Exhibit 3.11: Description of the TIMSS 2019 Intermediate International Benchmark (475) of Mathematics Achievement

	Intermediate International Benchmark

475	**Summary**
	Students can apply basic mathematical knowledge in a variety of situations. They can solve problems involving whole numbers, negative numbers, fractions, decimals, and ratios. Students have some basic knowledge about properties of two-dimensional shapes. They can read and interpret data in graphs and have some rudimentary knowledge of probability.
	Students at this level can solve problems involving whole numbers, negative numbers, fractions, decimals, and ratios.
	Students have some basic knowledge about properties of two-dimensional shapes.
	Students can read and interpret data presented in tables, bar graphs, and line graphs. They have some rudimentary knowledge of probability.

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Exhibit 3.11.1: Intermediate International Benchmark of Mathematics Achievement – Example Item 1

Content Domain: Number
Cognitive Domain: Knowing
Description: Solves a word problem involving subtraction of negative numbers

On Thursday, the lowest temperature in City X was 6 °C and the lowest temperature in City Y was –3 °C. What was the difference between the lowest temperatures in the cities?

Answer: [9] °C

The answer shown illustrates the type of response that would receive full credit (1 point).

Country	Percent Full Credit	
Finland	85 (1.5)	▲
† Norway (9)	82 (2.0)	▲
Chinese Taipei	82 (1.5)	▲
England	82 (1.6)	▲
Japan	81 (1.6)	▲
2 Singapore	80 (2.0)	▲
Ireland	80 (1.7)	▲
† Hong Kong SAR	80 (2.0)	▲
2 Sweden	80 (2.1)	▲
Korea, Rep. of	80 (1.9)	▲
Australia	79 (1.8)	▲
Hungary	76 (2.4)	▲
† United States	70 (1.7)	▲
† New Zealand	69 (2.5)	▲
Lithuania	68 (2.3)	▲
3 Israel	67 (1.9)	▲
Cyprus	65 (1.9)	▲
France	63 (2.3)	▲
2 Russian Federation	61 (3.1)	
Portugal	61 (2.8)	
International Average	**59 (0.3)**	
Italy	57 (2.5)	
Romania	55 (2.4)	
United Arab Emirates	53 (1.2)	▽
Turkey	52 (1.9)	▽
Bahrain	51 (2.2)	▽
Qatar	47 (2.4)	▽
Chile	46 (2.4)	▽
2 Kazakhstan	45 (2.7)	▽
1 Georgia	44 (2.6)	▽
Malaysia	43 (1.6)	▽
2 Egypt	41 (2.3)	▽
Kuwait	39 (2.2)	▽
Jordan	37 (2.2)	▽
Oman	36 (2.0)	▽
Lebanon	36 (2.2)	▽
Iran, Islamic Rep. of	35 (2.3)	▽
2 Saudi Arabia	33 (2.0)	▽
South Africa (9)	25 (1.1)	▽
Morocco	22 (1.4)	▽
Benchmarking Participants		
‡ Quebec, Canada	82 (2.6)	▲
Moscow City, Russian Fed.	75 (1.9)	▲
Ontario, Canada	71 (2.0)	▲
2 Dubai, UAE	70 (1.8)	▲
Abu Dhabi, UAE	44 (2.0)	▽
Western Cape, RSA (9)	40 (2.4)	▽
Gauteng, RSA (9)	30 (1.7)	▽

▲ Percent significantly higher than international average

▽ Percent significantly lower than international average

See Appendix B.7 for population coverage notes 1, 2, and 3. See Appendix B.10 for sampling guidelines and sampling participation notes †, ‡, and ≡.
( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

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Exhibit 3.11.2: Intermediate International Benchmark of Mathematics Achievement – Example Item 2

Content Domain: Geometry

Cognitive Domain: Applying

Description: Determines the value of an angle in an irregular quadrilateral given the values of the other angles

What is the value of x?

$x =$ | 60 |

The answer shown illustrates the type of response that would receive full credit (1 point).

Country	Percent Full Credit	
[2] Singapore	90 (1.0)	▲
Japan	89 (1.1)	▲
Korea, Rep. of	86 (2.0)	▲
Chinese Taipei	83 (1.5)	▲
[†] Hong Kong SAR	81 (2.2)	▲
Ireland	78 (1.9)	▲
Hungary	71 (3.0)	▲
England	70 (2.5)	▲
Lithuania	69 (2.2)	▲
[2] Russian Federation	65 (2.8)	▲
Cyprus	63 (2.0)	▲
[†] Norway (9)	62 (2.1)	▲
Australia	61 (2.0)	▲
Turkey	61 (2.5)	▲
[2] Kazakhstan	60 (2.7)	
Romania	59 (2.3)	
Finland	58 (2.2)	
Portugal	57 (3.0)	
International Average	**56 (0.4)**	
Italy	55 (2.6)	
[1] Georgia	54 (2.7)	
Bahrain	54 (2.5)	
[2] Sweden	52 (2.1)	
Malaysia	52 (2.1)	
Lebanon	51 (2.9)	
Iran, Islamic Rep. of	51 (2.0)	▽
[2] Egypt	49 (2.7)	▽
Qatar	48 (2.3)	▽
[†] New Zealand	47 (2.4)	▽
United Arab Emirates	46 (1.2)	▽
[3] Israel	46 (2.5)	▽
Oman	42 (2.1)	▽
Jordan	41 (2.5)	▽
[†] United States	39 (1.9)	▽
France	36 (2.4)	▽
Kuwait	32 (3.3)	▽
[2] Saudi Arabia	30 (2.2)	▽
South Africa (9)	27 (1.2)	▽
Chile	26 (1.9)	▽
Morocco	26 (1.7)	▽
Benchmarking Participants		
Moscow City, Russian Fed.	75 (2.2)	▲
[‡] Quebec, Canada	74 (2.5)	▲
[2] Dubai, UAE	63 (2.3)	▲
Ontario, Canada	58 (3.2)	
Western Cape, RSA (9)	44 (2.5)	▽
Abu Dhabi, UAE	38 (2.1)	▽
Gauteng, RSA (9)	37 (2.0)	▽

▲ Percent significantly higher than international average

▽ Percent significantly lower than international average

See Appendix B.7 for population coverage notes 1, 2, and 3. See Appendix B.10 for sampling guidelines and sampling participation notes †, ‡, and ≡.
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Exhibit 3.11.3: Intermediate International Benchmark of Mathematics Achievement – Example Item 3

Country	Percent Full Credit	
[2] Singapore	83 (1.3)	▲
Chinese Taipei	81 (1.4)	▲
Japan	81 (1.5)	▲
Korea, Rep. of	80 (2.0)	▲
Ireland	77 (2.5)	▲
[†] Hong Kong SAR	74 (2.7)	▲
Lithuania	70 (2.5)	▲
Australia	69 (1.8)	▲
[2] Russian Federation	66 (2.7)	▲
Cyprus	66 (2.5)	▲
[2] Kazakhstan	66 (2.7)	▲
Finland	65 (2.2)	▲
France	65 (2.2)	▲
Portugal	65 (2.7)	▲
Italy	64 (2.2)	▲
[†] United States	63 (1.9)	▲
[†] New Zealand	61 (2.1)	▲
Hungary	61 (2.4)	
Romania	61 (2.9)	
[3] Israel	59 (2.4)	
England	59 (2.8)	
Malaysia	57 (1.4)	
International Average	**56 (0.4)**	
[†] Norway (9)	56 (2.6)	
[2] Sweden	55 (2.5)	
Turkey	53 (2.4)	
Lebanon	48 (2.4)	▽
[1] Georgia	44 (2.6)	▽
United Arab Emirates	43 (1.0)	▽
Bahrain	43 (1.9)	▽
Iran, Islamic Rep. of	42 (2.2)	▽
Oman	37 (1.7)	▽
Chile	37 (2.3)	▽
[2] Egypt	35 (1.7)	▽
Jordan	35 (1.8)	▽
Qatar	33 (2.2)	▽
South Africa (9)	32 (1.5)	▽
Morocco	29 (1.7)	▽
Kuwait	21 (1.8)	▽
[2] Saudi Arabia	- -	

Benchmarking Participants

Country	Percent Full Credit	
Moscow City, Russian Fed.	77 (1.9)	▲
[‡] Quebec, Canada	72 (2.6)	▲
Ontario, Canada	66 (2.4)	▲
[2] Dubai, UAE	63 (2.2)	▲
Western Cape, RSA (9)	53 (2.1)	
Gauteng, RSA (9)	40 (2.1)	▽
Abu Dhabi, UAE	36 (1.9)	▽

Content Domain: Data and Probability
Cognitive Domain: Applying
Description: Finds and compares the unit prices of four objects

Socks on Sale!
Advertisements

SALE Store Q 6 pairs of socks 24.30 zeds	SALE Store R 2 pairs of socks 8.40 zeds
SALE Store S 4 pairs of socks 16.40 zeds	SALE Store T 3 pairs of socks 12 zeds

Chen has seen these advertisements for socks and wants to pay the lowest price per pair of socks. Complete the table below to show Chen the price per pair of socks in each store. Store Q has been done for you.

Store	Price Per Pair
Q	4.05 zeds
R	4.2 zeds
S	4.1 zeds
T	4.0 zeds

From which store should Chen buy her socks in order to pay the lowest price per pair?

Store: T

The answer shown illustrates the type of response that would receive full credit (1 point).

▲ Percent significantly higher than international average

▽ Percent significantly lower than international average

See Appendix B.7 for population coverage notes 1, 2, and 3. See Appendix B.10 for sampling guidelines and sampling participation notes †, ‡, and ≡.
( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.
A dash (-) indicates comparable data not available.

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