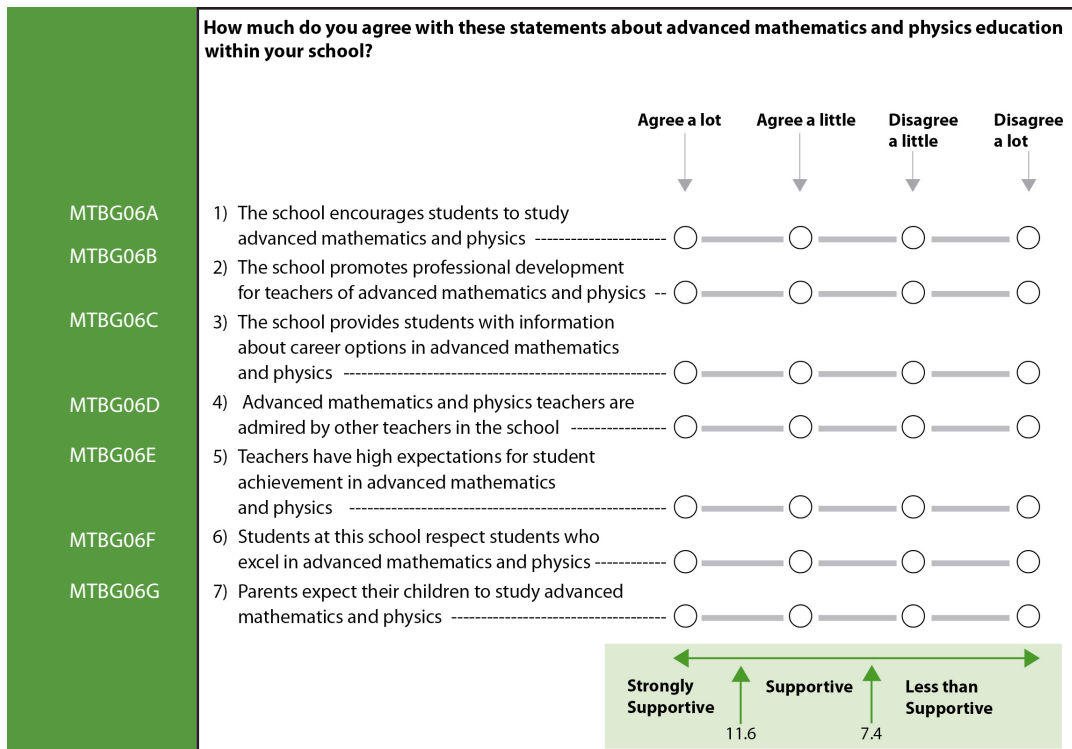


# School Supports Advanced Mathematics and Physics Education—Teacher Version Scale, Advanced Mathematics

The School Supports Advanced Mathematics and Physics Education—Teacher Version (SMP) scale was created based on teachers’ responses characterizing the seven aspects described below.

## Items in the TIMSS Advanced 2015 School Supports Advanced Mathematics and Physics Education—Teacher Version Scale, Advanced Mathematics<sup>1</sup>



<sup>1</sup> For the purpose of scaling, categories in which there were very few respondents were combined. The categories “Disagree a little” and “Disagree a lot” were combined for all variables. The scale statistics that are reported herein reflect analysis of the items following collapsing.

**Item Parameters for the TIMSS Advanced 2015 School Supports Advanced Mathematics and Physics Education - Teacher Version Scale, Advanced Mathematics**

Item	delta	tau_1	tau_2	Infit
MTBG06A	-0.83359	-1.13874	1.13874	0.90
MTBG06B	0.36769	-0.90518	0.90518	1.09
MTBG06C	0.01503	-1.05692	1.05692	0.98
MTBG06D	0.90364	-0.63126	0.63126	0.93
MTBG06E	-0.28192	-1.24591	1.24591	0.98
MTBG06F	-0.41669	-1.02854	1.02854	1.09
MTBG06G	0.24584	-1.19301	1.19301	1.10

**Scale Transformation Constants for the TIMSS Advanced 2015 School Supports Advanced Mathematics and Physics Education - Teacher Version Scale, Advanced Mathematics**

Scale Transformation Constants

A = 9.498786

B = 1.425402

Transformed Scale Score = 9.498786 + 1.425402 • Logit Scale Score

**Equivalence Table of the Raw Score and the Transformed Scale Score for the TIMSS Advanced 2015 School Supports Advanced Mathematics and Physics Education - Teacher Version Scale, Advanced Mathematics**

Raw Score	Transformed Scale Score	Cutpoint
0	3.88749	
1	5.67991	
2	6.64185	
3	7.36800	7.4
4	7.98333	
5	8.54226	
6	9.06318	
7	9.56156	
8	10.04970	
9	10.54426	
10	11.05900	
11	11.62342	11.6
12	12.28865	
13	13.18972	
14	14.91360	

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

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 School Supports Advanced Mathematics and Physics Education - Teacher Version Scale, Advanced Mathematics**

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item						
			MTBC006A	MTBC006B	MTBC006C	MTBC006D	MTBC006E	MTBC006F	MTBC006G
France	0.58	29	0.47	0.41	0.47	0.52	0.58	0.73	0.52
Italy	0.72	38	0.69	0.59	0.70	0.66	0.62	0.40	0.62
Lebanon	0.72	38	0.74	0.72	0.65	0.52	0.61	0.48	0.56
Norway	0.72	38	0.70	0.52	0.60	0.77	0.67	0.62	0.34
Portugal	0.72	38	0.66	0.71	0.64	0.59	0.62	0.41	0.64
Russian Federation	0.83	50	0.65	0.81	0.74	0.72	0.57	0.76	0.66
Russian Federation 6hr+	0.75	42	0.62	0.76	0.77	0.66	0.59	0.54	0.55
Slovenia	0.66	33	0.64	0.71	0.63	0.56	0.55	0.51	0.34
Sweden	0.66	33	0.63	0.38	0.70	0.48	0.63	0.61	0.53
United States	0.78	44	0.68	0.60	0.74	0.70	0.52	0.70	0.68
International Avg.	0.71	38	0.65	0.60	0.65	0.61	0.60	0.58	0.54

**Relationship Between the TIMSS Advanced 2015 School Supports Advanced Mathematics and Physics Education - Teacher Version 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	0.06	0.00	0.00
Italy	0.13	0.02	0.02
Lebanon	0.04	0.00	0.01
Norway	0.08	0.01	0.02
Portugal	0.06	0.00	0.00
Russian Federation	0.22	0.05	0.03
Russian Federation 6hr+	0.15	0.02	0.01
Slovenia	0.24	0.06	0.03
Sweden	0.07	0.00	0.00
United States	0.01	0.00	0.01
International Median	0.07	0.00	0.01

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