Appendix 12G: Mathematics Item Parameters from the eTIMSS 2019 Non-Invariant Model Calibration—Grade 4

Item		RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (d_{i1})	Step 2 (d_{i2})
ME01_01	ME51043	0.030	0.445 (0.035)	0.016 (0.064)			
ME01_02	ME51040	0.017	1.224 (0.134)	-0.026 (0.097)	0.415 (0.040)		
ME01_03	ME51008	0.088	1.309 (0.075)	1.185 (0.041)			
ME01_04A	ME51031A	0.067	1.565 (0.073)	0.257 (0.023)			
ME01_04B	ME51031B	0.058	1.787 (0.083)	0.290 (0.021)			
ME01_05	ME51508	0.084	1.262 (0.061)	0.324 (0.027)			
ME01_06A	ME51216A	0.038	1.199 (0.136)	0.649 (0.066)	0.290 (0.028)		
ME01_06B	ME51216B	0.103	0.741 (0.090)	-0.089 (0.168)	0.280 (0.060)		
ME01_07	ME51221	0.030	0.645 (0.071)	-0.717 (0.223)	0.251 (0.077)		
ME01_08	ME51115	0.037	0.641 (0.114)	1.749 (0.138)	0.118 (0.028)		
ME01_09A	ME51507A	0.040	0.759 (0.044)	-0.487 (0.049)			
ME01_09B	ME51507B	0.029	1.114 (0.061)	0.851 (0.037)			
ME02_01	ME71219	0.028	0.751 (0.067)	-0.865 (0.157)	0.186 (0.064)		
ME02_02	ME71021	0.034	1.106 (0.087)	0.103 (0.061)	0.132 (0.030)		
ME02_03	ME71167	0.100	1.565 (0.084)	1.052 (0.032)			
ME02_04	ME71041	0.039	1.145 (0.086)	-0.267 (0.070)	0.147 (0.037)		
ME02_05	ME71162	0.030	0.558 (0.027)	1.359 (0.055)		-0.492 (0.070)	0.492 (0.093)
ME02_06	ME71078	0.124	0.449 (0.036)	-0.884 (0.098)			
ME02_07	ME71090	0.034	1.197 (0.112)	0.338 (0.064)	0.226 (0.031)		
ME02_08	ME71151	0.038	0.743 (0.027)	0.783 (0.029)		-0.785 (0.062)	0.785 (0.069)
ME02_09	ME71119	0.072	0.666 (0.043)	-0.880 (0.070)			
ME02_10A	ME71217A	0.075	0.934 (0.053)	-0.921 (0.055)			
ME02_11	ME71142	0.030	1.114 (0.057)	-0.411 (0.036)			
ME02_12	ME71204	0.029	1.483 (0.072)	0.442 (0.025)			
ME03_01	ME61026	0.038	0.924 (0.075)	-0.637 (0.108)	0.166 (0.051)		
ME03_02	ME61273	0.031	0.793 (0.085)	0.374 (0.099)	0.174 (0.039)		
ME03_03	ME61034	0.030	1.202 (0.061)	0.661 (0.031)			
ME03_04	ME61040	0.049	1.636 (0.147)	0.737 (0.039)	0.176 (0.018)		
ME03_05	ME61228	0.080	0.739 (0.034)	1.210 (0.042)		-0.164 (0.053)	0.164 (0.072)
ME03_06	ME61166	0.031	1.182 (0.058)	-0.425 (0.033)			
ME03_07	ME61171	0.054	1.210 (0.109)	-0.143 (0.081)	0.269 (0.040)		
ME03_08	ME61080	0.039	0.686 (0.042)	0.505 (0.047)			
ME03_09	ME61222	0.060	0.828 (0.107)	0.295 (0.132)	0.319 (0.047)		
ME03_10	ME61076	0.073	0.443 (0.037)	-1.207 (0.116)			
ME03_11	ME61084	0.035	1.058 (0.056)	0.632 (0.034)			
ME04_01	ME71013	0.035	1.028 (0.100)	-0.210 (0.105)	0.275 (0.047)		
ME04_02	ME71026	0.027	1.177 (0.057)	0.142 (0.028)			
ME04_03	ME71036	0.019	0.923 (0.049)	-0.574 (0.042)			

Item		RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (d_{i1})	Step 2 (d_{i2})
ME04_04	ME71040	0.058	1.496 (0.111)	0.483 (0.036)	0.100 (0.017)		
ME04_05	ME71068	0.046	0.491 (0.072)	0.735 (0.170)	0.148 (0.051)		
ME04_06A	ME71075A	0.034	1.266 (0.061)	0.353 (0.027)			
ME04_06B	ME71075B	0.067	1.360 (0.070)	0.823 (0.031)			
ME04_07	ME71080	0.038	1.534 (0.149)	0.508 (0.050)	0.271 (0.024)		
ME04_08	ME71211	0.035	0.625 (0.040)	0.139 (0.047)			
ME04_09	ME71178	0.040	0.848 (0.048)	0.576 (0.041)			
ME04_10B	ME71135B	0.080	0.790 (0.045)	-0.220 (0.042)			
ME04_11	ME71201	0.128	0.743 (0.055)	1.599 (0.092)			
ME04_12	ME71175	0.039	0.790 (0.037)	-0.097 (0.030)		0.675 (0.050)	-0.675 (0.044)
ME05_01	ME51206	0.028	0.567 (0.039)	-0.819 (0.074)			
ME05_02	ME51052	0.045	0.775 (0.091)	0.041 (0.144)	0.262 (0.053)		
ME05_03	ME51049	0.051	1.491 (0.118)	0.218 (0.046)	0.175 (0.025)		
ME05_04	ME51045	0.071	1.148 (0.056)	0.084 (0.029)			
ME05_05	ME51098	0.033	1.065 (0.106)	0.818 (0.056)	0.136 (0.023)		
ME05_06	ME51030	0.029	1.006 (0.060)	1.165 (0.050)			
ME05_07	ME51502	0.043	0.997 (0.119)	1.215 (0.066)	0.130 (0.020)		
ME05_08	ME51224	0.031	0.837 (0.092)	0.003 (0.128)	0.256 (0.050)		
ME05_09	ME51207	0.035	0.786 (0.129)	0.860 (0.124)	0.333 (0.040)		
ME05_10	ME51427	0.020	1.144 (0.112)	0.728 (0.055)	0.160 (0.024)		
ME05_11	ME51533	0.038	1.085 (0.054)	0.181 (0.030)			
ME05_12	ME51080	0.121	1.104 (0.057)	0.231 (0.031)			
ME06_01	ME61018	0.029	0.944 (0.049)	0.106 (0.034)			
ME06_02	ME61274	0.028	0.743 (0.081)	-0.456 (0.180)	0.267 (0.067)		
ME06_03	ME61248	0.032	0.910 (0.040)	0.408 (0.025)		0.443 (0.038)	-0.443 (0.042)
ME06_04	ME61039	0.021	1.103 (0.055)	0.238 (0.030)			
ME06_05	ME61079	0.100	1.253 (0.066)	0.917 (0.035)			
ME06_06	ME61179	0.055	1.284 (0.107)	0.197 (0.057)	0.191 (0.029)		
ME06_07	ME61052	0.048	1.101 (0.086)	0.215 (0.057)	0.116 (0.027)		
ME06_08	ME61207	0.048	1.595 (0.115)	0.428 (0.035)	0.103 (0.017)		
ME06_09	ME61236	0.070	0.789 (0.045)	0.432 (0.040)			
ME06_10	ME61266	0.033	0.494 (0.020)	0.716 (0.040)		-0.892 (0.081)	0.892 (0.090)
ME06_11	ME61106	0.043	1.040 (0.106)	0.095 (0.094)	0.276 (0.041)		
ME07_01	ME51401	0.046	0.786 (0.045)	0.583 (0.042)			
ME07_02	ME51075	0.058	1.318 (0.187)	1.202 (0.065)	0.295 (0.020)		
ME07_03	ME51402	0.013	0.922 (0.049)	0.398 (0.035)			
ME07_04	ME51226	0.039	1.362 (0.142)	0.715 (0.054)	0.257 (0.023)		
ME07_05	ME51131	0.027	0.716 (0.042)	0.098 (0.042)			
ME07_06	ME51103	0.019	1.279 (0.120)	0.180 (0.068)	0.277 (0.032)		
ME07_07	ME51217	0.020	1.202 (0.061)	0.625 (0.031)			
ME07_08	ME51079	0.119	0.839 (0.048)	0.683 (0.042)			

Item		RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (d_{i1})	Step 2 (d_{i2})
ME07_09	ME51211	0.031	0.811 (0.096)	-0.234 (0.168)	0.333 (0.060)		
ME07_10	ME51102	0.031	1.038 (0.105)	0.793 (0.059)	0.146 (0.024)		
ME07_11	ME51009	0.022	0.829 (0.045)	-0.017 (0.038)			
ME07_12	ME51100	0.033	0.853 (0.109)	0.345 (0.124)	0.318 (0.045)		
ME08_01	ME71018	0.036	1.311 (0.109)	0.250 (0.052)	0.177 (0.026)		
ME08_02	ME71009	0.023	1.153 (0.056)	0.145 (0.029)			
ME08_03	ME71037	0.068	0.742 (0.042)	-0.031 (0.041)			
ME08_04	ME71051	0.030	1.220 (0.066)	0.955 (0.037)			
ME08_05	ME71064	0.040	0.697 (0.083)	0.630 (0.103)	0.148 (0.038)		
* ME08_06	ME71176	—	0.719 (0.068)	-1.067 (0.190)	0.223 (0.075)		
ME08_07	ME71169	0.062	1.197 (0.061)	0.662 (0.032)			
ME08_08	ME71083	0.045	1.177 (0.111)	0.396 (0.062)	0.213 (0.029)		
ME08_10	ME71184	0.036	2.115 (0.240)	1.037 (0.038)	0.238 (0.015)		
ME08_11	ME71141	0.148	0.871 (0.047)	0.271 (0.036)			
ME08_12	ME71194	0.050	0.732 (0.046)	-1.189 (0.074)			
ME08_13	ME71193	0.032	0.679 (0.024)	0.383 (0.028)		-0.779 (0.065)	0.779 (0.068)
ME08_14	ME71192	0.051	0.598 (0.023)	1.060 (0.040)		-1.329 (0.090)	1.329 (0.101)
ME09_01	ME61275	0.022	0.765 (0.077)	-0.543 (0.161)	0.234 (0.063)		
ME09_02	ME61027	0.037	0.795 (0.044)	-0.483 (0.046)			
ME09_03	ME61255	0.028	0.838 (0.034)	0.560 (0.026)		-0.131 (0.045)	0.131 (0.051)
ME09_04	ME61021	0.181	0.829 (0.055)	1.365 (0.069)			
ME09_05	ME61043	0.019	1.215 (0.059)	0.321 (0.028)			
ME09_06	ME61151	0.045	1.293 (0.100)	0.015 (0.055)	0.158 (0.029)		
ME09_07	ME61172	0.026	1.643 (0.140)	0.771 (0.036)	0.130 (0.016)		
ME09_08	ME61223	0.068	0.771 (0.072)	-0.299 (0.125)	0.170 (0.050)		
ME09_09	ME61269	0.037	0.816 (0.082)	-0.358 (0.141)	0.233 (0.057)		
ME09_10A	ME61081A	0.026	1.010 (0.056)	0.828 (0.040)			
ME09_10B	ME61081B	0.061	0.975 (0.059)	1.165 (0.053)			
ME10_02	ME71016	0.031	0.856 (0.046)	-0.119 (0.038)			
ME10_03	ME71163	0.018	1.875 (0.157)	0.956 (0.032)	0.084 (0.011)		
ME10_04	ME71045	0.028	1.288 (0.116)	0.383 (0.055)	0.207 (0.027)		
ME10_05	ME71213	0.030	0.835 (0.047)	0.423 (0.038)			
ME10_06	ME71070	0.036	0.431 (0.076)	0.228 (0.324)	0.251 (0.079)		
ME10_07	ME71181	0.042	0.892 (0.049)	0.506 (0.037)			
ME10_08	ME71179	0.051	1.079 (0.063)	1.052 (0.045)			
ME10_09	ME71067	0.031	0.561 (0.021)	1.046 (0.041)		-1.606 (0.100)	1.606 (0.110)
ME10_10A	ME71147A	0.017	1.327 (0.066)	-0.471 (0.032)			
ME10_10B	ME71147B	0.063	1.039 (0.053)	0.129 (0.031)			
ME10_11	ME71189	0.023	0.903 (0.055)	-1.301 (0.070)			

* eTIMSS items without a paperTIMSS counterpart

Item		RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (d_{i1})	Step 2 (d_{i2})
ME10_12A	ME71187A	0.073	0.720 (0.044)	-0.692 (0.058)			
ME10_12B	ME71187B	0.085	0.660 (0.042)	-0.042 (0.047)			
ME11_01	ME61178	0.033	0.952 (0.050)	-0.015 (0.034)			
ME11_02	ME61246	0.047	1.166 (0.094)	0.237 (0.054)	0.138 (0.027)		
ME11_03	ME61271	0.039	0.623 (0.040)	-0.549 (0.058)			
ME11_04	ME61256	0.035	0.953 (0.050)	0.168 (0.033)			
ME11_05	ME61182	0.044	1.180 (0.070)	1.216 (0.047)			
ME11_06	ME61049	0.030	1.029 (0.108)	-0.420 (0.129)	0.354 (0.053)		
ME11_07	ME61232	0.031	0.840 (0.125)	0.774 (0.108)	0.312 (0.037)		
ME11_08	ME61095	0.039	0.908 (0.048)	-0.005 (0.035)			
ME11_09	ME61264	0.031	0.568 (0.026)	0.447 (0.034)		-0.177 (0.063)	0.177 (0.068)
ME11_10	ME61108	0.048	0.587 (0.097)	0.871 (0.152)	0.210 (0.049)		
ME11_11A	ME61211A	0.071	1.234 (0.061)	0.340 (0.028)			
ME11_11B	ME61211B	0.052	1.376 (0.156)	0.794 (0.055)	0.273 (0.023)		
ME12_01	ME71001	0.029	0.815 (0.076)	-0.897 (0.164)	0.234 (0.069)		
ME12_02	ME71010	0.037	0.585 (0.038)	-0.299 (0.054)			
ME12_03	ME71062	0.039	1.412 (0.179)	1.248 (0.056)	0.179 (0.017)		
ME12_04A	ME71216A	0.099	1.422 (0.066)	-0.113 (0.026)			
ME12_04B	ME71216B	0.076	1.024 (0.053)	0.460 (0.033)			
ME12_05	ME71117	0.083	0.673 (0.040)	-0.066 (0.045)			
ME12_06	ME71071	0.043	0.883 (0.113)	0.480 (0.106)	0.296 (0.039)		
ME12_07	ME71098	0.045	0.698 (0.035)	0.928 (0.038)		0.178 (0.049)	-0.178 (0.065)
* ME12_08	ME71069	—	1.096 (0.057)	0.565 (0.032)			
ME12_09A	ME71134A	0.104	1.785 (0.124)	0.218 (0.033)	0.115 (0.019)		
ME12_09B	ME71134B	0.125	1.486 (0.073)	0.533 (0.025)			
ME12_10	ME71202	0.044	0.558 (0.038)	-0.527 (0.065)			
ME12_11	ME71190	0.028	1.011 (0.052)	-0.141 (0.034)			
ME12_12	ME71218	0.032	1.322 (0.078)	1.177 (0.042)			
ME13_01	ME61240	0.056	0.724 (0.044)	0.735 (0.049)			
ME13_02	ME61254	0.055	0.926 (0.048)	0.169 (0.034)			
ME13_03	ME61244	0.026	0.994 (0.097)	-0.084 (0.101)	0.258 (0.044)		
ME13_04	ME61041	0.021	1.261 (0.148)	0.935 (0.057)	0.243 (0.022)		
ME13_05	ME61173	0.033	0.633 (0.039)	-0.390 (0.053)			
ME13_06	ME61252	0.029	1.184 (0.102)	0.676 (0.046)	0.113 (0.020)		
ME13_07	ME61261	0.070	1.336 (0.063)	0.289 (0.026)			
ME13_08	ME61224	0.107	0.973 (0.055)	0.884 (0.042)			
ME13_09	ME61077	0.039	0.881 (0.079)	-0.190 (0.104)	0.179 (0.045)		
ME13_10A	ME61069A	0.034	0.737 (0.043)	-0.659 (0.054)			
ME13_10B	ME61069B	0.039	0.712 (0.042)	0.040 (0.043)			

* eTIMSS items without a paperTIMSS counterpart

Item		RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (d_{i1})	Step 2 (d_{i2})
ME14_01	ME71024	0.035	0.877 (0.047)	0.266 (0.036)			
ME14_02	ME71008	0.028	1.132 (0.085)	-0.182 (0.065)	0.137 (0.033)		
ME14_03	ME71165	0.050	1.212 (0.103)	0.309 (0.055)	0.167 (0.026)		
ME14_04	ME71049	0.106	0.749 (0.042)	0.007 (0.041)			
ME14_05	ME71063	0.042	0.845 (0.046)	0.239 (0.037)			
ME14_06	ME71079	0.050	1.303 (0.142)	0.887 (0.053)	0.216 (0.021)		
ME14_07	ME71081	0.032	1.012 (0.051)	-0.036 (0.032)			
ME14_08	ME71094	0.048	0.697 (0.097)	0.563 (0.133)	0.238 (0.046)		
ME14_09	ME71177	0.057	0.521 (0.037)	0.201 (0.055)			
ME14_10	ME71206	0.049	0.592 (0.066)	-0.329 (0.193)	0.195 (0.064)		
ME14_11A	ME71138A	0.025	0.753 (0.043)	0.007 (0.041)			
ME14_11B	ME71138B	0.079	1.013 (0.058)	0.994 (0.045)			
ME14_12	ME71203	0.044	0.911 (0.135)	1.242 (0.084)	0.207 (0.026)		
ME14_13	ME71205	0.064	1.201 (0.061)	0.531 (0.030)			

Appendix 12H: Science Item Parameters from the eTIMSS 2019 Non-Invariant Model Calibration— Grade 4

Item		RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (d_{i1})	Step 2 (d_{i2})
SE01_01	SE51054	0.022	0.899 (0.090)	-0.467 (0.136)	0.276 (0.057)		
SE01_02	SE51024	0.032	0.503 (0.041)	0.711 (0.066)			
SE01_03A	SE51132A	0.025	0.723 (0.057)	1.451 (0.088)			
SE01_03B	SE51132B	0.024	0.844 (0.058)	1.171 (0.060)			
SE01_04	SE51040	0.024	0.458 (0.039)	0.688 (0.072)			
SE01_05	SE51193	0.023	0.976 (0.096)	-0.125 (0.105)	0.257 (0.047)		
SE01_06	SE51063	0.040	1.095 (0.135)	0.847 (0.063)	0.217 (0.028)		
SE01_07	SE51012	0.033	1.212 (0.121)	0.301 (0.070)	0.268 (0.034)		
SE01_08	SE51115	0.036	1.113 (0.058)	0.239 (0.029)			
SE01_09	SE51180	0.039	0.795 (0.094)	-0.070 (0.147)	0.279 (0.055)		
SE01_10	SE51106	0.031	1.066 (0.122)	0.743 (0.063)	0.192 (0.029)		
SE01_11	SE51148	0.023	1.147 (0.104)	-0.011 (0.079)	0.231 (0.039)		
SE02_01	SE71002	0.079	0.615 (0.042)	0.352 (0.047)			
SE02_02	SE71402	0.035	1.133 (0.107)	-0.188 (0.093)	0.293 (0.044)		
SE02_03	SE71017	0.030	0.671 (0.043)	0.153 (0.044)			
SE02_04	SE71077	0.031	1.005 (0.053)	0.155 (0.031)			
SE02_05	SE71072	0.073	0.895 (0.120)	0.679 (0.092)	0.264 (0.037)		
SE02_06	SE71054	0.053	0.808 (0.047)	0.024 (0.039)			
SE02_07	SE71115	0.019	0.993 (0.134)	0.783 (0.079)	0.273 (0.032)		
SE02_08	SE71140	0.045	0.925 (0.090)	-0.100 (0.104)	0.226 (0.046)		
SE02_09	SE71128	0.035	0.978 (0.119)	0.183 (0.113)	0.360 (0.044)		
SE02_10	SE71147	0.029	1.069 (0.100)	-0.194 (0.096)	0.260 (0.045)		
SE02_11A	SE71920A	0.124	0.535 (0.043)	0.877 (0.070)			
SE02_11B	SE71920B	0.041	0.811 (0.051)	0.709 (0.043)			
SE02_12	SE71268	0.081	0.904 (0.114)	0.834 (0.075)	0.179 (0.031)		
SE03_01	SE61141	0.026	1.281 (0.136)	0.509 (0.062)	0.284 (0.030)		
SE03_02	SE61023	0.094	0.745 (0.045)	-0.353 (0.049)			
SE03_03	SE61054	0.039	0.508 (0.021)	0.825 (0.046)		1.507 (0.062)	-1.507 (0.087)
SE03_04	SE61007	0.021	0.722 (0.081)	-0.081 (0.146)	0.218 (0.055)		
SE03_05	SE61006	0.022	0.761 (0.046)	-0.701 (0.059)			
SE03_06	SE61108	0.038	0.928 (0.114)	0.265 (0.113)	0.318 (0.044)		
SE03_07	SE61109	0.030	0.614 (0.100)	0.727 (0.150)	0.220 (0.051)		
SE03_08	SE61080	0.035	1.161 (0.121)	0.391 (0.071)	0.264 (0.034)		
SE03_09	SE61088	0.027	0.711 (0.057)	1.517 (0.092)			
SE03_10	SE61151	0.031	0.940 (0.054)	0.516 (0.035)			
SE03_11	SE61150	0.017	0.590 (0.042)	0.385 (0.050)			
SE03_12	SE61169	0.074	1.234 (0.128)	0.331 (0.071)	0.285 (0.034)		

Item		RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (d_{i1})	Step 2 (d_{i2})
SE04_01	SE71013	0.037	1.128 (0.104)	-0.646 (0.116)	0.305 (0.056)		
SE04_02	SE71902	0.090	0.338 (0.041)	1.971 (0.220)			
SE04_03	SE71076	0.046	1.022 (0.086)	-0.605 (0.105)	0.207 (0.051)		
SE04_04	SE71041	0.068	0.862 (0.042)	0.827 (0.029)		0.288 (0.039)	-0.288 (0.051)
SE04_05	SE71046	0.051	0.907 (0.051)	0.272 (0.034)			
SE04_06	SE71095	0.036	0.555 (0.040)	0.142 (0.052)			
SE04_07	SE71129	0.028	0.806 (0.090)	-0.581 (0.181)	0.322 (0.067)		
SE04_08	SE71102	0.069	1.019 (0.058)	0.685 (0.035)			
SE04_09	SE71124	0.038	0.963 (0.107)	0.398 (0.086)	0.234 (0.038)		
SE04_10	SE71112	0.044	0.703 (0.074)	-0.915 (0.207)	0.257 (0.074)		
SE04_11	SE71265	0.080	0.355 (0.082)	0.211 (0.502)	0.317 (0.095)		
SE04_12	SE71223	0.059	0.423 (0.056)	-2.841 (0.458)	0.234 (0.092)		
SE05_01	SE51044	0.062	0.427 (0.038)	0.516 (0.071)			
SE05_03	SE51003	0.099	0.616 (0.073)	0.403 (0.119)	0.133 (0.042)		
SE05_04	SE51168	0.022	0.699 (0.044)	-0.686 (0.062)			
SE05_05	SE51010	0.022	0.785 (0.047)	0.098 (0.039)			
SE05_06	SE51035	0.028	1.335 (0.191)	1.175 (0.060)	0.233 (0.021)		
SE05_07	SE51059	0.033	0.488 (0.039)	0.130 (0.058)			
SE05_08	SE51142	0.044	0.669 (0.102)	0.605 (0.141)	0.235 (0.050)		
SE05_09A	SE51131A	0.041	0.964 (0.091)	0.064 (0.088)	0.193 (0.040)		
SE05_09B	SE51131B	0.060	0.848 (0.099)	0.697 (0.077)	0.151 (0.033)		
SE05_10	SE51151	0.045	0.849 (0.052)	-0.949 (0.065)			
SE05_11	SE51157	0.022	0.816 (0.130)	1.035 (0.093)	0.214 (0.035)		
SE06_01	SE61071	0.033	0.245 (0.047)	-1.669 (0.687)	0.248 (0.095)		
SE06_02	SE61138	0.026	0.558 (0.040)	0.079 (0.052)			
SE06_03A	SE61016A	0.054	0.949 (0.104)	0.535 (0.076)	0.191 (0.034)		
SE06_03B	SE61016B	0.048	0.996 (0.056)	0.669 (0.035)			
SE06_04	SE61011	0.027	0.735 (0.045)	-0.463 (0.052)			
SE06_06	SE61083	0.021	0.730 (0.047)	-0.980 (0.073)			
SE06_07	SE61034	0.028	0.733 (0.053)	1.219 (0.070)			
SE06_08	SE61044	0.023	0.759 (0.048)	0.545 (0.042)			
SE06_09A	SE61142A	0.050	0.662 (0.045)	0.518 (0.047)			
SE06_09B	SE61142B	0.047	0.811 (0.057)	1.203 (0.064)			
SE06_10A	SE61115A	0.037	1.583 (0.153)	0.482 (0.049)	0.270 (0.026)		
SE06_10B	SE61115B	0.082	1.292 (0.145)	0.736 (0.055)	0.237 (0.026)		
SE07_01	SE51161	0.023	0.494 (0.108)	1.148 (0.197)	0.224 (0.059)		
SE07_02	SE51051	0.025	1.336 (0.264)	1.505 (0.088)	0.281 (0.020)		
SE07_03Z	SE51138Z	0.030	0.516 (0.040)	0.378 (0.056)			
SE07_04	SE51194	0.078	1.038 (0.059)	0.771 (0.035)			
SE07_05	SE51029	0.026	0.654 (0.126)	1.161 (0.129)	0.234 (0.044)		
SE07_06	SE51077	0.030	0.750 (0.045)	-0.267 (0.047)			

Item		RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (d_{i1})	Step 2 (d_{i2})
SE07_07	SE51200	0.064	0.827 (0.061)	1.353 (0.072)			
SE07_08	SE51075	0.045	0.551 (0.040)	-0.511 (0.070)			
SE07_09	SE51065	0.023	0.835 (0.092)	-0.363 (0.158)	0.299 (0.061)		
SE07_10	SE51191	0.036	1.383 (0.145)	0.668 (0.052)	0.241 (0.026)		
SE07_11	SE51099	0.020	0.914 (0.102)	0.379 (0.093)	0.218 (0.040)		
SE07_12	SE51175	0.097	1.047 (0.070)	1.288 (0.055)			
SE08_02	SE71033	0.039	0.471 (0.094)	0.490 (0.291)	0.287 (0.074)		
SE08_03	SE71065	0.101	0.623 (0.041)	-0.236 (0.053)			
SE08_04	SE71025	0.035	0.474 (0.102)	0.708 (0.271)	0.285 (0.071)		
SE08_05	SE71081	0.065	0.956 (0.138)	1.005 (0.077)	0.231 (0.030)		
SE08_06	SE71056	0.038	0.511 (0.043)	1.064 (0.083)			
SE08_07	SE71145	0.051	0.563 (0.079)	-0.294 (0.261)	0.284 (0.076)		
SE08_08	SE71104	0.092	0.618 (0.042)	-0.621 (0.066)			
SE08_09	SE71144	0.038	0.641 (0.075)	0.199 (0.137)	0.166 (0.049)		
SE08_10	SE71150	0.043	1.051 (0.055)	-0.295 (0.036)			
SE08_11	SE71201	0.038	0.972 (0.103)	-0.088 (0.116)	0.306 (0.049)		
SE08_12	SE71237	0.040	1.061 (0.056)	0.280 (0.030)			
SE08_13	SE71260	0.035	0.707 (0.098)	1.089 (0.090)	0.122 (0.032)		
SE09_01	SE61135	0.040	0.831 (0.082)	-0.411 (0.135)	0.231 (0.055)		
SE09_02	SE61069	0.022	0.361 (0.035)	-0.550 (0.101)			
SE09_03	SE61134	0.037	0.743 (0.075)	0.226 (0.099)	0.138 (0.039)		
SE09_04	SE61140	0.029	1.131 (0.144)	0.714 (0.072)	0.299 (0.031)		
SE09_05	SE61019	0.047	0.798 (0.051)	0.835 (0.047)			
SE09_06	SE61022	0.024	0.618 (0.080)	0.045 (0.180)	0.225 (0.060)		
SE09_07	SE61036	0.027	0.993 (0.061)	0.984 (0.044)			
SE09_08	SE61160	0.028	0.871 (0.052)	-0.909 (0.061)			
SE09_09	SE61159	0.078	0.662 (0.045)	-1.239 (0.092)			
SE09_10	SE61091	0.021	0.479 (0.028)	1.134 (0.058)		-0.190 (0.071)	0.190 (0.092)
SE09_11	SE61118	0.047	1.171 (0.130)	0.665 (0.061)	0.225 (0.029)		
SE09_12	SE61097	0.029	0.766 (0.097)	0.436 (0.116)	0.216 (0.045)		
SE10_01	SE71009	0.025	0.572 (0.026)	-0.508 (0.041)		1.156 (0.078)	-1.156 (0.054)
SE10_02	SE71093	0.050	0.591 (0.041)	-0.661 (0.070)			
SE10_03	SE71069	0.049	1.534 (0.223)	1.107 (0.055)	0.306 (0.020)		
SE10_04	SE71051	0.052	0.705 (0.048)	0.822 (0.053)			
SE10_05	SE71039	0.036	0.837 (0.078)	0.178 (0.085)	0.137 (0.037)		
SE10_06	SE71080	0.034	0.703 (0.110)	0.886 (0.113)	0.209 (0.042)		
SE10_07	SE71137	0.035	0.742 (0.045)	-0.355 (0.049)			
SE10_08	SE71103	0.058	1.130 (0.116)	0.329 (0.074)	0.257 (0.035)		
SE10_09	SE71106	0.047	0.706 (0.046)	0.546 (0.045)			
SE10_10	SE71100	0.055	0.801 (0.102)	-0.089 (0.165)	0.346 (0.057)		

Item		RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (d_{i1})	Step 2 (d_{i2})
* SE10_11	SE71921	—	1.641 (0.279)	1.361 (0.064)	0.262 (0.018)		
SE10_12	SE71220	0.040	0.852 (0.122)	0.815 (0.093)	0.238 (0.037)		
SE10_13	SE71254	0.091	0.673 (0.044)	0.290 (0.044)			
SE11_01	SE61132	0.053	0.785 (0.121)	0.605 (0.127)	0.312 (0.045)		
SE11_02	SE61120	0.028	0.896 (0.099)	0.430 (0.086)	0.198 (0.037)		
SE11_03	SE61025	0.056	0.668 (0.043)	-0.037 (0.046)			
SE11_04A	SE61133A	0.051	1.625 (0.147)	0.286 (0.050)	0.284 (0.028)		
SE11_04B	SE61133B	0.072	1.492 (0.130)	0.947 (0.036)	0.074 (0.013)		
SE11_05	SE61074	0.033	0.719 (0.045)	0.359 (0.042)			
SE11_06	SE61093	0.016	0.764 (0.032)	-0.054 (0.031)		0.935 (0.053)	-0.935 (0.044)
SE11_07	SE61161	0.034	0.508 (0.041)	0.626 (0.063)			
SE11_08A	SE61042A	0.034	1.399 (0.155)	0.843 (0.048)	0.213 (0.022)		
SE11_08B	SE61042B	0.042	0.931 (0.116)	0.808 (0.074)	0.187 (0.031)		
SE11_09A	SE61041A	0.021	0.869 (0.050)	0.171 (0.036)			
SE11_09B	SE61041B	0.041	0.678 (0.045)	0.328 (0.044)			
SE11_10	SE61155	0.035	0.830 (0.092)	-0.348 (0.155)	0.289 (0.060)		
SE12_01	SE71031	0.024	0.617 (0.041)	-0.027 (0.049)			
SE12_02	SE71090	0.063	0.784 (0.047)	0.207 (0.038)			
SE12_03	SE71048	0.033	1.564 (0.196)	1.094 (0.047)	0.219 (0.018)		
SE12_04	SE71071	0.063	1.055 (0.065)	1.054 (0.044)			
SE12_05	SE71011	0.025	1.109 (0.093)	-0.464 (0.093)	0.218 (0.047)		
SE12_06	SE71142	0.035	0.949 (0.126)	0.423 (0.108)	0.349 (0.041)		
SE12_07	SE71138	0.031	0.640 (0.043)	-0.778 (0.071)			
SE12_08	SE71127	0.062	1.156 (0.114)	0.173 (0.078)	0.272 (0.037)		
SE12_10	SE71500	0.059	1.090 (0.114)	0.569 (0.064)	0.199 (0.030)		
SE12_11	SE71257	0.046	1.824 (0.325)	1.224 (0.060)	0.411 (0.018)		
SE12_12	SE71222	0.035	1.040 (0.056)	0.267 (0.030)			
SE12_13	SE71252	0.030	0.989 (0.115)	0.296 (0.098)	0.296 (0.041)		
SE13_02	SE61014	0.047	0.493 (0.040)	0.639 (0.065)			
SE13_03	SE61056	0.031	0.726 (0.046)	-0.837 (0.069)			
SE13_04	SE61015	0.051	0.519 (0.038)	-0.408 (0.068)			
SE13_05	SE61113	0.020	0.798 (0.054)	1.052 (0.056)			
SE13_06	SE61107	0.027	1.035 (0.123)	0.701 (0.070)	0.228 (0.031)		
SE13_07	SE61046	0.058	1.515 (0.173)	0.923 (0.046)	0.231 (0.021)		
SE13_08	SE61047	0.029	0.726 (0.091)	-0.333 (0.198)	0.331 (0.066)		
SE13_09	SE61048	0.031	1.556 (0.156)	0.564 (0.049)	0.278 (0.025)		
SE13_10	SE61096	0.041	1.172 (0.142)	0.681 (0.068)	0.288 (0.030)		
SE13_11	SE61124	0.037	0.606 (0.050)	1.376 (0.093)			
SE13_12	SE61116	0.037	0.718 (0.046)	0.307 (0.042)			

* eTIMSS items without a paperTIMSS counterpart

Item		RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (d_{i1})	Step 2 (d_{i2})
SE14_01	SE71063	0.071	0.420 (0.036)	0.078 (0.067)			
SE14_02	SE71900	0.072	0.517 (0.078)	-0.138 (0.271)	0.269 (0.074)		
SE14_04	SE71043	0.030	0.693 (0.054)	1.435 (0.088)			
SE14_05	SE71005	0.038	0.818 (0.047)	-0.588 (0.052)			
SE14_06	SE71118	0.057	1.170 (0.142)	0.992 (0.056)	0.187 (0.023)		
SE14_07	SE71139	0.030	1.011 (0.114)	0.020 (0.112)	0.354 (0.045)		
SE14_08	SE71114	0.044	0.711 (0.044)	-0.596 (0.058)			
SE14_09	SE71131	0.051	0.454 (0.037)	0.090 (0.062)			
SE14_10	SE71152	0.034	1.080 (0.130)	0.534 (0.079)	0.302 (0.034)		
SE14_11	SE71218	0.062	0.742 (0.076)	-1.147 (0.208)	0.265 (0.077)		
SE14_12	SE71214	0.021	1.078 (0.100)	0.163 (0.075)	0.209 (0.036)		
SE14_13	SE71213	0.068	0.769 (0.055)	1.179 (0.065)			

Appendix 12I: Mathematics Item Parameters from the eTIMSS 2019 Non-Invariant Model Calibration—Grade 8

Item		RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (d_{i1})	Step 2 (d_{i2})
ME01_01	ME52024	0.059	1.440 (0.157)	0.620 (0.062)	0.231 (0.029)		
ME01_02A	ME52058A	0.050	1.181 (0.071)	-0.248 (0.039)			
ME01_02B	ME52058B	0.059	1.368 (0.084)	1.044 (0.039)			
ME01_03	ME52125	0.045	1.166 (0.118)	0.772 (0.061)	0.124 (0.025)		
ME01_04	ME52229	0.129	1.224 (0.070)	0.379 (0.034)			
ME01_05	ME52063	0.043	1.674 (0.170)	0.634 (0.049)	0.196 (0.024)		
ME01_06	ME52072	0.050	1.229 (0.116)	0.170 (0.072)	0.165 (0.037)		
ME01_07A	ME52146A	0.068	0.865 (0.055)	0.437 (0.045)			
ME01_07B	ME52146B	0.070	1.625 (0.110)	1.364 (0.043)			
ME01_08	ME52092	0.042	1.379 (0.226)	1.661 (0.077)	0.186 (0.018)		
ME01_09	ME52046	0.071	0.946 (0.162)	1.762 (0.106)	0.143 (0.023)		
ME01_10	ME52083	0.044	1.328 (0.163)	1.046 (0.063)	0.200 (0.024)		
ME01_11	ME52082	0.031	1.207 (0.124)	0.285 (0.078)	0.203 (0.038)		
ME01_12	ME52161	0.037	1.034 (0.104)	-0.147 (0.108)	0.200 (0.052)		
ME01_13A	ME52418A	0.063	1.636 (0.161)	0.809 (0.045)	0.139 (0.020)		
ME01_13B	ME52418B	0.071	1.487 (0.172)	0.773 (0.061)	0.245 (0.027)		
ME02_01	ME72007	0.049	0.760 (0.038)	1.016 (0.040)		-0.143 (0.061)	0.143 (0.075)
ME02_02	ME72025	0.038	1.636 (0.175)	0.678 (0.053)	0.223 (0.025)		
ME02_03	ME72017	0.080	1.377 (0.091)	1.223 (0.044)			
ME02_04	ME72190	0.057	0.969 (0.059)	-0.005 (0.042)			
ME02_05	ME72068	0.039	1.357 (0.140)	0.131 (0.078)	0.250 (0.039)		
ME02_06	ME72076	0.052	1.297 (0.140)	0.766 (0.061)	0.175 (0.026)		
ME02_07	ME72056	0.033	1.288 (0.074)	0.555 (0.034)			
ME02_08	ME72098	0.038	1.906 (0.111)	0.765 (0.028)			
ME02_09	ME72103	0.025	1.280 (0.135)	0.688 (0.062)	0.170 (0.027)		
ME02_10	ME72121	0.073	1.141 (0.067)	-0.092 (0.038)			
ME02_11	ME72180	0.103	0.505 (0.043)	0.313 (0.070)			
ME02_12	ME72198	0.026	1.353 (0.078)	0.621 (0.034)			
ME02_13	ME72227	0.037	1.371 (0.078)	0.499 (0.033)			
ME02_14	ME72170	0.042	0.785 (0.052)	0.129 (0.049)			
ME02_15	ME72209	0.040	0.976 (0.073)	1.541 (0.072)			
ME03_01	ME62005	0.082	1.000 (0.146)	0.824 (0.104)	0.294 (0.037)		
ME03_02	ME62139	0.065	0.977 (0.061)	0.803 (0.045)			
ME03_03	ME62164	0.073	1.514 (0.143)	0.320 (0.057)	0.183 (0.030)		
ME03_04	ME62142	0.037	0.859 (0.055)	-0.160 (0.048)			
ME03_05	ME62084	0.026	1.715 (0.236)	1.486 (0.055)	0.142 (0.015)		
ME03_06	ME62351	0.034	0.843 (0.171)	1.541 (0.120)	0.251 (0.033)		
ME03_07	ME62223	0.048	1.633 (0.154)	0.028 (0.061)	0.212 (0.035)		

Item		RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (d_{i1})	Step 2 (d_{i2})
ME03_08	ME62027	0.037	0.739 (0.051)	0.722 (0.055)			
ME03_09	ME62174	0.034	1.733 (0.239)	0.976 (0.061)	0.342 (0.023)		
ME03_10	ME62244	0.050	1.131 (0.066)	0.575 (0.038)			
ME03_11	ME62261	0.028	2.219 (0.315)	1.516 (0.046)	0.140 (0.013)		
ME03_12	ME62300	0.033	0.748 (0.033)	0.443 (0.032)		-0.368 (0.066)	0.368 (0.069)
ME03_13	ME62254	0.032	0.852 (0.063)	1.461 (0.075)			
ME03_14A	ME62132A	0.045	1.084 (0.066)	-0.180 (0.041)			
ME03_14B	ME62132B	0.054	0.896 (0.140)	0.927 (0.115)	0.270 (0.040)		
ME04_01	ME72178	0.070	1.230 (0.073)	0.805 (0.038)			
ME04_02	ME72234	0.087	1.454 (0.186)	1.065 (0.061)	0.240 (0.023)		
ME04_03	ME72020	0.039	0.751 (0.035)	0.059 (0.033)		-0.188 (0.066)	0.188 (0.062)
ME04_04	ME72027	0.027	1.325 (0.129)	0.224 (0.070)	0.199 (0.036)		
ME04_05	ME72052	0.039	1.291 (0.086)	1.334 (0.049)			
ME04_06	ME72067	0.084	1.665 (0.180)	0.355 (0.062)	0.292 (0.032)		
ME04_07A	ME72083A	0.029	1.173 (0.069)	-0.101 (0.038)			
ME04_07B	ME72083B	0.089	0.873 (0.098)	0.883 (0.080)	0.111 (0.030)		
ME04_08A	ME72108A	0.094	0.797 (0.052)	0.324 (0.048)			
ME04_08B	ME72108B	0.148	1.128 (0.070)	0.967 (0.044)			
ME04_09	ME72181	0.120	0.984 (0.064)	1.047 (0.051)			
ME04_10	ME72126	0.036	0.742 (0.032)	0.967 (0.037)		-0.744 (0.078)	0.744 (0.087)
ME04_11	ME72164	0.092	0.657 (0.054)	1.488 (0.094)			
ME04_12A	ME72185A	0.138	1.421 (0.084)	0.813 (0.035)			
ME04_12B	ME72185B	0.119	1.289 (0.077)	0.742 (0.037)			
ME05_01	ME52413	0.145	1.322 (0.131)	0.369 (0.067)	0.193 (0.033)		
ME05_02	ME52134	0.027	1.348 (0.122)	-0.136 (0.074)	0.176 (0.041)		
ME05_03	ME52078	0.044	0.910 (0.126)	0.987 (0.094)	0.196 (0.035)		
ME05_04	ME52034	0.052	1.120 (0.136)	0.625 (0.086)	0.250 (0.036)		
ME05_05A	ME52174A	0.041	0.964 (0.059)	0.317 (0.041)			
ME05_05B	ME52174B	0.047	1.066 (0.070)	1.184 (0.051)			
ME05_06	ME52130	0.035	1.415 (0.155)	0.973 (0.054)	0.159 (0.022)		
ME05_07	ME52073	0.080	1.417 (0.141)	0.706 (0.054)	0.157 (0.025)		
ME05_08	ME52110	0.050	1.586 (0.092)	0.785 (0.031)			
ME05_09	ME52105	0.023	1.154 (0.082)	1.482 (0.059)			
ME05_10	ME52407	0.061	1.143 (0.138)	0.358 (0.099)	0.297 (0.043)		
ME05_11	ME52036	0.121	0.815 (0.056)	0.926 (0.055)			
ME05_12	ME52502	0.072	1.047 (0.063)	-0.036 (0.040)			
ME05_13	ME52117	0.060	0.638 (0.065)	2.338 (0.174)			
ME05_14	ME52426	0.058	0.862 (0.094)	-0.342 (0.154)	0.227 (0.066)		
ME06_01	ME62150	0.033	1.062 (0.065)	-0.231 (0.042)			
ME06_02	ME62335	0.030	1.439 (0.133)	-0.025 (0.069)	0.192 (0.039)		
ME06_03	ME62219	0.030	2.183 (0.237)	0.888 (0.040)	0.198 (0.018)		

Item		RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (d_{i1})	Step 2 (d_{i2})
ME06_04	ME62002	0.072	0.454 (0.043)	0.839 (0.089)			
ME06_05	ME62149	0.085	1.263 (0.125)	0.760 (0.055)	0.121 (0.024)		
ME06_06	ME62241	0.037	1.568 (0.090)	0.729 (0.031)			
ME06_08	ME62105	0.026	0.765 (0.031)	0.842 (0.033)		-1.536 (0.112)	1.536 (0.117)
ME06_09	ME62040	0.051	0.680 (0.134)	1.270 (0.148)	0.235 (0.047)		
ME06_10	ME62288	0.022	0.804 (0.036)	1.172 (0.038)		-0.914 (0.085)	0.914 (0.095)
ME06_11	ME62173	0.030	1.231 (0.075)	0.904 (0.040)			
ME06_12	ME62133	0.045	1.219 (0.140)	0.749 (0.069)	0.197 (0.030)		
ME06_13A	ME62123A	0.041	1.531 (0.165)	0.406 (0.065)	0.264 (0.032)		
ME06_13B	ME62123B	0.040	1.472 (0.160)	0.831 (0.054)	0.178 (0.024)		
ME07_01	ME52079	0.032	1.140 (0.161)	0.671 (0.099)	0.352 (0.037)		
ME07_02	ME52204	0.025	1.100 (0.129)	0.541 (0.086)	0.229 (0.037)		
ME07_03	ME52364	0.049	1.256 (0.074)	-0.219 (0.037)			
ME07_04	ME52215	0.111	0.938 (0.058)	0.133 (0.042)			
ME07_05	ME52147	0.038	1.580 (0.197)	0.890 (0.059)	0.277 (0.024)		
ME07_06	ME52067	0.063	1.340 (0.139)	0.204 (0.076)	0.243 (0.038)		
ME07_07	ME52068	0.034	1.400 (0.160)	1.269 (0.054)	0.105 (0.016)		
ME07_08	ME52087	0.018	1.774 (0.115)	1.163 (0.035)			
ME07_09	ME52048	0.169	0.779 (0.053)	0.660 (0.052)			
ME07_10	ME52039	0.055	1.323 (0.075)	0.431 (0.033)			
ME07_11	ME52208	0.047	2.078 (0.195)	1.179 (0.035)	0.050 (0.009)		
ME07_12A	ME52419A	0.088	0.882 (0.079)	0.028 (0.088)	0.106 (0.037)		
ME07_12B	ME52419B	0.069	1.289 (0.117)	-0.397 (0.085)	0.178 (0.048)		
ME07_13	ME52115	0.037	1.637 (0.139)	0.475 (0.042)	0.103 (0.021)		
ME07_14	ME52421	0.045	0.736 (0.052)	0.729 (0.056)			
ME08_01	ME72002	0.096	1.378 (0.081)	0.792 (0.035)			
ME08_02	ME72188	0.035	1.141 (0.120)	0.808 (0.062)	0.129 (0.026)		
ME08_03	ME72035	0.080	1.198 (0.072)	0.752 (0.038)			
ME08_04	ME72055	0.087	1.306 (0.080)	0.957 (0.039)			
ME08_05	ME72222	0.073	1.133 (0.128)	0.623 (0.075)	0.197 (0.033)		
ME08_06	ME72090	0.049	1.931 (0.230)	0.946 (0.047)	0.243 (0.020)		
ME08_07	ME72233	0.050	1.117 (0.178)	0.917 (0.099)	0.369 (0.034)		
ME08_08A	ME72106A	0.096	0.967 (0.059)	-0.030 (0.042)			
ME08_08B	ME72106B	0.130	1.588 (0.095)	0.879 (0.033)			
ME08_08C	ME72106C	0.129	1.839 (0.119)	1.140 (0.034)			
ME08_09A	ME72128A	0.045	1.008 (0.062)	0.664 (0.042)			
ME08_09B	ME72128B	0.060	0.900 (0.045)	0.886 (0.033)		-0.022 (0.052)	0.022 (0.062)
ME08_10	ME72119	0.053	1.075 (0.064)	0.352 (0.038)			
ME08_11A	ME72153A	0.041	1.327 (0.076)	0.352 (0.033)			
ME08_11B	ME72153B	0.043	1.457 (0.101)	1.359 (0.046)			
ME08_12	ME72172	0.042	1.065 (0.098)	0.292 (0.072)	0.117 (0.032)		

Item		RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (d_{i1})	Step 2 (d_{i2})
ME09_01	ME62329	0.045	0.683 (0.077)	-0.925 (0.223)	0.233 (0.082)		
ME09_02	ME62151	0.047	1.256 (0.075)	0.848 (0.038)			
ME09_03	ME62346	0.079	0.997 (0.063)	0.868 (0.046)			
ME09_04	ME62212	0.047	1.379 (0.172)	1.262 (0.056)	0.139 (0.018)		
ME09_05	ME62056	0.022	1.366 (0.088)	1.170 (0.042)			
ME09_06	ME62317	0.090	1.378 (0.086)	1.070 (0.039)			
ME09_07	ME62350	0.027	1.380 (0.199)	1.575 (0.068)	0.120 (0.016)		
ME09_08	ME62078	0.034	1.568 (0.089)	0.683 (0.030)			
ME09_09	ME62284	0.060	0.724 (0.127)	0.750 (0.170)	0.300 (0.054)		
ME09_10	ME62245	0.065	1.449 (0.158)	0.795 (0.055)	0.191 (0.024)		
ME09_11	ME62287	0.045	1.369 (0.101)	1.528 (0.055)			
ME09_12A	ME62345A	0.059	0.731 (0.041)	0.669 (0.037)		0.400 (0.057)	-0.400 (0.066)
ME09_13	ME62115	0.023	1.572 (0.223)	1.382 (0.058)	0.186 (0.018)		
ME10_01	ME72187	0.117	0.923 (0.057)	0.014 (0.043)			
ME10_02	ME72022	0.055	1.508 (0.213)	1.210 (0.062)	0.253 (0.021)		
ME10_04	ME72045	0.042	1.294 (0.073)	0.525 (0.034)			
ME10_05	ME72049	0.121	0.797 (0.053)	-0.347 (0.055)			
ME10_06	ME72069	0.119	1.640 (0.091)	0.178 (0.028)			
ME10_07	ME72074	0.065	1.543 (0.094)	0.984 (0.035)			
ME10_08	ME72013	0.064	1.325 (0.126)	0.731 (0.052)	0.111 (0.022)		
ME10_09	ME72095	0.079	1.258 (0.074)	0.740 (0.037)			
ME10_10	ME72109	0.080	1.664 (0.112)	1.286 (0.040)			
ME10_11	ME72125	0.038	2.069 (0.183)	0.718 (0.035)	0.099 (0.015)		
ME10_12	ME72196	0.057	1.311 (0.076)	0.679 (0.035)			
ME10_13	ME72237	0.051	0.729 (0.095)	0.081 (0.178)	0.237 (0.064)		
ME10_14	ME72232	0.057	0.592 (0.046)	-0.101 (0.065)			
ME10_15	ME72206	0.040	1.307 (0.090)	1.360 (0.050)			
ME11_01	ME62271	0.063	1.526 (0.150)	0.573 (0.053)	0.171 (0.025)		
ME11_02	ME62152	0.049	1.116 (0.065)	0.459 (0.037)			
ME11_03	ME62215	0.042	0.889 (0.041)	0.721 (0.031)		-0.129 (0.054)	0.129 (0.061)
ME11_04	ME62143	0.026	1.545 (0.091)	0.851 (0.033)			
ME11_05	ME62230	0.033	1.506 (0.236)	1.430 (0.067)	0.240 (0.019)		
ME11_06	ME62095	0.029	1.620 (0.167)	0.597 (0.053)	0.207 (0.025)		
ME11_07	ME62076	0.027	1.703 (0.186)	0.292 (0.063)	0.301 (0.032)		
ME11_08	ME62030	0.041	0.516 (0.043)	0.227 (0.069)			
ME11_09	ME62171	0.078	0.887 (0.097)	0.313 (0.106)	0.169 (0.044)		
ME11_10	ME62301	0.034	1.031 (0.067)	1.125 (0.052)			
ME11_11	ME62194	0.041	0.864 (0.103)	-0.352 (0.175)	0.287 (0.072)		
ME11_12	ME62344	0.025	0.966 (0.064)	1.114 (0.055)			
ME11_13	ME62320	0.056	1.771 (0.153)	0.626 (0.039)	0.097 (0.018)		
ME11_14	ME62296	0.037	1.144 (0.067)	0.113 (0.037)			

Item		RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (d_{i1})	Step 2 (d_{i2})
ME12_01	ME72001	0.058	1.774 (0.102)	0.723 (0.029)			
ME12_02	ME72019	0.053	1.489 (0.084)	0.522 (0.031)			
ME12_03	ME72189	0.109	1.408 (0.152)	0.507 (0.065)	0.236 (0.030)		
ME12_04	ME72024	0.089	1.222 (0.072)	0.722 (0.037)			
ME12_05	ME72043	0.045	2.027 (0.208)	0.702 (0.042)	0.197 (0.020)		
ME12_06	ME72221	0.082	1.695 (0.189)	0.635 (0.055)	0.263 (0.026)		
ME12_07	ME72220	0.078	1.500 (0.160)	1.061 (0.049)	0.120 (0.018)		
ME12_08	ME72225	0.034	1.250 (0.072)	0.521 (0.035)			
ME12_09A	ME72110A	0.079	1.377 (0.081)	0.788 (0.035)			
ME12_09B	ME72110B	0.102	1.837 (0.118)	1.132 (0.034)			
ME12_10	ME72150	0.063	1.561 (0.197)	0.404 (0.078)	0.391 (0.033)		
ME12_11	ME72139	0.031	1.255 (0.079)	1.050 (0.043)			
ME12_12	ME72229	0.018	0.973 (0.048)	1.444 (0.039)		-1.088 (0.104)	1.088 (0.114)
ME12_13	ME72171	0.033	1.282 (0.074)	0.435 (0.034)			
ME12_14A	ME72211A	0.076	1.656 (0.178)	0.325 (0.063)	0.276 (0.032)		
ME13_01	ME62001	0.090	0.964 (0.146)	1.043 (0.097)	0.257 (0.035)		
ME13_02	ME62214	0.052	1.028 (0.062)	0.551 (0.040)			
ME13_03	ME62146	0.038	1.408 (0.141)	0.832 (0.051)	0.133 (0.022)		
ME13_04	ME62154	0.044	1.395 (0.079)	0.033 (0.032)			
ME13_05	ME62067	0.042	0.992 (0.122)	0.129 (0.130)	0.303 (0.053)		
ME13_06	ME62341	0.036	0.892 (0.172)	1.619 (0.113)	0.225 (0.029)		
ME13_07	ME62242	0.025	1.204 (0.119)	0.269 (0.076)	0.185 (0.037)		
ME13_08A	ME62250A	0.057	1.103 (0.064)	0.303 (0.037)			
ME13_08B	ME62250B	0.056	1.399 (0.085)	0.978 (0.037)			
ME13_09	ME62170	0.051	0.582 (0.037)	0.978 (0.050)		0.644 (0.066)	-0.644 (0.087)
ME13_10	ME62192	0.031	1.129 (0.073)	1.145 (0.048)			
ME13_11	ME62072	0.035	0.980 (0.059)	0.189 (0.041)			
ME13_13	ME62120	0.067	1.284 (0.146)	0.765 (0.066)	0.206 (0.028)		
ME14_01	ME72005	0.052	0.927 (0.103)	0.424 (0.099)	0.174 (0.042)		
ME14_02	ME72021	0.106	1.200 (0.070)	0.470 (0.035)			
ME14_03	ME72026	0.027	0.788 (0.053)	0.627 (0.050)			
ME14_04A	ME72041A	0.094	1.129 (0.066)	0.330 (0.036)			
ME14_04B	ME72041B	0.097	1.099 (0.066)	0.608 (0.038)			
ME14_05	ME72223	0.052	2.059 (0.221)	0.582 (0.046)	0.265 (0.024)		
ME14_06	ME72094	0.035	1.255 (0.073)	-0.103 (0.036)			
ME14_07	ME72059	0.033	1.419 (0.081)	0.537 (0.031)			
ME14_08	ME72080	0.050	2.159 (0.212)	0.909 (0.036)	0.132 (0.016)		
ME14_09	ME72081	0.091	1.106 (0.071)	1.119 (0.048)			
ME14_10	ME72140	0.066	0.769 (0.052)	0.149 (0.049)			
ME14_11	ME72120	0.118	1.440 (0.089)	1.085 (0.038)			
ME14_12	ME72131	0.033	1.610 (0.107)	1.332 (0.041)			

Item		RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (d_{i1})	Step 2 (d_{i2})
ME14_13	ME72147	0.031	1.398 (0.090)	1.214 (0.042)			
ME14_14	ME72154	0.041	1.166 (0.123)	0.098 (0.094)	0.235 (0.046)		
ME14_15	ME72192	0.034	0.899 (0.110)	0.418 (0.117)	0.220 (0.047)		
ME14_16	ME72161	0.064	1.083 (0.067)	0.814 (0.042)			

Appendix 12J:Science Item Parameters from the eTIMSS 2019 Non-Invariant Model Calibration Grade 8

Item		RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (d_{i1})	Step 2 (d_{i2})
SE01_01	SE52006	0.034	0.585 (0.036)	-0.234 (0.047)		0.706 (0.084)	-0.706 (0.066)
SE01_02	SE52069	0.047	1.004 (0.173)	0.846 (0.110)	0.359 (0.040)		
SE01_03	SE52012	0.034	1.025 (0.120)	0.360 (0.095)	0.223 (0.042)		
SE01_04	SE52021	0.033	0.998 (0.066)	0.713 (0.042)			
SE01_05Z	SE52095Z	0.037	0.462 (0.044)	-0.059 (0.080)			
SE01_07	SE52054	0.037	0.739 (0.053)	-0.250 (0.059)			
SE01_08	SE52150	0.030	0.937 (0.158)	1.170 (0.091)	0.213 (0.033)		
SE01_09A	SE52243A	0.061	0.664 (0.052)	0.612 (0.057)			
SE01_09B	SE52243B	0.049	0.781 (0.056)	0.602 (0.049)			
SE01_09C	SE52243C	0.064	0.615 (0.111)	1.215 (0.134)	0.149 (0.043)		
SE01_10	SE52206	0.050	1.077 (0.110)	0.319 (0.078)	0.162 (0.036)		
SE01_11A	SE52112A	0.038	0.761 (0.096)	0.058 (0.153)	0.221 (0.057)		
SE01_11B	SE52112B	0.022	1.020 (0.068)	0.760 (0.042)			
SE01_12	SE52294	0.025	1.032 (0.109)	-0.048 (0.107)	0.221 (0.049)		
SE02_01	SE72072	0.027	0.909 (0.119)	0.517 (0.106)	0.222 (0.044)		
SE02_02	SE72029	0.051	1.336 (0.192)	0.802 (0.076)	0.339 (0.032)		
SE02_03	SE72902	0.067	1.230 (0.073)	0.236 (0.033)			
SE02_04	SE72077	0.067	0.709 (0.104)	0.441 (0.154)	0.224 (0.055)		
SE02_05A	SE72900A	0.045	0.865 (0.062)	0.875 (0.051)			
SE02_05B	SE72900B	0.094	0.678 (0.070)	1.953 (0.147)			
SE02_06	SE72103	0.081	0.715 (0.052)	0.160 (0.052)			
SE02_07	SE72110	0.037	0.883 (0.062)	0.800 (0.048)			
SE02_08	SE72130	0.066	0.752 (0.058)	0.963 (0.061)			
SE02_09	SE72148	0.069	1.290 (0.159)	0.939 (0.059)	0.179 (0.026)		
SE02_10	SE72200	0.029	0.906 (0.118)	0.786 (0.087)	0.164 (0.036)		
SE02_11	SE72232	0.040	1.517 (0.086)	0.303 (0.029)			
SE02_12	SE72275	0.034	1.064 (0.101)	-0.333 (0.101)	0.182 (0.049)		
SE02_13	SE72244	0.030	1.010 (0.065)	0.513 (0.039)			
SE02_14	SE72301	0.068	0.646 (0.128)	1.091 (0.151)	0.220 (0.050)		
SE02_15	SE72721	0.068	1.186 (0.116)	0.097 (0.080)	0.190 (0.040)		
SE02_16	SE72335	0.038	1.145 (0.164)	0.747 (0.087)	0.301 (0.036)		
SE03_01	SE62055	0.045	1.071 (0.141)	0.026 (0.135)	0.394 (0.052)		
SE03_02	SE62007	0.023	1.335 (0.138)	0.450 (0.063)	0.194 (0.031)		
SE03_03	SE62275	0.053	0.937 (0.068)	1.026 (0.053)			
SE03_04	SE62225	0.033	1.255 (0.257)	1.424 (0.088)	0.290 (0.025)		
SE03_05	SE62111	0.024	0.545 (0.033)	0.533 (0.042)		-0.040 (0.078)	0.040 (0.082)
SE03_06A	SE62116A	0.026	1.256 (0.076)	0.588 (0.033)			
SE03_06B	SE62116B	0.082	1.309 (0.088)	1.068 (0.041)			

Item		RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (d_{i1})	Step 2 (d_{i2})
SE03_06C	SE62116C	0.040	1.059 (0.080)	1.308 (0.060)			
SE03_07	SE62262	0.040	1.052 (0.182)	1.124 (0.087)	0.270 (0.032)		
SE03_08	SE62035	0.035	1.064 (0.156)	1.038 (0.076)	0.200 (0.030)		
SE03_09	SE62144	0.045	0.878 (0.093)	-0.312 (0.133)	0.205 (0.056)		
SE03_10	SE62162	0.032	0.717 (0.056)	0.909 (0.062)			
SE03_11	SE62233	0.045	1.072 (0.178)	0.904 (0.095)	0.327 (0.036)		
SE03_13	SE62171	0.035	0.427 (0.109)	1.157 (0.285)	0.232 (0.072)		
SE04_01	SE72002	0.046	1.019 (0.105)	0.127 (0.093)	0.188 (0.042)		
* SE04_02	SE72403	—	0.615 (0.048)	0.088 (0.060)			
SE04_03	SE72021	0.046	1.289 (0.144)	0.372 (0.076)	0.262 (0.036)		
SE04_04	SE72082	0.068	0.695 (0.051)	0.091 (0.054)			
SE04_05	SE72066	0.071	1.048 (0.119)	0.458 (0.083)	0.196 (0.037)		
SE04_06	SE72063	0.039	0.731 (0.190)	1.811 (0.176)	0.194 (0.035)		
SE04_07	SE72102	0.078	0.760 (0.054)	0.370 (0.049)			
SE04_08A	SE72141A	0.040	1.010 (0.070)	0.985 (0.048)			
SE04_08B	SE72141B	0.095	0.712 (0.036)	0.907 (0.038)		-0.336 (0.066)	0.336 (0.076)
SE04_09	SE72921	0.073	1.209 (0.090)	1.315 (0.054)			
SE04_10	SE72234	0.063	1.325 (0.175)	1.159 (0.057)	0.151 (0.021)		
SE04_11	SE72251	0.055	1.099 (0.172)	1.081 (0.078)	0.238 (0.030)		
SE04_12	SE72284	0.060	0.587 (0.047)	-0.037 (0.065)			
SE04_13	SE72345	0.038	0.803 (0.045)	0.485 (0.034)		0.638 (0.053)	-0.638 (0.056)
SE04_14	SE72349	0.025	1.125 (0.116)	0.145 (0.087)	0.210 (0.041)		
SE04_15	SE72363	0.051	0.740 (0.103)	0.224 (0.159)	0.245 (0.057)		
SE05_01	SE52076	0.045	0.865 (0.132)	0.509 (0.135)	0.311 (0.049)		
SE05_02	SE52272	0.017	1.059 (0.065)	-0.079 (0.041)			
SE05_03A	SE52085A	0.044	1.058 (0.079)	1.280 (0.058)			
SE05_03B	SE52085B	0.008	0.974 (0.062)	-0.077 (0.044)			
SE05_04	SE52094	0.030	0.648 (0.053)	0.927 (0.068)			
SE05_05	SE52248	0.034	0.947 (0.256)	1.631 (0.142)	0.329 (0.032)		
SE05_06	SE52146	0.022	1.161 (0.070)	0.402 (0.035)			
SE05_07	SE52282	0.052	0.701 (0.123)	0.822 (0.148)	0.244 (0.051)		
SE05_08	SE52299	0.047	1.111 (0.149)	0.323 (0.111)	0.364 (0.045)		
SE05_09	SE52144	0.037	1.301 (0.155)	0.680 (0.066)	0.234 (0.031)		
SE05_10	SE52214	0.028	1.033 (0.065)	0.375 (0.038)			
SE05_12	SE52101	0.031	0.538 (0.050)	1.010 (0.086)			
SE05_13	SE52113	0.062	1.515 (0.181)	0.706 (0.059)	0.265 (0.029)		
SE05_14	SE52107	0.045	0.769 (0.174)	1.482 (0.133)	0.233 (0.039)		
SE06_01	SE62090	0.047	1.084 (0.129)	0.265 (0.100)	0.272 (0.044)		
SE06_02	SE62274	0.031	0.575 (0.029)	0.794 (0.050)		1.266 (0.069)	-1.266 (0.089)

* eTIMSS items without a paperTIMSS counterpart

Item		RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (d_{i1})	Step 2 (d_{i2})
SE06_03	SE62284	0.040	0.384 (0.081)	0.394 (0.381)	0.242 (0.084)		
SE06_04A	SE62098A	0.019	0.626 (0.036)	0.477 (0.037)		0.011 (0.069)	-0.011 (0.072)
SE06_04B	SE62098B	0.027	0.956 (0.056)	1.309 (0.042)		0.016 (0.050)	-0.016 (0.071)
SE06_05	SE62032	0.030	1.610 (0.261)	1.305 (0.061)	0.251 (0.021)		
SE06_06	SE62043	0.042	0.962 (0.069)	1.075 (0.054)			
SE06_07	SE62158	0.050	0.696 (0.134)	0.845 (0.165)	0.290 (0.054)		
SE06_08	SE62159	0.061	1.086 (0.132)	0.593 (0.082)	0.218 (0.036)		
SE06_09	SE62005	0.055	1.258 (0.078)	0.741 (0.035)			
SE06_10	SE62075	0.039	0.966 (0.157)	0.852 (0.106)	0.302 (0.040)		
SE06_11	SE62004	0.021	2.042 (0.220)	0.848 (0.040)	0.195 (0.020)		
SE06_12	SE62175	0.039	0.625 (0.051)	0.605 (0.060)			
SE06_13A	SE62173A	0.027	0.631 (0.050)	0.247 (0.057)			
SE06_13B	SE62173B	0.044	0.847 (0.279)	2.133 (0.254)	0.217 (0.029)		
SE07_01A	SE52090A	0.042	0.396 (0.080)	-0.015 (0.431)	0.280 (0.092)		
SE07_01B	SE52090B	0.023	0.644 (0.068)	1.975 (0.153)			
SE07_02	SE52262	0.031	0.647 (0.129)	1.028 (0.159)	0.242 (0.052)		
SE07_03	SE52267	0.023	0.959 (0.139)	0.772 (0.098)	0.249 (0.039)		
SE07_04	SE52273	0.027	0.578 (0.038)	0.956 (0.050)		0.160 (0.070)	-0.160 (0.087)
SE07_05Z	SE52015Z	0.041	0.833 (0.057)	-0.427 (0.059)			
SE07_06	SE52051	0.048	0.924 (0.062)	0.651 (0.043)			
SE07_07	SE52026	0.030	0.774 (0.134)	0.489 (0.175)	0.353 (0.056)		
SE07_08	SE52130	0.027	0.953 (0.159)	1.167 (0.090)	0.215 (0.033)		
SE07_09	SE52028	0.029	0.770 (0.124)	0.642 (0.142)	0.266 (0.051)		
SE07_10	SE52189	0.043	0.995 (0.064)	0.476 (0.039)			
SE07_11	SE52217	0.026	0.643 (0.122)	0.842 (0.172)	0.254 (0.056)		
SE07_12	SE52038	0.046	1.262 (0.202)	1.077 (0.075)	0.299 (0.029)		
SE07_13	SE52099	0.023	0.953 (0.066)	0.899 (0.048)			
SE07_14	SE52118	0.017	0.785 (0.063)	1.250 (0.073)			
SE08_01	SE72070	0.079	0.905 (0.147)	0.541 (0.138)	0.363 (0.048)		
SE08_02	SE72400	0.045	0.864 (0.057)	-0.180 (0.050)			
SE08_03	SE72024	0.041	1.207 (0.126)	0.107 (0.086)	0.239 (0.042)		
SE08_04	SE72462	0.045	0.596 (0.114)	0.911 (0.174)	0.220 (0.056)		
SE08_05	SE72443	0.121	0.965 (0.119)	0.304 (0.110)	0.251 (0.046)		
SE08_06	SE72903	0.046	0.662 (0.036)	0.875 (0.040)		-0.216 (0.067)	0.216 (0.078)
SE08_07	SE72145	0.023	1.035 (0.078)	1.313 (0.061)			
SE08_08	SE72100	0.051	0.814 (0.181)	1.070 (0.145)	0.376 (0.045)		
SE08_10	SE72137	0.059	0.976 (0.099)	0.158 (0.090)	0.160 (0.040)		
SE08_11	SE72298	0.034	0.889 (0.059)	0.440 (0.043)			
SE08_12	SE72215	0.051	0.450 (0.022)	0.922 (0.052)		-1.332 (0.116)	1.332 (0.127)
SE08_13	SE72260	0.029	0.656 (0.050)	0.335 (0.055)			
SE08_14	SE72265	0.032	0.684 (0.051)	0.167 (0.054)			

Item		RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (d_{i1})	Step 2 (d_{i2})
SE08_15	SE72347	0.046	0.862 (0.166)	1.337 (0.106)	0.216 (0.035)		
SE08_16	SE72351	0.048	0.738 (0.060)	1.146 (0.071)			
SE08_17	SE72367	0.050	0.998 (0.131)	0.821 (0.080)	0.183 (0.034)		
SE09_01	SE62099	0.023	0.947 (0.108)	0.342 (0.098)	0.192 (0.042)		
SE09_02	SE62095	0.033	0.480 (0.031)	0.790 (0.052)		-0.064 (0.085)	0.064 (0.098)
SE09_03	SE62106	0.025	0.785 (0.085)	-0.450 (0.151)	0.185 (0.059)		
SE09_04	SE62064	0.027	0.829 (0.056)	-0.331 (0.055)			
SE09_05	SE62132	0.031	0.886 (0.109)	0.263 (0.120)	0.229 (0.049)		
SE09_06	SE62163	0.019	1.139 (0.085)	1.356 (0.059)			
SE09_07	SE62153	0.032	1.424 (0.209)	0.958 (0.068)	0.316 (0.028)		
SE09_08	SE62018	0.021	0.573 (0.034)	1.448 (0.066)		-0.568 (0.086)	0.568 (0.112)
SE09_09	SE62143	0.061	0.910 (0.093)	2.025 (0.132)			
SE09_10	SE62276	0.024	0.776 (0.059)	0.960 (0.060)			
SE09_11	SE62050	0.047	0.905 (0.069)	1.242 (0.064)			
SE09_12	SE62205	0.035	1.252 (0.143)	0.884 (0.057)	0.144 (0.025)		
SE09_13	SE62190	0.032	0.921 (0.095)	0.146 (0.096)	0.155 (0.042)		
SE09_14A	SE62024A	0.025	0.659 (0.118)	0.882 (0.152)	0.219 (0.052)		
SE09_14B	SE62024B	0.047	0.692 (0.068)	1.772 (0.125)			
SE10_01	SE72033	0.043	0.786 (0.034)	0.303 (0.030)		-0.463 (0.066)	0.463 (0.065)
SE10_02	SE72440	0.046	0.647 (0.049)	-0.231 (0.064)			
SE10_03	SE72032	0.032	1.284 (0.192)	0.950 (0.073)	0.299 (0.029)		
SE10_04	SE72031	0.056	0.857 (0.134)	1.131 (0.092)	0.164 (0.033)		
SE10_05	SE72086	0.114	0.622 (0.049)	-0.700 (0.085)			
SE10_06	SE72005	0.024	0.917 (0.050)	0.707 (0.031)		0.230 (0.047)	-0.230 (0.055)
SE10_08	SE72123	0.069	0.724 (0.114)	0.411 (0.169)	0.276 (0.058)		
SE10_09	SE72116	0.029	0.563 (0.121)	1.151 (0.179)	0.213 (0.055)		
SE10_10	SE72920	0.062	0.534 (0.032)	0.967 (0.054)		1.002 (0.071)	-1.002 (0.097)
SE10_11	SE72294	0.099	0.725 (0.053)	0.526 (0.052)			
SE10_12	SE72231	0.075	0.868 (0.146)	1.140 (0.098)	0.203 (0.035)		
SE10_13	SE72261	0.063	0.856 (0.057)	-0.204 (0.050)			
SE10_14	SE72220	0.060	1.429 (0.231)	1.435 (0.069)	0.169 (0.019)		
SE10_15	SE72348	0.065	0.589 (0.049)	-0.876 (0.098)			
SE10_16	SE72720	0.032	0.426 (0.126)	2.036 (0.290)	0.166 (0.055)		
SE11_01	SE62279	0.036	1.172 (0.125)	0.061 (0.091)	0.248 (0.044)		
SE11_02	SE62112	0.022	0.512 (0.046)	0.294 (0.068)			
SE11_03	SE62119	0.032	1.042 (0.117)	0.131 (0.102)	0.242 (0.046)		
SE11_04	SE62093	0.038	0.554 (0.034)	-0.010 (0.044)		0.206 (0.082)	-0.206 (0.074)
SE11_05	SE62089	0.033	1.627 (0.189)	0.962 (0.047)	0.171 (0.021)		
SE11_06	SE62006	0.021	1.069 (0.066)	0.405 (0.037)			
SE11_07	SE62067	0.040	0.755 (0.055)	0.499 (0.050)			
SE11_08	SE62247	0.030	0.881 (0.177)	1.236 (0.112)	0.273 (0.037)		

Item		RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (d_{i1})	Step 2 (d_{i2})
SE11_09	SE62177	0.036	0.859 (0.134)	0.978 (0.098)	0.198 (0.037)		
SE11_10	SE62186	0.031	1.462 (0.237)	1.262 (0.065)	0.243 (0.022)		
SE11_11A	SE62211A	0.022	0.789 (0.055)	0.402 (0.047)			
SE11_11B	SE62211B	0.014	0.938 (0.098)	2.053 (0.138)			
SE11_13	SE62033	0.024	1.263 (0.078)	0.724 (0.036)			
SE11_14	SE62037	0.041	0.745 (0.142)	0.798 (0.158)	0.315 (0.052)		
SE11_15	SE62242	0.025	0.864 (0.063)	-1.050 (0.082)			
SE12_01	SE72078	0.025	0.943 (0.061)	0.385 (0.041)			
SE12_02	SE72460	0.049	0.861 (0.140)	0.708 (0.128)	0.298 (0.046)		
SE12_03	SE72000	0.047	0.640 (0.031)	0.313 (0.035)		-0.347 (0.073)	0.347 (0.073)
SE12_05	SE72901	0.042	0.438 (0.105)	1.004 (0.290)	0.239 (0.074)		
SE12_06	SE72038	0.082	0.858 (0.124)	0.769 (0.105)	0.208 (0.041)		
SE12_07	SE72120	0.085	0.723 (0.122)	0.772 (0.144)	0.239 (0.051)		
SE12_08	SE72143	0.149	0.894 (0.062)	0.783 (0.048)			
SE12_09	SE72523	0.029	0.598 (0.037)	0.353 (0.040)		0.386 (0.070)	-0.386 (0.071)
SE12_10	SE72168	0.094	1.265 (0.137)	0.591 (0.063)	0.181 (0.030)		
SE12_11	SE72205	0.076	0.763 (0.114)	0.634 (0.131)	0.219 (0.049)		
SE12_12	SE72293	0.028	1.096 (0.071)	0.821 (0.041)			
SE12_13A	SE72280A	0.062	1.174 (0.076)	0.925 (0.041)			
SE12_13B	SE72280B	0.044	1.155 (0.122)	-0.309 (0.113)	0.276 (0.055)		
SE12_14	SE72370	0.049	1.288 (0.142)	0.234 (0.082)	0.269 (0.040)		
SE13_01A	SE62091A	0.051	1.112 (0.117)	-0.484 (0.126)	0.279 (0.061)		
SE13_01B	SE62091B	0.082	0.678 (0.082)	-0.500 (0.207)	0.229 (0.073)		
SE13_02	SE62100	0.056	0.985 (0.063)	0.526 (0.040)			
SE13_03	SE62097	0.037	0.934 (0.116)	0.396 (0.108)	0.226 (0.045)		
SE13_04	SE62101	0.048	0.562 (0.035)	0.033 (0.043)		0.305 (0.079)	-0.305 (0.072)
SE13_06	SE62128	0.041	0.929 (0.059)	0.117 (0.042)			
SE13_07	SE62047	0.048	0.466 (0.044)	0.368 (0.075)			
SE13_08	SE62042	0.061	0.551 (0.049)	0.861 (0.076)			
SE13_09	SE62250	0.029	0.601 (0.055)	1.366 (0.100)			
SE13_10	SE62246	0.033	1.214 (0.204)	1.163 (0.079)	0.292 (0.028)		
SE13_11	SE62056	0.033	1.263 (0.075)	0.505 (0.033)			
SE13_12	SE62235	0.033	0.780 (0.117)	0.853 (0.112)	0.186 (0.042)		
SE13_13	SE62180	0.028	1.182 (0.121)	0.264 (0.077)	0.192 (0.038)		
SE13_14	SE62022	0.044	0.584 (0.050)	0.771 (0.069)			
SE13_15	SE62243	0.050	0.647 (0.033)	-0.129 (0.039)		-0.227 (0.078)	0.227 (0.069)
SE14_01	SE72011	0.097	1.238 (0.127)	-0.090 (0.093)	0.253 (0.047)		
SE14_02	SE72905	0.090	0.482 (0.044)	-0.097 (0.078)			
SE14_03	SE72049	0.056	0.629 (0.108)	0.434 (0.207)	0.266 (0.065)		
SE14_04	SE72016	0.069	1.031 (0.051)	0.690 (0.027)		0.033 (0.045)	-0.033 (0.050)
SE14_05	SE72451	0.053	0.868 (0.057)	-0.137 (0.049)			

Item		RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (d_{i1})	Step 2 (d_{i2})
SE14_06	SE72074	0.094	0.878 (0.060)	0.608 (0.045)			
SE14_07	SE72091	0.038	1.150 (0.160)	0.821 (0.079)	0.264 (0.033)		
SE14_08	SE72109	0.062	0.693 (0.052)	0.487 (0.053)			
SE14_09	SE72140	0.036	0.808 (0.141)	0.915 (0.124)	0.262 (0.045)		
SE14_10	SE72132	0.036	1.007 (0.083)	1.540 (0.077)			
SE14_11	SE72209	0.038	0.940 (0.118)	0.548 (0.097)	0.202 (0.041)		
SE14_12	SE72210	0.043	0.479 (0.035)	1.126 (0.065)		0.604 (0.079)	-0.604 (0.107)
SE14_13	SE72249	0.039	0.788 (0.116)	0.998 (0.098)	0.149 (0.036)		
SE14_14	SE72323	0.051	0.687 (0.115)	0.690 (0.157)	0.234 (0.054)		
SE14_15	SE72368	0.138	0.744 (0.088)	-0.236 (0.167)	0.214 (0.063)		
SE14_16	SE72303	0.078	0.786 (0.144)	1.364 (0.109)	0.165 (0.035)		