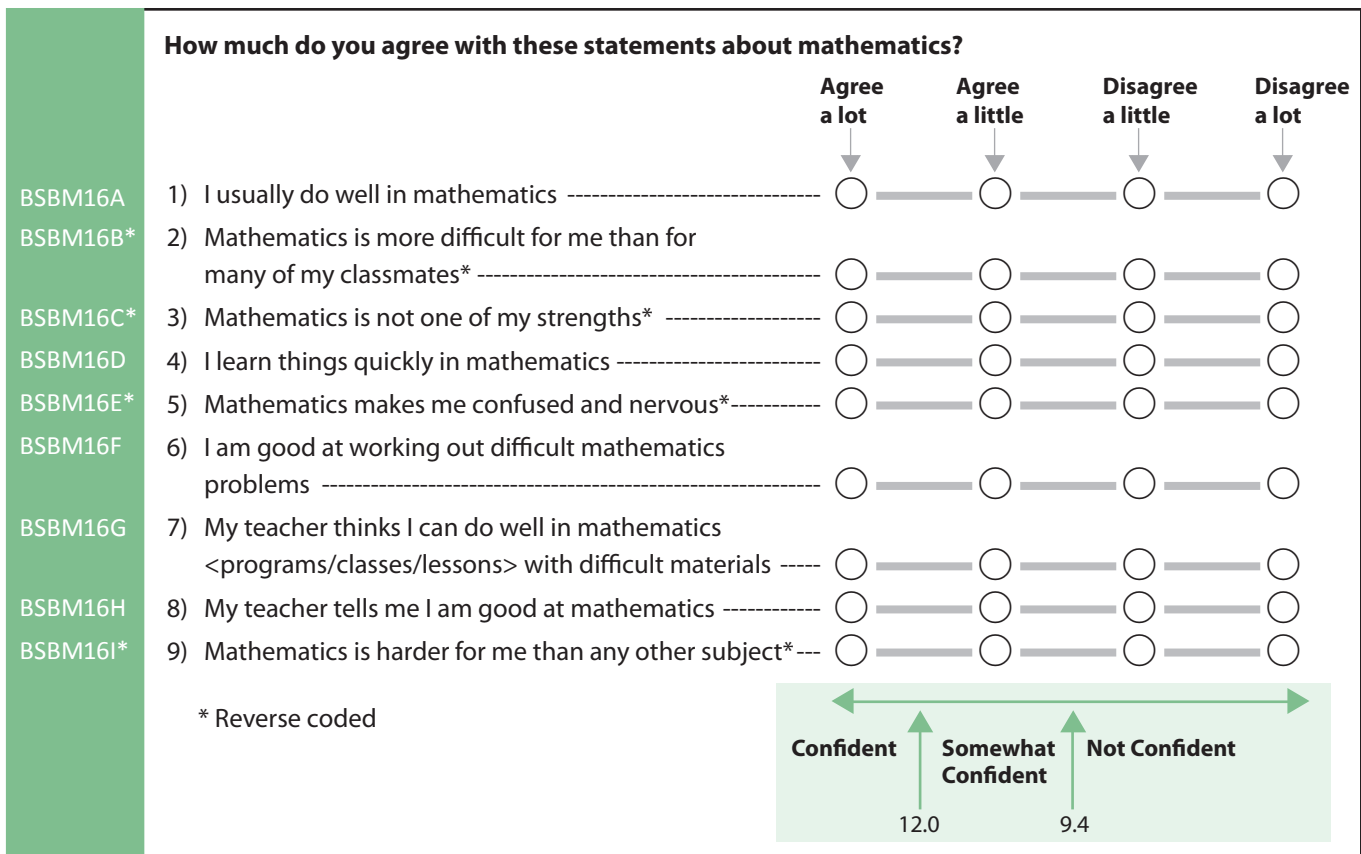


# TIMSS 2011

## The TIMSS 2011 Students Confident in Mathematics Scale, Eighth Grade

The Students Confident in Mathematics (SCM) scale was created based on students' degree of agreement to the nine statements described below. See [Creating and Interpreting TIMSS and PIRLS 2011 Context Questionnaire Scales](#) for more information on how the scales were formed.

**Exhibit 1: Items in the TIMSS 2011 Students Confident in Mathematics Scale, Eighth Grade**



**Exhibit 2: Item Parameters for the TIMSS 2011 Students Confident in Mathematics Scale, Eighth Grade**

Item	delta	tau_1	tau_2	tau_3
BSBM16A	-0.80182	-1.15216	-0.28741	1.43957
BSBM16B*	-0.23831	-1.13712	0.18600	0.95112
BSBM16C*	0.01484	-0.91776	0.25802	0.65974
BSBM16D	-0.52141	-1.33084	-0.06477	1.39561
BSBM16E*	-0.36782	-0.98865	0.10307	0.88558
BSBM16F	0.06867	-1.31939	-0.20215	1.52154
BSBM16G	-0.48810	-1.14221	-0.14877	1.29098
BSBM16H	-0.32317	-1.02591	-0.17254	1.19845
BSBM16I*	-0.06914	-0.65280	0.12136	0.53144

\*Reverse coded

**Exhibit 3: Scale Transformation Constants**

Scale Transformation Constants

A = 9.95884

B = 1.55644

Transformed Scale Score = 9.95884 + 1.55644 • Logit Scale Score

**Exhibit 4: Equivalence Table of the Raw Score and the Transformed Scale Score**

Raw Score	Transformed Scale Score	Cutpoint	Raw Score	Transformed Scale Score	Cutpoint
0	3.17837		14	9.61942	
1	4.94405		15	9.84519	
2	5.80254		16	10.07332	
3	6.39359		17	10.30668	
4	6.85613		18	10.54865	
5	7.24499		19	10.80346	
6	7.58514		20	11.07454	
7	7.89168		21	11.37095	
8	8.17383		22	11.70269	
9	8.43911		23	12.08627	12.0
10	8.69047		24	12.54869	
11	8.93142		25	13.14698	
12	9.16491		26	14.02271	
13	9.39344	9.4	27	15.81948	

**Exhibit 5: Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the TIMSS 2011 Students Confident in Mathematics Scale, Eighth Grade**

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Factor Loadings for Each Item								
			BSBM16A	BSBM16B*	BSBM16C*	BSBM16D	BSBM16E*	BSBM16F	BSBM16G	BSBM16H	BSBM16I*
Armenia	0.83	44	0.81	0.55	0.51	0.78	0.44	0.78	0.64	0.80	0.55
Australia	0.90	56	0.81	0.74	0.82	0.81	0.70	0.78	0.66	0.60	0.76
Bahrain	0.82	42	0.64	0.60	0.63	0.77	0.58	0.73	0.53	0.66	0.64
Chile	0.87	50	0.80	0.56	0.72	0.82	0.60	0.80	0.64	0.73	0.64
Chinese Taipei	0.93	65	0.86	0.81	0.85	0.85	0.67	0.83	0.75	0.83	0.80
England	0.88	52	0.77	0.68	0.82	0.78	0.68	0.76	0.66	0.54	0.75
Finland	0.93	65	0.88	0.77	0.86	0.84	0.71	0.80	0.81	0.78	0.79
Georgia	0.84	45	0.76	0.62	0.68	0.75	0.56	0.72	0.63	0.68	0.58
Ghana	0.74	33	0.67	0.54	0.52	0.66	0.50	0.58	0.53	0.65	0.50
Hong Kong SAR	0.90	56	0.80	0.72	0.80	0.78	0.66	0.77	0.65	0.74	0.77
Hungary	0.92	61	0.84	0.70	0.82	0.83	0.65	0.82	0.79	0.83	0.73
Indonesia	0.83	43	0.69	0.66	0.70	0.73	0.67	0.52	0.55	0.68	0.65
Iran, Islamic Rep. of	0.85	46	0.75	0.59	0.62	0.76	0.62	0.73	0.58	0.76	0.67
Israel	0.86	48	0.77	0.68	0.72	0.75	0.64	0.73	0.54	0.64	0.71
Italy	0.91	59	0.84	0.70	0.85	0.86	0.68	0.79	0.61	0.79	0.76
Japan	0.88	51	0.79	0.68	0.80	0.75	0.61	0.78	0.65	0.66	0.70
Jordan	0.79	38	0.56	0.57	0.50	0.71	0.52	0.73	0.65	0.71	0.55
Kazakhstan	0.88	52	0.78	0.68	0.77	0.79	0.52	0.78	0.65	0.79	0.66
Korea, Rep. of	0.89	55	0.85	0.75	0.81	0.74	0.55	0.81	0.67	0.71	0.74
Lebanon	0.80	40	0.75	0.58	0.53	0.75	0.50	0.66	0.50	0.74	0.61
Lithuania	0.89	55	0.84	0.71	0.70	0.81	0.55	0.79	0.76	0.74	0.72
Macedonia, Rep. of	0.83	44	0.79	0.39	0.55	0.78	0.55	0.78	0.60	0.80	0.60
Malaysia	0.78	37	0.74	0.34	0.52	0.70	0.53	0.75	0.69	0.65	0.43
Morocco	0.75	35	0.51	0.58	0.51	0.71	0.52	0.66	0.50	0.72	0.55
New Zealand	0.90	55	0.80	0.72	0.80	0.80	0.67	0.79	0.70	0.63	0.77
Norway	0.91	60	0.83	0.74	0.81	0.85	0.71	0.82	0.70	0.70	0.78
Oman	0.73	32	0.45	0.59	0.51	0.67	0.55	0.58	0.54	0.54	0.62
Palestinian Nat'l Auth.	0.77	36	0.64	0.52	0.53	0.72	0.51	0.70	0.54	0.66	0.55
Qatar	0.82	42	0.64	0.60	0.56	0.75	0.56	0.69	0.62	0.70	0.66
Romania	0.86	48	0.81	0.61	0.62	0.77	0.48	0.80	0.70	0.77	0.63
Russian Federation	0.90	57	0.82	0.75	0.83	0.85	0.57	0.79	0.60	0.78	0.74
Saudi Arabia	0.81	40	0.59	0.64	0.68	0.71	0.54	0.65	0.60	0.66	0.62
Singapore	0.90	57	0.84	0.72	0.83	0.80	0.69	0.77	0.67	0.69	0.77
Slovenia	0.89	54	0.82	0.73	0.81	0.82	0.67	0.64	0.60	0.77	0.73
Sweden	0.91	60	0.82	0.77	0.83	0.83	0.70	0.81	0.72	0.71	0.77
Syrian Arab Republic	0.73	33	0.51	0.50	0.41	0.69	0.50	0.70	0.55	0.69	0.51
Thailand	0.79	38	0.71	0.51	0.62	0.72	0.46	0.69	0.57	0.71	0.51
Tunisia	0.79	38	0.51	0.58	0.56	0.73	0.55	0.73	0.52	0.74	0.59

**Exhibit 5: Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the TIMSS 2011 Students Confident in Mathematics Scale, Eighth Grade (Continued)**

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Factor Loadings for Each Item								
			BSBM16A	BSBM16B*	BSBM16C*	BSBM16D	BSBM16E*	BSBM16F	BSBM16G	BSBM16H	BSBM16I*
Turkey	0.87	49	0.80	0.63	0.76	0.77	0.56	0.76	0.57	0.77	0.66
Ukraine	0.81	51	0.82	0.64	0.61	0.81	0.57	0.81	0.80	0.84	-0.35
United Arab Emirates	0.83	43	0.66	0.62	0.62	0.74	0.60	0.70	0.58	0.68	0.68
United States	0.89	55	0.77	0.74	0.81	0.81	0.71	0.76	0.61	0.61	0.79
<b>Ninth Grade Participants</b>											
Botswana	0.77	36	0.73	0.44	0.49	0.68	0.52	0.70	0.49	0.68	0.59
Honduras	0.77	38	0.77	0.32	0.34	0.80	0.35	0.79	0.72	0.79	0.28
South Africa	0.78	37	0.71	0.45	0.56	0.70	0.53	0.67	0.56	0.69	0.52
<b>Benchmarking Participants</b>											
Alberta, Canada	0.91	60	0.82	0.79	0.84	0.84	0.74	0.79	0.66	0.63	0.82
Ontario, Canada	0.92	62	0.84	0.80	0.86	0.84	0.75	0.81	0.68	0.67	0.81
Quebec, Canada	0.91	58	0.84	0.79	0.87	0.84	0.70	0.80	0.48	0.61	0.81
Abu Dhabi, UAE	0.81	40	0.61	0.62	0.59	0.72	0.58	0.69	0.56	0.66	0.65
Dubai, UAE	0.85	47	0.72	0.63	0.66	0.77	0.62	0.72	0.60	0.69	0.71
Alabama, US	0.89	54	0.77	0.72	0.80	0.82	0.70	0.78	0.62	0.62	0.76
California, US	0.89	53	0.78	0.73	0.78	0.81	0.69	0.76	0.60	0.66	0.75
Colorado, US	0.90	57	0.79	0.75	0.81	0.80	0.71	0.80	0.66	0.65	0.79
Connecticut, US	0.90	57	0.78	0.77	0.83	0.80	0.71	0.77	0.63	0.66	0.80
Florida, US	0.89	54	0.79	0.71	0.81	0.82	0.68	0.77	0.59	0.60	0.80
Indiana, US	0.90	55	0.78	0.73	0.82	0.83	0.70	0.78	0.64	0.58	0.78
Massachusetts, US	0.90	57	0.79	0.76	0.85	0.82	0.70	0.78	0.65	0.65	0.78
Minnesota, US	0.91	59	0.81	0.79	0.83	0.83	0.72	0.79	0.66	0.61	0.80
North Carolina, US	0.89	55	0.78	0.75	0.82	0.81	0.72	0.75	0.60	0.61	0.79

\*Reverse Coded

**Exhibit 6: Relationship Between the TIMSS 2011 Students Confident in Mathematics Scale, Eighth Grade, and TIMSS 2011 Mathematics Achievement**

Country	Pearson's Correlation with Mathematics Achievement		Variance in Mathematics Achievement Accounted for by Difference Between Regions of the Scale ( $\eta^2$ )
	(r)	(r <sup>2</sup> )	
Armenia	0.40	0.16	0.14
Australia	0.53	0.28	0.27
Bahrain	0.43	0.18	0.17
Chile	0.47	0.22	0.20
Chinese Taipei	0.53	0.28	0.22
England	0.45	0.21	0.17
Finland	0.60	0.36	0.34
Georgia	0.49	0.24	0.22
Ghana	0.29	0.09	0.08

**Exhibit 6: Relationship Between the TIMSS 2011 Students Confident in Mathematics Scale, Eighth Grade, and TIMSS 2011 Mathematics Achievement (Continued)**

Country	Pearson's Correlation with Mathematics Achievement		Variance in Mathematics Achievement Accounted for by Difference Between Regions of the Scale ( $\eta^2$ )
	(r)	(r <sup>2</sup> )	
Hong Kong SAR	0.38	0.14	0.13
Hungary	0.52	0.28	0.26
Indonesia	-0.02	0.00	0.00
Iran, Islamic Rep. of	0.40	0.16	0.16
Israel	0.44	0.19	0.18
Italy	0.50	0.25	0.24
Japan	0.47	0.22	0.17
Jordan	0.45	0.20	0.18
Kazakhstan	0.27	0.07	0.06
Korea, Rep. of	0.58	0.34	0.29
Lebanon	0.38	0.14	0.13
Lithuania	0.50	0.25	0.24
Macedonia, Rep. of	0.38	0.14	0.15
Malaysia	0.21	0.05	0.05
Morocco	0.34	0.12	0.10
New Zealand	0.49	0.24	0.21
Norway	0.61	0.38	0.35
Oman	0.44	0.19	0.16
Palestinian Nat'l Auth.	0.40	0.16	0.14
Qatar	0.34	0.12	0.11
Romania	0.45	0.20	0.20
Russian Federation	0.46	0.21	0.21
Saudi Arabia	0.46	0.21	0.18
Singapore	0.40	0.16	0.15
Slovenia	0.58	0.33	0.31
Sweden	0.59	0.34	0.31
Syrian Arab Republic	0.23	0.05	0.05
Thailand	0.15	0.02	0.03
Tunisia	0.40	0.16	0.14
Turkey	0.50	0.25	0.26
Ukraine	0.46	0.21	0.17
United Arab Emirates	0.39	0.15	0.14
United States	0.43	0.18	0.16
<b>International Median</b>	<b>0.44</b>	<b>0.20</b>	<b>0.17</b>

**Exhibit 6: Relationship Between the TIMSS 2011 Students Confident in Mathematics Scale, Eighth Grade, and TIMSS 2011 Mathematics Achievement (Continued)**

Country	Pearson's Correlation with Mathematics Achievement		Variance in Mathematics Achievement Accounted for by Difference Between Regions of the Scale ( $\eta^2$ )
	(r)	(r <sup>2</sup> )	
<b>Ninth Grade Participants</b>			
Botswana	0.28	0.08	0.11
Honduras	0.26	0.07	0.07
South Africa	0.24	0.06	0.08
<b>Benchmarking Participants</b>			
Alberta, Canada	0.57	0.33	0.32
Ontario, Canada	0.61	0.37	0.36
Quebec, Canada	0.52	0.27	0.24
Abu Dhabi, UAE	0.41	0.17	0.15
Dubai, UAE	0.39	0.15	0.13
Alabama, US	0.35	0.12	0.11
California, US	0.40	0.16	0.15
Colorado, US	0.51	0.26	0.23
Connecticut, US	0.43	0.19	0.18
Florida, US	0.47	0.22	0.21
Indiana, US	0.45	0.20	0.19
Massachusetts, US	0.49	0.24	0.19
Minnesota, US	0.52	0.27	0.25
North Carolina, US	0.40	0.16	0.13