Appendix 13C: TIMSS 2015 Eighth Grade Mathematics Item Parameters from Concurrent Calibration

TIMSS 2015 Eighth 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_01	M032166	1.015 (0.079)	0.060 (0.068)	0.188 (0.029)		
M01_02	M032721	0.941 (0.126)	1.280 (0.078)	0.269 (0.021)		
M01_03	M032757	0.540 (0.016)	-0.347 (0.030)		-1.922 (0.100)	1.922 (0.097)
M01_04A	M032760A	1.040 (0.031)	0.546 (0.019)		-1.082 (0.064)	1.082 (0.066)
M01_04B	M032760B	1.747 (0.080)	0.876 (0.025)			
M01_04C	M032760C	1.888 (0.094)	1.108 (0.027)			
M01_05	M032761	1.381 (0.052)	1.085 (0.022)		-0.096 (0.033)	0.096 (0.042)
M01_06	M032692	0.688 (0.022)	0.924 (0.030)		-1.302 (0.077)	1.302 (0.084)
M01_07	M032626	0.934 (0.075)	0.303 (0.066)	0.154 (0.027)		
M01_08	M032595	1.550 (0.102)	0.220 (0.036)	0.137 (0.017)		
M01_09	M032673	1.451 (0.110)	0.414 (0.042)	0.201 (0.019)		
M02_01	M052216	1.333 (0.100)	-0.294 (0.062)	0.262 (0.030)		
M02_02	M052231	0.699 (0.037)	-1.182 (0.059)			
M02_03	M052061	0.992 (0.043)	0.249 (0.030)			
M02_04	M052228	1.475 (0.098)	0.569 (0.033)	0.098 (0.013)		
M02_05	M052214	1.193 (0.130)	1.057 (0.058)	0.262 (0.018)		
M02_06	M052173	2.602 (0.242)	1.335 (0.029)	0.076 (0.007)		
M02_07	M052302	1.078 (0.077)	-0.486 (0.076)	0.185 (0.036)		
M02_08	M052002	1.083 (0.039)	1.230 (0.027)		-0.507 (0.050)	0.507 (0.060)
M02_09	M052362	1.093 (0.046)	0.281 (0.028)			
M02_10	M052408	0.899 (0.042)	0.624 (0.036)			
M02_11	M052084	1.579 (0.106)	0.311 (0.035)	0.143 (0.016)		
M02_12	M052206	1.088 (0.050)	0.865 (0.035)			
M02_13	M052429	0.941 (0.080)	0.476 (0.064)	0.168 (0.025)		
M02_14A	M052503A	0.645 (0.039)	1.482 (0.079)			
M02_14B	M052503B	0.563 (0.041)	1.833 (0.113)			
M03_01	M042032	0.911 (0.074)	-0.464 (0.103)	0.227 (0.044)		
M03_02	M042031	1.670 (0.136)	0.474 (0.040)	0.259 (0.017)		
M03_03	M042186	1.087 (0.046)	0.182 (0.028)			
M03_04	M042059	0.852 (0.027)	-0.023 (0.022)		-0.209 (0.043)	0.209 (0.043)
M03_05	M042236	1.532 (0.117)	0.221 (0.044)	0.243 (0.020)		

TIMSS 2015 Eighth 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_06	M042226	1.421 (0.058)	0.163 (0.023)			
M03_07	M042103	0.985 (0.052)	1.341 (0.052)			
M03_08	M042086	1.258 (0.054)	0.530 (0.028)			
M03_09	M042228	0.808 (0.038)	0.521 (0.039)			
M03_10	M042245	1.871 (0.158)	1.080 (0.034)	0.127 (0.010)		
M03_11	M042270	0.944 (0.041)	0.043 (0.031)			
M03_12	M042201	1.359 (0.056)	0.119 (0.024)			
M03_13	M042152	0.723 (0.083)	0.716 (0.099)	0.218 (0.033)		
M03_14	M042269	0.745 (0.083)	0.207 (0.127)	0.292 (0.041)		
M03_15	M042179	0.851 (0.067)	-0.010 (0.081)	0.149 (0.033)		
M03_16	M042177	1.059 (0.084)	0.113 (0.065)	0.207 (0.028)		
M03_17	M042207	0.403 (0.012)	-0.210 (0.036)		-2.851 (0.137)	2.851 (0.135)
M05_01	M032094	1.334 (0.105)	0.038 (0.057)	0.282 (0.026)		
M05_02	M032662	2.085 (0.200)	1.282 (0.034)	0.130 (0.009)		
M05_03	M032064	1.438 (0.063)	0.698 (0.026)			
M05_04	M032419	1.490 (0.136)	0.768 (0.044)	0.263 (0.017)		
M05_05	M032477	1.878 (0.149)	0.575 (0.034)	0.232 (0.015)		
M05_06	M032538	1.400 (0.058)	0.226 (0.024)			
M05_07	M032324	1.300 (0.113)	0.847 (0.044)	0.182 (0.016)		
M05_08	M032116	1.336 (0.128)	0.810 (0.050)	0.271 (0.018)		
M05_09	M032100	1.043 (0.078)	0.314 (0.055)	0.144 (0.023)		
M05_10	M032402	0.921 (0.110)	0.827 (0.081)	0.315 (0.026)		
M05_11	M032734	0.787 (0.036)	-0.471 (0.039)			
M05_12	M032397	1.150 (0.102)	0.645 (0.054)	0.219 (0.021)		
M05_13	M032695	0.593 (0.018)	-0.148 (0.028)		-0.927 (0.069)	0.927 (0.067)
M05_14	M032132	0.697 (0.062)	0.275 (0.093)	0.128 (0.033)		
M06_01	M042041	1.452 (0.112)	-0.234 (0.057)	0.297 (0.028)		
M06_02	M042024	1.612 (0.106)	0.051 (0.037)	0.167 (0.019)		
M06_03	M042016	0.882 (0.086)	0.491 (0.078)	0.232 (0.028)		
M06_04	M042002	0.761 (0.039)	0.884 (0.047)			
M06_05A	M042198A	1.205 (0.052)	-0.767 (0.032)			
M06_05B	M042198B	1.071 (0.046)	0.250 (0.028)			
M06_05C	M042198C	1.882 (0.091)	1.014 (0.026)			
M06_06	M042077	1.621 (0.131)	0.487 (0.040)	0.252 (0.018)		
M06_07	M042235	1.586 (0.100)	0.181 (0.033)	0.123 (0.016)		

TIMSS 2015 Eighth 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})
M06_08	M042067	2.243 (0.248)	1.122 (0.037)	0.285 (0.013)		
M06_09	M042150	0.834 (0.089)	0.827 (0.074)	0.198 (0.025)		
M06_10Z	M042300Z	0.814 (0.026)	0.316 (0.023)		-0.352 (0.046)	0.352 (0.048)
M06_11	M042260	0.997 (0.090)	-0.065 (0.090)	0.307 (0.035)		
M06_12A	M042169A	1.240 (0.052)	0.187 (0.025)			
M06_12B	M042169B	0.349 (0.029)	1.137 (0.110)			
M06_12C	M042169C	0.818 (0.050)	1.572 (0.072)			
M07_01	M032352	1.474 (0.140)	0.356 (0.056)	0.391 (0.022)		
M07_02	M032725	1.305 (0.059)	0.804 (0.030)			
M07_03	M032683	0.638 (0.020)	0.767 (0.030)		-1.196 (0.073)	1.196 (0.079)
M07_04	M032738	1.450 (0.105)	-0.169 (0.050)	0.234 (0.026)		
M07_05	M032295	1.489 (0.113)	-0.420 (0.059)	0.290 (0.030)		
M07_06	M032331	2.251 (0.231)	1.209 (0.035)	0.188 (0.011)		
M07_07	M032623	1.911 (0.133)	0.613 (0.028)	0.126 (0.012)		
M07_08	M032679	1.261 (0.098)	0.285 (0.050)	0.216 (0.022)		
M07_09	M032047	2.155 (0.281)	1.095 (0.046)	0.426 (0.014)		
M07_10	M032398	1.683 (0.168)	0.838 (0.045)	0.320 (0.016)		
M07_11	M032507	1.840 (0.166)	1.013 (0.036)	0.187 (0.012)		
M07_12	M032424	1.217 (0.090)	0.352 (0.046)	0.161 (0.020)		
M07_13A	M032681A	0.519 (0.030)	-0.720 (0.060)			
M07_13B	M032681B	0.551 (0.033)	0.889 (0.064)			
M07_13C	M032681C	1.067 (0.048)	0.400 (0.030)			
Items Common in 2011 and 2015:						
M01_01	M042182	1.660 (0.105)	0.280 (0.035)	0.375 (0.015)		
M01_02	M042081	0.912 (0.030)	0.676 (0.026)			
M01_03	M042049	1.177 (0.073)	0.108 (0.049)	0.308 (0.020)		
M01_04	M042052	1.809 (0.080)	-0.043 (0.023)	0.134 (0.013)		
M01_05	M042076	1.202 (0.071)	0.515 (0.036)	0.207 (0.015)		
M01_06A	M042302A	0.951 (0.022)	0.381 (0.015)		-0.203 (0.028)	0.203 (0.030)
M01_06B	M042302B	0.937 (0.020)	0.477 (0.015)		-0.633 (0.034)	0.633 (0.036)
M01_06C	M042302C	0.527 (0.015)	1.639 (0.042)		-1.036 (0.059)	1.036 (0.076)
M01_07	M042100	1.391 (0.079)	0.183 (0.037)	0.270 (0.017)		
M01_08	M042202	1.599 (0.095)	0.479 (0.030)	0.274 (0.013)		
M01_09	M042240	1.408 (0.066)	0.169 (0.028)	0.137 (0.014)		
M01_10	M042093	1.743 (0.062)	1.112 (0.020)			

TIMSS 2015 Eighth 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})
M01_11	M042271	1.143 (0.057)	0.256 (0.034)	0.122 (0.015)		
M01_12	M042268	1.530 (0.095)	1.037 (0.027)	0.151 (0.009)		
M01_13	M042159	0.474 (0.021)	-0.834 (0.049)			
M01_14	M042164	1.393 (0.043)	0.507 (0.018)			
M01_15	M042167	1.371 (0.045)	0.803 (0.020)			
M03_01	M052209	1.459 (0.068)	-0.052 (0.031)	0.157 (0.016)		
M03_02	M052142	1.030 (0.064)	0.818 (0.037)	0.144 (0.014)		
M03_03	M052006	1.481 (0.112)	1.016 (0.035)	0.303 (0.011)		
M03_04	M052035	1.473 (0.043)	0.318 (0.016)			
M03_05	M052016	1.487 (0.043)	0.400 (0.016)			
M03_06	M052064	1.536 (0.090)	0.613 (0.030)	0.240 (0.012)		
M03_07	M052126	1.861 (0.065)	1.115 (0.019)			
M03_08	M052103	1.126 (0.058)	0.247 (0.037)	0.140 (0.016)		
M03_09	M052066	1.408 (0.077)	0.440 (0.031)	0.212 (0.014)		
M03_10	M052041	1.230 (0.044)	1.280 (0.029)			
M03_11	M052057	0.659 (0.045)	0.048 (0.093)	0.151 (0.034)		
M03_12	M052417	0.962 (0.030)	0.298 (0.022)			
M03_13	M052501	0.874 (0.031)	1.000 (0.031)			
M03_14	M052410	0.848 (0.068)	0.599 (0.067)	0.286 (0.023)		
M03_15	M052170	1.143 (0.098)	1.221 (0.045)	0.270 (0.013)		
M05_01	M042183	0.681 (0.044)	-0.105 (0.091)	0.143 (0.034)		
M05_02	M042060	1.333 (0.066)	0.112 (0.033)	0.169 (0.016)		
M05_03	M042019	0.765 (0.026)	0.488 (0.028)			
M05_04	M042023	1.286 (0.038)	0.490 (0.019)			
M05_05	M042197	1.084 (0.036)	0.928 (0.026)			
M05_06	M042234	1.470 (0.074)	0.300 (0.029)	0.176 (0.014)		
M05_07	M042066	0.683 (0.024)	0.253 (0.029)			
M05_08	M042243	1.926 (0.084)	0.358 (0.019)	0.095 (0.009)		
M05_09	M042248	1.508 (0.046)	0.682 (0.018)			
M05_10Z	M042229Z	1.187 (0.028)	0.759 (0.014)		-0.300 (0.027)	0.300 (0.030)
M05_11A	M042080A	0.752 (0.026)	0.499 (0.028)			
M05_11B	M042080B	1.313 (0.048)	1.313 (0.028)			
M05_12	M042120	1.075 (0.067)	0.023 (0.058)	0.295 (0.023)		
M05_13	M042203	1.512 (0.072)	0.123 (0.028)	0.154 (0.014)		
M05_14	M042264	0.837 (0.032)	1.281 (0.039)			

TIMSS 2015 Eighth 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_15	M042255	0.657 (0.041)	-0.367 (0.101)	0.134 (0.038)		
M05_16	M042224	0.915 (0.029)	-0.075 (0.023)			
M06_01	M052017	1.238 (0.065)	0.126 (0.038)	0.187 (0.017)		
M06_02	M052217	1.368 (0.043)	0.777 (0.020)			
M06_03	M052021	1.025 (0.023)	0.627 (0.015)		-0.332 (0.029)	0.332 (0.032)
M06_04	M052095	1.636 (0.048)	0.442 (0.016)			
M06_05	M052094	1.189 (0.041)	1.126 (0.027)			
M06_06	M052131	1.256 (0.084)	0.829 (0.036)	0.241 (0.013)		
M06_07	M052090	1.276 (0.086)	0.881 (0.036)	0.227 (0.013)		
M06_08A	M052121A	1.045 (0.052)	0.260 (0.036)	0.098 (0.016)		
M06_08B	M052121B	1.890 (0.079)	1.472 (0.025)			
M06_09	M052042	0.910 (0.029)	0.533 (0.025)			
M06_10	M052047	1.136 (0.034)	0.342 (0.020)			
M06_11	M052044	1.636 (0.151)	1.157 (0.039)	0.398 (0.011)		
M06_12A	M052422A	0.825 (0.063)	0.054 (0.090)	0.318 (0.031)		
M06_12B	M052422B	0.705 (0.048)	0.266 (0.076)	0.143 (0.028)		
M06_13	M052505	1.165 (0.065)	-0.831 (0.069)	0.242 (0.037)		
M07_01	M042015	0.947 (0.050)	-0.432 (0.064)	0.158 (0.029)		
M07_02	M042196	1.098 (0.050)	0.013 (0.036)	0.091 (0.016)		
M07_03	M042194	1.184 (0.035)	-0.441 (0.020)			
M07_04A	M042114A	1.537 (0.044)	-0.055 (0.016)			
M07_04B	M042114B	1.549 (0.045)	0.205 (0.015)			
M07_05	M042112	0.869 (0.085)	1.113 (0.062)	0.318 (0.018)		
M07_06	M042109	1.656 (0.110)	1.020 (0.029)	0.222 (0.010)		
M07_07	M042050	1.152 (0.036)	0.684 (0.021)			
M07_08A	M042074A	1.067 (0.033)	0.556 (0.022)			
M07_08B	M042074B	0.970 (0.032)	0.739 (0.025)			
M07_08C	M042074C	1.754 (0.058)	0.977 (0.018)			
M07_09	M042151	0.892 (0.028)	0.014 (0.023)			
M07_10	M042132	1.847 (0.127)	1.158 (0.027)	0.200 (0.009)		
M07_11	M042257	0.708 (0.054)	0.855 (0.060)	0.132 (0.021)		
M07_12	M042158	0.782 (0.066)	0.310 (0.091)	0.337 (0.029)		
M07_13	M042252	1.141 (0.071)	0.798 (0.036)	0.175 (0.013)	(0.013)	
M07_14	M042261	0.692 (0.045)	-0.079 (0.088)	0.142 (0.033)		
M09_01	M052413	1.194 (0.070)	0.096 (0.046)	0.276 (0.020)		

TIMSS 2015 Eighth 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})
M09_02	M052134	1.227 (0.060)	-0.156 (0.039)	0.159 (0.020)		
M09_03	M052078	1.052 (0.071)	0.926 (0.040)	0.181 (0.014)		
M09_04	M052034	1.406 (0.092)	0.634 (0.036)	0.301 (0.014)		
M09_05A	M052174A	1.088 (0.033)	0.284 (0.020)			
M09_05B	M052174B	1.167 (0.039)	1.055 (0.026)			
M09_06	M052130	1.289 (0.078)	0.949 (0.031)	0.151 (0.011)		
M09_07	M052073	1.486 (0.075)	0.521 (0.026)	0.146 (0.011)		
M09_08	M052110	1.527 (0.047)	0.682 (0.018)			
M09_09	M052105	1.144 (0.044)	1.490 (0.036)			
M09_10	M052407	1.294 (0.092)	0.399 (0.048)	0.404 (0.017)		
M09_11	M052036	0.756 (0.026)	0.420 (0.027)			
M09_12	M052502	1.146 (0.034)	-0.237 (0.020)			
M09_13	M052117	0.580 (0.031)	2.163 (0.095)			
M09_14	M052426	0.794 (0.045)	-0.833 (0.099)	0.168 (0.044)		
M11_01	M052079	1.057 (0.074)	0.529 (0.050)	0.296 (0.018)		
M11_02	M052204	0.855 (0.057)	0.505 (0.054)	0.179 (0.021)		
M11_03	M052364	1.135 (0.033)	0.023 (0.019)			
M11_04	M052215	0.853 (0.027)	-0.186 (0.024)			
M11_05	M052147	1.586 (0.104)	0.820 (0.031)	0.273 (0.011)		
M11_06	M052067	1.083 (0.063)	0.125 (0.049)	0.237 (0.021)		
M11_07	M052068	1.475 (0.095)	1.236 (0.030)	0.125 (0.008)		
M11_08	M052087	1.591 (0.056)	1.156 (0.022)			
M11_09	M052048	1.006 (0.036)	1.166 (0.031)			
M11_10	M052039	1.292 (0.038)	0.341 (0.018)			
M11_11	M052208	2.351 (0.131)	1.128 (0.019)	0.077 (0.005)		
M11_12A	M052419A	0.912 (0.042)	-0.237 (0.047)	0.077 (0.021)		
M11_12B	M052419B	1.419 (0.063)	-0.546 (0.036)	0.124 (0.021)		
M11_13	M052115	1.800 (0.078)	0.398 (0.019)	0.085 (0.009)		
M11_14	M052421	0.802 (0.027)	0.640 (0.028)			
M13_01	M052024	1.628 (0.091)	0.530 (0.027)	0.228 (0.012)		
M13_02A	M052058A	1.226 (0.036)	-0.259 (0.019)			
M13_02B	M052058B	1.529 (0.050)	0.998 (0.020)			
M13_03	M052125	1.344 (0.067)	0.652 (0.026)	0.109 (0.011)		
M13_04	M052229	0.960 (0.029)	0.095 (0.021)			
M13_05	M052063	1.316 (0.075)	0.635 (0.031)	0.186 (0.013)		

TIMSS 2015 Eighth 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_06	M052072	1.043 (0.054)	0.048 (0.043)	0.138 (0.020)		
M13_07A	M052146A	0.849 (0.027)	0.247 (0.024)			
M13_07B	M052146B	1.655 (0.059)	1.221 (0.022)			
M13_08	M052092	1.198 (0.095)	1.499 (0.042)	0.139 (0.009)		
M13_09	M052046	1.148 (0.101)	1.517 (0.047)	0.186 (0.010)		
M13_10	M052083	1.553 (0.090)	0.900 (0.026)	0.159 (0.010)		
M13_11	M052082	1.185 (0.064)	0.248 (0.038)	0.181 (0.017)		
M13_12	M052161	1.163 (0.062)	-0.093 (0.046)	0.203 (0.022)		
M13_13A	M052418A	1.976 (0.108)	0.742 (0.022)	0.165 (0.009)		
M13_13B	M052418B	1.738 (0.102)	0.611 (0.027)	0.244 (0.012)		
Items Introduced in 2015:						
M02_01	M062208	1.027 (0.043)	-0.102 (0.029)			
M02_02	M062153	0.927 (0.090)	0.551 (0.075)	0.209 (0.029)		
M02_03A	M062111A	1.376 (0.056)	0.164 (0.023)			
M02_03B	M062111B	1.676 (0.072)	0.646 (0.022)			
M02_04	M062237	1.731 (0.084)	1.050 (0.027)			
M02_05	M062314	1.127 (0.056)	1.166 (0.039)			
M02_06	M062074	1.112 (0.145)	1.248 (0.067)	0.295 (0.019)		
M02_07	M062183	0.955 (0.042)	0.259 (0.031)			
M02_08	M062202	1.135 (0.087)	-0.035 (0.068)	0.189 (0.033)		
M02_09	M062246	2.166 (0.197)	1.105 (0.031)	0.172 (0.011)		
M02_10	M062286	1.083 (0.043)	1.354 (0.030)		-0.174 (0.041)	0.174 (0.056)
M02_11	M062325	0.887 (0.134)	1.062 (0.097)	0.378 (0.028)		
M02_12	M062106	0.504 (0.051)	1.101 (0.101)	0.250 (0.000)		
M02_13	M062124	1.444 (0.104)	0.607 (0.037)	0.122 (0.016)		
M04_01	M062329	0.809 (0.079)	-0.615 (0.173)	0.240 (0.072)		
M04_02	M062151	1.251 (0.055)	0.813 (0.030)			
M04_03	M062346	1.136 (0.050)	0.779 (0.031)			
M04_04	M062212	1.344 (0.117)	1.170 (0.042)	0.113 (0.012)		
M04_05	M062056	1.326 (0.064)	1.127 (0.034)			
M04_06	M062317	1.419 (0.063)	0.871 (0.028)			
M04_07	M062350	1.342 (0.153)	1.588 (0.057)	0.124 (0.011)		
M04_08	M062078	1.599 (0.069)	0.704 (0.024)			
M04_09	M062284	0.674 (0.094)	0.463 (0.163)	0.306 (0.050)		
M04_10	M062245	1.277 (0.108)	0.710 (0.047)	0.192 (0.019)		
M04_11	M062287	1.237 (0.067)	1.450 (0.045)			

TIMSS 2015 Eighth 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})
M04_12A	M062345A	0.584 (0.025)	0.569 (0.033)		0.297 (0.051)	-0.297 (0.060)
M04_13	M062115	1.577 (0.179)	1.397 (0.047)	0.199 (0.013)		
M08_01	M062005	0.843 (0.097)	0.491 (0.106)	0.308 (0.036)		
M08_02	M062139	1.008 (0.045)	0.636 (0.033)			
M08_03	M062164	1.389 (0.099)	0.154 (0.046)	0.180 (0.023)		
M08_04	M062142	0.912 (0.040)	-0.224 (0.033)			
M08_05	M062084	1.398 (0.167)	1.582 (0.057)	0.151 (0.012)		
M08_06	M062351	0.797 (0.125)	1.643 (0.098)	0.194 (0.022)		
M08_07	M062223	1.306 (0.092)	-0.140 (0.056)	0.175 (0.029)		
M08_08	M062027	0.765 (0.037)	0.606 (0.040)			
M08_09	M062174	1.521 (0.156)	0.891 (0.049)	0.324 (0.017)		
M08_10	M062244	0.990 (0.043)	0.483 (0.031)			
M08_11	M062261	1.706 (0.183)	1.498 (0.044)	0.128 (0.010)		
M08_12	M062300	0.738 (0.023)	0.472 (0.025)		-0.500 (0.051)	0.500 (0.055)
M08_13	M062254	0.651 (0.042)	1.739 (0.091)			
M08_14A	M062132A	1.186 (0.050)	-0.251 (0.028)			
M08_14B	M062132B	1.123 (0.116)	0.858 (0.061)	0.258 (0.022)		
M10_01	M062150	1.136 (0.047)	-0.174 (0.027)			
M10_02	M062335	1.418 (0.096)	-0.067 (0.048)	0.159 (0.025)		
M10_03	M062219	2.076 (0.179)	0.883 (0.032)	0.224 (0.013)		
M10_04	M062002	0.698 (0.035)	0.670 (0.044)			
M10_05	M062149	1.204 (0.091)	0.613 (0.044)	0.126 (0.019)		
M10_06	M062241	1.764 (0.076)	0.674 (0.022)			
M10_08	M062105	0.800 (0.025)	0.906 (0.026)		-1.435 (0.082)	1.435 (0.086)
M10_09	M062040	0.882 (0.103)	0.967 (0.077)	0.236 (0.026)		
M10_10	M062288	0.809 (0.027)	1.137 (0.030)		-0.842 (0.062)	0.842 (0.071)
M10_11	M062173	1.151 (0.052)	0.819 (0.032)			
M10_12	M062133	1.350 (0.119)	0.722 (0.048)	0.240 (0.019)		
M10_13A	M062123A	1.741 (0.149)	0.436 (0.044)	0.320 (0.020)		
M10_13B	M062123B	1.545 (0.116)	0.752 (0.036)	0.138 (0.014)		
M12_01	M062271	1.631 (0.132)	0.583 (0.041)	0.247 (0.018)		
M12_02	M062152	1.130 (0.048)	0.448 (0.028)			
M12_03	M062215	0.855 (0.029)	0.744 (0.025)		-0.194 (0.042)	0.194 (0.049)
M12_04	M062143	1.650 (0.074)	0.887 (0.025)			
M12_05	M062230	1.624 (0.187)	1.414 (0.048)	0.218 (0.012)		

TIMSS 2015 Eighth 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})
M12_06	M062095	1.674 (0.133)	0.615 (0.038)	0.224 (0.017)		
M12_07	M062076	1.806 (0.145)	0.319 (0.041)	0.294 (0.020)		
M12_08	M062030	0.513 (0.030)	0.039 (0.050)			
M12_09	M062171	0.821 (0.065)	-0.231 (0.102)	0.083 (0.047)		
M12_10	M062301	1.147 (0.054)	1.050 (0.036)			
M12_11	M062194	1.002 (0.088)	-0.308 (0.106)	0.261 (0.047)		
M12_12	M062344	0.890 (0.044)	1.106 (0.045)			
M12_13	M062320	1.886 (0.122)	0.566 (0.028)	0.097 (0.012)		
M12_14	M062296	1.168 (0.049)	0.221 (0.027)			
M14_01	M062001	1.025 (0.127)	0.915 (0.076)	0.346 (0.024)		
M14_02	M062214	1.158 (0.049)	0.453 (0.028)			
M14_03	M062146	1.399 (0.106)	0.759 (0.037)	0.126 (0.015)		
M14_04	M062154	1.352 (0.054)	-0.030 (0.024)			
M14_05	M062067	1.212 (0.112)	0.173 (0.073)	0.344 (0.029)		
M14_06	M062341	1.036 (0.166)	1.727 (0.092)	0.235 (0.017)		
M14_07	M062242	1.248 (0.090)	0.190 (0.051)	0.161 (0.024)		
M14_08A	M062250A	1.175 (0.048)	0.186 (0.026)			
M14_08B	M062250B	1.388 (0.063)	0.885 (0.028)			
M14_09	M062170	0.524 (0.025)	0.990 (0.044)		0.645 (0.053)	-0.645 (0.074)
M14_10	M062192	1.058 (0.053)	1.178 (0.042)			
M14_11	M062072	1.018 (0.043)	0.204 (0.029)			
M14_13	M062120	1.274 (0.099)	0.540 (0.045)	0.162 (0.020)		