

# Students' Views on Engaging Teaching in Advanced Mathematics Lessons Scale

The Students' Views on Engaging Teaching in Advanced Mathematics Lessons (EML) scale was created based on students' degree of agreement with the fourteen statements described below.

## Items in the TIMSS Advanced 2015 Students' Views on Engaging Teaching in Advanced Mathematics Lessons Scale



**Item Parameters for the TIMSS Advanced 2015 Students' Views on Engaging Teaching in Advanced Mathematics Lessons Scale, Advanced Mathematics**

Item	delta	tau_1	tau_2	tau_3	Infit
MSBM18A	-0.27752	-1.49392	-0.31185	1.80577	0.88
MSBM18B	-0.52469	-1.55270	-0.46138	2.01408	1.13
MSBM18C	0.02085	-1.52655	-0.20957	1.73612	0.83
MSBM18D	0.15229	-1.49964	-0.38439	1.88403	1.21
MSBM18E	0.83288	-1.83818	-0.20095	2.03913	0.96
MSBM18F	0.32078	-1.44837	-0.23359	1.68196	1.18
MSBM18G	-0.08348	-1.31458	-0.29135	1.60593	0.96
MSBM18H	-0.47204	-1.41178	-0.47480	1.88658	1.03
MSBM18I	-0.40869	-1.16049	-0.28104	1.44153	0.79
MSBM18J	-0.25862	-1.91696	-0.35479	2.27175	1.06
MSBM18K	-0.07877	-1.57597	-0.14124	1.71721	1.07
MSBM18L	0.30429	-1.59816	-0.19349	1.79165	1.12
MSBM18M	0.53568	-1.70713	-0.02321	1.73034	1.14
MSBM18N	-0.06296	-1.38459	-0.35309	1.73768	1.20

**Scale Transformation Constants for the TIMSS Advanced 2015 Students' Views on Engaging Teaching in Advanced Mathematics Lessons Scale, Advanced Mathematics**

Scale Transformation Constants

A = 8.028837

B = 1.168415

Transformed Scale Score = 8.028837 + 1.168415 • Logit Scale Score

**Equivalence Table of the Raw Score and the Transformed Scale Score  
for the TIMSS Advanced 2015 Students' Views on Engaging Teaching in  
Advanced Mathematics Lessons Scale, Advanced Mathematics**

Raw Score	Transformed Scale Score	Cutpoint
0	2.25920	
1	3.58079	
2	4.21671	
3	4.65055	
4	4.98578	
5	5.26436	
6	5.50518	
7	5.71976	
8	5.91528	
9	6.09775	
10	6.26742	
11	6.42988	
12	6.58608	
13	6.73753	
14	6.88552	
15	7.03109	
16	7.17519	
17	7.31924	
18	7.46246	
19	7.60644	
20	7.75182	
21	7.89911	7.9
22	8.04905	
23	8.20155	
24	8.35759	
25	8.51741	
26	8.68135	
27	8.84974	
28	9.02315	
29	9.20196	
30	9.38677	
31	9.57837	
32	9.77786	
33	9.98680	
34	10.20742	
35	10.44289	10.4
36	10.69789	
37	10.97836	
38	11.29738	
39	11.67448	
40	12.15065	
41	12.82864	
42	14.19398	

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 Advanced 2015 Students' Views on Engaging Teaching in Advanced Mathematics Lessons Scale, Advanced Mathematics**

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item													
			M5BM18A	M5BM18B	M5BM18C	M5BM18D	M5BM18E	M5BM18F	M5BM18G	M5BM18H	M5BM18I	M5BM18J	M5BM18K	M5BM18L	M5BM18M	M5BM18N
France	0.91	46	0.69	0.65	0.77	0.64	0.70	0.63	0.75	0.61	0.80	0.63	0.66	0.63	0.64	0.66
Italy	0.92	52	0.81	0.58	0.83	0.51	0.68	0.70	0.79	0.69	0.82	0.76	0.74	0.77	0.74	0.54
Lebanon	0.91	46	0.68	0.57	0.75	0.64	0.70	0.59	0.71	0.68	0.69	0.69	0.70	0.68	0.71	0.65
Norway	0.91	45	0.69	0.68	0.79	0.59	0.70	0.58	0.73	0.70	0.78	0.68	0.59	0.70	0.59	0.58
Portugal	0.93	52	0.79	0.66	0.80	0.57	0.73	0.62	0.78	0.69	0.81	0.70	0.75	0.74	0.73	0.66
Russian Federation	0.92	50	0.77	0.64	0.76	0.76	0.75	0.56	0.75	0.63	0.79	0.64	0.65	0.76	0.75	0.65
Russian Federation 6hr+	0.90	46	0.73	0.60	0.72	0.73	0.73	0.57	0.70	0.59	0.74	0.60	0.66	0.73	0.70	0.62
Slovenia	0.92	51	0.79	0.71	0.80	0.59	0.72	0.69	0.77	0.73	0.83	0.66	0.56	0.70	0.73	0.63
Sweden	0.93	53	0.75	0.65	0.82	0.68	0.77	0.74	0.75	0.75	0.81	0.71	0.71	0.74	0.64	0.60
United States	0.94	57	0.81	0.72	0.82	0.70	0.74	0.71	0.79	0.77	0.85	0.75	0.75	0.74	0.69	0.70
International Avg.	0.92	50	0.75	0.65	0.79	0.63	0.72	0.65	0.76	0.69	0.80	0.69	0.68	0.72	0.69	0.63

**Relationship Between the TIMSS Advanced 2015 Students' Views on Engaging Teaching in Advanced Mathematics Lessons Scale, and TIMSS Advanced 2015 Advanced Mathematics Achievement**

Country	Pearson's Correlation with Advanced Mathematics Achievement		Variance in Advanced Mathematics Achievement Accounted for by Difference Between Regions of the Scale ( $\eta^2$ )
	(r)	(r <sup>2</sup> )	
France	0.26	0.07	0.05
Italy	0.09	0.01	0.01
Lebanon	0.11	0.01	0.02
Norway	0.26	0.07	0.06
Portugal	0.22	0.05	0.06
Russian Federation	0.29	0.08	0.07
Russian Federation 6hr+	0.19	0.04	0.03
Slovenia	0.31	0.09	0.09
Sweden	0.30	0.09	0.08
United States	0.20	0.04	0.04
International Median	0.26	0.07	0.06

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