

# Students Like Learning Mathematics Scale, Eighth Grade

The Students Like Learning Mathematics (SLM) scale was created based on students' degree of agreement with the nine statements described below.

## Items in the TIMSS 2015 Students Like Learning Mathematics Scale, Eighth Grade

		How much do you agree with these statements about learning mathematics?			
		Agree a lot	Agree a little	Disagree a little	Disagree a lot
T	BSBM17A	1) I enjoy learning mathematics -----○-----	○-----	○-----	○-----
T	BSBM17B *	2) I wish I did not have to study mathematics* -----○-----	○-----	○-----	○-----
T	BSBM17C *	3) Mathematics is boring* -----○-----	○-----	○-----	○-----
T	BSBM17D	4) I learn many interesting things in mathematics ---○-----	○-----	○-----	○-----
T	BSBM17E	5) I like mathematics -----○-----	○-----	○-----	○-----
	BSBM17F	6) I like any schoolwork that involves numbers -----○-----	○-----	○-----	○-----
	BSBM17G	7) I like to solve mathematics problems-----○-----	○-----	○-----	○-----
	BSBM17H	8) I look forward to mathematics class -----○-----	○-----	○-----	○-----
	BSBM17I	9) Mathematics is one of my favorite subjects -----○-----	○-----	○-----	○-----

\* Reverse coded

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 Like Learning Mathematics Scale, Eighth Grade**

Item	delta	tau_1	tau_2	tau_3	Infit
BSBM17A	-0.48929	-1.41673	-0.43072	1.84745	0.81
BSBM17B*	-0.07466	-1.22401	0.09794	1.12607	1.72
BSBM17C*	0.11238	-1.62447	0.14173	1.48274	1.39
BSBM17D	-0.71855	-1.68593	-0.23274	1.91867	1.10
BSBM17E	-0.22025	-1.25167	-0.34163	1.59330	0.67
BSBM17F	0.20385	-1.83417	0.00020	1.83397	1.01
BSBM17G	0.13127	-1.51555	-0.16902	1.68457	0.90
BSBM17H	0.56595	-1.67774	-0.09470	1.77244	0.92
BSBM17I	0.48930	-1.06313	-0.07995	1.14308	0.81

\*Reverse coded

**Scale Transformation Constants for the TIMSS 2015 Students Like Learning Mathematics Scale, Eighth Grade**

Scale Transformation Constants	
A = 9.42706	Transformed Scale Score = 9.42706 + 0.987588 • Logit Scale Score
B = 0.987588	

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 Like Learning Mathematics Scale, Eighth Grade**

Raw Score	Transformed Scale Score	Cutpoint
0	4.96789	
1	6.12033	
2	6.69346	
3	7.09477	
4	7.41571	
5	7.68894	
6	7.93203	
7	8.15498	
8	8.36376	
9	8.56346	
10	8.75617	
11	8.94416	
12	9.12922	
13	9.31285	9.4
14	9.49639	
15	9.68118	
16	9.86866	
17	10.06049	
18	10.25863	
19	10.46547	
20	10.68282	
21	10.91671	
22	11.17269	
23	11.46067	11.4
24	11.79792	
25	12.21629	
26	12.80770	
27	13.97818	

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 Like Learning Mathematics Scale, Eighth Grade**

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item									
			BSBM17A	BSBM17B*	BSBM17C*	BSBM17D	BSBM17E	BSBM17F	BSBM17G	BSBM17H	BSBM17I	
Australia	0.94	67	0.88	0.71	0.74	0.74	0.91	0.81	0.85	0.86	0.85	
Bahrain	0.92	63	0.84	0.56	0.61	0.81	0.90	0.77	0.85	0.84	0.87	
Botswana (9)	0.87	50	0.76	0.52	0.60	0.64	0.83	0.68	0.77	0.70	0.78	
Canada	0.94	68	0.89	0.70	0.78	0.74	0.91	0.81	0.85	0.86	0.87	
Chile	0.93	66	0.85	0.61	0.72	0.74	0.90	0.83	0.87	0.86	0.87	
Chinese Taipei	0.95	70	0.89	0.74	0.78	0.83	0.92	0.85	0.88	0.78	0.88	
Egypt	0.88	54	0.78	0.33	0.48	0.75	0.86	0.75	0.83	0.82	0.82	
England	0.94	67	0.87	0.75	0.78	0.74	0.90	0.82	0.83	0.83	0.85	
Georgia	0.90	56	0.81	0.49	0.58	0.68	0.87	0.76	0.81	0.80	0.83	
Hong Kong SAR	0.94	69	0.89	0.67	0.73	0.82	0.92	0.84	0.88	0.81	0.89	
Hungary	0.93	65	0.87	0.67	0.72	0.76	0.91	0.82	0.83	0.82	0.84	
Iran, Islamic Rep. of	0.92	62	0.83	0.70	0.64	0.75	0.89	0.73	0.83	0.80	0.88	
Ireland	0.94	66	0.88	0.74	0.75	0.75	0.90	0.79	0.82	0.83	0.85	
Israel	0.93	65	0.85	0.64	0.73	0.80	0.90	0.78	0.85	0.80	0.87	
Italy	0.95	71	0.90	0.79	0.82	0.71	0.92	0.84	0.80	0.86	0.88	
Japan	0.94	68	0.88	0.61	0.72	0.82	0.92	0.85	0.88	0.82	0.88	
Jordan	0.91	60	0.82	0.45	0.55	0.78	0.90	0.79	0.84	0.87	0.86	
Kazakhstan	0.91	60	0.78	0.51	0.65	0.74	0.87	0.78	0.86	0.83	0.85	
Korea, Rep. of	0.94	70	0.89	0.66	0.78	0.83	0.92	0.86	0.87	0.77	0.89	
Kuwait	0.92	62	0.86	0.49	0.68	0.80	0.90	0.79	0.85	0.79	0.88	
Lebanon	0.87	52	0.77	0.45	0.42	0.66	0.87	0.74	0.81	0.75	0.85	
Lithuania	0.93	65	0.86	0.67	0.71	0.71	0.90	0.82	0.88	0.82	0.84	
Malaysia	0.89	54	0.82	0.58	0.67	0.74	0.86	0.75	0.60	0.73	0.82	
Malta	0.94	67	0.88	0.71	0.77	0.76	0.91	0.78	0.78	0.85	0.88	
Morocco	0.88	52	0.80	0.44	0.56	0.73	0.86	0.69	0.70	0.84	0.80	
New Zealand	0.93	64	0.87	0.67	0.70	0.71	0.90	0.81	0.83	0.84	0.85	
Norway (9)	0.94	70	0.88	0.71	0.78	0.80	0.92	0.84	0.89	0.86	0.85	
Oman	0.87	52	0.78	0.39	0.60	0.73	0.86	0.65	0.81	0.71	0.83	
Qatar	0.92	62	0.85	0.51	0.55	0.80	0.90	0.81	0.86	0.85	0.88	
Russian Federation	0.92	62	0.86	0.54	0.71	0.74	0.89	0.78	0.81	0.83	0.85	
Saudi Arabia	0.92	63	0.85	0.46	0.61	0.83	0.90	0.79	0.85	0.87	0.88	
Singapore	0.94	69	0.88	0.77	0.78	0.75	0.91	0.79	0.87	0.82	0.89	
Slovenia	0.93	66	0.85	0.64	0.80	0.78	0.91	0.78	0.84	0.86	0.84	
South Africa (9)	0.89	54	0.82	0.55	0.61	0.62	0.86	0.73	0.80	0.76	0.82	
Sweden	0.95	71	0.88	0.71	0.83	0.80	0.92	0.87	0.86	0.86	0.87	
Thailand	0.89	56	0.80	0.44	0.56	0.67	0.87	0.81	0.77	0.83	0.85	
Turkey	0.92	61	0.82	0.63	0.74	0.59	0.89	0.76	0.83	0.83	0.87	
United Arab Emirates	0.93	64	0.85	0.61	0.70	0.78	0.89	0.77	0.84	0.82	0.87	
United States	0.94	69	0.88	0.70	0.75	0.76	0.91	0.82	0.88	0.87	0.87	
<b>Benchmarking Participants</b>												
Buenos Aires, Argentina	0.92	62	0.83	0.57	0.64	0.73	0.89	0.84	0.84	0.83	0.86	
Ontario, Canada	0.95	70	0.90	0.73	0.78	0.74	0.91	0.82	0.87	0.88	0.87	
Quebec, Canada	0.93	64	0.87	0.63	0.79	0.73	0.90	0.80	0.81	0.82	0.84	
Norway (8)	0.95	71	0.88	0.73	0.81	0.79	0.92	0.84	0.88	0.86	0.85	
Abu Dhabi, UAE	0.93	64	0.85	0.56	0.68	0.79	0.89	0.80	0.85	0.84	0.88	
Dubai, UAE	0.93	65	0.86	0.71	0.75	0.76	0.89	0.76	0.83	0.82	0.87	
Florida, US	0.94	68	0.88	0.68	0.71	0.77	0.91	0.81	0.89	0.86	0.86	

\*Reverse coded

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

**Relationship Between the TIMSS 2015 Students Like Learning 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 ( $\eta^2$ )
	(r)	(r <sup>2</sup> )	
Australia	0.34	0.11	0.09
Bahrain	0.27	0.07	0.07
Botswana (9)	0.27	0.07	0.07
Canada	0.36	0.13	0.10
Chile	0.25	0.06	0.07
Chinese Taipei	0.43	0.18	0.15
Egypt	0.24	0.06	0.08
England	0.30	0.09	0.08
Georgia	0.23	0.05	0.05
Hong Kong SAR	0.33	0.11	0.09
Hungary	0.29	0.09	0.08
Iran, Islamic Rep. of	0.27	0.07	0.07
Ireland	0.32	0.10	0.08
Israel	0.11	0.01	0.01
Italy	0.34	0.11	0.11
Japan	0.35	0.13	0.11
Jordan	0.16	0.03	0.04
Kazakhstan	0.18	0.03	0.03
Korea, Rep. of	0.40	0.16	0.13
Kuwait	0.16	0.02	0.02
Lebanon	0.18	0.03	0.04
Lithuania	0.28	0.08	0.07
Malaysia	0.27	0.07	0.06
Malta	0.26	0.07	0.06
Morocco	0.30	0.09	0.08
New Zealand	0.25	0.06	0.05
Norway (9)	0.40	0.16	0.13
Oman	0.26	0.07	0.07
Qatar	0.29	0.08	0.08
Russian Federation	0.25	0.06	0.06
Saudi Arabia	0.19	0.04	0.03
Singapore	0.32	0.10	0.08
Slovenia	0.30	0.09	0.08
South Africa (9)	0.08	0.01	0.02
Sweden	0.40	0.16	0.15
Thailand	0.19	0.04	0.04
Turkey	0.19	0.04	0.05
United Arab Emirates	0.23	0.05	0.05
United States	0.27	0.07	0.06
International Median	0.27	0.07	0.07
<b>Benchmarking Participants</b>			
Buenos Aires, Argentina	0.16	0.03	0.02
Ontario, Canada	0.41	0.17	0.15
Quebec, Canada	0.33	0.11	0.07
Norway (8)	0.35	0.12	0.10
Abu Dhabi, UAE	0.22	0.05	0.05
Dubai, UAE	0.27	0.07	0.07
Florida, US	0.16	0.03	0.03

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