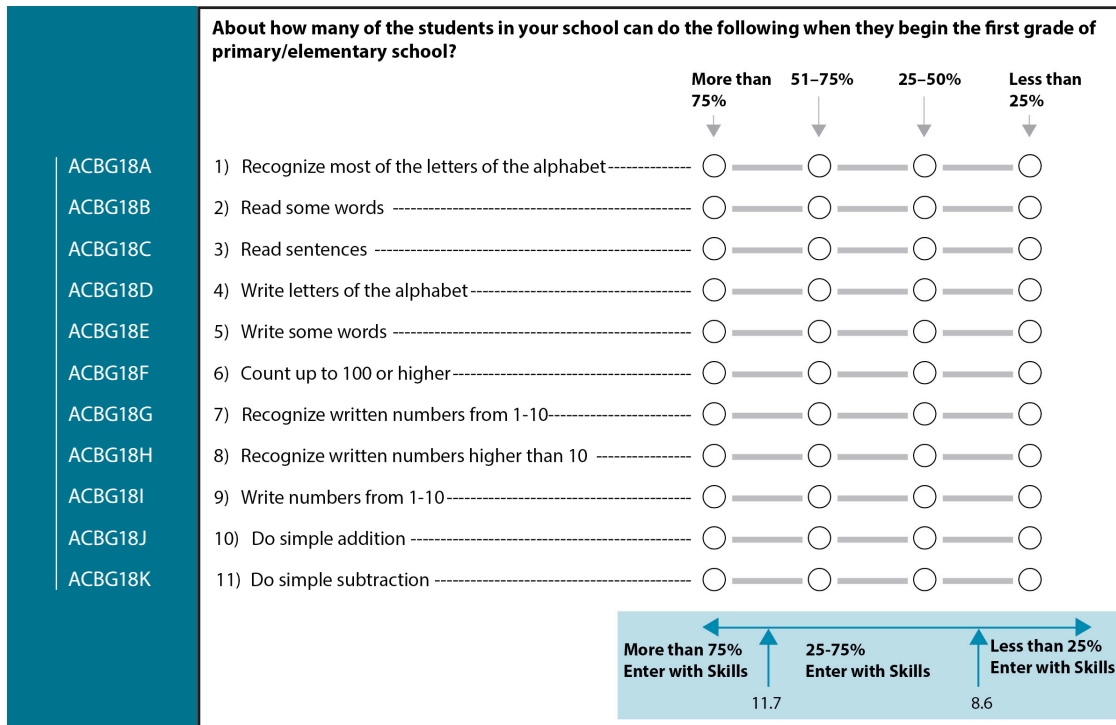


Schools Where Students Enter the Primary Grades with Literacy and Numeracy Skills Scale, Fourth Grade

The Schools Where Students Enter the Primary Grades with Literacy and Numeracy Skills (LNS) scale was created based on principals' responses about the percentage of children in the school who began first grade with the eleven key skills described below.

Items in the TIMSS 2015 Schools Where Students Enter the Primary Grades with Literacy and Numeracy Skills Scale, Fourth Grade



Item Parameters for the TIMSS 2015 Schools Where Students Enter the Primary Grades with Literacy and Numeracy Skills Scale, Fourth Grade

Item	delta	tau_1	tau_2	tau_3	Infit
ACBG18A	-0.95602	-1.74763	0.14297	1.60466	1.24
ACBG18B	0.12688	-1.85096	0.04000	1.81096	0.98
ACBG18C	1.51017	-1.41087	-0.14993	1.56080	0.99
ACBG18D	-0.71076	-2.06675	0.21261	1.85414	1.22
ACBG18E	0.44307	-1.83523	0.12227	1.71296	0.94
ACBG18F	0.94633	-2.15667	0.04262	2.11405	1.39
ACBG18G	-2.31455	-2.27679	0.44943	1.82736	1.18
ACBG18H	-0.10805	-2.00446	-0.00426	2.00872	1.13
ACBG18I	-1.08180	-1.80290	0.25691	1.54599	1.12
ACBG18J	0.76680	-1.99761	0.02009	1.97752	1.07
ACBG18K	1.37793	-1.79326	-0.02855	1.82181	1.14

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

Scale Transformation Constants for the TIMSS 2015 Schools Where Students Enter the Primary Grades with Literacy and Numeracy Skills Scale, Fourth Grade

Scale Transformation Constants	
A = 10.111117	Transformed Scale Score = 10.111117 + 0.64701 • Logit Scale Score
B = 0.64701	

Equivalence Table of Raw and Transformed Scale Scores for the TIMSS 2015 Schools Where Students Enter the Primary Grades with Literacy and Numeracy Skills Scale, Fourth Grade

Raw Score	Transformed Scale Score	Cutpoint
0	6.26128	
1	7.18133	
2	7.67242	
3	8.01378	
4	8.28032	
5	8.50311	8.6
6	8.69803	
7	8.87309	
8	9.03362	
9	9.18319	
10	9.32436	
11	9.45882	
12	9.58860	
13	9.71450	
14	9.83751	
15	9.95849	
16	10.07824	
17	10.19745	
18	10.31684	
19	10.43711	
20	10.55900	
21	10.68334	
22	10.81104	
23	10.94315	
24	11.08052	
25	11.22538	
26	11.37954	
27	11.54578	
28	11.72807	11.7
29	11.93264	
30	12.16926	
31	12.46093	
32	12.86502	
33	13.64705	

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 Schools Where Students Enter the Primary Grades with Literacy and Numeracy Skills Scale, Fourth Grade

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item										
			ACBG18A	ACBG18B	ACBG18C	ACBG18D	ACBG18E	ACBG18F	ACBG18G	ACBG18H	ACBG18I	ACBG18J	ACBG18K
Australia	0.97	78	0.85	0.91	0.87	0.91	0.91	0.88	0.86	0.89	0.91	0.88	0.85
Bahrain	0.97	76	0.84	0.92	0.86	0.89	0.90	0.86	0.80	0.88	0.85	0.89	0.86
Belgium (Flemish)	0.88	47	0.72	0.71	0.54	0.66	0.71	0.52	0.71	0.71	0.74	0.76	0.73
Bulgaria	0.95	66	0.82	0.86	0.77	0.84	0.85	0.64	0.77	0.83	0.81	0.85	0.84
Canada	0.96	69	0.79	0.88	0.83	0.83	0.88	0.83	0.79	0.84	0.82	0.84	0.81
Chile	0.95	66	0.73	0.86	0.82	0.85	0.88	0.84	0.76	0.83	0.78	0.77	0.77
Chinese Taipei	0.95	67	0.80	0.87	0.84	0.89	0.84	0.80	0.66	0.77	0.73	0.89	0.92
Croatia	0.92	55	0.71	0.82	0.71	0.78	0.81	0.67	0.72	0.71	0.76	0.77	0.72
Cyprus	0.92	57	0.77	0.84	0.60	0.79	0.77	0.64	0.74	0.79	0.75	0.81	0.78
Czech Republic	0.86	42	0.66	0.66	0.34	0.71	0.68	0.59	0.70	0.76	0.67	0.65	0.61
Denmark	0.92	55	0.72	0.78	0.75	0.52	0.75	0.74	0.78	0.82	0.75	0.76	0.78
England	0.97	78	0.90	0.93	0.88	0.91	0.93	0.73	0.88	0.87	0.90	0.87	0.86
Finland	0.92	55	0.68	0.74	0.61	0.72	0.74	0.68	0.73	0.81	0.78	0.85	0.82
France	0.88	46	0.59	0.70	0.57	0.67	0.71	0.62	0.66	0.72	0.67	0.77	0.74
Georgia	0.96	72	0.82	0.86	0.86	0.90	0.91	0.81	0.77	0.88	0.86	0.84	0.85
Germany	0.91	55	0.70	0.75	0.71	0.69	0.81	0.65	0.72	0.75	0.76	0.81	0.80
Hong Kong SAR	0.91	54	0.59	0.76	0.78	0.80	0.80	0.66	0.61	0.70	0.68	0.82	0.82
Hungary	0.84	40	0.55	0.47	0.32	0.60	0.62	0.66	0.72	0.76	0.70	0.71	0.67
Indonesia	0.96	71	0.79	0.88	0.87	0.86	0.91	0.76	0.78	0.84	0.84	0.87	0.87
Iran, Islamic Rep. of	0.95	69	0.75	0.85	0.84	0.89	0.85	0.79	0.77	0.88	0.82	0.86	0.84
Ireland	0.84	59	0.86	0.92	0.81	0.91	0.90	0.37	0.91	0.47	0.87	0.76	0.39
Italy	0.95	66	0.78	0.88	0.81	0.76	0.86	0.71	0.76	0.86	0.83	0.86	0.83
Japan	0.94	65	0.70	0.76	0.85	0.88	0.87	0.76	0.73	0.81	0.83	0.83	0.79
Jordan	0.97	77	0.86	0.91	0.85	0.88	0.90	0.84	0.84	0.88	0.87	0.90	0.90
Kazakhstan	0.94	64	0.74	0.83	0.79	0.84	0.83	0.73	0.72	0.76	0.81	0.87	0.88
Korea, Rep. of	0.95	69	0.86	0.69	0.87	0.90	0.83	0.80	0.82	0.86	0.88	0.81	0.82
Kuwait	0.97	79	0.90	0.94	0.90	0.91	0.92	0.86	0.81	0.90	0.84	0.90	0.89
Lithuania	0.94	62	0.75	0.81	0.77	0.76	0.80	0.71	0.71	0.78	0.78	0.87	0.86
Morocco	0.97	74	0.87	0.91	0.90	0.92	0.90	0.80	0.87	0.87	0.87	0.83	0.74
Netherlands	0.88	45	0.59	0.63	0.67	0.61	0.73	0.72	0.55	0.65	0.74	0.71	0.74
New Zealand	0.96	73	0.82	0.89	0.89	0.85	0.93	0.87	0.80	0.86	0.86	0.82	0.83
Northern Ireland	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway (5)	0.95	65	0.84	0.82	0.77	0.78	0.83	0.77	0.78	0.85	0.84	0.81	0.79
Oman	0.96	74	0.82	0.92	0.85	0.85	0.89	0.86	0.78	0.90	0.82	0.88	0.87
Poland	0.95	66	0.79	0.84	0.81	0.89	0.88	0.66	0.79	0.78	0.83	0.85	0.82
Portugal	0.95	65	0.82	0.83	0.76	0.78	0.86	0.71	0.76	0.84	0.80	0.87	0.85
Qatar	0.98	82	0.85	0.92	0.87	0.92	0.94	0.91	0.86	0.93	0.91	0.92	0.90
Russian Federation	0.94	63	0.79	0.87	0.81	0.79	0.78	0.71	0.78	0.82	0.75	0.83	0.81
Saudi Arabia	0.96	70	0.77	0.85	0.82	0.88	0.89	0.83	0.74	0.85	0.80	0.88	0.87
Serbia	0.93	58	0.69	0.81	0.76	0.82	0.81	0.67	0.77	0.82	0.84	0.73	0.63
Singapore	0.95	69	0.82	0.84	0.83	0.83	0.80	0.74	0.84	0.84	0.85	0.85	0.86
Slovak Republic	0.91	54	0.78	0.78	0.66	0.77	0.69	0.68	0.73	0.77	0.74	0.78	0.73
Slovenia	0.92	55	0.81	0.83	0.50	0.81	0.78	0.60	0.76	0.80	0.77	0.75	0.72
South Africa (5)	0.96	73	0.80	0.88	0.81	0.85	0.90	0.83	0.83	0.86	0.87	0.89	0.89
Spain	0.94	65	0.84	0.87	0.85	0.86	0.87	0.59	0.80	0.72	0.84	0.85	0.77
Sweden	0.94	64	0.82	0.85	0.76	0.76	0.83	0.73	0.82	0.83	0.81	0.83	0.76
Turkey	0.93	60	0.81	0.85	0.78	0.80	0.85	0.65	0.72	0.79	0.71	0.75	0.75
United Arab Emirates	0.97	79	0.87	0.91	0.86	0.92	0.92	0.87	0.86	0.89	0.89	0.90	0.87
United States	0.98	81	0.89	0.92	0.89	0.91	0.93	0.90	0.89	0.90	0.90	0.88	0.86
Benchmarking Participants													
Buenos Aires, Argentina	0.97	75	0.87	0.89	0.82	0.84	0.88	0.88	0.81	0.91	0.85	0.87	0.88
Ontario, Canada	0.96	73	0.87	0.90	0.87	0.90	0.86	0.83	0.82	0.84	0.83	0.84	0.84
Quebec, Canada	0.93	58	0.62	0.77	0.73	0.69	0.86	0.79	0.70	0.84	0.76	0.81	0.77
Norway (4)	0.94	63	0.79	0.80	0.75	0.76	0.81	0.75	0.79	0.83	0.84	0.80	0.78
Abu Dhabi, UAE	0.97	77	0.86	0.90	0.85	0.89	0.89	0.87	0.86	0.90	0.88	0.88	0.85
Dubai, UAE	0.98	85	0.92	0.94	0.87	0.96	0.95	0.87	0.93	0.92	0.94	0.93	0.89
Florida, US	0.97	77	0.89	0.93	0.92	0.90	0.87	0.84	0.87	0.89	0.84	0.86	0.82

A dash (-) indicates comparable data not available.

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

Relationship Between the TIMSS 2015 Schools Where Students Enter the Primary Grades with Literacy and Numeracy Skills Scale, Fourth Grade, and TIMSS 2015 Achievement

Country	Pearson's Correlation with Achievement				Variance in Achievement Accounted for by Difference Between Regions of the Scale (η^2)	
	(r)		(r)		Mathematics	Science
	Mathematics	Science	Mathematics	Science		
Australia	0.20	0.18	0.04	0.03	0.05	0.05
Bahrain	0.08	0.04	0.01	0.00	0.00	0.00
Belgium (Flemish)	0.05	0.07	0.00	0.01	0.00	0.00
Bulgaria	0.19	0.27	0.04	0.07	0.03	0.06
Canada	0.11	0.12	0.01	0.02	0.02	0.02
Chile	0.23	0.21	0.05	0.04	0.03	0.02
Chinese Taipei	0.08	0.05	0.01	0.00	0.02	0.01
Croatia	0.11	0.13	0.01	0.02	0.01	0.01
Cyprus	0.10	0.11	0.01	0.01	0.00	0.00
Czech Republic	0.08	0.07	0.01	0.00	0.00	0.00
Denmark	0.05	0.05	0.00	0.00	0.00	0.01
England	0.16	0.20	0.03	0.04	0.03	0.04
Finland	0.12	0.12	0.01	0.01	0.01	0.02
France	0.13	0.13	0.02	0.02	0.00	0.00
Georgia	0.02	0.01	0.00	0.00	0.00	0.00
Germany	0.10	0.12	0.01	0.01	0.01	0.01
Hong Kong SAR	0.14	0.11	0.02	0.01	0.02	0.02
Hungary	0.22	0.23	0.05	0.05	0.03	0.03
Indonesia	0.25	0.27	0.06	0.08	0.05	0.05
Iran, Islamic Rep. of	0.09	0.06	0.01	0.00	0.01	0.01
Ireland	0.07	0.06	0.01	0.00	0.00	0.00
Italy	0.07	0.05	0.01	0.00	0.00	0.00
Japan	0.06	0.04	0.00	0.00	0.01	0.01
Jordan	0.17	-	0.03	-	0.02	-
Kazakhstan	0.01	0.01	0.00	0.00	0.00	0.00
Korea, Rep. of	0.21	0.19	0.05	0.04	0.03	0.02
Kuwait	0.23	0.21	0.06	0.04	0.06	0.05
Lithuania	0.11	0.10	0.01	0.01	0.01	0.01
Morocco	0.19	0.19	0.03	0.04	0.03	0.03
Netherlands	0.05	0.08	0.00	0.01	0.00	0.01
New Zealand	0.23	0.24	0.05	0.06	0.04	0.04
Northern Ireland	-	-	-	-	-	-
Norway (5)	0.08	0.08	0.01	0.01	0.01	0.01
Oman	0.01	0.01	0.00	0.00	0.00	0.00
Poland	0.04	0.03	0.00	0.00	0.00	0.00
Portugal	0.16	0.14	0.03	0.02	0.01	0.01
Qatar	0.13	0.12	0.02	0.01	0.02	0.02
Russian Federation	0.20	0.24	0.04	0.06	0.02	0.03
Saudi Arabia	0.15	0.19	0.02	0.04	0.03	0.05
Serbia	0.16	0.18	0.03	0.03	0.03	0.04
Singapore	0.14	0.15	0.02	0.02	0.02	0.03
Slovak Republic	0.21	0.23	0.05	0.05	0.03	0.04
Slovenia	-0.01	-0.01	0.00	0.00	0.00	0.00
South Africa (5)	0.07	-	0.00	-	0.03	-
Spain	0.18	0.18	0.03	0.03	0.04	0.04
Sweden	0.15	0.15	0.02	0.02	0.01	0.01
Turkey	0.01	0.02	0.00	0.00	0.02	0.01
United Arab Emirates	0.19	0.22	0.04	0.05	0.04	0.05
United States	0.20	0.22	0.04	0.05	0.03	0.04
International Median	0.12	0.12	0.02	0.02	0.02	0.01
Benchmarking Participants						
Buenos Aires, Argentina	0.25	0.25	0.06	0.06	0.07	0.08
Ontario, Canada	0.13	0.13	0.02	0.02	0.02	0.02
Quebec, Canada	0.10	0.08	0.01	0.01	0.01	0.01
Norway (4)	-0.02	0.01	0.00	0.00	0.00	0.00
Abu Dhabi, UAE	0.28	0.27	0.08	0.07	0.07	0.06
Dubai, UAE	0.12	0.18	0.01	0.03	0.02	0.04
Florida, US	0.20	0.18	0.04	0.03	0.03	0.02

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

A dash (-) indicates comparable data not available.