Appendix 13A: TIMSS 2015 Fourth Grade Mathematics Item Parameters from Concurrent Calibration

TIMSS 2015 Fourth Grade Mathematics Item Parameters from Concurrent Calibration

Item		Slope (a_j)	Location (b_j)	Guessing (c_j)	Step 1 (d_{j1})	Step 2 (d_{j2})
Items Released in 2011:						
M01_01A	M031346A	1.675 (0.064)	-0.334 (0.020)			
M01_01B	M031346B	1.818 (0.072)	0.494 (0.018)			
M01_01C	M031346C	1.465 (0.049)	0.260 (0.014)		0.408 (0.022)	-0.408 (0.023)
M01_02	M031379	1.113 (0.050)	0.834 (0.031)			
M01_03	M031380	1.165 (0.055)	1.091 (0.037)			
M01_05	M031313	0.653 (0.033)	-1.187 (0.060)			
M01_06	M031083	0.969 (0.068)	-0.496 (0.082)	0.210 (0.036)		
M01_07	M031071	1.003 (0.089)	0.647 (0.055)	0.206 (0.022)		
M01_08	M031185	1.720 (0.119)	0.199 (0.035)	0.235 (0.019)		
M02_01	M051305	0.957 (0.067)	-0.162 (0.068)	0.183 (0.029)		
M02_02	M051091	1.508 (0.107)	0.514 (0.034)	0.188 (0.016)		
M02_03	M051001	1.055 (0.046)	0.702 (0.030)			
M02_04	M051007	1.153 (0.144)	1.275 (0.063)	0.266 (0.016)		
M02_05	M051203	0.561 (0.030)	0.413 (0.045)			
M02_06	M051601	1.002 (0.040)	-0.261 (0.028)			
M02_07A	M051064A	0.856 (0.036)	-0.155 (0.031)			
M02_07B	M051064B	0.902 (0.038)	-0.719 (0.036)			
M02_08	M051015	0.671 (0.032)	0.221 (0.037)			
M02_09	M051123	0.567 (0.074)	0.854 (0.115)	0.190 (0.036)		
M02_10	M051109	1.127 (0.044)	-0.229 (0.025)			
M02_11	M051117	0.987 (0.087)	0.305 (0.067)	0.271 (0.026)		
M03_01	M041010	0.921 (0.071)	-0.452 (0.095)	0.267 (0.038)		
M03_02	M041098	1.839 (0.143)	0.596 (0.032)	0.250 (0.015)		
M03_03	M041064	0.712 (0.032)	-0.538 (0.040)			
M03_04	M041003	0.828 (0.036)	-0.018 (0.031)			
M03_05	M041104	1.071 (0.043)	-0.074 (0.026)			
M03_06	M041299	1.303 (0.056)	0.784 (0.027)			
M03_07	M041329	1.055 (0.093)	0.069 (0.075)	0.343 (0.029)		
M03_08	M041143	0.331 (0.011)	-0.632 (0.045)		-1.833 (0.111)	1.833 (0.103)
M03_09	M041158	0.853 (0.063)	-0.314 (0.086)	0.189 (0.035)		
M03_10	M041328	0.905 (0.038)	-0.274 (0.030)			
M03_11	M041155	0.986 (0.070)	0.244 (0.052)	0.139 (0.022)		
M03_12	M041284	0.741 (0.029)	0.678 (0.027)		0.420 (0.037)	-0.420 (0.047)

TIMSS 2015 Fourth Grade Mathematics Item Parameters from Concurrent Calibration (Continued)

Item		Slope (a_j)	Location (b_j)	Guessing (c_j)	Step 1 (d_{j1})	Step 2 (d_{j2})
M03_13	M041335	0.769 (0.052)	-1.179 (0.120)	0.154 (0.048)		
M03_14	M041184	0.899 (0.066)	-0.726 (0.101)	0.222 (0.042)		
M05_01	M031128	0.534 (0.029)	-1.247 (0.071)			
M05_02	M031016	1.295 (0.055)	0.719 (0.026)			
M05_03	M031183	0.864 (0.030)	0.147 (0.022)		0.656 (0.034)	-0.656 (0.035)
M05_05	M031187	0.749 (0.058)	-0.776 (0.129)	0.213 (0.048)		
M05_06	M031251	1.473 (0.112)	0.501 (0.038)	0.237 (0.017)		
M05_07	M031294	1.355 (0.080)	-0.035 (0.039)	0.138 (0.020)		
M05_08	M031297	0.824 (0.039)	0.735 (0.037)			
M05_09	M031218	1.402 (0.087)	0.069 (0.039)	0.162 (0.019)		
M05_10	M031109	0.674 (0.060)	-0.319 (0.129)	0.208 (0.044)		
M05_11	M031159	1.059 (0.076)	-0.263 (0.070)	0.236 (0.031)		
M05_12	M031133	0.854 (0.039)	-1.289 (0.051)			
M06_01	M041107	0.991 (0.062)	-1.006 (0.083)	0.150 (0.037)		
M06_02	M041011	1.301 (0.085)	-0.199 (0.052)	0.228 (0.026)		
M06_03	M041122	0.483 (0.016)	0.576 (0.032)		-0.778 (0.065)	0.778 (0.071)
M06_04	M041041	1.151 (0.104)	0.345 (0.063)	0.353 (0.025)		
M06_05	M041320	1.694 (0.111)	0.408 (0.030)	0.179 (0.016)		
M06_06A	M041115A	0.871 (0.037)	-0.377 (0.033)			
M06_06B	M041115B	1.173 (0.047)	0.142 (0.023)			
M06_07A	M041160A	1.087 (0.047)	-1.133 (0.041)			
M06_07B	M041160B	1.345 (0.059)	-1.159 (0.036)			
M06_08	M041327	0.533 (0.029)	0.001 (0.045)			
M06_09	M041148	0.374 (0.019)	-0.059 (0.041)		0.354 (0.076)	-0.354 (0.073)
M06_10	M041265	0.886 (0.076)	0.816 (0.053)	0.123 (0.019)		
M06_11	M041175	0.881 (0.060)	-1.144 (0.111)	0.180 (0.047)		
M06_12	M041199	1.249 (0.083)	-0.614 (0.067)	0.243 (0.033)		
M07_01	M031210	1.599 (0.150)	0.813 (0.040)	0.310 (0.016)		
M07_02	M031009	1.016 (0.044)	0.525 (0.028)			
M07_03	M031252	1.099 (0.070)	-0.244 (0.058)	0.170 (0.027)		
M07_04	M031316	0.802 (0.038)	-1.574 (0.063)			
M07_05	M031317	1.479 (0.099)	0.600 (0.031)	0.131 (0.014)		
M07_06B	M031079B	1.269 (0.050)	-0.639 (0.028)			
M07_06C	M031079C	0.799 (0.037)	0.396 (0.032)			
M07_07	M031004	1.217 (0.099)	1.036 (0.040)	0.108 (0.013)		

TIMSS 2015 Fourth Grade Mathematics Item Parameters from Concurrent Calibration (Continued)

Item		Slope (a_j)	Location (b_j)	Guessing (c_j)	Step 1 (d_{j1})	Step 2 (d_{j2})
M07_08	M031043	1.456 (0.094)	0.263 (0.036)	0.175 (0.018)		
M07_09	M031325	0.907 (0.041)	0.637 (0.032)			
M07_10	M031088	0.925 (0.068)	-0.436 (0.089)	0.225 (0.037)		
M07_11	M031093	0.583 (0.109)	1.016 (0.159)	0.389 (0.040)		
M07_12	M031155	1.301 (0.105)	0.335 (0.050)	0.294 (0.022)		
Items Common in 2011 and 2015:						
M01_01	M041004	0.987 (0.050)	-1.314 (0.084)	0.210 (0.040)		
M01_02	M041023	1.650 (0.070)	-0.693 (0.033)	0.182 (0.020)		
M01_03	M041034	0.949 (0.045)	-0.068 (0.045)	0.139 (0.020)		
M01_04	M041087	0.808 (0.025)	-0.072 (0.022)			
M01_05	M041124	0.964 (0.028)	-0.199 (0.020)			
M01_06A	M041302A	1.037 (0.047)	-0.604 (0.052)	0.165 (0.025)		
M01_06B	M041302B	0.628 (0.021)	-0.296 (0.029)			
M01_06C	M041302C	1.071 (0.030)	-0.312 (0.019)			
M01_07	M041254	0.775 (0.052)	0.306 (0.064)	0.223 (0.024)		
M01_08	M041153	1.100 (0.053)	0.224 (0.034)	0.148 (0.016)		
M01_09	M041132	0.460 (0.041)	0.800 (0.100)	0.111 (0.030)		
M01_10	M041165	0.375 (0.010)	0.411 (0.027)		-0.866 (0.057)	0.866 (0.060)
M01_11	M041174	1.136 (0.032)	-0.689 (0.022)			
M01_12	M041191	1.025 (0.059)	-1.045 (0.089)	0.337 (0.038)		
M03_01	M051205	0.691 (0.023)	-0.325 (0.027)			
M03_02	M051039	1.186 (0.033)	-0.094 (0.017)			
M03_03	M051055	1.166 (0.037)	0.889 (0.022)			
M03_04	M051006	0.539 (0.014)	1.070 (0.028)		-0.560 (0.042)	0.560 (0.051)
M03_05	M051070	1.462 (0.088)	0.922 (0.026)	0.185 (0.010)		
M03_06	M051018	0.944 (0.063)	0.573 (0.046)	0.243 (0.018)		
M03_07	M051407	0.942 (0.053)	0.165 (0.049)	0.203 (0.020)		
M03_08	M051410	0.962 (0.058)	0.576 (0.040)	0.176 (0.016)		
M03_09	M051059	0.750 (0.025)	-1.128 (0.037)			
M03_10	M051093	0.814 (0.056)	0.720 (0.048)	0.169 (0.018)		
M03_11	M051134	1.277 (0.036)	0.363 (0.016)			
M03_12	M051077	1.236 (0.052)	0.190 (0.026)	0.090 (0.012)		
M05_01	M041291	0.705 (0.023)	-0.727 (0.032)			
M05_02	M041289	1.156 (0.066)	0.200 (0.043)	0.292 (0.018)		
M05_03	M041068	1.261 (0.056)	0.574 (0.023)	0.081 (0.010)		

TIMSS 2015 Fourth Grade Mathematics Item Parameters from Concurrent Calibration (Continued)

Item		Slope (a_j)	Location (b_j)	Guessing (c_j)	Step 1 (d_{j1})	Step 2 (d_{j2})
M05_04A	M041065A	1.625 (0.081)	0.643 (0.022)	0.172 (0.010)		
M05_04B	M041065B	1.067 (0.035)	1.015 (0.025)			
M05_05	M041096	1.079 (0.052)	0.489 (0.029)	0.103 (0.013)		
M05_06	M041125	1.209 (0.072)	0.791 (0.031)	0.195 (0.012)		
M05_07	M041135	0.832 (0.060)	-0.466 (0.107)	0.422 (0.034)		
M05_08	M041257	0.772 (0.025)	0.331 (0.023)			
M05_09	M041268	2.022 (0.129)	1.008 (0.022)	0.232 (0.009)		
M05_10	M041151	0.519 (0.042)	-0.314 (0.158)	0.208 (0.046)		
M05_11	M041264	0.545 (0.052)	0.561 (0.110)	0.221 (0.033)		
M05_12	M041182	0.818 (0.028)	-1.611 (0.045)			
M05_13	M041200	0.472 (0.013)	-0.556 (0.027)		-0.209 (0.050)	0.209 (0.043)
M06_01	M051140	0.665 (0.044)	0.214 (0.074)	0.160 (0.026)		
M06_02	M051017	0.994 (0.071)	0.656 (0.046)	0.295 (0.017)		
M06_03	M051111	0.696 (0.026)	0.992 (0.035)			
M06_04	M051089	1.211 (0.036)	0.693 (0.018)			
M06_05	M051094	1.235 (0.068)	0.490 (0.032)	0.220 (0.014)		
M06_06	M051227	1.101 (0.037)	1.126 (0.027)			
M06_07	M051060	0.578 (0.046)	0.538 (0.083)	0.151 (0.028)		
M06_08Z	M051061Z	0.735 (0.025)	0.687 (0.028)			
M06_09	M051129	0.748 (0.049)	-0.060 (0.081)	0.241 (0.029)		
M06_10	M051236	0.897 (0.027)	0.077 (0.020)			
M06_11A	M051125A	0.825 (0.028)	-1.633 (0.046)			
M06_11B	M051125B	0.669 (0.050)	0.085 (0.096)	0.251 (0.032)		
M07_01	M041298	1.021 (0.055)	-0.537 (0.065)	0.285 (0.028)		
M07_02	M041007	0.877 (0.053)	0.425 (0.046)	0.182 (0.019)		
M07_03	M041280	0.877 (0.065)	0.801 (0.048)	0.238 (0.017)		
M07_04	M041059	0.699 (0.023)	-0.143 (0.025)			
M07_05	M041046	1.335 (0.058)	0.288 (0.025)	0.118 (0.012)		
M07_06	M041048	1.556 (0.092)	0.631 (0.028)	0.287 (0.012)		
M07_07	M041169	1.066 (0.058)	0.187 (0.042)	0.222 (0.018)		
M07_08	M041333	1.083 (0.058)	0.648 (0.031)	0.137 (0.013)		
M07_09	M041262	0.938 (0.070)	0.993 (0.043)	0.209 (0.015)		
M07_10	M041267	0.598 (0.023)	0.751 (0.035)			
M07_11	M041177	0.882 (0.044)	-0.432 (0.060)	0.152 (0.026)		
M07_12	M041271	0.935 (0.042)	-0.491 (0.051)	0.121 (0.023)		

TIMSS 2015 Fourth Grade Mathematics Item Parameters from Concurrent Calibration (Continued)

Item		Slope (a_j)	Location (b_j)	Guessing (c_j)	Step 1 (d_{j1})	Step 2 (d_{j2})
M07_13A	M041276A	1.032 (0.030)	0.119 (0.018)			
M07_13B	M041276B	0.911 (0.029)	0.674 (0.023)			
M09_01	M051206	0.646 (0.022)	-0.720 (0.034)			
M09_02	M051052	1.021 (0.066)	0.268 (0.053)	0.331 (0.020)		
M09_03	M051049	1.499 (0.064)	0.098 (0.025)	0.152 (0.013)		
M09_04	M051045	1.176 (0.033)	0.056 (0.017)			
M09_05	M051098	1.067 (0.059)	0.736 (0.031)	0.132 (0.013)		
M09_06	M051030	1.019 (0.035)	1.161 (0.029)			
M09_07	M051502	0.975 (0.068)	1.099 (0.039)	0.154 (0.013)		
M09_08	M051224	1.015 (0.060)	0.159 (0.051)	0.280 (0.021)		
M09_09	M051207	0.952 (0.085)	0.898 (0.056)	0.377 (0.017)		
M09_10	M051427	1.135 (0.064)	0.717 (0.031)	0.165 (0.013)		
M09_11	M051533	1.134 (0.032)	0.184 (0.017)			
M09_12	M051080	1.073 (0.031)	-0.066 (0.018)			
M11_01	M051401	0.865 (0.028)	0.566 (0.023)			
M11_02	M051075	1.597 (0.126)	1.075 (0.032)	0.342 (0.010)		
M11_03	M051402	1.061 (0.031)	0.401 (0.018)			
M11_04	M051226	1.361 (0.080)	0.595 (0.031)	0.264 (0.013)		
M11_05	M051131	0.777 (0.024)	-0.022 (0.023)			
M11_06	M051103	1.470 (0.081)	0.326 (0.031)	0.301 (0.015)		
M11_07	M051217	1.210 (0.036)	0.609 (0.018)			
M11_08	M051079	0.887 (0.027)	0.378 (0.021)			
M11_09	M051211	0.868 (0.052)	-0.044 (0.064)	0.246 (0.025)		
M11_10	M051102	1.223 (0.072)	0.723 (0.031)	0.203 (0.013)		
M11_11	M051009	0.881 (0.027)	0.049 (0.021)			
M11_12	M051100	0.724 (0.051)	0.317 (0.070)	0.208 (0.025)		
M13_01	M051043	0.544 (0.021)	-0.007 (0.031)			
M13_02	M051040	1.219 (0.079)	0.039 (0.054)	0.436 (0.020)		
M13_03	M051008	1.220 (0.038)	0.948 (0.022)			
M13_04A	M051031A	1.490 (0.040)	0.166 (0.014)			
M13_04B	M051031B	1.662 (0.045)	0.258 (0.013)			
M13_05	M051508	1.295 (0.036)	0.179 (0.015)			
M13_06A	M051216A	1.292 (0.070)	0.480 (0.031)	0.226 (0.014)		
M13_06B	M051216B	0.552 (0.041)	-1.034 (0.197)	0.250 (0.060)		
M13_07	M051221	0.649 (0.039)	-0.726 (0.114)	0.172 (0.041)		

TIMSS 2015 Fourth Grade Mathematics Item Parameters from Concurrent Calibration (Continued)

Item		Slope (a_j)	Location (b_j)	Guessing (c_j)	Step 1 (d_{j1})	Step 2 (d_{j2})
M13_08	M051115	0.612 (0.059)	1.641 (0.075)	0.100 (0.017)		
M13_09A	M051507A	0.748 (0.024)	-0.513 (0.028)			
M13_09B	M051507B	1.152 (0.036)	0.825 (0.021)			
Items Introduced in 2015:						
M02_01	M061272	0.910 (0.038)	0.121 (0.028)			
M02_02	M061243	0.477 (0.015)	-0.220 (0.031)		-0.923 (0.072)	0.923 (0.068)
M02_03	M061029	1.151 (0.072)	-0.226 (0.055)	0.139 (0.027)		
M02_04	M061031	1.497 (0.087)	0.563 (0.027)	0.066 (0.012)		
M02_05	M061050	1.427 (0.104)	0.596 (0.036)	0.184 (0.017)		
M02_06	M061167	0.730 (0.033)	-0.826 (0.047)			
M02_07	M061206	0.723 (0.069)	0.755 (0.070)	0.105 (0.027)		
M02_08A	M061265A	0.989 (0.042)	0.485 (0.028)			
M02_08B	M061265B	0.991 (0.103)	1.125 (0.057)	0.183 (0.019)		
M02_09	M061185	0.980 (0.063)	-0.503 (0.076)	0.114 (0.036)		
M02_10	M061239	1.408 (0.056)	-0.587 (0.026)			
M04_01	M061275	0.764 (0.065)	-0.479 (0.132)	0.192 (0.053)		
M04_02	M061027	0.941 (0.039)	-0.423 (0.032)			
M04_03	M061255	0.842 (0.027)	0.561 (0.021)		-0.210 (0.038)	0.210 (0.042)
M04_04	M061021	0.835 (0.039)	0.715 (0.035)			
M04_05	M061043	1.385 (0.054)	0.358 (0.021)			
M04_06	M061151	1.295 (0.080)	-0.012 (0.044)	0.143 (0.023)		
M04_07	M061172	1.556 (0.113)	0.830 (0.031)	0.135 (0.013)		
M04_08	M061223	0.739 (0.055)	-0.678 (0.122)	0.066 (0.053)		
M04_09	M061269	0.818 (0.058)	-0.439 (0.093)	0.085 (0.041)		
M04_10A	M061081A	1.115 (0.049)	0.742 (0.029)			
M04_10B	M061081B	0.801 (0.041)	1.002 (0.044)			
M08_01	M061026	0.920 (0.055)	-0.764 (0.079)	0.043 (0.038)		
M08_02	M061273	0.815 (0.065)	0.246 (0.073)	0.119 (0.031)		
M08_03	M061034	1.230 (0.051)	0.673 (0.025)			
M08_04	M061040	1.711 (0.117)	0.601 (0.030)	0.169 (0.015)		
M08_05	M061228	0.780 (0.026)	0.878 (0.026)		-0.309 (0.042)	0.309 (0.050)
M08_06	M061166	1.141 (0.045)	-0.158 (0.025)			
M08_07	M061171	1.316 (0.086)	-0.240 (0.054)	0.201 (0.028)		
M08_08	M061080	0.854 (0.039)	0.598 (0.033)			
M08_09	M061222	0.904 (0.094)	0.401 (0.089)	0.326 (0.032)		

TIMSS 2015 Fourth Grade Mathematics Item Parameters from Concurrent Calibration (Continued)

Item		Slope (a_j)	Location (b_j)	Guessing (c_j)	Step 1 (d_{j1})	Step 2 (d_{j2})
M08_10	M061076	0.583 (0.030)	-0.477 (0.048)			
M08_11	M061084	1.119 (0.050)	0.869 (0.031)			
M10_01	M061018	0.889 (0.038)	0.147 (0.029)			
M10_02	M061274	0.791 (0.070)	-0.396 (0.132)	0.249 (0.051)		
M10_03	M061248	0.932 (0.033)	0.431 (0.020)		0.400 (0.031)	-0.400 (0.035)
M10_04	M061039	1.224 (0.049)	0.354 (0.023)			
M10_05	M061079	1.324 (0.055)	0.724 (0.025)			
M10_06	M061179	1.225 (0.080)	0.122 (0.046)	0.158 (0.023)		
M10_07	M061052	1.049 (0.064)	0.121 (0.046)	0.075 (0.022)		
M10_08	M061207	1.537 (0.092)	0.316 (0.031)	0.115 (0.016)		
M10_09	M061236	0.788 (0.036)	0.318 (0.032)			
M10_10	M061266	0.494 (0.017)	0.750 (0.033)		-0.820 (0.066)	0.820 (0.073)
M10_11	M061106	1.065 (0.081)	0.038 (0.067)	0.229 (0.030)		
M12_01	M061178	0.866 (0.037)	0.144 (0.029)			
M12_02	M061246	1.065 (0.066)	0.151 (0.045)	0.086 (0.021)		
M12_03	M061271	0.700 (0.032)	-0.544 (0.042)			
M12_04	M061256	0.933 (0.039)	0.212 (0.028)			
M12_05	M061182	1.188 (0.056)	1.140 (0.035)			
M12_06	M061049	0.971 (0.080)	-0.362 (0.100)	0.301 (0.041)		
M12_07	M061232	0.859 (0.091)	0.604 (0.082)	0.285 (0.029)		
M12_08	M061095	0.951 (0.039)	-0.015 (0.028)			
M12_09	M061264	0.636 (0.023)	0.473 (0.026)		-0.126 (0.046)	0.126 (0.051)
M12_10	M061108	0.564 (0.071)	0.548 (0.142)	0.161 (0.047)		
M12_11A	M061211A	1.290 (0.051)	0.224 (0.022)			
M12_11B	M061211B	1.514 (0.121)	0.624 (0.039)	0.254 (0.018)		
M14_01	M061240	0.795 (0.037)	0.631 (0.035)			
M14_02	M061254	0.882 (0.037)	0.086 (0.029)			
M14_03	M061244	1.045 (0.081)	0.031 (0.072)	0.251 (0.031)		
M14_04	M061041	1.374 (0.136)	1.104 (0.045)	0.242 (0.016)		
M14_05	M061173	0.737 (0.033)	-0.222 (0.036)			
M14_06	M061252	1.327 (0.092)	0.669 (0.035)	0.132 (0.016)		
M14_07	M061261	1.337 (0.051)	0.195 (0.021)			
M14_08	M061224	0.872 (0.039)	0.622 (0.032)			
M14_09	M061077	0.879 (0.058)	-0.038 (0.064)	0.069 (0.028)		
M14_10A	M061069A	0.741 (0.034)	-0.713 (0.045)			
M14_10B	M061069B	0.743 (0.034)	-0.055 (0.035)			