

Appendix F: The Test–Curriculum Matching Analysis

TIMSS went to great lengths to ensure that comparisons of student achievement across countries would be as fair and equitable as possible. The [TIMSS 2015 Assessment Frameworks](#) were designed to specify the important aspects of mathematics that participating countries agreed should be the focus of an international assessment of mathematics achievement, and the assessment items were developed through a collaborative process with national representatives to faithfully represent the specifications in the frameworks and field tested extensively in participating countries. Finalizing the TIMSS 2015 assessments involved a series of reviews by representatives of the participating countries, experts in mathematics, and testing specialists. At the end of this process, the National Research Coordinators (NRCs) from each country formally approved the TIMSS 2015 assessments, thus accepting them as being sufficiently fair to compare their students' mathematics achievement with that of students from other countries.

Although the assessments were developed to represent an agreed-upon framework and were intended to have as much in common across countries as possible, it was unavoidable that the match between the TIMSS 2015 assessment (or test) and the mathematics curriculum would not be the same in all countries. To restrict test items to just those topics included in the curricula of all participating countries and covered in the same sequence would severely limit test coverage and restrict the research questions that the study is designed to address. The tests, therefore, inevitably have some items measuring topics unfamiliar to some students in some countries.

The Test-Curriculum Matching Analysis (TCMA) was conducted to investigate the extent to which the TIMSS 2015 mathematics assessment matched each country's curriculum. The TCMA also investigates the impact on a country's performance of including only achievement items that were judged to be relevant to its own curriculum.¹

To gather data about the extent to which the TIMSS 2015 tests matched the curricula of the TIMSS countries and benchmarking participants, NRCs were asked to examine each achievement item and indicate whether the item was in their country's intended curriculum at the grade tested (fourth or eighth grade). The NRCs were asked to choose persons very familiar with the curriculum at these grades to make this determination. In some countries, the curriculum was prescribed for a range of grades and was not explicit about what was to be covered by the end of the fourth or eighth grades. For example, in Poland the curriculum specifies the curricular goals to be achieved by the end of the sixth and ninth grades, but does not provide a grade-by-grade specification. In such

¹ Because there also may be curriculum areas covered in some countries that are not covered by the TIMSS 2015 tests, the TCMA does not provide complete information about how well the tests cover the curricula of the countries.

situations, coordinators were asked to make the best judgment possible.² Because an item might be in the curriculum for some but not all students in a country, NRCs were asked to consider an item included if it was in the intended curriculum for more than 50 percent of the students. All TIMSS 2015 participants took part in the TCMA analysis except Norway (4) and Buenos Aires at the fourth grade and Egypt, Norway (8), and Buenos Aires at the eighth grade. TCMA was not administered for TIMSS Numeracy and therefore Jordan and South Africa (5), who participated in TIMSS Numeracy but did not participate in TIMSS at the fourth grade, are not included in the fourth grade exhibit.

Exhibits F.1 through F.4 present the TCMA results for the TIMSS 2015 mathematics test at the fourth and eighth grades. Exhibits F.1 and F.2 show the average percent correct on the mathematics items judged appropriate by each country at the fourth and eighth grades, respectively. Exhibits F.3 and F.4 show the standard errors corresponding to the percentages presented in Exhibits F.1 and F.2.

In Exhibit F.1, the bottom row of the exhibit shows the number of items, in terms of score points, identified as appropriate in each country. At the fourth grade, the maximum number of score points in the assessment was 178 points.³ Generally, the proportion of items judged appropriate was fairly high. Reading along the bottom row, it can be seen that 4 of the 47 countries that took part in the TCMA analysis judged 100 percent of the items to be included in their curricula as did 1 of the 5 benchmarking participants. A further 34 countries and 2 of the other 4 benchmarking participants judged 75 percent or more (134 score points) to be appropriate. All of the participants concurred that more than half of the mathematics items were included in their curricula.

At the eighth grade, the percentage of items judged appropriate was similar; 4 of the 38 countries and 1 of the 5 benchmarking participants judged 100 percent of the items to be appropriate (all 221 score points), and an additional 33 countries and the remainder of the benchmarking participants judged 75 percent or more (166 score points) to be appropriate.

Because most countries indicated that at least some items were not included in their intended curriculum at the grade tested, the data were analyzed to determine whether the inclusion of these items had any effect on the international performance comparisons.⁴

The first column of data in Exhibits F.1 and F.2 show the average percent correct on all test items for each participant, together with its standard error. Subsequent columns show the performance of each participant on those items judged appropriate by the participant listed at the head of the column. Participants are presented in order of their performance based on average percent correct on all items, from highest to lowest. To interpret these exhibits, choosing a country and reading across its row provides the average percent correct for the students in that country on the items selected by each of the countries listed along the top of the exhibit. For example, at the fourth grade, Hong Kong, where the average percent correct was 75 percent on its own set of items,

2 Exhibits 5 and 6 of the TIMSS 2015 Encyclopedia provide information on the grade-to-grade structure of the curriculum for each TIMSS 2015 participant.
 3 The TIMSS 2015 fourth grade mathematics assessment contained 169 items, yielding 182 score points. However, following item review, response categories for four of the items were combined, resulting in data for 178 score points. Similarly, following item review, the 212 items and 229 score points in the eighth grade assessment were reduced to 209 items and 221 score points.
 4 It should be noted that the mathematics achievement presented in Exhibits F.1 and F.2 is based on average percent correct (the percentage of students in a country answering each item correctly, averaged across all items), which is different from the average scale scores that are presented in main tables of the report.

Exhibit F.1: Average Percent Correct for the Test-Curriculum Matching Analysis, Fourth Grade

Based on a subset of items specifically identified by each country as addressing its curriculum

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.

SOURCE: IEA's Trends in International Mathematics and Science Study - TIMSS 2015

| Country | Average Percent Correct on All Items | Hong Kong SAR | Singapore | Korea, Rep. of | Chinese Taipei | Japan | Northern Ireland | Russian Federation | Ireland | Norway (5) | England | Belgium (Flemish) | Kazakhstan | Portugal | United States | Denmark | Lithuania | Finland | Hungary | Poland | Czech Republic | Netherlands | Bulgaria | Cyprus | Germany | Slovenia | Australia | Serbia | Sweden | Canada | Italy | | |
|----------------------|--------------------------------------|---------------|-----------|----------------|----------------|-------|------------------|--------------------|---------|------------|---------|-------------------|------------|----------|---------------|---------|-----------|---------|---------|--------|----------------|-------------|----------|--------|---------|----------|-----------|--------|--------|--------|-------|----|----|
| | Hong Kong SAR | 75 (0.7) | 75 | 75 | 75 | 74 | 76 | 75 | 75 | 75 | 75 | 75 | 75 | 74 | 75 | 77 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 76 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 |
| Singapore | 74 (0.8) | 74 | 76 | 75 | 75 | 75 | 74 | 74 | 75 | 74 | 75 | 74 | 75 | 74 | 75 | 76 | 73 | 75 | 74 | 75 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 75 |
| Korea, Rep. of | 73 (0.5) | 74 | 74 | 76 | 73 | 76 | 73 | 74 | 74 | 73 | 74 | 75 | 74 | 73 | 74 | 76 | 73 | 75 | 73 | 75 | 73 | 75 | 71 | 75 | 73 | 75 | 75 | 74 | 75 | 75 | 73 | 74 | 75 |
| Chinese Taipei | 70 (0.4) | 72 | 72 | 73 | 72 | 74 | 71 | 71 | 71 | 70 | 71 | 72 | 70 | 70 | 71 | 73 | 70 | 71 | 70 | 72 | 71 | 69 | 71 | 71 | 71 | 70 | 71 | 72 | 71 | 70 | 71 | 70 | 71 |
| Japan | 70 (0.4) | 70 | 70 | 72 | 70 | 73 | 70 | 70 | 71 | 70 | 70 | 72 | 70 | 70 | 70 | 73 | 70 | 71 | 70 | 71 | 71 | 69 | 71 | 70 | 71 | 71 | 71 | 70 | 71 | 72 | 70 | 71 | 71 |
| Northern Ireland | 64 (0.7) | 64 | 64 | 64 | 63 | 65 | 65 | 65 | 65 | 64 | 65 | 64 | 65 | 64 | 65 | 64 | 65 | 64 | 65 | 64 | 65 | 64 | 65 | 66 | 65 | 65 | 65 | 64 | 64 | 64 | 65 | 64 | 65 |
| Russian Federation | 63 (0.9) | 62 | 61 | 63 | 61 | 64 | 63 | 67 | 63 | 63 | 62 | 63 | 66 | 63 | 63 | 66 | 64 | 63 | 64 | 63 | 65 | 64 | 68 | 64 | 65 | 65 | 63 | 64 | 64 | 63 | 64 | 63 | 64 |
| Ireland | 59 (0.6) | 59 | 59 | 59 | 58 | 60 | 59 | 59 | 60 | 59 | 59 | 57 | 59 | 59 | 62 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 60 | 60 | 60 | 60 | 59 | 58 | 60 | 59 | 59 | |
| Norway (5) | 59 (0.7) | 59 | 58 | 59 | 58 | 59 | 59 | 59 | 60 | 59 | 59 | 60 | 58 | 59 | 59 | 63 | 59 | 60 | 60 | 59 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 59 | 59 | 62 | 59 | 60 | |
| England | 58 (0.7) | 58 | 58 | 57 | 57 | 58 | 58 | 59 | 59 | 58 | 59 | 58 | 57 | 58 | 59 | 62 | 58 | 58 | 59 | 58 | 59 | 58 | 59 | 60 | 60 | 60 | 60 | 58 | 58 | 58 | 58 | 58 | 59 |
| Belgium (Flemish) | 58 (0.6) | 58 | 58 | 58 | 57 | 59 | 58 | 57 | 59 | 58 | 58 | 59 | 57 | 58 | 58 | 61 | 57 | 59 | 58 | 59 | 58 | 57 | 58 | 58 | 58 | 59 | 58 | 58 | 58 | 59 | 58 | 58 | |
| Kazakhstan | 57 (1.2) | 57 | 57 | 58 | 57 | 58 | 57 | 61 | 57 | 57 | 57 | 58 | 60 | 57 | 58 | 60 | 58 | 58 | 58 | 58 | 58 | 59 | 58 | 61 | 58 | 60 | 59 | 57 | 59 | 58 | 57 | 58 | |
| Portugal | 57 (0.6) | 57 | 57 | 57 | 56 | 58 | 57 | 57 | 58 | 57 | 57 | 57 | 57 | 57 | 57 | 60 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 58 | 57 | 57 | 57 | 57 | 57 | 57 | |
| United States | 57 (0.5) | 57 | 57 | 57 | 56 | 57 | 57 | 57 | 56 | 57 | 57 | 57 | 55 | 57 | 57 | 60 | 56 | 57 | 57 | 56 | 57 | 56 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | |
| Denmark | 56 (0.7) | 56 | 56 | 56 | 55 | 56 | 56 | 57 | 57 | 56 | 56 | 57 | 56 | 56 | 57 | 61 | 56 | 57 | 57 | 56 | 57 | 57 | 57 | 58 | 56 | 58 | 57 | 56 | 56 | 59 | 56 | 57 | |
| Lithuania | 56 (0.7) | 54 | 53 | 55 | 54 | 57 | 56 | 58 | 55 | 55 | 56 | 56 | 56 | 56 | 59 | 57 | 56 | 56 | 56 | 56 | 57 | 57 | 59 | 56 | 58 | 57 | 56 | 56 | 57 | 56 | 56 | 56 | |
| Finland | 55 (0.5) | 54 | 54 | 55 | 54 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 59 | 55 | 56 | 55 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 55 | 56 | 55 | 56 | 55 | 55 |
| Hungary | 55 (0.7) | 55 | 54 | 54 | 53 | 55 | 55 | 58 | 55 | 55 | 55 | 55 | 57 | 55 | 55 | 58 | 55 | 55 | 55 | 56 | 54 | 57 | 56 | 58 | 56 | 58 | 56 | 54 | 56 | 57 | 55 | 55 | |
| Poland | 55 (0.6) | 54 | 54 | 55 | 54 | 55 | 55 | 56 | 55 | 54 | 54 | 56 | 55 | 55 | 55 | 58 | 55 | 56 | 55 | 56 | 56 | 55 | 57 | 55 | 56 | 56 | 55 | 56 | 55 | 56 | 57 | 55 | 55 |
| Czech Republic | 53 (0.6) | 54 | 52 | 53 | 52 | 54 | 53 | 55 | 54 | 53 | 53 | 54 | 55 | 53 | 54 | 57 | 53 | 54 | 55 | 53 | 56 | 55 | 56 | 54 | 57 | 56 | 52 | 55 | 56 | 53 | 54 | 54 | |
| Netherlands | 53 (0.5) | 52 | 52 | 53 | 52 | 54 | 53 | 55 | 53 | 53 | 53 | 55 | 55 | 53 | 53 | 58 | 55 | 54 | 54 | 54 | 55 | 56 | 56 | 54 | 55 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 |
| Bulgaria | 53 (1.3) | 54 | 53 | 54 | 52 | 55 | 53 | 59 | 53 | 53 | 53 | 53 | 57 | 53 | 54 | 56 | 54 | 53 | 54 | 54 | 54 | 53 | 59 | 54 | 57 | 55 | 53 | 55 | 54 | 53 | 54 | 53 | 54 |
| Cyprus | 53 (0.6) | 53 | 52 | 52 | 51 | 53 | 53 | 54 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 56 | 53 | 53 | 53 | 54 | 53 | 54 | 54 | 54 | 54 | 55 | 53 | 53 | 53 | 55 | 53 | 53 | |
| Germany | 52 (0.5) | 51 | 51 | 51 | 50 | 53 | 52 | 55 | 53 | 52 | 52 | 52 | 52 | 52 | 52 | 56 | 52 | 52 | 52 | 53 | 52 | 53 | 53 | 56 | 53 | 56 | 54 | 52 | 54 | 52 | 54 | 52 | 52 |
| Slovenia | 51 (0.5) | 51 | 50 | 50 | 49 | 51 | 52 | 53 | 52 | 51 | 51 | 51 | 52 | 51 | 52 | 55 | 51 | 52 | 53 | 51 | 54 | 53 | 54 | 52 | 54 | 54 | 51 | 52 | 54 | 51 | 52 | 54 | 51 |
| Australia | 51 (0.7) | 51 | 50 | 50 | 50 | 51 | 51 | 51 | 52 | 51 | 51 | 51 | 50 | 51 | 51 | 55 | 52 | 51 | 52 | 51 | 52 | 53 | 52 | 52 | 53 | 53 | 52 | 51 | 54 | 51 | 51 | 52 | |
| Serbia | 51 (0.8) | 51 | 51 | 52 | 51 | 53 | 52 | 55 | 51 | 51 | 51 | 52 | 54 | 51 | 51 | 55 | 52 | 52 | 53 | 52 | 53 | 53 | 55 | 52 | 54 | 53 | 52 | 54 | 53 | 52 | 54 | 51 | 52 |
| Sweden | 51 (0.7) | 50 | 49 | 51 | 49 | 51 | 51 | 54 | 51 | 51 | 51 | 51 | 52 | 51 | 51 | 55 | 52 | 52 | 52 | 51 | 53 | 53 | 55 | 52 | 54 | 53 | 52 | 52 | 55 | 51 | 51 | 52 | |
| Canada | 49 (0.5) | 49 | 48 | 49 | 48 | 50 | 50 | 50 | 49 | 49 | 49 | 49 | 49 | 49 | 50 | 53 | 50 | 50 | 50 | 49 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 50 |
| Italy | 48 (0.6) | 48 | 48 | 49 | 47 | 49 | 48 | 49 | 49 | 48 | 48 | 48 | 48 | 48 | 48 | 51 | 48 | 48 | 48 | 48 | 49 | 48 | 47 | 50 | 48 | 50 | 49 | 48 | 49 | 49 | 48 | 49 | 48 |
| Spain | 47 (0.6) | 48 | 47 | 48 | 47 | 49 | 48 | 48 | 48 | 47 | 47 | 48 | 47 | 47 | 48 | 51 | 48 | 48 | 48 | 48 | 48 | 48 | 47 | 49 | 48 | 50 | 49 | 48 | 48 | 49 | 47 | 48 | |
| Croatia | 47 (0.5) | 47 | 47 | 48 | 46 | 49 | 47 | 52 | 47 | 46 | 46 | 47 | 51 | 47 | 47 | 50 | 47 | 47 | 47 | 48 | 48 | 46 | 52 | 47 | 51 | 49 | 47 | 49 | 47 | 49 | 48 | 47 | 48 |
| Slovak Republic | 46 (0.5) | 46 | 45 | 46 | 44 | 46 | 46 | 50 | 46 | 46 | 46 | 47 | 48 | 46 | 46 | 47 | 46 | 47 | 47 | 46 | 48 | 48 | 51 | 47 | 49 | 48 | 47 | 48 | 47 | 48 | 46 | 47 | 46 |
| New Zealand | 45 (0.5) | 44 | 43 | 43 | 43 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 45 | 45 | 49 | 45 | 45 | 45 | 45 | 46 | 47 | 45 | 45 | 46 | 46 | 45 | 45 | 45 | 47 | 45 | 45 | |
| Turkey | 44 (0.7) | 45 | 45 | 45 | 44 | 46 | 45 | 46 | 45 | 44 | 44 | 44 | 44 | 44 | 45 | 47 | 45 | 45 | 45 | 45 | 45 | 44 | 46 | 45 | 46 | 46 | 44 | 45 | 45 | 44 | 45 | 44 | 45 |
| France | 44 (0.7) | 44 | 43 | 43 | 42 | 44 | 44 | 45 | 44 | 43 | 44 | 44 | 44 | 44 | 44 | 47 | 43 | 44 | 44 | 44 | 45 | 43 | 45 | 44 | 46 | 45 | 43 | 45 | 45 | 46 | 44 | 44 | 44 |
| Georgia | 39 (0.8) | 38 | 38 | 40 | 38 | 40 | 39 | 44 | 39 | 39 | 39 | 40 | 42 | 39 | 39 | 42 | 40 | 39 | 40 | 39 | 41 | 40 | 43 | 40 | 42 | 41 | 39 | 40 | 40 | 39 | 40 | 39 | 40 |
| United Arab Emirates | 38 (0.5) | 38 | 38 | 38 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 37 | 38 | 38 | 41 | 38 | 38 | 38 | 38 | 39 | 38 | 38 | 38 | 39 | 39 | 38 | 38 | 39 | 38 | 38 | 38 | 38 |
| Chile | 37 (0.5) | 36 | 36 | 36 | 36 | 38 | 37 | 37 | 38 | 37 | 37 | 36 | 36 | 37 | 37 | 41 | 38 | 37 | 37 | 37 | 39 | 38 | 38 | 38 | 39 | 39 | 37 | 38 | 40 | 37 | 37 | 37 | |
| Bahrain | 36 (0.4) | 36 | 36 | 36 | 35 | 36 | 37 | 37 | 37 | 36 | 36 | 35 | 36 | 35 | 36 | 37 | 39 | 37 | 36 | 37 | 37 | 37 | 37 | 37 | 38 | 38 | 36 | 36 | 36 | 36 | 36 | 37 | |
| Qatar | 35 (0.7) | 35 | 35 | 35 | 34 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 34 | 35 | 35 | 38 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 36 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |
| Oman | 33 (0.5) | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 32 | 32 | 33 | 34 | 35 | 33 | 33 | 33 | 34 | 33 | 34 | 33 | 33 | 33 | 34 | 34 | 33 | | | | | |

Exhibit F.1: Average Percent Correct for the Test-Curriculum Matching Analysis, Fourth Grade (Continued)

Based on a subset of items specifically identified by each country as addressing its curriculum

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 | | | | | | | | | | | | | | | | | Benchmarking Participants | | | | | | |
|-----------------------|--------------------------------------|---------|-----------------|-------------|--------|--------|---------|----------------------|-------|---------|-------|------|-----------------------|-----------|---------|--------------|--------|---------------------------|-----------------|----|----|----|----|----|
| | Spain | Croatia | Slovak Republic | New Zealand | Turkey | France | Georgia | United Arab Emirates | Chile | Bahrain | Qatar | Oman | Iran, Islamic Rep. of | Indonesia | Morocco | Saudi Arabia | Kuwait | | | | | | | |
| Hong Kong SAR | 75 (0.7) | 76 | 74 | 74 | 76 | 75 | 75 | 74 | 75 | 75 | 75 | 76 | 75 | 74 | 75 | 75 | 75 | 75 | Florida, US | 75 | 75 | 75 | 74 | 76 |
| Singapore | 74 (0.8) | 74 | 73 | 73 | 74 | 75 | 74 | 73 | 74 | 74 | 74 | 76 | 74 | 74 | 74 | 74 | 75 | 75 | Quebec, Canada | 75 | 75 | 74 | 74 | 73 |
| Korea, Rep. of | 73 (0.5) | 74 | 73 | 74 | 74 | 74 | 74 | 73 | 73 | 73 | 74 | 73 | 73 | 73 | 72 | 74 | 73 | 74 | Dubai, UAE | 74 | 75 | 73 | 72 | 73 |
| Chinese Taipei | 70 (0.4) | 71 | 70 | 71 | 70 | 71 | 71 | 71 | 70 | 70 | 71 | 71 | 73 | 70 | 70 | 71 | 70 | 72 | Ontario, Canada | 71 | 71 | 70 | 70 | 69 |
| Japan | 70 (0.4) | 71 | 69 | 70 | 71 | 71 | 71 | 71 | 70 | 69 | 70 | 70 | 70 | 69 | 71 | 70 | 70 | 70 | Abu Dhabi, UAE | 70 | 71 | 70 | 70 | 70 |
| Northern Ireland | 64 (0.7) | 65 | 62 | 65 | 65 | 65 | 65 | 64 | 64 | 64 | 65 | 64 | 66 | 64 | 64 | 65 | 64 | 65 | | 65 | 66 | 64 | 65 | 65 |
| Russian Federation | 63 (0.9) | 63 | 65 | 66 | 64 | 64 | 64 | 65 | 63 | 63 | 63 | 63 | 63 | 63 | 61 | 64 | 63 | 63 | | 63 | 64 | 63 | 62 | 65 |
| Ireland | 59 (0.6) | 59 | 56 | 58 | 60 | 59 | 59 | 58 | 59 | 58 | 59 | 59 | 61 | 59 | 58 | 59 | 59 | 60 | | 59 | 61 | 59 | 60 | 59 |
| Norway (5) | 59 (0.7) | 60 | 57 | 60 | 61 | 60 | 60 | 59 | 59 | 59 | 59 | 59 | 60 | 59 | 57 | 59 | 59 | 59 | | 59 | 61 | 59 | 60 | 60 |
| England | 58 (0.7) | 59 | 57 | 60 | 60 | 59 | 59 | 58 | 58 | 58 | 59 | 58 | 60 | 58 | 57 | 59 | 58 | 59 | | 59 | 60 | 58 | 59 | 59 |
| Belgium (Flemish) | 58 (0.6) | 59 | 57 | 57 | 59 | 59 | 59 | 57 | 58 | 58 | 58 | 58 | 60 | 58 | 57 | 59 | 58 | 59 | | 58 | 59 | 58 | 57 | 57 |
| Kazakhstan | 57 (1.2) | 58 | 61 | 59 | 58 | 58 | 58 | 58 | 57 | 58 | 58 | 58 | 58 | 58 | 57 | 59 | 57 | 58 | | 58 | 59 | 57 | 57 | 59 |
| Portugal | 57 (0.6) | 58 | 55 | 56 | 59 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 59 | 57 | 56 | 57 | 57 | 58 | | 57 | 59 | 57 | 57 | 57 |
| United States | 57 (0.5) | 57 | 55 | 56 | 58 | 57 | 57 | 56 | 57 | 56 | 57 | 56 | 58 | 57 | 56 | 57 | 57 | 57 | | 57 | 58 | 57 | 57 | 56 |
| Denmark | 56 (0.7) | 57 | 56 | 57 | 58 | 57 | 57 | 56 | 56 | 56 | 56 | 56 | 57 | 56 | 55 | 57 | 56 | 56 | | 57 | 58 | 56 | 56 | 57 |
| Lithuania | 56 (0.7) | 56 | 55 | 57 | 57 | 56 | 56 | 56 | 56 | 55 | 56 | 55 | 56 | 56 | 54 | 57 | 56 | 56 | | 56 | 57 | 56 | 55 | 57 |
| Finland | 55 (0.5) | 55 | 53 | 56 | 57 | 56 | 55 | 55 | 55 | 54 | 55 | 54 | 56 | 55 | 53 | 55 | 55 | 55 | | 55 | 57 | 55 | 55 | 56 |
| Hungary | 55 (0.7) | 55 | 57 | 58 | 56 | 56 | 56 | 56 | 55 | 54 | 55 | 55 | 56 | 55 | 54 | 58 | 55 | 55 | | 55 | 57 | 55 | 54 | 57 |
| Poland | 55 (0.6) | 55 | 54 | 56 | 57 | 56 | 55 | 56 | 55 | 54 | 55 | 54 | 55 | 55 | 53 | 54 | 55 | 55 | | 55 | 56 | 55 | 55 | 55 |
| Czech Republic | 53 (0.6) | 54 | 55 | 57 | 55 | 54 | 55 | 55 | 53 | 53 | 54 | 53 | 55 | 54 | 52 | 55 | 53 | 54 | | 54 | 55 | 53 | 54 | 55 |
| Netherlands | 53 (0.5) | 54 | 53 | 58 | 54 | 54 | 54 | 54 | 53 | 53 | 54 | 53 | 54 | 54 | 51 | 54 | 53 | 53 | | 53 | 55 | 53 | 54 | 56 |
| Bulgaria | 53 (1.3) | 53 | 58 | 57 | 54 | 54 | 54 | 55 | 53 | 53 | 54 | 53 | 54 | 53 | 53 | 57 | 53 | 54 | | 54 | 55 | 53 | 51 | 56 |
| Cyprus | 53 (0.6) | 53 | 53 | 52 | 55 | 54 | 54 | 54 | 53 | 52 | 53 | 53 | 54 | 53 | 52 | 54 | 53 | 53 | | 53 | 55 | 53 | 53 | 55 |
| Germany | 52 (0.5) | 53 | 53 | 56 | 54 | 53 | 53 | 53 | 52 | 52 | 52 | 52 | 53 | 52 | 50 | 55 | 52 | 52 | | 52 | 54 | 52 | 53 | 54 |
| Slovenia | 51 (0.5) | 52 | 51 | 53 | 54 | 52 | 52 | 52 | 51 | 51 | 52 | 51 | 52 | 52 | 49 | 52 | 51 | 52 | | 52 | 54 | 51 | 52 | 53 |
| Australia | 51 (0.7) | 52 | 49 | 51 | 54 | 52 | 52 | 51 | 51 | 51 | 52 | 51 | 52 | 51 | 49 | 52 | 51 | 52 | | 51 | 53 | 51 | 53 | 53 |
| Serbia | 51 (0.8) | 52 | 54 | 54 | 53 | 52 | 52 | 53 | 51 | 51 | 52 | 51 | 52 | 52 | 50 | 53 | 51 | 52 | | 51 | 53 | 51 | 51 | 53 |
| Sweden | 51 (0.7) | 51 | 51 | 54 | 53 | 52 | 52 | 52 | 51 | 51 | 51 | 50 | 51 | 51 | 48 | 52 | 51 | 51 | | 51 | 53 | 51 | 52 | 54 |
| Canada | 49 (0.5) | 50 | 48 | 50 | 52 | 50 | 50 | 50 | 49 | 49 | 50 | 49 | 50 | 50 | 47 | 50 | 49 | 50 | | 50 | 51 | 49 | 51 | 51 |
| Italy | 48 (0.6) | 49 | 48 | 48 | 50 | 49 | 48 | 48 | 48 | 48 | 48 | 48 | 49 | 48 | 47 | 49 | 48 | 48 | | 48 | 49 | 48 | 47 | 48 |
| Spain | 47 (0.6) | 48 | 47 | 48 | 50 | 48 | 48 | 48 | 47 | 47 | 48 | 48 | 49 | 48 | 46 | 49 | 47 | 48 | | 48 | 49 | 47 | 47 | 47 |
| Croatia | 47 (0.5) | 47 | 52 | 50 | 48 | 48 | 48 | 49 | 47 | 46 | 47 | 47 | 48 | 47 | 45 | 51 | 47 | 47 | | 47 | 49 | 47 | 44 | 48 |
| Slovak Republic | 46 (0.5) | 46 | 48 | 52 | 47 | 47 | 47 | 48 | 46 | 45 | 46 | 46 | 47 | 46 | 45 | 48 | 46 | 46 | | 46 | 49 | 46 | 47 | 48 |
| New Zealand | 45 (0.5) | 45 | 42 | 45 | 47 | 45 | 45 | 45 | 45 | 44 | 45 | 44 | 45 | 45 | 43 | 44 | 45 | 45 | | 45 | 46 | 45 | 46 | 46 |
| Turkey | 44 (0.7) | 45 | 44 | 44 | 46 | 45 | 45 | 45 | 44 | 44 | 45 | 45 | 46 | 45 | 44 | 45 | 44 | 45 | | 45 | 46 | 44 | 44 | 45 |
| France | 44 (0.7) | 44 | 44 | 43 | 46 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | 44 | 43 | 45 | 44 | 44 | | 44 | 46 | 44 | 43 | 45 |
| Georgia | 39 (0.8) | 39 | 42 | 43 | 39 | 40 | 40 | 41 | 39 | 38 | 39 | 39 | 40 | 39 | 39 | 42 | 39 | 39 | | 39 | 41 | 39 | 38 | 41 |
| United Arab Emirates | 38 (0.5) | 38 | 36 | 38 | 39 | 39 | 39 | 38 | 38 | 38 | 38 | 38 | 39 | 38 | 37 | 38 | 38 | 38 | | 38 | 39 | 38 | 38 | 38 |
| Chile | 37 (0.5) | 38 | 35 | 37 | 40 | 38 | 38 | 37 | 37 | 37 | 37 | 37 | 38 | 38 | 36 | 37 | 37 | 37 | | 37 | 39 | 37 | 38 | 39 |
| Bahrain | 36 (0.4) | 37 | 35 | 36 | 38 | 37 | 37 | 36 | 36 | 36 | 37 | 36 | 38 | 37 | 35 | 37 | 36 | 37 | | 37 | 38 | 36 | 37 | 37 |
| Qatar | 35 (0.7) | 35 | 33 | 35 | 36 | 35 | 35 | 35 | 35 | 34 | 35 | 35 | 36 | 35 | 34 | 35 | 35 | 35 | | 35 | 36 | 35 | 34 | 35 |
| Oman | 33 (0.5) | 34 | 32 | 31 | 34 | 34 | 34 | 33 | 33 | 33 | 34 | 33 | 35 | 34 | 33 | 34 | 33 | 34 | | 34 | 34 | 33 | 33 | 34 |
| Iran, Islamic Rep. of | 32 (0.6) | 33 | 31 | 30 | 34 | 33 | 33 | 32 | 32 | 32 | 33 | 33 | 34 | 33 | 32 | 32 | 32 | 33 | | 32 | 33 | 32 | 32 | 32 |
| Indonesia | 26 (0.6) | 27 | 26 | 25 | 27 | 27 | 27 | 25 | 26 | 26 | 26 | 26 | 27 | 26 | 26 | 27 | 26 | 26 | | 26 | 27 | 26 | 25 | 26 |
| Morocco | 25 (0.6) | 26 | 25 | 24 | 26 | 26 | 26 | 25 | 25 | 25 | 26 | 26 | 25 | 26 | 27 | 25 | 26 | 26 | | 25 | 26 | 25 | 25 | 25 |
| Saudi Arabia | 25 (0.6) | 26 | 25 | 24 | 26 | 26 | 26 | 25 | 25 | 25 | 25 | 26 | 25 | 25 | 25 | 25 | 25 | 25 | | 25 | 26 | 25 | 25 | 26 |
| Kuwait | 21 (0.6) | 21 | 20 | 20 | 22 | 22 | 21 | 21 | 21 | 21 | 21 | 21 | 22 | 21 | 21 | 21 | 21 | 21 | | 21 | 22 | 21 | 21 | 21 |
| International Avg. | 50 (0.1) | 51 | 50 | 51 | 52 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 51 | 50 | 49 | 51 | 50 | 51 | | 51 | 52 | 50 | 50 | 51 |

SOURCE: IEA's Trends in International Mathematics and Science Study - TIMSS 2015

Benchmarking Participants

| | | | | | | | | | | | | | | | | | | | | | | | |
|--|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Florida, US | 58 (1.2) | 58 | 56 | 58 | 60 | 59 | 58 | 58 | 58 | 59 | 58 | 60 | 58 | 58 | 58 | 58 | 59 | 59 | 60 | 58 | 58 | 58 | |
| Quebec, Canada | 55 (1.1) | 57 | 55 | 55 | 58 | 56 | 56 | 56 | 55 | 55 | 56 | 56 | 57 | 56 | 54 | 56 | 55 | 56 | 56 | 58 | 55 | 56 | 56 |
| Dubai, UAE | 50 (0.4) | 51 | 49 | 50 | 52 | 51 | 51 | 50 | 50 | 50 | 51 | 50 | 51 | 50 | 49 | 51 | 50 | 51 | 51 | 52 | 50 | 50 | 51 |
| Ontario, Canada | 50 (0.6) | 51 | 48 | 51 | 53 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 51 | 51 | 48 | 51 | 50 | 50 | 50 | 52 | 50 | 51 | 52 |
| Abu Dhabi, UAE | 32 (0.9) | 33 | 31 | 32 | 33 | 33 | 33 | 32 | 32 | 32 | 33 | 33 | 33 | 32 | 32 | 33 | 32 | 33 | 33 | 33 | 32 | 32 | 33 |
| Number of Items (Score Points) Identified* | 178 | 160 | 111 | 102 | 132 | 172 | 166 | 146 | 178 | 169 | 175 | 170 | 130 | 168 | 142 | 129 | 178 | 161 | 170 | 149 | 178 | 125 | 127 |

Exhibit F.2: Average Percent Correct for the Test-Curriculum Matching Analysis, Eighth Grade

Based on a subset of items specifically identified by each country as addressing its curriculum

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 | Singapore | Korea, Rep. of | Chinese Taipei | Hong Kong SAR | Japan | Russian Federation | Kazakhstan | Canada | Ireland | United States | England | Hungary | Israel | Slovenia | Lithuania | Norway (9) | Australia | Malta | Sweden | New Zealand | Italy | United Arab Emirates | Malaysia | Turkey | Bahrain | Georgia | Qatar | Iran, Islamic Rep. of | Lebanon | Thailand | |
|-----------------------|--------------------------------------|-----------|----------------|----------------|---------------|-------|--------------------|------------|--------|---------|---------------|---------|---------|--------|----------|-----------|------------|-----------|-------|--------|-------------|-------|----------------------|----------|--------|---------|---------|-------|-----------------------|---------|----------|----|
| | Singapore | 74 (0.8) | 74 | 74 | 74 | 75 | 74 | 75 | 74 | 75 | 74 | 74 | 74 | 74 | 74 | 74 | 75 | 74 | 74 | 74 | 75 | 76 | 75 | 74 | 75 | 74 | 74 | 74 | 74 | 75 | 77 | 74 |
| Korea, Rep. of | 69 (0.6) | 70 | 70 | 70 | 70 | 70 | 70 | 69 | 70 | 70 | 69 | 69 | 69 | 69 | 69 | 69 | 70 | 70 | 70 | 71 | 72 | 70 | 69 | 70 | 69 | 69 | 70 | 70 | 72 | 70 | 72 | 70 |
| Chinese Taipei | 68 (0.5) | 68 | 68 | 68 | 69 | 68 | 69 | 68 | 69 | 68 | 68 | 68 | 68 | 68 | 68 | 69 | 68 | 68 | 68 | 69 | 69 | 68 | 68 | 69 | 68 | 68 | 68 | 68 | 69 | 70 | 69 | |
| Hong Kong SAR | 68 (1.1) | 68 | 68 | 68 | 69 | 68 | 69 | 68 | 70 | 68 | 68 | 68 | 68 | 68 | 68 | 69 | 68 | 68 | 68 | 70 | 70 | 69 | 68 | 69 | 68 | 68 | 68 | 68 | 69 | 71 | 69 | |
| Japan | 65 (0.5) | 65 | 66 | 65 | 65 | 67 | 66 | 65 | 66 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 66 | 66 | 66 | 68 | 65 | 65 | 66 | 65 | 65 | 65 | 66 | 66 | 66 | 66 | |
| Russian Federation | 53 (1.3) | 53 | 53 | 53 | 54 | 53 | 55 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 54 | 53 | 53 | 53 | 53 | 53 | 54 | 53 | 53 | 53 | 53 | 53 | 54 | 56 | 54 | | |
| Kazakhstan | 50 (1.4) | 51 | 51 | 50 | 51 | 50 | 52 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 51 | 51 | 50 | 51 | 50 | 50 | 51 | 50 | 50 | 51 | 50 | 50 | 51 | 51 | 53 | 51 | | |
| Canada | 50 (0.6) | 50 | 51 | 50 | 51 | 52 | 51 | 50 | 54 | 51 | 50 | 50 | 50 | 50 | 50 | 51 | 51 | 51 | 51 | 51 | 53 | 55 | 51 | 50 | 52 | 50 | 50 | 51 | 52 | 52 | | |
| Ireland | 49 (0.7) | 50 | 50 | 50 | 50 | 51 | 51 | 50 | 53 | 50 | 49 | 49 | 50 | 50 | 50 | 50 | 50 | 51 | 50 | 52 | 54 | 51 | 49 | 51 | 50 | 50 | 51 | 51 | 53 | 51 | | |
| United States | 48 (0.8) | 49 | 49 | 48 | 48 | 50 | 49 | 49 | 50 | 49 | 49 | 49 | 50 | 48 | 49 | 48 | 49 | 49 | 49 | 50 | 51 | 49 | 48 | 49 | 49 | 49 | 49 | 49 | 50 | 49 | | |
| England | 48 (1.1) | 48 | 48 | 48 | 48 | 49 | 49 | 48 | 51 | 49 | 48 | 48 | 48 | 48 | 48 | 49 | 49 | 49 | 49 | 50 | 52 | 49 | 48 | 49 | 48 | 48 | 48 | 49 | 49 | 50 | | |
| Hungary | 48 (0.9) | 48 | 49 | 48 | 48 | 49 | 49 | 48 | 50 | 49 | 48 | 48 | 48 | 48 | 48 | 49 | 49 | 49 | 49 | 50 | 52 | 49 | 48 | 50 | 48 | 48 | 48 | 49 | 49 | 51 | | |
| Israel | 47 (0.9) | 48 | 48 | 47 | 48 | 48 | 49 | 47 | 48 | 48 | 47 | 47 | 47 | 47 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 49 | 48 | 47 | 48 | 48 | 48 | 48 | 48 | 49 | | |
| Slovenia | 47 (0.5) | 47 | 48 | 47 | 48 | 49 | 48 | 47 | 50 | 48 | 47 | 47 | 47 | 47 | 48 | 48 | 48 | 48 | 48 | 48 | 50 | 51 | 48 | 49 | 47 | 47 | 47 | 48 | 48 | 51 | | |
| Lithuania | 46 (0.7) | 46 | 46 | 46 | 47 | 47 | 47 | 46 | 49 | 47 | 46 | 46 | 46 | 46 | 46 | 46 | 48 | 47 | 47 | 47 | 49 | 50 | 47 | 46 | 48 | 46 | 46 | 46 | 47 | | | |
| Norway (9) | 46 (0.6) | 46 | 46 | 46 | 46 | 47 | 47 | 46 | 49 | 47 | 46 | 46 | 46 | 46 | 46 | 47 | 47 | 47 | 47 | 49 | 50 | 47 | 46 | 47 | 46 | 46 | 46 | 47 | 47 | | | |
| Australia | 45 (0.7) | 45 | 45 | 45 | 45 | 46 | 46 | 45 | 48 | 46 | 45 | 45 | 45 | 45 | 45 | 46 | 46 | 46 | 46 | 46 | 47 | 49 | 46 | 45 | 46 | 45 | 45 | 46 | 46 | | | |
| Malta | 43 (0.3) | 43 | 43 | 43 | 43 | 44 | 44 | 43 | 45 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 45 | 46 | 44 | 43 | 44 | 43 | 43 | 43 | 44 | 45 | | | |
| Sweden | 43 (0.7) | 43 | 43 | 43 | 43 | 44 | 44 | 43 | 45 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 46 | 47 | 44 | 43 | 44 | 43 | 43 | 44 | 44 | | | |
| New Zealand | 42 (0.8) | 42 | 43 | 42 | 42 | 44 | 43 | 42 | 45 | 43 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 45 | 46 | 43 | 42 | 43 | 42 | 42 | 43 | 44 | | | |
| Italy | 42 (0.6) | 42 | 42 | 42 | 42 | 43 | 43 | 42 | 44 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 42 | 42 | 42 | 43 | 45 | 43 | 42 | 43 | 42 | 42 | 42 | 43 | 44 | | | |
| United Arab Emirates | 37 (0.4) | 37 | 37 | 37 | 37 | 38 | 38 | 37 | 39 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 38 | 39 | 38 | 37 | 37 | 37 | 37 | 37 | 38 | 39 | | | |
| Malaysia | 36 (0.8) | 37 | 37 | 37 | 37 | 37 | 38 | 36 | 39 | 37 | 36 | 36 | 36 | 36 | 37 | 37 | 38 | 37 | 37 | 38 | 39 | 37 | 36 | 38 | 37 | 37 | 37 | 37 | 39 | | | |
| Turkey | 36 (1.0) | 36 | 36 | 36 | 36 | 36 | 37 | 36 | 38 | 37 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 37 | 36 | 37 | 38 | 37 | 36 | 37 | 36 | 36 | 36 | 37 | 37 | | | |
| Bahrain | 35 (0.3) | 35 | 35 | 35 | 34 | 36 | 36 | 35 | 36 | 36 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 37 | 35 | 35 | 35 | 35 | 35 | 35 | 36 | 35 | | | |
| Georgia | 34 (0.7) | 34 | 34 | 34 | 34 | 35 | 35 | 34 | 35 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 35 | 34 | 35 | 36 | 34 | 34 | 35 | 34 | 34 | 34 | 35 | 35 | | | |
| Qatar | 32 (0.5) | 32 | 32 | 32 | 32 | 33 | 33 | 32 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 32 | 33 | 34 | 33 | 32 | 33 | 32 | 32 | 32 | 33 | 34 | | | |
| Iran, Islamic Rep. of | 31 (0.9) | 31 | 31 | 31 | 31 | 32 | 32 | 31 | 32 | 32 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 32 | 31 | 32 | 33 | 32 | 31 | 32 | 31 | 31 | 31 | 32 | 32 | | | |
| Lebanon | 30 (0.7) | 30 | 30 | 30 | 31 | 30 | 31 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 31 | 30 | 31 | 30 | 30 | 31 | 30 | 30 | 31 | 30 | 30 | 31 | 30 | 31 | | | |
| Thailand | 30 (1.0) | 30 | 30 | 30 | 29 | 30 | 30 | 30 | 31 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 31 | 31 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 31 | | | |
| Chile | 28 (0.5) | 28 | 28 | 28 | 28 | 29 | 29 | 28 | 30 | 29 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 29 | 28 | 29 | 31 | 29 | 28 | 29 | 28 | 28 | 28 | 29 | 30 | | | |
| Oman | 26 (0.4) | 26 | 26 | 26 | 26 | 27 | 26 | 27 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 27 | 26 | 27 | 27 | 26 | 26 | 26 | 26 | 26 | 26 | 27 | | | | |
| Kuwait | 24 (0.8) | 24 | 24 | 24 | 23 | 24 | 25 | 24 | 25 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 25 | 24 | 24 | 24 | 24 | 24 | 24 | 25 | | | |
| Jordan | 23 (0.4) | 23 | 23 | 23 | 23 | 24 | 24 | 23 | 24 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 24 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 24 | | | | |
| Botswana (9) | 23 (0.3) | 23 | 23 | 23 | 23 | 24 | 24 | 23 | 25 | 24 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 24 | 23 | 24 | 25 | 24 | 23 | 24 | 23 | 23 | 24 | | | | | |
| Morocco | 22 (0.3) | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 23 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 23 | 22 | 22 | 22 | 22 | 22 | 22 | 23 | | | | |
| South Africa (9) | 21 (0.7) | 21 | 21 | 21 | 21 | 22 | 22 | 21 | 22 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 22 | 21 | 22 | 21 | 21 | 21 | 21 | 21 | 22 | | | | |
| Saudi Arabia | 21 (0.6) | 21 | 20 | 20 | 20 | 21 | 21 | 20 | 22 | 21 | 21 | 21 | 21 | 21 | 20 | 20 | 21 | 21 | 21 | 21 | 22 | 21 | 21 | 20 | 21 | 21 | 21 | 21 | | | | |
| International Avg. | 42 (0.1) | 42 | 42 | 42 | 42 | 42 | 43 | 42 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 44 | 42 | 42 | 43 | 42 | 42 | 42 | 42 | | | | |

Benchmarking Participants

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Quebec, Canada | 54 (1.0) | 55 | 55 | 55 | 55 | 56 | 55 | 54 | 57 | 55 | 54 | 54 | 54 | 55 | 55 | 55 | 55 | 56 | 55 | 57 | 59 | 55 | 54 | 56 | 54 | 54 | 54 | 55 | 56 | 57 | 56 |
| Ontario, Canada | 49 (0.8) | 49 | 49 | 49 | 49 | 50 | 49 | 49 | 53 | 50 | 49 | 49 | 49 | 49 | 49 | 50 | 50 | 50 | 50 | 52 | 53 | 50 | 49 | 50 | 49 | 49 | 49 | 50 | 51 | 50 | |
| Dubai, UAE | 47 (0.5) | 48 | 47 | 47 | 47 | 48 | 48 | 47 | 49 | 48 | 47 | 47 | 47 | 47 | 48 | 48 | 48 | 48 | 48 | 50 | 48 | 48 | 47 | 48 | 47 | 47 | 47 | 48 | 48 | 49 | 48 |
| Florida, US | 43 (1.5) | 43 | 43 | 42 | 42 | 44 | 43 | 43 | 44 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 45 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 43 | |
| Abu Dhabi, UAE | 32 (0.9) | 33 | 33 | 33 | 33 | 33 | 33 | 32 | 34 | 33 | 32 | 32 | 32 | 33 | 33 | 33 | 33 | 33 | 33 | 34 | 35 | 33 | 32 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | |
| Number of Items (Score Points) Identified* | 221 | 215 | 210 | 217 | 190 | 196 | 203 | 217 | 188 | 214 | 218 | 221 | 220 | 216 | 202 | 192 | 210 | 210 | 212 | 184 | 177 | 211 | 221 | 185 | 219 | 219 | 217 | 211 | 206 | 152 | 208 |

* Of the 212 items in the Mathematics test, some extended-response items were scored on a two-point scale, resulting in 229 score points. Following item review, three items were deleted and the point value of three items were reduced, resulting in 209 items and 221 score points.

() Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

Exhibit F.2: Average Percent Correct for the Test-Curriculum Matching Analysis, Eighth Grade (Continued)

Based on a subset of items specifically identified by each country as addressing its curriculum

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 | Chile | Oman | Kuwait | Jordan | Botswana (9) | Morocco | South Africa (9) | Saudi Arabia | Benchmarking Participants | Quebec, Canada | Ontario, Canada | Dubai, UAE | Florida, US | Abu Dhabi, UAE | |
|--|--------------------------------------|-------|------|--------|--------|--------------|---------|------------------|--------------|---------------------------|----------------|-----------------|------------|-------------|----------------|--|
| | | | | | | | | | | | | | | | | |
| Singapore | 74 (0.8) | 75 | 75 | 75 | 76 | 74 | 75 | 74 | 74 | | 75 | 76 | 74 | 74 | 74 | |
| Korea, Rep. of | 69 (0.6) | 71 | 71 | 70 | 73 | 70 | 70 | 69 | 69 | | 70 | 70 | 69 | 69 | 70 | |
| Chinese Taipei | 68 (0.5) | 69 | 69 | 69 | 71 | 68 | 69 | 68 | 68 | | 69 | 69 | 68 | 68 | 68 | |
| Hong Kong SAR | 68 (1.1) | 70 | 69 | 69 | 71 | 68 | 69 | 68 | 68 | | 69 | 70 | 68 | 68 | 68 | |
| Japan | 65 (0.5) | 66 | 66 | 66 | 69 | 66 | 65 | 65 | 65 | | 66 | 67 | 65 | 65 | 65 | |
| Russian Federation | 53 (1.3) | 53 | 54 | 54 | 57 | 53 | 54 | 53 | 53 | | 54 | 54 | 53 | 53 | 53 | |
| Kazakhstan | 50 (1.4) | 50 | 51 | 51 | 54 | 51 | 51 | 50 | 50 | | 51 | 51 | 50 | 50 | 50 | |
| Canada | 50 (0.6) | 52 | 52 | 52 | 54 | 51 | 51 | 50 | 50 | | 51 | 54 | 50 | 50 | 51 | |
| Ireland | 49 (0.7) | 52 | 51 | 51 | 53 | 50 | 50 | 49 | 49 | | 51 | 53 | 49 | 49 | 50 | |
| United States | 48 (0.8) | 49 | 49 | 49 | 53 | 49 | 48 | 48 | 48 | | 49 | 51 | 48 | 49 | 49 | |
| England | 48 (1.1) | 50 | 49 | 49 | 52 | 49 | 48 | 48 | 48 | | 49 | 52 | 48 | 48 | 49 | |
| Hungary | 48 (0.9) | 50 | 50 | 49 | 52 | 49 | 49 | 48 | 48 | | 49 | 51 | 48 | 48 | 49 | |
| Israel | 47 (0.9) | 48 | 48 | 48 | 51 | 48 | 47 | 47 | 47 | | 48 | 49 | 47 | 47 | 48 | |
| Slovenia | 47 (0.5) | 49 | 49 | 49 | 51 | 48 | 48 | 47 | 47 | | 49 | 51 | 47 | 47 | 48 | |
| Lithuania | 46 (0.7) | 48 | 48 | 47 | 50 | 46 | 47 | 46 | 46 | | 47 | 49 | 46 | 46 | 47 | |
| Norway (9) | 46 (0.6) | 49 | 47 | 47 | 49 | 46 | 46 | 46 | 46 | | 47 | 49 | 46 | 46 | 46 | |
| Australia | 45 (0.7) | 47 | 46 | 46 | 49 | 45 | 45 | 45 | 45 | | 46 | 48 | 45 | 45 | 46 | |
| Malta | 43 (0.3) | 44 | 44 | 44 | 47 | 43 | 43 | 43 | 43 | | 44 | 46 | 43 | 43 | 43 | |
| Sweden | 43 (0.7) | 45 | 45 | 44 | 46 | 43 | 43 | 43 | 43 | | 44 | 46 | 43 | 43 | 43 | |
| New Zealand | 42 (0.8) | 44 | 44 | 43 | 46 | 43 | 42 | 42 | 42 | | 43 | 45 | 42 | 42 | 43 | |
| Italy | 42 (0.6) | 44 | 43 | 43 | 46 | 42 | 43 | 42 | 42 | | 43 | 45 | 42 | 42 | 42 | |
| United Arab Emirates | 37 (0.4) | 38 | 38 | 38 | 41 | 37 | 37 | 37 | 37 | | 37 | 39 | 37 | 37 | 37 | |
| Malaysia | 36 (0.8) | 38 | 38 | 37 | 41 | 37 | 37 | 36 | 36 | | 37 | 39 | 36 | 36 | 37 | |
| Turkey | 36 (1.0) | 37 | 36 | 37 | 40 | 36 | 36 | 36 | 36 | | 37 | 38 | 36 | 36 | 36 | |
| Bahrain | 35 (0.3) | 35 | 35 | 35 | 40 | 35 | 34 | 35 | 35 | | 35 | 36 | 35 | 35 | 35 | |
| Georgia | 34 (0.7) | 35 | 35 | 35 | 38 | 34 | 35 | 34 | 34 | | 34 | 35 | 34 | 34 | 34 | |
| Qatar | 32 (0.5) | 33 | 33 | 33 | 36 | 32 | 32 | 32 | 32 | | 33 | 34 | 32 | 32 | 32 | |
| Iran, Islamic Rep. of | 31 (0.9) | 32 | 32 | 32 | 35 | 31 | 32 | 31 | 31 | | 32 | 33 | 31 | 31 | 32 | |
| Lebanon | 30 (0.7) | 31 | 31 | 31 | 34 | 30 | 31 | 30 | 30 | | 31 | 30 | 30 | 30 | 30 | |
| Thailand | 30 (1.0) | 31 | 30 | 31 | 33 | 30 | 30 | 30 | 30 | | 30 | 32 | 30 | 30 | 30 | |
| Chile | 28 (0.5) | 29 | 29 | 29 | 32 | 28 | 28 | 28 | 28 | | 29 | 30 | 28 | 28 | 29 | |
| Oman | 26 (0.4) | 26 | 26 | 27 | 30 | 26 | 26 | 26 | 26 | | 26 | 27 | 26 | 26 | 26 | |
| Kuwait | 24 (0.8) | 24 | 24 | 24 | 27 | 24 | 24 | 24 | 24 | | 24 | 25 | 24 | 24 | 24 | |
| Jordan | 23 (0.4) | 23 | 23 | 24 | 27 | 23 | 23 | 23 | 23 | | 23 | 24 | 23 | 23 | 23 | |
| Botswana (9) | 23 (0.3) | 24 | 24 | 24 | 27 | 23 | 23 | 23 | 23 | | 23 | 25 | 23 | 23 | 23 | |
| Morocco | 22 (0.3) | 22 | 22 | 22 | 25 | 22 | 22 | 22 | 22 | | 22 | 23 | 22 | 22 | 22 | |
| South Africa (9) | 21 (0.7) | 22 | 22 | 22 | 24 | 21 | 21 | 21 | 21 | | 21 | 23 | 21 | 21 | 21 | |
| Saudi Arabia | 21 (0.6) | 21 | 20 | 21 | 24 | 21 | 20 | 21 | 21 | | 20 | 22 | 21 | 21 | 21 | |
| International Avg. | 42 (0.1) | 43 | 43 | 43 | 45 | 42 | 42 | 42 | 42 | | 42 | 44 | 42 | 42 | 42 | |
| Benchmarking Participants | | | | | | | | | | | | | | | | |
| Quebec, Canada | 54 (1.0) | 57 | 57 | 56 | 58 | 55 | 55 | 54 | 54 | | 56 | 58 | 54 | 54 | 55 | |
| Ontario, Canada | 49 (0.8) | 51 | 50 | 50 | 52 | 49 | 49 | 49 | 49 | | 50 | 53 | 49 | 49 | 50 | |
| Dubai, UAE | 47 (0.5) | 48 | 48 | 48 | 51 | 48 | 47 | 47 | 47 | | 48 | 49 | 47 | 47 | 48 | |
| Florida, US | 43 (1.5) | 43 | 43 | 43 | 47 | 43 | 42 | 43 | 43 | | 43 | 45 | 43 | 43 | 43 | |
| Abu Dhabi, UAE | 32 (0.9) | 33 | 33 | 33 | 36 | 33 | 33 | 32 | 32 | | 33 | 34 | 32 | 32 | 33 | |
| Number of Items (Score Points) Identified* | 221 | 193 | 194 | 207 | 183 | 207 | 181 | 221 | 221 | | 205 | 184 | 221 | 218 | 215 | |

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS 2015

also had 75 percent correct on the items selected by Singapore and Korea, 74 percent on the items selected by Chinese Taipei, 76 percent on the items selected by Japan, and so forth.

The column for a country listed at the top shows how each of the other participants performed on the set of items selected as appropriate for that country's students. Using the set of items selected by England at the fourth grade as an example, 75 percent of these items, on average, were answered correctly by students in Hong Kong and Singapore, 74 percent by students in Korea, 71 percent by students in Chinese Taipei, 70 percent by students in Japan, 65 percent by those in Northern Ireland, and so forth. The shaded diagonal element in the exhibit shows how each country performed on the set of items that it selected based on its own curriculum. Thus, students from the England averaged 59 percent correct on the set of items identified by England for the analysis.

For each country's selected items, the international averages across participating countries are presented in the lower part of the exhibit. These show that the selections of items by the participating countries varied somewhat in average difficulty, ranging at the fourth grade from 49 percent correct (the most difficult) for those chosen by Chinese Taipei and Indonesia, to 53 percent correct (the least difficult) for those chosen by Denmark. At the eighth grade, the average percent correct ranged from 42 percent for many participants to 45 percent for those chosen by Jordan.

Comparing the diagonal element for a country with the overall average percent correct shows the difference between performance on the set of items chosen as appropriate for that country and performance on the test as a whole. In general, countries performed better on their own item sets than on the items overall, although not by much. To illustrate, the average percent correct for Singapore across all fourth grade mathematics items was 74 percent. The diagonal element shows that students from Singapore had a slightly greater average percent correct (76 percent) across the set of items selected as appropriate for Singapore than they did overall. Most participants had a difference of one or two percentage points between the two performance measures, with the largest differences in Bulgaria and the Slovak Republic (6 percentage points). At the eighth grade, the differences were generally smaller; the largest being in Canada, New Zealand, Lebanon, Jordan, and the province of Ontario (4 percentage points).

It is clear that the selection of items does not have a major effect on the relative performance among TIMSS participants. Participants that had relatively high or low performance across all the mathematics items also had relatively high or low performance on each of the various sets of items selected for the TCMA. For example, at the eighth grade, Singapore had the highest average percent correct, not only on the test as a whole, but also on all of the different item selections, with Korea, Chinese Taipei, Hong Kong SAR and Japan next in order of performance (with some ties) on practically all selections of items. Although there are 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.⁵

5 Small differences in performance between adjacent countries shown in this exhibit usually are not statistically significant. The standard errors for the average percent correct statistics based on the TIMSS 2015 sample are provided in Exhibits F.3 and F.4. For any sample average shown in Exhibits F.1 and F.2, it can be said with 95 percent confidence that the corresponding value in the population falls between the sample estimate plus or minus two standard errors.

Even when countries performed better on the items judged by them to be included in their curriculum than they did overall, their performance relative to other participants was changed little. As an example, consider the 154 score points selected by Slovenia at the fourth grade. The students in Slovenia did better on these items (54% correct) than on the test as a whole (51% correct). However, most other countries also did better on these particular items, with an international average of 52 percent correct compared with 50 percent correct overall. The countries that performed better than Slovenia on the overall test also performed as well or better on the items selected by Slovenia.

The TCMA results provide evidence that the TIMSS 2015 mathematics assessment provides a reasonable basis for comparing achievement of the participating countries and benchmarking entities. This result is not unexpected; making the assessment as fair as possible was a major consideration in test development. The fact that the majority of countries indicated that most items were appropriate for their students means that the different average percent correct estimates were based on many of the same items. Insofar as countries rejected items that would be difficult for their students, these items tended to be difficult for students in other countries as well. The analysis shows that omitting such items tends to improve the results for that country, but also tends to improve the results for all other countries, so that the overall pattern of relative performance is largely unaffected.

Exhibit F.3: Standard Errors for the Test-Curriculum Matching Analysis, Fourth Grade (Continued)

Based on a subset of items specifically identified by each country as addressing its curriculum

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 | Benchmarking Participants | | | | | | | | | | | | | | | | | | | | | |
|--|--------------------------------------|---------------------------|---------|-----------------|-------------|--------|--------|---------|----------------------|-------|---------|-------|------|-----------------------|-----------|---------|--------------|--------|-------------|----------------|------------|-----------------|----------------|
| | | Spain | Croatia | Slovak Republic | New Zealand | Turkey | France | Georgia | United Arab Emirates | Chile | Bahrain | Qatar | Oman | Iran, Islamic Rep. of | Indonesia | Morocco | Saudi Arabia | Kuwait | Florida, US | Quebec, Canada | Dubai, UAE | Ontario, Canada | Abu Dhabi, UAE |
| Hong Kong SAR | 75 (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 |
| Singapore | 74 (0.8) | 0.8 | 0.9 | 0.9 | 0.8 | 0.9 | 0.8 | 0.9 | 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 | 0.9 | 0.8 |
| Korea, Rep. of | 73 (0.5) | 0.4 | 0.5 | 0.5 | 0.4 | 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 |
| Chinese Taipei | 70 (0.4) | 0.4 | 0.5 | 0.5 | 0.5 | 0.4 | 0.4 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 |
| Japan | 70 (0.4) | 0.4 | 0.5 | 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 | 0.5 | 0.5 |
| Northern Ireland | 64 (0.7) | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.8 | 0.7 | 0.8 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 |
| Russian Federation | 63 (0.9) | 0.9 | 0.8 | 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 |
| Ireland | 59 (0.6) | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.5 | 0.5 | 0.6 | 0.6 | 0.5 | 0.5 | 0.5 | 0.6 | 0.5 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.5 | 0.6 | 0.6 |
| Norway (5) | 59 (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 |
| England | 58 (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 |
| Belgium (Flemish) | 58 (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 | 0.6 | 0.6 |
| Kazakhstan | 57 (1.2) | 1.2 | 1.1 | 1.1 | 1.2 | 1.2 | 1.2 | 1.1 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.1 | 1.1 |
| Portugal | 57 (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 | 0.6 | 0.6 |
| United States | 57 (0.5) | 0.5 | 0.5 | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 |
| Denmark | 56 (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 |
| Lithuania | 56 (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 |
| Finland | 55 (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 |
| Hungary | 55 (0.7) | 0.7 | 0.7 | 0.8 | 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 | 0.8 | 0.8 | 0.8 |
| Poland | 55 (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 | 0.6 | 0.6 |
| Czech Republic | 53 (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 | 0.7 | 0.7 |
| Netherlands | 53 (0.5) | 0.4 | 0.5 | 0.5 | 0.4 | 0.5 | 0.4 | 0.5 | 0.5 | 0.4 | 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 |
| Bulgaria | 53 (1.3) | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.2 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 |
| Cyprus | 53 (0.6) | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 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 |
| Germany | 52 (0.5) | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.5 | 0.6 | 0.6 | 0.5 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |
| Slovenia | 51 (0.5) | 0.5 | 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 |
| Australia | 51 (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 |
| Serbia | 51 (0.8) | 0.8 | 0.8 | 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 |
| Sweden | 51 (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 |
| Canada | 49 (0.5) | 0.6 | 0.5 | 0.5 | 0.6 | 0.5 | 0.6 | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | 0.5 | 0.6 | 0.6 | 0.5 | 0.6 | 0.6 | 0.5 | 0.6 | 0.5 | 0.6 |
| Italy | 48 (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 | 0.6 | 0.6 |
| Spain | 47 (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 | 0.6 | 0.6 |
| Croatia | 47 (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 |
| Slovak Republic | 46 (0.5) | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 |
| New Zealand | 45 (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 |
| Turkey | 44 (0.7) | 0.7 | 0.6 | 0.7 | 0.7 | 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 |
| France | 44 (0.7) | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 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 |
| Georgia | 39 (0.8) | 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 |
| United Arab Emirates | 38 (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 |
| Chile | 37 (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 |
| Bahrain | 36 (0.4) | 0.4 | 0.3 | 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 |
| Qatar | 35 (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 |
| Oman | 33 (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 |
| Iran, Islamic Rep. of | 32 (0.6) | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |
| Indonesia | 26 (0.6) | 0.6 | 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 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |
| Morocco | 25 (0.6) | 0.6 | 0.7 | 0.7 | 0.6 | 0.6 | 0.6 | 0.7 | 0.6 | 0.6 | 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 |
| Saudi Arabia | 25 (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 | 0.6 | 0.6 |
| Kuwait | 21 (0.6) | 0.6 | 0.6 | 0.7 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.7 | 0.6 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |
| International Avg. | 50 (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 | 0.1 | 0.1 |
| Benchmarking Participants | | | | | | | | | | | | | | | | | | | | | | | |
| Florida, US | 58 (1.2) | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 |
| Quebec, Canada | 55 (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 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| Dubai, UAE | 50 (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 |
| Ontario, Canada | 50 (0.6) | 0.6 | 0.7 | 0.7 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.7 | 0.6 | 0.7 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |
| Abu Dhabi, UAE | 32 (0.9) | 0.9 | 0.9 | 0.9 | 1.0 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 1.0 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 |
| Number of Items (Score Points) Identified* | 178 | 160 | 111 | 102 | 132 | 172 | 166 | 146 | 178 | 169 | 175 | 170 | 130 | 168 | 142 | 129 | 178 | 161 | 170 | 149 | 178 | 125 | 127 |

SOURCE: IEA's Trends in International Mathematics and Science Study - TIMSS 2015

Exhibit F.4: Standard Errors for the Test-Curriculum Matching Analysis, Eighth Grade

Based on a subset of items specifically identified by each country as addressing its curriculum

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.

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS 2015

| Country | Average Percent Correct on All Items | Singapore | Korea, Rep. of | Chinese Taipei | Hong Kong SAR | Japan | Russian Federation | Kazakhstan | Canada | Ireland | United States | England | Hungary | Israel | Slovenia | Lithuania | Norway (9) | Australia | Malta | Sweden | New Zealand | Italy | United Arab Emirates | Malaysia | Turkey | Bahrain | Georgia | Qatar | Iran, Islamic Rep. of | Lebanon | Thailand |
|-----------------------|--------------------------------------|-----------|----------------|----------------|---------------|-------|--------------------|------------|--------|---------|---------------|---------|---------|--------|----------|-----------|------------|-----------|-------|--------|-------------|-------|----------------------|----------|--------|---------|---------|-------|-----------------------|---------|----------|
| | Singapore | 74 (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 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| Korea, Rep. of | 69 (0.6) | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.5 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.5 | 0.6 | 0.5 | 0.6 | 0.5 | 0.6 | 0.6 | 0.6 | 0.6 | 0.5 | 0.6 | 0.6 |
| Chinese Taipei | 68 (0.5) | 0.5 | 0.5 | 0.6 | 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 | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 |
| Hong Kong SAR | 68 (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 | 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 |
| Japan | 65 (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 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| Russian Federation | 53 (1.3) | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.2 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.2 | 1.2 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 |
| Kazakhstan | 50 (1.4) | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 |
| Canada | 50 (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 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |
| Ireland | 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 | 0.7 | 0.7 | 0.7 |
| United States | 48 (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 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| England | 48 (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 | 1.1 | 1.1 | 1.1 | 1.1 | 1.2 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| Hungary | 48 (0.9) | 0.9 | 0.9 | 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 | 1.0 | 0.9 | 0.9 | 1.0 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 1.0 |
| Israel | 47 (0.9) | 1.0 | 1.0 | 0.9 | 1.0 | 0.9 | 1.0 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.9 | 1.0 | 1.0 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 1.0 | 0.9 | 0.9 | 1.0 | |
| Slovenia | 47 (0.5) | 0.5 | 0.5 | 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 | 0.6 | 0.6 | 0.5 | 0.5 | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | |
| Lithuania | 46 (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 | 0.7 | 0.7 | |
| Norway (9) | 46 (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 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | |
| Australia | 45 (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 | 0.8 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | |
| Malta | 43 (0.3) | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | |
| Sweden | 43 (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 | 0.7 | 0.7 | |
| New Zealand | 42 (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 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | |
| Italy | 42 (0.6) | 0.6 | 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 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | |
| United Arab Emirates | 37 (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 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | |
| Malaysia | 36 (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 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | |
| Turkey | 36 (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 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | |
| Bahrain | 35 (0.3) | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | |
| Georgia | 34 (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 | 0.7 | 0.7 | |
| Qatar | 32 (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 | 0.6 | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | |
| Iran, Islamic Rep. of | 31 (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 | 1.0 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 1.0 | 0.9 | |
| Lebanon | 30 (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 | 0.7 | 0.8 | |
| Thailand | 30 (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 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | |
| Chile | 28 (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 | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | |
| Oman | 26 (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 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | |
| Kuwait | 24 (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 | 0.9 | 0.9 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.9 | |
| Jordan | 23 (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 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | |
| Botswana (9) | 23 (0.3) | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | |
| Morocco | 22 (0.3) | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | |
| South Africa (9) | 21 (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 | 0.8 | | |
| Saudi Arabia | 21 (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 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | |
| International Avg. | 42 (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 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | | |

Benchmarking Participants

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Quebec, Canada | 54 (1.0) | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.0 | 1.0 | 1.1 | 1.1 | 1.0 | 1.0 | 1.0 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.0 | 1.1 | 1.0 | 1.1 | 1.0 | 1.1 | 1.1 | 1.1 | 1.1 |
| Ontario, Canada | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Exhibit F.4: Standard Errors for the Test-Curriculum Matching Analysis, Eighth Grade (Continued)

Based on a subset of items specifically identified by each country as addressing its curriculum

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 | Country | | | | | | | | Benchmarking Participants | | | | |
|--|--------------------------------------|---------|------|--------|--------|--------------|---------|------------------|--------------|---------------------------|-----------------|------------|-------------|----------------|
| | | Chile | Oman | Kuwait | Jordan | Botswana (9) | Morocco | South Africa (9) | Saudi Arabia | Quebec, Canada | Ontario, Canada | Dubai, UAE | Florida, US | Abu Dhabi, UAE |
| Singapore | 74 (0.8) | 0.8 | 0.8 | 0.8 | 0.7 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| Korea, Rep. of | 69 (0.6) | 0.6 | 0.5 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |
| Chinese Taipei | 68 (0.5) | 0.5 | 0.5 | 0.6 | 0.5 | 0.5 | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| Hong Kong SAR | 68 (1.1) | 1.1 | 1.1 | 1.1 | 1.0 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| Japan | 65 (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 |
| Russian Federation | 53 (1.3) | 1.2 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 |
| Kazakhstan | 50 (1.4) | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 |
| Canada | 50 (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 |
| Ireland | 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 |
| United States | 48 (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 | 48 (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 |
| Hungary | 48 (0.9) | 0.9 | 1.0 | 0.9 | 0.9 | 0.9 | 1.0 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 |
| Israel | 47 (0.9) | 0.9 | 1.0 | 0.9 | 1.0 | 1.0 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 1.0 | 1.0 |
| Slovenia | 47 (0.5) | 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 |
| Lithuania | 46 (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 |
| Norway (9) | 46 (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 |
| Australia | 45 (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 |
| Malta | 43 (0.3) | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Sweden | 43 (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 |
| New Zealand | 42 (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 |
| Italy | 42 (0.6) | 0.7 | 0.7 | 0.7 | 0.6 | 0.6 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |
| United Arab Emirates | 37 (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 |
| Malaysia | 36 (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 |
| Turkey | 36 (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 |
| Bahrain | 35 (0.3) | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Georgia | 34 (0.7) | 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 |
| Qatar | 32 (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 |
| Iran, Islamic Rep. of | 31 (0.9) | 1.0 | 1.0 | 0.9 | 0.9 | 0.9 | 1.0 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 |
| Lebanon | 30 (0.7) | 0.7 | 0.8 | 0.7 | 0.8 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 |
| Thailand | 30 (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 |
| Chile | 28 (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 |
| Oman | 26 (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 |
| Kuwait | 24 (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 |
| Jordan | 23 (0.4) | 0.4 | 0.4 | 0.4 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 |
| Botswana (9) | 23 (0.3) | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Morocco | 22 (0.3) | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| South Africa (9) | 21 (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 |
| Saudi Arabia | 21 (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 |
| International Avg. | 42 (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 |
| Benchmarking Participants | | | | | | | | | | | | | | |
| Quebec, Canada | 54 (1.0) | 1.1 | 1.1 | 1.1 | 1.1 | 1.0 | 1.1 | 1.0 | 1.0 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| Ontario, Canada | 49 (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 |
| Dubai, UAE | 47 (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 |
| Florida, US | 43 (1.5) | 1.6 | 1.6 | 1.5 | 1.5 | 1.6 | 1.6 | 1.5 | 1.5 | 1.5 | 1.6 | 1.5 | 1.5 | 1.5 |
| Abu Dhabi, UAE | 32 (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 |
| Number of Items (Score Points) Identified* | 221 | 193 | 194 | 207 | 183 | 207 | 181 | 221 | 221 | 205 | 184 | 221 | 218 | 215 |

SOURCE: IEA's Trends in International Mathematics and Science Study - TIMSS 2015