

# Appendix B

## THE TEST-CURRICULUM MATCHING ANALYSIS

When comparing student achievement across countries, it is important that the comparisons be as “fair” as possible. TIMSS has worked towards this goal in a number of ways, including providing detailed procedures for standardizing the population definitions, sampling, test translations, test administration, scoring, and database formation. Developing the TIMSS tests involved the interaction of experts in the field of mathematics with representatives of the participating countries and testing specialists.<sup>1</sup> The National Research Coordinators (NRCs) from each country formally approved the TIMSS test, thus accepting it as being sufficiently fair to compare their students’ mathematics achievement with that of students from other countries.

Although the TIMSS test was developed to represent a set of agreed-upon mathematics content areas, there are differences among the curricula of participating countries that result in various mathematics topics being taught at different grades. To restrict test items not only to those topics in the curricula of all countries but also to those covered in the same sequence in all participating countries would severely limit test coverage and restrict the research questions about international differences that TIMSS is designed to address. The TIMSS tests, therefore, inevitably contain some items measuring topics unfamiliar to some students in some countries.

The Test-Curriculum Matching Analysis (TCMA) was developed and conducted to investigate the appropriateness of the TIMSS mathematics test for third- and fourth-grade students in the participating countries, and to show how student performance for individual countries varied when based only on the test questions that were judged to be relevant to their own curriculum.<sup>2</sup>

To gather data about the extent to which the TIMSS tests were relevant to the curriculum of the participating countries, TIMSS asked the NRC of each country to report whether or not each item was in the country’s intended curriculum at each of the two grades being tested. The NRC was asked to choose a person or persons who were very familiar with the curricula at the grades being tested to make the determination. Since an item might be in the curriculum for some but not all students in a country, an item was determined appropriate if it was in the intended curriculum for more than 50% of the students. The NRCs had considerable flexibility in selecting items and may have considered items inappropriate for other reasons. All participating countries except Austria and Thailand returned the information for analysis.

<sup>1</sup> See Appendix A for more information on the test development.

<sup>2</sup> Because there also may be curriculum areas covered in some countries that are not covered by the TIMSS tests, the TCMA does not provide complete information about how well the TIMSS tests cover the curricula of the countries.

Tables B.1 and B.2 present the TCMA results for the fourth and third grades, respectively. The first row of each table indicates that at both grades the countries varied substantially in the number of items considered appropriate. At the fourth grade, two-thirds of the countries indicated that items representing three-quarters or more of the score points (85 out of a possible 113) were appropriate,<sup>3</sup> with the percentage ranging from 100% in the United States to 43% (49 score points) in Korea. Although, in general, fewer items were selected at the third grade than at the fourth grade, more than half of the countries selected items representing at least half of the score points (57). The number of score points represented by the selected items for the third grade ranged from 26 (23%) in the Netherlands to 113 (100%) in the United States. That somewhat lower percentages of items were selected for the TCMA at the third grade is consistent with the instrument development process, which put more emphasis on the upper-grade curriculum.

Since most countries indicated that some items were not included in their intended curricula at the two grades tested, the question becomes whether the inclusion of these items had any effect on the international performance comparisons.<sup>4</sup> The TCMA results provide a method for answering this question, providing evidence that the relative standings of countries generally do not vary much for the different sets of items selected from the TIMSS mathematics test.

The first column in Tables B.1 and B.2 shows the overall average percent correct for each country (as discussed in Chapter 2 and reproduced here for convenience in making comparisons). The countries are presented in the order of their overall performance, from highest to lowest. To interpret these tables, reading across a row provides the average percent correct for the students in that country on the items selected by each country, listed across the top of the table. For example, fourth-grade Japanese students had an average of 72% correct on the items Korea selected as appropriate for the Korean students, an average of 75% correct on the items selected for the Singaporean students, 75% correct on its own items, 74% on the items selected by Hong Kong, and so forth. The column for a country shows how each of the other countries performed on the subset of items selected for its own students. Using the set of items selected by Slovenia as an example, on average, 75% of these items were answered correctly by the Korean students, 74% by the Singaporean students, 73% by the Japanese students, 71% by the students from Hong Kong, 70% by Dutch students, and so forth. The shaded diagonal elements in each table show how each country performed on the subset of items that it selected based on its own curriculum. Thus, the Slovenian students themselves averaged 67% correct responses on the items identified by Slovenia for the analysis.

<sup>3</sup> Of the 102 items in the test, some items were assigned more score points than others. In particular, some items had two parts, and some extended-response items were scored on a two-point scale. The total number of score points available for analysis was 113. The TCMA uses the score points in order to give the same importance to items that they received in the test scoring.

<sup>4</sup> It should be noted that the performance levels presented in Tables B.1 and B.2 are based on the average percent correct as was done in Chapter 2, which is different from the average scale scores that were presented in Chapter 1. The cost and delay of scaling would have been prohibitive for the TCMA analyses.

**Table B.1 Test-Curriculum Matching Analysis Results - Mathematics - Upper Grade (Fourth Grade\*)**

Average Percent Correct Based on Subsets of Items Specially Identified by Each Country as Addressing Its Curriculum (See Table B.3 for corresponding standard errors)

Instructions: Read across the row to compare that country's performance based on the test items included by each of the countries across the top. Read down the column under a country name to compare the performance of the country down the left on the items included by the country listed on the top. Read along the diagonal to compare performance for each different country based on its own decisions about the test items to include.

Country	Average Percent Correct on all Items	(Number of Score Points Included)																									
		173	49	84	101	91	59	84	89	96	86	111	113	99	83	105	92	86	99	100	98	92	73	102	97	66	
Korea	76 (0.4)	77	79	77	77	78	77	75	77	77	76	76	77	78	76	77	79	79	78	76	76	77	79	78	77	76	76
Singapore	76 (0.8)	75	79	76	77	78	76	74	75	77	75	76	77	77	75	76	78	78	75	75	75	77	78	77	76	78	78
Japan	74 (0.4)	72	75	75	74	76	75	73	75	75	74	74	75	75	74	74	77	74	74	75	74	75	77	75	74	74	74
Hong Kong	73 (0.8)	69	74	72	73	73	71	74	74	72	73	74	73	73	73	74	74	73	72	72	72	74	75	73	73	74	74
Netherlands	69 (0.7)	68	70	69	69	75	72	70	71	70	69	69	69	71	71	70	72	69	71	70	74	70	70	70	70	69	69
Czech Republic	66 (0.7)	66	67	66	67	71	69	68	68	67	66	66	66	69	68	66	68	67	68	67	68	67	71	67	67	66	66
Slovenia	64 (0.7)	65	65	64	65	68	68	67	67	65	64	64	65	67	66	64	66	64	66	67	66	66	69	65	65	64	64
Hungary	64 (0.8)	65	65	63	64	69	68	66	66	65	63	64	65	67	66	64	66	64	65	65	65	66	69	65	65	65	65
Ireland	63 (0.8)	61	65	64	65	67	65	63	65	64	63	63	65	64	64	65	66	64	64	64	64	64	67	64	64	64	64
Australia	63 (0.6)	59	63	62	64	65	64	64	65	62	63	63	63	64	64	64	65	63	63	63	63	67	63	63	63	63	61
United States	63 (0.7)	61	64	62	64	64	64	62	65	63	62	63	64	63	63	63	65	64	63	63	63	67	63	63	62	62	62
Canada	60 (1.0)	58	61	60	62	63	62	60	63	61	60	60	61	61	62	62	63	61	61	62	61	65	61	61	61	59	59
Israel	59 (1.0)	60	61	59	60	63	62	61	62	60	59	59	60	62	61	60	62	60	61	61	61	60	65	60	60	60	60
Latvia (LSS)	59 (1.0)	59	60	58	59	62	62	62	61	59	58	59	59	61	60	58	61	58	60	61	60	60	64	60	60	60	59
Scotland	58 (0.8)	55	58	57	59	60	59	58	60	58	58	58	59	59	59	60	61	59	58	60	60	63	59	58	58	58	55
England	57 (0.7)	52	56	56	57	58	58	57	59	56	56	57	57	57	58	59	59	59	57	57	59	56	61	57	56	53	53
Cyprus	54 (0.6)	55	55	54	55	57	56	54	55	55	53	54	55	55	54	54	56	55	55	55	55	56	57	55	56	57	57
Norway	53 (0.7)	53	53	53	53	57	56	55	55	53	53	53	53	55	55	53	55	53	55	56	56	54	57	54	54	52	52
New Zealand	53 (1.0)	49	53	52	54	55	54	56	53	53	53	53	54	54	55	55	55	54	54	55	55	53	58	54	53	51	51
Greece	51 (0.9)	50	51	50	52	55	53	52	52	52	50	51	51	52	52	50	52	51	52	52	50	52	54	52	52	53	53
Iceland	50 (0.8)	47	49	49	51	53	52	51	52	50	49	50	50	51	51	50	52	50	50	50	52	55	50	50	50	47	47
Portugal	48 (0.7)	47	49	47	48	50	49	49	49	50	48	48	49	49	48	47	49	48	48	48	48	50	50	49	49	50	50
Iran, Islamic Rep.	38 (0.9)	39	39	37	39	39	39	40	39	39	38	38	39	38	38	37	39	38	39	38	38	40	40	39	40	43	43
Kuwait	32 (0.5)	32	32	31	31	32	33	33	33	32	31	32	32	31	32	30	32	31	32	31	32	33	33	32	32	32	33
International Average	59 (0.7)	58	60	59	60	62	61	60	61	60	59	59	60	61	60	60	61	60	60	60	60	63	60	60	60	60	59

\*Fourth grade in most countries; see Table 2 for more information about the grades tested in each country.  
 \*\*Of the 102 items in the mathematics test, some items had two parts and some extended-response items were scored on a two-point scale, resulting in 113 total score points.  
 ( ) Standard errors for the average percent of correct responses on all items appear in parentheses. Standard errors for scores based on subsets of items are provided in Table B.3.  
 Because results are rounded to the nearest whole number, some totals may appear inconsistent.  
 Countries shown in italics did not satisfy one or more guidelines for sample participation rates, age/grade specifications, or classroom sampling procedures (see Figure A.3 for details).  
 Because population coverage falls below 65% Latvia is annotated LSS for Latvian Speaking Schools only.  
 SOURCE: IEA Third International Mathematics and Science Study (TIMSS), 1994-95.

## Table B.2 Test-Curriculum Matching Analysis Results - Mathematics - Lower Grade (Third Grade\*)

Average Percent Correct Based on Subsets of Items Specially Identified by Each Country as Addressing Its Curriculum (See Table B.4 for corresponding standard errors)

Instructions: Read across the row to compare a country's performance based on the test items included by each of the countries across the top. Read down the column under a country name to compare the performance of the country down the left on the items included by the country listed on the top. Read along the diagonal to compare performance for each different country based on its own decisions about the test items to include.

Country	Average Percent Correct on all Items		(Number of Score Points Included)																					
	113	173	Korea	Japan	Singapore	Hong Kong	Netherlands	Czech Republic	Slovenia	Australia	United States	Hungary	Ireland	Canada	Scotland	England (LSS)	New Zealand	Cyprus	Portugal	Greece	Norway	Iceland	Iran, Islamic Rep.	
Korea	67 (0.5)	69	69	67	74	76	71	68	66	69	67	67	72	73	67	72	68	72	71	69	70	69	68	71
Japan	63 (0.3)	65	67	74	76	71	68	64	63	65	63	65	68	67	65	68	65	67	65	65	67	65	65	68
Singapore	62 (0.9)	61	64	68	70	68	64	63	62	65	62	63	67	66	64	69	61	68	68	64	68	65	65	67
Hong Kong	59 (0.7)	56	59	65	69	63	60	59	61	59	61	61	62	64	64	67	60	63	63	61	64	61	63	65
Netherlands	52 (0.6)	51	51	57	60	63	56	54	56	52	57	57	58	55	59	60	57	57	56	53	58	56	60	56
Czech Republic	52 (0.7)	50	50	58	61	60	55	55	53	52	56	59	55	55	58	60	57	57	55	53	57	55	61	58
Slovenia	51 (0.7)	49	49	56	61	58	55	55	53	51	56	58	55	55	59	58	56	57	55	52	56	54	59	56
Australia	50 (0.9)	47	48	54	58	58	52	51	54	50	54	54	55	54	58	57	54	55	54	50	55	53	57	53
United States	49 (0.7)	47	48	55	59	55	51	50	52	49	52	55	54	56	56	56	52	54	53	50	54	52	53	52
Hungary	49 (0.9)	47	48	56	61	58	52	52	51	49	53	58	53	55	55	55	54	55	53	50	54	52	55	55
Ireland	48 (0.8)	46	47	52	57	55	49	49	50	48	50	55	52	52	55	54	50	52	52	49	52	50	53	51
Canada	47 (0.7)	44	45	52	56	55	50	48	50	47	51	51	53	53	55	54	50	53	51	48	53	50	53	50
Scotland	45 (0.8)	42	43	48	53	53	48	46	49	45	49	48	50	54	53	48	50	50	49	46	50	47	51	47
England	45 (0.6)	43	43	48	52	52	47	46	48	45	49	47	48	53	52	48	49	49	49	45	49	47	51	47
Latvia (LSS)	45 (0.8)	43	43	51	53	50	48	47	47	45	49	51	49	52	51	51	51	51	49	46	50	47	54	50
New Zealand	41 (0.8)	39	39	45	49	47	43	42	44	41	45	44	45	49	49	47	45	45	45	41	46	43	48	44
Cyprus	38 (0.6)	36	39	46	46	43	39	39	39	38	39	45	42	43	43	40	43	43	43	39	44	40	42	43
Portugal	37 (0.8)	35	36	41	45	40	36	38	37	37	38	41	41	41	41	42	39	40	40	38	41	37	38	40
Greece	37 (0.8)	35	37	42	45	46	38	39	38	37	39	43	40	42	41	40	41	41	40	38	44	40	41	40
Norway	36 (0.7)	34	34	39	43	44	38	37	38	36	40	42	39	41	40	42	40	40	38	36	41	38	41	38
Iceland	35 (0.6)	34	34	38	42	43	37	37	38	35	39	40	40	43	40	39	40	40	39	36	40	38	42	38
Iran, Islamic Rep.	28 (0.7)	25	27	33	35	27	27	30	27	28	28	34	30	31	32	31	31	31	29	32	29	31	33	33
International Average	47 (0.7)	45	46	52	56	54	49	48	49	47	50	52	51	53	53	50	52	51	48	52	49	52	49	51

\*Third grade in most countries; see Table 2 for more information about the grades tested in each country.

\*\*Of the 102 items in the mathematics test, some items had two parts and some extended-response items were scored on a two-scale, resulting in 113 total score points.

() Standard errors for the average percent of correct responses on all items appear in parentheses. Standard errors for scores based on subsets of items are provided in Table B.4.

Because results are rounded to the nearest whole number, some totals may appear inconsistent.

Countries shown in italics did not satisfy one or more guidelines for sample participation rates, age/grade specifications, or classroom sampling procedures (see Figure A.3 for details).

Because population coverage falls below 65% Latvia is annotated LSS for Latvian Speaking Schools only.

SOURCE: IEA Third International Mathematics and Science Study (TIMSS), 1994-95.

The international averages presented across the last row of the tables show that the selection of items for the participating countries varied somewhat in average difficulty, ranging from 58% to 63% at the fourth grade and from 45% to 56% at the third grade. Despite these differences, the overall picture provided by Tables B.1 and B.2 reveals that different item selections do not make a major difference in how well countries perform relative to each other. The items selected by some countries were more difficult than those selected by others. The relative performance of countries on the various item selections did vary somewhat, but generally not in a statistically significant manner.<sup>5</sup>

Comparing the diagonal element for a country with the overall average percentage correct shows the difference between performance on this subset of items and performance on the test as a whole. In general, there were small increases in each country's performance on its own subset of items. To illustrate, the average percent correct for fourth-grade students in Ireland is 63%. The diagonal element shows that Irish students had about the same average percent correct (64%) based on the smaller set of items selected as relevant to the curriculum in Ireland as they did overall. In the fourth grade, the differences were 3 average percentage points or less for most countries. Only a few countries had an average percent correct on their own selected items that was more than 4 percentage points higher than their average on the test as a whole. Performance differences between the entire TIMSS test and the subset of items selected for the TCMA were, in general, somewhat larger for third-grade students. Several countries had average performance that was about 10 percentage points higher on the items selected for their own students. The largest increase (11 average percentage points) was for the third-grade students in the Netherlands.

It is clear that the selection of items does not have a major effect on the general relationships among countries. Countries that had substantially higher or lower performance on the overall test in comparison to each other also had higher or lower relative performance on the different sets of items selected for the TCMA. At the fourth grade, Korea, Singapore, Japan, and Hong Kong were the highest-performing countries, both on the test as a whole and on all the different sets of item selections. At the third grade, Korea had the highest average percent correct on the test as a whole and on all of the different item selections, with Japan, Singapore and Hong Kong among the top four highest-performing countries in all cases. Although there were some changes in the ordering of countries based on the items selected for the TCMA, most of these differences are within the boundaries of sampling error.

<sup>5</sup> Small differences in performance in these tables are not statistically significant. The standard errors for the estimated average percent correct statistics can be found in Tables B.3 and B.4. We can say with 95% confidence that the value for the entire population will fall between the sample estimate plus or minus two standard errors.

As the most extreme example, consider the 26 score points selected by the Netherlands for the third grade. The Netherlands did substantially better on these items than on the test as a whole, with 63% correct responses to these items, on average, compared to only 52% average correct on the test as a whole. However, almost all other countries also did better on these particular items, with an international average of 54% for the items selected by the Netherlands compared with 47% on the test as a whole. Insofar as countries rejected items that would be difficult for their own students, these items tended to be difficult for students in other countries as well. The analysis shows that omitting such items improves the results for that country, but also tends to improve the results for all other countries, so that the overall pattern of results is largely unaffected.

**Table B.3 Standard Errors for the Test-Curriculum Matching Analysis Results Mathematics - Upper Grade (Fourth Grade\*)**

**See Table B.1 for the Test-Curriculum Matching Analysis Results**

Instructions: Read across the row for the standard error for the score based on the test items included by each of the countries across the top. Read down the column under a country name for the standard error for the score of the country down the left on the items included by the country listed on the top. Read along the *diagonal* for the standard error for the score for each different country based on its own decisions about the test items to include.

Country	Average Percent Correct on all Items																					
	(Number of Score Points Included)																					
	49	84	84	89	96	86	111	113	99	83	105	92	86	99	100	98	92	73	102	97	66	
<i>Korea</i>	76 (0.4)	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
<i>Singapore</i>	76 (0.8)	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
<i>Japan</i>	74 (0.4)	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
<i>Hong Kong</i>	73 (0.8)	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
<i>Netherlands</i>	69 (0.7)	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
<i>Czech Republic</i>	66 (0.7)	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
<i>Slovenia</i>	64 (0.7)	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
<i>Hungary</i>	64 (0.8)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
<i>Ireland</i>	63 (0.8)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
<i>Australia</i>	63 (0.6)	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
<i>United States</i>	63 (0.7)	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
<i>Canada</i>	60 (1.0)	1.0	1.0	1.1	1.1	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
<i>Israel</i>	59 (1.0)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
<i>Latvia (LSS)</i>	59 (1.0)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
<i>Scotland</i>	58 (0.8)	0.8	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
<i>England</i>	57 (0.7)	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.7	0.7	0.7	0.7	0.6	0.7	0.7	0.7	0.7	0.7
<i>Cyprus</i>	54 (0.6)	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
<i>Norway</i>	53 (0.7)	0.8	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
<i>New Zealand</i>	53 (1.0)	0.9	1.0	1.0	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
<i>Greece</i>	51 (0.9)	1.0	1.0	0.9	0.9	1.0	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	0.9	0.9	0.9	1.0	0.9	0.9	1.0	1.0
<i>Iceland</i>	50 (0.8)	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
<i>Portugal</i>	48 (0.7)	0.7	0.8	0.7	0.8	0.8	0.7	0.7	0.8	0.8	0.7	0.8	0.8	0.8	0.8	0.8	0.7	0.8	0.8	0.8	0.7	0.7
<i>Iran, Islamic Rep.</i>	38 (0.9)	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0
<i>Kuwait</i>	32 (0.5)	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
<b>International Average</b>	<b>59 (0.7)</b>	<b>0.8</b>	<b>0.8</b>	<b>0.8</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.8</b>	<b>0.8</b>	<b>0.8</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>

\*Fourth grade in most countries; see Table 2 for more information about the grades tested in each country.  
 \*\*Of the 102 items in the mathematics test, some items had two parts and some extended-response items were scored on a two-point scale, resulting in 113 total score points.  
 () Standard errors for the average percent of correct responses on all items appear in parentheses. The matrix contains standard errors corresponding to the average percent of correct responses based on TCMA subsets of items, as displayed in Table B.1. Because results are rounded to the nearest whole number, some totals may appear inconsistent.  
 Countries shown in italics did not satisfy one or more guidelines for sample participation rates, age/grade specifications, or classroom sampling procedures (see Figure A.3 for details).  
 Because population coverage falls below 65% Latvia is annotated LSS for Latvian Speaking Schools only.  
 SOURCE: IEA Third International Mathematics and Science Study (TIMSS), 1994-95.

## Table B.4 Standard Errors for the Test-Curriculum Matching Analysis Results Mathematics - Lower Grade (Third Grade\*)

See Table B.3 for the Test-Curriculum Matching Analysis Results

Instructions: Read across the row for the standard error for the score based on the test items included by each of the countries across the top.  
 Read down the column under a country name for the standard error for the score of the country down the left on the items included by the country listed on the top.  
 Read along the diagonal for the standard error for the score for each different country based on its own decisions about the test items to include.

Country	Average Percent Correct on all Items																											
	(Number of Score Points Included)																											
	113	69	84	58	45	26	Netherlands		Czech Republic		Slovenia		Australia	United States	Hungary	Ireland	Canada	Scotland	England	Latvia (LSS)	New Zealand	Cyprus	Portugal	Greece	Norway	Iceland	Iran, Islamic Rep.	
Korea	67 (0.5)	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Japan	63 (0.3)	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Singapore	62 (0.9)	1.0	0.9	0.9	0.9	0.9	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Hong Kong	59 (0.7)	0.8	0.8	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Netherlands	52 (0.6)	0.6	0.6	0.7	0.6	0.6	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Czech Republic	52 (0.7)	0.7	0.7	0.7	0.7	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Slovenia	51 (0.7)	0.7	0.7	0.8	0.7	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Australia	50 (0.9)	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
United States	49 (0.7)	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Hungary	49 (0.9)	0.8	0.8	0.9	1.0	0.9	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Ireland	48 (0.8)	0.8	0.8	0.8	0.9	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Canada	47 (0.7)	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Scotland	45 (0.8)	0.8	0.8	0.8	0.8	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
England	45 (0.6)	0.6	0.6	0.7	0.7	0.7	0.6	0.7	0.7	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Latvia (LSS)	45 (0.8)	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
New Zealand	41 (0.8)	0.9	0.8	0.9	1.0	1.0	0.9	0.9	1.0	0.8	0.9	1.0	1.0	0.9	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Cyprus	38 (0.6)	0.6	0.6	0.7	0.7	0.7	0.6	0.6	0.7	0.6	0.6	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Portugal	37 (0.8)	0.8	0.8	0.9	1.0	1.0	0.9	0.8	0.9	0.8	0.9	0.8	0.9	0.8	0.9	0.8	0.9	0.8	0.9	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Greece	37 (0.8)	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.9	0.8	0.8	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Norway	36 (0.7)	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Iceland	35 (0.6)	0.6	0.6	0.7	0.7	0.8	0.7	0.7	0.7	0.6	0.7	0.7	0.7	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Iran, Islamic Rep.	28 (0.7)	0.7	0.7	0.9	1.0	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
International Average	47 (0.7)	0.7	0.7	0.8	0.8	0.8	0.8	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8

\*Third grade in most countries; see Table 2 for more information about the grades tested in each country.

\*\*Of the 102 items in the mathematics test, some items had two parts and some extended-response items were scored on a two-point scale, resulting in 113 total score points.

( ) Standard errors for the average percent of correct responses on all items appear in parentheses. The matrix contains standard errors corresponding to the average percent of correct responses based on TCMA subsets of items, as displayed in Table B.2. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

Countries shown in italics did not satisfy one or more guidelines for sample participation rates, age/grade specifications, or classroom sampling procedures (see Figure A.3 for details). Because population coverage falls below 65% Latvia is annotated LSS for Latvian Speaking Schools only.

SOURCE: IEA Third International Mathematics and Science Study (TIMSS), 1994-95.