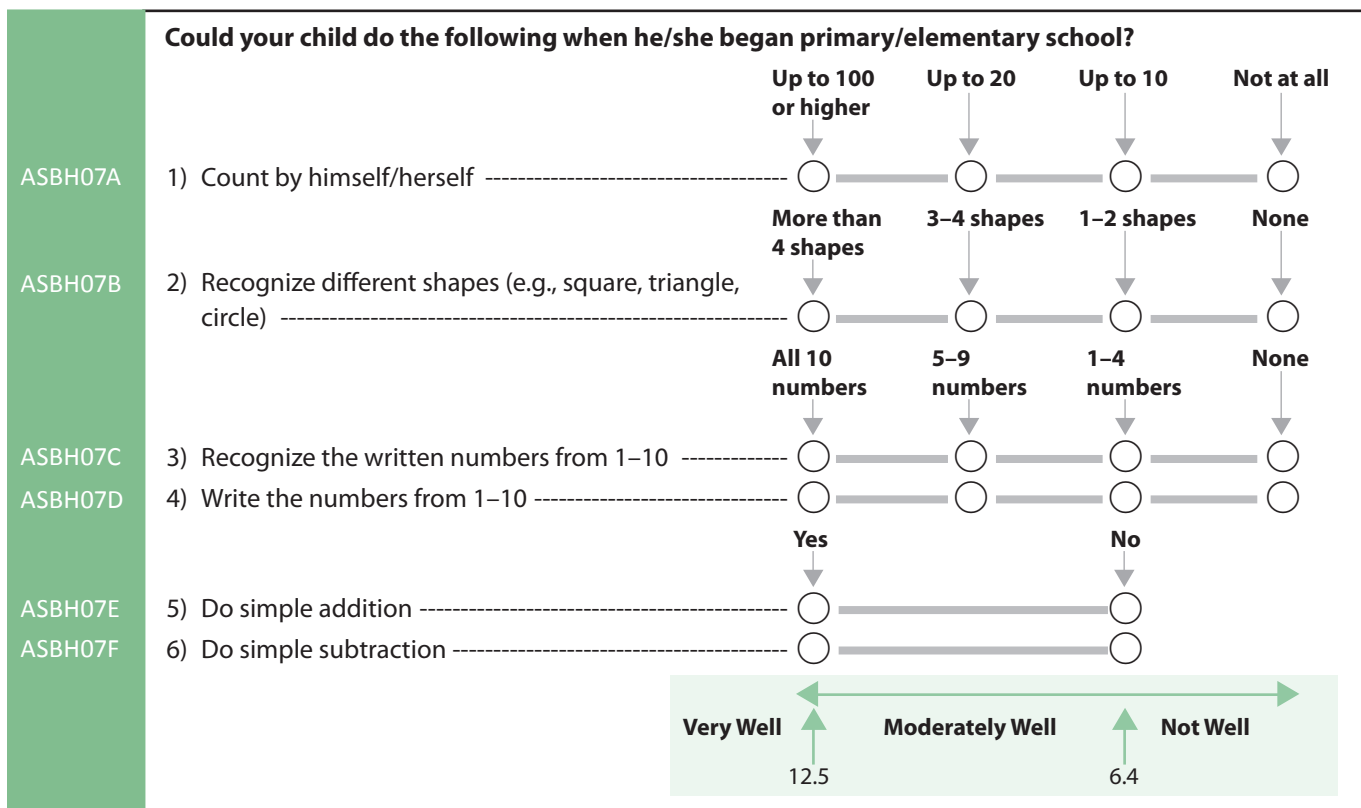


TIMSS 2011

# The TIMSS 2011 Could Do Early Numeracy Tasks When Began Primary School Scale, Fourth Grade

The Could Do Early Numeracy Tasks When Began Primary School (ENT) scale was created based on parents' responses to the six statements described below. See [Creating and Interpreting TIMSS and PIRLS 2011 Context Questionnaire Scales](#) for more information on how the scales were formed. Because the ENT scale was derived using responses to items in the PIRLS Home Questionnaire, results reported in Exhibits 2–5 were estimated from the PIRLS 2011 data. Results reported in Exhibit 6 were estimated from the TIMSS 2011 data.

**Exhibit 1: Items in the TIMSS 2011 Could Do Early Numeracy Tasks When Began Primary School Scale, Fourth Grade**



**Exhibit 2: Item Parameters for the TIMSS 2011 Could Do Early Numeracy Tasks When Began Primary School Scale, Fourth Grade**

Item	delta	tau_1	tau_2	tau_3
ASBH07A	-2.27612	-2.65569	0.17773	2.47796
ASBH07B	-2.11927	-1.80571	-0.16181	1.96752
ASBH07C	-2.88609	-0.91092	0.79778	0.11314
ASBH07D	-2.21841	-0.72036	0.73968	-0.01932
ASBH07E	-1.76756			
ASBH07F	-0.86125			

### Exhibit 3: Scale Transformation Constants

#### Scale Transformation Constants

$$A = 10.28744$$

$$B = 1.26023$$

$$\text{Transformed Scale Score} = 10.28744 + 1.26023 \cdot \text{Logit Scale Score}$$

### Exhibit 4: Equivalence Table of the Raw Score and the Transformed Scale Score

Raw Score	Transformed Scale score	Cutpoint	Raw Score	Transformed Scale score	Cutpoint
0	2.27813		8	7.84932	
1	4.06273		9	8.22609	
2	5.07300		10	8.65222	
3	5.79118		11	9.18673	
4	6.33195	6.4	12	9.90094	
5	6.76724		13	10.88265	
6	7.14524		14	12.59388	12.5
7	7.50029				

### Exhibit 5: Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the TIMSS 2011 Could Do Early Numeracy Tasks When Began Primary School Scale, Fourth Grade<sup>5</sup>

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Factor Loadings for Each Item					
			ASBH07A	ASBH07B	ASBH07C	ASBH07D	ASBH07E	ASBH07F
Australia	0.80	52	0.73	0.64	0.75	0.77	0.72	0.68
Austria	0.76	49	0.68	0.53	0.74	0.73	0.75	0.74
Azerbaijan	0.81	57	0.74	0.68	0.75	0.78	0.78	0.79
Chinese Taipei	0.75	48	0.66	0.64	0.76	0.76	0.69	0.66
Croatia	0.74	46	0.64	0.57	0.70	0.70	0.73	0.73
Czech Republic	0.72	44	0.65	0.48	0.70	0.74	0.66	0.71
Finland	0.78	50	0.71	0.59	0.75	0.78	0.70	0.71
Georgia	0.72	48	0.64	0.63	0.69	0.66	0.76	0.77
Germany	0.75	46	0.66	0.53	0.72	0.73	0.72	0.72
Hong Kong SAR	0.68	43	0.61	0.57	0.74	0.77	0.62	0.61
Hungary	0.74	47	0.66	0.58	0.73	0.70	0.70	0.71
Iran, Islamic Rep. of	0.80	52	0.68	0.69	0.75	0.77	0.73	0.73
Ireland	-	-	-	-	-	-	-	-
Italy	0.77	49	0.68	0.61	0.74	0.75	0.71	0.69
Lithuania	0.76	50	0.65	0.61	0.71	0.73	0.77	0.77
Malta	0.78	49	0.68	0.65	0.68	0.72	0.74	0.72
Morocco	0.82	55	0.71	0.75	0.80	0.82	0.72	0.62
Northern Ireland	0.79	51	0.70	0.61	0.78	0.78	0.73	0.70
Norway	0.78	49	0.73	0.60	0.77	0.76	0.71	0.62
Oman	0.80	53	0.68	0.70	0.75	0.78	0.72	0.72
Poland	0.80	53	0.68	0.64	0.81	0.79	0.72	0.72

**Exhibit 5: Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the TIMSS 2011 Could Do Early Numeracy Tasks When Began Primary School Scale, Fourth Grade<sup>5</sup> (Continued)**

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Factor Loadings for Each Item					
			ASBH07A	ASBH07B	ASBH07C	ASBH07D	ASBH07E	ASBH07F
Portugal	0.76	47	0.69	0.64	0.69	0.72	0.70	0.68
Qatar	0.79	52	0.65	0.67	0.72	0.79	0.73	0.74
Romania	0.87	65	0.79	0.75	0.84	0.85	0.81	0.80
Russian Federation	0.73	48	0.66	0.63	0.65	0.70	0.76	0.75
Saudi Arabia	0.78	51	0.67	0.70	0.75	0.77	0.70	0.71
Singapore	0.75	49	0.66	0.63	0.73	0.74	0.70	0.72
Slovak Republic	0.79	51	0.69	0.64	0.78	0.77	0.70	0.69
Slovenia	0.80	52	0.71	0.63	0.79	0.79	0.71	0.70
Spain	0.77	48	0.69	0.61	0.72	0.75	0.72	0.67
Sweden	0.79	51	0.73	0.62	0.77	0.79	0.69	0.66
United Arab Emirates	0.79	52	0.69	0.64	0.72	0.77	0.75	0.73
<b>Sixth Grade Participants</b>								
Botswana	0.81	54	0.71	0.73	0.78	0.79	0.72	0.70
Honduras	0.69	45	0.60	0.57	0.67	0.70	0.73	0.72
<b>Benchmarking Participants</b>								
Quebec, Canada	0.79	50	0.72	0.60	0.75	0.77	0.70	0.67
Abu Dhabi, UAE	0.79	52	0.68	0.64	0.72	0.77	0.75	0.73
Dubai, UAE	0.80	51	0.70	0.63	0.71	0.78	0.74	0.72

<sup>5</sup> Available only for countries that administered both TIMSS and PIRLS to the same fourth grade students because the items for this scale were included in the PIRLS Home Questionnaire completed by parents.

A dash (-) indicates that the item was not administered or comparable data was not available.

**Exhibit 6: Relationship Between the TIMSS 2011 Could Do Early Numeracy Tasks When Began Primary School Scale, Fourth Grade, and TIMSS 2011 Mathematics Achievement<sup>5</sup>**

Country	Pearson's Correlation with Mathematics Achievement		Variance in Mathematics Achievement Accounted for by Difference Between Regions of the Scale ( $\eta^2$ )
	(r)	(r <sup>2</sup> )	
Australia	0.27	0.07	0.05
Austria	0.23	0.05	0.04
Azerbaijan	0.10	0.01	0.02
Chinese Taipei	0.24	0.06	0.04
Croatia	0.30	0.09	0.06
Czech Republic	0.26	0.07	0.05
Finland	0.36	0.13	0.09
Georgia	0.22	0.05	0.03
Germany	0.25	0.06	0.04
Hong Kong SAR	0.18	0.03	0.03
Hungary	0.29	0.08	0.05
Iran, Islamic Rep. of	0.24	0.06	0.04

**Exhibit 6: Relationship Between the TIMSS 2011 Could Do Early Numeracy Tasks When Began Primary School Scale, Fourth Grade, and TIMSS 2011 Mathematics Achievement<sup>5</sup> (Continued)**

Country	Pearson's Correlation with Mathematics Achievement		Variance in Mathematics Achievement Accounted for by Difference Between Regions of the Scale ( $\eta^2$ )
	(r)	(r <sup>2</sup> )	
Ireland	–	–	–
Italy	0.17	0.03	0.02
Lithuania	0.34	0.12	0.07
Malta	0.16	0.03	0.02
Morocco	0.09	0.01	0.01
Northern Ireland	0.18	0.03	0.02
Norway	0.28	0.08	0.06
Oman	0.17	0.03	0.02
Poland	0.31	0.10	0.06
Portugal	0.22	0.05	0.03
Qatar	0.12	0.01	0.01
Romania	0.37	0.14	0.09
Russian Federation	0.28	0.08	0.06
Saudi Arabia	0.18	0.03	0.02
Singapore	0.32	0.10	0.07
Slovak Republic	0.23	0.05	0.05
Slovenia	0.27	0.07	0.06
Spain	0.24	0.06	0.04
Sweden	0.31	0.10	0.06
United Arab Emirates	0.07	0.00	0.01
<b>International Median</b>	<b>0.24</b>	<b>0.06</b>	<b>0.04</b>
<b>Sixth Grade Participants</b>			
Botswana	0.32	0.10	0.07
Honduras	0.18	0.03	0.02
<b>Benchmarking Participants</b>			
Quebec, Canada	0.22	0.05	0.04
Abu Dhabi, UAE	0.12	0.01	0.01
Dubai, UAE	0.05	0.00	0.00

<sup>5</sup> Available only for countries that administered both TIMSS and PIRLS to the same fourth grade students because the items for this scale were included in the PIRLS Home Questionnaire completed by parents.

A dash (–) indicates comparable data not available.