

The Condition of Education 2009

Indicator 15

International Trends in Mathematics Performance

The indicator and corresponding tables are taken directly from *The Condition of Education 2009*. Therefore, the page numbers may not be sequential.

Additional information about the survey data and supplementary notes can be found in the full report. For a copy of *The Condition of Education 2009*, visit the NCES website (<http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2009081>) or contact ED PUBS at 1-877-4ED-PUBS.

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International Trends in Mathematics Performance

In 2007, U.S. 4th-graders scored higher in mathematics than their peers in 23 countries and lower than those in 8 countries. U.S. 8th-graders scored higher than their peers in 37 countries and lower than those in 5 countries. Compared with 1995, U.S. 4th- and 8th-graders improved in mathematics in 2007.

Conducted in 2007, the Trends in International Mathematics and Science Study (TIMSS) assessed students' mathematics performance at grade 4 in 36 countries and at grade 8 in 48 countries. The assessment is curriculum based and measures what students have actually learned against the subject matter that is expected to be taught in the participating countries by the end of grades 4 and 8.

At grades 4 and 8, U.S. students scored above the TIMSS mathematics scale average in 2007. U.S. 4th-graders scored higher, on average, than their counterparts in 23 countries and lower than those in 8 countries. Average scores in the other 4 countries were not measurably different from the U.S. average. At grade 4, the 8 countries with higher average scores than the United States were Hong Kong Special Administrative Region (SAR), Singapore, Chinese Taipei, Japan, Kazakhstan, the Russian Federation, England, and Latvia. U.S. students scored higher than the TIMSS scale average on all 3 mathematics content domains measured at grade 4: number, geometric shapes and measures, and data display (see table A-15-1).

At grade 8, the average U.S. mathematics score was higher than those of students in 37 countries in 2007 and below the average scores of students in 5 countries. The 5 countries with higher average scores than the United States were all in Asia: Chinese Taipei, Republic of Korea, Singapore, Hong Kong SAR, and Japan. U.S. students scored higher than the TIMSS scale average on all 4 mathematics content domains measured at grade 8: number, algebra, geometry, and data and chance (see table A-15-2).

To examine the mathematics performance of each participating country's highest and lowest performing students, cutpoint scores were calculated for students performing at or above the 90th percentile (that is, the top 10 percent of students) and those performing at or below the 10th percentile (the bottom 10 percent of students)

based on the distribution of scores within each country. In 2007, the score defining the highest performing U.S. 4th-graders was higher than the 90th percentile scores for 4th-graders in 23 countries and lower than the scores in 7 countries (see table A-15-1). The score defining the lowest performing U.S. 4th-graders was higher than the 10th percentile scores in 23 countries and lower than those in 6 countries.

At grade 8, the U.S. score at the 90th percentile in mathematics was higher than the corresponding scores in 34 countries and lower than those in 6 countries in 2007 (see table A-15-2). The U.S. score at the 10th percentile was higher than those in 34 countries and lower than those in 4 countries.

The United States was 1 of the 16 countries at grade 4 and 1 of the 20 countries at grade 8 that participated in both the first TIMSS mathematics assessment in 1995 and the most recent one in 2007. At both grades 4 and 8, U.S. students showed improvement in mathematics in 2007 compared with 1995 (see tables A-15-3 and A-15-4). The United States was among the 8 countries at grade 4 and 6 countries at grade 8 to show improvement in mathematics over this period.

Among U.S. 4th-graders, there was no measurable change in the mathematics score at the 90th percentile in 2007 compared with 1995 (see table A-15-5). However, the 90th percentile score was higher in 2007 than in 2003. The score at the 10th percentile was higher in 2007 than in either 1995 or 2003. Among U.S. 8th-graders, the 90th percentile score was higher in 2007 than in 1995. The 10th percentile score was higher in 2007 than in 1995 or 1999.



For more information: *Tables A-15-1 through A-15-5; Indicators 16 and 29*

Glossary: *International Target Population, National Target Population*
NCES 2009-001

Technical Notes

The total number of countries reported here differs from the total number reported in the TIMSS reports. In addition to the 36 countries at grade 4 and 48 countries at grade 8, some 8 other educational jurisdictions, or "benchmarking" entities, participated: the states of Massachusetts and Minnesota; the Canadian provinces of Alberta, British Columbia, Ontario, and Quebec; the Basque region of Spain; and Dubai, United Arab Emirates.

The TIMSS scale average was established with a mean of 500 and a standard deviation of 100, based on the average of all the countries that participated in 1995. Successive assessments have scaled the achievement data so that scores are equivalent from assessment to assessment. That is, a score of 500 in grade 8 mathematics in 2007 is equivalent to a score of 500 in grade 8 mathematics in 2003, 1999, and 1995. For more information on TIMSS, see *supplemental note 5*.

Table 15-1. Average mathematics scale scores of 4th-grade students, by country: 2007

Average score relative to the United States	Country and score					
Higher	Hong Kong SAR ¹	607	Japan	568	England	541
	Singapore	599	Kazakhstan ²	549	Latvia ²	537
	Chinese Taipei	576	Russian Federation	544		
Not measurably different	Netherlands ³	535	United States^{4,5}	529	Denmark ⁴	523
	Lithuania ²	530	Germany	525		
Lower	Australia	516	Slovak Republic	496	Algeria	378
	Hungary	510	Scotland ⁴	494	Colombia	355
	Italy	507	New Zealand	492	Morocco	341
	Austria	505	Czech Republic	486	El Salvador	330
	Sweden	503	Norway	473	Tunisia	327
	Slovenia	502	Ukraine	469	Kuwait ⁶	316
	Armenia	500	Georgia ²	438	Qatar	296
	<i>TIMSS scale average</i>	<i>500</i>	Iran, Islamic Republic of	402	Yemen	224

¹ Hong Kong is a Special Administrative Region (SAR) of the People's Republic of China.

² National Target Population did not include all of the International Target Population.

³ Nearly satisfied guidelines for sample participation rates only after substitute schools were included.

⁴ Met guidelines for sample participation rates only after substitute schools were included.

⁵ National Defined Population covered 90 to 95 percent of National Target Population.

⁶ Kuwait tested the same cohort of students as other countries, but later in 2007, at the beginning of the next school year.

NOTE: Countries are ordered by 2007 average score. The Trends in International Mathematics and Science Study (TIMSS) scale average was established with a mean of 500 and a standard deviation of 100, based on the average of all the countries that participated in 1995. Successive TIMSS assessments have scaled achievement data so that scores are equivalent from assessment to assessment. That is, a score of 500 in grade 4 mathematics in 2007 is equivalent to a score of 500 in grade 4 mathematics in 2003 and 1995. For more information on the TIMSS, see *supplemental note 5*.

SOURCE: Gonzales, P., Williams, T., Jocelyn, L., Roey, S., Kastberg, D., and Brenwald, S. (2008). *Highlights From TIMSS 2007: Mathematics and Science Achievement of U.S. Fourth- and Eighth-Grade Students in an International Context* (NCES 2009-001), table 3, data from International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2007.

Table 15-2. Average mathematics scale scores of 8th-grade students, by country: 2007

Average score relative to the United States	Country and score					
Higher	Chinese Taipei	598	Singapore	593	Japan	570
	Korea, Republic of	597	Hong Kong SAR ^{1,2}	572		
Not measurably different	Hungary	517	Russian Federation	512	Lithuania ⁴	506
	England ²	513	United States^{2,3}	508	Czech Republic	504
Lower	Slovenia	501	Israel ⁵	463	Syrian Arab Republic	395
	<i>TIMSS scale average</i>	<i>500</i>	Ukraine	462	Egypt	391
	Armenia	499	Romania	461	Algeria	387
	Australia	496	Bosnia and Herzegovina	456	Colombia	380
	Sweden	491	Lebanon	449	Oman	372
	Malta	488	Thailand	441	Palestinian National	
	Scotland ²	487	Turkey	432	Authority	367
	Serbia ^{4,3}	486	Jordan	427	Botswana	364
	Italy	480	Tunisia	420	Kuwait ⁶	354
	Malaysia	474	Georgia ⁴	410	El Salvador	340
	Norway	469	Iran, Islamic Republic of	403	Saudi Arabia	329
	Cyprus	465	Bahrain	398	Ghana	309
	Bulgaria	464	Indonesia	397	Qatar	307

¹ Hong Kong is a Special Administrative Region (SAR) of the People's Republic of China.

² Met guidelines for sample participation rates only after substitute schools were included.

³ National Defined Population covered 90 to 95 percent of National Target Population.

⁴ National Target Population did not include all of the International Target Population.

⁵ National Defined Population covers less than 90 percent of National Target Population (but at least 77 percent).

⁶ Kuwait tested the same cohort of students as other countries, but later in 2007, at the beginning of the next school year.

NOTE: Countries are ordered by 2007 average score. The Trends in International Mathematics and Science Study (TIMSS) scale average was established with a mean of 500 and a standard deviation of 100, based on the average of all the countries that participated in 1995. Successive TIMSS assessments have scaled achievement data so that scores are equivalent from assessment to assessment. That is, a score of 500 in grade 8 mathematics in 2007 is equivalent to a score of 500 in grade 8 mathematics in 2003, 1999, and 1995. For more information on the TIMSS, see *supplemental note 5*.

SOURCE: Gonzales, P., Williams, T., Jocelyn, L., Roey, S., Kastberg, D., and Brenwald, S. (2008). *Highlights From TIMSS 2007: Mathematics and Science Achievement of U.S. Fourth- and Eighth-Grade Students in an International Context* (NCES 2009-001), table 3, data from International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2007.

International Trends in Mathematics Performance

Table A-15-1. Average mathematics scale scores and percentile scores of 4th-grade students, by content domain and country: 2007

Country (ordered by total score)	Total mathematics	Content domain			Percentile	
		Number	Geometric shapes and measures	Data display	90th	10th
TIMSS scale average	500*	500*	500*	500*	†	†
Hong Kong SAR ¹	607*	606*	599*	585*	691*	520*
Singapore	599*	611*	570*	583*	702*	487*
Chinese Taipei	576*	581*	556*	567*	663*	488*
Japan	568*	561*	566*	578*	663*	471*
Kazakhstan ²	549*	556*	542*	522*	653*	435
Russian Federation	544*	546*	538*	530*	647*	436
England	541*	531	548*	547	647*	429
Latvia ²	537*	536*	532*	536*	628	444*
Netherlands ³	535	535*	522	543	612*	454*
Lithuania ²	530	533*	518	530*	624	430
United States^{4,5}	529	524	522	543	625	430
Germany	525	521	528	534*	607*	440
Denmark ⁴	523	509*	544*	529*	611*	431
Australia	516*	496*	536*	534*	620	408*
Hungary	510*	510*	510*	504*	620	389*
Italy	507*	505*	509*	506*	601*	406*
Austria	505*	502*	509*	508*	590*	416*
Sweden	503*	490*	508*	529*	586*	417*
Slovenia	502*	485*	522	518*	589*	408*
Armenia	500*	522	483*	458*	617	385*
Slovak Republic	496*	495*	499*	492*	597*	389*
Scotland ⁴	494*	481*	503*	516*	592*	389*
New Zealand	492*	478*	502*	513*	598*	377*
Czech Republic	486*	482*	494*	493*	576*	392*
Norway	473*	461*	490*	487*	566*	372*
Ukraine	469*	480*	457*	462*	573*	356*
Georgia ²	438*	464*	415*	414*	549*	322*
Iran, Islamic Republic of	402*	398*	429*	400*	508*	290*
Algeria	378*	391*	383*	361*	493*	261*
Colombia	355*	360*	361*	363*	470*	238*
Morocco	341*	353*	365*	316*	466*	223*
El Salvador	330*	317*	333*	367*	448*	212*
Tunisia	327*	352*	334*	307*	469*	178*
Kuwait ⁶	316*	321*	316*	318*	443*	184*
Qatar	296*	292*	296*	326*	413*	179*
Yemen	224*	—	—	—	371*	81*

* $p < .05$. Significantly different from the U.S. score.

— Not available. Average achievement could not be accurately estimated.

† Not applicable.

¹ Hong Kong SAR is a Special Administrative Region (SAR) of the People's Republic of China.² National Target Population did not include all of the International Target Population.³ Nearly satisfied guidelines for sample participation rates only after substitute schools were included.⁴ Met guidelines for sample participation rates only after substitute schools were included.⁵ National Defined Population covered less than 90 to 95 percent of National Target Population.⁶ Kuwait tested the same cohort of students as other countries, but later in 2007, at the beginning of the next school year.

NOTE: Results from the grade 4 Trends in International Mathematics and Science Study (TIMSS) assessment are reported on a total mathematics scale, which captures students' overall mathematics knowledge and skills, and three content domains. The TIMSS scale average was established with a mean of 500 and a standard deviation of 100, based on the average of all the countries that participated in 1995. Successive TIMSS assessments have scaled achievement data so that scores are equivalent from assessment to assessment. That is, a score of 500 in grade 4 mathematics in 2007 is equivalent to a score of 500 in grade 4 mathematics in 2003 and 1995. Countries are ordered by total mathematics average score. Ordering of countries does not imply that scores are measurably different from one another. Percentile scores are calculated based on distribution of student scores within each country. For more information on TIMSS, see *supplemental note 5*. SOURCE: Gonzales, P., Williams, T., Jocelyn, L., Roey, S., Kastberg, D., and Brenwald, S. (2008). *Highlights From TIMSS 2007: Mathematics and Science Achievement of U.S. Fourth- and Eighth-Grade Students in an International Context* (NCES 2009-001), tables 3, 6, and 9, data from International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2007.

Table A-15-2. Average mathematics scale scores and percentile scores of 8th-grade students, by content domain and country: 2007

Country (ordered by total score)	Total mathematics	Content domain				Percentile	
		Number	Algebra	Geometry	Data and chance	90th	10th
TIMSS scale average	500*	500*	500	500*	500*	†	†
Chinese Taipei	598*	577*	617*	592*	566*	721*	448*
Korea, Republic of	597*	583*	596*	587*	580*	711*	475*
Singapore	593*	597*	579*	578*	574*	706*	463*
Hong Kong SAR ^{1,2}	572*	567*	565*	570*	549*	681*	438
Japan	570*	551*	559*	573*	573*	677*	460*
Hungary	517	517	503	508*	524	624*	405
England ²	513	510	492	510*	547*	618	400
Russian Federation	512	507	518*	510*	487*	617	402
United States^{2,3}	508	510	501	480	531	607	408
Lithuania ⁴	506	506	483*	507*	523*	609	402
Czech Republic	504	511	484*	498*	512*	599	408
Slovenia	501*	502*	488*	499*	511*	594*	409
Armenia	499*	492*	532*	493*	427*	601	390*
Australia	496*	503	471*	487	525	600	394
Sweden	491*	507	456*	472*	526	582*	399
Malta	488*	496*	473*	495*	487*	597*	359*
Scotland ²	487*	489*	467*	485	517*	590*	381*
Serbia ^{3,4}	486*	478*	500	486	458*	597	368*
Italy	480*	478*	460*	490*	491*	574*	381*
Malaysia	474*	491*	454*	477	469*	578*	372*
Norway	469*	488*	425*	459*	505*	552*	382*
Cyprus	465*	464*	468*	458*	464*	575*	347*
Bulgaria	464*	458*	476*	468*	440*	586*	324*
Israel ⁵	463*	469*	470*	436*	465*	584*	328*
Ukraine	462*	460*	464*	467*	458*	572*	346*
Romania	461*	457*	478*	466*	429*	587*	328*
Bosnia and Herzegovina	456*	451*	475*	451*	437*	552*	352*
Lebanon	449*	454*	465*	462*	407*	549*	354*
Thailand	441*	444*	433*	442*	453*	562*	327*
Turkey	432*	429*	440*	411*	445*	581*	297*
Jordan	427*	416*	448*	436*	425*	556*	290*
Tunisia	420*	425*	423*	437*	411*	508*	336*
Georgia ⁴	410*	421*	421*	409*	373*	532*	280*
Iran, Islamic Republic of	403*	395*	408*	423*	415*	516*	295*
Bahrain	398*	388*	403*	412*	418*	505*	289*
Indonesia	397*	399*	405*	395*	402*	509*	286*
Syrian Arab Republic	395*	393*	406*	417*	387*	502*	290*
Egypt	391*	393*	409*	406*	384*	521*	258*
Algeria	387*	403*	349*	432*	371*	465*	311*
Colombia	380*	369*	390*	371*	405*	477*	281*

See notes at end of table.

International Trends in Mathematics Performance

Table A-15-2. Average mathematics scale scores and percentile scores of 8th-grade students, by content domain and country: 2007—Continued

Country (ordered by total score)	Total mathematics	Content domain				Percentile	
		Number	Algebra	Geometry	Data and chance	90th	10th
TIMSS scale average	500*	500*	500	500*	500*	†	†
Oman	372*	363*	391*	387*	389*	492*	245*
Palestinian National Authority	367*	366*	382*	388*	371*	498*	233*
Botswana	364*	366*	394*	325*	384*	460*	264*
Kuwait ⁶	354*	347*	354*	385*	366*	455*	252*
El Salvador	340*	355*	331*	318*	362*	433*	248*
Saudi Arabia	329*	309*	344*	359*	348*	429*	231*
Ghana	309*	310*	358*	275*	321*	428*	192*
Qatar	307*	334*	312*	301*	305*	427*	186*

* $p < .05$. Significantly different from the U.S. score.

† Not applicable.

¹ Hong Kong is a Special Administrative Region (SAR) of the People's Republic of China.

² Met guidelines for sample participation rates only after substitute schools were included.

³ National Defined Population covered 90 to 95 percent of National Target Population.

⁴ National Target Population did not include all of the International Target Population.

⁵ National Defined Population covered less than 90 percent of National Target Population (but at least 77 percent).

⁶ Kuwait tested the same cohort of students as other countries, but later in 2007, at the beginning of the next school year.

NOTE: Results from the grade 8 Trends in International Mathematics and Science Study (TIMSS) assessment are reported on a total mathematics scale, which captures students' overall mathematics knowledge and skills, and four content domains. The TIMSS scale average was established with a mean of 500 and a standard deviation of 100, based on the average of all the countries that participated in 1995. Successive TIMSS assessments have scaled achievement data so that scores are equivalent from assessment to assessment. That is, a score of 500 in grade 8 mathematics in 2007 is equivalent to a score of 500 in grade 8 mathematics in 2003, 1999, and 1995. Countries are ordered by total mathematics average score. Ordering of countries does not imply that scores are measurably different from one another. Percentile scores are calculated based on distribution of student scores within each country. For more information on the TIMSS, see *supplemental note 5*.

SOURCE: Gonzales, P., Williams, T., Jocelyn, L., Roey, S., Kastberg, D., and Brenwald, S. (2008). *Highlights From TIMSS 2007: Mathematics and Science Achievement of U.S. Fourth- and Eighth-Grade Students in an International Context* (NCES 2009-001), tables 3, 7, and 9, data from International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2007.

Table A-15-3. Average mathematics scale scores of 4th-grade students, by country: 1995 and 2007

Country (ordered by 2007 score)	1995	2007
TIMSS scale average	500	500
Hong Kong SAR ¹	557	607*
Singapore	590	599
Japan	567	568
England	484	541*
Latvia ²	499	537*
Netherlands ³	549	535*
United States^{4,5}	518	529*
Australia	495	516*
Hungary	521	510*
Austria	531	505*
Slovenia	462	502*
Scotland ⁴	493	494
New Zealand	469	492*
Czech Republic	541	486*
Norway	476	473
Iran, Islamic Republic of	387	402*

* $p < .05$. 2007 average score is significantly different from 1995 average score.

¹ Hong Kong is a Special Administrative Region (SAR) of the People's Republic of China.

² In 2007, National Target Population did not include all of the International Target Population.

³ In 2007, nearly satisfied guidelines for sample participation rates only after substitute schools were included.

⁴ In 2007, met guidelines for sample participation rates only after substitute schools were included.

⁵ In 2007, National Defined Population covered 90 percent to 95 percent of National Target Population.

⁶ In 2007, Kuwait tested the same cohort of students as other countries, but later in 2007, at the beginning of the next school year.

NOTE: Countries are ordered by 2007 total mathematics average score. Ordering of countries does not imply that scores are measurably different from one another. The Trends in International Mathematics and Science Study (TIMSS) scale average was established with a mean of 500 and a standard deviation of 100, based on the average of all the countries that participated in 1995. Successive TIMSS assessments have scaled achievement data so that scores are equivalent from assessment to assessment. That is, a score of 500 in grade 4 mathematics in 2007 is equivalent to a score of 500 in grade 4 mathematics in 2003 and 1995. For more information on TIMSS, see *supplemental note 5*.

SOURCE: Gonzales, P., Williams, T., Jocelyn, L., Roey, S., Kastberg, D., and Brenwald, S. (2008). *Highlights From TIMSS 2007: Mathematics and Science Achievement of U.S. Fourth- and Eighth-Grade Students in an International Context* (NCES 2009-001), table 4, data from International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2007.

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Table A-15-4. Average mathematics scale scores of 8th-grade students, by country: 1995 and 2007

Country (ordered by 2007 score)	1995	2007
TIMSS scale average	500	500
Korea, Republic of	581	597*
Singapore	609	593*
Hong Kong SAR ^{1,2}	569	572
Japan	581	570*
Hungary	527	517*
England ²	498	513*
Russian Federation	524	512
United States^{2,3}	492	508*
Lithuania ⁴	472	506*
Czech Republic	546	504*
Slovenia	494	501*
Australia	509	496*
Sweden	540	491*
Scotland ²	493	487
Norway	498	469*
Cyprus	468	465
Bulgaria	527	464*
Romania	474	461*
Iran, Islamic Republic of	418	403*
Colombia	332	380*

* $p < .05$. 2007 average score is significantly different from 1995 average score.

¹ Hong Kong is a Special Administrative Region (SAR) of the People's Republic of China.

² In 2007, met guidelines for sample participation rates only after substitute schools were included.

³ In 2007, National Target Population did not include all of the International Target Population.

⁴ In 2007, National Target Population covered 90 to 95 percent of National Target Population.

NOTE: Countries are ordered by 2007 total mathematics average score. Ordering of countries does not imply that scores are measurably different from one another. The Trends in International Mathematics and Science Study (TIMSS) scale average was established with a mean of 500 and a standard deviation of 100, based on the average of all the countries that participated in 1995. Successive TIMSS assessments have scaled achievement data so that scores are equivalent from assessment to assessment. That is, a score of 500 in grade 8 mathematics in 2007 is equivalent to a score of 500 in grade 8 mathematics in 2003, 1999, and 1995. For more information on TIMSS, see *supplemental note 5*.

SOURCE: Gonzales, P., Williams, T., Jocelyn, L., Roey, S., Kastberg, D., and Brenwald, S. (2008). *Highlights From TIMSS 2007: Mathematics and Science Achievement of U.S. Fourth- and Eighth-Grade Students in an International Context* (NCES 2009-001), table 4, data from International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2007.

Table A-15-5. Trends in 10th and 90th percentile mathematics scores of U.S. 4th- and 8th-grade students: Various years 1995–2007

Percentile	1995	1999 ¹	2003	2007
4th grade				
10th	408*	—	417*	430
90th	619	—	614*	625
8th grade				
10th	380*	387*	400	408
90th	594*	611	608	607

* $p < .05$. Percentile cutpoint score is significantly different from 2007 percentile cutpoint score.

— Not available.

¹ No 4th-grade assessment was conducted in 1999.

NOTE: In 2007, the United States met guidelines for sample participation rates only after substitute schools were included. The National Defined Population covered 90 percent to 95 percent of National Target Population. Cutpoints are calculated based on distribution of U.S. student scores. For more information on the Trends in International Mathematics and Science Study (TIMSS), see *supplemental note 5*.

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 1995, 1999, 2003, and 2007.

International Trends in Mathematics Performance

Table S-15-1. Standard errors for the average mathematics scale scores and percentile scores of 4th-grade students, by content domain and country: 2007

Country (ordered by total score)	Total mathematics	Content domain			Percentile	
		Number	Geometric shapes and measures	Data display	90th	10th
TIMSS scale average	†	†	†	†	†	†
Hong Kong SAR	3.6	3.8	3.1	2.7	6.0	4.0
Singapore	3.7	4.3	3.7	3.2	4.5	7.1
Chinese Taipei	1.7	1.9	2.2	2.0	2.3	2.3
Japan	2.1	2.2	2.2	2.8	3.3	3.0
Kazakhstan	7.1	6.6	7.4	5.8	7.3	9.1
Russian Federation	4.9	4.4	5.1	4.9	6.9	4.7
England	2.9	3.2	2.7	2.5	4.9	5.2
Latvia	2.3	2.1	2.6	3.0	3.9	2.2
Netherlands	2.1	2.2	2.3	2.3	2.6	4.9
Lithuania	2.4	2.3	2.4	2.9		
United States	2.4	2.7	2.5	2.4	3.1	4.2
Germany	2.3	2.2	2.0	3.1	3.2	3.8
Denmark	2.4	2.9	2.6	3.4	3.6	4.2
Australia	3.5	3.7	3.1	3.1	2.9	6.5
Hungary	3.5	3.7	3.3	3.5	2.9	8.4
Italy	3.1	3.2	3.0	3.4	3.8	5.6
Austria	2.0	2.2	2.4	2.6	3.7	2.9
Sweden	2.5	2.5	2.3	2.7	3.0	4.4
Slovenia	1.8	1.9	1.8	2.5	3.2	3.0
Armenia	4.3	4.0	4.7	4.3	8.2	5.1
Slovak Republic	4.5	3.9	4.3	4.2	4.5	9.7
Scotland	2.2	2.6	2.6	2.2	2.7	3.9
New Zealand	2.3	2.7	2.3	2.6	2.6	4.8
Czech Republic	2.8	2.8	2.8	3.3	2.8	6.9
Norway	2.5	2.8	3.0	2.6	3.0	3.3
Ukraine	2.9	2.9	2.8	3.2	2.6	4.6
Georgia	4.2	3.8	4.8	4.6	4.1	5.7
Iran, Islamic Republic of	4.1	3.6	3.3	4.0	2.9	4.4
Algeria	5.2	5.0	4.5	5.2	6.2	8.0
Colombia	5.0	4.3	4.8	5.9	5.2	4.7
Morocco	4.7	4.7	4.3	6.1	6.3	6.3
El Salvador	4.1	3.9	4.3	3.5	5.0	5.7
Tunisia	4.5	4.5	4.5	4.8	3.9	5.5
Kuwait	3.6	3.5	3.6	4.7	5.5	5.3
Qatar	1.0	1.2	1.4	1.6	1.6	1.8
Yemen	6.0	†	†	†	6.8	7.1

† Not applicable.

SOURCE: Gonzales, P., Williams, T., Jocelyn, L., Roey, S., Kastberg, D., and Brenwald, S. (2008). *Highlights From TIMSS 2007: Mathematics and Science Achievement of U.S. Fourth- and Eighth-Grade Students in an International Context* (NCES 2009-001), tables E-1, E-3, and E-6, data from International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2007.

Table S-15-2. Standard errors for the average mathematics scale scores and percentile scores of 8th-grade students, by content domain and country: 2007

Country (ordered by total score)	Total mathematics	Content domain				Percentile	
		Number	Algebra	Geometry	Data and chance	90th	10th
TIMSS scale average	†	†	†	†	†	†	†
Chinese Taipei	4.5	4.2	5.4	4.6	3.6	4.6	6.5
Korea, Republic of	2.7	2.4	3.0	2.3	2.0	3.7	3.9
Singapore	3.8	3.5	3.7	3.4	3.9	4.3	8.7
Hong Kong SAR	5.8	5.6	5.6	5.5	4.7	4.3	14.9
Japan	2.4	2.3	2.5	2.2	2.2	4.0	5.5
Hungary	3.5	3.6	3.6	3.6	3.3	5.4	4.3
England	4.8	5.0	4.6	4.4	5.0	6.8	9.0
Russian Federation	4.1	3.8	4.5	4.1	3.8	4.7	6.9
United States	2.8	2.7	2.7	2.5	2.8	3.3	3.4
Lithuania	2.3	2.7	2.7	2.6	2.3	3.6	5.3
Czech Republic	2.4	2.5	2.4	2.7	2.8	3.6	3.2
Slovenia	2.1	2.3	2.4	2.4	2.3	3.1	3.3
Armenia	3.5	3.1	2.5	4.1	3.9	6.3	5.3
Australia	3.9	3.7	3.7	3.6	3.2	7.9	8.3
Sweden	2.3	1.8	2.4	2.5	3.0	2.8	4.1
Malta	1.2	1.3	1.4	1.1	1.4	1.8	2.9
Scotland	3.7	3.7	3.7	3.9	3.5	4.7	6.5
Serbia	3.3	2.9	3.2	3.6	3.0	5.4	3.8
Italy	3.0	2.8	3.2	3.1	3.1	6.3	5.3
Malaysia	5.0	5.1	4.3	5.6	4.1	5.9	8.0
Norway	2.0	2.0	2.8	2.3	2.5	2.3	2.3
Cyprus	1.6	1.6	2.0	2.7	1.6	5.9	8.0
Bulgaria	5.0	4.7	5.1	5.0	4.7	4.6	9.4
Israel	3.9	3.2	3.9	4.3	4.4	7.3	8.3
Ukraine	3.6	3.7	3.9	3.6	3.5	4.6	7.0
Romania	4.1	3.5	4.6	4.0	3.7	4.3	7.5
Bosnia and Herzegovina	2.7	3.0	3.2	3.5	2.3	2.6	3.6
Lebanon	4.0	3.4	3.2	4.0	4.4	3.9	5.8
Thailand	5.0	4.8	5.0	5.3	4.1	11.0	4.7
Turkey	4.8	4.0	5.1	5.1	4.4	7.7	4.9
Jordan	4.1	4.3	4.1	3.9	3.8	3.9	7.2
Tunisia	2.4	2.6	2.6	2.6	2.3	2.2	2.7
Georgia	6.0	5.6	6.6	6.7	4.3	10.1	8.4
Iran, Islamic Republic of	4.1	3.9	3.9	4.4	3.5	7.6	4.7
Bahrain	1.6	2.0	1.8	2.1	2.1	5.3	5.3
Indonesia	3.8	3.7	3.5	4.5	3.6	5.4	8.7
Syrian Arab Republic	3.8	3.4	3.7	3.4	2.7	6.2	5.0
Egypt	3.6	3.1	3.3	3.4	3.1	4.5	4.4
Algeria	2.1	1.7	2.4	2.1	1.7	1.9	3.2
Colombia	3.6	3.5	3.1	3.3	3.8	3.6	6.7
Oman	3.4	2.7	3.2	3.0	3.0	2.8	6.5
Palestinian National Authority	3.5	3.2	3.4	3.8	2.9	2.5	6.4
Botswana	2.3	2.9	2.2	3.2	2.6	3.8	3.6
Kuwait	2.3	3.1	3.0	2.8	3.5	2.6	4.6
El Salvador	2.8	3.0	3.7	3.7	3.0	3.2	2.6
Saudi Arabia	2.9	3.3	2.8	2.6	2.2	4.5	4.3
Ghana	4.4	4.0	3.6	4.9	3.6	5.5	5.3
Qatar	1.4	1.6	1.5	1.8	1.6	2.3	3.1

† Not applicable.

SOURCE: Gonzales, P., Williams, T., Jocelyn, L., Roey, S., Kastberg, D., and Brenwald, S. (2008). *Highlights From TIMSS 2007: Mathematics and Science Achievement of U.S. Fourth- and Eighth-Grade Students in an International Context* (NCES 2009-001), tables E-2, E-4, and E-7, data from International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2007.

International Trends in Mathematics Performance

Table S-15-3. Standard errors for the average mathematics scale scores of 4th-grade students, by country: 1995 and 2007

Country (ordered by total score)	1995	2007
TIMSS scale average	†	†
Hong Kong SAR	4.0	3.6
Singapore	4.5	3.7
Japan	1.9	2.1
England	3.3	2.9
Latvia	4.6	2.3
Netherlands	3.0	2.1
United States	3.0	2.4
Australia	3.4	3.5
Hungary	3.6	3.5
Austria	2.9	2.0
Slovenia	3.1	1.8
Scotland	4.2	2.2
New Zealand	4.4	2.3
Czech Republic	3.1	2.8
Norway	3.0	2.5
Iran, Islamic Republic of	5.0	4.1

† Not applicable.

SOURCE: Gonzales, P., Williams, T., Jocelyn, L., Roey, S., Kastberg, D., and Brenwald, S. (2008). *Highlights From TIMSS 2007: Mathematics and Science Achievement of U.S. Fourth- and Eighth-Grade Students in an International Context* (NCES 2009-001), table E-1, data from International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 1995 and 2007.

Table S-15-4. Standard errors for the average mathematics scale scores of 8th-grade students, by country: 1995 and 2007

Country (ordered by total score)	1995	2007
TIMSS scale average	†	†
Korea, Republic of	2.0	2.7
Singapore	4.0	3.8
Hong Kong SAR	6.1	5.8
Japan	1.6	2.4
Hungary	3.2	3.5
England	3.0	4.8
Russian Federation	5.3	4.1
United States	4.7	2.8
Lithuania	4.1	2.3
Czech Republic	4.5	2.4
Slovenia	2.9	2.1
Australia	3.7	3.9
Sweden	4.3	2.3
Scotland	5.7	3.7
Norway	2.2	2.0
Cyprus	2.2	1.6
Bulgaria	5.8	5.0
Romania	4.6	4.1
Iran, Islamic Republic of	3.9	4.1
Colombia	5.6	3.6

† Not applicable.

SOURCE: Gonzales, P., Williams, T., Jocelyn, L., Roey, S., Kastberg, D., and Brenwald, S. (2008). *Highlights From TIMSS 2007: Mathematics and Science Achievement of U.S. Fourth- and Eighth-Grade Students in an International Context* (NCES 2009-001), table E-2, data from International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 1995 and 2007.

Table S-15-5. Standard errors for trends in 10th and 90th percentile mathematics scores of U.S. 4th- and 8th-grade students: Various years 1995–2007

Percentile	1995	1999	2003	2007
4th grade				
10th	3.3	†	3.4	4.2
90th	3.6	†	2.8	3.1
8th grade				
10th	6.5	4.9	4.7	3.4
90th	5.1	5.6	4.5	3.3

† Not applicable.

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 1995, 1999, 2003, and 2007.