## Mathematics • Grade 8

## Exhibit 3.1: Average Mathematics Achievement and Scale Score Distributions

€iea TIMSS 2019

Country	Average Scale Score	<b>_</b>			Math	ematics Achie	vement Distrib	ution		
<sup>2</sup> Singapore	616 (4.0)									
Chinese Taipei	612 (2.7)									
Korea, Rep. of	607 (2.8)		-							
Japan	594 (2.7)							_		
† Hong Kong SAR	578 (4.1)		-							
<sup>2</sup> Russian Federation	543 (4.5)									
Ireland	524 (2.6)									
Lithuania	520 (2.9)								_	
<sup>3</sup> Israel	519 (4.3)									
Australia	517 (3.8)	<b></b>								
Hungary	517 (2.9)	<u> </u>								
† United States	515 (4.8)									
England	515 (5.3)									
Finland	509 (2.6)					_	-			
<sup>†</sup> Norway (9)	503 (2.4)						-			
<sup>2</sup> Sweden	503 (2.5)						-			
Cyprus	501 (1.6)					_	-			
Portugal	500 (3.2)									
TIMSS Scale Centerpoint	500									
Italy	497 (2.7)					_	_			
Turkey	496 (4.3)						_			
<sup>2</sup> Kazakhstan	488 (3.3)	$\bigtriangledown$				_	_			
France	483 (2.5)	$\nabla$	-				_			
† New Zealand	482 (3.4)	$\nabla$					_			
Bahrain	481 (1.7)	$\nabla$	-				-			
Romania	479 (4.3)	$\nabla$	· · · · ·							
United Arab Emirates	473 (1.9)	V								
<sup>1</sup> Georgia	461 (4.3)	V								
•	461 (4.3)	V								
Malaysia		$\nabla$					_			
Iran, Islamic Rep. of	446 (3.7)	$\nabla$								
Ψ Qatar	443 (4.0)									
Ψ Chile	441 (2.8)	$\bigtriangledown$								
Lebanon	429 (2.9)	$\bigtriangledown$								
Ψ Jordan	420 (4.3)	$\bigtriangledown$				_		-		
<sup>2</sup> Ψ Egypt	413 (5.2)	$\nabla$								
Ψ Oman	411 (2.8)	$\nabla$						-		
Ψ Kuwait	403 (5.0)	$\bigtriangledown$				-		•		
<sup>2</sup> Ψ Saudi Arabia	394 (2.5)	$\bigtriangledown$				-				
<sup>ж</sup> South Africa (9)	389 (2.3)	$\bigtriangledown$								
Ψ Morocco	388 (2.3)	$\bigtriangledown$				-				
Benchmarking Participants			100	200	300	400	500	600	700	8
Moscow City, Russian Fed.	575 (4.2)									
‡ Quebec, Canada	543 (3.7)	<b></b>				_				
<sup>2</sup> Dubai, UAE	537 (2.0)		-			_				
Ontario, Canada	530 (4.3)								_	
Ψ Western Cape, RSA (9)	441 (4.4)		·							
<ul> <li>Ψ Abu Dhabi, UAE</li> </ul>	436 (2.9)	V								
		$\nabla$								
<sup></sup> Gauteng, RSA (9)	421 (3.0)		100	200	300	400	500	600	700	
		<b></b>	Average	significantly highe erpoint of the TIMS	er than	400	500	Percentiles of P 25 <sup>th</sup>		
		$\bigtriangledown$	Average	significantly lower erpoint of the TIMS	than		95%	Confidence Interval	for Average (±2SE)	

The TIMSS achievement scale was established in 1995 based on the combined achievement distribution of all countries that participated in TIMSS 1995. To provide a point of reference for country comparisons, the scale centerpoint of 500 was located at the mean of the combined achievement distribution. The units of the scale were chosen so that 100 scale score points corresponded to the standard deviation of the distribution.

Ψ Reservations about reliability because the percentage of students with achievement too low for estimation exceeds 15% but does not exceed 25%.

X Reservations about reliability because the percentage of students with achievement too low for estimation exceeds 25%.

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.

SOURCE: IEA's Trends in International Mathematics and Science Study - TIMSS 2019 Downloaded from http://timss2019.org/download



## E IEA TIMSS 2019

Read across the row for a country to compare performance with the countries listed along the top of the chart. If no statistically significant difference was found, no symbol is present. If the difference is significant ( $\rho < 0.05$ ), a symbol indicates whether the estimated achievement of the country in the row is higher ( $\blacktriangle$ ) than that of the comparison country, or lower ( $\nabla$ ).

· · · · · · · · · · · · · · · · · · ·												, ,	_																_	<u>`</u>	<i>'</i>			_
Country	Average Scale Score	Singapore	Chinese Taipei	Korea, Rep. of	Japan	Hong Kong SAR	Russian Federation	Ireland Lithumin	Limuania Israel	Australia	Hungary	United States	England	Finland	Norway (9)	Sweden	Cyprus	Portugal	Italy	Turkey	Kazakhstan	France	New Zealand	Bahrain	Romania	United Arab Emirates	Georgia	Malaysia	Iran, Islamic Rep. of	Qatar	Chile	Lebanon	Jordan	Eavpt
Singapore	616 (4.0)																																	
Chinese Taipei	612 (2.7)																																	
Korea, Rep. of	607 (2.8)								• •																									
Japan	594 (2.7)	$\bigtriangledown$	$\nabla$	$\nabla$																														
Hong Kong SAR	578 (4.1)	$\bigtriangledown$	$\nabla$	$\nabla$	$\nabla$																													
Russian Federation	543 (4.5)	$\bigtriangledown$	$\bigtriangledown$	$\nabla$	$\nabla$	$\nabla$			. 4	▲   ▲																								
Ireland	524 (2.6)	$\nabla$	$\nabla$	$\nabla$	$\nabla$	_	$\bigtriangledown$																											
Lithuania	520 (2.9)	$\bigtriangledown$	$\bigtriangledown$	$\nabla$	$\nabla$		$\bigtriangledown$																											
Israel	519 (4.3)	$\bigtriangledown$	$\bigtriangledown$	$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$																											
Australia	517 (3.8)	$\bigtriangledown$	$\bigtriangledown$	$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$																											
Hungary	517 (2.9)	$\nabla$	$\nabla$	$\nabla$	$\nabla$		$\bigtriangledown$																											
United States	515 (4.8)	$\bigtriangledown$	$\bigtriangledown$	$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$																											
England	515 (5.3)	$\nabla$	$\bigtriangledown$	$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$																											
Finland	509 (2.6)	$\bigtriangledown$	$\nabla$	$\nabla$	$\nabla$	$\nabla$			$\overline{}$	_																								
Norway (9)	503 (2.4)	$\bigtriangledown$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$	-	$\nabla \mid \nabla$	-	_	$\nabla$	$\nabla$																					
Sweden	503 (2.5)	$\bigtriangledown$	$\nabla$	$\nabla$	$\nabla$	$\nabla$			$\overline{}$	7 🗸	′ ▽	$\nabla$	$\nabla$																					
Cyprus	501 (1.6)	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$		$\overline{\nabla}$	_	' ▽	$\nabla$	$\nabla$	$\nabla$																				
Portugal	500 (3.2)	$\bigtriangledown$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$	$\nabla$	$\overline{}$	7 🗸	′ ▽	$\nabla$	$\nabla$	$\nabla$																				
Italy	497 (2.7)	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$		$\overline{}$			$\nabla$	$\nabla$	$\nabla$																				
Turkey	496 (4.3)	$\bigtriangledown$	$\bigtriangledown$	$\nabla$	$\nabla$	$\bigtriangledown$			$\nabla \mid \nabla$	7   🗸	$\nabla$	$\nabla$	$\nabla$	$\nabla$																				
Kazakhstan	488 (3.3)	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$		$\overline{\nabla}$	7 🗸	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\nabla$															
France	483 (2.5)	$\bigtriangledown$	$\bigtriangledown$	$\nabla$	$\nabla$	$\bigtriangledown$	$\bigtriangledown$	· ·		7 🗸		$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$														
New Zealand	482 (3.4)	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$			7 🗸		$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$	$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$		_												
Bahrain	481 (1.7)	$\bigtriangledown$	$\nabla$	$\nabla$	$\nabla$	$\nabla$			$\overline{}$		' ▽	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$	$\bigtriangledown$	$\nabla$	$\bigtriangledown$	$\bigtriangledown$														
Romania	479 (4.3)	$\bigtriangledown$	$\bigtriangledown$	$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$	-			$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\nabla$	$\bigtriangledown$	$\bigtriangledown$														
United Arab Emirates	473 (1.9)	$\bigtriangledown$	$\bigtriangledown$	$\nabla$	$\nabla$	$\nabla$	$\nabla$			_	_	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$	$\nabla$	$\nabla$	$\bigtriangledown$	$\bigtriangledown$	$\nabla$	_	$\bigtriangledown$	$\bigtriangledown$										
Georgia	461 (4.3)	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$			· ·		$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$	$\nabla$	$\bigtriangledown$	$\nabla$								
Malaysia	461 (3.2)	$\bigtriangledown$	$\bigtriangledown$	$\nabla$	$\nabla$	$\nabla$	$\nabla$				′ ▽	$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$	$\nabla$	$\nabla$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$														
Iran, Islamic Rep. of	446 (3.7)	$\nabla$	$\bigtriangledown$	$\bigtriangledown$	$\nabla$	$\nabla$						$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\nabla$	$\nabla$	$\bigtriangledown$	$\nabla$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\nabla$	$\nabla$		_	_			
Qatar	443 (4.0)	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$				7 \	′ ▽	$\bigtriangledown$	$\nabla$	$\bigtriangledown$	$\nabla$	$\bigtriangledown$	$\bigtriangledown$																	
Chile	441 (2.8)	$\nabla$		7 🗸		$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\nabla$	$\bigtriangledown$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$	$\bigtriangledown$	$\nabla$	$\bigtriangledown$	$\bigtriangledown$		_	_									
Lebanon	429 (2.9)	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$			7 🗸		$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\nabla$		$\bigtriangledown$														
Jordan	420 (4.3)	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$	$\nabla$			· ·	′ ▽	$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$	$\nabla$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$		$\bigtriangledown$	_									
Egypt	413 (5.2)	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\nabla$				_	_	$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$	$\nabla$	$\bigtriangledown$	$\bigtriangledown$	$\nabla$			$\bigtriangledown$												
Oman	411 (2.8)	$\nabla$	$\bigtriangledown$	$\bigtriangledown$	$\nabla$	$\bigtriangledown$	$\nabla$	-				$\nabla$	$\nabla$	$\bigtriangledown$	$\nabla$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	_									
Kuwait	403 (5.0)	$\nabla$	$\bigtriangledown$	$\bigtriangledown$	$\nabla$	$\bigtriangledown$	$\nabla$			_		$\bigtriangledown$	$\nabla$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	_	$\bigtriangledown$													
Saudi Arabia	394 (2.5)		$\bigtriangledown$	$\bigtriangledown$	$\nabla$	$\nabla$					_		$\nabla$	$\bigtriangledown$	$\nabla$	$\bigtriangledown$	$\nabla$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$			$\bigtriangledown$							
South Africa (9)	389 (2.3)	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$					_		$\bigtriangledown$		$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$				$\bigtriangledown$									
Morocco	388 (2.3)	$\nabla$	$\bigtriangledown$	$\nabla$	$\nabla$	$\bigtriangledown$	$\nabla$	7		7 🗸	$\nabla$	$\bigtriangledown$	$\nabla$	$\nabla$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\nabla$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\nabla$	$\nabla$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\nabla$
Benchmarking Participants				-	-						<b>—</b>							•					•								<u> </u>	<u> </u>		
Moscow City, Russian Fed.	575 (4.2)		$\nabla$	$\nabla$	$\nabla$	_																												
Quebec, Canada	543 (3.7)	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$																												
Dubai, UAE	537 (2.0)	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	-																											
Ontario, Canada	530 (4.3)	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	-		7 -																								
Western Cape, RSA (9)	441 (4.4)	$\nabla$	$\bigtriangledown$	$\nabla$	$\nabla$	$\bigtriangledown$			_	-	_		$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\nabla$	$\bigtriangledown$	$\nabla$	$\bigtriangledown$	$\nabla$	$\bigtriangledown$	$\nabla$	$\nabla$	$\bigtriangledown$	$\bigtriangledown$	-	$\rightarrow$	_			
	436 (2.9)	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$	$\nabla$	$\nabla \mid \nabla$	$  \mid                                  $	7   🗸	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\bigtriangledown$	$\bigtriangledown$	$\nabla$	$\nabla$	$\bigtriangledown$	$\nabla$	$\nabla$	$\bigtriangledown$	$\bigtriangledown$	$\nabla$	$\bigtriangledown$	$\nabla$	$\nabla$	$\bigtriangledown$	$\bigtriangledown$					
Abu Dhabi, UAE Gauteng, RSA (9)	421 (3.0)	$\nabla$	7 7	7 🛛	· 🗸	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\nabla$																						

 $\bigstar$  Average achievement significantly higher than comparison country  $\bigtriangledown$  Average achievement significantly lower than comparison country

Significance tests were not adjusted for multiple comparisons. Five percent of the comparisons would be statistically significant by chance alone. () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.



TIMSS & PIRLS International Study Center Lynch School of Education BOSTON COLLEGE

Downloaded from http://timss2019.org/download

SOURCE: IEA's Trends in International Mathematics and Science Study - TIMSS 2019



		_		_						<u>(C</u>	on	<u>tin</u>	ue	d
buntry	Average Scale Score	Oman	Kuwait	Saudi Arabia	South Africa (9)	Morocco	Benchmarking Participants	Moscow City, Russian Fed.	Quebec, Canada	Dubai, UAE	Ontario, Canada	Western Cape, RSA (9)	Abu Dhabi, UAE	Galitand RSA (0)
Singapore	616 (4.0)						m							
Chinese Taipei	612 (2.7)													4
Korea, Rep. of	607 (2.8)													4
Japan	594 (2.7)													4
Hong Kong SAR	578 (4.1)													4
Russian Federation	543 (4.5)							$\nabla$						4
Ireland	524 (2.6)							$\nabla$	$\nabla$	$\nabla$				4
Lithuania	520 (2.9)							$\nabla$	$\bigtriangledown$	$\bigtriangledown$				4
Israel	519 (4.3)								$\nabla$		-			4
Australia	517 (3.8)								$\bigtriangledown$		$\bigtriangledown$			4
Hungary	517 (2.9)								$\nabla$	$\nabla$	$\nabla$			4
United States	515 (4.8)													4
England	515 (5.3)								$\nabla$	$\nabla$	$\nabla$			4
Finland	509 (2.6)							$\nabla$	$\nabla$	$\nabla$	$\nabla$			
Norway (9) Sweden	503 (2.4)							$\nabla$	$\nabla$	$\nabla$	$\nabla$			
	503 (2.5)							$\nabla$	$\nabla$	$\nabla$	$\nabla$			
Cyprus Portugal	501 (1.6) 500 (3.2)							$\nabla$	$\nabla$	$\nabla$	$\nabla$			
Italy	497 (2.7)							$\nabla$	$\nabla$	$\nabla$	$\nabla$			
Turkey	496 (4.3)							$\nabla$	$\nabla$	$\nabla$	$\nabla$			
Kazakhstan	488 (3.3)							$\nabla$	$\nabla$	$\nabla$	$\nabla$			
France	483 (2.5)							$\nabla$	$\nabla$	$\nabla$	$\nabla$			
New Zealand	482 (3.4)							$\nabla$	$\nabla$	$\nabla$	$\nabla$			4
Bahrain	481 (1.7)							$\nabla$	$\nabla$	$\nabla$	$\nabla$			
Romania	479 (4.3)							$\nabla$	$\nabla$	$\nabla$	$\nabla$			4
United Arab Emirates	473 (1.9)							$\nabla$	$\nabla$	$\nabla$	$\nabla$			4
Georgia	461 (4.3)							$\nabla$	$\nabla$	$\nabla$	$\nabla$			
Malaysia	461 (3.2)							$\nabla$	$\nabla$	$\nabla$	$\nabla$			4
Iran, Islamic Rep. of	446 (3.7)							$\nabla$	$\nabla$	$\nabla$	$\nabla$			4
Qatar	443 (4.0)							$\nabla$	$\bigtriangledown$	$\nabla$	$\bigtriangledown$			
Chile	441 (2.8)							$\nabla$	$\nabla$	$\nabla$	$\nabla$			4
Lebanon	429 (2.9)							$\nabla$	$\bigtriangledown$	$\nabla$	$\nabla$	$\nabla$		4
Jordan	420 (4.3)							$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	
Egypt	413 (5.2)							$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	
Oman	411 (2.8)	_						$\nabla$	$\bigtriangledown$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	7
Kuwait	403 (5.0)	_							$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	$\bigtriangledown$	7
Saudi Arabia	394 (2.5)		~					$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	7
South Africa (9)	389 (2.3)	$\nabla$	$\nabla$					$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	7
Morocco	388 (2.3)		~						~	V	~	~	~	
Benchmarking Participants	575 (4.0)													
Moscow City, Russian Fed.	575 (4.2)							$\nabla$						
Quebec, Canada Dubai, UAE	543 (3.7) 537 (2.0)							$\nabla$	-		-			
Ontario, Canada	537 (2.0)							$\nabla$	$\nabla$					
Western Cape, RSA (9)	441 (4.4)							$\nabla$	$\nabla$	$\nabla$	$\nabla$	_	_	
Abu Dhabi, UAE	436 (2.9)							$\nabla$	$\nabla$	$\nabla$	$\nabla$			
Gauteng, RSA (9)	421 (3.0)							$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	$\nabla$	1

 $\bigstar$  Average achievement significantly higher than comparison country  $\bigtriangledown$  Average achievement significantly lower than comparison country

Significance tests were not adjusted for multiple comparisons. Five percent of the comparisons would be statistically significant by chance alone. () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.



SOURCE: IEA's Trends in International Mathematics and Science Study - TIMSS 2019 Downloaded from http://timss2019.org/download