

Students Value Mathematics Scale, Eighth Grade

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

Items in the TIMSS 2015 Students Value 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	BSBM20A	1) I think learning mathematics will help me in my daily life ----- ○ ——— ○ ——— ○ ——— ○			
T	BSBM20B	2) I need mathematics to learn other school subjects ----- ○ ——— ○ ——— ○ ——— ○			
T	BSBM20C	3) I need to do well in mathematics to get into the university of my choice ----- ○ ——— ○ ——— ○ ——— ○			
T	BSBM20D	4) I need to do well in mathematics to get the job I want ----- ○ ——— ○ ——— ○ ——— ○			
T	BSBM20E	5) I would like a job that involves using mathematics ----- ○ ——— ○ ——— ○ ——— ○			
	BSBM20F	6) It is important to learn about mathematics to get ahead in the world ----- ○ ——— ○ ——— ○ ——— ○			
	BSBM20G	7) Learning mathematics will give me more job opportunities when I am an adult ----- ○ ——— ○ ——— ○ ——— ○			
	BSBM20H	8) My parents think that it is important that I do well in mathematics ----- ○ ——— ○ ——— ○ ——— ○			
	BSBM20I	9) It is important to do well in mathematics ----- ○ ——— ○ ——— ○ ——— ○			

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Strongly Value Mathematics
Value Mathematics
Do Not Value Mathematics

10.3
7.7

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 Value Mathematics Scale, Eighth Grade

Item	delta	tau_1	tau_2	tau_3	Infit
BSBM20A	-0.09861	-0.83768	-0.54142	1.37910	1.06
BSBM20B	0.18629	-1.33201	-0.44135	1.77336	1.09
BSBM20C	-0.25501	-0.94177	-0.29071	1.23248	0.97
BSBM20D	-0.04767	-1.09264	-0.15715	1.24979	0.90
BSBM20E	1.50538	-1.33717	-0.05987	1.39704	1.32
BSBM20F	0.03583	-1.16694	-0.36329	1.53023	0.86
BSBM20G	-0.24374	-1.00834	-0.47571	1.48405	0.85
BSBM20H	-0.52892	-0.96883	-0.41750	1.38633	1.17
BSBM20I	-0.55355	-0.78232	-0.54990	1.33222	0.91

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

Scale Transformation Constants	
A = 7.964227	Transformed Scale Score = 7.964227 + 1.234642 • Logit Scale Score
B = 1.234642	

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 Value Mathematics Scale, Eighth Grade**

Raw Score	Transformed Scale Score	Cutpoint
0	2.99893	
1	4.33377	
2	4.96171	
3	5.38958	
4	5.72259	
5	6.00170	
6	6.24837	
7	6.47387	
8	6.68550	
9	6.88836	
10	7.08629	
11	7.28237	
12	7.48033	
13	7.67979	7.7
14	7.88500	
15	8.09804	
16	8.32084	
17	8.55527	
18	8.80299	
19	9.06690	
20	9.34984	
21	9.65639	
22	9.99387	
23	10.37453	10.3
24	10.81825	
25	11.37143	
26	12.14660	
27	13.65262	

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 Value Mathematics Scale, Eighth Grade

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item								
			BSBM20A	BSBM20B	BSBM20C	BSBM20D	BSBM20E	BSBM20F	BSBM20G	BSBM20H	BSBM20I
Australia	0.90	58	0.77	0.73	0.79	0.80	0.65	0.82	0.81	0.64	0.80
Bahrain	0.90	57	0.72	0.73	0.80	0.78	0.62	0.82	0.82	0.67	0.78
Botswana (9)	0.81	42	0.64	0.61	0.70	0.73	0.48	0.72	0.70	0.56	0.68
Canada	0.88	52	0.71	0.68	0.75	0.76	0.63	0.77	0.79	0.62	0.78
Chile	0.89	55	0.74	0.70	0.77	0.79	0.59	0.82	0.82	0.67	0.76
Chinese Taipei	0.90	56	0.68	0.67	0.78	0.82	0.70	0.80	0.84	0.61	0.79
Egypt	0.87	49	0.64	0.71	0.75	0.74	0.61	0.73	0.73	0.64	0.71
England	0.87	51	0.71	0.69	0.71	0.75	0.60	0.79	0.78	0.61	0.76
Georgia	0.88	54	0.72	0.68	0.73	0.77	0.57	0.80	0.78	0.69	0.81
Hong Kong SAR	0.91	57	0.69	0.73	0.77	0.83	0.68	0.82	0.85	0.62	0.79
Hungary	0.87	51	0.72	0.67	0.66	0.75	0.65	0.78	0.75	0.66	0.75
Iran, Islamic Rep. of	0.88	51	0.66	0.64	0.77	0.78	0.67	0.78	0.75	0.60	0.74
Ireland	0.87	51	0.68	0.66	0.74	0.77	0.63	0.79	0.77	0.59	0.75
Israel	0.88	54	0.70	0.69	0.75	0.77	0.58	0.83	0.81	0.64	0.79
Italy	0.86	47	0.71	0.63	0.68	0.74	0.65	0.79	0.78	0.56	0.61
Japan	0.86	47	0.63	0.66	0.72	0.76	0.57	0.81	0.78	0.58	0.66
Jordan	0.89	54	0.68	0.71	0.78	0.78	0.57	0.79	0.79	0.70	0.77
Kazakhstan	0.91	58	0.73	0.67	0.82	0.83	0.70	0.78	0.83	0.70	0.77
Korea, Rep. of	0.88	52	0.60	0.68	0.77	0.80	0.60	0.77	0.81	0.63	0.80
Kuwait	0.86	49	0.68	0.66	0.74	0.73	0.64	0.76	0.76	0.58	0.73
Lebanon	0.88	51	0.68	0.69	0.74	0.76	0.63	0.80	0.75	0.60	0.73
Lithuania	0.88	52	0.71	0.69	0.73	0.79	0.60	0.73	0.78	0.63	0.78
Malaysia	0.89	53	0.69	0.64	0.79	0.77	0.59	0.78	0.77	0.72	0.79
Malta	0.88	52	0.70	0.70	0.73	0.76	0.59	0.80	0.79	0.61	0.75
Morocco	0.85	47	0.64	0.67	0.74	0.75	0.60	0.71	0.72	0.60	0.72
New Zealand	0.89	56	0.74	0.72	0.77	0.78	0.59	0.81	0.81	0.68	0.79
Norway (9)	0.89	55	0.73	0.70	0.78	0.79	0.66	0.81	0.80	0.62	0.77
Oman	0.85	46	0.65	0.63	0.72	0.70	0.57	0.74	0.73	0.65	0.70
Qatar	0.91	60	0.73	0.75	0.81	0.80	0.64	0.84	0.83	0.73	0.81
Russian Federation	0.89	55	0.72	0.69	0.78	0.80	0.67	0.79	0.80	0.61	0.75
Saudi Arabia	0.89	55	0.72	0.74	0.78	0.77	0.61	0.81	0.80	0.64	0.75
Singapore	0.87	50	0.68	0.64	0.74	0.76	0.60	0.79	0.78	0.59	0.75
Slovenia	0.88	52	0.69	0.66	0.72	0.77	0.60	0.80	0.81	0.64	0.74
South Africa (9)	0.82	44	0.65	0.57	0.73	0.75	0.50	0.71	0.72	0.57	0.70
Sweden	0.88	51	0.64	0.65	0.80	0.80	0.64	0.75	0.77	0.64	0.72
Thailand	0.88	53	0.61	0.66	0.75	0.79	0.60	0.80	0.79	0.74	0.77
Turkey	0.87	50	0.63	0.68	0.74	0.77	0.65	0.81	0.77	0.55	0.73
United Arab Emirates	0.90	56	0.72	0.70	0.79	0.79	0.62	0.81	0.81	0.68	0.77
United States	0.89	54	0.72	0.70	0.73	0.77	0.60	0.83	0.82	0.65	0.78
Benchmarking Participants											
Buenos Aires, Argentina	0.86	48	0.72	0.66	0.66	0.73	0.56	0.78	0.78	0.58	0.71
Ontario, Canada	0.88	53	0.70	0.67	0.75	0.75	0.64	0.80	0.78	0.63	0.78
Quebec, Canada	0.86	50	0.67	0.64	0.74	0.77	0.61	0.71	0.80	0.64	0.75
Norway (8)	0.88	54	0.73	0.69	0.79	0.77	0.62	0.80	0.80	0.60	0.77
Abu Dhabi, UAE	0.90	57	0.73	0.72	0.80	0.80	0.62	0.81	0.82	0.70	0.78
Dubai, UAE	0.89	54	0.71	0.65	0.78	0.78	0.65	0.81	0.81	0.65	0.75
Florida, US	0.89	56	0.74	0.70	0.73	0.79	0.59	0.84	0.83	0.67	0.80

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

Relationship Between the TIMSS 2015 Students Value 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	0.23	0.05	0.05
Bahrain	0.23	0.05	0.05
Botswana (9)	0.34	0.12	0.11
Canada	0.22	0.05	0.05
Chile	0.12	0.01	0.01
Chinese Taipei	0.36	0.13	0.12
Egypt	0.18	0.03	0.03
England	0.12	0.01	0.01
Georgia	0.11	0.01	0.02
Hong Kong SAR	0.24	0.06	0.06
Hungary	0.18	0.03	0.03
Iran, Islamic Rep. of	0.12	0.01	0.02
Ireland	0.15	0.02	0.02
Israel	0.16	0.02	0.03
Italy	0.19	0.04	0.03
Japan	0.24	0.06	0.04
Jordan	0.14	0.02	0.03
Kazakhstan	0.09	0.01	0.01
Korea, Rep. of	0.38	0.14	0.13
Kuwait	0.15	0.02	0.02
Lebanon	0.14	0.02	0.02
Lithuania	0.15	0.02	0.02
Malaysia	0.22	0.05	0.05
Malta	0.17	0.03	0.03
Morocco	0.19	0.03	0.03
New Zealand	0.16	0.02	0.02
Norway (9)	0.23	0.06	0.05
Oman	0.21	0.04	0.05
Qatar	0.27	0.07	0.07
Russian Federation	0.10	0.01	0.01
Saudi Arabia	0.12	0.02	0.02
Singapore	0.11	0.01	0.02
Slovenia	0.18	0.03	0.02
South Africa (9)	0.15	0.02	0.02
Sweden	0.20	0.04	0.04
Thailand	0.19	0.03	0.03
Turkey	0.14	0.02	0.02
United Arab Emirates	0.22	0.05	0.05
United States	0.17	0.03	0.02
International Median	0.18	0.03	0.03
Benchmarking Participants			
Buenos Aires, Argentina	0.02	0.00	0.00
Ontario, Canada	0.25	0.06	0.05
Quebec, Canada	0.24	0.06	0.05
Norway (8)	0.17	0.03	0.03
Abu Dhabi, UAE	0.19	0.04	0.05
Dubai, UAE	0.25	0.06	0.05
Florida, US	0.07	0.01	0.00

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