The Condition of Education 2009

Indicator 16
International Trends in Science 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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ies NATIONAL CENTER FOR EDUCATION STATISTICS
Institute of Education Sciences

International Trends in Science Performance

The U.S. 4th-graders' 2007 science score was higher than scores in 25 countries and lower than in 4 countries. The U.S. 8th-graders' science score was higher than scores in 35 countries and lower than in 9 countries. U.S. students' 2007 science scores did not measurably differ from 1995 scores.

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

In 2007, U.S. 4th- and 8th-grade students scored above the TIMSS science scale average. U.S. 4th-graders scored higher, on average, than their peers in 25 of the 35 other countries that participated at grade 4 and lower than those in 4 of the other countries. Average scores in the remaining 6 countries were not measurably different from the U.S. average. The four countries with higher average scores than the United States were Singapore, Chinese Taipei, Hong Kong Special Administrative Region (SAR), and Japan. U.S. students scored higher than the TIMSS scale average on all three science content domains measured at grade 4: life science, physical science, and Earth science (see table A-16-1).

The average U.S. 8th-grade science score was higher than the scores of students in 35 of the 47 other countries that participated at grade 8 in 2007, lower than the scores of students in 9 of the other countries, and not measurably different from the scores of students in the remaining 3 countries. The nine countries with higher average scores than the United States were Singapore, Chinese Taipei, Japan, Republic of Korea, England, Hungary, the Czech Republic, Slovenia, and the Russian Federation. On the four science content domains measured at grade 8, U.S. students scored above the TIMSS scale average in biology, chemistry, and Earth science, but their scores were not measurably different from the average in physics (see table A-16-2).

Examination of the science performance of each participating country's higher and lower performing students shows that, in 2007, the score defining the highest performing U.S. 4th-graders (those performing at or above the 90th percentile) was higher than the 90th percentile scores for 4th-graders in 27 countries and lower than the scores in 2 countries (table A-16-1). The score defining the lowest performing U.S. 4th-graders in science (those performing at or below the 10th percentile) was higher than the 10th percentile scores for 4th-graders in 17 countries and lower than the scores in 7 countries.

In 2007, the U.S. 8th-grade science score at the 90th percentile was higher than the corresponding scores in 34 countries and lower than the scores in 6 countries (see table A-16-2). At the other end of the scale, the U.S. 8th-grade science score at the 10th percentile was higher than the scores in 34 countries and lower than the scores in 8 countries.

The United States was 1 of 16 countries at grade 4 and 1 of 19 at grade 8 that participated in both the first TIMSS science assessment in 1995 and the most recent one in 2007. The average science scores in 2007 for both U.S. 4th- and 8th-grade students were not measurably different from those in 1995 (see tables A-16-3 and A-16-4).

Among U.S. 4th-graders, the science score at the 90th percentile was lower in 2007 than in 1995 (see table A-16-5). Though the U.S. 4th-grade 10th percentile science score appears to have improved, there was no measurable change in the score between 1995 and 2007 or between 2003 and 2007. The U.S. 8th-grade 90th percentile science scores in 1995 and 2007 showed no measurable differences, nor did the scores in 2003 and 2007. In 2007, the 90th percentile score was lower than in 1999. The U.S. 8th-grade 10th percentile score was higher in 2007 than in both 1995 and 1999.

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

Glossary: *International Target Population, National Target Population*

NCES 2009-001

Technical Notes

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 science in 2007 is equivalent to a score of 500 in grade 8 science in 2003, 1999, and 1995. 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, eight 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. For more information on TIMSS, see *supplemental note 5.*

Table 16-1. Average science scale scores of 4th-grade students, by country: 2007

Average score relative to the United States	Country and score					
Higher	Singapore	587	Hong Kong SAR[1]	554		
	Chinese Taipei	557	Japan	548		
Not measurably different	Russian Federation	546	**United States[3,4]**	**539**	Kazakhstan[2]	533
	Latvia[2]	542	Hungary	536		
	England	542	Italy	535		
Lower	Germany	528	Lithuania[2]	514	Colombia	400
	Australia	527	New Zealand	504	El Salvador	390
	Slovak Republic	526	Scotland[3]	500	Algeria	354
	Austria	526	*TIMSS scale average*	*500*	Kuwait[6]	348
	Sweden	525	Armenia	484	Tunisia	318
	Netherlands[5]	523	Norway	477	Morocco	297
	Slovenia	518	Ukraine	474	Qatar	294
	Denmark[3]	517	Iran, Islamic Republic of	436	Yemen	197
	Czech Republic	515	Georgia[2]	418		

[1] Hong Kong is a Special Administrative Region (SAR) of the People's Republic of China.
[2] National Target Population does not include all of the International Target Population.
[3] Met guidelines for sample participation rates only after substitute schools were included.
[4] National Defined Population covers 90 to 95 percent of National Target Population.
[5] Nearly satisfied guidelines for sample participation rates only after substitute schools were included.
[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 to have 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 science in 2007 is equivalent to a score of 500 in grade 4 science 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 11, data from the International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2007.

Table 16-2. Average science scale scores of 8th-grade students, by country: 2007

Average score relative to the United States	Country and score					
Higher	Singapore	567	Korea, Republic of	553	Czech Republic	539
	Chinese Taipei	561	England[1]	542	Slovenia	538
	Japan	554	Hungary	539	Russian Federation	530
Not measurably different	Hong Kong SAR[1,2]	530	Lithuania[4]	519		
	United States[1,2]	**520**	Australia	515		
Lower	Sweden	511	Bahrain	467	Colombia	417
	TIMSS scale average	*500*	Bosnia and Herzegovina	466	Lebanon	414
	Scotland[1]	496	Romania	462	Egypt	408
	Italy	495	Iran, Islamic Republic of	459	Algeria	408
	Armenia	488	Malta	457	Palestinian National Authority	404
	Norway	487	Turkey	454	Saudi Arabia	403
	Ukraine	485	Syrian Arab Republic	452	El Salvador	387
	Jordan	482	Cyprus	452	Botswana	355
	Malaysia	471	Tunisia	445	Qatar	319
	Thailand	471	Indonesia	427	Ghana	303
	Serbia[3,4]	470	Oman	423		
	Bulgaria[5]	470	Georgia[4]	421		
	Israel[5]	468	Kuwait[6]	418		

[1] Met guidelines for sample participation rates only after substitute schools were included.
[2] Hong Kong is a Special Administrative Region (SAR) of the People's Republic of China.
[3] National Defined Population covers 90 to 95 percent of National Target Population.
[4] National Target Population does 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 to have 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 science in 2007 is equivalent to a score of 500 in grade 8 science 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 11, data from the International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2007.

Table A-16-1. Average science scale scores and percentile scores of 4th-grade students, by content domain, percentile, and country: 2007

Country (ordered by total score)	Total science	Content domain			Percentile	
		Life science	Physical science	Earth science	90th	10th
TIMSS scale average	**500***	**500***	**500***	**500***	†	†
Singapore	587*	582*	585*	554*	701*	464*
Chinese Taipei	557*	541	559*	553*	653*	457*
Hong Kong SAR[1]	554*	532	558*	560*	637	466*
Japan	548*	530*	564*	529	633*	459*
Russian Federation	546	539	547*	536	646	443*
Latvia[2]	542	535	544*	536	625*	454*
England	542	532*	543*	538	641	438
United States[3,4]	**539**	**540**	**534**	**533**	**643**	**427**
Hungary	536	548*	529	517*	637	425
Italy	535	549*	521*	526	636	429
Kazakhstan[2]	533	528*	528	534	623*	433
Germany	528*	529*	524*	524*	623*	427
Australia	527*	528*	522*	534	626*	423
Slovak Republic	526*	532	513*	530	627*	416
Austria	526*	526*	514*	532	620*	423
Sweden	525*	531*	508*	535	617*	429
Netherlands[5]	523*	536	503*	524*	598*	445*
Slovenia	518*	511*	530	517*	610*	416*
Denmark[3]	517*	527*	502*	522*	610*	417
Czech Republic	515*	520*	511*	518*	610*	416*
Lithuania[2]	514*	516*	514*	511*	595*	428
New Zealand	504*	506*	498*	515*	614*	382*
Scotland[3]	500*	504*	499*	508*	593*	400*
Armenia	484*	489*	492*	479*	640	336*
Norway	477*	487*	469*	497*	570*	374*
Ukraine	474*	482*	475*	474*	576*	364*
Iran, Islamic Republic of	436*	442*	454*	433*	558*	304*
Georgia[2]	418*	427*	414*	432*	524*	306*
Colombia	400*	408*	411*	401*	522*	271*
El Salvador	390*	410*	392*	393*	507*	267*
Algeria	354*	351*	377*	365*	483*	220*
Kuwait[6]	348*	353*	345*	363*	505*	182*
Tunisia	318*	323*	340*	325*	497*	119*
Morocco	297*	292*	324*	293*	465*	139*
Qatar	294*	291*	303*	305*	464*	121*
Yemen	197*	—	—	—	379*	20*

*$p < .05$. Significantly different from the U.S. score.
— Not available. Average achievement could not be accurately estimated.
† Not applicable.
[1] Hong Kong is a Special Administrative Region (SAR) of the People's Republic of China.
[2] National Target Population does not include all of the International Target Population.
[3] Met guidelines for sample participation rates only after substitute schools were included.
[4] National Defined Population covers 90 to 95 percent of National Target Population.
[5] Nearly satisfied guidelines for sample participation rates only after substitute schools were included.
[6] Kuwait tested the same cohort of students as other countries, but later in 2007, at the beginning of the next school year.
NOTE: The Trends in International Mathematics and Science Study (TIMSS) scale average was established to have 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 since then have scaled achievement data so that scores are equivalent from assessment to assessment. That is, a score of 500 in grade 4 science in 2007 is equivalent to a score of 500 in grade 4 science in 2003 and 1995. Countries are ordered by total science 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. The international average is the average of the scores for all reported countries. 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 11, 14, and 17, data from the International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2007.

Table A-16-2. Average science scale scores and percentile scores of 8th-grade students, by content domain and country: 2007

Country (ordered by total score)	Total science	Content domain				Percentile	
		Biology	Chemistry	Physics	Earth science	90th	10th
TIMSS scale average	**500***	**500***	**500***	**500**	**500***	†	†
Singapore	567*	564*	560*	575*	541*	694*	421
Chinese Taipei	561*	549*	573*	554*	545*	665*	439*
Japan	554*	553*	551*	558*	533	648*	454*
Korea, Republic of	553*	548*	536*	571*	538*	646*	452*
England[1]	542*	541*	534*	545*	529	649*	427*
Hungary	539*	534	536*	541*	531	635*	437*
Czech Republic	539*	531	535*	537*	534*	630	447*
Slovenia	538*	530	539*	524*	542*	628	442*
Hong Kong SAR[1,2]	530	527	517	528*	532	625	419
Russian Federation	530*	525	535*	519*	525	627	427*
United States[1,3]	**520**	**530**	**510**	**503**	**525**	**623**	**410**
Lithuania[4]	519	527	507	505	515*	616	414
Australia	515	518*	505	508	519	617	410
Sweden	511*	515*	499*	506	510*	608*	405
Scotland[1]	496*	495*	497*	494	498*	597*	388*
Italy	495*	502*	481*	489*	503*	590*	393*
Armenia	488*	490*	478*	503	475*	612	366*
Norway	487*	487*	483*	475*	502*	578*	389*
Ukraine	485*	477*	490*	492*	482*	588*	374*
Jordan	482*	478*	491*	479*	484*	601*	349*
Malaysia	471*	469*	479*	484*	463*	581*	357*
Thailand	471*	478*	462*	458*	488*	578*	363*
Serbia[3,4]	470*	474*	467*	467*	466*	571*	359*
Bulgaria[5]	470*	467*	472*	466*	480*	595*	330*
Israel[5]	468*	472*	467*	472*	462*	591*	329*
Bahrain	467*	473*	468*	466*	465*	575*	351*
Bosnia and Herzegovina	466*	464*	468*	463*	469*	565*	359*
Romania	462*	459*	463*	458*	471*	572*	345*
Iran, Islamic Republic of	459*	449*	463*	470*	476*	566*	355*
Malta	457*	453*	461*	470*	456*	595*	298*
Turkey	454*	462*	435*	445*	466*	577*	336*
Syrian Arab Republic	452*	459*	450*	447*	448*	546*	355*
Cyprus	452*	447*	452*	458*	457*	556*	339*
Tunisia	445*	452*	458*	432*	447*	524*	367*
Indonesia	427*	428*	421*	432*	442*	520*	330*
Oman	423*	414*	416*	443*	439*	541*	293*
Georgia[4]	421*	423*	418*	416*	425*	527*	309*
Kuwait[6]	418*	419*	418*	438*	410*	530*	298*
Colombia	417*	434*	420*	407*	407*	514*	319*
Lebanon	414*	405*	447*	431*	389*	539*	284*

See notes at end of table.

Table A-16-2. Average science scale scores and percentile scores of 8th-grade students, by content domain and country: 2007—Continued

Country (ordered by total score)	Total science	Content domain				Percentile	
		Biology	Chemistry	Physics	Earth science	90th	10th
TIMSS scale average	**500***	**500***	**500***	**500**	**500***	†	†
Egypt	408*	406*	413*	413*	426*	537*	275*
Algeria	408*	411*	414*	397*	413*	488*	327*
Palestinian National Authority	404*	402*	413*	414*	408*	543*	255*
Saudi Arabia	403*	407*	390*	408*	423*	503*	300*
El Salvador	387*	398*	377*	380*	400*	477*	298*
Botswana	355*	359*	371*	351*	361*	478*	220*
Qatar	319*	318*	322*	347*	312*	480*	146*
Ghana	303*	304*	342*	276*	294*	445*	163*

*$p < .05$. Significantly different from the U.S. score.
† Not applicable.
[1] Met guidelines for sample participation rates only after substitute schools were included.
[2] Hong Kong is a Special Administrative Region (SAR) of the People's Republic of China.
[3] National Defined Population covers 90 to 95 percent of National Target Population.
[4] National Target Population does 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: The Trends in International Mathematics and Science Study (TIMSS) scale average was established to have 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 science in 2007 is equivalent to a score of 500 in grade 8 science in 2003, 1999, and 1995. Countries are ordered by total science 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 11, 15, and 17, data from the International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2007.

Table A-16-3. Average science scale scores of 4th-grade students, by country: 1995 and 2007

Country (ordered by 2007 score)	1995	2007
TIMSS scale average	**500**	**500**
Singapore	523	587*
Hong Kong SAR[1]	508	554*
Japan	553	548*
Latvia[2]	486	542*
England	528	542*
United States[3,4]	**542**	**539**
Hungary	508	536*
Australia	521	527
Austria	538	526*
Netherlands[5]	530	523
Slovenia	464	518*
Czech Republic	532	515*
New Zealand	505	504
Scotland[3]	514	500*
Norway	504	477*
Iran, Islamic Republic of	380	436*

*$p < .05$. 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, met guidelines for sample participation rates only after substitute schools were included.
[4] In 2007, National Defined Population covered 90 to 95 percent of National Target Population.
[5] In 2007, nearly satisfied guidelines for sample participation rates only after substitute schools were included.
NOTE: 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 to have 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 science in 2007 is equivalent to a score of 500 in grade 4 science 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 12, data from the International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2007.

Table A-16-4. Average science scale scores of 8th-grade students, by country: 1995 and 2007

Country (ordered by 2007 score)	1995	2007
TIMSS scale average	**500**	**500**
Singapore	580	567
Japan	554	554
Korea, Republic of	546	553*
England[1]	533	542
Hungary	537	539
Czech Republic	555	539*
Slovenia	514	538*
Hong Kong SAR[1,2]	510	530*
Russian Federation	523	530
United States[1,3]	**513**	**520**
Lithuania[4]	464	519*
Australia	514	515
Sweden	553	511*
Scotland[1]	501	496
Norway	514	487*
Romania	471	462
Iran, Islamic Republic of	463	459
Cyprus	452	452
Colombia	365	417*

*$p < .05$. 2007 average score is significantly different from 1995 average score.
[1] In 2007, met guidelines for sample participation rates only after substitute schools were included.
[2] Hong Kong is a Special Administrative Region (SAR) of the People's Republic of China.
[3] In 2007, National Target Population covered 90 to 95 percent of National Target Population.
[4] In 2007, National Target Population did not include all of the International Target Population.
NOTE: 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 to have 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 science in 2007 is equivalent to a score of 500 in grade 8 science 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 12, data from the International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2007.

Table A-16-5. Trends in 10th and 90th percentile science scores of U.S. 4th- and 8th-grade students: Various years 1995–2007

Percentile	1995	1999[1]	2003	2007
4th grade				
10th	419	—	426	427
90th	654*	—	636	643
8th grade				
10th	384*	386*	419	410
90th	628	636*	628	623

— Not available.
* $p < .05$. Percentile cutpoint score is significantly different from 2007 percentile cutpoint score.
[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.

Table S-16-1. Standard errors for the average science scale scores and percentile scores of 4th-grade students, by content domain, percentile, and country: 2007

Country (ordered by total score)	Total science	Content domain			Percentile	
		Life science	Physical science	Earth science	90th	10th
TIMSS scale average	†	†	†	†	†	†
Singapore	4.1	4.1	3.9	3.3	5.0	7.0
Chinese Taipei	2.0	2.1	2.5	1.9	2.2	3.0
Hong Kong SAR	3.5	3.5	3.5	3.2	4.1	4.5
Japan	2.1	2.0	2.3	2.7	3.4	3.4
Russian Federation	4.8	4.1	4.6	4.3	4.9	4.9
Latvia	2.3	2.1	2.4	2.2	3.3	4.5
England	2.9	2.7	2.7	2.9	4.8	3.7
United States	**2.7**	**2.5**	**2.4**	**2.6**	**2.8**	**4.3**
Hungary	3.3	2.9	3.3	3.5	6.3	6.1
Italy	3.2	3.0	3.1	3.0	3.8	6.3
Kazakhstan	5.6	5.0	5.8	5.2	3.8	9.2
Germany	2.4	2.0	2.5	2.4	4.2	4.3
Australia	3.3	3.4	3.1	3.2	1.4	3.7
Slovak Republic	4.8	4.0	4.6	4.8	4.0	8.3
Austria	2.5	2.0	2.4	1.9	4.1	4.8
Sweden	2.9	2.5	2.7	2.7	2.4	4.0
Netherlands	2.6	2.2	2.3	2.5	4.1	3.6
Slovenia	1.9	2.2	1.6	2.5	2.7	1.7
Denmark	2.9	2.4	2.5	2.7	1.6	9.9
Czech Republic	3.1	2.9	2.8	2.6	5.1	3.5
Lithuania	2.4	1.8	1.4	2.5	2.2	3.3
New Zealand	2.6	2.5	2.5	2.6	3.1	4.7
Scotland	2.3	2.2	1.9	2.5	4.1	3.7
Armenia	5.7	5.9	5.1	5.5	15.2	8.6
Norway	3.5	2.5	2.7	2.9	3.4	7.7
Ukraine	3.1	2.5	2.7	3.1	4.2	5.1
Iran, Islamic Republic of	4.3	4.4	4.2	4.1	3.4	5.5
Georgia	4.6	3.5	4.0	5.0	5.2	7.3
Colombia	5.4	5.2	4.9	5.6	4.9	7.9
El Salvador	3.4	3.6	3.8	3.3	3.4	6.2
Algeria	6.0	6.2	5.3	5.7	6.8	10.0
Kuwait	4.4	4.9	5.2	3.8	5.9	8.0
Tunisia	5.9	5.6	6.4	5.8	4.6	14.0
Morocco	5.9	6.8	5.5	6.2	9.4	7.5
Qatar	2.6	1.4	2.1	2.2	2.0	3.8
Yemen	7.2	†	†	†	8.6	8.3

† 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-20, E-22, and E-25, data from the International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2007.

Table S-16-2. Standard errors for the average science scale scores and percentile scores of 8th-grade students, by content domain and country: 2007

Country (ordered by total score)	Total science	Content domain				Percentile	
		Biology	Chemistry	Physics	Earth science	90th	10th
TIMSS scale average	†	†	†	†	†	†	†
Singapore	4.4	4.2	4.1	3.9	4.1	3.0	7.9
Chinese Taipei	3.7	3.4	4.2	3.7	2.9	3.3	6.4
Japan	1.9	1.9	1.9	1.9	2.5	3.1	4.3
Korea	2.0	1.9	2.4	2.4	2.2	2.1	4.2
England	4.5	4.4	4.0	4.0	4.3	4.9	6.9
Hungary	2.9	2.7	3.5	3.2	2.9	3.5	5.2
Czech Republic	1.9	2.1	2.7	2.1	2.0	3.4	2.3
Slovenia	2.2	2.3	2.5	2.0	2.2	3.3	3.2
Hong Kong SAR	4.9	4.6	4.6	4.8	4.5	4.4	11.2
Russian Federation	3.9	3.6	3.7	4.0	3.4	5.1	6.6
United States	**2.9**	**2.8**	**2.7**	**2.7**	**3.1**	**2.6**	**3.5**
Lithuania	2.6	2.3	2.3	2.9	2.5	3.9	6.8
Australia	3.6	3.4	3.6	4.2	3.8	6.2	6.0
Sweden	2.6	2.4	2.4	2.7	3.0	2.6	4.1
Scotland	3.4	3.2	3.2	3.7	3.2	5.1	5.4
Italy	2.8	3.0	2.9	3.1	3.1	3.4	5.3
Armenia	5.8	5.9	6.3	5.6	5.8	13.7	7.0
Norway	2.2	2.3	2.2	3.0	2.5	1.7	5.6
Ukraine	3.5	3.4	3.3	3.9	4.0	3.3	7.3
Jordan	4.0	3.8	4.1	4.2	3.6	5.0	5.3
Malaysia	6.0	5.8	5.0	5.8	5.4	7.6	9.9
Thailand	4.3	4.5	4.1	4.2	3.8	5.6	5.7
Serbia	3.2	3.2	3.7	3.0	3.8	2.5	6.6
Bulgaria	5.9	6.0	6.1	5.6	5.5	6.8	16.9
Israel	4.3	4.2	4.6	4.6	4.1	4.3	6.0
Bahrain	1.7	2.0	2.4	1.5	2.4	2.4	3.8
Bosnia and Herzegovina	2.8	3.0	2.9	3.1	3.4	3.8	5.5
Romania	3.9	3.2	4.0	3.4	3.3	4.5	6.3
Iran, Islamic Republic of	3.6	3.6	3.5	3.6	3.7	5.2	4.0
Malta	1.4	1.7	2.1	1.7	1.5	2.3	2.9
Turkey	3.7	3.4	5.2	4.3	3.3	4.0	4.3
Syrian Arab Republic	2.9	2.7	2.9	2.7	3.2	3.0	5.1
Cyprus	2.0	1.9	2.5	2.8	2.3	3.1	3.7
Tunisia	2.1	2.2	2.5	2.5	1.8	2.3	2.2
Indonesia	3.4	3.1	3.4	3.1	3.3	3.9	4.8
Oman	3.0	3.1	3.6	2.9	2.5	3.3	5.3
Georgia	4.8	3.9	4.6	5.8	4.1	4.4	7.3
Kuwait	2.8	2.6	3.8	2.8	3.0	3.2	4.8
Colombia	3.5	3.7	3.1	3.5	3.9	3.9	4.7
Lebanon	5.9	6.2	5.5	5.1	6.4	5.7	7.2
Egypt	3.6	3.4	4.0	3.3	3.8	4.3	5.6
Algeria	1.7	1.9	1.7	2.2	1.6	1.5	2.6
Palestinian National Authority	3.5	4.1	4.2	3.7	3.7	4.4	8.1
Saudi Arabia	2.4	2.4	2.5	2.3	2.3	3.4	5.6
El Salvador	2.9	3.0	3.2	3.5	2.9	3.4	4.9
Botswana	3.1	2.9	2.4	3.2	4.0	3.0	4.9
Qatar	1.7	1.7	1.8	2.1	1.9	2.3	4.5
Ghana	5.4	5.0	4.9	5.8	5.8	8.6	8.0

† 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-21, E-23, and E-26, data from the International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2007.

Table S-16-3. Standard errors for the average science scale scores of 4th-grade students, by country: 1995 and 2007

Country (ordered by 2007 score)	1995	2007
TIMSS scale average	†	†
Singapore	4.8	4.1
Hong Kong SAR	3.3	3.5
Japan	1.8	2.1
Latvia	4.9	2.3
England	3.1	2.9
United States	**3.3**	**2.7**
Hungary	3.4	3.3
Australia	3.8	3.3
Austria	3.6	2.5
Netherlands	3.2	2.6
Slovenia	3.1	1.9
Czech Republic	3.0	3.1
New Zealand	5.3	2.6
Scotland	4.5	2.3
Norway	3.7	3.5
Iran, Islamic Republic of	4.6	4.3

† 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-20, data from the International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 1995 and 2007.

Table S-16-4. Standard errors for the average science scale scores of 8th-grade students, by country: 1995 and 2007

Country (ordered by 2007 score)	1995	2007
TIMSS scale average	†	†
Singapore	5.5	4.4
Japan	1.8	1.9
Korea	2.0	2.0
England	3.6	4.5
Hungary	3.1	2.9
Czech Republic	4.5	1.9
Slovenia	2.7	2.2
Hong Kong SAR	5.8	4.9
Russian Federation	4.5	3.9
United States	**5.6**	**2.9**
Lithuania	4.0	2.6
Australia	3.9	3.6
Sweden	4.4	2.6
Scotland	5.6	3.4
Norway	2.4	2.2
Romania	5.1	3.9
Iran, Islamic Republic of	3.6	3.6
Cyprus	2.1	2.0
Colombia	6.2	3.5

† 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-21, data from the International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 1995 and 2007.

Table S-16-5. Standard errors for trends in 10th and 90th percentile science scores of U.S. 4th- and 8th-grade students: Various years 1995–2007

Percentile	1995	1999	2003	2007
4th grade				
10th	5.3	†	3.4	4.3
90th	4.0	†	3.1	2.8
8th grade				
10th	9.8	6.9	5.2	3.5
90th	4.3	4.7	3.5	2.6

† 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.