

# Appendix C: The TIMSS 2023 Test-Curriculum Matching Analysis

TIMSS is designed and implemented to ensure that comparisons of student achievement across countries are fair and equitable. The [TIMSS 2023 Assessment Frameworks](#) were developed to specify the important aspects of mathematics and science to be covered in an international assessment of student achievement based on input and with agreement from participating countries. The assessment items were developed through a collaborative process with national representatives to reflect the assessment specifications articulated in the frameworks, and all items were field-tested in participating countries. Finalizing the TIMSS 2023 assessments involved a series of reviews by representatives of the participating countries, subject matter experts in mathematics and science, and measurement specialists. Ultimately, the National Research Coordinators (NRCs) from each participating country formally approved the TIMSS 2023 assessments, confirming the assessments' fairness for comparing students' mathematics and science achievement internationally.

Although the assessments were developed to adhere to the agreed-upon frameworks and be as consistent as possible across countries, it may be argued that the alignment between the TIMSS 2023 assessments and countries' mathematics and science curricula varies across countries. However, limiting the assessment items to only those topics covered uniformly in all participating countries would greatly limit the assessment coverage and restrict the research questions TIMSS is designed to address. The assessment aims to cover the TIMSS frameworks broadly and hence may include some items assessing topics that may be unfamiliar to some students in some countries.

A study referred to as Test-Curriculum Matching Analysis (TCMA) is conducted in each TIMSS cycle to investigate the extent to which the assessments align with the mathematics and science curricula of each participating country.<sup>1</sup> The TCMA also investigates how a country's average achievement would be affected if only the achievement items assessing topics covered by its own curriculum were included.

To gather this information, TIMSS 2023 NRCs were asked to review each achievement item in the TIMSS 2023 assessment and indicate whether the knowledge and skills assessed by the item were part of their country's intended curriculum for the relevant grade level (e.g., the fourth

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<sup>1</sup> It should be noted that because there may be content areas covered by the curricula in some countries that are not covered by the TIMSS 2023 assessments, the TCMA may not provide complete information about how well the assessments cover the curricula of the countries.

or eighth grade). The NRCs were asked to involve experts or individuals who are familiar with the curriculum at these grades to make this determination.

In some countries, the curriculum prescribes topics for a range of grades rather than specifying what should be covered by the end of each grade. For example, in France the curriculum specifies the curricular goals to be achieved by the end of primary school Cycle 2 (Grades 1–3), Cycle 3 (Grades 4–6), and Cycle 4 (Grades 7–9), rather than providing grade-specific guidelines (see *TIMSS 2023 Encyclopedia*). In such situations, NRCs were asked to make the best judgment possible. If an item applied to only a subset of students within a country, NRCs were instructed to consider the item as part of the curriculum if it was included in the intended curriculum for more than 50% of the student population.

## Match Between TIMSS Assessments and Countries' Mathematics and Science Curricula

Exhibits C.1 through C.4 present the TCMA results for the TIMSS 2023 mathematics and science assessments at the fourth and eighth grades, respectively. The bottom row of each exhibit shows the number of items, with the corresponding number of score points in parentheses, identified by each country as relevant to its students according to its curriculum. The TCMA was conducted based on all countries and benchmarking participants that administered the TIMSS 2023 digital assessment *and* provided the requested information. Therefore, not all participating countries are represented in the exhibits.

In mathematics at the fourth grade (Exhibit C.1), countries' average mathematics achievement was based on students' performance on 183 items. This represents the maximum number of items that a country could identify as part of its fourth-grade mathematics curriculum.<sup>2</sup> Overall, the proportion of mathematics items covered by countries' curricula was high. Reading along the bottom row, 9 of the 51 countries and 3 of the 5 benchmarking participants included in the analysis judged 100% of the items as relevant to their curricula. Additionally, 39 countries and 2 benchmarking participants found at least 75% of the items to be relevant. All participants at the fourth-grade level agreed that more than half of the mathematics items aligned with their curricula.

In fourth-grade science (Exhibit C.2), there were a maximum of 173 items. The distribution of curriculum alignment with the fourth-grade science assessment items varied widely across participating countries and benchmarking participants. Several high-performing countries, notably Singapore and Japan, selected relatively few science items as relevant for their fourth-grade students. Of the 38 countries and 5 benchmarking participants at the fourth grade, 6 countries and 3 benchmarking participants judged 100% of the science items to be addressed

<sup>2</sup> Numbers of items and score points are based on the TIMSS 2023 fourth-grade mathematics items included in scaling. See Chapter 9 of [TIMSS 2023 Technical Report](#) for details about items deleted or recoded for scaling.

by their curricula. Additionally, 23 countries selected 75% or more of the science items, with percentages ranging from 77% to 98%.

At the eighth grade, the proportions of mathematics and science items identified as aligned with countries' curricula were generally higher compared to the fourth grade. In mathematics (Exhibit C.3), 7 of the 39 participating countries, along with all benchmarking participants, judged 100% of the mathematics items to assess topics covered by their curricula, totaling 200 items. All remaining countries considered 75% or more of the items to be relevant.

In eighth-grade science (Exhibit C.4), 4 of the 39 countries and all benchmarking participants judged 100% of the 212 science items to be aligned with their curricula. An additional 24 countries selected 75% or more of the science items. Notably, all but 2 countries agreed that over half of the science items assessed topics covered by their curricula at the eighth grade.

## Impact of Item Selection on Average Scale Scores

The first columns in Exhibits C.1 through C.4 show, for each grade and subject, the average scale score and its standard error for each country, based on all assessment items, as reported in Exhibits 1.1.1, 1.2.1, 2.1.1, and 2.2.1 of this report. Countries are listed in descending order according to their overall average achievement scores. The subsequent columns show the average performance of each country based solely only on the items selected by the participant named at the top of the column. To interpret these results, choosing a country from the top of the exhibit and reading down its column indicates the average scale score and standard error for the country in each row, but estimated based only on the set of items identified by the country at the top of the column. This allows for a comparison of how each country performed when assessed by the items selected as suitable for another country's students. Standard errors provide a margin of error for comparing average scale scores across countries. Differences in one country's average scale scores across exhibit columns should be interpreted with caution.

For example, in Exhibit C.1, the column for Singapore shows that Singapore had an average fourth-grade mathematics scale score of 619 based on the items it selected as part of its curriculum. Looking further down the column, Chinese Taipei had an average scale score of 608 based on Singapore's selected items, while Korea had 595 on that same set of items. This pattern continues for all other countries in the row, showing the estimated average achievement for each country based solely on the specific set of items deemed suitable by Singapore.

The shaded diagonal element in these exhibits shows the average achievement of each country based solely on the set of items that it selected based on its own curriculum. Generally, countries' achievement was slightly higher when estimated based on their own item sets compared to the assessment overall, though the differences were typically small. Comparing the diagonal element for a country with the overall average scale score shows the difference between achievement estimated based on the set of items selected for that country and

achievement based on all assessment items. To illustrate, Singapore's average scale score based on all fourth-grade mathematics items was 615, as shown in the first column. Singapore's diagonal element in Exhibit C.1 (619) shows that students from Singapore had just slightly higher achievement (a 4-point difference) based on their selected set of items than they did based on all items. In fourth-grade mathematics, most participants had a difference of no more than 1 or 2 scale score points between the two estimates. The largest differences occurred in Australia (9 points) and Japan (8 points).

In comparison to fourth-grade mathematics, the differences between countries' average achievement based on their chosen set of items and achievement based on all items were more pronounced in science (Exhibit C.2). While over half of the participants had a difference of 3 scale score points or less, the largest discrepancy was observed in Singapore, with a 74-point difference, followed by Japan and Korea with differences of 30 points and 22 points, respectively. Notably, Singapore and Japan selected the smallest proportions of science test items as relevant for their students among the 51 countries and 5 benchmarking participants included in the analysis.

At the eighth grade, the differences between countries' average scale scores based on all items and those based on their selected subsets were generally smaller. In mathematics (Exhibit C.3), 27 out of 39 countries and all 3 benchmarking participants showed differences of 1 scale score point or less. Morocco had the largest difference in average mathematics achievement between the estimate based on its selected items and the estimate based on all items (8 points). The eighth-grade science results (Exhibit C.4) were similar, with 19 countries and all benchmarking participants showing a maximum difference of 1 scale score point. Japan had the largest difference in science achievement, with a 19-point gap, followed by Cyprus, Korea, and Singapore, which had differences ranging from 11 to 15 points.

The TCMA results indicate that, in most cases, the selection of items does not greatly affect the relative performance of countries. Countries that demonstrated relatively high or low achievement in mathematics or science based on the full set of items maintained similar rankings of achievement estimated based on the various item sets selected for the TCMA. Although there were some changes in the ordering of countries based on the items selected for the TCMA, most of these differences were within the margins of sampling error. Small differences in average scale scores between adjacent countries shown in the exhibits usually are not statistically significant at the chosen alpha level.

Even when countries had higher achievement estimates based on the items they identified as aligned with their curricula than they did based on all items, their average achievement relative to other participants showed minimal change. For instance, in eighth-grade science, Korea selected 124 items (Exhibit C.4) and had higher average achievement estimates based on these items, with an average scale score of 558 compared to 545 based on the overall assessment. However, most other countries also had higher achievement based on this subset of items

selected by Korea. Singapore and Japan, for example, also had higher achievement based on Korea's selected items compared with their average achievement based on all items.

The TCMA results provide evidence that the TIMSS 2023 assessments provide a robust foundation for comparing the achievement of participating countries and benchmarking entities. This outcome is expected, as ensuring the fairness of the assessments is fundamental to the TIMSS methods and procedures for test development and reporting. Moreover, most countries reported that the majority of items were relevant to the curricula for their students, suggesting that overall, there was a good alignment between the assessment content and the knowledge and skills addressed by curricula across participating countries. When countries excluded items deemed not relevant for their students due to difficulty, these items were often challenging for students in other countries as well. The analysis shows that while excluding such items may improve a country's average results, it also tends to improve the results for other countries, leaving the overall pattern of relative performance largely unchanged.

### Exhibit C.1: Average Scale Scores for the Mathematics Test-Curriculum Matching Analysis

Results based on items identified by each country as addressed in its curriculum

Read down the column under a country name to compare achievement scores based on the items identified by that country. Scores on the diagonal are countries' achievement scores based on the test items they identified.

Country	Average Mathematics Scale Score based on All Items	Singapore	Chinese Taipei	Hong Kong SAR	Korea, Rep. of	Japan	Macao SAR	Lithuania	Türkiye (5)	England	Ireland
Singapore	615 (2.9)	619 (2.9)	615 (2.9)	615 (3.0)	618 (2.9)	614 (2.9)	615 (2.9)	612 (2.9)	616 (2.9)	615 (2.9)	615 (2.9)
Chinese Taipei	607 (1.7)	608 (1.7)	607 (1.8)	609 (1.8)	610 (1.8)	613 (1.7)	607 (1.8)	606 (1.7)	608 (1.8)	607 (1.7)	607 (1.7)
Hong Kong SAR	594 (4.0)	594 (4.1)	595 (4.1)	599 (4.1)	596 (3.9)	593 (4.0)	594 (4.1)	593 (4.0)	595 (4.2)	594 (4.0)	595 (4.0)
Korea, Rep. of	594 (2.6)	595 (2.6)	594 (2.6)	595 (2.6)	600 (2.7)	597 (2.6)	595 (2.6)	595 (2.6)	594 (2.7)	594 (2.6)	596 (2.7)
Japan	591 (2.3)	590 (2.3)	590 (2.3)	588 (2.4)	594 (2.3)	599 (2.4)	589 (2.4)	592 (2.3)	589 (2.4)	590 (2.3)	590 (2.3)
Macao SAR	582 (1.0)	581 (1.1)	582 (1.1)	584 (1.1)	586 (1.1)	582 (1.1)	582 (1.1)	582 (1.1)	582 (1.0)	582 (1.0)	583 (1.0)
Lithuania	561 (2.9)	561 (2.9)	561 (2.9)	562 (3.0)	563 (2.9)	565 (2.9)	562 (2.9)	565 (2.9)	561 (3.0)	561 (2.9)	561 (2.9)
Türkiye (5)	553 (4.1)	555 (4.2)	554 (4.1)	555 (4.1)	554 (4.0)	554 (4.1)	553 (4.1)	553 (4.0)	554 (4.2)	554 (4.1)	553 (4.1)
England	552 (2.7)	554 (2.7)	552 (2.7)	553 (2.8)	551 (2.7)	550 (2.7)	552 (2.8)	551 (2.7)	552 (2.7)	552 (2.7)	553 (2.7)
Ireland	546 (2.9)	548 (3.0)	546 (2.9)	548 (3.0)	546 (2.9)	548 (3.0)	548 (3.0)	545 (2.9)	547 (3.0)	546 (2.9)	546 (2.9)
Poland	546 (2.0)	546 (2.1)	546 (2.1)	548 (2.0)	547 (2.1)	548 (2.1)	549 (2.0)	547 (2.0)	548 (2.1)	546 (2.1)	546 (2.0)
Romania	542 (4.8)	541 (4.9)	542 (4.8)	544 (4.9)	544 (4.9)	543 (4.9)	544 (4.9)	543 (4.8)	543 (4.8)	542 (4.8)	541 (4.8)
Netherlands	537 (2.0)	538 (2.0)	537 (2.0)	537 (2.0)	538 (2.0)	540 (2.0)	538 (1.9)	540 (2.0)	538 (2.0)	537 (2.0)	537 (2.0)
Latvia	534 (2.8)	534 (2.9)	534 (2.8)	535 (2.8)	538 (2.9)	537 (2.9)	535 (2.9)	536 (2.8)	535 (2.9)	534 (2.8)	535 (2.8)
Norway (5)	531 (2.0)	530 (2.0)	531 (2.0)	530 (2.0)	530 (2.1)	530 (2.0)	530 (2.0)	532 (2.0)	530 (2.0)	531 (2.0)	530 (2.0)
Czech Republic	530 (2.2)	531 (2.2)	531 (2.2)	531 (2.2)	530 (2.2)	532 (2.2)	532 (2.2)	530 (2.2)	531 (2.2)	531 (2.2)	530 (2.2)
Sweden	530 (2.8)	529 (2.8)	530 (2.8)	528 (2.8)	529 (2.8)	529 (2.8)	529 (2.9)	531 (2.8)	529 (2.8)	530 (2.8)	530 (2.8)
Finland	529 (2.5)	529 (2.5)	529 (2.5)	528 (2.5)	528 (2.5)	531 (2.5)	529 (2.5)	530 (2.5)	529 (2.5)	529 (2.5)	529 (2.5)
Australia	525 (2.6)	526 (2.6)	525 (2.6)	526 (2.6)	524 (2.6)	523 (2.6)	525 (2.6)	526 (2.6)	525 (2.6)	525 (2.6)	525 (2.6)
Denmark	524 (2.1)	524 (2.1)	523 (2.1)	520 (2.1)	524 (2.1)	524 (2.1)	522 (2.1)	525 (2.1)	523 (2.1)	524 (2.1)	524 (2.1)
Germany	524 (2.1)	524 (2.2)	524 (2.2)	525 (2.2)	523 (2.2)	525 (2.2)	525 (2.2)	523 (2.1)	526 (2.2)	524 (2.2)	524 (2.1)
Serbia	523 (3.3)	522 (3.3)	524 (3.3)	525 (3.2)	525 (3.4)	525 (3.4)	525 (3.3)	523 (3.3)	524 (3.3)	523 (3.3)	523 (3.3)
Belgium (Flemish)	521 (2.4)	522 (2.4)	521 (2.4)	520 (2.4)	522 (2.4)	523 (2.4)	522 (2.5)	519 (2.4)	522 (2.5)	520 (2.4)	521 (2.4)
Hungary	520 (3.6)	520 (3.7)	521 (3.6)	521 (3.6)	520 (3.7)	519 (3.8)	521 (3.7)	521 (3.6)	521 (3.6)	520 (3.6)	520 (3.6)
Portugal	517 (2.8)	519 (2.8)	518 (2.8)	519 (2.8)	518 (2.9)	516 (2.9)	518 (2.8)	517 (2.8)	518 (2.8)	518 (2.8)	517 (2.8)
United States	517 (3.1)	517 (3.1)	517 (3.1)	518 (3.1)	517 (3.1)	517 (3.1)	519 (3.1)	516 (3.1)	518 (3.1)	517 (3.1)	517 (3.1)
Slovak Republic	515 (3.1)	514 (3.1)	515 (3.1)	516 (3.1)	513 (3.2)	514 (3.2)	515 (3.1)	515 (3.1)	515 (3.1)	515 (3.1)	515 (3.1)
Slovenia	514 (1.8)	514 (1.9)	514 (1.8)	515 (1.9)	514 (1.9)	513 (1.9)	516 (1.9)	513 (1.8)	515 (1.9)	514 (1.8)	513 (1.8)
Armenia	513 (2.8)	510 (2.8)	513 (2.8)	515 (2.8)	511 (2.9)	512 (2.8)	513 (2.8)	511 (2.8)	513 (2.8)	512 (2.8)	512 (2.8)
Italy	513 (2.8)	514 (2.8)	514 (2.8)	515 (2.8)	515 (2.8)	515 (2.9)	515 (2.8)	513 (2.8)	515 (2.8)	513 (2.8)	513 (2.8)
Albania	512 (4.9)	511 (5.1)	512 (4.9)	514 (5.0)	510 (5.1)	510 (5.1)	512 (5.0)	510 (4.9)	512 (5.0)	511 (5.0)	511 (4.9)
Canada	504 (2.0)	504 (2.0)	504 (2.0)	504 (2.0)	503 (2.0)	503 (2.0)	503 (2.0)	504 (2.0)	503 (2.0)	504 (2.0)	504 (2.0)
Georgia	498 (3.1)	496 (3.1)	498 (3.1)	501 (3.1)	499 (3.0)	499 (3.1)	500 (3.1)	498 (3.0)	499 (3.1)	497 (3.1)	498 (3.0)
Spain	498 (2.1)	500 (2.1)	498 (2.1)	499 (2.1)	501 (2.1)	499 (2.1)	499 (2.1)	499 (2.1)	498 (2.1)	499 (2.1)	498 (2.1)
United Arab Emirates	498 (1.2)	498 (1.3)	498 (1.3)	499 (1.2)	498 (1.3)	497 (1.3)	498 (1.2)	497 (1.2)	498 (1.2)	498 (1.2)	498 (1.2)
New Zealand	490 (2.6)	491 (2.7)	490 (2.7)	490 (2.7)	489 (2.7)	490 (2.7)	491 (2.7)	491 (2.7)	490 (2.7)	490 (2.6)	490 (2.7)
Belgium (French)	489 (2.4)	489 (2.5)	489 (2.4)	488 (2.4)	490 (2.5)	490 (2.5)	488 (2.4)	488 (2.4)	489 (2.5)	490 (2.4)	490 (2.4)
Kazakhstan	487 (3.6)	484 (3.7)	487 (3.6)	489 (3.6)	492 (3.7)	489 (3.7)	489 (3.6)	489 (3.6)	486 (3.6)	486 (3.6)	487 (3.6)
France	484 (2.9)	484 (2.9)	484 (2.9)	484 (2.9)	486 (3.0)	485 (3.0)	484 (2.9)	484 (2.9)	485 (2.9)	484 (2.9)	484 (2.9)
Montenegro	477 (2.1)	475 (2.1)	477 (2.1)	480 (2.1)	480 (2.1)	478 (2.2)	479 (2.1)	478 (2.1)	478 (2.1)	477 (2.1)	477 (2.1)
North Macedonia	474 (3.6)	472 (3.6)	474 (3.6)	475 (3.6)	472 (3.6)	472 (3.7)	473 (3.6)	473 (3.6)	474 (3.6)	473 (3.6)	473 (3.6)
Qatar	464 (3.5)	464 (3.5)	464 (3.5)	464 (3.5)	464 (3.5)	463 (3.5)	464 (3.5)	463 (3.5)	463 (3.5)	464 (3.5)	464 (3.5)
Bahrain	462 (4.1)	462 (4.2)	462 (4.2)	462 (4.2)	461 (4.2)	460 (4.2)	461 (4.2)	461 (4.1)	461 (4.2)	462 (4.2)	462 (4.2)
Kosovo	451 (3.4)	450 (3.4)	452 (3.5)	453 (3.5)	453 (3.4)	451 (3.5)	452 (3.5)	452 (3.4)	452 (3.4)	451 (3.5)	452 (3.5)
Bosnia & Herzegovina	447 (3.2)	446 (3.3)	448 (3.2)	450 (3.3)	449 (3.4)	449 (3.3)	449 (3.3)	448 (3.3)	449 (3.3)	447 (3.2)	447 (3.3)
Chile	444 (2.8)	443 (2.8)	443 (2.8)	442 (2.9)	445 (2.9)	442 (2.9)	441 (2.9)	446 (2.8)	442 (2.8)	443 (2.8)	444 (2.8)
Uzbekistan	443 (3.2)	442 (3.2)	444 (3.2)	447 (3.2)	447 (3.2)	445 (3.3)	446 (3.2)	443 (3.2)	445 (3.2)	443 (3.2)	444 (3.2)
Jordan	427 (5.3)	427 (5.3)	427 (5.3)	430 (5.3)	425 (5.3)	425 (5.4)	428 (5.2)	425 (5.3)	428 (5.2)	427 (5.3)	427 (5.3)
Oman	421 (4.0)	422 (4.1)	422 (4.0)	421 (4.1)	419 (4.1)	420 (4.1)	420 (4.0)	421 (4.0)	421 (4.0)	421 (4.0)	421 (4.0)
Saudi Arabia	420 (4.2)	419 (4.2)	419 (4.2)	421 (4.2)	418 (4.2)	419 (4.3)	419 (4.2)	419 (4.2)	419 (4.1)	419 (4.2)	419 (4.2)
Brazil	400 (3.4)	400 (3.5)	400 (3.4)	401 (3.4)	400 (3.5)	400 (3.4)	400 (3.5)	401 (3.4)	400 (3.4)	400 (3.4)	399 (3.4)
<b>International Average</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>513 (0.4)</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>511 (0.4)</b>	<b>512 (0.4)</b>
<b>Benchmarking Participants</b>											
Dubai, UAE	557 (1.6)	557 (1.6)	557 (1.6)	557 (1.6)	556 (1.6)	555 (1.6)	556 (1.6)	556 (1.6)	556 (1.6)	557 (1.6)	557 (1.6)
Quebec, Canada	515 (2.7)	516 (2.8)	515 (2.7)	514 (2.7)	515 (2.8)	515 (2.8)	513 (2.7)	514 (2.7)	514 (2.7)	515 (2.7)	515 (2.7)
Sharjah, UAE	504 (3.3)	504 (3.3)	504 (3.3)	505 (3.3)	503 (3.3)	503 (3.3)	503 (3.3)	503 (3.2)	504 (3.3)	504 (3.3)	504 (3.3)
Ontario, Canada	503 (3.4)	503 (3.4)	503 (3.4)	503 (3.4)	502 (3.5)	502 (3.4)	503 (3.4)	504 (3.4)	502 (3.3)	503 (3.4)	503 (3.4)
Abu Dhabi, UAE	459 (1.9)	458 (2.0)	459 (2.0)	460 (2.0)	459 (2.0)	458 (1.9)	459 (1.9)	458 (1.9)	458 (1.9)	458 (2.0)	458 (1.9)
<b>Number of Items (Score Points)*</b>	<b>183 (192)</b>	<b>155 (164)</b>	<b>178 (187)</b>	<b>148 (154)</b>	<b>145 (154)</b>	<b>140 (147)</b>	<b>152 (159)</b>	<b>169 (177)</b>	<b>161 (168)</b>	<b>179 (188)</b>	<b>176 (183)</b>

\* The number of items and score points are based on the number of items included in scaling the fourth-grade mathematics achievement data. See Chapter 9 in TIMSS 2023 Technical Report (Methods and Procedures) for information about items deleted or recoded for scaling. ( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

**Exhibit C.1: Average Scale Scores for the Mathematics Test-Curriculum Matching Analysis**

Results based on items identified by each country as addressed in its curriculum

(Continued)

Country	Average Mathematics Scale Score based on All Items	Poland	Romania	Netherlands	Latvia	Norway (5)	Czech Republic	Sweden	Finland	Australia	Denmark
Singapore	615 (2.9)	614 (2.9)	615 (2.9)	615 (2.9)	614 (2.9)	615 (2.9)	612 (2.9)	612 (2.9)	614 (2.9)	613 (2.9)	615 (2.9)
Chinese Taipei	607 (1.7)	606 (1.7)	607 (1.7)	608 (1.8)	606 (1.8)	607 (1.8)	605 (1.8)	604 (1.8)	608 (1.8)	603 (1.8)	607 (1.7)
Hong Kong SAR	594 (4.0)	594 (4.0)	594 (4.0)	593 (4.0)	594 (4.1)	596 (4.0)	594 (4.0)	592 (4.0)	593 (4.0)	593 (4.1)	594 (4.0)
Korea, Rep. of	594 (2.6)	595 (2.6)	594 (2.6)	594 (2.6)	593 (2.7)	597 (2.7)	592 (2.7)	592 (2.7)	596 (2.6)	597 (2.6)	595 (2.6)
Japan	591 (2.3)	591 (2.3)	591 (2.3)	593 (2.3)	590 (2.4)	592 (2.4)	591 (2.3)	589 (2.4)	594 (2.3)	589 (2.3)	591 (2.3)
Macao SAR	582 (1.0)	582 (1.0)	582 (1.0)	581 (1.1)	581 (1.0)	582 (1.1)	581 (1.1)	580 (1.1)	582 (1.0)	582 (1.1)	581 (1.1)
Lithuania	561 (2.9)	562 (2.9)	561 (2.9)	565 (3.0)	561 (2.9)	564 (2.9)	562 (3.0)	562 (3.0)	562 (2.9)	560 (3.0)	559 (2.9)
Türkiye (5)	553 (4.1)	553 (4.1)	553 (4.1)	555 (4.1)	553 (4.1)	554 (4.1)	553 (4.1)	552 (4.1)	553 (4.0)	553 (4.1)	553 (4.1)
England	552 (2.7)	551 (2.7)	552 (2.7)	553 (2.6)	552 (2.8)	552 (2.8)	550 (2.7)	551 (2.7)	550 (2.7)	556 (2.7)	552 (2.7)
Ireland	546 (2.9)	545 (2.9)	546 (2.9)	547 (3.0)	546 (2.9)	547 (3.0)	544 (2.9)	545 (2.9)	546 (2.9)	549 (3.0)	545 (2.9)
Poland	546 (2.0)	547 (2.0)	546 (2.0)	547 (2.0)	546 (2.0)	548 (2.1)	547 (2.0)	547 (2.0)	547 (2.0)	551 (2.1)	546 (2.0)
Romania	542 (4.8)	542 (4.9)	542 (4.8)	540 (4.8)	542 (4.9)	543 (5.0)	543 (4.9)	543 (4.9)	542 (4.9)	541 (4.9)	541 (4.8)
Netherlands	537 (2.0)	538 (2.0)	537 (2.0)	543 (2.1)	537 (2.0)	539 (2.0)	539 (2.1)	540 (2.1)	539 (2.0)	540 (2.1)	538 (2.0)
Latvia	534 (2.8)	535 (2.8)	534 (2.8)	536 (2.9)	535 (2.8)	538 (3.0)	535 (2.9)	535 (2.9)	535 (2.8)	536 (2.9)	534 (2.8)
Norway (5)	531 (2.0)	531 (2.0)	531 (2.0)	532 (2.0)	531 (2.0)	533 (2.1)	531 (2.0)	532 (2.0)	531 (2.0)	536 (2.1)	531 (2.0)
Czech Republic	530 (2.2)	530 (2.2)	530 (2.2)	530 (2.2)	531 (2.2)	531 (2.2)	533 (2.2)	534 (2.2)	530 (2.2)	530 (2.2)	531 (2.2)
Sweden	530 (2.8)	530 (2.8)	530 (2.8)	531 (2.8)	530 (2.8)	532 (2.9)	531 (2.8)	531 (2.8)	530 (2.8)	533 (2.9)	530 (2.8)
Finland	529 (2.5)	530 (2.5)	529 (2.5)	531 (2.5)	529 (2.5)	530 (2.6)	529 (2.5)	529 (2.5)	530 (2.5)	532 (2.6)	530 (2.5)
Australia	525 (2.6)	524 (2.6)	525 (2.6)	527 (2.6)	525 (2.6)	527 (2.6)	525 (2.6)	525 (2.6)	525 (2.6)	534 (2.6)	525 (2.6)
Denmark	524 (2.1)	525 (2.1)	524 (2.1)	525 (2.2)	524 (2.1)	524 (2.1)	524 (2.1)	525 (2.1)	525 (2.1)	526 (2.2)	525 (2.1)
Germany	524 (2.1)	524 (2.2)	524 (2.1)	527 (2.2)	524 (2.2)	526 (2.2)	524 (2.2)	525 (2.2)	524 (2.2)	527 (2.2)	525 (2.2)
Serbia	523 (3.3)	523 (3.3)	523 (3.3)	523 (3.3)	523 (3.3)	526 (3.3)	525 (3.3)	525 (3.4)	522 (3.3)	523 (3.4)	522 (3.3)
Belgium (Flemish)	521 (2.4)	521 (2.4)	521 (2.4)	521 (2.4)	520 (2.4)	521 (2.4)	520 (2.5)	520 (2.5)	521 (2.4)	521 (2.5)	522 (2.5)
Hungary	520 (3.6)	520 (3.6)	520 (3.6)	521 (3.7)	521 (3.6)	523 (3.7)	523 (3.6)	523 (3.6)	519 (3.6)	525 (3.7)	521 (3.6)
Portugal	517 (2.8)	517 (2.8)	517 (2.8)	518 (2.8)	517 (2.8)	518 (2.8)	517 (2.8)	517 (2.8)	517 (2.8)	523 (2.8)	518 (2.8)
United States	517 (3.1)	517 (3.1)	517 (3.1)	518 (3.1)	517 (3.1)	518 (3.1)	517 (3.1)	516 (3.1)	516 (3.1)	519 (3.1)	516 (3.1)
Slovak Republic	515 (3.1)	514 (3.1)	515 (3.1)	516 (3.2)	515 (3.1)	516 (3.2)	517 (3.1)	517 (3.1)	514 (3.1)	519 (3.2)	515 (3.1)
Slovenia	514 (1.8)	513 (1.9)	514 (1.8)	515 (1.9)	515 (1.8)	515 (2.0)	516 (1.9)	516 (1.9)	513 (1.9)	517 (2.0)	513 (1.8)
Armenia	513 (2.8)	512 (2.8)	513 (2.8)	509 (2.8)	513 (2.8)	511 (2.8)	514 (2.8)	513 (2.8)	510 (2.8)	506 (3.0)	511 (2.8)
Italy	513 (2.8)	513 (2.8)	513 (2.8)	513 (2.8)	513 (2.8)	514 (2.8)	512 (2.8)	512 (2.8)	514 (2.8)	517 (2.9)	514 (2.8)
Albania	512 (4.9)	511 (4.9)	512 (4.9)	509 (5.0)	512 (4.9)	510 (5.0)	510 (4.8)	510 (4.9)	510 (5.0)	509 (5.2)	510 (4.9)
Canada	504 (2.0)	504 (2.0)	504 (2.0)	505 (2.0)	504 (2.0)	505 (2.0)	504 (2.0)	504 (2.0)	504 (2.0)	509 (2.0)	504 (2.0)
Georgia	498 (3.1)	499 (3.0)	498 (3.1)	498 (3.0)	498 (3.1)	499 (3.1)	499 (3.1)	499 (3.1)	497 (3.0)	495 (3.1)	496 (3.1)
Spain	498 (2.1)	498 (2.1)	498 (2.1)	498 (2.1)	498 (2.1)	498 (2.2)	498 (2.1)	498 (2.2)	499 (2.1)	499 (2.2)	499 (2.1)
United Arab Emirates	498 (1.2)	497 (1.2)	498 (1.2)	497 (1.2)	498 (1.2)	497 (1.3)	498 (1.2)	497 (1.2)	497 (1.2)	498 (1.2)	497 (1.2)
New Zealand	490 (2.6)	490 (2.6)	490 (2.6)	493 (2.7)	491 (2.6)	493 (2.7)	491 (2.7)	492 (2.7)	491 (2.6)	496 (2.8)	490 (2.6)
Belgium (French)	489 (2.4)	489 (2.4)	489 (2.4)	486 (2.4)	490 (2.4)	489 (2.4)	488 (2.4)	488 (2.4)	489 (2.4)	490 (2.5)	489 (2.4)
Kazakhstan	487 (3.6)	488 (3.6)	487 (3.6)	487 (3.7)	487 (3.6)	490 (3.7)	489 (3.7)	488 (3.7)	487 (3.6)	484 (3.7)	486 (3.6)
France	484 (2.9)	484 (2.9)	484 (2.9)	483 (2.9)	484 (2.9)	483 (2.9)	483 (2.9)	484 (2.9)	485 (2.9)	485 (2.9)	484 (2.9)
Montenegro	477 (2.1)	477 (2.1)	477 (2.1)	475 (2.1)	477 (2.1)	477 (2.2)	478 (2.1)	477 (2.1)	477 (2.1)	476 (2.2)	475 (2.1)
North Macedonia	474 (3.6)	473 (3.6)	474 (3.6)	471 (3.6)	473 (3.6)	471 (3.7)	473 (3.6)	472 (3.6)	472 (3.6)	470 (3.8)	472 (3.6)
Qatar	464 (3.5)	464 (3.5)	464 (3.5)	464 (3.5)	464 (3.5)	464 (3.5)	464 (3.5)	463 (3.5)	463 (3.4)	464 (3.6)	463 (3.5)
Bahrain	462 (4.1)	461 (4.2)	462 (4.1)	460 (4.1)	462 (4.1)	460 (4.1)	462 (4.1)	461 (4.1)	461 (4.2)	461 (4.2)	461 (4.2)
Kosovo	451 (3.4)	451 (3.4)	451 (3.4)	449 (3.4)	451 (3.4)	451 (3.4)	451 (3.4)	450 (3.4)	450 (3.4)	447 (3.5)	450 (3.4)
Bosnia & Herzegovina	447 (3.2)	447 (3.3)	447 (3.2)	446 (3.3)	447 (3.3)	449 (3.3)	448 (3.2)	447 (3.3)	447 (3.3)	449 (3.4)	446 (3.2)
Chile	444 (2.8)	444 (2.8)	444 (2.8)	445 (2.9)	444 (2.8)	446 (2.9)	445 (2.8)	445 (2.8)	445 (2.8)	449 (2.9)	444 (2.8)
Uzbekistan	443 (3.2)	444 (3.2)	443 (3.2)	443 (3.3)	443 (3.2)	445 (3.3)	444 (3.3)	443 (3.2)	442 (3.2)	436 (3.3)	442 (3.2)
Jordan	427 (5.3)	426 (5.3)	427 (5.3)	423 (5.2)	427 (5.3)	423 (5.2)	426 (5.3)	426 (5.3)	425 (5.3)	424 (5.2)	425 (5.3)
Oman	421 (4.0)	421 (4.0)	421 (4.0)	418 (4.0)	422 (4.0)	418 (4.0)	420 (4.0)	420 (4.0)	421 (4.0)	422 (4.1)	420 (4.0)
Saudi Arabia	420 (4.2)	418 (4.2)	420 (4.2)	417 (4.2)	420 (4.2)	417 (4.1)	419 (4.1)	419 (4.1)	419 (4.1)	416 (4.3)	418 (4.2)
Brazil	400 (3.4)	400 (3.5)	400 (3.4)	400 (3.5)	400 (3.4)	402 (3.4)	401 (3.4)	401 (3.4)	401 (3.4)	402 (3.5)	400 (3.5)
<b>International Average</b>	<b>512 (0.4)</b>	<b>511 (0.4)</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>511 (0.4)</b>	<b>512 (0.4)</b>	<b>511 (0.4)</b>
<b>Benchmarking Participants</b>											
Dubai, UAE	557 (1.6)	556 (1.6)	557 (1.6)	556 (1.6)	557 (1.6)	555 (1.6)	556 (1.6)	555 (1.6)	555 (1.6)	558 (1.6)	556 (1.6)
Quebec, Canada	515 (2.7)	515 (2.7)	515 (2.7)	514 (2.7)	514 (2.7)	514 (2.8)	513 (2.7)	513 (2.7)	515 (2.7)	519 (2.7)	515 (2.7)
Sharjah, UAE	504 (3.3)	503 (3.3)	504 (3.3)	502 (3.2)	504 (3.3)	503 (3.3)	504 (3.2)	503 (3.2)	503 (3.3)	504 (3.3)	503 (3.3)
Ontario, Canada	503 (3.4)	503 (3.4)	503 (3.4)	504 (3.4)	503 (3.4)	504 (3.4)	504 (3.4)	504 (3.4)	503 (3.4)	508 (3.4)	503 (3.4)
Abu Dhabi, UAE	459 (1.9)	458 (2.0)	459 (1.9)	458 (2.0)	459 (1.9)	458 (2.0)	458 (2.0)	458 (2.0)	458 (1.9)	459 (2.0)	458 (2.0)
<b>Number of Items (Score Points)*</b>	<b>183 (192)</b>	<b>177 (186)</b>	<b>183 (192)</b>	<b>147 (154)</b>	<b>180 (189)</b>	<b>131 (137)</b>	<b>167 (176)</b>	<b>165 (173)</b>	<b>173 (182)</b>	<b>122 (128)</b>	<b>173 (182)</b>

\* The number of items and score points are based on the number of items included in scaling the fourth-grade mathematics achievement data. See Chapter 9 in TIMSS 2023 Technical Report (Methods and Procedures) for information about items deleted or recoded for scaling. ( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

**Exhibit C.1: Average Scale Scores for the Mathematics Test-Curriculum Matching Analysis**

Results based on items identified by each country as addressed in its curriculum

(Continued)

Country	Average Mathematics Scale Score based on All Items	Germany	Serbia	Belgium (Flemish)	Hungary	Portugal	United States	Slovak Republic	Slovenia	Armenia	Italy
Singapore	615 (2.9)	614 (2.9)	615 (2.9)	618 (3.0)	614 (2.9)	615 (2.9)	615 (2.9)	614 (2.9)	612 (2.9)	615 (2.9)	616 (2.9)
Chinese Taipei	607 (1.7)	605 (1.8)	607 (1.7)	607 (1.7)	606 (1.8)	607 (1.7)	607 (1.8)	603 (1.8)	603 (1.7)	607 (1.7)	607 (1.7)
Hong Kong SAR	594 (4.0)	593 (4.1)	594 (4.0)	594 (4.0)	594 (4.1)	594 (4.0)	595 (4.1)	592 (4.0)	594 (4.0)	594 (4.0)	594 (4.1)
Korea, Rep. of	594 (2.6)	593 (2.7)	594 (2.6)	598 (2.6)	593 (2.7)	594 (2.6)	594 (2.7)	591 (2.6)	592 (2.6)	594 (2.6)	596 (2.6)
Japan	591 (2.3)	589 (2.4)	591 (2.3)	590 (2.3)	590 (2.4)	591 (2.3)	590 (2.4)	589 (2.3)	590 (2.3)	591 (2.3)	591 (2.3)
Macao SAR	582 (1.0)	580 (1.1)	582 (1.0)	583 (1.1)	582 (1.1)	582 (1.0)	582 (1.1)	581 (1.1)	581 (1.1)	582 (1.0)	582 (1.1)
Lithuania	561 (2.9)	560 (2.9)	561 (2.9)	561 (2.9)	561 (3.0)	561 (2.9)	560 (2.9)	563 (3.0)	565 (3.0)	561 (2.9)	560 (2.9)
Türkiye (5)	553 (4.1)	554 (4.2)	553 (4.1)	553 (4.0)	554 (4.1)	553 (4.1)	553 (4.2)	553 (4.0)	553 (4.1)	553 (4.1)	553 (4.1)
England	552 (2.7)	551 (2.7)	552 (2.7)	553 (2.7)	551 (2.8)	552 (2.7)	553 (2.7)	554 (2.7)	552 (2.7)	552 (2.7)	552 (2.7)
Ireland	546 (2.9)	546 (2.9)	546 (2.9)	546 (2.9)	546 (2.9)	546 (2.9)	546 (2.9)	546 (3.0)	545 (3.0)	546 (2.9)	546 (2.9)
Poland	546 (2.0)	548 (2.1)	546 (2.0)	548 (2.1)	546 (2.1)	546 (2.0)	547 (2.0)	549 (2.1)	547 (2.0)	546 (2.0)	546 (2.0)
Romania	542 (4.8)	543 (4.9)	542 (4.8)	541 (4.9)	544 (4.8)	542 (4.8)	543 (4.9)	542 (4.9)	545 (4.9)	542 (4.8)	542 (4.8)
Netherlands	537 (2.0)	540 (2.0)	537 (2.0)	538 (2.0)	537 (2.0)	537 (2.0)	536 (2.0)	540 (2.1)	540 (2.1)	537 (2.0)	537 (2.0)
Latvia	534 (2.8)	534 (2.9)	534 (2.8)	535 (2.9)	535 (2.9)	534 (2.8)	534 (2.8)	535 (2.9)	536 (2.9)	534 (2.8)	535 (2.8)
Norway (5)	531 (2.0)	531 (2.0)	531 (2.0)	531 (2.1)	530 (2.0)	531 (2.0)	531 (2.0)	534 (2.0)	532 (2.0)	531 (2.0)	531 (2.0)
Czech Republic	530 (2.2)	534 (2.2)	530 (2.2)	531 (2.2)	531 (2.2)	530 (2.2)	532 (2.2)	533 (2.2)	533 (2.2)	530 (2.2)	531 (2.2)
Sweden	530 (2.8)	529 (2.8)	530 (2.8)	532 (2.9)	530 (2.8)	530 (2.8)	530 (2.8)	533 (2.9)	532 (2.9)	530 (2.8)	530 (2.8)
Finland	529 (2.5)	528 (2.5)	529 (2.5)	530 (2.5)	528 (2.5)	529 (2.5)	529 (2.5)	530 (2.6)	529 (2.5)	529 (2.5)	529 (2.5)
Australia	525 (2.6)	526 (2.6)	525 (2.6)	526 (2.6)	525 (2.6)	525 (2.6)	525 (2.6)	527 (2.6)	526 (2.6)	525 (2.6)	525 (2.6)
Denmark	524 (2.1)	523 (2.1)	524 (2.1)	524 (2.1)	523 (2.1)	524 (2.1)	523 (2.1)	524 (2.1)	523 (2.1)	524 (2.1)	524 (2.1)
Germany	524 (2.1)	527 (2.2)	524 (2.1)	524 (2.2)	523 (2.2)	524 (2.2)	524 (2.1)	525 (2.2)	525 (2.2)	524 (2.1)	524 (2.1)
Serbia	523 (3.3)	526 (3.3)	523 (3.3)	523 (3.4)	524 (3.3)	523 (3.3)	524 (3.2)	523 (3.4)	525 (3.4)	523 (3.3)	523 (3.3)
Belgium (Flemish)	521 (2.4)	521 (2.5)	521 (2.4)	522 (2.4)	520 (2.5)	521 (2.4)	521 (2.5)	519 (2.4)	518 (2.4)	521 (2.4)	521 (2.4)
Hungary	520 (3.6)	523 (3.6)	520 (3.6)	520 (3.7)	523 (3.6)	520 (3.6)	522 (3.6)	525 (3.7)	525 (3.7)	520 (3.6)	520 (3.6)
Portugal	517 (2.8)	518 (2.8)	517 (2.8)	517 (2.8)	517 (2.8)	517 (2.8)	518 (2.8)	519 (2.8)	517 (2.8)	517 (2.8)	517 (2.8)
United States	517 (3.1)	517 (3.1)	517 (3.1)	518 (3.1)	518 (3.1)	517 (3.1)	517 (3.1)	520 (3.1)	519 (3.1)	517 (3.1)	516 (3.1)
Slovak Republic	515 (3.1)	517 (3.2)	515 (3.1)	516 (3.1)	515 (3.1)	515 (3.1)	515 (3.1)	521 (3.2)	518 (3.2)	515 (3.1)	515 (3.1)
Slovenia	514 (1.8)	517 (1.9)	514 (1.8)	514 (1.9)	515 (1.9)	514 (1.8)	514 (1.8)	517 (2.0)	517 (1.9)	514 (1.8)	513 (1.8)
Armenia	513 (2.8)	512 (2.8)	513 (2.8)	511 (2.8)	514 (2.8)	513 (2.8)	514 (2.8)	511 (2.8)	514 (2.8)	513 (2.8)	512 (2.8)
Italy	513 (2.8)	514 (2.8)	513 (2.8)	513 (2.8)	513 (2.8)	513 (2.8)	514 (2.8)	513 (2.9)	512 (2.8)	513 (2.8)	513 (2.8)
Albania	512 (4.9)	510 (4.9)	512 (4.9)	509 (5.0)	511 (4.8)	512 (4.9)	512 (4.9)	509 (4.9)	510 (4.9)	512 (4.9)	512 (5.0)
Canada	504 (2.0)	504 (2.0)	504 (2.0)	504 (2.0)	505 (2.0)	504 (2.0)	504 (2.0)	507 (2.1)	505 (2.0)	504 (2.0)	504 (2.0)
Georgia	498 (3.1)	499 (3.1)	498 (3.1)	497 (3.1)	499 (3.1)	498 (3.1)	499 (3.0)	500 (3.0)	500 (3.1)	498 (3.1)	498 (3.1)
Spain	498 (2.1)	498 (2.2)	498 (2.1)	499 (2.1)	498 (2.1)	498 (2.1)	498 (2.1)	499 (2.2)	498 (2.2)	498 (2.1)	498 (2.1)
United Arab Emirates	498 (1.2)	497 (1.2)	498 (1.2)	498 (1.3)	498 (1.2)	498 (1.2)	498 (1.2)	498 (1.3)	498 (1.2)	498 (1.2)	498 (1.2)
New Zealand	490 (2.6)	491 (2.7)	490 (2.6)	491 (2.6)	490 (2.7)	490 (2.6)	490 (2.6)	494 (2.7)	493 (2.7)	490 (2.6)	490 (2.7)
Belgium (French)	489 (2.4)	488 (2.4)	489 (2.4)	491 (2.5)	489 (2.4)	489 (2.4)	489 (2.4)	487 (2.5)	487 (2.4)	489 (2.4)	490 (2.4)
Kazakhstan	487 (3.6)	487 (3.7)	487 (3.6)	487 (3.7)	489 (3.7)	487 (3.6)	488 (3.6)	488 (3.7)	492 (3.7)	487 (3.6)	487 (3.6)
France	484 (2.9)	483 (2.9)	484 (2.9)	484 (2.9)	483 (2.9)	484 (2.9)	484 (2.9)	483 (2.9)	483 (3.0)	484 (2.9)	484 (2.9)
Montenegro	477 (2.1)	477 (2.1)	477 (2.1)	477 (2.1)	477 (2.1)	477 (2.1)	478 (2.0)	476 (2.1)	478 (2.1)	477 (2.1)	477 (2.1)
North Macedonia	474 (3.6)	472 (3.7)	474 (3.6)	471 (3.6)	473 (3.6)	474 (3.6)	474 (3.6)	471 (3.7)	472 (3.6)	474 (3.6)	473 (3.6)
Qatar	464 (3.5)	463 (3.5)	464 (3.5)	465 (3.5)	464 (3.4)	464 (3.5)	464 (3.5)	466 (3.5)	465 (3.5)	464 (3.5)	463 (3.5)
Bahrain	462 (4.1)	461 (4.2)	462 (4.1)	461 (4.2)	463 (4.1)	462 (4.2)	462 (4.2)	461 (4.2)	462 (4.1)	462 (4.1)	461 (4.2)
Kosovo	451 (3.4)	450 (3.5)	451 (3.4)	450 (3.4)	451 (3.5)	451 (3.4)	453 (3.5)	449 (3.4)	451 (3.5)	451 (3.4)	451 (3.4)
Bosnia & Herzegovina	447 (3.2)	449 (3.3)	447 (3.2)	447 (3.4)	447 (3.2)	447 (3.2)	448 (3.2)	447 (3.3)	448 (3.3)	447 (3.2)	447 (3.3)
Chile	444 (2.8)	444 (2.9)	444 (2.8)	443 (2.9)	445 (2.8)	444 (2.8)	442 (2.8)	446 (2.9)	446 (2.8)	444 (2.8)	443 (2.8)
Uzbekistan	443 (3.2)	444 (3.2)	443 (3.2)	442 (3.2)	444 (3.2)	443 (3.2)	443 (3.2)	442 (3.3)	444 (3.3)	443 (3.2)	443 (3.2)
Jordan	427 (5.3)	426 (5.2)	427 (5.3)	427 (5.2)	427 (5.3)	427 (5.3)	427 (5.3)	429 (5.3)	425 (5.2)	427 (5.3)	426 (5.3)
Oman	421 (4.0)	420 (4.0)	421 (4.0)	420 (4.0)	422 (4.0)	421 (4.0)	422 (4.1)	420 (4.0)	419 (4.0)	421 (4.0)	421 (4.0)
Saudi Arabia	420 (4.2)	418 (4.2)	419 (4.2)	419 (4.1)	420 (4.2)	419 (4.2)	420 (4.2)	417 (4.2)	418 (4.1)	420 (4.2)	419 (4.2)
Brazil	400 (3.4)	400 (3.5)	400 (3.4)	400 (3.5)	401 (3.4)	400 (3.4)	400 (3.4)	400 (3.5)	402 (3.5)	400 (3.4)	400 (3.4)
<b>International Average</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>511 (0.4)</b>
<b>Benchmarking Participants</b>											
Dubai, UAE	557 (1.6)	555 (1.6)	557 (1.6)	557 (1.6)	557 (1.6)	557 (1.6)	557 (1.6)	558 (1.6)	557 (1.6)	557 (1.6)	556 (1.6)
Quebec, Canada	515 (2.7)	513 (2.7)	515 (2.7)	515 (2.7)	514 (2.7)	515 (2.7)	515 (2.7)	515 (2.8)	512 (2.7)	515 (2.7)	515 (2.7)
Sharjah, UAE	504 (3.3)	503 (3.3)	504 (3.3)	503 (3.3)	504 (3.3)	504 (3.3)	504 (3.3)	504 (3.3)	504 (3.2)	504 (3.3)	503 (3.3)
Ontario, Canada	503 (3.4)	503 (3.4)	503 (3.4)	503 (3.4)	504 (3.4)	503 (3.4)	503 (3.4)	507 (3.5)	505 (3.4)	503 (3.4)	503 (3.4)
Abu Dhabi, UAE	459 (1.9)	458 (2.0)	459 (1.9)	458 (2.0)	459 (2.0)	459 (1.9)	459 (2.0)	460 (2.0)	459 (2.0)	459 (1.9)	458 (2.0)
<b>Number of Items (Score Points)*</b>	<b>183 (192)</b>	<b>153 (161)</b>	<b>183 (192)</b>	<b>154 (163)</b>	<b>167 (176)</b>	<b>183 (192)</b>	<b>169 (178)</b>	<b>136 (144)</b>	<b>153 (161)</b>	<b>183 (192)</b>	<b>177 (186)</b>

\* The number of items and score points are based on the number of items included in scaling the fourth-grade mathematics achievement data. See Chapter 9 in *TIMSS 2023 Technical Report (Methods and Procedures)* for information about items deleted or recoded for scaling. ( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.



## Exhibit C.1: Average Scale Scores for the Mathematics Test-Curriculum Matching Analysis

Results based on items identified by each country as addressed in its curriculum

(Continued)

Country	Average Mathematics Scale Score based on All Items	Albania	Canada	Georgia	Spain	United Arab Emirates	New Zealand	Belgium (French)	Kazakhstan	France	Montenegro
Singapore	615 (2.9)	615 (2.9)	614 (2.9)	611 (2.9)	613 (2.9)	615 (2.9)	617 (2.9)	615 (3.0)	615 (2.9)	614 (2.9)	613 (3.0)
Chinese Taipei	607 (1.7)	607 (1.7)	602 (1.8)	604 (1.8)	607 (1.7)	607 (1.7)	610 (1.8)	607 (1.8)	609 (1.8)	608 (1.7)	604 (1.8)
Hong Kong SAR	594 (4.0)	594 (4.0)	592 (4.1)	594 (4.0)	593 (4.1)	594 (4.0)	595 (4.0)	594 (4.0)	596 (4.2)	594 (4.0)	595 (4.1)
Korea, Rep. of	594 (2.6)	594 (2.6)	596 (2.6)	593 (2.6)	595 (2.6)	594 (2.6)	597 (2.6)	593 (2.7)	592 (2.7)	595 (2.6)	592 (2.7)
Japan	591 (2.3)	590 (2.3)	585 (2.4)	589 (2.3)	591 (2.3)	591 (2.3)	593 (2.4)	588 (2.4)	589 (2.5)	592 (2.3)	588 (2.5)
Macao SAR	582 (1.0)	582 (1.1)	581 (1.1)	581 (1.1)	581 (1.1)	582 (1.0)	584 (1.1)	581 (1.1)	582 (1.1)	582 (1.0)	582 (1.1)
Lithuania	561 (2.9)	561 (2.9)	561 (3.0)	567 (3.0)	562 (2.9)	561 (2.9)	560 (2.9)	562 (3.0)	559 (2.9)	562 (2.9)	561 (3.0)
Türkiye (5)	553 (4.1)	553 (4.1)	554 (4.1)	554 (4.1)	555 (4.1)	553 (4.1)	554 (4.1)	554 (4.1)	552 (4.3)	554 (4.1)	554 (4.1)
England	552 (2.7)	552 (2.7)	554 (2.8)	551 (2.7)	551 (2.7)	552 (2.7)	553 (2.7)	552 (2.8)	551 (2.8)	551 (2.7)	552 (2.8)
Ireland	546 (2.9)	546 (2.9)	547 (3.0)	545 (2.9)	547 (2.9)	546 (2.9)	547 (3.0)	547 (3.0)	546 (3.0)	546 (2.9)	547 (3.0)
Poland	546 (2.0)	546 (2.0)	549 (2.0)	549 (2.0)	548 (2.0)	546 (2.0)	546 (2.0)	548 (2.1)	546 (2.1)	546 (2.0)	551 (2.1)
Romania	542 (4.8)	542 (4.8)	544 (5.0)	545 (5.0)	543 (4.9)	542 (4.8)	541 (4.9)	544 (4.9)	548 (4.8)	543 (4.8)	545 (4.9)
Netherlands	537 (2.0)	537 (2.0)	537 (2.0)	541 (2.0)	539 (2.0)	537 (2.0)	537 (1.9)	537 (2.0)	535 (2.0)	538 (2.0)	537 (2.0)
Latvia	534 (2.8)	534 (2.8)	536 (2.9)	538 (2.9)	535 (2.9)	534 (2.8)	535 (2.9)	535 (2.9)	535 (2.8)	535 (2.8)	535 (3.0)
Norway (5)	531 (2.0)	530 (2.0)	532 (2.1)	533 (2.1)	532 (2.0)	531 (2.0)	531 (2.0)	531 (2.0)	529 (2.0)	531 (2.0)	531 (2.1)
Czech Republic	530 (2.2)	531 (2.2)	532 (2.2)	531 (2.2)	531 (2.2)	530 (2.2)	530 (2.2)	532 (2.2)	535 (2.1)	530 (2.2)	532 (2.2)
Sweden	530 (2.8)	530 (2.8)	532 (2.9)	531 (2.8)	529 (2.8)	530 (2.8)	530 (2.8)	530 (2.8)	528 (2.8)	530 (2.8)	531 (2.8)
Finland	529 (2.5)	529 (2.5)	530 (2.6)	530 (2.5)	530 (2.5)	529 (2.5)	528 (2.5)	529 (2.5)	528 (2.4)	530 (2.5)	530 (2.6)
Australia	525 (2.6)	525 (2.6)	528 (2.5)	525 (2.6)	526 (2.6)	525 (2.6)	527 (2.6)	526 (2.6)	521 (2.7)	525 (2.6)	527 (2.6)
Denmark	524 (2.1)	524 (2.1)	522 (2.1)	524 (2.1)	525 (2.1)	524 (2.1)	524 (2.1)	523 (2.1)	521 (2.2)	525 (2.1)	522 (2.1)
Germany	524 (2.1)	524 (2.1)	525 (2.2)	525 (2.2)	525 (2.2)	524 (2.1)	524 (2.1)	525 (2.2)	525 (2.2)	524 (2.2)	524 (2.2)
Serbia	523 (3.3)	523 (3.3)	525 (3.4)	524 (3.4)	523 (3.3)	523 (3.3)	523 (3.4)	525 (3.3)	528 (3.2)	523 (3.3)	525 (3.3)
Belgium (Flemish)	521 (2.4)	521 (2.4)	519 (2.4)	519 (2.4)	521 (2.4)	521 (2.4)	520 (2.5)	521 (2.5)	520 (2.4)	521 (2.4)	521 (2.4)
Hungary	520 (3.6)	520 (3.6)	525 (3.7)	521 (3.8)	520 (3.6)	520 (3.6)	521 (3.6)	522 (3.6)	525 (3.5)	519 (3.6)	524 (3.6)
Portugal	517 (2.8)	517 (2.8)	519 (2.8)	517 (2.8)	518 (2.8)	517 (2.8)	520 (2.8)	518 (2.8)	514 (2.9)	517 (2.8)	518 (2.8)
United States	517 (3.1)	517 (3.1)	518 (3.1)	518 (3.1)	517 (3.1)	517 (3.1)	516 (3.1)	518 (3.1)	516 (3.2)	516 (3.1)	519 (3.1)
Slovak Republic	515 (3.1)	515 (3.1)	518 (3.1)	516 (3.2)	513 (3.1)	515 (3.1)	514 (3.2)	516 (3.1)	517 (3.1)	514 (3.1)	517 (3.1)
Slovenia	514 (1.8)	514 (1.8)	516 (2.0)	514 (1.9)	514 (1.9)	514 (1.8)	515 (1.9)	515 (1.9)	514 (1.8)	513 (1.8)	516 (1.9)
Armenia	513 (2.8)	513 (2.8)	512 (2.8)	513 (2.9)	509 (2.9)	513 (2.8)	510 (2.9)	514 (2.8)	523 (2.7)	511 (2.8)	516 (2.8)
Italy	513 (2.8)	513 (2.8)	515 (2.8)	512 (2.8)	515 (2.8)	513 (2.8)	516 (2.8)	514 (2.8)	515 (2.8)	513 (2.8)	515 (2.8)
Albania	512 (4.9)	512 (4.9)	511 (5.0)	510 (4.9)	509 (5.0)	512 (4.9)	509 (5.1)	513 (5.0)	518 (4.8)	511 (5.0)	514 (4.8)
Canada	504 (2.0)	504 (2.0)	506 (2.1)	504 (2.0)	505 (2.0)	504 (2.0)	505 (2.0)	504 (2.0)	501 (2.0)	504 (2.0)	506 (2.0)
Georgia	498 (3.1)	498 (3.1)	499 (3.0)	502 (3.1)	497 (3.1)	498 (3.1)	495 (3.1)	500 (3.1)	504 (3.0)	498 (3.1)	501 (3.1)
Spain	498 (2.1)	498 (2.1)	498 (2.2)	498 (2.1)	499 (2.1)	498 (2.1)	500 (2.1)	498 (2.1)	497 (2.2)	499 (2.1)	497 (2.2)
United Arab Emirates	498 (1.2)	498 (1.2)	498 (1.3)	497 (1.2)	496 (1.2)	498 (1.2)	498 (1.2)	498 (1.2)	498 (1.3)	498 (1.2)	498 (1.3)
New Zealand	490 (2.6)	490 (2.6)	491 (2.7)	492 (2.7)	491 (2.7)	490 (2.6)	492 (2.7)	491 (2.7)	486 (2.7)	490 (2.6)	491 (2.7)
Belgium (French)	489 (2.4)	489 (2.4)	487 (2.5)	488 (2.5)	489 (2.4)	489 (2.4)	491 (2.4)	490 (2.4)	489 (2.4)	489 (2.4)	490 (2.4)
Kazakhstan	487 (3.6)	487 (3.6)	487 (3.7)	491 (3.7)	485 (3.7)	487 (3.6)	487 (3.7)	488 (3.7)	491 (3.6)	488 (3.6)	489 (3.7)
France	484 (2.9)	484 (2.9)	482 (3.0)	484 (3.0)	485 (2.9)	484 (2.9)	486 (2.9)	484 (2.9)	485 (2.9)	484 (2.9)	482 (2.9)
Montenegro	477 (2.1)	477 (2.1)	478 (2.2)	479 (2.1)	476 (2.1)	477 (2.1)	475 (2.1)	479 (2.1)	482 (2.1)	478 (2.1)	481 (2.1)
North Macedonia	474 (3.6)	474 (3.6)	473 (3.7)	472 (3.6)	472 (3.6)	474 (3.6)	472 (3.7)	475 (3.6)	479 (3.5)	473 (3.6)	474 (3.6)
Qatar	464 (3.5)	464 (3.5)	463 (3.5)	464 (3.5)	462 (3.5)	464 (3.5)	464 (3.5)	464 (3.5)	461 (3.5)	463 (3.5)	464 (3.4)
Bahrain	462 (4.1)	461 (4.2)	461 (4.2)	461 (4.2)	461 (4.2)	462 (4.1)	462 (4.2)	462 (4.2)	461 (4.3)	461 (4.2)	463 (4.2)
Kosovo	451 (3.4)	452 (3.4)	451 (3.4)	452 (3.5)	448 (3.4)	451 (3.4)	450 (3.4)	453 (3.4)	457 (3.4)	452 (3.4)	451 (3.5)
Bosnia & Herzegovina	447 (3.2)	447 (3.3)	449 (3.3)	449 (3.3)	447 (3.3)	447 (3.2)	447 (3.3)	449 (3.3)	453 (3.2)	448 (3.3)	451 (3.2)
Chile	444 (2.8)	443 (2.8)	445 (2.9)	445 (2.9)	445 (2.9)	444 (2.8)	446 (2.8)	443 (2.8)	437 (2.9)	445 (2.8)	443 (2.9)
Uzbekistan	443 (3.2)	443 (3.2)	443 (3.2)	444 (3.3)	441 (3.2)	443 (3.2)	442 (3.3)	445 (3.2)	453 (3.1)	443 (3.2)	446 (3.3)
Jordan	427 (5.3)	427 (5.3)	426 (5.1)	426 (5.3)	425 (5.2)	427 (5.3)	426 (5.2)	429 (5.3)	433 (5.3)	426 (5.4)	430 (5.2)
Oman	421 (4.0)	421 (4.1)	421 (4.0)	419 (4.0)	420 (4.0)	421 (4.0)	421 (4.0)	422 (4.1)	422 (4.1)	421 (4.0)	424 (4.0)
Saudi Arabia	420 (4.2)	419 (4.2)	418 (4.2)	419 (4.1)	419 (4.1)	420 (4.2)	418 (4.2)	420 (4.2)	420 (4.3)	419 (4.2)	422 (4.2)
Brazil	400 (3.4)	400 (3.4)	400 (3.5)	402 (3.5)	402 (3.5)	400 (3.4)	401 (3.5)	401 (3.4)	398 (3.4)	401 (3.4)	401 (3.4)
<b>International Average</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>511 (0.4)</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>513 (0.4)</b>	<b>512 (0.4)</b>	<b>513 (0.4)</b>
<b>Benchmarking Participants</b>											
Dubai, UAE	557 (1.6)	557 (1.6)	557 (1.6)	556 (1.6)	555 (1.6)	557 (1.6)	557 (1.6)	556 (1.6)	555 (1.6)	556 (1.6)	556 (1.6)
Quebec, Canada	515 (2.7)	515 (2.7)	515 (2.7)	512 (2.7)	515 (2.7)	515 (2.7)	516 (2.8)	514 (2.7)	514 (2.7)	515 (2.7)	514 (2.7)
Sharjah, UAE	504 (3.3)	504 (3.3)	503 (3.3)	503 (3.2)	502 (3.3)	504 (3.3)	505 (3.3)	504 (3.3)	505 (3.3)	503 (3.2)	504 (3.3)
Ontario, Canada	503 (3.4)	503 (3.4)	506 (3.5)	504 (3.4)	504 (3.3)	503 (3.4)	503 (3.4)	504 (3.4)	499 (3.3)	503 (3.4)	506 (3.4)
Abu Dhabi, UAE	459 (1.9)	458 (2.0)	459 (2.0)	459 (2.0)	457 (1.9)	459 (1.9)	459 (2.0)	459 (2.0)	459 (1.9)	458 (1.9)	459 (2.0)
<b>Number of Items (Score Points)*</b>	<b>183 (192)</b>	<b>180 (189)</b>	<b>140 (147)</b>	<b>148 (155)</b>	<b>157 (165)</b>	<b>183 (192)</b>	<b>152 (161)</b>	<b>162 (169)</b>	<b>143 (149)</b>	<b>178 (187)</b>	<b>140 (148)</b>

\* The number of items and score points are based on the number of items included in scaling the fourth-grade mathematics achievement data.

See Chapter 9 in *TIMSS 2023 Technical Report (Methods and Procedures)* for information about items deleted or recoded for scaling.

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

**Exhibit C.1: Average Scale Scores for the Mathematics Test-Curriculum Matching Analysis**

Results based on items identified by each country as addressed in its curriculum

(Continued)

Country	Average Mathematics Scale Score based on All Items	North Macedonia	Qatar	Bahrain	Kosovo	Bosnia & Herzegovina	Chile	Uzbekistan	Jordan	Oman	Saudi Arabia
Singapore	615 (2.9)	613 (2.9)	614 (3.0)	614 (2.9)	615 (2.9)	614 (2.9)	613 (3.0)	615 (2.9)	615 (2.9)	615 (2.9)	615 (2.9)
Chinese Taipei	607 (1.7)	605 (1.7)	605 (1.8)	607 (1.7)	607 (1.7)	607 (1.7)	605 (1.8)	607 (1.7)	607 (1.7)	607 (1.7)	607 (1.7)
Hong Kong SAR	594 (4.0)	595 (4.0)	594 (4.0)	594 (4.0)	594 (4.0)	594 (4.0)	595 (4.1)	594 (4.0)	594 (4.0)	594 (4.0)	594 (4.0)
Korea, Rep. of	594 (2.6)	594 (2.7)	595 (2.7)	595 (2.6)	595 (2.7)	595 (2.7)	593 (2.7)	594 (2.6)	594 (2.6)	594 (2.6)	594 (2.6)
Japan	591 (2.3)	589 (2.4)	587 (2.3)	591 (2.3)	591 (2.3)	591 (2.4)	588 (2.5)	591 (2.3)	591 (2.3)	591 (2.3)	590 (2.3)
Macao SAR	582 (1.0)	583 (1.0)	582 (1.1)	582 (1.0)	582 (1.0)	582 (1.1)	583 (1.1)	582 (1.0)	582 (1.0)	582 (1.0)	582 (1.0)
Lithuania	561 (2.9)	563 (3.0)	561 (3.0)	561 (2.9)	561 (2.9)	561 (2.9)	561 (3.0)	561 (2.9)	561 (2.9)	561 (2.9)	561 (2.9)
Türkiye (5)	553 (4.1)	555 (4.2)	555 (4.1)	553 (4.1)	553 (4.1)	553 (4.0)	553 (4.2)	553 (4.1)	553 (4.1)	553 (4.1)	554 (4.1)
England	552 (2.7)	552 (2.8)	554 (2.7)	551 (2.7)	552 (2.7)	551 (2.7)	552 (2.8)	552 (2.7)	552 (2.7)	552 (2.7)	552 (2.7)
Ireland	546 (2.9)	546 (3.0)	547 (3.0)	545 (2.9)	546 (2.9)	545 (2.9)	545 (3.0)	546 (2.9)	546 (2.9)	546 (2.9)	546 (2.9)
Poland	546 (2.0)	549 (2.1)	548 (2.1)	546 (2.0)	546 (2.0)	547 (2.0)	549 (2.1)	546 (2.0)	546 (2.0)	546 (2.0)	547 (2.0)
Romania	542 (4.8)	543 (5.0)	544 (4.8)	542 (4.8)	542 (4.8)	543 (4.9)	544 (4.9)	542 (4.8)	542 (4.8)	542 (4.8)	542 (4.8)
Netherlands	537 (2.0)	537 (2.0)	538 (2.0)	537 (2.0)	537 (2.0)	537 (2.0)	537 (2.0)	537 (2.0)	537 (2.0)	537 (2.0)	537 (2.0)
Latvia	534 (2.8)	536 (2.9)	535 (2.9)	535 (2.8)	534 (2.8)	535 (2.8)	536 (2.9)	534 (2.8)	534 (2.8)	534 (2.8)	534 (2.8)
Norway (5)	531 (2.0)	531 (2.0)	532 (2.1)	531 (2.0)	531 (2.0)	530 (2.0)	531 (2.0)	531 (2.0)	531 (2.0)	531 (2.0)	531 (2.0)
Czech Republic	530 (2.2)	530 (2.2)	532 (2.2)	531 (2.2)	530 (2.2)	532 (2.2)	532 (2.2)	530 (2.2)	530 (2.2)	530 (2.2)	531 (2.2)
Sweden	530 (2.8)	531 (2.8)	532 (2.8)	530 (2.8)	530 (2.8)	531 (2.8)	531 (2.8)	530 (2.8)	530 (2.8)	530 (2.8)	530 (2.8)
Finland	529 (2.5)	530 (2.5)	530 (2.5)	529 (2.5)	529 (2.5)	529 (2.5)	530 (2.5)	529 (2.5)	529 (2.5)	529 (2.5)	529 (2.5)
Australia	525 (2.6)	526 (2.6)	528 (2.5)	525 (2.6)	525 (2.6)	525 (2.6)	527 (2.6)	525 (2.6)	525 (2.6)	525 (2.6)	525 (2.6)
Denmark	524 (2.1)	522 (2.1)	524 (2.1)	524 (2.1)	524 (2.1)	523 (2.1)	524 (2.1)	524 (2.1)	524 (2.1)	524 (2.1)	524 (2.1)
Germany	524 (2.1)	524 (2.2)	525 (2.2)	524 (2.2)	524 (2.2)	524 (2.2)	525 (2.2)	524 (2.1)	524 (2.2)	524 (2.1)	524 (2.1)
Serbia	523 (3.3)	524 (3.4)	523 (3.3)	523 (3.3)	523 (3.3)	524 (3.3)	523 (3.3)	523 (3.3)	523 (3.3)	523 (3.3)	523 (3.3)
Belgium (Flemish)	521 (2.4)	520 (2.4)	519 (2.5)	521 (2.4)	521 (2.4)	520 (2.4)	521 (2.5)	521 (2.4)	521 (2.4)	521 (2.4)	520 (2.4)
Hungary	520 (3.6)	522 (3.6)	523 (3.7)	521 (3.6)	520 (3.6)	522 (3.6)	524 (3.6)	520 (3.6)	520 (3.6)	520 (3.6)	520 (3.6)
Portugal	517 (2.8)	518 (2.8)	519 (2.8)	517 (2.8)	517 (2.8)	517 (2.8)	517 (2.8)	517 (2.8)	517 (2.8)	517 (2.8)	517 (2.8)
United States	517 (3.1)	517 (3.1)	518 (3.1)	517 (3.1)	517 (3.1)	517 (3.1)	519 (3.1)	517 (3.1)	517 (3.1)	517 (3.1)	517 (3.1)
Slovak Republic	515 (3.1)	517 (3.1)	517 (3.1)	515 (3.1)	515 (3.1)	515 (3.1)	517 (3.1)	515 (3.1)	515 (3.1)	515 (3.1)	515 (3.1)
Slovenia	514 (1.8)	515 (1.9)	515 (1.9)	514 (1.8)	514 (1.8)	515 (1.8)	515 (1.9)	514 (1.8)	514 (1.8)	514 (1.8)	514 (1.8)
Armenia	513 (2.8)	513 (2.8)	513 (2.8)	512 (2.8)	513 (2.8)	513 (2.8)	515 (2.8)	513 (2.8)	513 (2.8)	513 (2.8)	512 (2.8)
Italy	513 (2.8)	514 (2.8)	514 (2.8)	513 (2.8)	513 (2.8)	513 (2.8)	514 (2.8)	513 (2.8)	513 (2.8)	513 (2.8)	513 (2.8)
Albania	512 (4.9)	512 (5.0)	511 (5.1)	511 (4.9)	512 (4.9)	510 (4.9)	513 (4.8)	512 (4.9)	512 (4.9)	512 (4.9)	511 (5.0)
Canada	504 (2.0)	504 (2.0)	505 (2.0)	504 (2.0)	504 (2.0)	504 (2.0)	505 (2.0)	504 (2.0)	504 (2.0)	504 (2.0)	504 (2.0)
Georgia	498 (3.1)	499 (3.1)	499 (3.1)	498 (3.1)	498 (3.1)	499 (3.1)	499 (3.1)	498 (3.1)	498 (3.1)	498 (3.1)	497 (3.1)
Spain	498 (2.1)	498 (2.1)	498 (2.2)	498 (2.1)	498 (2.1)	498 (2.1)	497 (2.2)	498 (2.1)	498 (2.1)	498 (2.1)	498 (2.1)
United Arab Emirates	498 (1.2)	498 (1.2)	499 (1.3)	498 (1.2)	498 (1.2)	498 (1.2)	499 (1.3)	498 (1.2)	498 (1.2)	498 (1.2)	498 (1.2)
New Zealand	490 (2.6)	491 (2.7)	491 (2.7)	490 (2.6)	490 (2.6)	490 (2.6)	491 (2.7)	490 (2.6)	490 (2.6)	490 (2.6)	491 (2.6)
Belgium (French)	489 (2.4)	489 (2.4)	488 (2.4)	490 (2.4)	490 (2.4)	489 (2.4)	490 (2.4)	489 (2.4)	489 (2.4)	489 (2.4)	489 (2.4)
Kazakhstan	487 (3.6)	488 (3.7)	486 (3.7)	487 (3.6)	487 (3.6)	488 (3.6)	487 (3.7)	487 (3.6)	487 (3.6)	487 (3.6)	487 (3.6)
France	484 (2.9)	483 (2.9)	483 (3.0)	484 (2.9)	484 (2.9)	484 (2.9)	483 (2.9)	484 (2.9)	484 (2.9)	484 (2.9)	484 (2.9)
Montenegro	477 (2.1)	478 (2.1)	477 (2.1)	477 (2.1)	477 (2.1)	477 (2.1)	477 (2.1)	477 (2.0)	477 (2.1)	477 (2.1)	477 (2.1)
North Macedonia	474 (3.6)	474 (3.6)	473 (3.7)	473 (3.6)	474 (3.6)	473 (3.6)	474 (3.7)	474 (3.6)	473 (3.5)	474 (3.6)	473 (3.6)
Qatar	464 (3.5)	464 (3.5)	465 (3.5)	464 (3.5)	464 (3.5)	464 (3.5)	464 (3.5)	464 (3.5)	464 (3.5)	464 (3.5)	464 (3.5)
Bahrain	462 (4.1)	461 (4.2)	462 (4.2)	461 (4.1)	462 (4.2)	461 (4.1)	463 (4.2)	462 (4.1)	462 (4.1)	462 (4.2)	461 (4.2)
Kosovo	451 (3.4)	451 (3.5)	451 (3.5)	451 (3.4)	451 (3.4)	451 (3.4)	452 (3.5)	451 (3.4)	451 (3.4)	451 (3.4)	451 (3.5)
Bosnia & Herzegovina	447 (3.2)	448 (3.2)	448 (3.2)	447 (3.3)	447 (3.3)	448 (3.2)	446 (3.2)	447 (3.2)	447 (3.3)	447 (3.2)	447 (3.3)
Chile	444 (2.8)	445 (2.8)	444 (2.9)	444 (2.8)	444 (2.8)	444 (2.8)	443 (2.9)	444 (2.8)	444 (2.8)	444 (2.8)	444 (2.8)
Uzbekistan	443 (3.2)	444 (3.3)	442 (3.2)	443 (3.2)	443 (3.2)	443 (3.2)	444 (3.3)	444 (3.2)	443 (3.2)	443 (3.2)	443 (3.2)
Jordan	427 (5.3)	426 (5.3)	429 (5.3)	426 (5.3)	427 (5.3)	426 (5.2)	429 (5.3)	427 (5.3)	427 (5.3)	427 (5.3)	427 (5.3)
Oman	421 (4.0)	421 (4.0)	423 (4.1)	421 (4.0)	421 (4.0)	421 (4.0)	424 (4.0)	421 (4.0)	421 (4.0)	421 (4.0)	421 (4.0)
Saudi Arabia	420 (4.2)	418 (4.2)	421 (4.2)	419 (4.1)	419 (4.2)	419 (4.1)	420 (4.2)	420 (4.2)	420 (4.2)	420 (4.2)	419 (4.2)
Brazil	400 (3.4)	400 (3.4)	401 (3.4)	400 (3.4)	400 (3.4)	400 (3.4)	398 (3.5)	400 (3.4)	400 (3.4)	400 (3.4)	400 (3.4)
<b>International Average</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>511 (0.4)</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>511 (0.4)</b>
<b>Benchmarking Participants</b>											
Dubai, UAE	557 (1.6)	556 (1.6)	558 (1.6)	556 (1.6)	557 (1.5)	556 (1.6)	557 (1.6)	557 (1.6)	557 (1.6)	557 (1.6)	557 (1.5)
Quebec, Canada	515 (2.7)	513 (2.7)	515 (2.8)	515 (2.7)	515 (2.7)	514 (2.7)	513 (2.7)	515 (2.7)	515 (2.7)	515 (2.7)	515 (2.7)
Sharjah, UAE	504 (3.3)	503 (3.3)	504 (3.3)	504 (3.3)	504 (3.3)	503 (3.2)	504 (3.3)	504 (3.3)	504 (3.3)	504 (3.3)	504 (3.3)
Ontario, Canada	503 (3.4)	504 (3.3)	504 (3.5)	503 (3.4)	503 (3.4)	503 (3.4)	505 (3.4)	503 (3.4)	503 (3.4)	503 (3.4)	503 (3.4)
Abu Dhabi, UAE	459 (1.9)	458 (2.0)	459 (2.0)	458 (1.9)	459 (1.9)	458 (1.9)	460 (2.0)	459 (1.9)	459 (1.9)	459 (1.9)	458 (1.9)
<b>Number of Items (Score Points)*</b>	<b>183 (192)</b>	<b>163 (171)</b>	<b>149 (156)</b>	<b>182 (191)</b>	<b>183 (192)</b>	<b>175 (184)</b>	<b>145 (152)</b>	<b>183 (192)</b>	<b>183 (192)</b>	<b>183 (192)</b>	<b>179 (188)</b>

\* The number of items and score points are based on the number of items included in scaling the fourth-grade mathematics achievement data. See Chapter 9 in TIMSS 2023 Technical Report (Methods and Procedures) for information about items deleted or recoded for scaling. (.) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

**Exhibit C.1: Average Scale Scores for the Mathematics Test-Curriculum Matching Analysis**

Results based on items identified by each country as addressed in its curriculum

(Continued)

Country	Average Mathematics Scale Score based on All Items	Brazil	Benchmarking Participants	Dubai, UAE	Quebec, Canada	Sharjah, UAE	Ontario, Canada	Abu Dhabi, UAE
Singapore	615 (2.9)	617 (2.9)		615 (2.9)	616 (2.9)	615 (2.9)	615 (2.9)	615 (2.9)
Chinese Taipei	607 (1.7)	609 (1.7)		607 (1.7)	606 (1.8)	607 (1.7)	602 (1.7)	607 (1.7)
Hong Kong SAR	594 (4.0)	597 (3.9)		594 (4.0)	594 (4.0)	594 (4.0)	592 (4.1)	594 (4.0)
Korea, Rep. of	594 (2.6)	597 (2.6)		594 (2.6)	595 (2.6)	594 (2.6)	596 (2.6)	594 (2.6)
Japan	591 (2.3)	592 (2.3)		591 (2.3)	590 (2.3)	591 (2.3)	586 (2.4)	591 (2.3)
Macao SAR	582 (1.0)	584 (1.1)		582 (1.0)	583 (1.0)	582 (1.0)	581 (1.1)	582 (1.0)
Lithuania	561 (2.9)	561 (2.9)		561 (2.9)	560 (2.9)	561 (2.9)	562 (3.0)	561 (2.9)
Türkiye (5)	553 (4.1)	553 (4.2)		553 (4.1)	553 (4.1)	553 (4.1)	554 (4.1)	553 (4.1)
England	552 (2.7)	552 (2.7)		552 (2.7)	553 (2.7)	552 (2.7)	554 (2.8)	552 (2.7)
Ireland	546 (2.9)	546 (3.0)		546 (2.9)	546 (2.9)	546 (2.9)	547 (3.0)	546 (2.9)
Poland	546 (2.0)	546 (2.1)		546 (2.0)	546 (2.1)	546 (2.0)	549 (2.0)	546 (2.0)
Romania	542 (4.8)	541 (4.9)		542 (4.8)	541 (4.8)	542 (4.8)	544 (4.9)	542 (4.8)
Netherlands	537 (2.0)	539 (2.0)		537 (2.0)	537 (2.0)	537 (2.0)	537 (2.0)	537 (2.0)
Latvia	534 (2.8)	535 (2.8)		534 (2.8)	534 (2.8)	534 (2.8)	537 (2.9)	534 (2.8)
Norway (5)	531 (2.0)	532 (2.0)		531 (2.0)	531 (2.0)	531 (2.0)	532 (2.1)	531 (2.0)
Czech Republic	530 (2.2)	530 (2.2)		530 (2.2)	530 (2.2)	530 (2.2)	532 (2.2)	530 (2.2)
Sweden	530 (2.8)	530 (2.8)		530 (2.8)	530 (2.8)	530 (2.8)	532 (2.9)	530 (2.8)
Finland	529 (2.5)	530 (2.5)		529 (2.5)	529 (2.5)	529 (2.5)	530 (2.6)	529 (2.5)
Australia	525 (2.6)	527 (2.6)		525 (2.6)	526 (2.6)	525 (2.6)	528 (2.5)	525 (2.6)
Denmark	524 (2.1)	526 (2.2)		524 (2.1)	524 (2.1)	524 (2.1)	522 (2.1)	524 (2.1)
Germany	524 (2.1)	525 (2.2)		524 (2.1)	524 (2.2)	524 (2.1)	525 (2.2)	524 (2.1)
Serbia	523 (3.3)	523 (3.3)		523 (3.3)	522 (3.3)	523 (3.3)	525 (3.4)	523 (3.3)
Belgium (Flemish)	521 (2.4)	521 (2.4)		521 (2.4)	521 (2.4)	521 (2.4)	519 (2.5)	521 (2.4)
Hungary	520 (3.6)	519 (3.6)		520 (3.6)	521 (3.7)	520 (3.6)	525 (3.7)	520 (3.6)
Portugal	517 (2.8)	519 (2.8)		517 (2.8)	518 (2.8)	517 (2.8)	519 (2.8)	517 (2.8)
United States	517 (3.1)	517 (3.1)		517 (3.1)	517 (3.1)	517 (3.1)	518 (3.1)	517 (3.1)
Slovak Republic	515 (3.1)	513 (3.2)		515 (3.1)	516 (3.1)	515 (3.1)	518 (3.2)	515 (3.1)
Slovenia	514 (1.8)	514 (1.9)		514 (1.8)	514 (1.9)	514 (1.8)	516 (1.9)	514 (1.8)
Armenia	513 (2.8)	510 (2.8)		513 (2.8)	512 (2.8)	513 (2.8)	512 (2.8)	513 (2.8)
Italy	513 (2.8)	515 (2.8)		513 (2.8)	514 (2.8)	513 (2.8)	515 (2.8)	513 (2.8)
Albania	512 (4.9)	509 (5.1)		512 (4.9)	512 (4.9)	512 (4.9)	511 (5.0)	512 (4.9)
Canada	504 (2.0)	505 (2.0)		504 (2.0)	505 (2.0)	504 (2.0)	506 (2.1)	504 (2.0)
Georgia	498 (3.1)	498 (3.1)		498 (3.1)	498 (3.1)	498 (3.1)	498 (3.0)	498 (3.1)
Spain	498 (2.1)	499 (2.1)		498 (2.1)	498 (2.1)	498 (2.1)	498 (2.2)	498 (2.1)
United Arab Emirates	498 (1.2)	498 (1.3)		498 (1.2)	498 (1.3)	498 (1.2)	498 (1.3)	498 (1.2)
New Zealand	490 (2.6)	491 (2.7)		490 (2.6)	490 (2.6)	490 (2.6)	491 (2.7)	490 (2.6)
Belgium (French)	489 (2.4)	489 (2.4)		489 (2.4)	489 (2.5)	489 (2.4)	487 (2.4)	489 (2.4)
Kazakhstan	487 (3.6)	488 (3.6)		487 (3.6)	487 (3.7)	487 (3.6)	487 (3.7)	487 (3.6)
France	484 (2.9)	484 (2.9)		484 (2.9)	483 (2.9)	484 (2.9)	483 (2.9)	484 (2.9)
Montenegro	477 (2.1)	475 (2.1)		477 (2.1)	476 (2.1)	477 (2.1)	477 (2.2)	477 (2.1)
North Macedonia	474 (3.6)	472 (3.6)		474 (3.6)	473 (3.6)	474 (3.6)	472 (3.7)	474 (3.6)
Qatar	464 (3.5)	465 (3.4)		464 (3.5)	464 (3.5)	464 (3.5)	464 (3.5)	464 (3.5)
Bahrain	462 (4.1)	461 (4.2)		462 (4.1)	461 (4.2)	462 (4.1)	461 (4.2)	462 (4.1)
Kosovo	451 (3.4)	450 (3.5)		451 (3.4)	451 (3.4)	451 (3.4)	452 (3.4)	451 (3.4)
Bosnia & Herzegovina	447 (3.2)	447 (3.3)		447 (3.2)	446 (3.3)	447 (3.2)	449 (3.3)	447 (3.2)
Chile	444 (2.8)	444 (2.9)		444 (2.8)	444 (2.8)	444 (2.8)	445 (2.9)	444 (2.8)
Uzbekistan	443 (3.2)	443 (3.3)		443 (3.2)	443 (3.2)	443 (3.2)	443 (3.2)	443 (3.2)
Jordan	427 (5.3)	424 (5.3)		427 (5.3)	426 (5.3)	427 (5.3)	426 (5.1)	427 (5.3)
Oman	421 (4.0)	418 (4.1)		421 (4.0)	421 (4.0)	421 (4.0)	421 (4.0)	421 (4.0)
Saudi Arabia	420 (4.2)	416 (4.2)		420 (4.2)	418 (4.2)	420 (4.2)	418 (4.2)	420 (4.2)
Brazil	400 (3.4)	401 (3.5)		400 (3.4)	400 (3.4)	400 (3.4)	400 (3.5)	400 (3.4)
<b>International Average</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>		<b>512 (0.4)</b>	<b>511 (0.4)</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>	<b>512 (0.4)</b>
<b>Benchmarking Participants</b>								
Dubai, UAE	557 (1.6)	557 (1.6)		557 (1.6)	557 (1.6)	557 (1.6)	557 (1.6)	557 (1.6)
Quebec, Canada	515 (2.7)	516 (2.7)		515 (2.7)	516 (2.8)	515 (2.7)	515 (2.7)	515 (2.7)
Sharjah, UAE	504 (3.3)	503 (3.3)		504 (3.3)	504 (3.3)	504 (3.3)	503 (3.3)	504 (3.3)
Ontario, Canada	503 (3.4)	503 (3.4)		503 (3.4)	504 (3.4)	503 (3.4)	505 (3.5)	503 (3.4)
Abu Dhabi, UAE	459 (1.9)	458 (2.0)		459 (1.9)	459 (2.0)	459 (1.9)	459 (2.0)	459 (1.9)
<b>Number of Items (Score Points)*</b>	<b>183 (192)</b>	<b>142 (150)</b>		<b>183 (192)</b>	<b>168 (177)</b>	<b>183 (192)</b>	<b>143 (150)</b>	<b>183 (192)</b>

\* The number of items and score points are based on the number of items included in scaling the fourth-grade mathematics achievement data. See Chapter 9 in *TIMSS 2023 Technical Report (Methods and Procedures)* for information about items deleted or recoded for scaling. (.) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

**Exhibit C.2: Average Scale Scores for the Science Test-Curriculum Matching Analysis**
*Results based on items identified by each country as addressed in its curriculum*

Read down the column under a country name to compare achievement scores based on the items identified by that country. Scores on the diagonal are countries' achievement scores based on the test items they identified.

Country	Average Scale Score based on All Items	Singapore	Korea, Rep. of	Chinese Taipei	Türkiye (5)	England	Japan	Australia	Poland	Hong Kong SAR	Finland
Singapore	607 (2.8)	681 (3.1)	617 (2.7)	625 (2.8)	622 (2.7)	620 (2.8)	646 (2.8)	610 (2.6)	616 (2.9)	615 (2.8)	610 (2.7)
Korea, Rep. of	583 (2.5)	602 (2.5)	605 (2.4)	599 (2.5)	597 (2.6)	584 (2.5)	607 (2.6)	591 (2.5)	586 (2.5)	582 (2.6)	584 (2.6)
Chinese Taipei	573 (1.7)	591 (2.0)	585 (1.7)	589 (1.6)	579 (1.8)	576 (1.8)	610 (2.0)	570 (1.8)	571 (1.7)	574 (1.8)	577 (1.8)
Türkiye (5)	570 (3.4)	585 (3.2)	571 (3.1)	569 (3.2)	583 (3.4)	582 (3.5)	593 (3.3)	575 (3.4)	570 (3.4)	572 (3.4)	575 (3.5)
England	556 (2.6)	570 (2.5)	564 (2.5)	561 (2.4)	565 (2.5)	562 (2.5)	572 (2.5)	561 (2.5)	561 (2.6)	566 (2.7)	563 (2.6)
Japan	555 (2.4)	586 (2.3)	573 (2.3)	572 (2.3)	557 (2.3)	562 (2.4)	585 (2.2)	560 (2.4)	557 (2.5)	548 (2.6)	550 (2.4)
Australia	550 (2.3)	564 (2.0)	558 (2.1)	551 (2.3)	558 (2.3)	553 (2.2)	560 (2.1)	556 (2.2)	554 (2.3)	559 (2.3)	555 (2.3)
Poland	550 (2.2)	562 (2.9)	558 (2.4)	554 (2.4)	558 (2.4)	550 (2.4)	558 (3.1)	557 (2.4)	558 (2.4)	554 (2.4)	555 (2.4)
Hong Kong SAR	545 (3.8)	570 (3.9)	553 (3.6)	552 (3.9)	551 (3.9)	548 (3.9)	567 (3.5)	546 (3.9)	551 (3.9)	555 (4.0)	555 (3.8)
Finland	542 (2.9)	547 (2.9)	552 (3.0)	548 (2.8)	547 (2.9)	542 (2.9)	549 (2.9)	549 (3.0)	548 (3.0)	548 (3.0)	554 (3.0)
Lithuania	537 (2.9)	553 (3.0)	542 (2.8)	546 (2.9)	546 (3.0)	543 (2.9)	556 (2.9)	542 (2.9)	542 (3.0)	536 (2.9)	542 (3.0)
Macao SAR	536 (1.4)	562 (1.0)	545 (1.2)	544 (1.3)	545 (1.3)	542 (1.3)	561 (1.1)	536 (1.3)	540 (1.3)	544 (1.3)	545 (1.3)
Sweden	533 (3.2)	543 (3.2)	540 (3.3)	539 (3.2)	541 (3.2)	536 (3.2)	539 (3.6)	540 (3.1)	536 (3.3)	534 (3.4)	539 (3.4)
Ireland	532 (3.2)	546 (3.1)	542 (3.1)	538 (3.1)	539 (3.3)	532 (3.2)	540 (3.1)	537 (3.3)	537 (3.4)	542 (3.5)	539 (3.3)
United States	532 (2.8)	548 (2.7)	538 (2.8)	534 (2.7)	535 (2.8)	534 (2.8)	545 (2.7)	538 (2.8)	536 (2.8)	541 (2.9)	536 (2.8)
Norway (5)	530 (2.6)	531 (2.6)	540 (2.6)	534 (2.6)	538 (2.7)	531 (2.6)	528 (2.7)	539 (2.5)	532 (2.6)	537 (2.6)	533 (2.7)
Czech Republic	526 (2.3)	548 (2.3)	536 (2.4)	526 (2.3)	535 (2.3)	534 (2.4)	541 (2.4)	534 (2.4)	530 (2.4)	529 (2.4)	535 (2.3)
Latvia	526 (3.0)	545 (2.7)	534 (3.0)	531 (2.9)	536 (2.9)	536 (2.9)	544 (2.5)	534 (3.1)	526 (3.1)	525 (3.0)	527 (3.1)
Romania	526 (4.8)	539 (4.5)	531 (4.8)	530 (4.7)	536 (4.8)	531 (4.6)	547 (5.0)	529 (5.0)	531 (4.9)	530 (4.9)	531 (5.1)
Slovenia	526 (2.3)	546 (2.8)	539 (2.5)	534 (2.4)	538 (2.6)	532 (2.5)	554 (2.8)	533 (2.5)	530 (2.4)	529 (2.5)	530 (2.5)
Hungary	524 (3.2)	540 (3.2)	536 (3.2)	526 (3.2)	530 (3.2)	528 (3.3)	531 (3.4)	530 (3.4)	532 (3.3)	532 (3.3)	533 (3.3)
Denmark	522 (2.6)	518 (2.9)	525 (2.8)	526 (2.6)	522 (2.7)	520 (2.6)	517 (3.0)	524 (2.6)	529 (2.6)	526 (2.7)	526 (2.7)
Canada	521 (2.0)	538 (1.9)	528 (2.0)	525 (2.1)	530 (2.1)	522 (2.0)	530 (2.1)	525 (2.1)	525 (2.0)	527 (2.1)	528 (2.1)
Slovak Republic	521 (3.3)	542 (3.3)	525 (3.4)	524 (3.3)	531 (3.3)	531 (3.3)	536 (3.5)	529 (3.4)	522 (3.1)	522 (3.3)	528 (3.3)
Netherlands	517 (2.9)	517 (3.9)	522 (3.3)	522 (3.1)	521 (3.2)	521 (3.2)	522 (3.9)	528 (3.2)	516 (3.2)	519 (3.2)	521 (3.2)
New Zealand	517 (2.8)	535 (3.3)	526 (3.1)	522 (3.1)	524 (3.1)	520 (3.0)	532 (3.5)	521 (3.1)	521 (3.1)	524 (3.1)	524 (3.1)
Germany	515 (2.8)	528 (3.1)	523 (3.0)	522 (2.9)	522 (3.0)	520 (2.9)	528 (3.3)	519 (3.0)	519 (3.0)	518 (3.0)	517 (3.0)
Italy	511 (2.5)	529 (2.2)	520 (2.4)	514 (2.4)	520 (2.4)	511 (2.4)	526 (2.6)	514 (2.6)	517 (2.5)	521 (2.7)	518 (2.6)
Portugal	511 (2.3)	525 (2.1)	515 (2.2)	513 (2.3)	523 (2.3)	513 (2.3)	527 (2.1)	516 (2.4)	513 (2.3)	518 (2.3)	516 (2.4)
Serbia	510 (3.2)	530 (3.6)	522 (3.2)	518 (3.4)	516 (3.3)	514 (3.3)	534 (3.6)	514 (3.4)	517 (3.3)	514 (3.3)	518 (3.2)
Spain	504 (2.1)	523 (2.5)	511 (2.2)	505 (2.2)	514 (2.3)	507 (2.2)	518 (2.6)	509 (2.3)	506 (2.1)	511 (2.2)	512 (2.2)
United Arab Emirates	495 (1.8)	516 (1.9)	501 (1.9)	497 (1.9)	500 (1.9)	499 (1.8)	517 (1.9)	497 (1.9)	490 (1.9)	501 (1.9)	503 (1.9)
Albania	491 (4.5)	512 (4.9)	497 (4.4)	492 (4.4)	498 (4.7)	494 (4.4)	518 (4.6)	495 (4.8)	494 (4.5)	498 (4.5)	494 (4.5)
Belgium (Flemish)	488 (2.6)	492 (2.7)	494 (2.7)	496 (2.6)	494 (2.6)	491 (2.6)	497 (2.9)	497 (2.6)	491 (2.7)	494 (2.7)	492 (2.7)
France	488 (3.0)	497 (3.4)	496 (3.3)	493 (3.0)	496 (3.1)	488 (3.1)	495 (3.6)	487 (3.3)	492 (3.1)	494 (3.1)	495 (3.1)
Belgium (French)	481 (2.8)	495 (3.0)	488 (3.0)	485 (2.9)	487 (3.0)	480 (2.9)	491 (3.2)	482 (2.9)	487 (2.9)	483 (3.0)	484 (2.9)
Chile	479 (2.7)	501 (3.1)	490 (2.9)	482 (2.8)	485 (2.9)	481 (2.8)	494 (3.3)	486 (2.8)	487 (2.8)	486 (2.8)	488 (2.9)
Bahrain	475 (3.9)	496 (4.4)	480 (4.0)	476 (4.1)	479 (4.2)	478 (4.0)	494 (4.2)	476 (4.1)	475 (4.1)	481 (4.2)	479 (4.1)
Qatar	472 (3.6)	491 (3.9)	478 (3.6)	479 (3.7)	479 (3.8)	475 (3.8)	497 (3.8)	473 (3.8)	473 (3.7)	480 (3.8)	477 (3.7)
Kazakhstan	467 (3.5)	486 (3.7)	472 (3.6)	469 (3.4)	467 (3.7)	475 (3.5)	494 (3.7)	469 (3.6)	467 (3.6)	466 (3.6)	463 (3.6)
Georgia	465 (3.4)	474 (3.9)	467 (3.7)	461 (3.7)	468 (3.7)	466 (3.6)	467 (4.2)	465 (3.6)	470 (3.5)	466 (3.6)	466 (3.5)
Montenegro	461 (2.0)	482 (2.1)	469 (2.1)	468 (2.1)	468 (2.0)	465 (2.0)	473 (2.2)	465 (2.1)	468 (2.1)	467 (2.1)	469 (2.0)
Armenia	457 (2.7)	466 (2.7)	455 (2.6)	454 (2.6)	453 (2.7)	457 (2.7)	448 (2.8)	450 (2.8)	464 (2.6)	459 (2.7)	454 (2.5)
Bosnia & Herzegovina	448 (3.7)	461 (4.9)	460 (3.9)	456 (3.6)	459 (4.1)	454 (3.8)	466 (4.6)	457 (4.2)	453 (4.0)	453 (3.8)	456 (3.9)
North Macedonia	439 (3.9)	451 (4.5)	444 (4.2)	443 (4.1)	444 (4.1)	440 (4.0)	453 (4.8)	437 (4.1)	446 (4.0)	442 (4.2)	444 (4.0)
Oman	433 (4.2)	447 (4.6)	438 (4.4)	438 (4.3)	436 (4.4)	436 (4.3)	451 (4.6)	432 (4.3)	433 (4.4)	433 (4.4)	429 (4.3)
Saudi Arabia	428 (4.0)	425 (4.5)	428 (4.2)	425 (4.1)	427 (4.2)	429 (4.0)	435 (4.4)	423 (4.1)	425 (4.1)	431 (4.2)	428 (3.9)
Brazil	425 (3.5)	434 (3.6)	424 (3.5)	429 (3.4)	429 (3.5)	427 (3.5)	427 (3.6)	427 (3.5)	426 (3.7)	430 (3.7)	430 (3.6)
Jordan	418 (4.9)	423 (5.4)	421 (5.2)	416 (5.0)	419 (5.2)	420 (5.0)	434 (5.1)	414 (5.2)	413 (5.0)	419 (5.0)	416 (4.9)
Uzbekistan	412 (3.5)	411 (4.2)	416 (3.7)	406 (3.5)	407 (3.7)	415 (3.6)	404 (4.4)	415 (3.7)	411 (3.7)	414 (3.6)	413 (3.6)
Kosovo	403 (3.6)	414 (4.9)	407 (4.2)	407 (4.0)	410 (4.0)	401 (3.9)	422 (4.7)	408 (3.9)	399 (4.0)	406 (3.9)	406 (3.9)
<b>International Average</b>	<b>505 (0.4)</b>	<b>520 (0.5)</b>	<b>512 (0.4)</b>	<b>509 (0.4)</b>	<b>511 (0.4)</b>	<b>508 (0.4)</b>	<b>519 (0.5)</b>	<b>508 (0.4)</b>	<b>508 (0.4)</b>	<b>509 (0.5)</b>	<b>509 (0.4)</b>
<b>Benchmarking Participants</b>											
Dubai, UAE	562 (1.8)	584 (2.0)	566 (1.9)	564 (1.9)	569 (1.9)	567 (1.8)	583 (2.1)	566 (1.9)	557 (1.8)	572 (1.9)	572 (1.9)
Ontario, Canada	525 (3.2)	541 (3.1)	531 (3.3)	529 (3.4)	533 (3.3)	525 (3.2)	531 (3.4)	530 (3.3)	530 (3.3)	532 (3.4)	532 (3.4)
Quebec, Canada	508 (2.7)	524 (2.7)	514 (2.8)	512 (2.7)	517 (2.7)	508 (2.7)	521 (2.9)	510 (2.8)	511 (2.7)	511 (2.7)	517 (2.7)
Sharjah, UAE	503 (3.9)	524 (4.0)	510 (3.9)	504 (4.0)	507 (4.0)	508 (3.9)	528 (4.1)	502 (3.8)	499 (3.9)	509 (4.1)	511 (4.1)
Abu Dhabi, UAE	446 (2.6)	466 (3.0)	452 (2.8)	449 (2.8)	450 (2.8)	449 (2.7)	467 (3.1)	449 (2.8)	442 (2.8)	451 (2.8)	454 (2.8)
<b>Number of Items (Score Points)*</b>	<b>173 (185)</b>	<b>41 (46)</b>	<b>79 (84)</b>	<b>99 (107)</b>	<b>88 (92)</b>	<b>111 (119)</b>	<b>40 (41)</b>	<b>99 (104)</b>	<b>95 (105)</b>	<b>109 (116)</b>	<b>105 (112)</b>

\* The number of items and score points are based on the number of items included in scaling the fourth-grade science achievement data.

 See Chapter 9 in *TIMSS 2023 Technical Report (Methods and Procedures)* for information about items deleted or recoded for scaling.

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

## Exhibit C.2: Average Scale Scores for the Science Test-Curriculum Matching Analysis

Results based on items identified by each country as addressed in its curriculum

(Continued)

Country	Average Science Scale Score based on All Items	Lithuania	Macao SAR	Sweden	Ireland	United States	Norway (5)	Czech Republic	Latvia	Romania	Slovenia
Singapore	607 (2.8)	608 (2.7)	626 (2.8)	608 (2.7)	610 (2.7)	613 (2.7)	612 (2.8)	607 (2.7)	612 (2.8)	607 (2.8)	613 (2.8)
Korea, Rep. of	583 (2.5)	584 (2.5)	591 (2.4)	584 (2.5)	584 (2.5)	586 (2.5)	582 (2.5)	586 (2.5)	584 (2.5)	583 (2.5)	585 (2.5)
Chinese Taipei	573 (1.7)	574 (1.7)	577 (1.6)	574 (1.7)	574 (1.7)	574 (1.7)	571 (1.7)	574 (1.7)	575 (1.7)	573 (1.7)	573 (1.7)
Türkiye (5)	570 (3.4)	570 (3.4)	569 (3.3)	571 (3.4)	571 (3.4)	566 (3.4)	568 (3.4)	567 (3.2)	572 (3.4)	570 (3.4)	574 (3.4)
England	556 (2.6)	557 (2.6)	557 (2.6)	557 (2.6)	558 (2.5)	556 (2.6)	557 (2.7)	560 (2.6)	557 (2.6)	556 (2.6)	559 (2.6)
Japan	555 (2.4)	554 (2.4)	565 (2.5)	553 (2.4)	556 (2.4)	557 (2.4)	554 (2.4)	552 (2.5)	556 (2.4)	555 (2.4)	556 (2.4)
Australia	550 (2.3)	550 (2.3)	549 (2.2)	550 (2.3)	550 (2.3)	551 (2.3)	550 (2.3)	554 (2.3)	550 (2.3)	550 (2.3)	551 (2.3)
Poland	550 (2.2)	551 (2.2)	549 (2.3)	551 (2.2)	551 (2.2)	550 (2.2)	553 (2.3)	555 (2.3)	551 (2.2)	550 (2.2)	552 (2.3)
Hong Kong SAR	545 (3.8)	547 (3.9)	552 (3.9)	547 (3.9)	548 (3.9)	546 (3.8)	548 (3.8)	548 (3.8)	547 (3.9)	545 (3.8)	549 (3.9)
Finland	542 (2.9)	543 (2.9)	547 (3.0)	543 (2.9)	543 (2.9)	543 (3.0)	545 (3.0)	545 (2.9)	542 (2.9)	542 (2.9)	542 (2.9)
Lithuania	537 (2.9)	537 (2.9)	540 (2.9)	538 (2.9)	537 (2.9)	537 (2.9)	537 (3.0)	538 (3.0)	539 (2.9)	537 (2.9)	540 (2.9)
Macao SAR	536 (1.4)	537 (1.4)	542 (1.3)	537 (1.4)	538 (1.4)	535 (1.4)	538 (1.4)	541 (1.4)	539 (1.4)	536 (1.4)	540 (1.4)
Sweden	533 (3.2)	534 (3.2)	536 (3.4)	534 (3.3)	533 (3.2)	535 (3.3)	535 (3.3)	537 (3.2)	535 (3.2)	533 (3.2)	536 (3.3)
Ireland	532 (3.2)	533 (3.2)	535 (3.2)	533 (3.2)	533 (3.2)	533 (3.2)	533 (3.3)	536 (3.4)	532 (3.2)	532 (3.2)	533 (3.3)
United States	532 (2.8)	533 (2.8)	533 (2.8)	533 (2.8)	534 (2.8)	536 (2.8)	533 (2.8)	536 (2.8)	533 (2.8)	532 (2.8)	532 (2.8)
Norway (5)	530 (2.6)	531 (2.5)	531 (2.6)	530 (2.6)	529 (2.6)	530 (2.5)	533 (2.6)	534 (2.6)	530 (2.6)	530 (2.6)	532 (2.6)
Czech Republic	526 (2.3)	527 (2.3)	529 (2.3)	527 (2.3)	527 (2.3)	527 (2.4)	527 (2.3)	527 (2.3)	528 (2.4)	526 (2.3)	528 (2.4)
Latvia	526 (3.0)	526 (3.0)	528 (3.0)	527 (3.0)	526 (2.9)	526 (3.0)	525 (3.1)	525 (3.1)	528 (3.0)	526 (3.0)	529 (3.0)
Romania	526 (4.8)	527 (4.8)	529 (4.8)	528 (4.8)	526 (4.8)	528 (4.8)	528 (4.9)	529 (4.9)	526 (4.8)	526 (4.8)	529 (4.8)
Slovenia	526 (2.3)	527 (2.4)	532 (2.4)	526 (2.3)	528 (2.4)	528 (2.4)	525 (2.4)	528 (2.4)	527 (2.4)	526 (2.3)	530 (2.4)
Hungary	524 (3.2)	525 (3.2)	530 (3.3)	524 (3.2)	524 (3.2)	527 (3.2)	528 (3.3)	529 (3.3)	525 (3.2)	524 (3.2)	524 (3.2)
Denmark	522 (2.6)	525 (2.6)	523 (2.7)	524 (2.6)	522 (2.6)	523 (2.6)	526 (2.6)	526 (2.6)	522 (2.5)	522 (2.6)	521 (2.6)
Canada	521 (2.0)	522 (2.0)	521 (2.1)	521 (2.0)	522 (2.0)	523 (2.1)	522 (2.0)	525 (2.1)	522 (2.0)	521 (2.0)	521 (2.0)
Slovak Republic	521 (3.3)	521 (3.3)	520 (3.2)	521 (3.3)	523 (3.4)	520 (3.3)	521 (3.3)	526 (3.4)	523 (3.3)	521 (3.3)	523 (3.3)
Netherlands	517 (2.9)	519 (2.9)	520 (3.1)	517 (2.9)	518 (3.0)	518 (2.9)	517 (3.0)	520 (3.0)	518 (2.9)	517 (2.9)	518 (3.0)
New Zealand	517 (2.8)	517 (2.9)	518 (3.0)	518 (2.9)	518 (2.9)	519 (2.9)	518 (3.0)	522 (3.0)	518 (2.9)	517 (2.8)	518 (2.9)
Germany	515 (2.8)	517 (2.8)	520 (2.9)	516 (2.8)	517 (2.8)	517 (2.8)	516 (2.9)	517 (2.9)	516 (2.8)	515 (2.8)	518 (2.8)
Italy	511 (2.5)	511 (2.5)	516 (2.4)	512 (2.5)	511 (2.5)	513 (2.5)	513 (2.5)	515 (2.6)	512 (2.5)	511 (2.5)	512 (2.5)
Portugal	511 (2.3)	511 (2.3)	513 (2.2)	511 (2.3)	512 (2.3)	510 (2.3)	513 (2.3)	515 (2.3)	512 (2.3)	511 (2.3)	511 (2.3)
Serbia	510 (3.2)	511 (3.2)	517 (3.2)	510 (3.2)	512 (3.3)	511 (3.2)	513 (3.2)	513 (3.2)	510 (3.3)	510 (3.2)	512 (3.3)
Spain	504 (2.1)	504 (2.1)	509 (2.1)	504 (2.1)	505 (2.1)	505 (2.1)	506 (2.1)	508 (2.1)	505 (2.1)	504 (2.1)	506 (2.1)
United Arab Emirates	495 (1.8)	495 (1.8)	496 (1.9)	495 (1.8)	497 (1.8)	494 (1.8)	494 (1.8)	496 (1.8)	495 (1.8)	495 (1.8)	494 (1.9)
Albania	491 (4.5)	490 (4.6)	498 (4.4)	491 (4.6)	491 (4.6)	490 (4.5)	491 (4.5)	491 (4.6)	490 (4.6)	491 (4.5)	493 (4.6)
Belgium (Flemish)	488 (2.6)	490 (2.6)	491 (2.6)	488 (2.6)	490 (2.6)	490 (2.6)	489 (2.6)	492 (2.6)	489 (2.6)	488 (2.6)	490 (2.6)
France	488 (3.0)	489 (3.0)	490 (3.1)	488 (3.0)	489 (3.0)	487 (3.1)	491 (3.0)	490 (3.1)	488 (3.0)	488 (3.0)	488 (3.0)
Belgium (French)	481 (2.8)	482 (2.8)	486 (2.9)	481 (2.8)	483 (2.8)	483 (2.8)	482 (2.9)	482 (2.9)	482 (2.8)	481 (2.8)	482 (2.8)
Chile	479 (2.7)	479 (2.7)	482 (2.8)	480 (2.7)	480 (2.7)	480 (2.7)	483 (2.7)	488 (2.8)	479 (2.7)	479 (2.7)	480 (2.8)
Bahrain	475 (3.9)	475 (3.9)	475 (4.1)	476 (4.0)	477 (4.0)	472 (4.0)	475 (4.0)	479 (4.0)	476 (3.9)	475 (3.9)	475 (4.0)
Qatar	472 (3.6)	473 (3.7)	477 (3.6)	474 (3.6)	474 (3.7)	473 (3.6)	473 (3.6)	475 (3.7)	474 (3.6)	472 (3.6)	475 (3.7)
Kazakhstan	467 (3.5)	467 (3.5)	466 (3.6)	467 (3.5)	467 (3.5)	465 (3.5)	465 (3.5)	467 (3.6)	466 (3.5)	467 (3.5)	466 (3.5)
Georgia	465 (3.4)	464 (3.5)	467 (3.5)	465 (3.5)	464 (3.5)	465 (3.5)	466 (3.4)	466 (3.5)	465 (3.4)	465 (3.4)	467 (3.4)
Montenegro	461 (2.0)	462 (2.0)	469 (2.0)	461 (2.0)	462 (2.0)	462 (2.0)	465 (2.0)	462 (2.0)	461 (2.0)	461 (2.0)	463 (2.0)
Armenia	457 (2.7)	457 (2.7)	459 (2.6)	457 (2.7)	456 (2.7)	455 (2.7)	458 (2.7)	455 (2.7)	456 (2.7)	457 (2.7)	458 (2.7)
Bosnia & Herzegovina	448 (3.7)	448 (3.8)	453 (3.7)	449 (3.7)	449 (3.8)	448 (3.8)	449 (3.9)	448 (3.9)	448 (3.8)	448 (3.7)	451 (3.8)
North Macedonia	439 (3.9)	439 (4.0)	445 (4.1)	439 (4.0)	438 (4.1)	439 (4.0)	441 (4.0)	439 (4.0)	438 (4.0)	439 (3.9)	440 (4.0)
Oman	433 (4.2)	432 (4.2)	436 (4.4)	434 (4.3)	434 (4.3)	433 (4.2)	433 (4.2)	431 (4.2)	433 (4.3)	433 (4.2)	434 (4.3)
Saudi Arabia	428 (4.0)	427 (3.9)	426 (4.2)	428 (4.0)	427 (4.1)	426 (4.0)	426 (4.0)	428 (4.0)	427 (4.0)	428 (4.0)	427 (4.0)
Brazil	425 (3.5)	426 (3.5)	425 (3.4)	426 (3.5)	425 (3.5)	424 (3.5)	426 (3.6)	427 (3.7)	426 (3.6)	425 (3.5)	426 (3.5)
Jordan	418 (4.9)	417 (4.9)	415 (5.2)	418 (4.9)	419 (5.0)	416 (4.9)	414 (4.9)	417 (4.9)	418 (4.9)	418 (4.9)	419 (5.0)
Uzbekistan	412 (3.5)	412 (3.5)	406 (3.6)	413 (3.5)	410 (3.6)	409 (3.5)	412 (3.5)	410 (3.6)	411 (3.5)	412 (3.5)	409 (3.6)
Kosovo	403 (3.6)	403 (3.7)	410 (3.9)	403 (3.7)	404 (3.7)	404 (3.7)	403 (3.8)	400 (3.9)	403 (3.7)	403 (3.6)	404 (3.8)
<b>International Average</b>	<b>505 (0.4)</b>	<b>505 (0.4)</b>	<b>508 (0.4)</b>	<b>505 (0.4)</b>	<b>505 (0.4)</b>	<b>505 (0.4)</b>	<b>506 (0.4)</b>	<b>507 (0.4)</b>	<b>505 (0.4)</b>	<b>505 (0.4)</b>	<b>506 (0.4)</b>
<b>Benchmarking Participants</b>											
Dubai, UAE	562 (1.8)	562 (1.8)	563 (1.9)	562 (1.8)	565 (1.8)	560 (1.8)	561 (1.8)	565 (1.8)	563 (1.8)	562 (1.8)	563 (1.8)
Ontario, Canada	525 (3.2)	526 (3.2)	524 (3.3)	526 (3.3)	526 (3.2)	528 (3.3)	525 (3.3)	530 (3.3)	525 (3.3)	525 (3.2)	525 (3.3)
Quebec, Canada	508 (2.7)	509 (2.7)	509 (2.7)	508 (2.8)	508 (2.7)	508 (2.7)	510 (2.7)	511 (2.8)	509 (2.7)	508 (2.7)	507 (2.7)
Sharjah, UAE	503 (3.9)	503 (3.9)	505 (4.1)	503 (3.9)	505 (4.0)	501 (3.9)	501 (3.9)	505 (3.9)	503 (3.9)	503 (3.9)	502 (3.9)
Abu Dhabi, UAE	446 (2.6)	447 (2.6)	446 (2.8)	446 (2.7)	447 (2.7)	446 (2.7)	445 (2.7)	447 (2.7)	446 (2.6)	446 (2.6)	445 (2.7)
<b>Number of Items (Score Points)*</b>	<b>173 (185)</b>	<b>160 (171)</b>	<b>115 (124)</b>	<b>162 (173)</b>	<b>151 (162)</b>	<b>147 (157)</b>	<b>140 (151)</b>	<b>123 (133)</b>	<b>158 (170)</b>	<b>173 (185)</b>	<b>140 (151)</b>

\* The number of items and score points are based on the number of items included in scaling the fourth-grade science achievement data. See Chapter 9 in *TIMSS 2023 Technical Report (Methods and Procedures)* for information about items deleted or recoded for scaling. ( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

# Exhibit C.2: Average Scale Scores for the Science Test-Curriculum Matching Analysis

Results based on items identified by each country as addressed in its curriculum

(Continued)

Country	Average Science Scale Score based on All Items	Hungary	Denmark	Canada	Slovak Republic	Netherlands	New Zealand	Germany	Italy	Portugal	Serbia
Singapore	607 (2.8)	615 (2.7)	606 (2.7)	624 (2.7)	608 (2.7)	610 (2.8)	616 (2.8)	612 (2.8)	611 (2.8)	610 (2.8)	611 (2.8)
Korea, Rep. of	583 (2.5)	585 (2.5)	584 (2.5)	586 (2.5)	586 (2.5)	586 (2.6)	588 (2.5)	586 (2.5)	585 (2.5)	585 (2.5)	587 (2.5)
Chinese Taipei	573 (1.7)	573 (1.7)	575 (1.7)	570 (1.8)	577 (1.7)	577 (1.7)	576 (1.7)	574 (1.7)	572 (1.7)	572 (1.8)	574 (1.7)
Türkiye (5)	570 (3.4)	570 (3.3)	567 (3.4)	571 (3.4)	581 (3.4)	574 (3.4)	573 (3.4)	566 (3.4)	564 (3.4)	569 (3.4)	568 (3.4)
England	556 (2.6)	556 (2.6)	557 (2.6)	561 (2.6)	557 (2.5)	558 (2.5)	559 (2.6)	556 (2.6)	556 (2.6)	557 (2.6)	557 (2.6)
Japan	555 (2.4)	557 (2.3)	556 (2.4)	552 (2.4)	557 (2.4)	558 (2.4)	560 (2.5)	559 (2.4)	558 (2.4)	558 (2.4)	557 (2.4)
Australia	550 (2.3)	550 (2.3)	550 (2.3)	557 (2.2)	547 (2.4)	550 (2.3)	552 (2.3)	550 (2.3)	551 (2.3)	549 (2.3)	550 (2.3)
Poland	550 (2.2)	551 (2.3)	551 (2.2)	557 (2.4)	548 (2.3)	553 (2.2)	550 (2.3)	551 (2.2)	552 (2.2)	550 (2.3)	550 (2.2)
Hong Kong SAR	545 (3.8)	547 (4.0)	545 (3.8)	549 (3.9)	550 (3.9)	549 (3.9)	547 (3.9)	546 (3.9)	546 (3.9)	547 (3.9)	548 (3.9)
Finland	542 (2.9)	544 (3.0)	542 (2.9)	545 (2.9)	545 (2.9)	545 (2.9)	544 (2.9)	544 (3.0)	544 (3.0)	546 (2.9)	543 (2.9)
Lithuania	537 (2.9)	538 (3.0)	537 (2.9)	542 (2.8)	540 (3.0)	540 (2.9)	539 (2.9)	539 (2.9)	536 (2.9)	537 (2.9)	537 (2.9)
Macao SAR	536 (1.4)	536 (1.4)	536 (1.4)	541 (1.3)	541 (1.4)	542 (1.4)	536 (1.4)	536 (1.4)	535 (1.4)	536 (1.4)	537 (1.4)
Sweden	533 (3.2)	537 (3.2)	535 (3.2)	540 (3.2)	537 (3.2)	537 (3.3)	534 (3.2)	534 (3.3)	533 (3.3)	535 (3.2)	533 (3.3)
Ireland	532 (3.2)	533 (3.2)	533 (3.2)	537 (3.2)	534 (3.3)	534 (3.3)	535 (3.2)	533 (3.2)	534 (3.2)	534 (3.2)	534 (3.2)
United States	532 (2.8)	531 (2.8)	534 (2.8)	544 (2.8)	529 (2.9)	533 (2.8)	534 (2.8)	534 (2.8)	534 (2.8)	533 (2.9)	534 (2.8)
Norway (5)	530 (2.6)	535 (2.5)	532 (2.6)	533 (2.5)	532 (2.6)	532 (2.6)	529 (2.7)	531 (2.6)	531 (2.6)	533 (2.6)	529 (2.5)
Czech Republic	526 (2.3)	527 (2.3)	527 (2.3)	539 (2.4)	524 (2.3)	530 (2.3)	526 (2.3)	527 (2.3)	528 (2.3)	527 (2.3)	527 (2.3)
Latvia	526 (3.0)	526 (3.1)	527 (3.0)	534 (3.1)	528 (3.0)	529 (3.0)	528 (3.1)	524 (3.0)	524 (3.1)	525 (3.0)	525 (3.0)
Romania	526 (4.8)	529 (4.8)	527 (4.7)	531 (4.8)	529 (4.8)	529 (4.9)	529 (5.0)	527 (4.8)	527 (4.8)	526 (4.8)	526 (4.8)
Slovenia	526 (2.3)	528 (2.4)	526 (2.4)	534 (2.5)	528 (2.4)	530 (2.4)	528 (2.4)	528 (2.3)	528 (2.4)	527 (2.4)	527 (2.4)
Hungary	524 (3.2)	529 (3.2)	526 (3.2)	531 (3.3)	524 (3.2)	528 (3.3)	524 (3.2)	526 (3.2)	529 (3.2)	527 (3.3)	525 (3.2)
Denmark	522 (2.6)	523 (2.6)	525 (2.6)	527 (2.7)	523 (2.6)	523 (2.6)	524 (2.6)	523 (2.6)	524 (2.6)	525 (2.6)	523 (2.6)
Canada	521 (2.0)	521 (2.0)	522 (2.1)	532 (2.1)	520 (2.1)	522 (2.0)	523 (2.1)	522 (2.1)	522 (2.0)	521 (2.1)	522 (2.0)
Slovak Republic	521 (3.3)	521 (3.3)	521 (3.3)	529 (3.3)	522 (3.4)	525 (3.3)	523 (3.4)	520 (3.3)	521 (3.3)	521 (3.3)	520 (3.3)
Netherlands	517 (2.9)	519 (3.0)	521 (3.0)	522 (3.0)	518 (3.0)	518 (3.0)	519 (3.0)	517 (2.9)	516 (3.0)	517 (3.0)	517 (2.9)
New Zealand	517 (2.8)	519 (2.9)	519 (2.9)	524 (3.1)	517 (3.0)	517 (2.9)	520 (2.9)	518 (2.9)	518 (2.9)	517 (2.9)	517 (2.9)
Germany	515 (2.8)	518 (2.8)	516 (2.9)	520 (3.0)	517 (2.9)	518 (2.9)	517 (2.8)	517 (2.8)	517 (2.9)	516 (2.9)	516 (2.8)
Italy	511 (2.5)	512 (2.4)	510 (2.5)	518 (2.6)	510 (2.5)	514 (2.4)	515 (2.4)	512 (2.5)	514 (2.5)	511 (2.5)	513 (2.5)
Portugal	511 (2.3)	515 (2.3)	511 (2.3)	519 (2.3)	513 (2.3)	515 (2.3)	514 (2.3)	512 (2.3)	513 (2.3)	513 (2.3)	510 (2.3)
Serbia	510 (3.2)	511 (3.2)	509 (3.2)	517 (3.3)	514 (3.4)	514 (3.3)	512 (3.2)	513 (3.2)	513 (3.2)	511 (3.2)	512 (3.2)
Spain	504 (2.1)	505 (2.1)	503 (2.1)	511 (2.2)	507 (2.1)	507 (2.1)	506 (2.1)	506 (2.1)	505 (2.1)	505 (2.1)	504 (2.1)
United Arab Emirates	495 (1.8)	492 (1.9)	494 (1.8)	501 (1.8)	495 (1.9)	497 (1.8)	494 (1.8)	493 (1.9)	493 (1.9)	494 (1.8)	494 (1.8)
Albania	491 (4.5)	492 (4.4)	490 (4.5)	494 (4.7)	496 (4.8)	492 (4.5)	492 (4.5)	491 (4.5)	490 (4.5)	492 (4.4)	491 (4.6)
Belgium (Flemish)	488 (2.6)	491 (2.6)	492 (2.6)	493 (2.8)	490 (2.6)	491 (2.6)	491 (2.6)	489 (2.7)	489 (2.8)	489 (2.6)	490 (2.7)
France	488 (3.0)	490 (3.0)	487 (3.1)	491 (3.3)	487 (3.0)	491 (3.0)	489 (3.0)	488 (3.0)	489 (3.0)	488 (3.0)	488 (3.0)
Belgium (French)	481 (2.8)	483 (2.8)	480 (2.8)	486 (2.9)	482 (2.8)	484 (2.8)	482 (2.8)	482 (2.8)	483 (2.8)	481 (2.8)	482 (2.8)
Chile	479 (2.7)	482 (2.8)	481 (2.7)	493 (2.8)	478 (2.8)	482 (2.8)	481 (2.7)	481 (2.7)	484 (2.7)	482 (2.7)	479 (2.7)
Bahrain	475 (3.9)	472 (4.1)	473 (4.0)	481 (4.1)	479 (4.1)	476 (4.0)	476 (4.0)	474 (4.0)	475 (4.0)	474 (4.0)	475 (4.0)
Qatar	472 (3.6)	471 (3.6)	472 (3.6)	476 (3.7)	476 (3.7)	475 (3.7)	474 (3.7)	472 (3.6)	472 (3.5)	472 (3.6)	473 (3.6)
Kazakhstan	467 (3.5)	466 (3.5)	465 (3.5)	470 (3.7)	470 (3.6)	466 (3.6)	466 (3.5)	465 (3.5)	465 (3.5)	465 (3.5)	466 (3.5)
Georgia	465 (3.4)	465 (3.5)	464 (3.4)	466 (3.6)	465 (3.5)	465 (3.5)	465 (3.5)	464 (3.4)	467 (3.4)	465 (3.4)	465 (3.4)
Montenegro	461 (2.0)	463 (2.1)	459 (2.0)	465 (2.1)	462 (2.0)	464 (2.0)	463 (2.1)	464 (2.0)	464 (2.0)	462 (2.0)	463 (2.0)
Armenia	457 (2.7)	456 (2.7)	456 (2.7)	454 (2.8)	459 (2.7)	456 (2.7)	456 (2.7)	456 (2.7)	458 (2.7)	454 (2.6)	457 (2.7)
Bosnia & Herzegovina	448 (3.7)	451 (3.9)	447 (3.7)	451 (4.4)	451 (3.8)	452 (3.8)	450 (3.8)	450 (3.8)	449 (3.9)	450 (3.7)	449 (3.8)
North Macedonia	439 (3.9)	440 (4.0)	437 (3.9)	436 (4.2)	443 (4.0)	441 (4.0)	439 (4.0)	440 (4.0)	440 (4.0)	438 (4.0)	439 (4.0)
Oman	433 (4.2)	431 (4.3)	432 (4.3)	435 (4.3)	438 (4.3)	434 (4.2)	434 (4.2)	433 (4.2)	431 (4.2)	431 (4.2)	432 (4.2)
Saudi Arabia	428 (4.0)	421 (4.1)	427 (4.0)	421 (4.1)	431 (4.1)	427 (4.0)	428 (4.0)	425 (4.1)	425 (4.0)	424 (4.0)	427 (4.0)
Brazil	425 (3.5)	426 (3.5)	426 (3.5)	428 (3.7)	427 (3.5)	428 (3.5)	427 (3.5)	425 (3.5)	426 (3.6)	425 (3.6)	425 (3.5)
Jordan	418 (4.9)	411 (5.0)	418 (4.9)	415 (4.9)	421 (5.1)	418 (5.0)	417 (4.8)	415 (4.9)	413 (4.9)	413 (4.9)	417 (4.9)
Uzbekistan	412 (3.5)	408 (3.5)	413 (3.5)	414 (3.7)	410 (3.6)	409 (3.6)	413 (3.5)	410 (3.4)	412 (3.4)	410 (3.4)	410 (3.5)
Kosovo	403 (3.6)	405 (3.8)	400 (3.7)	395 (3.9)	411 (3.8)	405 (3.7)	403 (3.7)	405 (3.7)	401 (3.7)	405 (3.7)	404 (3.7)
<b>International Average</b>	<b>505 (0.4)</b>	<b>505 (0.4)</b>	<b>505 (0.4)</b>	<b>509 (0.4)</b>	<b>507 (0.4)</b>	<b>507 (0.4)</b>	<b>506 (0.4)</b>	<b>505 (0.4)</b>	<b>505 (0.4)</b>	<b>505 (0.4)</b>	<b>505 (0.4)</b>
<b>Benchmarking Participants</b>											
Dubai, UAE	562 (1.8)	560 (1.8)	561 (1.8)	569 (1.8)	564 (1.8)	564 (1.8)	562 (1.9)	560 (1.8)	560 (1.8)	563 (1.8)	561 (1.8)
Ontario, Canada	525 (3.2)	524 (3.3)	527 (3.3)	537 (3.4)	524 (3.3)	527 (3.3)	527 (3.3)	526 (3.3)	526 (3.3)	525 (3.3)	526 (3.3)
Quebec, Canada	508 (2.7)	510 (2.7)	507 (2.8)	516 (2.7)	506 (2.8)	509 (2.7)	509 (2.8)	507 (2.7)	508 (2.8)	509 (2.7)	507 (2.7)
Sharjah, UAE	503 (3.9)	500 (4.0)	500 (3.9)	510 (3.8)	503 (4.0)	505 (4.0)	502 (3.9)	500 (3.9)	501 (3.9)	501 (3.9)	502 (3.9)
Abu Dhabi, UAE	446 (2.6)	444 (2.8)	446 (2.6)	452 (2.8)	445 (2.7)	447 (2.7)	446 (2.7)	444 (2.7)	446 (2.7)	445 (2.7)	446 (2.6)
<b>Number of Items (Score Points)*</b>	<b>173 (185)</b>	<b>133 (142)</b>	<b>157 (168)</b>	<b>94 (100)</b>	<b>128 (139)</b>	<b>150 (159)</b>	<b>141 (151)</b>	<b>153 (164)</b>	<b>140 (151)</b>	<b>152 (161)</b>	<b>161 (172)</b>

\* The number of items and score points are based on the number of items included in scaling the fourth-grade science achievement data.

See Chapter 9 in *TIMSS 2023 Technical Report (Methods and Procedures)* for information about items deleted or recoded for scaling.

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

**Exhibit C.2: Average Scale Scores for the Science Test-Curriculum Matching Analysis**

Results based on items identified by each country as addressed in its curriculum

(Continued)

Country	Average Science Scale Score based on All Items	Spain	United Arab Emirates	Albania	Belgium (Flemish)	France	Belgium (French)	Chile	Bahrain	Qatar	Kazakhstan
Singapore	607 (2.8)	611 (2.8)	607 (2.8)	618 (2.8)	630 (2.8)	613 (2.8)	613 (2.7)	607 (2.8)	607 (2.8)	623 (2.7)	607 (2.8)
Korea, Rep. of	583 (2.5)	585 (2.5)	583 (2.5)	589 (2.5)	594 (2.5)	587 (2.6)	596 (2.5)	583 (2.5)	583 (2.5)	592 (2.6)	583 (2.5)
Chinese Taipei	573 (1.7)	572 (1.7)	573 (1.7)	575 (1.7)	580 (1.7)	570 (1.7)	575 (1.8)	573 (1.7)	573 (1.7)	577 (1.8)	573 (1.7)
Türkiye (5)	570 (3.4)	572 (3.4)	570 (3.4)	572 (3.4)	575 (3.2)	577 (3.4)	575 (3.4)	570 (3.4)	570 (3.4)	569 (3.4)	570 (3.4)
England	556 (2.6)	558 (2.6)	556 (2.6)	557 (2.6)	563 (2.6)	559 (2.6)	564 (2.5)	556 (2.6)	556 (2.6)	565 (2.5)	556 (2.6)
Japan	555 (2.4)	554 (2.5)	555 (2.4)	560 (2.5)	567 (2.4)	554 (2.6)	556 (2.4)	555 (2.4)	555 (2.4)	560 (2.3)	555 (2.4)
Australia	550 (2.3)	551 (2.3)	550 (2.3)	549 (2.3)	553 (2.3)	550 (2.3)	557 (2.3)	549 (2.3)	550 (2.3)	560 (2.2)	550 (2.3)
Poland	550 (2.2)	552 (2.2)	550 (2.2)	550 (2.3)	557 (2.5)	557 (2.4)	558 (2.4)	550 (2.2)	550 (2.2)	557 (2.4)	550 (2.2)
Hong Kong SAR	545 (3.8)	547 (3.9)	545 (3.8)	550 (3.9)	549 (3.9)	550 (3.9)	549 (3.9)	545 (3.9)	545 (3.8)	555 (4.0)	545 (3.9)
Finland	542 (2.9)	543 (2.9)	542 (2.9)	543 (3.0)	550 (2.9)	547 (3.0)	556 (3.0)	542 (2.9)	542 (2.9)	552 (3.0)	542 (2.9)
Lithuania	537 (2.9)	537 (2.9)	537 (2.9)	538 (2.9)	544 (3.0)	540 (3.0)	545 (2.9)	537 (2.9)	537 (2.9)	542 (2.9)	537 (2.9)
Macao SAR	536 (1.4)	538 (1.4)	536 (1.4)	539 (1.4)	543 (1.3)	541 (1.3)	540 (1.3)	536 (1.4)	536 (1.4)	540 (1.2)	536 (1.4)
Sweden	533 (3.2)	535 (3.2)	533 (3.2)	535 (3.2)	542 (3.1)	535 (3.1)	544 (3.1)	533 (3.2)	533 (3.2)	542 (3.4)	532 (3.2)
Ireland	532 (3.2)	533 (3.2)	532 (3.2)	533 (3.2)	537 (3.2)	533 (3.2)	541 (3.2)	532 (3.2)	532 (3.2)	543 (3.4)	532 (3.2)
United States	532 (2.8)	533 (2.8)	532 (2.8)	533 (2.8)	535 (2.9)	537 (2.9)	543 (2.8)	532 (2.8)	532 (2.8)	542 (2.9)	533 (2.8)
Norway (5)	530 (2.6)	531 (2.6)	530 (2.6)	529 (2.6)	536 (2.6)	532 (2.7)	533 (2.6)	530 (2.6)	530 (2.6)	540 (2.6)	530 (2.6)
Czech Republic	526 (2.3)	528 (2.3)	526 (2.3)	526 (2.3)	535 (2.2)	534 (2.3)	537 (2.4)	526 (2.3)	526 (2.3)	532 (2.3)	526 (2.3)
Latvia	526 (3.0)	528 (3.0)	526 (3.0)	526 (3.0)	531 (3.1)	526 (3.2)	535 (2.9)	526 (3.0)	526 (3.0)	532 (3.0)	526 (3.0)
Romania	526 (4.8)	528 (4.8)	526 (4.8)	528 (4.9)	534 (4.8)	533 (5.0)	532 (4.8)	526 (4.8)	526 (4.8)	530 (5.0)	526 (4.8)
Slovenia	526 (2.3)	528 (2.4)	526 (2.3)	529 (2.4)	535 (2.5)	532 (2.5)	538 (2.6)	526 (2.3)	526 (2.3)	534 (2.5)	526 (2.3)
Hungary	524 (3.2)	526 (3.2)	524 (3.2)	527 (3.2)	528 (3.2)	530 (3.1)	535 (3.3)	524 (3.2)	524 (3.2)	531 (3.4)	524 (3.2)
Denmark	522 (2.6)	523 (2.6)	522 (2.6)	522 (2.6)	525 (2.7)	523 (2.6)	528 (2.8)	522 (2.6)	522 (2.6)	529 (2.7)	522 (2.6)
Canada	521 (2.0)	522 (2.0)	521 (2.0)	522 (2.0)	525 (2.1)	526 (2.0)	533 (2.0)	521 (2.0)	521 (2.0)	527 (2.1)	521 (2.0)
Slovak Republic	521 (3.3)	523 (3.3)	521 (3.3)	521 (3.4)	529 (3.3)	526 (3.3)	529 (3.3)	521 (3.3)	521 (3.3)	525 (3.4)	521 (3.3)
Netherlands	517 (2.9)	517 (3.0)	517 (2.9)	516 (3.0)	522 (3.3)	517 (3.2)	524 (3.2)	517 (2.9)	517 (2.9)	523 (3.2)	517 (2.9)
New Zealand	517 (2.8)	518 (2.9)	517 (2.8)	517 (2.9)	520 (3.1)	519 (3.1)	527 (3.1)	517 (2.9)	517 (2.8)	525 (3.1)	517 (2.9)
Germany	515 (2.8)	517 (2.8)	515 (2.8)	517 (2.9)	521 (2.9)	519 (3.0)	523 (3.0)	516 (2.8)	515 (2.8)	522 (3.0)	516 (2.8)
Italy	511 (2.5)	512 (2.4)	511 (2.5)	516 (2.5)	517 (2.5)	522 (2.5)	524 (2.6)	511 (2.5)	511 (2.5)	520 (2.4)	511 (2.5)
Portugal	511 (2.3)	512 (2.3)	511 (2.3)	514 (2.2)	519 (2.3)	519 (2.3)	522 (2.4)	511 (2.3)	511 (2.3)	516 (2.2)	511 (2.3)
Serbia	510 (3.2)	511 (3.2)	510 (3.2)	515 (3.3)	517 (3.4)	520 (3.2)	524 (3.4)	510 (3.2)	510 (3.2)	514 (3.4)	510 (3.2)
Spain	504 (2.1)	505 (2.1)	504 (2.1)	506 (2.1)	509 (2.2)	516 (2.2)	513 (2.2)	504 (2.1)	504 (2.1)	507 (2.2)	504 (2.1)
United Arab Emirates	495 (1.8)	495 (1.8)	495 (1.8)	495 (1.9)	495 (1.9)	504 (1.9)	500 (1.9)	495 (1.8)	495 (1.8)	496 (1.9)	495 (1.8)
Albania	491 (4.5)	492 (4.6)	491 (4.5)	495 (4.6)	494 (4.5)	499 (4.6)	492 (4.8)	491 (4.5)	491 (4.5)	494 (4.5)	491 (4.5)
Belgium (Flemish)	488 (2.6)	489 (2.7)	488 (2.6)	489 (2.6)	494 (2.7)	491 (2.7)	494 (2.8)	488 (2.6)	488 (2.6)	495 (2.7)	488 (2.6)
France	488 (3.0)	489 (3.0)	488 (3.0)	489 (3.0)	492 (3.1)	494 (3.1)	498 (3.2)	488 (3.0)	488 (3.0)	491 (3.2)	488 (3.0)
Belgium (French)	481 (2.8)	482 (2.8)	481 (2.8)	485 (2.8)	485 (3.0)	487 (2.9)	491 (2.9)	481 (2.8)	481 (2.8)	486 (3.0)	481 (2.8)
Chile	479 (2.7)	482 (2.7)	479 (2.7)	480 (2.7)	491 (2.9)	491 (2.9)	490 (2.9)	479 (2.7)	479 (2.7)	481 (2.8)	479 (2.7)
Bahrain	475 (3.9)	476 (4.0)	475 (3.9)	478 (4.0)	475 (4.2)	485 (4.1)	481 (4.1)	475 (3.9)	475 (3.9)	474 (4.1)	475 (3.9)
Qatar	472 (3.6)	473 (3.7)	472 (3.6)	475 (3.7)	475 (3.9)	476 (3.6)	479 (3.6)	472 (3.6)	472 (3.6)	478 (3.6)	472 (3.6)
Kazakhstan	467 (3.5)	466 (3.5)	467 (3.5)	465 (3.6)	461 (3.6)	470 (3.6)	471 (3.7)	466 (3.5)	465 (3.5)	465 (3.6)	467 (3.5)
Georgia	465 (3.4)	467 (3.4)	465 (3.4)	464 (3.6)	467 (3.6)	471 (3.6)	466 (3.8)	465 (3.4)	465 (3.4)	464 (3.6)	465 (3.4)
Montenegro	461 (2.0)	462 (2.0)	461 (2.0)	465 (2.0)	469 (2.1)	472 (2.1)	469 (2.1)	461 (2.0)	461 (2.0)	469 (2.1)	461 (2.0)
Armenia	457 (2.7)	458 (2.7)	457 (2.7)	458 (2.7)	455 (2.6)	459 (2.7)	453 (2.8)	457 (2.7)	457 (2.7)	454 (2.8)	457 (2.7)
Bosnia & Herzegovina	448 (3.7)	450 (3.8)	448 (3.7)	450 (3.9)	456 (4.1)	455 (4.1)	458 (4.5)	448 (3.7)	448 (3.7)	456 (4.0)	448 (3.7)
North Macedonia	439 (3.9)	439 (4.0)	439 (3.9)	441 (4.1)	440 (4.1)	444 (4.1)	439 (4.2)	439 (3.9)	439 (3.9)	441 (4.2)	439 (3.9)
Oman	433 (4.2)	432 (4.2)	433 (4.2)	434 (4.3)	432 (4.4)	439 (4.5)	438 (4.3)	433 (4.2)	433 (4.2)	431 (4.3)	433 (4.2)
Saudi Arabia	428 (4.0)	426 (4.0)	428 (4.0)	428 (4.1)	420 (4.2)	434 (4.2)	429 (4.2)	428 (4.0)	428 (4.0)	423 (4.0)	428 (4.0)
Brazil	425 (3.5)	427 (3.5)	425 (3.5)	427 (3.6)	428 (3.6)	426 (3.8)	431 (3.8)	425 (3.5)	425 (3.5)	427 (3.7)	425 (3.5)
Jordan	418 (4.9)	417 (4.8)	418 (4.9)	418 (5.0)	412 (5.0)	421 (5.3)	417 (5.1)	418 (4.9)	418 (4.9)	409 (5.0)	418 (4.9)
Uzbekistan	412 (3.5)	413 (3.5)	412 (3.5)	407 (3.6)	405 (3.7)	414 (3.7)	412 (3.8)	412 (3.5)	412 (3.5)	404 (3.6)	412 (3.5)
Kosovo	403 (3.6)	403 (3.7)	403 (3.6)	404 (3.8)	406 (4.1)	411 (4.1)	402 (4.0)	403 (3.7)	403 (3.6)	407 (4.1)	403 (3.7)
<b>International Average</b>	<b>505 (0.4)</b>	<b>506 (0.4)</b>	<b>505 (0.4)</b>	<b>506 (0.4)</b>	<b>509 (0.4)</b>	<b>510 (0.5)</b>	<b>511 (0.5)</b>	<b>505 (0.4)</b>	<b>505 (0.4)</b>	<b>509 (0.4)</b>	<b>505 (0.4)</b>
<b>Benchmarking Participants</b>											
Dubai, UAE	562 (1.8)	563 (1.8)	562 (1.8)	563 (1.8)	565 (1.9)	574 (1.8)	567 (1.8)	562 (1.8)	562 (1.8)	565 (1.9)	562 (1.8)
Ontario, Canada	525 (3.2)	527 (3.2)	525 (3.2)	527 (3.3)	528 (3.4)	528 (3.3)	539 (3.3)	525 (3.3)	525 (3.2)	531 (3.3)	525 (3.2)
Quebec, Canada	508 (2.7)	509 (2.7)	508 (2.7)	507 (2.7)	514 (2.7)	516 (2.7)	517 (2.7)	508 (2.7)	508 (2.7)	511 (2.7)	508 (2.7)
Sharjah, UAE	503 (3.9)	503 (3.9)	503 (3.9)	503 (4.0)	501 (4.1)	514 (4.0)	508 (3.9)	503 (4.0)	503 (3.9)	502 (3.9)	503 (3.9)
Abu Dhabi, UAE	446 (2.6)	445 (2.6)	446 (2.6)	445 (2.7)	446 (2.9)	453 (2.8)	450 (2.8)	446 (2.6)	446 (2.6)	448 (2.8)	446 (2.6)
<b>Number of Items (Score Points)*</b>	<b>173 (185)</b>	<b>153 (164)</b>	<b>173 (185)</b>	<b>135 (146)</b>	<b>80 (89)</b>	<b>106 (115)</b>	<b>88 (92)</b>	<b>173 (185)</b>	<b>173 (185)</b>	<b>97 (101)</b>	<b>173 (185)</b>

\* The number of items and score points are based on the number of items included in scaling the fourth-grade science achievement data. See Chapter 9 in *TIMSS 2023 Technical Report (Methods and Procedures)* for information about items deleted or recoded for scaling. ( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

**Exhibit C.2: Average Scale Scores for the Science Test-Curriculum Matching Analysis**

Results based on items identified by each country as addressed in its curriculum

(Continued)

Country	Average Science Scale Score based on All Items	Georgia	Montenegro	Armenia	Bosnia & Herzegovina	North Macedonia	Oman	Saudi Arabia	Brazil	Jordan	Uzbekistan
Singapore	607 (2.8)	614 (2.6)	607 (2.8)	607 (2.8)	606 (2.8)	621 (2.6)	610 (2.7)	608 (2.7)	617 (2.9)	611 (2.7)	608 (2.8)
Korea, Rep. of	583 (2.5)	589 (2.5)	581 (2.6)	583 (2.5)	585 (2.5)	586 (2.5)	585 (2.5)	584 (2.5)	584 (2.5)	590 (2.5)	583 (2.5)
Chinese Taipei	573 (1.7)	578 (1.7)	569 (1.8)	573 (1.7)	569 (1.7)	576 (1.7)	573 (1.7)	574 (1.7)	570 (1.8)	576 (1.7)	574 (1.7)
Türkiye (5)	570 (3.4)	575 (3.3)	572 (3.5)	570 (3.4)	567 (3.4)	590 (3.5)	571 (3.4)	570 (3.4)	571 (3.5)	572 (3.4)	570 (3.4)
England	556 (2.6)	558 (2.5)	557 (2.7)	556 (2.6)	560 (2.7)	565 (2.5)	557 (2.6)	556 (2.6)	562 (2.7)	558 (2.5)	558 (2.7)
Japan	555 (2.4)	559 (2.4)	552 (2.5)	555 (2.4)	553 (2.5)	551 (2.4)	556 (2.4)	556 (2.4)	556 (2.6)	560 (2.4)	554 (2.4)
Australia	550 (2.3)	552 (2.2)	551 (2.3)	550 (2.3)	554 (2.3)	554 (2.3)	550 (2.3)	549 (2.3)	553 (2.2)	550 (2.3)	551 (2.3)
Poland	550 (2.2)	552 (2.4)	551 (2.3)	550 (2.2)	551 (2.3)	551 (2.5)	549 (2.2)	550 (2.2)	554 (2.4)	553 (2.3)	551 (2.3)
Hong Kong SAR	545 (3.8)	550 (3.9)	545 (3.9)	545 (3.8)	544 (3.9)	552 (4.1)	546 (3.9)	546 (3.8)	547 (3.9)	550 (3.8)	547 (3.8)
Finland	542 (2.9)	543 (3.0)	545 (3.0)	542 (2.9)	546 (3.0)	546 (2.9)	543 (2.9)	542 (2.9)	549 (3.0)	543 (2.9)	542 (3.0)
Lithuania	537 (2.9)	538 (3.0)	538 (2.9)	537 (2.9)	535 (2.9)	545 (2.9)	536 (2.9)	538 (2.9)	542 (2.9)	539 (2.9)	536 (2.9)
Macao SAR	536 (1.4)	544 (1.3)	535 (1.4)	536 (1.4)	534 (1.4)	544 (1.3)	536 (1.4)	537 (1.4)	540 (1.3)	540 (1.4)	537 (1.4)
Sweden	533 (3.2)	541 (3.3)	535 (3.2)	533 (3.2)	534 (3.3)	536 (3.2)	534 (3.3)	533 (3.2)	539 (3.3)	532 (3.2)	534 (3.2)
Ireland	532 (3.2)	534 (3.3)	533 (3.2)	532 (3.2)	535 (3.3)	539 (3.3)	533 (3.1)	532 (3.2)	534 (3.3)	534 (3.1)	533 (3.2)
United States	532 (2.8)	534 (2.8)	533 (2.8)	532 (2.8)	536 (2.8)	539 (2.9)	533 (2.8)	533 (2.8)	538 (2.8)	533 (2.8)	534 (2.8)
Norway (5)	530 (2.6)	533 (2.7)	532 (2.6)	530 (2.6)	534 (2.6)	533 (2.7)	530 (2.5)	531 (2.6)	536 (2.6)	530 (2.6)	531 (2.6)
Czech Republic	526 (2.3)	533 (2.4)	527 (2.4)	526 (2.3)	529 (2.3)	531 (2.4)	527 (2.3)	526 (2.3)	537 (2.4)	527 (2.3)	527 (2.4)
Latvia	526 (3.0)	532 (2.9)	525 (3.1)	526 (3.0)	525 (3.0)	534 (2.8)	527 (3.0)	526 (3.0)	530 (3.1)	525 (3.0)	526 (3.0)
Romania	526 (4.8)	531 (4.8)	528 (4.8)	526 (4.8)	529 (4.8)	536 (4.9)	527 (4.7)	526 (4.8)	534 (5.0)	528 (4.8)	528 (4.8)
Slovenia	526 (2.3)	532 (2.5)	523 (2.4)	526 (2.3)	526 (2.4)	533 (2.6)	527 (2.4)	525 (2.3)	529 (2.5)	527 (2.4)	526 (2.3)
Hungary	524 (3.2)	533 (3.4)	528 (3.2)	524 (3.2)	529 (3.2)	525 (3.3)	524 (3.2)	524 (3.2)	532 (3.3)	524 (3.2)	526 (3.2)
Denmark	522 (2.6)	520 (2.7)	524 (2.6)	522 (2.6)	526 (2.7)	521 (2.6)	523 (2.6)	522 (2.6)	526 (2.7)	522 (2.5)	523 (2.6)
Canada	521 (2.0)	525 (2.1)	522 (2.0)	521 (2.0)	525 (2.1)	528 (2.1)	521 (2.0)	521 (2.1)	526 (2.0)	523 (2.0)	522 (2.0)
Slovak Republic	521 (3.3)	530 (3.4)	519 (3.2)	521 (3.3)	523 (3.3)	530 (3.4)	521 (3.3)	521 (3.3)	525 (3.3)	522 (3.3)	522 (3.3)
Netherlands	517 (2.9)	520 (3.1)	518 (3.0)	517 (2.9)	518 (3.0)	518 (3.2)	518 (2.9)	517 (2.9)	517 (3.2)	517 (2.9)	518 (2.9)
New Zealand	517 (2.8)	519 (3.0)	518 (2.9)	517 (2.8)	520 (2.9)	522 (3.0)	517 (2.9)	517 (2.8)	523 (3.1)	518 (2.9)	519 (2.9)
Germany	515 (2.8)	518 (3.0)	515 (2.9)	515 (2.8)	516 (2.9)	517 (3.0)	516 (2.8)	516 (2.8)	518 (3.0)	516 (2.9)	516 (2.8)
Italy	511 (2.5)	517 (2.5)	514 (2.5)	511 (2.5)	515 (2.5)	518 (2.5)	511 (2.4)	510 (2.5)	520 (2.5)	515 (2.5)	512 (2.5)
Portugal	511 (2.3)	515 (2.3)	512 (2.3)	511 (2.3)	513 (2.3)	518 (2.2)	510 (2.3)	511 (2.3)	518 (2.3)	513 (2.3)	512 (2.3)
Serbia	510 (3.2)	516 (3.3)	511 (3.2)	510 (3.2)	511 (3.2)	514 (3.4)	510 (3.3)	510 (3.2)	516 (3.2)	514 (3.2)	511 (3.2)
Spain	504 (2.1)	510 (2.2)	506 (2.1)	504 (2.1)	504 (2.1)	512 (2.3)	504 (2.1)	505 (2.1)	511 (2.2)	507 (2.1)	505 (2.1)
United Arab Emirates	495 (1.8)	501 (1.9)	495 (1.8)	495 (1.8)	495 (1.8)	507 (1.9)	493 (1.8)	495 (1.8)	497 (1.9)	499 (1.8)	494 (1.8)
Albania	491 (4.5)	494 (4.6)	490 (4.5)	491 (4.5)	492 (4.5)	502 (4.8)	491 (4.5)	491 (4.5)	497 (4.7)	493 (4.6)	490 (4.5)
Belgium (Flemish)	488 (2.6)	489 (2.6)	488 (2.7)	488 (2.6)	490 (2.7)	492 (2.6)	489 (2.6)	489 (2.6)	489 (2.8)	490 (2.6)	489 (2.6)
France	488 (3.0)	491 (3.2)	489 (3.0)	488 (3.0)	490 (3.1)	491 (3.1)	488 (3.0)	488 (3.0)	493 (3.1)	490 (3.0)	490 (3.0)
Belgium (French)	481 (2.8)	485 (2.9)	482 (2.8)	481 (2.8)	480 (2.9)	485 (3.0)	481 (2.8)	481 (2.8)	485 (3.0)	484 (2.8)	482 (2.8)
Chile	479 (2.7)	484 (2.8)	483 (2.7)	479 (2.7)	484 (2.7)	481 (2.9)	479 (2.7)	479 (2.7)	492 (2.8)	482 (2.7)	481 (2.7)
Bahrain	475 (3.9)	480 (4.0)	475 (4.0)	475 (3.9)	475 (4.0)	483 (4.3)	473 (4.0)	476 (3.9)	478 (4.1)	478 (4.0)	475 (3.9)
Qatar	472 (3.6)	478 (3.7)	471 (3.6)	472 (3.6)	470 (3.6)	482 (3.9)	472 (3.7)	473 (3.6)	475 (3.6)	476 (3.6)	472 (3.7)
Kazakhstan	467 (3.5)	468 (3.7)	466 (3.5)	467 (3.5)	466 (3.5)	472 (3.7)	466 (3.5)	467 (3.5)	467 (3.6)	467 (3.5)	467 (3.5)
Georgia	465 (3.4)	469 (3.7)	468 (3.4)	465 (3.4)	466 (3.5)	464 (3.9)	466 (3.4)	465 (3.4)	468 (3.6)	465 (3.5)	465 (3.5)
Montenegro	461 (2.0)	464 (2.1)	464 (2.0)	461 (2.0)	462 (2.0)	464 (2.1)	462 (2.0)	461 (2.0)	466 (2.1)	465 (2.1)	461 (2.0)
Armenia	457 (2.7)	453 (2.7)	460 (2.7)	457 (2.7)	457 (2.7)	453 (2.8)	458 (2.7)	457 (2.7)	456 (2.6)	458 (2.7)	457 (2.7)
Bosnia & Herzegovina	448 (3.7)	452 (4.0)	450 (3.8)	448 (3.7)	452 (3.6)	453 (3.8)	450 (3.7)	448 (3.7)	452 (3.9)	450 (3.8)	449 (3.7)
North Macedonia	439 (3.9)	440 (4.1)	440 (4.0)	439 (3.9)	439 (3.9)	441 (4.2)	438 (4.0)	439 (3.9)	442 (4.0)	440 (4.0)	440 (3.9)
Oman	433 (4.2)	435 (4.4)	429 (4.3)	433 (4.2)	430 (4.2)	439 (4.6)	433 (4.2)	433 (4.2)	431 (4.3)	433 (4.3)	433 (4.3)
Saudi Arabia	428 (4.0)	431 (4.1)	426 (4.0)	428 (4.0)	427 (4.0)	436 (4.3)	426 (4.0)	428 (4.0)	428 (4.1)	430 (4.0)	428 (4.0)
Brazil	425 (3.5)	428 (3.4)	427 (3.6)	425 (3.5)	427 (3.6)	426 (3.5)	425 (3.5)	425 (3.5)	429 (3.7)	427 (3.6)	426 (3.6)
Jordan	418 (4.9)	420 (5.1)	414 (5.0)	418 (4.9)	416 (4.8)	422 (5.4)	417 (4.9)	418 (4.9)	417 (4.9)	421 (5.0)	418 (4.9)
Uzbekistan	412 (3.5)	409 (3.7)	413 (3.5)	412 (3.5)	413 (3.4)	407 (3.9)	411 (3.5)	411 (3.4)	418 (3.5)	410 (3.5)	412 (3.5)
Kosovo	403 (3.6)	411 (3.9)	402 (3.7)	403 (3.6)	402 (3.6)	411 (4.0)	402 (3.7)	404 (3.7)	403 (3.9)	405 (3.7)	403 (3.7)
<b>International Average</b>	<b>505 (0.4)</b>	<b>508 (0.4)</b>	<b>505 (0.4)</b>	<b>505 (0.4)</b>	<b>506 (0.4)</b>	<b>510 (0.5)</b>	<b>505 (0.4)</b>	<b>505 (0.4)</b>	<b>509 (0.4)</b>	<b>507 (0.4)</b>	<b>505 (0.4)</b>
<b>Benchmarking Participants</b>											
Dubai, UAE	562 (1.8)	568 (1.9)	562 (1.8)	562 (1.8)	563 (1.8)	578 (1.9)	560 (1.8)	563 (1.8)	566 (1.9)	566 (1.8)	562 (1.8)
Ontario, Canada	525 (3.2)	528 (3.3)	525 (3.2)	525 (3.2)	529 (3.4)	531 (3.4)	525 (3.2)	525 (3.3)	529 (3.3)	527 (3.3)	527 (3.3)
Quebec, Canada	508 (2.7)	514 (2.7)	509 (2.7)	508 (2.7)	510 (2.8)	515 (2.8)	507 (2.7)	507 (2.7)	514 (2.7)	508 (2.7)	509 (2.7)
Sharjah, UAE	503 (3.9)	509 (4.0)	503 (4.0)	503 (3.9)	503 (3.9)	517 (4.2)	501 (3.9)	503 (3.9)	505 (3.9)	507 (4.0)	502 (3.9)
Abu Dhabi, UAE	446 (2.6)	453 (2.7)	446 (2.7)	446 (2.6)	445 (2.7)	455 (2.9)	444 (2.6)	447 (2.6)	448 (2.8)	449 (2.7)	445 (2.7)
<b>Number of Items (Score Points)*</b>	<b>173 (185)</b>	<b>107 (114)</b>	<b>149 (159)</b>	<b>173 (185)</b>	<b>145 (154)</b>	<b>94 (99)</b>	<b>158 (170)</b>	<b>170 (182)</b>	<b>106 (114)</b>	<b>154 (164)</b>	<b>161 (172)</b>

\* The number of items and score points are based on the number of items included in scaling the fourth-grade science achievement data. See Chapter 9 in *TIMSS 2023 Technical Report (Methods and Procedures)* for information about items deleted or recoded for scaling. ( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.



## Exhibit C.2: Average Scale Scores for the Science Test-Curriculum Matching Analysis

Results based on items identified by each country as addressed in its curriculum

(Continued)

Country	Average Science Scale Score based on All Items	Kosovo	Benchmarking Participants	Dubai, UAE	Ontario, Canada	Quebec, Canada	Sharjah, UAE	Abu Dhabi, UAE
Singapore	607 (2.8)	621 (2.8)		607 (2.8)	614 (2.7)	608 (2.8)	607 (2.8)	607 (2.8)
Korea, Rep. of	583 (2.5)	586 (2.6)		583 (2.5)	588 (2.5)	579 (2.5)	583 (2.5)	583 (2.5)
Chinese Taipei	573 (1.7)	574 (1.9)		573 (1.7)	572 (1.8)	575 (1.7)	573 (1.7)	573 (1.7)
Türkiye (5)	570 (3.4)	580 (3.4)		570 (3.4)	571 (3.4)	578 (3.3)	570 (3.4)	570 (3.4)
England	556 (2.6)	564 (2.5)		556 (2.6)	560 (2.6)	563 (2.7)	556 (2.6)	556 (2.6)
Japan	555 (2.4)	548 (2.5)		555 (2.4)	553 (2.4)	556 (2.5)	555 (2.4)	555 (2.4)
Australia	550 (2.3)	556 (2.2)		550 (2.3)	555 (2.2)	556 (2.4)	550 (2.3)	550 (2.3)
Poland	550 (2.2)	552 (2.4)		550 (2.2)	553 (2.3)	566 (2.5)	550 (2.2)	550 (2.2)
Hong Kong SAR	545 (3.8)	548 (4.0)		545 (3.8)	546 (3.9)	550 (3.7)	545 (3.8)	545 (3.8)
Finland	542 (2.9)	545 (3.0)		542 (2.9)	544 (3.0)	550 (2.9)	542 (2.9)	542 (2.9)
Lithuania	537 (2.9)	542 (3.0)		537 (2.9)	539 (2.8)	548 (3.0)	537 (2.9)	537 (2.9)
Macao SAR	536 (1.4)	540 (1.3)		536 (1.4)	536 (1.3)	549 (1.3)	536 (1.4)	536 (1.4)
Sweden	533 (3.2)	536 (3.2)		533 (3.2)	533 (3.1)	545 (3.2)	533 (3.2)	533 (3.2)
Ireland	532 (3.2)	538 (3.3)		532 (3.2)	535 (3.2)	538 (3.4)	532 (3.2)	532 (3.2)
United States	532 (2.8)	540 (2.9)		532 (2.8)	539 (2.8)	540 (2.9)	532 (2.8)	532 (2.8)
Norway (5)	530 (2.6)	534 (2.6)		530 (2.6)	530 (2.6)	540 (2.7)	530 (2.6)	530 (2.6)
Czech Republic	526 (2.3)	532 (2.3)		526 (2.3)	532 (2.4)	544 (2.4)	526 (2.3)	526 (2.3)
Latvia	526 (3.0)	529 (3.0)		526 (3.0)	528 (3.0)	539 (3.0)	526 (3.0)	526 (3.0)
Romania	526 (4.8)	533 (5.0)		526 (4.8)	529 (4.8)	533 (5.0)	526 (4.8)	526 (4.8)
Slovenia	526 (2.3)	535 (2.5)		526 (2.3)	529 (2.5)	535 (2.6)	526 (2.3)	526 (2.3)
Hungary	524 (3.2)	528 (3.3)		524 (3.2)	527 (3.2)	533 (3.3)	524 (3.2)	524 (3.2)
Denmark	522 (2.6)	525 (2.7)		522 (2.6)	525 (2.6)	527 (2.7)	522 (2.6)	522 (2.6)
Canada	521 (2.0)	527 (2.1)		521 (2.0)	528 (2.1)	531 (2.1)	521 (2.0)	521 (2.0)
Slovak Republic	521 (3.3)	528 (3.4)		521 (3.3)	527 (3.3)	536 (3.4)	521 (3.3)	521 (3.3)
Netherlands	517 (2.9)	519 (3.2)		517 (2.9)	521 (3.1)	525 (3.4)	517 (2.9)	517 (2.9)
New Zealand	517 (2.8)	522 (3.1)		517 (2.8)	521 (3.0)	524 (3.1)	517 (2.8)	517 (2.8)
Germany	515 (2.8)	518 (3.0)		515 (2.8)	517 (2.9)	523 (3.0)	515 (2.8)	515 (2.8)
Italy	511 (2.5)	520 (2.5)		511 (2.5)	511 (2.6)	520 (2.6)	511 (2.5)	511 (2.5)
Portugal	511 (2.3)	521 (2.3)		511 (2.3)	514 (2.3)	524 (2.4)	511 (2.3)	511 (2.3)
Serbia	510 (3.2)	511 (3.4)		510 (3.2)	512 (3.2)	519 (3.3)	510 (3.2)	510 (3.2)
Spain	504 (2.1)	512 (2.2)		504 (2.1)	505 (2.2)	516 (2.3)	504 (2.1)	504 (2.1)
United Arab Emirates	495 (1.8)	500 (1.9)		495 (1.8)	499 (1.8)	501 (1.9)	495 (1.8)	495 (1.8)
Albania	491 (4.5)	500 (4.6)		491 (4.5)	491 (4.6)	490 (4.5)	491 (4.5)	491 (4.5)
Belgium (Flemish)	488 (2.6)	488 (2.7)		488 (2.6)	491 (2.7)	497 (2.8)	488 (2.6)	488 (2.6)
France	488 (3.0)	489 (3.1)		488 (3.0)	487 (3.2)	498 (3.3)	488 (3.0)	488 (3.0)
Belgium (French)	481 (2.8)	483 (3.0)		481 (2.8)	481 (2.9)	490 (3.0)	481 (2.8)	481 (2.8)
Chile	479 (2.7)	486 (2.9)		479 (2.7)	486 (2.8)	495 (2.9)	479 (2.7)	479 (2.7)
Bahrain	475 (3.9)	480 (4.2)		475 (3.9)	479 (4.1)	481 (4.1)	475 (3.9)	475 (3.9)
Qatar	472 (3.6)	479 (3.8)		472 (3.6)	473 (3.7)	477 (3.8)	472 (3.6)	472 (3.6)
Kazakhstan	467 (3.5)	468 (3.6)		467 (3.5)	470 (3.6)	468 (3.7)	467 (3.5)	467 (3.5)
Georgia	465 (3.4)	465 (3.7)		465 (3.4)	466 (3.5)	466 (3.7)	465 (3.4)	465 (3.4)
Montenegro	461 (2.0)	465 (2.1)		461 (2.0)	462 (2.0)	465 (2.1)	461 (2.0)	461 (2.0)
Armenia	457 (2.7)	454 (2.7)		457 (2.7)	456 (2.8)	454 (2.8)	457 (2.7)	457 (2.7)
Bosnia & Herzegovina	448 (3.7)	455 (3.8)		448 (3.7)	448 (4.1)	455 (4.3)	448 (3.7)	448 (3.7)
North Macedonia	439 (3.9)	442 (4.1)		439 (3.9)	436 (4.1)	436 (4.2)	439 (3.9)	439 (3.9)
Oman	433 (4.2)	435 (4.5)		433 (4.2)	434 (4.3)	436 (4.3)	433 (4.2)	433 (4.2)
Saudi Arabia	428 (4.0)	426 (4.3)		428 (4.0)	425 (4.0)	426 (4.0)	428 (4.0)	428 (4.0)
Brazil	425 (3.5)	428 (3.7)		425 (3.5)	426 (3.6)	428 (3.9)	425 (3.5)	425 (3.5)
Jordan	418 (4.9)	414 (5.2)		418 (4.9)	417 (4.9)	418 (5.1)	418 (4.9)	418 (4.9)
Uzbekistan	412 (3.5)	413 (3.8)		412 (3.5)	413 (3.7)	416 (3.8)	412 (3.5)	412 (3.5)
Kosovo	403 (3.6)	404 (4.1)		403 (3.6)	397 (3.8)	400 (4.0)	403 (3.6)	403 (3.6)
<b>International Average</b>	<b>505 (0.4)</b>	<b>509 (0.5)</b>		<b>505 (0.4)</b>	<b>506 (0.4)</b>	<b>511 (0.5)</b>	<b>505 (0.4)</b>	<b>505 (0.4)</b>
<b>Benchmarking Participants</b>								
Dubai, UAE	562 (1.8)	572 (1.9)		562 (1.8)	566 (1.8)	571 (1.9)	562 (1.8)	562 (1.8)
Ontario, Canada	525 (3.2)	532 (3.3)		525 (3.2)	533 (3.3)	536 (3.4)	525 (3.2)	525 (3.2)
Quebec, Canada	508 (2.7)	512 (2.8)		508 (2.7)	511 (2.7)	518 (2.9)	508 (2.7)	508 (2.7)
Sharjah, UAE	503 (3.9)	509 (4.0)		503 (3.9)	507 (3.9)	509 (4.0)	503 (3.9)	503 (3.9)
Abu Dhabi, UAE	446 (2.6)	448 (2.8)		446 (2.6)	450 (2.7)	450 (2.8)	446 (2.6)	446 (2.6)
<b>Number of Items (Score Points)*</b>	<b>173 (185)</b>	<b>104 (111)</b>		<b>173 (185)</b>	<b>120 (127)</b>	<b>82 (90)</b>	<b>173 (185)</b>	<b>173 (185)</b>

\* The number of items and score points are based on the number of items included in scaling the fourth-grade science achievement data.

See Chapter 9 in *TIMSS 2023 Technical Report (Methods and Procedures)* for information about items deleted or recoded for scaling.

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

### Exhibit C.3: Average Scale Scores for the Mathematics Test-Curriculum Matching Analysis

Results based on items identified by each country as addressed in its curriculum

Read down the column under a country name to compare achievement scores based on the items identified by that country. Scores on the diagonal are countries' achievement scores based on the test items they identified.

Country	Average Mathematics Scale Score based on All Items	Singapore	Chinese Taipei	Korea, Rep. of	Japan	Hong Kong SAR	England	Ireland	Czech Republic	Sweden	Lithuania
Singapore	605 (6.1)	606 (6.1)	605 (6.0)	605 (6.0)	605 (6.0)	607 (6.1)	605 (6.0)	607 (6.1)	605 (6.1)	605 (6.0)	606 (6.1)
Chinese Taipei	602 (3.1)	603 (3.1)	603 (3.1)	602 (3.1)	601 (3.1)	604 (3.1)	602 (3.1)	602 (3.1)	603 (3.1)	602 (3.1)	604 (3.1)
Korea, Rep. of	596 (3.0)	596 (3.1)	596 (3.0)	597 (3.1)	596 (3.1)	598 (3.1)	595 (3.0)	595 (3.0)	596 (3.0)	596 (3.1)	596 (3.0)
Japan	595 (3.0)	594 (3.0)	594 (3.0)	596 (3.0)	599 (3.1)	592 (3.1)	594 (3.0)	593 (3.1)	593 (3.1)	596 (3.1)	592 (3.1)
Hong Kong SAR	575 (5.0)	575 (5.1)	575 (5.0)	574 (5.0)	575 (5.0)	577 (5.1)	575 (5.0)	577 (5.1)	576 (5.0)	574 (5.0)	576 (5.0)
England	525 (4.5)	524 (4.5)	525 (4.5)	526 (4.5)	527 (4.6)	524 (4.5)	526 (4.5)	525 (4.6)	524 (4.5)	526 (4.5)	524 (4.6)
Ireland	522 (2.7)	522 (2.7)	522 (2.7)	522 (2.8)	524 (2.8)	520 (2.7)	523 (2.7)	523 (2.7)	519 (2.7)	522 (2.8)	519 (2.8)
Czech Republic	518 (2.3)	518 (2.3)	518 (2.3)	518 (2.3)	518 (2.3)	522 (2.3)	519 (2.3)	518 (2.3)	521 (2.3)	518 (2.3)	521 (2.3)
Sweden	517 (2.4)	517 (2.4)	517 (2.4)	519 (2.4)	521 (2.5)	516 (2.4)	519 (2.5)	518 (2.4)	516 (2.4)	518 (2.4)	516 (2.4)
Lithuania	514 (3.1)	514 (3.1)	514 (3.2)	513 (3.2)	514 (3.2)	517 (3.1)	514 (3.2)	515 (3.1)	516 (3.1)	514 (3.1)	517 (3.1)
Austria	512 (2.3)	512 (2.3)	512 (2.3)	512 (2.3)	512 (2.3)	516 (2.3)	513 (2.3)	512 (2.3)	515 (2.3)	512 (2.3)	516 (2.3)
Australia	509 (3.5)	508 (3.5)	509 (3.5)	509 (3.5)	511 (3.5)	506 (3.5)	510 (3.5)	509 (3.5)	506 (3.5)	510 (3.5)	506 (3.5)
Türkiye	509 (4.3)	508 (4.3)	509 (4.3)	508 (4.3)	509 (4.4)	507 (4.3)	509 (4.2)	508 (4.3)	507 (4.3)	509 (4.3)	506 (4.3)
Hungary	506 (3.7)	506 (3.8)	506 (3.7)	506 (3.8)	507 (3.8)	509 (3.8)	507 (3.8)	506 (3.7)	508 (3.8)	506 (3.7)	509 (3.8)
Finland	504 (2.6)	503 (2.6)	504 (2.6)	505 (2.6)	506 (2.6)	504 (2.6)	505 (2.6)	504 (2.6)	504 (2.6)	504 (2.6)	504 (2.6)
Italy	501 (3.0)	501 (3.0)	501 (3.0)	500 (3.0)	499 (2.9)	502 (3.0)	501 (3.0)	501 (3.0)	501 (3.0)	500 (2.9)	501 (3.0)
Norway (9)	501 (2.3)	501 (2.2)	501 (2.3)	501 (2.3)	503 (2.3)	498 (2.2)	503 (2.3)	501 (2.3)	499 (2.2)	501 (2.3)	498 (2.2)
Malta	499 (1.2)	499 (1.2)	499 (1.2)	499 (1.2)	500 (1.2)	499 (1.2)	500 (1.2)	501 (1.2)	499 (1.2)	500 (1.2)	499 (1.2)
Romania	496 (4.9)	497 (4.9)	496 (4.9)	494 (4.8)	493 (4.8)	499 (4.8)	494 (4.8)	498 (4.9)	498 (4.8)	495 (4.8)	497 (4.8)
Cyprus	494 (2.7)	494 (2.7)	494 (2.7)	494 (2.7)	493 (2.7)	495 (2.7)	492 (2.7)	495 (2.7)	494 (2.7)	493 (2.7)	494 (2.7)
United Arab Emirates	489 (1.7)	489 (1.7)	488 (1.7)	488 (1.7)	487 (1.7)	489 (1.7)	487 (1.7)	489 (1.7)	489 (1.7)	488 (1.7)	489 (1.7)
United States	488 (4.2)	487 (4.2)	488 (4.2)	488 (4.2)	489 (4.2)	487 (4.2)	488 (4.2)	487 (4.2)	487 (4.2)	489 (4.2)	488 (4.2)
Israel	487 (3.9)	487 (3.9)	487 (3.8)	487 (3.8)	488 (3.8)	489 (3.9)	486 (3.8)	487 (3.8)	489 (3.8)	488 (3.8)	488 (3.8)
New Zealand	485 (4.1)	485 (4.0)	486 (4.1)	486 (4.1)	487 (4.1)	484 (4.1)	487 (4.1)	485 (4.1)	484 (4.1)	486 (4.1)	484 (4.1)
France	479 (3.1)	478 (3.1)	479 (3.1)	479 (3.1)	479 (3.1)	478 (3.1)	480 (3.1)	478 (3.2)	478 (3.1)	479 (3.1)	478 (3.1)
Portugal	475 (2.7)	475 (2.7)	475 (2.7)	475 (2.7)	475 (2.7)	478 (2.7)	476 (2.7)	475 (2.7)	477 (2.7)	476 (2.7)	477 (2.7)
Georgia	467 (3.2)	468 (3.2)	467 (3.2)	466 (3.2)	465 (3.2)	470 (3.2)	466 (3.2)	468 (3.2)	469 (3.2)	466 (3.2)	468 (3.2)
Kazakhstan	454 (3.5)	455 (3.5)	454 (3.5)	453 (3.5)	452 (3.5)	458 (3.5)	454 (3.5)	455 (3.5)	456 (3.5)	454 (3.5)	456 (3.6)
Qatar	451 (4.2)	451 (4.2)	451 (4.2)	451 (4.3)	451 (4.3)	452 (4.2)	452 (4.2)	452 (4.2)	452 (4.2)	452 (4.3)	452 (4.2)
Bahrain	426 (2.4)	427 (2.4)	426 (2.4)	426 (2.5)	426 (2.5)	427 (2.4)	427 (2.4)	427 (2.4)	427 (2.4)	427 (2.4)	426 (2.4)
Uzbekistan	421 (4.3)	423 (4.3)	421 (4.3)	420 (4.3)	419 (4.3)	425 (4.3)	420 (4.2)	422 (4.3)	423 (4.3)	420 (4.3)	423 (4.4)
Chile	416 (3.2)	416 (3.2)	416 (3.2)	415 (3.2)	416 (3.3)	416 (3.2)	417 (3.2)	414 (3.2)	416 (3.2)	416 (3.2)	416 (3.2)
Malaysia	411 (3.5)	411 (3.5)	411 (3.5)	410 (3.5)	411 (3.5)	413 (3.5)	412 (3.5)	411 (3.5)	412 (3.5)	411 (3.5)	413 (3.5)
Oman	411 (2.7)	412 (2.7)	411 (2.7)	411 (2.7)	412 (2.7)	411 (2.7)	410 (2.7)	412 (2.7)	410 (2.7)	411 (2.7)	410 (2.7)
Saudi Arabia	397 (3.3)	398 (3.2)	397 (3.3)	396 (3.3)	397 (3.2)	397 (3.2)	397 (3.2)	399 (3.2)	396 (3.2)	397 (3.2)	396 (3.3)
Jordan	388 (3.2)	389 (3.2)	388 (3.2)	388 (3.2)	387 (3.2)	391 (3.2)	389 (3.2)	390 (3.2)	389 (3.2)	388 (3.2)	389 (3.2)
Palestinian Nat'l Auth.	382 (3.0)	383 (3.0)	382 (3.0)	380 (3.0)	379 (3.0)	383 (2.9)	382 (2.9)	383 (2.9)	382 (3.0)	382 (2.9)	382 (2.9)
Brazil	378 (2.8)	379 (2.8)	378 (2.8)	377 (2.8)	378 (2.8)	380 (2.7)	379 (2.7)	379 (2.7)	379 (2.7)	379 (2.8)	379 (2.7)
Morocco	378 (3.0)	379 (3.0)	378 (3.0)	378 (3.0)	378 (3.0)	381 (3.0)	377 (2.9)	378 (3.0)	380 (3.0)	378 (3.0)	380 (3.0)
<b>International Average</b>	<b>484 (0.5)</b>	<b>484 (0.5)</b>	<b>484 (0.5)</b>	<b>484 (0.5)</b>	<b>484 (0.5)</b>	<b>485 (0.5)</b>	<b>484 (0.5)</b>	<b>485 (0.5)</b>	<b>484 (0.5)</b>	<b>484 (0.5)</b>	<b>484 (0.5)</b>
<b>Benchmarking Participants</b>											
Dubai, UAE	546 (2.8)	546 (2.8)	546 (2.8)	545 (2.8)	544 (2.8)	546 (2.7)	545 (2.8)	547 (2.8)	546 (2.7)	546 (2.8)	545 (2.8)
Sharjah, UAE	496 (4.8)	496 (4.8)	496 (4.8)	495 (4.8)	493 (4.7)	497 (4.8)	494 (4.8)	496 (4.8)	496 (4.8)	495 (4.8)	496 (4.8)
Abu Dhabi, UAE	454 (2.8)	454 (2.8)	454 (2.8)	453 (2.8)	453 (2.8)	454 (2.8)	453 (2.8)	454 (2.8)	454 (2.8)	454 (2.8)	454 (2.8)
<b>Number of Items (Score Points)*</b>	<b>200 (207)</b>	<b>195 (202)</b>	<b>199 (206)</b>	<b>188 (195)</b>	<b>177 (182)</b>	<b>183 (190)</b>	<b>180 (187)</b>	<b>177 (183)</b>	<b>188 (195)</b>	<b>186 (191)</b>	<b>181 (188)</b>

\* The number of items and score points are based on the number of items included in scaling the eighth-grade mathematics achievement data. See Chapter 9 in *TIMSS 2023 Technical Report (Methods and Procedures)* for information about items deleted or recoded for scaling. ( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

**Exhibit C.3: Average Scale Scores for the Mathematics Test-Curriculum Matching Analysis**

Results based on items identified by each country as addressed in its curriculum

(Continued)

Country	Average Mathematics Scale Score based on All Items	Austria	Australia	Türkiye	Hungary	Finland	Italy	Norway (9)	Malta	Romania	Cyprus
Singapore	605 (6.1)	606 (6.1)	605 (6.0)	606 (6.1)	606 (6.1)	607 (6.1)	607 (6.1)	606 (6.0)	606 (6.0)	605 (6.0)	608 (6.1)
Chinese Taipei	602 (3.1)	603 (3.1)	603 (3.1)	603 (3.1)	603 (3.1)	602 (3.1)	603 (3.1)	603 (3.1)	603 (3.1)	602 (3.1)	603 (3.1)
Korea, Rep. of	596 (3.0)	596 (3.1)	595 (3.0)	596 (3.1)	596 (3.1)	595 (3.1)	595 (3.1)	596 (3.0)	596 (3.1)	596 (3.1)	596 (3.1)
Japan	595 (3.0)	593 (3.1)	595 (3.1)	594 (3.1)	595 (3.1)	595 (3.0)	594 (3.1)	596 (3.1)	594 (3.1)	595 (3.0)	594 (3.1)
Hong Kong SAR	575 (5.0)	577 (5.1)	575 (5.0)	575 (5.1)	575 (5.0)	576 (5.0)	575 (5.0)	575 (5.0)	575 (5.0)	575 (5.0)	578 (5.1)
Ireland	525 (4.5)	524 (4.5)	526 (4.5)	525 (4.5)	525 (4.5)	525 (4.6)	525 (4.5)	525 (4.5)	525 (4.6)	525 (4.5)	526 (4.5)
Czech Republic	522 (2.7)	519 (2.8)	522 (2.8)	521 (2.7)	522 (2.7)	522 (2.7)	522 (2.8)	522 (2.7)	522 (2.7)	522 (2.7)	523 (2.7)
Sweden	518 (2.3)	522 (2.3)	518 (2.3)	519 (2.3)	518 (2.3)	518 (2.3)	519 (2.3)	518 (2.3)	518 (2.3)	518 (2.3)	519 (2.3)
Lithuania	517 (2.4)	516 (2.4)	517 (2.4)	517 (2.4)	517 (2.4)	518 (2.4)	517 (2.4)	518 (2.4)	517 (2.4)	517 (2.4)	517 (2.4)
Austria	514 (3.1)	516 (2.3)	512 (2.3)	513 (2.3)	512 (2.3)	512 (2.3)	513 (2.3)	512 (2.3)	513 (2.3)	512 (2.3)	513 (2.3)
Australia	512 (2.3)	516 (2.3)	512 (2.3)	513 (2.3)	512 (2.3)	512 (2.3)	513 (2.3)	512 (2.3)	513 (2.3)	512 (2.3)	513 (2.3)
Türkiye	509 (3.5)	506 (3.5)	509 (3.5)	508 (3.5)	509 (3.5)	509 (3.5)	509 (3.5)	509 (3.5)	509 (3.5)	509 (3.5)	509 (3.5)
Hungary	509 (4.3)	506 (4.3)	510 (4.4)	508 (4.3)	509 (4.3)	508 (4.3)	508 (4.3)	508 (4.3)	508 (4.3)	509 (4.3)	509 (4.3)
Finland	506 (3.7)	509 (3.8)	506 (3.7)	507 (3.7)	506 (3.7)	506 (3.7)	507 (3.7)	506 (3.7)	506 (3.7)	506 (3.8)	506 (3.7)
Italy	504 (2.6)	504 (2.5)	504 (2.6)	504 (2.5)	504 (2.6)	504 (2.6)	504 (2.5)	504 (2.6)	504 (2.6)	504 (2.6)	504 (2.6)
Norway (9)	501 (3.0)	501 (3.0)	500 (3.0)	501 (3.0)	501 (3.0)	501 (3.0)	501 (3.0)	501 (3.0)	501 (3.0)	501 (3.0)	502 (3.0)
Malta	501 (2.3)	499 (2.2)	500 (2.2)	500 (2.2)	501 (2.2)	501 (2.2)	501 (2.2)	501 (2.3)	500 (2.3)	501 (2.3)	500 (2.2)
Romania	499 (1.2)	499 (1.2)	500 (1.2)	499 (1.2)	500 (1.2)	500 (1.2)	500 (1.2)	499 (1.2)	500 (1.2)	499 (1.2)	501 (1.2)
Cyprus	496 (4.9)	497 (4.8)	496 (4.8)	496 (4.9)	496 (4.8)	495 (4.9)	496 (4.9)	496 (4.9)	496 (4.9)	496 (4.9)	498 (4.9)
United Arab Emirates	494 (2.7)	494 (2.7)	494 (2.7)	494 (2.7)	493 (2.7)	494 (2.7)	494 (2.7)	493 (2.7)	494 (2.7)	494 (2.7)	496 (2.7)
United States	489 (1.7)	489 (1.7)	489 (1.7)	489 (1.7)	489 (1.7)	488 (1.7)	488 (1.7)	488 (1.7)	489 (1.7)	489 (1.7)	489 (1.7)
Israel	488 (4.2)	487 (4.2)	488 (4.2)	488 (4.2)	488 (4.2)	488 (4.2)	488 (4.2)	488 (4.2)	488 (4.2)	488 (4.2)	488 (4.2)
New Zealand	487 (3.9)	489 (3.9)	487 (3.9)	488 (3.8)	488 (3.8)	488 (3.9)	488 (3.8)	488 (3.8)	487 (3.8)	487 (3.9)	488 (3.8)
France	485 (4.1)	484 (4.1)	485 (4.1)	485 (4.1)	486 (4.1)	486 (4.1)	486 (4.1)	486 (4.1)	485 (4.1)	486 (4.1)	486 (4.1)
Portugal	479 (3.1)	478 (3.2)	478 (3.1)	478 (3.1)	479 (3.1)	479 (3.1)	479 (3.1)	478 (3.1)	479 (3.1)	479 (3.1)	479 (3.1)
Georgia	475 (2.7)	478 (2.7)	475 (2.7)	476 (2.7)	476 (2.7)	475 (2.7)	476 (2.7)	475 (2.7)	475 (2.7)	476 (2.7)	476 (2.7)
Kazakhstan	467 (3.2)	469 (3.2)	466 (3.2)	467 (3.2)	467 (3.2)	466 (3.2)	466 (3.2)	466 (3.2)	467 (3.2)	467 (3.2)	467 (3.2)
Qatar	454 (3.5)	457 (3.5)	454 (3.5)	454 (3.5)	454 (3.5)	453 (3.5)	454 (3.5)	454 (3.5)	454 (3.5)	454 (3.5)	456 (3.5)
Bahrain	451 (4.2)	452 (4.2)	452 (4.3)	452 (4.2)	452 (4.3)	451 (4.3)	452 (4.3)	452 (4.2)	452 (4.2)	451 (4.2)	452 (4.2)
Uzbekistan	426 (2.4)	427 (2.4)	427 (2.5)	426 (2.4)	426 (2.4)	426 (2.4)	426 (2.4)	427 (2.4)	427 (2.5)	426 (2.4)	427 (2.5)
Chile	421 (4.3)	423 (4.3)	421 (4.4)	422 (4.3)	421 (4.3)	420 (4.3)	421 (4.3)	421 (4.3)	421 (4.3)	421 (4.3)	422 (4.3)
Malaysia	416 (3.2)	417 (3.2)	415 (3.3)	416 (3.2)	416 (3.2)	416 (3.2)	416 (3.2)	416 (3.2)	416 (3.2)	416 (3.2)	416 (3.3)
Oman	411 (3.5)	413 (3.5)	411 (3.5)	411 (3.5)	411 (3.5)	411 (3.5)	411 (3.5)	412 (3.5)	411 (3.5)	411 (3.5)	412 (3.5)
Saudi Arabia	411 (2.7)	410 (2.7)	411 (2.7)	411 (2.7)	411 (2.7)	411 (2.7)	411 (2.7)	411 (2.7)	412 (2.7)	411 (2.7)	412 (2.7)
Jordan	397 (3.3)	396 (3.2)	397 (3.3)	397 (3.2)	397 (3.3)	397 (3.2)	397 (3.3)	397 (3.2)	398 (3.2)	397 (3.3)	398 (3.2)
Palestinian Nat'l Auth.	388 (3.2)	389 (3.2)	389 (3.2)	388 (3.2)	388 (3.2)	388 (3.2)	388 (3.2)	388 (3.2)	389 (3.2)	388 (3.2)	390 (3.1)
Brazil	382 (3.0)	382 (2.9)	382 (3.0)	382 (2.9)	382 (3.0)	381 (3.0)	381 (3.0)	382 (2.9)	382 (3.0)	382 (3.0)	383 (2.9)
Morocco	378 (2.8)	379 (2.7)	378 (2.8)	379 (2.7)	378 (2.8)	378 (2.8)	378 (2.8)	378 (2.8)	378 (2.8)	378 (2.8)	379 (2.7)
International Average	378 (3.0)	380 (3.0)	378 (3.0)	379 (3.0)	378 (3.0)	378 (3.0)	378 (3.0)	377 (3.0)	379 (3.0)	378 (3.0)	379 (3.0)
<b>Benchmarking Participants</b>	484 (0.5)	485 (0.5)	484 (0.5)	484 (0.5)	484 (0.5)	484 (0.5)	484 (0.5)	484 (0.5)	484 (0.5)	484 (0.5)	485 (0.5)
Dubai, UAE	546 (2.8)	545 (2.7)	546 (2.8)	546 (2.8)	546 (2.8)	546 (2.8)	546 (2.8)	545 (2.7)	546 (2.7)	546 (2.8)	546 (2.8)
Sharjah, UAE	496 (4.8)	496 (4.8)	496 (4.8)	496 (4.8)	496 (4.8)	495 (4.8)	495 (4.8)	495 (4.8)	496 (4.8)	496 (4.8)	496 (4.8)
Abu Dhabi, UAE	454 (2.8)	454 (2.8)	454 (2.8)	454 (2.8)	454 (2.8)	454 (2.8)	454 (2.8)	454 (2.8)	454 (2.8)	454 (2.8)	455 (2.8)
<b>Number of Items (Score Points)*</b>	200 (207)	187 (194)	186 (192)	193 (200)	197 (204)	194 (201)	191 (198)	190 (196)	194 (201)	200 (207)	175 (182)

\* The number of items and score points are based on the number of items included in scaling the eighth-grade mathematics achievement data. See Chapter 9 in TIMSS 2023 Technical Report (Methods and Procedures) for information about items deleted or recoded for scaling. ( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

**Exhibit C.3: Average Scale Scores for the Mathematics Test-Curriculum Matching Analysis**

Results based on items identified by each country as addressed in its curriculum

(Continued)

Country	Average Mathematics Scale Score based on All Items	United Arab Emirates	United States	Israel	New Zealand	France	Portugal	Georgia	Kazakhstan	Qatar	Bahrain
Singapore	605 (6.1)	605 (6.1)	605 (6.1)	604 (6.2)	605 (6.0)	606 (6.1)	605 (6.1)	606 (6.0)	605 (6.1)	605 (6.0)	605 (6.0)
Chinese Taipei	602 (3.1)	602 (3.1)	603 (3.1)	601 (3.1)	602 (3.1)	604 (3.1)	604 (3.1)	605 (3.1)	602 (3.1)	602 (3.1)	602 (3.1)
Korea, Rep. of	596 (3.0)	596 (3.0)	596 (3.0)	594 (3.1)	594 (3.1)	595 (3.0)	597 (3.0)	597 (3.1)	596 (3.0)	596 (3.1)	596 (3.1)
Japan	595 (3.0)	595 (3.0)	595 (3.1)	592 (3.1)	596 (3.1)	596 (3.0)	593 (3.1)	594 (3.0)	595 (3.0)	595 (3.0)	595 (3.0)
Hong Kong SAR	575 (5.0)	575 (5.0)	575 (5.0)	576 (5.1)	573 (5.0)	575 (5.1)	576 (5.0)	576 (5.1)	575 (5.0)	575 (5.0)	575 (5.0)
England	525 (4.5)	525 (4.5)	525 (4.5)	523 (4.5)	527 (4.6)	525 (4.6)	524 (4.5)	525 (4.5)	525 (4.5)	525 (4.5)	525 (4.5)
Ireland	522 (2.7)	522 (2.7)	522 (2.7)	519 (2.8)	524 (2.8)	522 (2.7)	519 (2.8)	521 (2.7)	522 (2.7)	521 (2.7)	522 (2.7)
Czech Republic	518 (2.3)	518 (2.3)	518 (2.3)	521 (2.3)	518 (2.3)	518 (2.3)	521 (2.3)	518 (2.3)	518 (2.3)	518 (2.3)	518 (2.3)
Sweden	517 (2.4)	517 (2.4)	517 (2.4)	521 (2.5)	519 (2.5)	517 (2.4)	517 (2.4)	517 (2.4)	517 (2.4)	517 (2.4)	517 (2.4)
Lithuania	514 (3.1)	514 (3.1)	514 (3.1)	517 (3.2)	513 (3.1)	514 (3.1)	516 (3.1)	513 (3.2)	514 (3.1)	514 (3.2)	514 (3.2)
Austria	512 (2.3)	512 (2.3)	512 (2.3)	516 (2.4)	513 (2.3)	512 (2.3)	515 (2.3)	512 (2.3)	512 (2.3)	512 (2.3)	512 (2.3)
Australia	509 (3.5)	509 (3.5)	509 (3.5)	507 (3.5)	512 (3.6)	510 (3.5)	506 (3.5)	508 (3.5)	509 (3.5)	509 (3.5)	509 (3.5)
Türkiye	509 (4.3)	509 (4.3)	509 (4.3)	506 (4.3)	510 (4.3)	509 (4.3)	506 (4.3)	509 (4.3)	509 (4.3)	509 (4.3)	509 (4.3)
Hungary	506 (3.7)	506 (3.7)	506 (3.7)	508 (3.8)	507 (3.8)	506 (3.8)	508 (3.8)	506 (3.7)	506 (3.7)	506 (3.8)	506 (3.8)
Finland	504 (2.6)	504 (2.6)	504 (2.6)	506 (2.6)	505 (2.6)	504 (2.6)	505 (2.6)	503 (2.5)	504 (2.6)	504 (2.5)	504 (2.6)
Italy	501 (3.0)	501 (3.0)	501 (3.0)	502 (3.1)	500 (3.0)	501 (3.0)	501 (3.0)	501 (3.0)	501 (3.0)	500 (3.0)	501 (3.0)
Norway (9)	501 (2.3)	501 (2.3)	501 (2.2)	502 (2.3)	502 (2.3)	501 (2.3)	499 (2.2)	500 (2.2)	501 (2.3)	500 (2.2)	501 (2.3)
Malta	499 (1.2)	499 (1.2)	499 (1.2)	499 (1.2)	500 (1.2)	500 (1.2)	498 (1.2)	500 (1.2)	499 (1.2)	500 (1.2)	499 (1.2)
Romania	496 (4.9)	496 (4.9)	496 (4.9)	498 (4.8)	492 (4.8)	495 (4.8)	498 (4.8)	497 (4.8)	496 (4.9)	496 (4.8)	496 (4.8)
Cyprus	494 (2.7)	494 (2.7)	494 (2.7)	496 (2.7)	491 (2.7)	493 (2.7)	494 (2.7)	494 (2.7)	494 (2.7)	494 (2.7)	494 (2.7)
United Arab Emirates	489 (1.7)	489 (1.7)	489 (1.7)	489 (1.7)	488 (1.7)	488 (1.7)	489 (1.7)	489 (1.7)	489 (1.7)	489 (1.7)	488 (1.7)
United States	488 (4.2)	488 (4.2)	488 (4.2)	487 (4.2)	489 (4.2)	488 (4.2)	487 (4.2)	487 (4.2)	488 (4.2)	488 (4.2)	488 (4.2)
Israel	487 (3.9)	487 (3.9)	487 (3.9)	490 (3.9)	486 (3.8)	487 (3.8)	489 (3.8)	488 (3.9)	487 (3.9)	487 (3.8)	487 (3.8)
New Zealand	485 (4.1)	485 (4.1)	485 (4.1)	484 (4.1)	488 (4.1)	486 (4.1)	484 (4.1)	485 (4.1)	485 (4.1)	486 (4.1)	486 (4.1)
France	479 (3.1)	479 (3.1)	479 (3.1)	480 (3.2)	480 (3.2)	479 (3.1)	478 (3.1)	477 (3.1)	479 (3.1)	479 (3.2)	479 (3.1)
Portugal	475 (2.7)	475 (2.7)	475 (2.7)	479 (2.8)	476 (2.7)	476 (2.7)	478 (2.7)	475 (2.7)	475 (2.7)	475 (2.7)	475 (2.7)
Georgia	467 (3.2)	467 (3.2)	467 (3.2)	467 (3.2)	465 (3.2)	466 (3.2)	469 (3.2)	469 (3.2)	467 (3.2)	467 (3.2)	467 (3.2)
Kazakhstan	454 (3.5)	454 (3.5)	454 (3.5)	457 (3.6)	453 (3.5)	454 (3.5)	457 (3.5)	455 (3.5)	454 (3.5)	454 (3.5)	454 (3.5)
Qatar	451 (4.2)	451 (4.2)	451 (4.3)	453 (4.2)	452 (4.3)	452 (4.2)	452 (4.2)	451 (4.2)	451 (4.2)	452 (4.2)	451 (4.2)
Bahrain	426 (2.4)	426 (2.4)	427 (2.4)	427 (2.5)	427 (2.4)	426 (2.4)	426 (2.4)	428 (2.4)	426 (2.4)	426 (2.4)	427 (2.4)
Uzbekistan	421 (4.3)	421 (4.3)	421 (4.3)	423 (4.4)	417 (4.3)	421 (4.3)	424 (4.3)	425 (4.3)	421 (4.3)	421 (4.3)	421 (4.3)
Chile	416 (3.2)	416 (3.2)	416 (3.2)	417 (3.3)	418 (3.3)	416 (3.3)	417 (3.2)	415 (3.2)	416 (3.2)	416 (3.2)	416 (3.2)
Malaysia	411 (3.5)	411 (3.5)	411 (3.5)	411 (3.5)	411 (3.5)	411 (3.5)	412 (3.5)	411 (3.5)	411 (3.5)	411 (3.5)	411 (3.5)
Oman	411 (2.7)	411 (2.7)	411 (2.7)	411 (2.7)	411 (2.7)	411 (2.7)	409 (2.7)	412 (2.7)	411 (2.7)	411 (2.7)	411 (2.7)
Saudi Arabia	397 (3.3)	397 (3.3)	397 (3.3)	398 (3.3)	397 (3.3)	397 (3.2)	396 (3.2)	398 (3.2)	397 (3.3)	397 (3.2)	397 (3.3)
Jordan	388 (3.2)	388 (3.2)	388 (3.2)	390 (3.3)	387 (3.2)	389 (3.2)	389 (3.2)	392 (3.2)	388 (3.2)	388 (3.2)	388 (3.2)
Palestinian Nat'l Auth.	382 (3.0)	382 (3.0)	382 (3.0)	382 (3.0)	380 (3.0)	382 (3.0)	382 (2.9)	385 (3.0)	382 (3.0)	382 (3.0)	382 (3.0)
Brazil	378 (2.8)	378 (2.8)	378 (2.8)	379 (2.8)	378 (2.8)	379 (2.7)	380 (2.7)	379 (2.8)	378 (2.8)	378 (2.8)	378 (2.8)
Morocco	378 (3.0)	378 (3.0)	378 (3.0)	379 (3.1)	377 (3.0)	379 (3.0)	380 (3.0)	379 (3.0)	378 (3.0)	378 (3.0)	378 (3.0)
International Average	484 (0.5)	484 (0.5)	484 (0.5)	485 (0.6)	484 (0.5)	484 (0.5)	485 (0.5)	485 (0.5)	484 (0.5)	484 (0.5)	484 (0.5)
<b>Benchmarking Participants</b>											
Dubai, UAE	546 (2.8)	546 (2.8)	546 (2.8)	545 (2.8)	545 (2.8)	546 (2.8)	545 (2.7)	546 (2.8)	546 (2.8)	546 (2.8)	546 (2.8)
Sharjah, UAE	496 (4.8)	496 (4.8)	496 (4.8)	495 (4.8)	494 (4.7)	495 (4.8)	496 (4.8)	496 (4.8)	496 (4.8)	496 (4.8)	495 (4.8)
Abu Dhabi, UAE	454 (2.8)	454 (2.8)	454 (2.8)	454 (2.8)	453 (2.8)	454 (2.8)	454 (2.8)	455 (2.8)	454 (2.8)	454 (2.8)	454 (2.8)
<b>Number of Items (Score Points)*</b>	<b>200 (207)</b>	<b>200 (207)</b>	<b>200 (207)</b>	<b>171 (178)</b>	<b>174 (180)</b>	<b>186 (193)</b>	<b>188 (195)</b>	<b>185 (191)</b>	<b>200 (207)</b>	<b>195 (202)</b>	<b>199 (206)</b>

\* The number of items and score points are based on the number of items included in scaling the eighth-grade mathematics achievement data. See Chapter 9 in *TIMSS 2023 Technical Report (Methods and Procedures)* for information about items deleted or recoded for scaling. ( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

**Exhibit C.3: Average Scale Scores for the Mathematics Test-Curriculum Matching Analysis**

Results based on items identified by each country as addressed in its curriculum

(Continued)

Country	Average Mathematics Scale Score based on All Items	Uzbekistan	Chile	Malaysia	Oman	Saudi Arabia	Jordan	Palestinian Nat'l Auth.	Brazil	Morocco
Singapore	605 (6.1)	605 (6.1)	606 (6.1)	606 (6.0)	605 (6.1)	605 (6.0)	605 (6.1)	605 (6.0)	605 (6.0)	607 (6.0)
Chinese Taipei	602 (3.1)	602 (3.1)	603 (3.1)	603 (3.1)	602 (3.1)	602 (3.1)	602 (3.1)	602 (3.1)	604 (3.1)	606 (3.1)
Korea, Rep. of	596 (3.0)	596 (3.1)	596 (3.0)	595 (3.0)	596 (3.1)	596 (3.0)	596 (3.0)	596 (3.0)	596 (3.0)	599 (3.0)
Japan	595 (3.0)	595 (3.0)	595 (3.0)	594 (3.0)	595 (3.0)	595 (3.0)	595 (3.0)	594 (3.1)	593 (3.0)	593 (3.1)
Hong Kong SAR	575 (5.0)	575 (5.0)	575 (5.0)	575 (5.0)	575 (5.0)	575 (5.1)	575 (5.0)	575 (5.1)	577 (4.9)	580 (5.1)
England	525 (4.5)	525 (4.5)	525 (4.5)	525 (4.5)	525 (4.5)	525 (4.5)	525 (4.5)	525 (4.5)	526 (4.5)	524 (4.5)
Ireland	522 (2.7)	522 (2.7)	522 (2.7)	522 (2.7)	522 (2.7)	522 (2.7)	522 (2.7)	522 (2.7)	524 (2.7)	519 (2.7)
Czech Republic	518 (2.3)	518 (2.3)	518 (2.3)	518 (2.3)	518 (2.3)	518 (2.3)	518 (2.3)	519 (2.3)	519 (2.3)	522 (2.3)
Sweden	517 (2.4)	517 (2.4)	517 (2.4)	518 (2.4)	517 (2.4)	518 (2.4)	517 (2.4)	517 (2.4)	519 (2.4)	515 (2.4)
Lithuania	514 (3.1)	514 (3.1)	514 (3.2)	513 (3.2)	514 (3.1)	514 (3.2)	514 (3.1)	514 (3.2)	514 (3.2)	517 (3.1)
Austria	512 (2.3)	512 (2.3)	512 (2.3)	512 (2.3)	512 (2.3)	512 (2.3)	512 (2.3)	513 (2.3)	513 (2.3)	516 (2.3)
Australia	509 (3.5)	509 (3.5)	509 (3.5)	509 (3.5)	509 (3.5)	509 (3.5)	509 (3.5)	509 (3.5)	509 (3.5)	505 (3.5)
Türkiye	509 (4.3)	509 (4.3)	509 (4.3)	509 (4.3)	509 (4.3)	509 (4.3)	509 (4.3)	508 (4.3)	511 (4.3)	505 (4.4)
Hungary	506 (3.7)	506 (3.7)	506 (3.8)	506 (3.7)	506 (3.7)	506 (3.7)	506 (3.7)	507 (3.7)	507 (3.7)	508 (3.8)
Finland	504 (2.6)	504 (2.6)	504 (2.6)	503 (2.6)	504 (2.6)	504 (2.6)	504 (2.6)	504 (2.6)	505 (2.6)	505 (2.6)
Italy	501 (3.0)	501 (3.0)	501 (3.0)	500 (3.0)	501 (3.0)	500 (3.0)	501 (3.0)	501 (3.0)	502 (3.0)	503 (3.0)
Norway (9)	501 (2.3)	501 (2.2)	501 (2.2)	501 (2.2)	501 (2.2)	501 (2.3)	501 (2.3)	501 (2.2)	502 (2.2)	497 (2.2)
Malta	499 (1.2)	499 (1.2)	499 (1.2)	500 (1.2)	499 (1.2)	499 (1.2)	499 (1.2)	499 (1.2)	500 (1.2)	499 (1.2)
Romania	496 (4.9)	496 (4.9)	496 (4.9)	496 (4.9)	496 (4.9)	495 (4.9)	496 (4.9)	496 (4.9)	497 (4.8)	500 (4.9)
Cyprus	494 (2.7)	494 (2.7)	494 (2.7)	494 (2.7)	494 (2.7)	494 (2.7)	494 (2.7)	494 (2.7)	494 (2.7)	494 (2.7)
United Arab Emirates	489 (1.7)	489 (1.7)	489 (1.7)	488 (1.7)	489 (1.7)	488 (1.7)	489 (1.7)	489 (1.7)	489 (1.7)	491 (1.7)
United States	488 (4.2)	488 (4.2)	488 (4.2)	488 (4.2)	488 (4.2)	488 (4.2)	488 (4.2)	489 (4.2)	488 (4.2)	488 (4.2)
Israel	487 (3.9)	487 (3.9)	487 (3.9)	488 (3.8)	487 (3.9)	487 (3.9)	487 (3.9)	488 (3.9)	488 (3.8)	489 (3.9)
New Zealand	485 (4.1)	486 (4.1)	486 (4.1)	486 (4.0)	485 (4.1)	486 (4.1)	485 (4.1)	485 (4.1)	486 (4.1)	483 (4.1)
France	479 (3.1)	479 (3.1)	479 (3.2)	479 (3.1)	479 (3.1)	479 (3.1)	479 (3.1)	479 (3.1)	479 (3.1)	478 (3.1)
Portugal	475 (2.7)	476 (2.7)	476 (2.7)	475 (2.7)	475 (2.7)	475 (2.7)	475 (2.7)	475 (2.7)	473 (2.6)	476 (2.7)
Georgia	467 (3.2)	467 (3.2)	467 (3.2)	466 (3.2)	467 (3.2)	467 (3.2)	467 (3.2)	467 (3.2)	468 (3.2)	472 (3.3)
Kazakhstan	454 (3.5)	454 (3.5)	454 (3.5)	453 (3.5)	454 (3.5)	454 (3.5)	454 (3.5)	455 (3.5)	455 (3.5)	458 (3.5)
Qatar	451 (4.2)	451 (4.2)	451 (4.3)	452 (4.2)	451 (4.2)	451 (4.2)	451 (4.2)	452 (4.2)	451 (4.1)	454 (4.2)
Bahrain	426 (2.4)	427 (2.4)	426 (2.5)	426 (2.4)	426 (2.4)	426 (2.4)	426 (2.4)	427 (2.4)	428 (2.5)	428 (2.4)
Uzbekistan	421 (4.3)	421 (4.3)	421 (4.3)	420 (4.3)	421 (4.3)	421 (4.3)	421 (4.3)	421 (4.3)	424 (4.3)	428 (4.3)
Chile	416 (3.2)	416 (3.2)	416 (3.2)	416 (3.2)	416 (3.2)	416 (3.2)	416 (3.2)	416 (3.2)	416 (3.2)	417 (3.2)
Malaysia	411 (3.5)	411 (3.5)	411 (3.5)	411 (3.5)	411 (3.5)	411 (3.5)	411 (3.5)	411 (3.5)	412 (3.5)	415 (3.5)
Oman	411 (2.7)	411 (2.7)	411 (2.7)	411 (2.7)	411 (2.7)	411 (2.7)	411 (2.7)	411 (2.7)	412 (2.7)	412 (2.7)
Saudi Arabia	397 (3.3)	397 (3.3)	397 (3.3)	397 (3.2)	397 (3.3)	397 (3.3)	397 (3.3)	397 (3.3)	398 (3.2)	398 (3.2)
Jordan	388 (3.2)	388 (3.2)	388 (3.2)	389 (3.2)	388 (3.2)	388 (3.2)	388 (3.2)	389 (3.2)	390 (3.1)	393 (3.1)
Palestinian Nat'l Auth.	382 (3.0)	382 (3.0)	382 (3.0)	382 (3.0)	382 (3.0)	382 (3.0)	382 (3.0)	382 (3.0)	383 (2.9)	386 (2.9)
Brazil	378 (2.8)	378 (2.8)	378 (2.8)	378 (2.8)	378 (2.8)	378 (2.8)	378 (2.8)	378 (2.8)	381 (2.7)	380 (2.7)
Morocco	378 (3.0)	378 (3.0)	378 (3.0)	378 (3.0)	378 (3.0)	378 (3.0)	378 (3.0)	378 (3.0)	379 (2.9)	386 (3.0)
<b>International Average</b>	<b>484 (0.5)</b>	<b>484 (0.5)</b>	<b>484 (0.5)</b>	<b>484 (0.5)</b>	<b>484 (0.5)</b>	<b>484 (0.5)</b>	<b>484 (0.5)</b>	<b>484 (0.5)</b>	<b>485 (0.5)</b>	<b>486 (0.5)</b>
<b>Benchmarking Participants</b>										
Dubai, UAE	546 (2.8)	546 (2.8)	546 (2.8)	546 (2.8)	546 (2.8)	546 (2.8)	546 (2.8)	546 (2.8)	545 (2.7)	546 (2.7)
Sharjah, UAE	496 (4.8)	496 (4.8)	496 (4.8)	495 (4.8)	496 (4.8)	495 (4.8)	496 (4.8)	496 (4.8)	496 (4.8)	498 (4.7)
Abu Dhabi, UAE	454 (2.8)	454 (2.8)	454 (2.8)	453 (2.8)	454 (2.8)	454 (2.8)	454 (2.8)	454 (2.8)	454 (2.8)	456 (2.7)
<b>Number of Items (Score Points)*</b>	<b>200 (207)</b>	<b>199 (206)</b>	<b>200 (207)</b>	<b>194 (201)</b>	<b>200 (207)</b>	<b>199 (206)</b>	<b>200 (207)</b>	<b>197 (204)</b>	<b>169 (176)</b>	<b>160 (167)</b>

\* The number of items and score points are based on the number of items included in scaling the eighth-grade mathematics achievement data. See Chapter 9 in *TIMSS 2023 Technical Report (Methods and Procedures)* for information about items deleted or recoded for scaling. ( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

**Exhibit C.3: Average Scale Scores for the Mathematics Test-Curriculum Matching Analysis**

Results based on items identified by each country as addressed in its curriculum

(Continued)

Country	Average Mathematics Scale Score based on All Items	Benchmarking Participants	Dubai, UAE	Sharjah, UAE	Abu Dhabi, UAE
Singapore	605 (6.1)		605 (6.1)	605 (6.1)	605 (6.1)
Chinese Taipei	602 (3.1)		602 (3.1)	602 (3.1)	602 (3.1)
Korea, Rep. of	596 (3.0)		596 (3.0)	596 (3.0)	596 (3.0)
Japan	595 (3.0)		595 (3.0)	595 (3.0)	595 (3.0)
Hong Kong SAR	575 (5.0)		575 (5.0)	575 (5.0)	575 (5.0)
England	525 (4.5)		525 (4.5)	525 (4.5)	525 (4.5)
Ireland	522 (2.7)		522 (2.7)	522 (2.7)	522 (2.7)
Czech Republic	518 (2.3)		518 (2.3)	518 (2.3)	518 (2.3)
Sweden	517 (2.4)		517 (2.4)	517 (2.4)	517 (2.4)
Lithuania	514 (3.1)		514 (3.1)	514 (3.1)	514 (3.1)
Austria	512 (2.3)		512 (2.3)	512 (2.3)	512 (2.3)
Australia	509 (3.5)		509 (3.5)	509 (3.5)	509 (3.5)
Türkiye	509 (4.3)		509 (4.3)	509 (4.3)	509 (4.3)
Hungary	506 (3.7)		506 (3.7)	506 (3.7)	506 (3.7)
Finland	504 (2.6)		504 (2.6)	504 (2.6)	504 (2.6)
Italy	501 (3.0)		501 (3.0)	501 (3.0)	501 (3.0)
Norway (9)	501 (2.3)		501 (2.3)	501 (2.3)	501 (2.3)
Malta	499 (1.2)		499 (1.2)	499 (1.2)	499 (1.2)
Romania	496 (4.9)		496 (4.9)	496 (4.9)	496 (4.9)
Cyprus	494 (2.7)		494 (2.7)	494 (2.7)	494 (2.7)
United Arab Emirates	489 (1.7)		489 (1.7)	489 (1.7)	489 (1.7)
United States	488 (4.2)		488 (4.2)	488 (4.2)	488 (4.2)
Israel	487 (3.9)		487 (3.9)	487 (3.9)	487 (3.9)
New Zealand	485 (4.1)		485 (4.1)	485 (4.1)	485 (4.1)
France	479 (3.1)		479 (3.1)	479 (3.1)	479 (3.1)
Portugal	475 (2.7)		475 (2.7)	475 (2.7)	475 (2.7)
Georgia	467 (3.2)		467 (3.2)	467 (3.2)	467 (3.2)
Kazakhstan	454 (3.5)		454 (3.5)	454 (3.5)	454 (3.5)
Qatar	451 (4.2)		451 (4.2)	451 (4.2)	451 (4.2)
Bahrain	426 (2.4)		426 (2.4)	426 (2.4)	426 (2.4)
Uzbekistan	421 (4.3)		421 (4.3)	421 (4.3)	421 (4.3)
Chile	416 (3.2)		416 (3.2)	416 (3.2)	416 (3.2)
Malaysia	411 (3.5)		411 (3.5)	411 (3.5)	411 (3.5)
Oman	411 (2.7)		411 (2.7)	411 (2.7)	411 (2.7)
Saudi Arabia	397 (3.3)		397 (3.3)	397 (3.3)	397 (3.3)
Jordan	388 (3.2)		388 (3.2)	388 (3.2)	388 (3.2)
Palestinian Nat'l Auth.	382 (3.0)		382 (3.0)	382 (3.0)	382 (3.0)
Brazil	378 (2.8)		378 (2.8)	378 (2.8)	378 (2.8)
Morocco	378 (3.0)		378 (3.0)	378 (3.0)	378 (3.0)
<b>International Average</b>	<b>484 (0.5)</b>		<b>484 (0.5)</b>	<b>484 (0.5)</b>	<b>484 (0.5)</b>
<b>Benchmarking Participants</b>					
Dubai, UAE	546 (2.8)		546 (2.8)	546 (2.8)	546 (2.8)
Sharjah, UAE	496 (4.8)		496 (4.8)	496 (4.8)	496 (4.8)
Abu Dhabi, UAE	454 (2.8)		454 (2.8)	454 (2.8)	454 (2.8)
<b>Number of Items (Score Points)*</b>	<b>200 (207)</b>		<b>200 (207)</b>	<b>200 (207)</b>	<b>200 (207)</b>

\* The number of items and score points are based on the number of items included in scaling the eighth-grade mathematics achievement data. See Chapter 9 in *TIMSS 2023 Technical Report (Methods and Procedures)* for information about items deleted or recoded for scaling. ( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

### Exhibit C.4: Average Scale Scores for the Science Test-Curriculum Matching Analysis

Results based on items identified by each country as addressed in its curriculum

Read down the column under a country name to compare achievement scores based on the items identified by that country. Scores on the diagonal are countries' achievement scores based on the test items they identified.

Country	Average Scale Score based on All Items	Singapore	Chinese Taipei	Japan	Korea, Rep. of	England	Finland	Türkiye	Hong Kong SAR	Czech Republic	Ireland
Singapore	606 (5.7)	617 (5.8)	609 (5.7)	625 (5.6)	610 (5.4)	609 (5.7)	610 (5.8)	609 (5.7)	612 (5.6)	607 (5.7)	608 (5.7)
Chinese Taipei	572 (2.4)	564 (2.4)	573 (2.4)	580 (2.3)	569 (2.3)	578 (2.4)	572 (2.5)	573 (2.4)	572 (2.4)	572 (2.4)	573 (2.4)
Japan	557 (3.1)	559 (3.1)	558 (3.1)	576 (3.3)	559 (3.1)	559 (3.1)	557 (3.0)	558 (3.1)	565 (3.3)	557 (3.1)	559 (3.2)
Korea, Rep. of	545 (2.2)	545 (2.2)	545 (2.2)	561 (2.2)	558 (2.4)	544 (2.3)	542 (2.3)	545 (2.2)	552 (2.3)	545 (2.2)	544 (2.2)
England	531 (4.3)	531 (4.4)	531 (4.3)	534 (4.4)	531 (4.4)	531 (4.4)	531 (4.4)	532 (4.3)	532 (4.4)	532 (4.3)	533 (4.3)
Finland	531 (3.2)	530 (3.3)	531 (3.2)	532 (3.7)	532 (3.4)	533 (3.2)	531 (3.2)	533 (3.2)	533 (3.4)	531 (3.2)	532 (3.2)
Türkiye	530 (3.6)	534 (3.6)	531 (3.6)	537 (3.8)	533 (3.7)	531 (3.6)	532 (3.6)	534 (3.7)	532 (3.6)	529 (3.6)	531 (3.6)
Hong Kong SAR	528 (4.7)	528 (4.7)	528 (4.7)	529 (4.4)	531 (4.7)	529 (4.7)	528 (4.7)	530 (4.8)	537 (4.8)	528 (4.7)	530 (4.7)
Czech Republic	527 (2.0)	528 (2.1)	528 (2.0)	538 (2.0)	531 (2.1)	529 (2.0)	529 (2.0)	529 (2.0)	528 (2.0)	527 (2.0)	528 (2.0)
Ireland	525 (3.5)	526 (3.6)	525 (3.6)	529 (3.4)	527 (3.6)	524 (3.6)	525 (3.5)	526 (3.5)	531 (3.5)	525 (3.5)	526 (3.5)
Hungary	522 (3.3)	524 (3.3)	522 (3.3)	528 (3.1)	525 (3.4)	524 (3.3)	523 (3.4)	524 (3.3)	522 (3.3)	522 (3.3)	524 (3.3)
Sweden	521 (2.9)	521 (3.0)	521 (2.9)	524 (3.0)	526 (3.1)	522 (3.0)	522 (3.0)	525 (3.0)	523 (3.0)	522 (2.9)	523 (3.0)
Australia	520 (3.2)	521 (3.2)	520 (3.1)	526 (3.3)	522 (3.2)	520 (3.2)	521 (3.2)	520 (3.1)	524 (3.2)	521 (3.2)	519 (3.1)
Lithuania	519 (3.0)	520 (3.0)	520 (3.0)	529 (3.1)	524 (3.1)	520 (3.0)	519 (3.0)	523 (3.0)	519 (3.0)	519 (3.0)	521 (3.0)
United States	513 (3.9)	515 (3.8)	513 (3.8)	515 (3.9)	515 (3.9)	513 (3.9)	515 (3.8)	513 (3.8)	514 (3.8)	514 (3.8)	512 (3.8)
Austria	512 (2.4)	510 (2.4)	511 (2.4)	523 (2.4)	514 (2.4)	514 (2.4)	512 (2.4)	513 (2.3)	515 (2.4)	512 (2.4)	512 (2.4)
Portugal	506 (2.4)	509 (2.4)	506 (2.3)	504 (2.6)	509 (2.4)	505 (2.4)	506 (2.4)	506 (2.4)	508 (2.4)	506 (2.4)	507 (2.4)
New Zealand	502 (4.0)	504 (4.1)	502 (4.0)	506 (4.4)	504 (4.2)	501 (4.0)	504 (4.0)	503 (4.1)	506 (4.2)	502 (4.0)	501 (4.1)
Italy	501 (3.2)	500 (3.2)	501 (3.2)	505 (3.1)	501 (3.3)	499 (3.2)	499 (3.2)	504 (3.1)	501 (3.3)	501 (3.2)	503 (3.1)
Malta	501 (1.6)	504 (1.6)	501 (1.6)	511 (1.7)	505 (1.7)	501 (1.6)	502 (1.6)	503 (1.6)	506 (1.6)	502 (1.6)	502 (1.6)
Norway (9)	488 (2.6)	489 (2.6)	489 (2.6)	490 (2.6)	489 (2.5)	488 (2.6)	489 (2.6)	491 (2.6)	490 (2.6)	489 (2.6)	490 (2.6)
France	486 (3.2)	488 (3.2)	486 (3.1)	494 (3.4)	490 (3.3)	486 (3.1)	486 (3.2)	487 (3.2)	491 (3.2)	486 (3.2)	487 (3.2)
United Arab Emirates	486 (2.0)	491 (2.0)	487 (2.0)	497 (2.0)	490 (2.0)	489 (2.0)	489 (2.0)	488 (2.0)	488 (2.0)	486 (2.0)	488 (2.1)
Israel	481 (3.6)	484 (3.7)	482 (3.6)	488 (3.6)	480 (3.6)	481 (3.6)	484 (3.6)	482 (3.6)	481 (3.6)	480 (3.6)	482 (3.6)
Qatar	481 (4.3)	487 (4.3)	482 (4.2)	494 (4.4)	493 (4.4)	484 (4.3)	483 (4.3)	484 (4.3)	486 (4.2)	481 (4.3)	485 (4.3)
Romania	466 (4.1)	470 (4.2)	467 (4.1)	481 (4.2)	468 (4.2)	466 (4.1)	466 (4.1)	469 (4.0)	468 (4.0)	466 (4.1)	468 (4.0)
Cyprus	464 (3.0)	469 (3.0)	465 (3.0)	474 (2.9)	468 (3.0)	466 (3.0)	466 (3.0)	467 (2.9)	473 (3.0)	464 (3.0)	467 (2.9)
Oman	456 (2.6)	464 (2.7)	456 (2.6)	467 (2.7)	469 (2.6)	460 (2.6)	458 (2.6)	456 (2.7)	457 (2.6)	455 (2.6)	457 (2.7)
Chile	455 (2.7)	456 (2.8)	456 (2.7)	456 (2.7)	455 (2.8)	455 (2.7)	455 (2.7)	457 (2.7)	455 (2.7)	455 (2.7)	456 (2.7)
Bahrain	452 (2.6)	457 (2.7)	453 (2.6)	464 (2.7)	458 (2.8)	453 (2.6)	454 (2.6)	454 (2.7)	453 (2.7)	452 (2.6)	454 (2.7)
Georgia	448 (2.9)	449 (2.9)	449 (2.9)	462 (3.0)	453 (3.0)	449 (3.0)	448 (3.0)	450 (2.9)	448 (2.9)	448 (2.9)	451 (2.9)
Kazakhstan	443 (3.0)	446 (3.0)	443 (3.0)	452 (2.9)	449 (3.0)	444 (3.0)	445 (3.0)	444 (3.0)	441 (2.9)	442 (3.0)	445 (3.0)
Malaysia	426 (3.7)	432 (3.8)	426 (3.7)	434 (3.7)	430 (3.9)	427 (3.7)	430 (3.7)	427 (3.7)	430 (3.7)	427 (3.7)	426 (3.7)
Brazil	420 (2.5)	420 (2.5)	421 (2.5)	419 (2.5)	422 (2.6)	419 (2.5)	421 (2.5)	422 (2.5)	420 (2.5)	420 (2.5)	421 (2.5)
Saudi Arabia	419 (3.4)	423 (3.5)	420 (3.4)	429 (3.4)	424 (3.5)	421 (3.4)	419 (3.4)	420 (3.4)	423 (3.3)	419 (3.4)	421 (3.4)
Jordan	413 (3.6)	418 (3.7)	413 (3.6)	423 (3.8)	420 (3.7)	414 (3.6)	413 (3.7)	413 (3.6)	415 (3.5)	412 (3.6)	414 (3.7)
Uzbekistan	396 (3.7)	398 (3.8)	395 (3.7)	408 (4.0)	402 (4.0)	398 (3.7)	397 (3.8)	397 (3.7)	399 (3.7)	395 (3.7)	398 (3.7)
Palestinian Nat'l Auth.	393 (2.9)	400 (2.9)	394 (2.9)	415 (2.9)	400 (3.0)	397 (2.9)	395 (2.9)	394 (2.9)	398 (2.8)	392 (2.9)	394 (2.9)
Morocco	327 (3.4)	332 (3.4)	327 (3.4)	332 (3.7)	331 (3.6)	330 (3.3)	330 (3.4)	328 (3.4)	332 (3.4)	327 (3.4)	328 (3.4)
<b>International Average</b>	<b>486 (0.5)</b>	<b>489 (0.5)</b>	<b>487 (0.5)</b>	<b>495 (0.5)</b>	<b>490 (0.5)</b>	<b>488 (0.5)</b>	<b>487 (0.5)</b>	<b>488 (0.5)</b>	<b>489 (0.5)</b>	<b>486 (0.5)</b>	<b>488 (0.5)</b>
<b>Benchmarking Participants</b>											
Dubai, UAE	547 (3.2)	550 (3.2)	548 (3.1)	555 (3.2)	549 (3.2)	549 (3.2)	549 (3.2)	549 (3.2)	548 (3.2)	547 (3.2)	550 (3.2)
Sharjah, UAE	499 (4.9)	503 (4.9)	500 (4.9)	512 (4.9)	503 (5.0)	501 (4.9)	501 (4.9)	501 (4.9)	500 (4.9)	499 (4.9)	502 (5.0)
Abu Dhabi, UAE	443 (3.8)	449 (3.8)	444 (3.8)	453 (3.8)	448 (3.8)	446 (3.7)	447 (3.7)	445 (3.8)	447 (3.7)	444 (3.8)	444 (3.8)
<b>Number of Items (Score Points)*</b>	<b>212 (230)</b>	<b>146 (158)</b>	<b>199 (217)</b>	<b>72 (81)</b>	<b>124 (132)</b>	<b>178 (195)</b>	<b>182 (198)</b>	<b>186 (202)</b>	<b>135 (148)</b>	<b>208 (226)</b>	<b>185 (202)</b>

\* The number of items and score points are based on the number of items included in scaling the eighth-grade science achievement data. See Chapter 9 in TIMSS 2023 Technical Report (Methods and Procedures) for information about items deleted or recoded for scaling. ( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

**Exhibit C.4: Average Scale Scores for the Science Test-Curriculum Matching Analysis**

Results based on items identified by each country as addressed in its curriculum

(Continued)

Country	Average Science Scale Score based on All Items	Hungary	Sweden	Australia	Lithuania	United States	Austria	Portugal	New Zealand	Italy	Malta
Singapore	606 (5.7)	607 (5.7)	607 (5.7)	604 (5.5)	604 (5.7)	603 (5.6)	606 (5.7)	606 (5.6)	608 (5.7)	606 (5.7)	607 (5.6)
Chinese Taipei	572 (2.4)	572 (2.4)	572 (2.4)	569 (2.3)	569 (2.4)	570 (2.4)	572 (2.4)	575 (2.4)	575 (2.5)	571 (2.4)	572 (2.4)
Japan	557 (3.1)	557 (3.1)	556 (3.1)	559 (3.2)	559 (3.1)	560 (3.2)	557 (3.1)	559 (3.2)	556 (3.1)	557 (3.1)	558 (3.1)
Korea, Rep. of	545 (2.2)	545 (2.3)	545 (2.3)	550 (2.2)	548 (2.3)	550 (2.2)	545 (2.3)	545 (2.2)	544 (2.2)	546 (2.3)	546 (2.2)
England	531 (4.3)	531 (4.3)	532 (4.3)	534 (4.4)	532 (4.4)	532 (4.4)	531 (4.3)	531 (4.3)	532 (4.3)	531 (4.3)	532 (4.4)
Finland	531 (3.2)	530 (3.2)	530 (3.2)	531 (3.3)	530 (3.2)	530 (3.2)	531 (3.2)	533 (3.2)	534 (3.2)	531 (3.2)	530 (3.2)
Türkiye	530 (3.6)	530 (3.6)	530 (3.6)	533 (3.5)	529 (3.5)	527 (3.5)	530 (3.6)	528 (3.6)	531 (3.6)	529 (3.6)	532 (3.6)
Hong Kong SAR	528 (4.7)	528 (4.7)	528 (4.7)	528 (4.7)	526 (4.7)	526 (4.7)	528 (4.7)	530 (4.7)	531 (4.7)	529 (4.7)	530 (4.8)
Czech Republic	527 (2.0)	527 (2.0)	527 (2.0)	528 (2.0)	528 (2.0)	527 (2.0)	527 (2.0)	527 (2.0)	530 (2.0)	527 (2.0)	528 (2.0)
Ireland	525 (3.5)	526 (3.5)	525 (3.5)	527 (3.8)	525 (3.6)	525 (3.6)	525 (3.5)	526 (3.5)	527 (3.7)	525 (3.5)	526 (3.6)
Hungary	522 (3.3)	521 (3.3)	522 (3.3)	524 (3.2)	522 (3.3)	522 (3.2)	522 (3.3)	522 (3.2)	524 (3.3)	521 (3.3)	524 (3.3)
Sweden	521 (2.9)	521 (3.0)	522 (2.9)	520 (3.0)	520 (2.9)	520 (2.9)	521 (2.9)	524 (2.9)	524 (2.9)	522 (3.0)	520 (3.0)
Australia	520 (3.2)	521 (3.2)	521 (3.1)	526 (3.3)	522 (3.2)	522 (3.2)	520 (3.2)	520 (3.1)	523 (3.2)	520 (3.1)	520 (3.2)
Lithuania	519 (3.0)	519 (3.0)	519 (3.0)	521 (3.0)	521 (3.0)	520 (3.0)	519 (3.0)	521 (3.0)	522 (3.0)	519 (3.0)	518 (3.0)
United States	513 (3.9)	514 (3.9)	513 (3.8)	519 (3.9)	515 (3.9)	515 (3.9)	513 (3.9)	514 (3.8)	515 (3.9)	513 (3.8)	512 (3.9)
Austria	512 (2.4)	512 (2.4)	512 (2.4)	514 (2.5)	512 (2.4)	512 (2.4)	512 (2.4)	511 (2.3)	514 (2.4)	511 (2.4)	512 (2.4)
Portugal	506 (2.4)	505 (2.4)	506 (2.4)	504 (2.4)	505 (2.4)	504 (2.4)	506 (2.4)	509 (2.4)	506 (2.4)	506 (2.4)	507 (2.4)
New Zealand	502 (4.0)	503 (4.0)	503 (4.0)	506 (4.1)	503 (4.0)	503 (4.0)	502 (4.0)	503 (4.0)	505 (4.1)	502 (4.0)	501 (4.1)
Italy	501 (3.2)	500 (3.2)	500 (3.2)	502 (3.2)	502 (3.2)	501 (3.2)	501 (3.2)	504 (3.2)	502 (3.2)	502 (3.2)	501 (3.2)
Malta	501 (1.6)	502 (1.6)	502 (1.6)	504 (1.7)	501 (1.6)	500 (1.6)	501 (1.6)	502 (1.6)	502 (1.6)	501 (1.6)	503 (1.6)
Norway (9)	488 (2.6)	489 (2.6)	489 (2.6)	491 (2.6)	488 (2.6)	489 (2.6)	488 (2.6)	489 (2.6)	491 (2.6)	489 (2.6)	489 (2.6)
France	486 (3.2)	487 (3.2)	487 (3.2)	491 (3.2)	487 (3.2)	488 (3.2)	486 (3.2)	487 (3.2)	490 (3.2)	487 (3.2)	486 (3.2)
United Arab Emirates	486 (2.0)	487 (2.0)	487 (2.0)	488 (2.0)	486 (2.0)	486 (2.0)	486 (2.0)	488 (2.0)	488 (2.0)	487 (2.0)	488 (2.1)
Israel	481 (3.6)	481 (3.6)	480 (3.6)	482 (3.6)	481 (3.6)	481 (3.6)	481 (3.6)	480 (3.6)	482 (3.7)	482 (3.6)	481 (3.7)
Qatar	481 (4.3)	482 (4.2)	482 (4.3)	485 (4.3)	481 (4.3)	482 (4.2)	481 (4.3)	482 (4.3)	483 (4.3)	481 (4.2)	485 (4.3)
Romania	466 (4.1)	466 (4.0)	466 (4.0)	469 (4.0)	467 (4.0)	467 (4.0)	466 (4.1)	469 (4.0)	468 (4.0)	467 (4.0)	467 (4.2)
Cyprus	464 (3.0)	465 (3.0)	465 (3.0)	466 (3.0)	466 (3.0)	465 (3.0)	464 (3.0)	467 (2.9)	466 (3.0)	465 (3.0)	466 (3.0)
Oman	456 (2.6)	456 (2.6)	456 (2.6)	461 (2.6)	456 (2.6)	456 (2.6)	456 (2.6)	454 (2.6)	456 (2.7)	455 (2.6)	459 (2.6)
Chile	455 (2.7)	455 (2.7)	455 (2.7)	457 (2.7)	456 (2.7)	456 (2.7)	456 (2.7)	457 (2.6)	456 (2.7)	456 (2.7)	456 (2.7)
Bahrain	452 (2.6)	452 (2.6)	452 (2.7)	454 (2.7)	452 (2.7)	452 (2.7)	452 (2.6)	453 (2.7)	453 (2.7)	452 (2.6)	453 (2.7)
Georgia	448 (2.9)	447 (2.9)	448 (2.9)	449 (2.9)	449 (2.9)	447 (2.9)	448 (2.9)	450 (2.9)	447 (2.9)	448 (2.9)	448 (3.0)
Kazakhstan	443 (3.0)	443 (3.0)	443 (3.0)	443 (2.9)	443 (3.0)	442 (3.0)	443 (3.0)	442 (3.0)	444 (3.0)	442 (3.0)	443 (3.0)
Malaysia	426 (3.7)	427 (3.7)	426 (3.7)	425 (3.6)	426 (3.7)	427 (3.7)	426 (3.7)	429 (3.7)	427 (3.7)	427 (3.7)	425 (3.7)
Brazil	420 (2.5)	421 (2.5)	420 (2.5)	425 (2.6)	420 (2.5)	421 (2.5)	420 (2.5)	423 (2.5)	421 (2.5)	421 (2.5)	420 (2.5)
Saudi Arabia	419 (3.4)	420 (3.4)	419 (3.4)	422 (3.5)	419 (3.4)	419 (3.4)	419 (3.4)	421 (3.4)	420 (3.4)	420 (3.4)	422 (3.4)
Jordan	413 (3.6)	413 (3.6)	413 (3.6)	416 (3.6)	412 (3.6)	413 (3.6)	413 (3.6)	412 (3.7)	412 (3.6)	414 (3.6)	414 (3.7)
Uzbekistan	396 (3.7)	395 (3.7)	396 (3.7)	400 (3.7)	396 (3.7)	397 (3.7)	396 (3.7)	397 (3.7)	398 (3.8)	396 (3.7)	399 (3.7)
Palestinian Nat'l Auth.	393 (2.9)	393 (2.9)	393 (2.9)	395 (2.8)	393 (2.9)	392 (2.8)	393 (2.9)	393 (2.9)	394 (2.9)	394 (2.9)	397 (2.9)
Morocco	327 (3.4)	328 (3.4)	326 (3.4)	328 (3.6)	327 (3.4)	329 (3.4)	327 (3.4)	330 (3.4)	328 (3.4)	329 (3.4)	330 (3.4)
<b>International Average</b>	<b>486 (0.5)</b>	<b>487 (0.5)</b>	<b>487 (0.5)</b>	<b>488 (0.5)</b>	<b>487 (0.5)</b>	<b>487 (0.5)</b>	<b>486 (0.5)</b>	<b>488 (0.5)</b>	<b>488 (0.5)</b>	<b>487 (0.5)</b>	<b>487 (0.5)</b>
<b>Benchmarking Participants</b>											
Dubai, UAE	547 (3.2)	548 (3.2)	548 (3.2)	547 (3.2)	547 (3.2)	546 (3.2)	547 (3.2)	548 (3.2)	548 (3.2)	548 (3.2)	549 (3.2)
Sharjah, UAE	499 (4.9)	499 (4.9)	499 (4.9)	499 (4.8)	498 (4.9)	498 (4.9)	499 (4.9)	500 (4.9)	501 (4.9)	499 (4.9)	501 (5.0)
Abu Dhabi, UAE	443 (3.8)	444 (3.7)	444 (3.8)	446 (3.8)	443 (3.8)	444 (3.8)	443 (3.8)	445 (3.7)	445 (3.7)	444 (3.8)	445 (3.8)
<b>Number of Items (Score Points)*</b>	<b>212 (230)</b>	<b>207 (224)</b>	<b>207 (224)</b>	<b>151 (165)</b>	<b>204 (222)</b>	<b>191 (207)</b>	<b>212 (230)</b>	<b>184 (200)</b>	<b>176 (189)</b>	<b>202 (219)</b>	<b>181 (198)</b>

\* The number of items and score points are based on the number of items included in scaling the eighth-grade science achievement data. See Chapter 9 in *TIMSS 2023 Technical Report (Methods and Procedures)* for information about items deleted or recoded for scaling. ( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.



**Exhibit C.4: Average Scale Scores for the Science Test-Curriculum Matching Analysis**

Results based on items identified by each country as addressed in its curriculum

(Continued)

Country	Average Science Scale Score based on All Items	Norway (9)	France	United Arab Emirates	Israel	Qatar	Romania	Cyprus	Oman	Chile	Bahrain
Singapore	606 (5.7)	609 (5.6)	610 (5.3)	606 (5.7)	603 (5.2)	613 (5.8)	608 (5.7)	603 (4.9)	605 (5.6)	604 (5.4)	606 (5.7)
Chinese Taipei	572 (2.4)	573 (2.4)	573 (2.3)	572 (2.4)	584 (2.4)	575 (2.5)	572 (2.4)	573 (2.3)	572 (2.4)	572 (2.4)	572 (2.4)
Japan	557 (3.1)	557 (3.1)	561 (3.2)	557 (3.1)	558 (3.1)	558 (3.1)	556 (3.1)	577 (3.3)	558 (3.1)	562 (3.0)	557 (3.1)
Korea, Rep. of	545 (2.2)	545 (2.2)	551 (2.3)	545 (2.2)	552 (2.3)	548 (2.2)	545 (2.3)	561 (2.5)	546 (2.2)	552 (2.3)	545 (2.3)
England	531 (4.3)	531 (4.3)	534 (4.4)	531 (4.3)	536 (4.4)	531 (4.4)	532 (4.4)	535 (4.5)	532 (4.4)	532 (4.4)	531 (4.3)
Finland	531 (3.2)	531 (3.2)	535 (3.4)	531 (3.2)	532 (3.4)	532 (3.3)	531 (3.2)	534 (3.7)	531 (3.2)	531 (3.3)	531 (3.2)
Türkiye	530 (3.6)	530 (3.6)	532 (3.7)	530 (3.6)	535 (3.6)	532 (3.7)	531 (3.6)	528 (3.5)	530 (3.6)	526 (3.5)	529 (3.6)
Hong Kong SAR	528 (4.7)	529 (4.7)	531 (4.7)	528 (4.7)	532 (4.6)	529 (4.8)	527 (4.7)	536 (4.4)	528 (4.7)	530 (4.6)	528 (4.7)
Czech Republic	527 (2.0)	528 (2.0)	529 (1.9)	527 (2.0)	532 (2.0)	531 (2.0)	528 (2.0)	535 (2.2)	528 (2.0)	536 (2.1)	528 (2.0)
Ireland	525 (3.5)	526 (3.4)	529 (3.6)	525 (3.5)	532 (3.7)	523 (3.5)	525 (3.5)	533 (4.3)	525 (3.6)	526 (3.7)	525 (3.6)
Hungary	522 (3.3)	522 (3.3)	525 (3.1)	522 (3.3)	529 (3.3)	522 (3.4)	521 (3.3)	537 (3.3)	522 (3.3)	525 (3.3)	522 (3.3)
Sweden	521 (2.9)	523 (3.0)	529 (3.0)	521 (2.9)	527 (3.0)	522 (3.0)	522 (2.9)	525 (3.0)	521 (3.0)	521 (3.0)	521 (2.9)
Australia	520 (3.2)	520 (3.1)	521 (3.1)	520 (3.2)	526 (3.2)	519 (3.2)	520 (3.2)	528 (3.3)	520 (3.2)	523 (3.2)	520 (3.2)
Lithuania	519 (3.0)	520 (3.0)	524 (3.0)	519 (3.0)	524 (3.0)	520 (3.0)	521 (3.0)	523 (3.1)	520 (3.0)	522 (3.1)	519 (3.0)
United States	513 (3.9)	513 (3.8)	516 (3.9)	513 (3.9)	520 (3.8)	512 (3.8)	514 (3.9)	522 (3.9)	514 (3.9)	516 (3.9)	513 (3.9)
Austria	512 (2.4)	512 (2.4)	515 (2.5)	512 (2.4)	516 (2.4)	512 (2.4)	512 (2.4)	517 (2.4)	512 (2.4)	514 (2.4)	512 (2.4)
Portugal	506 (2.4)	507 (2.4)	513 (2.5)	506 (2.4)	511 (2.4)	507 (2.4)	506 (2.4)	516 (2.5)	506 (2.4)	511 (2.5)	506 (2.4)
New Zealand	502 (4.0)	503 (4.0)	504 (4.2)	502 (4.0)	506 (4.1)	499 (4.1)	502 (4.0)	504 (4.3)	502 (4.0)	502 (4.1)	502 (4.0)
Italy	501 (3.2)	501 (3.2)	508 (3.1)	501 (3.2)	509 (3.1)	498 (3.3)	500 (3.2)	516 (3.4)	502 (3.2)	506 (3.3)	501 (3.2)
Malta	501 (1.6)	503 (1.6)	506 (1.6)	501 (1.6)	505 (1.6)	502 (1.7)	502 (1.6)	509 (1.7)	501 (1.6)	501 (1.6)	501 (1.6)
Norway (9)	488 (2.6)	489 (2.6)	489 (2.6)	488 (2.6)	498 (2.6)	487 (2.6)	488 (2.6)	495 (2.4)	488 (2.6)	491 (2.6)	488 (2.6)
France	486 (3.2)	486 (3.2)	493 (3.3)	486 (3.2)	492 (3.3)	485 (3.2)	485 (3.2)	495 (3.5)	487 (3.2)	489 (3.3)	486 (3.2)
United Arab Emirates	486 (2.0)	488 (2.1)	489 (2.1)	486 (2.0)	494 (2.0)	490 (2.0)	488 (2.0)	491 (2.1)	487 (2.0)	488 (2.0)	486 (2.0)
Israel	481 (3.6)	479 (3.6)	485 (3.6)	481 (3.6)	488 (3.7)	485 (3.7)	482 (3.6)	479 (3.7)	481 (3.6)	483 (3.7)	480 (3.6)
Qatar	481 (4.3)	484 (4.3)	489 (4.2)	481 (4.3)	492 (4.3)	486 (4.3)	482 (4.3)	494 (4.3)	481 (4.3)	487 (4.2)	481 (4.3)
Romania	466 (4.1)	467 (4.0)	475 (3.9)	466 (4.1)	467 (4.2)	467 (4.1)	466 (4.1)	478 (4.0)	467 (4.1)	470 (4.1)	466 (4.0)
Cyprus	464 (3.0)	465 (3.0)	468 (2.9)	464 (3.0)	471 (2.8)	466 (2.9)	464 (3.0)	479 (2.9)	465 (3.0)	469 (3.0)	464 (3.0)
Oman	456 (2.6)	457 (2.6)	458 (2.7)	456 (2.6)	461 (2.7)	464 (2.6)	457 (2.6)	463 (2.8)	456 (2.6)	460 (2.6)	456 (2.6)
Chile	455 (2.7)	454 (2.7)	459 (2.6)	455 (2.7)	460 (2.8)	454 (2.7)	455 (2.7)	467 (2.7)	456 (2.7)	461 (2.7)	456 (2.7)
Bahrain	452 (2.6)	453 (2.7)	456 (2.8)	452 (2.6)	458 (2.8)	457 (2.6)	453 (2.6)	455 (3.0)	452 (2.7)	454 (2.7)	452 (2.6)
Georgia	448 (2.9)	449 (2.9)	455 (3.0)	448 (2.9)	451 (3.1)	451 (3.0)	449 (2.9)	459 (3.0)	448 (2.9)	451 (3.0)	448 (2.9)
Kazakhstan	443 (3.0)	443 (3.0)	444 (2.9)	443 (3.0)	446 (2.9)	447 (3.0)	445 (3.0)	442 (2.9)	443 (3.0)	443 (3.1)	443 (3.0)
Malaysia	426 (3.7)	428 (3.7)	434 (3.8)	426 (3.7)	428 (3.7)	428 (3.7)	427 (3.7)	434 (3.7)	426 (3.7)	429 (3.8)	426 (3.7)
Brazil	420 (2.5)	421 (2.5)	424 (2.5)	420 (2.5)	419 (2.5)	418 (2.5)	420 (2.5)	431 (2.7)	420 (2.5)	424 (2.6)	420 (2.5)
Saudi Arabia	419 (3.4)	419 (3.5)	425 (3.5)	419 (3.4)	429 (3.5)	422 (3.4)	419 (3.4)	429 (3.7)	419 (3.4)	423 (3.5)	420 (3.4)
Jordan	413 (3.6)	414 (3.7)	415 (3.8)	413 (3.6)	416 (3.8)	416 (3.7)	413 (3.6)	418 (3.7)	413 (3.6)	413 (3.7)	413 (3.6)
Uzbekistan	396 (3.7)	397 (3.8)	399 (3.8)	396 (3.7)	400 (4.0)	401 (3.8)	396 (3.7)	404 (4.0)	396 (3.7)	399 (3.9)	396 (3.7)
Palestinian Nat'l Auth.	393 (2.9)	394 (2.9)	396 (2.9)	393 (2.9)	398 (2.9)	400 (2.9)	395 (2.9)	397 (2.9)	393 (2.9)	397 (2.9)	394 (2.9)
Morocco	327 (3.4)	327 (3.4)	332 (3.6)	327 (3.4)	339 (3.4)	331 (3.4)	328 (3.4)	323 (4.0)	327 (3.4)	331 (3.5)	327 (3.4)
<b>International Average</b>	<b>486 (0.5)</b>	<b>487 (0.5)</b>	<b>491 (0.5)</b>	<b>486 (0.5)</b>	<b>492 (0.5)</b>	<b>488 (0.5)</b>	<b>487 (0.5)</b>	<b>493 (0.5)</b>	<b>487 (0.5)</b>	<b>489 (0.5)</b>	<b>486 (0.5)</b>
<b>Benchmarking Participants</b>											
Dubai, UAE	547 (3.2)	549 (3.2)	549 (3.3)	547 (3.2)	554 (3.2)	550 (3.1)	549 (3.2)	551 (3.3)	548 (3.2)	548 (3.1)	547 (3.2)
Sharjah, UAE	499 (4.9)	501 (5.0)	502 (5.0)	499 (4.9)	506 (4.9)	504 (4.9)	500 (4.9)	503 (5.0)	499 (4.9)	501 (4.9)	499 (4.9)
Abu Dhabi, UAE	443 (3.8)	444 (3.8)	447 (3.8)	443 (3.8)	452 (3.8)	447 (3.8)	445 (3.8)	447 (3.9)	444 (3.8)	446 (3.8)	444 (3.8)
<b>Number of Items (Score Points)*</b>	<b>212 (230)</b>	<b>193 (210)</b>	<b>112 (122)</b>	<b>212 (230)</b>	<b>115 (125)</b>	<b>160 (175)</b>	<b>200 (217)</b>	<b>70 (78)</b>	<b>207 (224)</b>	<b>140 (153)</b>	<b>211 (229)</b>

\* The number of items and score points are based on the number of items included in scaling the eighth-grade science achievement data. See Chapter 9 in *TIMSS 2023 Technical Report (Methods and Procedures)* for information about items deleted or recoded for scaling. ( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

**Exhibit C.4: Average Scale Scores for the Science Test-Curriculum Matching Analysis**

Results based on items identified by each country as addressed in its curriculum

(Continued)

Country	Average Science Scale Score based on All Items	Georgia	Kazakhstan	Malaysia	Brazil	Saudi Arabia	Jordan	Uzbekistan	Palestinian Nat'l Auth.	Morocco
Singapore	606 (5.7)	608 (5.6)	606 (5.7)	607 (5.7)	604 (5.4)	606 (5.7)	605 (5.6)	606 (5.7)	608 (5.7)	614 (5.7)
Chinese Taipei	572 (2.4)	571 (2.4)	572 (2.4)	572 (2.4)	569 (2.3)	572 (2.4)	573 (2.4)	572 (2.4)	573 (2.4)	570 (2.3)
Japan	557 (3.1)	560 (3.1)	557 (3.1)	557 (3.1)	559 (3.3)	557 (3.1)	556 (3.1)	557 (3.1)	559 (3.1)	563 (3.1)
Korea, Rep. of	545 (2.2)	547 (2.3)	545 (2.2)	546 (2.2)	553 (2.3)	545 (2.2)	546 (2.2)	545 (2.3)	546 (2.2)	550 (2.3)
England	531 (4.3)	532 (4.4)	531 (4.3)	532 (4.3)	531 (4.4)	531 (4.3)	531 (4.3)	532 (4.3)	532 (4.3)	531 (4.3)
Finland	531 (3.2)	532 (3.3)	531 (3.2)	530 (3.2)	531 (3.4)	531 (3.2)	530 (3.2)	531 (3.2)	530 (3.2)	531 (3.3)
Türkiye	530 (3.6)	531 (3.7)	530 (3.6)	530 (3.6)	529 (3.6)	530 (3.6)	531 (3.6)	529 (3.6)	531 (3.6)	531 (3.5)
Hong Kong SAR	528 (4.7)	531 (4.7)	528 (4.7)	528 (4.8)	532 (4.7)	528 (4.7)	528 (4.7)	528 (4.7)	530 (4.7)	527 (4.8)
Czech Republic	527 (2.0)	529 (2.0)	527 (2.0)	527 (2.0)	530 (2.0)	527 (2.0)	527 (2.0)	527 (2.0)	528 (2.0)	530 (2.0)
Ireland	525 (3.5)	527 (3.5)	525 (3.5)	525 (3.5)	527 (3.7)	525 (3.5)	525 (3.6)	525 (3.5)	525 (3.5)	526 (3.6)
Hungary	522 (3.3)	524 (3.3)	522 (3.3)	522 (3.3)	525 (3.3)	522 (3.3)	522 (3.3)	522 (3.3)	524 (3.3)	525 (3.3)
Sweden	521 (2.9)	522 (2.9)	521 (2.9)	521 (2.9)	524 (3.1)	521 (2.9)	521 (2.9)	522 (2.9)	521 (3.0)	522 (3.0)
Australia	520 (3.2)	522 (3.2)	520 (3.2)	520 (3.2)	523 (3.2)	520 (3.2)	520 (3.2)	520 (3.2)	520 (3.2)	522 (3.2)
Lithuania	519 (3.0)	520 (3.0)	519 (3.0)	519 (3.0)	523 (3.0)	519 (3.0)	520 (3.0)	519 (3.0)	520 (3.1)	522 (3.0)
United States	513 (3.9)	513 (3.9)	513 (3.9)	513 (3.8)	515 (4.0)	513 (3.9)	514 (3.9)	513 (3.9)	513 (3.9)	516 (3.9)
Austria	512 (2.4)	516 (2.4)	512 (2.4)	511 (2.4)	513 (2.4)	512 (2.4)	512 (2.4)	512 (2.4)	513 (2.4)	512 (2.4)
Portugal	506 (2.4)	506 (2.4)	506 (2.4)	505 (2.4)	508 (2.4)	506 (2.4)	507 (2.4)	506 (2.4)	508 (2.4)	507 (2.4)
New Zealand	502 (4.0)	504 (4.1)	502 (4.0)	502 (4.0)	504 (4.2)	502 (4.0)	501 (4.0)	502 (4.0)	501 (4.0)	504 (4.2)
Italy	501 (3.2)	499 (3.2)	501 (3.2)	500 (3.2)	505 (3.2)	501 (3.2)	501 (3.2)	501 (3.2)	502 (3.2)	500 (3.2)
Malta	501 (1.6)	506 (1.6)	501 (1.6)	502 (1.6)	503 (1.6)	501 (1.6)	502 (1.6)	501 (1.6)	503 (1.6)	503 (1.6)
Norway (9)	488 (2.6)	490 (2.6)	488 (2.6)	488 (2.6)	489 (2.6)	488 (2.6)	487 (2.6)	489 (2.6)	489 (2.6)	491 (2.7)
France	486 (3.2)	487 (3.2)	486 (3.2)	485 (3.2)	488 (3.2)	486 (3.2)	487 (3.2)	486 (3.2)	487 (3.2)	490 (3.3)
United Arab Emirates	486 (2.0)	488 (2.0)	486 (2.0)	486 (2.0)	487 (2.0)	486 (2.0)	488 (2.1)	486 (2.0)	489 (2.0)	489 (2.0)
Israel	481 (3.6)	480 (3.7)	481 (3.6)	481 (3.6)	480 (3.6)	481 (3.6)	481 (3.6)	480 (3.6)	481 (3.6)	483 (3.7)
Qatar	481 (4.3)	484 (4.3)	481 (4.3)	482 (4.3)	485 (4.2)	481 (4.3)	483 (4.3)	481 (4.3)	485 (4.3)	486 (4.3)
Romania	466 (4.1)	466 (4.1)	466 (4.1)	466 (4.1)	470 (4.1)	466 (4.1)	468 (4.0)	466 (4.1)	467 (4.0)	470 (4.1)
Cyprus	464 (3.0)	466 (3.0)	464 (3.0)	464 (3.0)	467 (3.0)	464 (3.0)	465 (3.0)	464 (3.0)	466 (2.9)	468 (2.9)
Oman	456 (2.6)	457 (2.6)	456 (2.6)	457 (2.6)	459 (2.6)	456 (2.6)	458 (2.6)	456 (2.6)	459 (2.7)	461 (2.6)
Chile	455 (2.7)	455 (2.7)	455 (2.7)	455 (2.7)	458 (2.7)	455 (2.7)	455 (2.7)	455 (2.7)	454 (2.7)	457 (2.7)
Bahrain	452 (2.6)	453 (2.7)	452 (2.6)	453 (2.6)	454 (2.7)	452 (2.6)	453 (2.7)	452 (2.6)	453 (2.7)	457 (2.7)
Georgia	448 (2.9)	450 (2.9)	448 (2.9)	448 (2.9)	449 (2.9)	448 (2.9)	449 (2.9)	448 (2.9)	449 (3.0)	452 (2.9)
Kazakhstan	443 (3.0)	446 (3.0)	443 (3.0)	442 (3.0)	443 (2.9)	443 (3.0)	443 (3.0)	443 (3.0)	444 (3.0)	448 (2.9)
Malaysia	426 (3.7)	428 (3.7)	426 (3.7)	427 (3.7)	429 (3.7)	426 (3.7)	427 (3.7)	426 (3.7)	427 (3.7)	429 (3.7)
Brazil	420 (2.5)	418 (2.5)	420 (2.5)	420 (2.5)	427 (2.5)	420 (2.5)	420 (2.5)	420 (2.5)	420 (2.5)	421 (2.5)
Saudi Arabia	419 (3.4)	420 (3.4)	419 (3.4)	420 (3.4)	422 (3.4)	419 (3.4)	419 (3.5)	419 (3.4)	420 (3.5)	423 (3.5)
Jordan	413 (3.6)	415 (3.6)	413 (3.6)	414 (3.6)	416 (3.6)	413 (3.6)	414 (3.7)	412 (3.6)	414 (3.7)	418 (3.6)
Uzbekistan	396 (3.7)	399 (3.8)	396 (3.7)	395 (3.7)	397 (3.8)	396 (3.7)	397 (3.7)	396 (3.7)	398 (3.8)	402 (3.8)
Palestinian Nat'l Auth.	393 (2.9)	397 (2.8)	393 (2.9)	394 (2.9)	395 (2.9)	393 (2.9)	395 (2.9)	393 (2.9)	396 (2.9)	400 (2.8)
Morocco	327 (3.4)	330 (3.4)	327 (3.4)	327 (3.4)	328 (3.5)	327 (3.4)	328 (3.4)	327 (3.4)	330 (3.4)	330 (3.5)
<b>International Average</b>	<b>486 (0.5)</b>	<b>488 (0.5)</b>	<b>486 (0.5)</b>	<b>486 (0.5)</b>	<b>488 (0.5)</b>	<b>486 (0.5)</b>	<b>487 (0.5)</b>	<b>486 (0.5)</b>	<b>488 (0.5)</b>	<b>489 (0.5)</b>
<b>Benchmarking Participants</b>										
Dubai, UAE	547 (3.2)	548 (3.2)	547 (3.2)	547 (3.2)	547 (3.2)	547 (3.2)	549 (3.2)	547 (3.2)	549 (3.2)	548 (3.1)
Sharjah, UAE	499 (4.9)	500 (4.8)	499 (4.9)	499 (5.0)	499 (5.0)	499 (4.9)	501 (5.0)	499 (4.9)	501 (5.0)	503 (4.9)
Abu Dhabi, UAE	443 (3.8)	446 (3.7)	443 (3.8)	444 (3.7)	445 (3.8)	443 (3.8)	445 (3.8)	444 (3.8)	446 (3.8)	446 (3.8)
<b>Number of Items (Score Points)*</b>	<b>212 (230)</b>	<b>173 (189)</b>	<b>212 (230)</b>	<b>205 (223)</b>	<b>151 (162)</b>	<b>212 (230)</b>	<b>198 (213)</b>	<b>210 (228)</b>	<b>186 (202)</b>	<b>141 (153)</b>

\* The number of items and score points are based on the number of items included in scaling the eighth-grade science achievement data. See Chapter 9 in *TIMSS 2023 Technical Report (Methods and Procedures)* for information about items deleted or recoded for scaling. ( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

### Exhibit C.4: Average Scale Scores for the Science Test-Curriculum Matching Analysis

Results based on items identified by each country as addressed in its curriculum

(Continued)

Country	Average Science Scale Score based on All Items	Benchmarking Participants	Benchmarking Participants		
			Dubai, UAE	Sharjah, UAE	Abu Dhabi, UAE
Singapore	606 (5.7)		606 (5.7)	606 (5.7)	606 (5.7)
Chinese Taipei	572 (2.4)		572 (2.4)	572 (2.4)	572 (2.4)
Japan	557 (3.1)		557 (3.1)	557 (3.1)	557 (3.1)
Korea, Rep. of	545 (2.2)		545 (2.2)	545 (2.2)	545 (2.2)
England	531 (4.3)		531 (4.3)	531 (4.3)	531 (4.3)
Finland	531 (3.2)		531 (3.2)	531 (3.2)	531 (3.2)
Türkiye	530 (3.6)		530 (3.6)	530 (3.6)	530 (3.6)
Hong Kong SAR	528 (4.7)		528 (4.7)	528 (4.7)	528 (4.7)
Czech Republic	527 (2.0)		527 (2.0)	527 (2.0)	527 (2.0)
Ireland	525 (3.5)		525 (3.5)	525 (3.5)	525 (3.5)
Hungary	522 (3.3)		522 (3.3)	522 (3.3)	522 (3.3)
Sweden	521 (2.9)		521 (2.9)	521 (2.9)	521 (2.9)
Australia	520 (3.2)		520 (3.2)	520 (3.2)	520 (3.2)
Lithuania	519 (3.0)		519 (3.0)	519 (3.0)	519 (3.0)
United States	513 (3.9)		513 (3.9)	513 (3.9)	513 (3.9)
Austria	512 (2.4)		512 (2.4)	512 (2.4)	512 (2.4)
Portugal	506 (2.4)		506 (2.4)	506 (2.4)	506 (2.4)
New Zealand	502 (4.0)		502 (4.0)	502 (4.0)	502 (4.0)
Italy	501 (3.2)		501 (3.2)	501 (3.2)	501 (3.2)
Malta	501 (1.6)		501 (1.6)	501 (1.6)	501 (1.6)
Norway (9)	488 (2.6)		488 (2.6)	488 (2.6)	488 (2.6)
France	486 (3.2)		486 (3.2)	486 (3.2)	486 (3.2)
United Arab Emirates	486 (2.0)		486 (2.0)	486 (2.0)	486 (2.0)
Israel	481 (3.6)		481 (3.6)	481 (3.6)	481 (3.6)
Qatar	481 (4.3)		481 (4.3)	481 (4.3)	481 (4.3)
Romania	466 (4.1)		466 (4.1)	466 (4.1)	466 (4.1)
Cyprus	464 (3.0)		464 (3.0)	464 (3.0)	464 (3.0)
Oman	456 (2.6)		456 (2.6)	456 (2.6)	456 (2.6)
Chile	455 (2.7)		455 (2.7)	455 (2.7)	455 (2.7)
Bahrain	452 (2.6)		452 (2.6)	452 (2.6)	452 (2.6)
Georgia	448 (2.9)		448 (2.9)	448 (2.9)	448 (2.9)
Kazakhstan	443 (3.0)		443 (3.0)	443 (3.0)	443 (3.0)
Malaysia	426 (3.7)		426 (3.7)	426 (3.7)	426 (3.7)
Brazil	420 (2.5)		420 (2.5)	420 (2.5)	420 (2.5)
Saudi Arabia	419 (3.4)		419 (3.4)	419 (3.4)	419 (3.4)
Jordan	413 (3.6)		413 (3.6)	413 (3.6)	413 (3.6)
Uzbekistan	396 (3.7)		396 (3.7)	396 (3.7)	396 (3.7)
Palestinian Nat'l Auth.	393 (2.9)		393 (2.9)	393 (2.9)	393 (2.9)
Morocco	327 (3.4)		327 (3.4)	327 (3.4)	327 (3.4)
<b>International Average</b>	<b>486 (0.5)</b>		<b>486 (0.5)</b>	<b>486 (0.5)</b>	<b>486 (0.5)</b>
<b>Benchmarking Participants</b>					
Dubai, UAE	547 (3.2)		547 (3.2)	547 (3.2)	547 (3.2)
Sharjah, UAE	499 (4.9)		499 (4.9)	499 (4.9)	499 (4.9)
Abu Dhabi, UAE	443 (3.8)		443 (3.8)	443 (3.8)	443 (3.8)
<b>Number of Items (Score Points)*</b>	<b>212 (230)</b>		<b>212 (230)</b>	<b>212 (230)</b>	<b>212 (230)</b>

\* The number of items and score points are based on the number of items included in scaling the eighth-grade science achievement data. See Chapter 9 in *TIMSS 2023 Technical Report (Methods and Procedures)* for information about items deleted or recoded for scaling. ( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.