at the Eighth Grade*, 2000, Exhibit 1.6; International Association for the Evaluation of Educational Achievement, *TIMSS 1999 International Science Report: Findings from IEA's Repeat of the Third International Mathematics and Science Study at the Eighth Grade*, 2000, Exhibit 1.6.

## Mathematics and Science Achievement in Secondary Education – Data Tables

Table A-16a. Average scale scores of eighth-grade students in mathematics and science achievement, by country: 1999

Country	Mathematics	Science
Canada	531 (2.5)	533 (2.1)
England*	496 (4.1)	538 (4.8)
Italy	479 (3.8)	493 (3.9)
Japan	579 (1.7)	550 (2.2)
Russian Federation	526 (5.9)	529 (6.4)
United States	502 (4.0)	515 (4.6)

\*Met guidelines for sample participation rates only after replacement schools were included.

NOTE: Standard errors are in parentheses.

SOURCE: International Association for the Evaluation of Educational Achievement, *TIMSS 1999 International Mathematics Report: Findings from IEA's Repeat of the Third International Mathematics and Science Study at the Eighth Grade*, 2000, Exhibit 1.1; International Association for the Evaluation of Educational Achievement, *TIMSS 1999 International Science Report: Findings from IEA's Repeat of the Third International Mathematics and Science Study at the Eighth Grade*, 2000, Exhibit 1.1.

Table A-16b. Percentage of eighth-grade students reaching the top 10 percent benchmark of the TIMSS-R International Benchmarks of mathematics and science achievement, by country: 1999

Country	Mathematics	Science
Canada	12 (1.1)	14 (0.9)
England	7 (0.9)	19 (1.9)
Italy	5 (0.7)	7 (0.9)
Japan	33 (1.1)	19 (1.1)
Russian Federation	15 (1.8)	17 (2.4)
United States	9 (1.0)	15 (1.2)

NOTE: Standard errors are in parentheses.

SOURCE: International Association for the Evaluation of Educational Achievement, *TIMSS 1999 International Mathematics Report: Findings from IEA's Repeat of the Third International Mathematics and Science Study at the Eighth Grade*, 2000, Exhibit 1.6; International Association for the Evaluation of Educational Achievement, *TIMSS 1999 International Science Report: Findings from IEA's Repeat of the Third International Mathematics and Science Study at the Eighth Grade*, 2000, Exhibit 1.6.