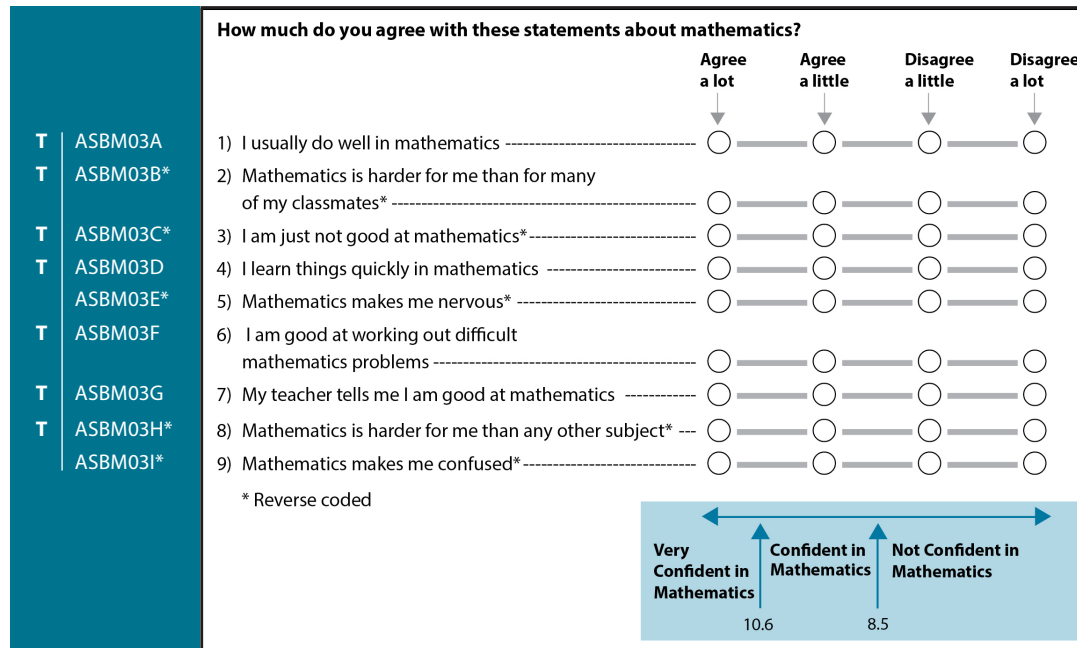


Students Confident in Mathematics Scale, Fourth Grade

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, Fourth Grade



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, Fourth Grade

Item	delta	tau_1	tau_2	tau_3	Infit
ASBM03A	-0.54541	-0.55281	-0.58064	1.13345	0.92
ASBM03B*	0.28031	-0.54709	0.20931	0.33778	1.03
ASBM03C*	0.03294	-0.35764	0.16685	0.19079	0.94
ASBM03D	-0.29218	-0.62562	-0.32950	0.95512	0.98
ASBM03E*	0.11800	-0.33518	0.20115	0.13403	1.14
ASBM03F	0.23717	-0.75825	-0.29418	1.05243	1.08
ASBM03G	-0.08982	-0.68948	-0.31756	1.00704	1.18
ASBM03H*	0.17797	-0.19045	0.15607	0.03438	0.92
ASBM03I*	0.08102	-0.31116	0.17313	0.13803	0.96

*Reverse coded

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

Scale Transformation Constants

A = 8.5562

B = 1.599041

Transformed Scale Score = 8.5562 + 1.599041 • Logit Scale Score

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, Fourth Grade**

Raw Score	Transformed Scale Score	Cutpoint
0	3.07742	
1	4.72829	
2	5.49394	
3	6.01123	
4	6.41043	
5	6.74273	
6	7.03006	
7	7.28571	
8	7.51692	
9	7.73253	
10	7.93452	
11	8.12606	
12	8.30992	
13	8.48862	8.5
14	8.66452	
15	8.83997	
16	9.01741	
17	9.19961	
18	9.38976	
19	9.59180	
20	9.81049	
21	10.04927	
22	10.32220	
23	10.64456	10.6
24	11.04413	
25	11.57999	
26	12.39959	
27	14.17323	

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, Fourth Grade

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item								
			ASBM03A	ASBM03B*	ASBM03C*	ASBM03D	ASBM03E*	ASBM03F	ASBM03G	ASBM03H*	ASBM03I*
Australia	0.87	50	0.74	0.71	0.78	0.71	0.65	0.74	0.42	0.78	0.74
Bahrain	0.76	35	0.18	0.72	0.74	0.38	0.73	0.34	0.33	0.79	0.74
Belgium (Flemish)	0.88	52	0.81	0.76	0.82	0.70	0.50	0.71	0.60	0.80	0.72
Bulgaria	0.87	49	0.73	0.70	0.73	0.71	0.62	0.70	0.66	0.74	0.73
Canada	0.86	48	0.73	0.75	0.77	0.70	0.63	0.69	0.38	0.78	0.74
Chile	0.82	41	0.65	0.60	0.70	0.64	0.64	0.61	0.44	0.72	0.75
Chinese Taipei	0.86	48	0.74	0.68	0.65	0.74	0.57	0.70	0.62	0.75	0.76
Croatia	0.89	53	0.75	0.73	0.71	0.76	0.69	0.70	0.67	0.77	0.78
Cyprus	0.86	47	0.71	0.68	0.71	0.68	0.61	0.70	0.59	0.73	0.74
Czech Republic	0.88	51	0.74	0.74	0.80	0.75	0.64	0.59	0.61	0.78	0.73
Denmark	0.87	50	0.78	0.75	0.80	0.74	0.58	0.63	0.54	0.75	0.74
England	0.87	49	0.73	0.70	0.78	0.71	0.64	0.72	0.36	0.79	0.76
Finland	0.86	49	0.78	0.73	0.81	0.74	0.64	0.70	0.52	0.77	0.53
France	0.87	50	0.75	0.72	0.77	0.74	0.64	0.61	0.54	0.76	0.77
Georgia	0.76	35	0.38	0.71	0.73	0.44	0.65	0.32	0.39	0.75	0.70
Germany	0.89	53	0.76	0.76	0.80	0.74	0.66	0.70	0.63	0.77	0.73
Hong Kong SAR	0.86	48	0.72	0.68	0.81	0.71	0.56	0.71	0.60	0.77	0.63
Hungary	0.88	52	0.78	0.72	0.78	0.76	0.56	0.74	0.72	0.74	0.68
Indonesia	0.75	34	0.37	0.70	0.73	0.41	0.70	0.16	0.32	0.75	0.76
Iran, Islamic Rep. of	0.76	34	0.50	0.56	0.50	0.52	0.68	0.52	0.49	0.72	0.72
Ireland	0.85	48	0.73	0.75	0.77	0.70	0.63	0.69	0.29	0.78	0.74
Italy	0.85	45	0.69	0.70	0.64	0.71	0.66	0.59	0.60	0.75	0.71
Japan	0.88	50	0.71	0.67	0.83	0.72	0.66	0.77	0.46	0.75	0.75
Jordan	0.75	35	0.09	0.73	0.76	0.26	0.78	0.17	0.25	0.80	0.77
Kazakhstan	0.85	45	0.68	0.69	0.72	0.66	0.62	0.66	0.65	0.72	0.64
Korea, Rep. of	0.88	53	0.82	0.78	0.78	0.73	0.43	0.79	0.56	0.80	0.76
Kuwait	0.75	33	0.22	0.68	0.70	0.40	0.71	0.36	0.39	0.75	0.70
Lithuania	0.84	45	0.75	0.70	0.75	0.66	0.48	0.69	0.62	0.72	0.59
Morocco	0.74	32	0.39	0.66	0.71	0.35	0.71	0.27	0.32	0.72	0.70
Netherlands	0.89	54	0.80	0.77	0.82	0.74	0.46	0.77	0.53	0.80	0.82
New Zealand	0.83	42	0.70	0.66	0.74	0.66	0.54	0.67	0.42	0.72	0.67
Northern Ireland	0.87	49	0.77	0.74	0.79	0.70	0.66	0.71	0.31	0.76	0.76
Norway (5)	0.87	49	0.76	0.72	0.75	0.75	0.57	0.75	0.50	0.76	0.70
Oman	0.69	30	0.07	0.73	0.62	0.21	0.74	0.08	0.15	0.78	0.76
Poland	0.88	52	0.75	0.74	0.73	0.76	0.60	0.74	0.65	0.79	0.74
Portugal	0.86	49	0.72	0.64	0.77	0.67	0.65	0.72	0.66	0.69	0.75
Qatar	0.80	38	0.34	0.75	0.76	0.43	0.72	0.40	0.39	0.79	0.73
Russian Federation	0.89	54	0.75	0.75	0.78	0.77	0.69	0.71	0.62	0.76	0.76
Saudi Arabia	0.75	35	0.04	0.74	0.74	0.24	0.79	0.18	0.24	0.81	0.77
Serbia	0.88	51	0.71	0.72	0.75	0.68	0.68	0.68	0.66	0.76	0.75
Singapore	0.87	49	0.77	0.73	0.76	0.69	0.61	0.69	0.52	0.78	0.75
Slovak Republic	0.87	48	0.72	0.68	0.75	0.70	0.67	0.67	0.58	0.74	0.74
Slovenia	0.88	52	0.76	0.70	0.72	0.69	0.66	0.74	0.66	0.78	0.75
South Africa (5)	0.69	29	0.12	0.72	0.73	0.11	0.68	0.05	0.06	0.76	0.71
Spain	0.85	45	0.68	0.71	0.74	0.61	0.65	0.61	0.58	0.73	0.73
Sweden	0.87	49	0.75	0.73	0.74	0.74	0.60	0.71	0.47	0.79	0.72
Turkey	0.82	42	0.63	0.70	0.74	0.55	0.61	0.58	0.59	0.70	0.70
United Arab Emirates	0.79	37	0.46	0.67	0.71	0.51	0.65	0.48	0.44	0.73	0.70
United States	0.86	48	0.70	0.75	0.77	0.68	0.64	0.68	0.39	0.79	0.75
Benchmarking Participants											
Buenos Aires, Argentina	0.81	40	0.64	0.62	0.69	0.55	0.66	0.55	0.41	0.74	0.75
Ontario, Canada	0.86	49	0.73	0.76	0.78	0.69	0.61	0.70	0.39	0.78	0.74
Quebec, Canada	0.87	50	0.77	0.75	0.76	0.77	0.66	0.69	0.39	0.75	0.72
Norway (4)	0.84	45	0.71	0.67	0.72	0.73	0.49	0.74	0.47	0.72	0.68
Abu Dhabi, UAE	0.77	35	0.37	0.67	0.71	0.45	0.69	0.40	0.37	0.72	0.73
Dubai, UAE	0.83	42	0.62	0.69	0.70	0.60	0.63	0.60	0.54	0.73	0.69
Florida, US	0.87	50	0.71	0.78	0.76	0.68	0.68	0.67	0.47	0.81	0.75

*Reverse coded

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

Relationship Between the TIMSS 2015 Students Confident in Mathematics Scale, Fourth 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	0.44	0.19	0.18
Bahrain	0.37	0.14	0.13
Belgium (Flemish)	0.39	0.15	0.14
Bulgaria	0.40	0.16	0.16
Canada	0.44	0.19	0.19
Chile	0.41	0.17	0.17
Chinese Taipei	0.44	0.19	0.20
Croatia	0.45	0.20	0.19
Cyprus	0.44	0.19	0.18
Czech Republic	0.42	0.18	0.18
Denmark	0.42	0.17	0.17
England	0.32	0.10	0.12
Finland	0.43	0.19	0.17
France	0.40	0.16	0.16
Georgia	0.36	0.13	0.15
Germany	0.42	0.18	0.18
Hong Kong SAR	0.41	0.17	0.18
Hungary	0.49	0.24	0.25
Indonesia	0.29	0.09	0.09
Iran, Islamic Rep. of	0.30	0.09	0.10
Ireland	0.43	0.18	0.18
Italy	0.32	0.10	0.10
Japan	0.44	0.19	0.19
Jordan	0.38	0.14	0.15
Kazakhstan	0.22	0.05	0.05
Korea, Rep. of	0.54	0.29	0.27
Kuwait	0.26	0.07	0.07
Lithuania	0.46	0.21	0.21
Morocco	0.32	0.10	0.10
Netherlands	0.52	0.27	0.28
New Zealand	0.37	0.14	0.13
Northern Ireland	0.40	0.16	0.17
Norway (5)	0.42	0.18	0.16
Oman	0.31	0.10	0.10
Poland	0.47	0.22	0.22
Portugal	0.49	0.24	0.25
Qatar	0.28	0.08	0.10
Russian Federation	0.39	0.15	0.16
Saudi Arabia	0.28	0.08	0.09
Serbia	0.44	0.19	0.19
Singapore	0.47	0.22	0.22
Slovak Republic	0.40	0.16	0.15
Slovenia	0.46	0.21	0.21
South Africa (5)	0.38	0.15	0.15
Spain	0.44	0.19	0.21
Sweden	0.38	0.14	0.13
Turkey	0.47	0.22	0.20
United Arab Emirates	0.32	0.11	0.11
United States	0.43	0.18	0.19
International Median	0.41	0.17	0.17
Benchmarking Participants			
Buenos Aires, Argentina	0.33	0.11	0.12
Ontario, Canada	0.45	0.20	0.20
Quebec, Canada	0.43	0.19	0.17
Norway (4)	0.39	0.15	0.14
Abu Dhabi, UAE	0.37	0.14	0.14
Dubai, UAE	0.30	0.09	0.10
Florida, US	0.43	0.18	0.20

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