

Students Confident in Mathematics Scale, Eighth Grade

The Students Confident in Mathematics (SCM) scale was created based on students' degree of agreement with the nine statements described below.

Items in the TIMSS 2015 Students Confident in Mathematics Scale, Eighth Grade

		How much do you agree with these statements about mathematics?			
		Agree a lot	Agree a little	Disagree a little	Disagree a lot
T	BSBM19A	1) I usually do well in mathematics ----- ○ ———— ○ ———— ○ ———— ○			
T	BSBM19B*	2) Mathematics is more difficult for me than for many of my classmates* ----- ○ ———— ○ ———— ○ ———— ○			
T	BSBM19C*	3) Mathematics is not one of my strengths* ----- ○ ———— ○ ———— ○ ———— ○			
T	BSBM19D	4) I learn things quickly in mathematics ----- ○ ———— ○ ———— ○ ———— ○			
	BSBM19E*	5) Mathematics makes me nervous* ----- ○ ———— ○ ———— ○ ———— ○			
T	BSBM19F	6) I am good at working out difficult mathematics problems ----- ○ ———— ○ ———— ○ ———— ○			
T	BSBM19G	7) My teacher tells me I am good at mathematics ----- ○ ———— ○ ———— ○ ———— ○			
T	BSBM19H*	8) Mathematics is harder for me than any other subject* -- ○ ———— ○ ———— ○ ———— ○			
	BSBM19I*	9) Mathematics makes me confused* ----- ○ ———— ○ ———— ○ ———— ○			

* Reverse coded

Very Confident in Mathematics (12.1) Confident in Mathematics (9.5) Not Confident in Mathematics

T Trend item—item was included in the same scale in TIMSS 2011 and was used for linking the TIMSS 2011 and TIMSS 2015 scales.

Item Parameters for the TIMSS 2015 Students Confident in Mathematics Scale, Eighth Grade

Item	delta	tau_1	tau_2	tau_3	Infit
BSBM19A	-0.50782	-1.09617	-0.31356	1.40973	0.93
BSBM19B*	0.02025	-1.16866	0.14633	1.02233	1.04
BSBM19C*	0.24765	-0.85950	0.16100	0.69850	0.94
BSBM19D	-0.23484	-1.26266	-0.08260	1.34526	0.94
BSBM19E*	-0.05673	-0.97126	0.06128	0.90998	1.21
BSBM19F	0.28492	-1.25325	-0.17310	1.42635	0.99
BSBM19G	0.02811	-1.08338	-0.13552	1.21890	1.11
BSBM19H*	0.11634	-0.69162	0.02593	0.66569	0.92
BSBM19I*	0.10212	-0.89145	0.10503	0.78642	0.99

*Reverse coded

Scale Transformation Constants for the TIMSS 2015 Students Confident in Mathematics Scale, Eighth Grade

Scale Transformation Constants	
A = 9.553292	Transformed Scale Score = 9.553292 + 1.590838 • Logit Scale Score
B = 1.590838	

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

**Equivalence Table of Raw and Transformed Scale Scores for the TIMSS
2015 Students Confident in Mathematics Scale, Eighth Grade**

Raw Score	Transformed Scale Score	Cutpoint
0	3.19619	
1	4.99370	
2	5.86478	
3	6.46291	
4	6.92948	
5	7.32079	
6	7.66196	
7	7.96832	
8	8.24834	
9	8.51163	
10	8.76064	
11	8.99900	
12	9.22981	
13	9.45579	9.5
14	9.67949	
15	9.90347	
16	10.13034	
17	10.36309	
18	10.60515	
19	10.86066	
20	11.13293	
21	11.43104	
22	11.76507	
23	12.15148	12.1
24	12.61729	
25	13.22021	
26	14.10390	
27	15.92523	

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



Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the TIMSS 2015 Students Confident in Mathematics Scale, Eighth Grade

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item									
			BSBM19A	BSBM19B*	BSBM19C*	BSBM19D	BSBM19E*	BSBM19F	BSBM19G	BSBM19H*	BSBM19I*	
Australia	0.90	56	0.80	0.75	0.83	0.79	0.58	0.77	0.58	0.80	0.77	
Bahrain	0.80	38	0.49	0.58	0.61	0.65	0.58	0.64	0.59	0.72	0.65	
Botswana (9)	0.71	32	0.71	0.38	0.49	0.68	0.10	0.71	0.66	0.49	0.53	
Canada	0.92	62	0.83	0.82	0.86	0.82	0.66	0.80	0.58	0.84	0.81	
Chile	0.85	46	0.76	0.53	0.66	0.78	0.48	0.75	0.67	0.70	0.73	
Chinese Taipei	0.93	65	0.85	0.81	0.88	0.85	0.54	0.82	0.80	0.84	0.81	
Egypt	0.70	30	0.19	0.67	0.59	0.38	0.68	0.34	0.29	0.74	0.71	
England	0.89	53	0.76	0.72	0.79	0.78	0.60	0.77	0.48	0.82	0.77	
Georgia	0.80	39	0.63	0.62	0.70	0.66	0.43	0.62	0.59	0.66	0.64	
Hong Kong SAR	0.91	58	0.78	0.76	0.85	0.76	0.62	0.77	0.68	0.83	0.77	
Hungary	0.91	59	0.83	0.73	0.83	0.83	0.57	0.79	0.78	0.76	0.74	
Iran, Islamic Rep. of	0.85	46	0.75	0.53	0.63	0.73	0.65	0.69	0.69	0.71	0.72	
Ireland	0.89	55	0.80	0.74	0.81	0.81	0.60	0.77	0.52	0.80	0.76	
Israel	0.87	49	0.75	0.68	0.70	0.73	0.63	0.70	0.60	0.75	0.72	
Italy	0.92	63	0.84	0.76	0.85	0.85	0.67	0.78	0.76	0.81	0.79	
Japan	0.90	56	0.77	0.70	0.84	0.74	0.63	0.78	0.66	0.78	0.78	
Jordan	0.76	34	0.33	0.63	0.62	0.54	0.65	0.52	0.51	0.70	0.68	
Kazakhstan	0.89	54	0.77	0.72	0.76	0.79	0.59	0.76	0.76	0.74	0.72	
Korea, Rep. of	0.91	60	0.86	0.79	0.86	0.76	0.36	0.84	0.78	0.82	0.76	
Kuwait	0.82	40	0.54	0.59	0.54	0.70	0.63	0.67	0.61	0.73	0.68	
Lebanon	0.77	36	0.62	0.62	0.60	0.59	0.63	0.50	0.57	0.71	0.55	
Lithuania	0.88	52	0.81	0.72	0.80	0.75	0.60	0.75	0.66	0.74	0.65	
Malaysia	0.81	39	0.58	0.58	0.73	0.56	0.68	0.57	0.46	0.70	0.74	
Malta	0.89	53	0.78	0.66	0.76	0.77	0.63	0.73	0.63	0.78	0.77	
Morocco	0.68	29	0.62	0.31	0.26	0.69	0.51	0.60	0.68	0.47	0.52	
New Zealand	0.88	51	0.75	0.71	0.80	0.75	0.56	0.75	0.54	0.79	0.72	
Norway (9)	0.93	63	0.83	0.77	0.86	0.83	0.73	0.83	0.71	0.81	0.74	
Oman	0.78	36	0.41	0.71	0.60	0.52	0.69	0.41	0.38	0.76	0.73	
Qatar	0.82	40	0.58	0.65	0.65	0.63	0.63	0.59	0.56	0.72	0.69	
Russian Federation	0.91	58	0.78	0.74	0.83	0.82	0.67	0.77	0.71	0.77	0.75	
Saudi Arabia	0.75	34	0.29	0.65	0.56	0.55	0.66	0.44	0.44	0.74	0.72	
Singapore	0.91	59	0.84	0.76	0.85	0.78	0.65	0.78	0.64	0.82	0.77	
Slovenia	0.91	59	0.81	0.73	0.82	0.81	0.67	0.79	0.73	0.78	0.77	
South Africa (9)	0.80	38	0.66	0.51	0.63	0.65	0.51	0.65	0.62	0.65	0.67	
Sweden	0.92	60	0.82	0.77	0.84	0.82	0.61	0.82	0.66	0.84	0.80	
Thailand	0.80	39	0.59	0.62	0.75	0.58	0.52	0.51	0.55	0.71	0.70	
Turkey	0.87	50	0.76	0.67	0.78	0.72	0.50	0.72	0.71	0.73	0.75	
United Arab Emirates	0.85	45	0.64	0.65	0.74	0.66	0.66	0.64	0.59	0.73	0.71	
United States	0.90	56	0.77	0.76	0.82	0.79	0.63	0.76	0.58	0.82	0.78	
Benchmarking Participants												
Buenos Aires, Argentina	0.85	46	0.73	0.66	0.73	0.69	0.54	0.63	0.63	0.75	0.72	
Ontario, Canada	0.92	61	0.81	0.82	0.85	0.81	0.65	0.80	0.56	0.84	0.81	
Quebec, Canada	0.92	63	0.84	0.81	0.87	0.84	0.67	0.79	0.61	0.83	0.81	
Norway (8)	0.91	60	0.81	0.77	0.84	0.82	0.71	0.81	0.64	0.79	0.74	
Abu Dhabi, UAE	0.83	42	0.58	0.64	0.73	0.61	0.66	0.60	0.53	0.70	0.71	
Dubai, UAE	0.88	51	0.74	0.70	0.77	0.72	0.67	0.70	0.64	0.77	0.74	
Florida, US	0.89	53	0.75	0.71	0.80	0.77	0.60	0.72	0.61	0.80	0.77	

*Reverse coded

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

Relationship Between the TIMSS 2015 Students Confident in Mathematics Scale, Eighth Grade, and TIMSS 2015 Mathematics Achievement

Country	Pearson's Correlation with Mathematics Achievement		Variance in Mathematics Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r ²)	
Australia	0.51	0.26	0.25
Bahrain	0.40	0.16	0.15
Botswana (9)	0.26	0.07	0.09
Canada	0.55	0.30	0.29
Chile	0.43	0.18	0.18
Chinese Taipei	0.52	0.27	0.24
Egypt	0.35	0.12	0.11
England	0.46	0.21	0.18
Georgia	0.45	0.20	0.19
Hong Kong SAR	0.37	0.14	0.14
Hungary	0.53	0.28	0.28
Iran, Islamic Rep. of	0.42	0.18	0.17
Ireland	0.44	0.19	0.19
Israel	0.36	0.13	0.13
Italy	0.50	0.25	0.23
Japan	0.44	0.19	0.16
Jordan	0.37	0.14	0.14
Kazakhstan	0.25	0.06	0.07
Korea, Rep. of	0.52	0.27	0.24
Kuwait	0.30	0.09	0.09
Lebanon	0.33	0.11	0.11
Lithuania	0.54	0.29	0.29
Malaysia	0.33	0.11	0.11
Malta	0.39	0.15	0.16
Morocco	0.39	0.15	0.14
New Zealand	0.47	0.22	0.20
Norway (9)	0.61	0.37	0.34
Oman	0.35	0.12	0.11
Qatar	0.42	0.17	0.16
Russian Federation	0.44	0.19	0.18
Saudi Arabia	0.35	0.12	0.11
Singapore	0.40	0.16	0.16
Slovenia	0.54	0.29	0.28
South Africa (9)	0.24	0.06	0.08
Sweden	0.59	0.35	0.32
Thailand	0.23	0.05	0.10
Turkey	0.48	0.23	0.24
United Arab Emirates	0.37	0.14	0.14
United States	0.43	0.18	0.18
International Median	0.42	0.18	0.16
Benchmarking Participants			
Buenos Aires, Argentina	0.37	0.13	0.12
Ontario, Canada	0.59	0.35	0.35
Quebec, Canada	0.54	0.29	0.27
Norway (8)	0.57	0.33	0.30
Abu Dhabi, UAE	0.39	0.15	0.14
Dubai, UAE	0.42	0.18	0.17
Florida, US	0.33	0.11	0.10

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