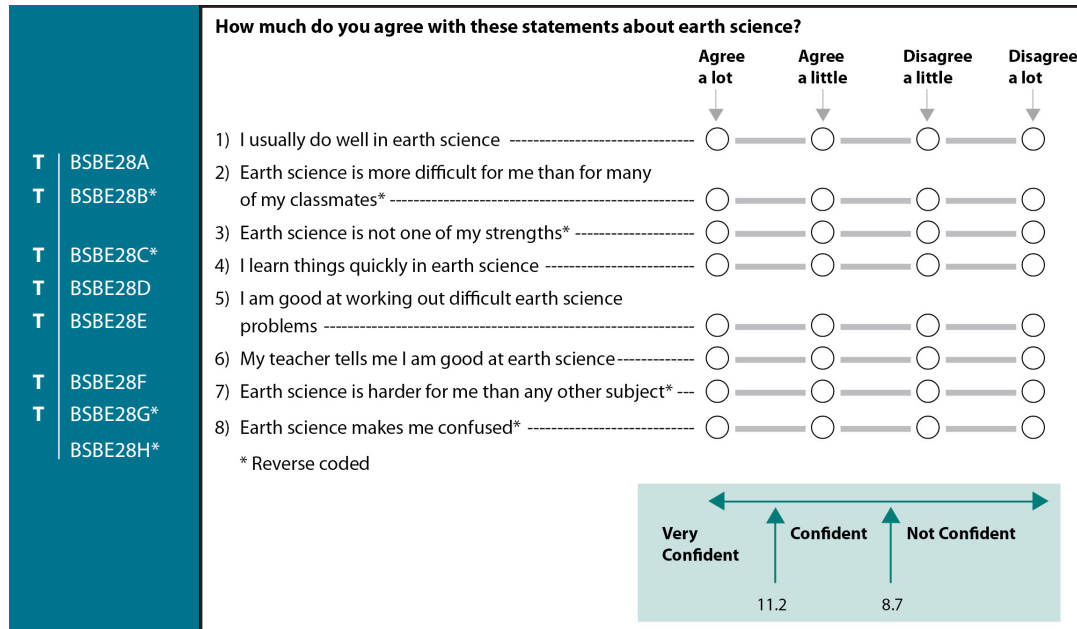


Students Confident in Earth Science Scale, Eighth Grade

The Students Confident in Earth Science (SCE) scale was created based on students' degree of agreement with the eight statements described below.

Items in the TIMSS 2015 Students Confident in Earth Science Scale, Eighth 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 Earth Science Scale, Eighth Grade

Item	delta	tau_1	tau_2	tau_3	Infit
BSBE28A	-0.42005	-1.17384	-0.44817	1.62201	0.90
BSBE28B*	-0.06756	-1.01438	-0.28584	1.30022	0.97
BSBE28C*	0.19190	-1.06848	-0.14054	1.20902	0.93
BSBE28D	-0.15726	-1.36012	-0.24217	1.60229	0.89
BSBE28E	0.31769	-1.54826	0.00872	1.53954	1.01
BSBE28F	0.24063	-1.49092	-0.07339	1.56431	1.04
BSBE28G*	0.04915	-0.92539	-0.33018	1.25557	1.02
BSBE28H*	-0.15450	-0.55000	-0.43709	0.98709	1.07

*Reverse coded

Scale Transformation Constants for the TIMSS 2015 Students Confident in Earth Science Scale, Eighth Grade

Scale Transformation Constants	
A = 8.804148	Transformed Scale Score = 8.804148 + 1.447084 • Logit Scale Score
B = 1.447084	

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 Earth Science Scale, Eighth Grade**

Raw Score	Transformed Scale Score	Cutpoint
0	3.05255	
1	4.68088	
2	5.46730	
3	6.00837	
4	6.43368	
5	6.79112	
6	7.11037	
7	7.39780	
8	7.66917	
9	7.92933	
10	8.18503	
11	8.43655	
12	8.69029	8.7
13	8.94985	
14	9.21859	
15	9.49991	
16	9.79733	
17	10.11386	
18	10.45693	
19	10.83407	
20	11.25874	11.2
21	11.75346	
22	12.36898	
23	13.23453	
24	14.94588	

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 Earth Science Scale, Eighth Grade

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item							
			BSBE28A	BSBE28B*	BSBE28C*	BSBE28D	BSBE28E	BSBE28F	BSBE28G*	BSBE28H*
Georgia	0.76	37	0.64	0.58	0.64	0.68	0.63	0.60	0.55	0.57
Hungary	0.89	56	0.81	0.72	0.80	0.80	0.73	0.76	0.74	0.65
Kazakhstan	0.87	52	0.76	0.70	0.75	0.78	0.74	0.74	0.65	0.64
Lebanon	-	-	-	-	-	-	-	-	-	-
Lithuania	0.84	48	0.76	0.70	0.74	0.75	0.72	0.64	0.65	0.55
Malta	0.87	52	0.78	0.66	0.69	0.80	0.76	0.73	0.67	0.69
Morocco	0.65	32	0.72	-0.24	-0.29	0.74	0.78	0.79	-0.24	-0.21
Russian Federation	0.87	52	0.75	0.71	0.79	0.79	0.74	0.71	0.64	0.63
Slovenia	0.90	58	0.81	0.76	0.79	0.80	0.75	0.70	0.76	0.72
Sweden	-	-	-	-	-	-	-	-	-	-

*Reverse coded

A dash (-) indicates comparable data not available.

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

Relationship Between the TIMSS 2015 Students Confident in Earth Science Scale, Eighth Grade, and TIMSS 2015 Science Achievement

Country	Pearson's Correlation with Science Achievement		Variance in Science Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r^2)	
Georgia	0.38	0.14	0.15
Hungary	0.22	0.05	0.07
Kazakhstan	0.18	0.03	0.04
Lebanon	-	-	-
Lithuania	0.30	0.09	0.09
Malta	0.32	0.10	0.12
Morocco	0.30	0.09	0.08
Russian Federation	0.18	0.03	0.04
Slovenia	0.27	0.07	0.09
Sweden	-	-	-
International Median	0.28	0.08	0.08

A dash (-) indicates comparable data not available.

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