

Item		RMSD		Slope (a _i)	Location (b _i)	Guessing (c _i)	Step 1 (d _{i1})	Step 2 (d _{i2})
		2015	2019					
M05_01	M041291	0.043		0.689 (0.031)	-0.796 (0.045)			
M05_02	M041289	0.023		1.059 (0.084)	0.160 (0.065)	0.299 (0.026)		
M05_03	M041068	0.031		1.105 (0.067)	0.503 (0.036)	0.082 (0.015)		
M05_04A	M041065A	0.024		1.435 (0.099)	0.596 (0.034)	0.182 (0.015)		
M05_04B	M041065B	0.024		0.929 (0.042)	1.027 (0.039)			
M05_05	M041096	0.024		0.989 (0.066)	0.514 (0.044)	0.106 (0.018)		
M05_06	M041125	0.020		1.114 (0.089)	0.765 (0.045)	0.186 (0.017)		
M05_07	M041135	0.032		0.731 (0.066)	-0.732 (0.166)	0.358 (0.053)		
M05_08	M041257	0.027		0.728 (0.032)	0.246 (0.034)			
M05_09	M041268	0.024		1.731 (0.147)	0.979 (0.034)	0.227 (0.012)		
M05_10	M041151	0.037		0.483 (0.047)	-0.528 (0.214)	0.191 (0.060)		
M05_11	M041264	0.027		0.508 (0.062)	0.471 (0.164)	0.225 (0.046)		
M05_12	M041182	0.080		0.769 (0.037)	-1.784 (0.069)			
M05_13	M041200	0.049		0.447 (0.017)	-0.623 (0.039)		-0.221 (0.073)	0.221 (0.062)
M06_01	M051140	0.029		0.143 (0.101)	0.176 (0.035)			
M06_02	M051017	0.018		0.628 (0.069)	0.298 (0.024)			
M06_03	M051111	0.025		0.911 (0.045)				
M06_04	M051089	0.030		0.657 (0.027)				
M06_05	M051094	0.027		0.399 (0.051)	0.201 (0.021)			
M06_06	M051227	0.028		1.115 (0.039)				
M06_07	M051060	0.029		0.535 (0.105)	0.163 (0.034)			
M06_08Z	M051061Z	0.028		0.659 (0.040)				
M06_09	M051129	0.035		-0.311 (0.133)	0.203 (0.047)			
M06_10	M051236	0.040		0.035 (0.030)				
M06_11A	M051125A	0.086		0.628 (0.069)	-1.791 (0.067)			
M06_11B	M051125B	0.030		0.001 (0.138)	0.001 (0.138)			
M07_01	M041298	0.043		0.930 (0.065)	-0.782 (0.099)	0.253 (0.041)		
M07_02	M041007	0.027		0.807 (0.066)	0.321 (0.071)	0.182 (0.027)		
M07_03	M041280	0.023		0.731 (0.077)	0.780 (0.082)	0.233 (0.027)		
M07_04	M041059	0.036		0.689 (0.030)	-0.315 (0.036)			
M07_05	M041046	0.025		1.255 (0.074)	0.176 (0.037)	0.117 (0.017)		
M07_06	M041048	0.021		1.309 (0.105)	0.557 (0.044)	0.277 (0.018)		
M07_07	M041169	0.025		0.942 (0.069)	0.051 (0.066)	0.205 (0.027)		
M07_08	M041333	0.023		0.963 (0.072)	0.565 (0.049)	0.147 (0.019)		
M07_09	M041262	0.022		0.799 (0.082)	0.984 (0.068)	0.197 (0.022)		
M07_10	M041267	0.026		0.558 (0.029)	0.771 (0.052)			
M07_11	M041177	0.047		0.809 (0.055)	-0.472 (0.088)	0.158 (0.035)		
M07_12	M041271	0.048		0.860 (0.051)	-0.668 (0.076)	0.115 (0.032)		
M07_13A	M041276A	0.038		0.948 (0.038)	0.042 (0.027)			
M07_13B	M041276B	0.025		0.885 (0.038)	0.573 (0.032)			

2015 2019

Step 1 (d_{i1}) Step 2 (d_{i2})





Item	RMSD		Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (d_{i1})	Step 2 (d_{i2})
	2015	2019					



Item	RMSD		Slope (a_i)	Step 1 (d_{i1})	Step 2 (d_{i2})
	2015	2019			

Item	RMSD		Slope (a _i)	Location (b _i)	Guessing (c _i)	Step 1 (d _{i1})	Step 2 (d _{i2})
	2015	2019					
Items Released in 2015:							
S01_01	S041010	0.044		0.3	0.259 (0.038)		
S01_02	S041034	0.034		0.34	0.274 (0.042)		
S01_03	S041017	0.021		0.61	0.249 (0.021)		
S01_04	S041124	0.024		0.057	0.263 (0.022)		
S01_05	S041186	0.031		0.057			
S01_06	S041037	0.040		0.028		-0.129 (0.055)	0.129 (0.050)
S01_07	S041119	0.028		0.076	0.400 (0.029)		
S01_08	S041105	0.039		0.060	0.141 (0.026)		
S01_10Z	S041149Z	0.024		0.33 (0.032)		-1.084 (0.062)	1.084 (0.072)
S01_11	S041032	0.079		0.450 (0.061)			
S01_12	S041068	0.030		0.250 (0.033)			
S01_13	S041303	0.026		0.799 (0.102)	0.272 (0.033)		
S02_01	S061105	0.028	0.701 (0.078)	0.107 (0.135)	0.383 (0.039)		
S02_02	S061010	0.041	0.419 (0.026)	0.038 (0.053)			
S02_03	S061028	0.020	0.843 (0.119)	1.177 (0.083)	0.321 (0.024)		
S02_04	S061065	0.039	1.003 (0.067)	-0.227 (0.065)	0.198 (0.029)		
S02_05	S061130	0.031	0.797 (0.037)	0.420 (0.031)			
S02_06	S061081	0.028	0.926 (0.044)	0.828 (0.034)			
S02_07	S061060	0.041	0.829 (0.036)	-0.010 (0.030)			
S02_08	S061075	0.043	0.604 (0.050)	-0.260 (0.117)	0.145 (0.039)		
S02_09	S061031	0.034	0.992 (0.046)	0.875 (0.033)			
S02_10A	S061049A	0.047	0.773 (0.050)	-0.348 (0.074)	0.105 (0.028)		
S02_10B	S061049B	0.031	0.618 (0.057)	0.244 (0.101)	0.159 (0.034)		
S02_11	S061098	0.019	0.757 (0.105)	1.217 (0.088)	0.264 (0.026)		
S02_12	S061172	0.023	0.566 (0.034)	1.057 (0.061)			
S03_01	S051041	0.022	0.677 (0.098)	0.677 (0.098)			
S03_02	S051037	0.042	0.611 (0.035)	0.611 (0.035)			
S03_03	S051008	0.024	0.610 (0.045)	0.610 (0.045)			
S03_04	S051004	0.034	0.661 (0.088)	0.661 (0.088)	0.024		
S03_05Z	S051026Z	0.028	0.532 (0.031)	0.532 (0.031)			
S03_06	S051130	0.022	0.530 (0.029)	0.530 (0.029)			
S03_07	S051114	0.024	1.155 (0.021)		0.251 (0.021)		
S03_08Z	S051121Z	0.045	0.419 (0.021)	0.419 (0.021)			
S03_09	S051147	0.027	0.859 (0.041)	0.859 (0.041)			
S03_10	S051105	0.031	0.715 (0.081)	0.715 (0.081)	0.339 (0.032)		
S03_11	S051110	0.033	0.052 (0.072)	0.052 (0.072)	0.195 (0.029)		
S03_12	S051111	0.021	0.299 (0.068)	0.299 (0.068)	0.374 (0.027)		

Item	RMSD		Slope (a _i)	Location (b _i)	Guessing (c _i)	Step 1 (d _{i1})	Step 2 (d _{i2})
	2015	2019					
Items Common in 2015 and 2019							
SP01_01	SP51054	0.049			0.261 (0.024)		
SP01_02	SP51024	0.038					
SP01_03A	SP51132A	0.026					
SP01_03B	SP51132B	0.039					
SP01_04	SP51040	0.030					
SP01_05	SP51193	0.033			0.274 (0.022)		
SP01_06	SP51063	0.018			0.222 (0.013)		
SP01_07	SP51012	0.027			0.253 (0.018)		
SP01_08	SP51115	0.054					
SP01_09	SP51180	0.034			0.360 (0.022)		
SP01_10	SP51106	0.018			0.215 (0.014)		
SP01_11	SP51148	0.025			0.241 (0.018)		
SP03_01	SP61141	0.028	0.021	1.235 (0.068)	0.519 (0.032)	0.300 (0.014)	
SP03_02	SP61023	0.034	0.035	0.770 (0.022)	0.015 (0.020)		
SP03_03	SP61054	0.046	0.042	0.479 (0.010)	0.643 (0.024)	1.489 (0.034)	-1.489 (0.043)
SP03_04	SP61007	0.040	0.035	0.647 (0.036)	-0.209 (0.079)	0.163 (0.028)	
SP03_05	SP61006	0.056	0.047	0.785 (0.022)	-0.650 (0.026)		
SP03_06	SP61108	0.025	0.026	1.050 (0.061)	0.233 (0.047)	0.352 (0.018)	
SP03_07	SP61109	0.029	0.032	0.583 (0.050)	0.710 (0.081)	0.235 (0.026)	
SP03_08	SP61080	0.024	0.024	0.968 (0.053)	0.297 (0.044)	0.264 (0.018)	
SP03_09	SP61088	0.028	0.017	0.672 (0.026)	1.417 (0.046)		
SP03_10	SP61151	0.033	0.031	0.952 (0.026)	0.440 (0.017)		
SP03_11	SP61150	0.045	0.043	0.624 (0.021)	0.408 (0.025)		
SP03_12	SP61169	0.024	0.032	1.077 (0.053)	0.079 (0.041)	0.268 (0.018)	
SP05_01	SP51044	0.034			0.201 (0.028)		
SP05_03	SP51003	0.044			-0.122 (0.054)		
SP05_04	SP51168	0.066			-0.475 (0.021)		
SP05_05	SP51010	0.039			0.076 (0.022)		
SP05_06	SP51035	0.024			1.298 (0.101)		
SP05_07	SP51059	0.035			0.211 (0.020)		
SP05_08	SP51142	0.036			0.212 (0.050)		
SP05_09A	SP51131A	0.030			0.114 (0.045)		
SP05_09B	SP51131B	0.023			0.988 (0.055)		
SP05_10	SP51151	0.063			0.918 (0.021)		
SP05_11	SP51157	0.030			0.739 (0.021)	0.190 (0.017)	
SP06_01	SP61071	0.051	0.043	0.335 (0.028)	-1.372 (0.337)	0.197 (0.071)	
SP06_02	SP61138	0.055	0.046	0.616 (0.020)	0.002 (0.024)		
SP06_03A	SP61016A	0.032	0.025	0.926 (0.050)	0.365 (0.041)	0.216 (0.017)	
SP06_03B	SP61016B	0.038	0.037	0.990 (0.027)	0.509 (0.017)		
SP06_04	SP61011	0.059	0.050	0.733 (0.021)	-0.536 (0.026)		

Item	RMSD		Slope (a _i)	Location (b _i)	Guessing (c _i)	Step 1 (d _{i1})	Step 2 (d _{i2})
	2015	2019					
SP06_06	SP61083	0.055	0.051	0.726 (0.021)	-1.025 (0.034)		
SP06_07	SP61034	0.026	0.028	0.788 (0.027)	1.088 (0.030)		
SP06_08	SP61044	0.030	0.030	0.740 (0.023)	0.551 (0.022)		
SP06_09A	SP61142A	0.034	0.034	0.623 (0.021)	0.351 (0.024)		
SP06_09B	SP61142B	0.027	0.026	0.788 (0.027)	1.034 (0.029)		
SP06_10A	SP61115A	0.033	0.031	1.468 (0.068)	0.346 (0.026)	0.264 (0.013)	
SP06_10B	SP61115B	0.037	0.028	1.345 (0.081)	0.662 (0.030)	0.328 (0.013)	
SP07_01	SP51161	0.036			0.099	0.217 (0.029)	
SP07_02	SP51051	0.027			0.037	0.281 (0.009)	
SP07_03Z	SP51138Z	0.033					
SP07_04	SP51194	0.024					
SP07_05	SP51029	0.022				0.202 (0.026)	
SP07_06	SP51077	0.046					
SP07_07	SP51200	0.023					
SP07_08	SP51075	0.062					
SP07_09	SP51065	0.037				0.333 (0.026)	
SP07_10	SP51191	0.024				0.205 (0.012)	
SP07_11	SP51099	0.024				0.216 (0.019)	
SP07_12	SP51175	0.020					
SP09_01	SP61135	0.050	0.036	0.758 (0.041)	-0.598 (0.085)	0.268 (0.030)	
SP09_02	SP61069	0.044	0.041	0.400 (0.016)	-0.481 (0.041)		
SP09_03	SP61134	0.039	0.038	0.651 (0.036)	0.181 (0.060)	0.126 (0.022)	
SP09_04	SP61140	0.029	0.024	1.039 (0.064)	0.601 (0.039)	0.296 (0.016)	
SP09_05	SP61019	0.024	0.028	0.887 (0.028)	0.943 (0.024)		
SP09_06	SP61022	0.028	0.030	0.656 (0.044)	0.183 (0.079)	0.241 (0.026)	
SP09_07	SP61036	0.029	0.028	0.951 (0.029)	0.903 (0.022)		
SP09_08	SP61160	0.052	0.051	0.761 (0.022)	-0.954 (0.032)		
SP09_09	SP61159	0.063	0.054	0.826 (0.023)	-0.788 (0.027)		
SP09_10	SP61091	0.029	0.031	0.452 (0.014)	1.170 (0.032)	-0.176 (0.038)	0.176 (0.050)
SP09_11	SP61118	0.020	0.029	1.001 (0.056)	0.542 (0.036)	0.217 (0.016)	
SP09_12	SP61097	0.024	0.028	0.798 (0.055)	0.517 (0.056)	0.275 (0.021)	
SP11_01	SP61132	0.028					
SP11_02	SP61120	0.028					
SP11_03	SP61025	0.041					
SP11_04A	SP61133A	0.028					
SP11_04B	SP61133B	0.028					
SP11_05	SP61074	0.044					
SP11_06	SP61093	0.063				0.937 (0.026)	-0.937 (0.022)
SP11_07	SP61161	0.034					
SP11_08A	SP61042A	0.020				0.239 (0.011)	
SP11_08B	SP61042B	0.022				0.150 (0.017)	

Item	RMSD		Slope (a _i)	Location (b _i)	Guessing (c _i)	Step 1 (d _{i1})	Step 2 (d _{i2})
	2015	2019					
SP11_09A	SP61041A	0.032					
SP11_09B	SP61041B	0.044					
SP11_10	SP61155	0.044			0.286 (0.032)		
SP13_02	SP61014	0.039	0.036	0.495 (0.018)	0.425 (0.030)		
SP13_03	SP61056	0.068	0.060	0.853 (0.023)	-0.738 (0.026)		
SP13_04	SP61015	0.060	0.055	0.692 (0.020)	-0.395 (0.025)		
SP13_05	SP61113	0.036	0.024	0.760 (0.025)	0.954 (0.028)		
SP13_06	SP61107	0.020	0.032	1.001 (0.054)	0.641 (0.032)	0.180 (0.014)	
SP13_07	SP61046	0.019	0.030	1.164 (0.068)	0.804 (0.029)	0.227 (0.012)	
SP13_08	SP61047	0.042	0.043	0.751 (0.043)	-0.518 (0.089)	0.313 (0.030)	
SP13_09	SP61048	0.027	0.032	1.300 (0.062)	0.509 (0.026)	0.221 (0.012)	
SP13_10	SP61096	0.029	0.019	1.100 (0.066)	0.730 (0.033)	0.257 (0.014)	
SP13_11	SP61124	0.026	0.028	0.590 (0.023)	1.242 (0.043)		
SP13_12	SP61116	0.039	0.031	0.681 (0.021)	0.159 (0.022)		
Items Introduced in 2019:							
SP02_01	SP71002				0.043 (0.065)		
SP02_02	SP71402				-0.253 (0.108)	0.299 (0.045)	
SP02_03	SP71017				0.271 (0.056)		
SP02_04	SP71077				0.226 (0.038)		
SP02_05	SP71072				0.786 (0.072)	0.232 (0.027)	
SP02_06	SP71054				0.213 (0.043)		
SP02_07	SP71115				0.797 (0.110)	0.249 (0.039)	
SP02_08	SP71140				-0.071 (0.182)	0.240 (0.039)	
SP02_09	SP71128				0.016 (0.152)	0.330 (0.039)	
SP02_10	SP71147				-0.224 (0.134)	0.270 (0.039)	
SP02_11A	SP71920A				0.359 (0.052)	0.344 (0.052)	
SP02_11B	SP71920B				0.070 (0.051)	0.612 (0.051)	
SP02_12	SP71268				1.204 (0.110)	1.253 (0.110)	
SP04_01	SP71013	0.049		0.852 (0.106)	-0.766 (0.181)	0.278 (0.067)	
SP04_02	SP71902	0.031		0.272 (0.040)	1.509 (0.259)		
SP04_03	SP71076	0.050		0.860 (0.091)	-0.563 (0.126)	0.134 (0.052)	
SP04_04	SP71041	0.036		0.778 (0.049)	0.977 (0.050)	0.021 (0.060)	-0.021 (0.084)
SP04_05	SP71046	0.033		0.803 (0.059)	0.442 (0.053)		
SP04_06	SP71095	0.040		0.654 (0.051)	0.225 (0.059)		
SP04_07	SP71129	0.042		0.855 (0.118)	-0.617 (0.192)	0.346 (0.066)	
SP04_08	SP71102	0.032		0.751 (0.059)	0.669 (0.064)		
SP04_09	SP71124	0.031		1.132 (0.159)	0.510 (0.079)	0.252 (0.032)	
SP04_10	SP71112	0.062		0.743 (0.094)	-1.183 (0.243)	0.216 (0.090)	
SP04_11	SP71265	0.030		0.708 (0.157)	0.628 (0.170)	0.341 (0.052)	
SP04_12	SP71223	0.059		0.548 (0.100)	-1.573 (0.565)	0.298 (0.161)	
SP08_02	SP71033				0.276 (0.275)	0.289 (0.076)	

Item	RMSD		Slope (a _i)	Location (b _i)	Guessing (c _i)	Step 1 (d _{i1})	Step 2 (d _{i2})
	2015	2019					
SP08_03	SP71065						
SP08_04	SP71025				0.000 (0.251)		
SP08_05	SP71081				0.157 (0.027)		
SP08_06	SP71056						
SP08_07	SP71145				0.181 (0.091)		
SP08_08	SP71104						
SP08_09	SP71144				0.081 (0.073)		
SP08_10	SP71150						
SP08_11	SP71201				0.285 (0.043)		
SP08_12	SP71237						
SP08_13	SP71260				0.151 (0.036)		
SP10_01	SP71009	0.073	0.591 (0.033)	-0.470 (0.049)		1.127 (0.086)	-1.127 (0.069)
SP10_02	SP71093	0.049	0.727 (0.050)	-0.409 (0.057)			
SP10_03	SP71069	0.028	0.946 (0.213)	1.140 (0.118)	0.295 (0.032)		
SP10_04	SP71051	0.029	0.748 (0.058)	0.622 (0.062)			
SP10_05	SP71039	0.034	0.766 (0.101)	0.150 (0.117)	0.147 (0.045)		
SP10_06	SP71080	0.026	0.929 (0.170)	0.928 (0.099)	0.235 (0.033)		
SP10_07	SP71137	0.063	0.705 (0.050)	-0.283 (0.057)			
SP10_08	SP71103	0.035	0.815 (0.127)	0.275 (0.130)	0.259 (0.046)		
SP10_09	SP71106	0.040	0.629 (0.051)	0.442 (0.067)			
SP10_10	SP71100	0.029	0.910 (0.155)	0.275 (0.136)	0.374 (0.045)		
SP10_12	SP71220	0.030	0.998 (0.160)	0.732 (0.088)	0.232 (0.033)		
SP10_13	SP71254	0.030	0.704 (0.057)	0.652 (0.068)			
SP12_01	SP71031			0.021 (0.060)			
SP12_02	SP71090			0.011 (0.051)			
SP12_03	SP71048			1.191 (0.078)			
SP12_04	SP71071			0.875 (0.058)			
SP12_05	SP71011			-0.421 (0.085)			
SP12_06	SP71142			0.493 (0.119)			
SP12_07	SP71138			-0.619 (0.052)			
SP12_08	SP71127			0.037 (0.127)			
SP12_10	SP71500			0.002 (0.106)			
SP12_11	SP71257			0.095 (0.431)			
SP12_12	SP71222			0.006 (0.062)			
SP12_13	SP71252			0.988 (0.146)			
SP14_01	SP71063	0.050	0.407 (0.040)	-0.311 (0.090)			
SP14_02	SP71900	0.036	1.029 (0.149)	-0.022 (0.125)	0.373 (0.046)		
SP14_04	SP71043	0.024	0.644 (0.065)	1.381 (0.127)			
SP14_05	SP71005	0.062	1.021 (0.065)	-0.584 (0.049)			
SP14_06	SP71118	0.028	1.130 (0.170)	0.827 (0.073)	0.188 (0.027)		
SP14_07	SP71139	0.041	0.952 (0.143)	0.007 (0.135)	0.359 (0.048)		

Item		RMSD		Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (d_{i1})	Step 2 (d_{i2})
		2015	2019					
SP14_08	SP71114	0.059	0.059	0.784 (0.054)	-0.391 (0.054)			
SP14_09	SP71131	0.050	0.050	0.577 (0.047)	-0.028 (0.065)			
SP14_10	SP71152	0.029	0.029	1.235 (0.178)	0.479 (0.078)	0.300 (0.033)		
SP14_11	SP71218	0.056	0.056	0.795 (0.112)	-0.626 (0.205)	0.309 (0.070)		
SP14_12	SP71214	0.037	0.037	1.098 (0.123)	0.119 (0.076)	0.167 (0.035)		
SP14_13	SP71213	0.034	0.034	1.005 (0.081)	0.950 (0.063)			



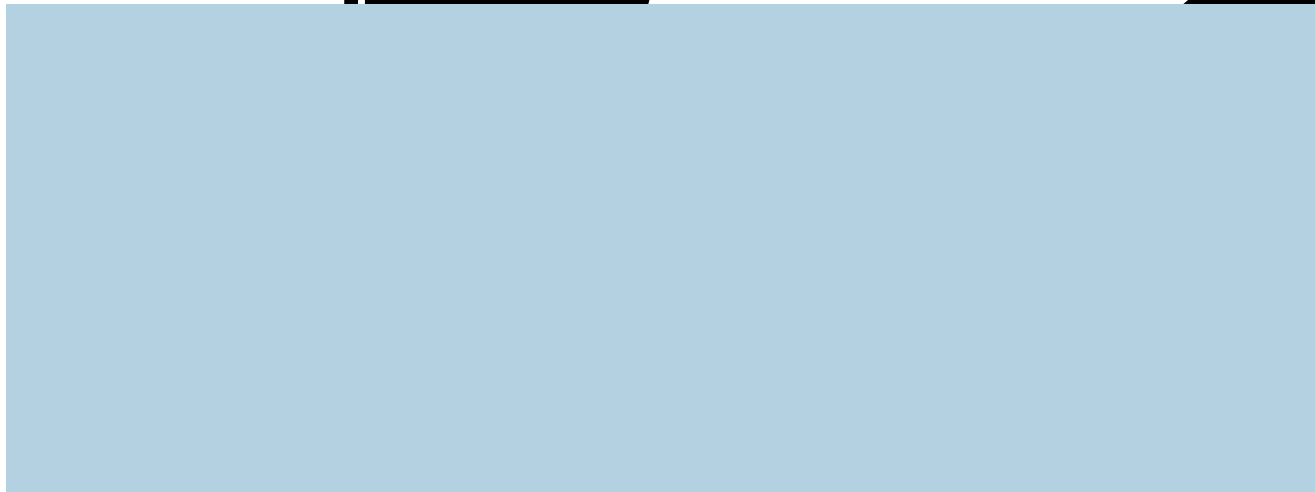


Item	RMSD		Slope (a_i)	Location (b_i)	Gue -5 (u)-10 (e)-5 (e5 (u,d)) TP. 5 (e) T (e) T (e)
	2015	2019			

Item		RMSD		Slope (a _i)	Location (b _i)	Guessing (c _i)	Step 1 (d _{1i})	Step 2 (d _{2i})
		2015	2019					
M07_01	M042015	0.048		0.863 (0.065)	-0.598 (0.107)	0.167 (0.048)		
M07_02	M042196	0.029		1.090 (0.069)	-0.042 (0.051)	0.088 (0.023)		
M07_03	M042194	0.039		1.195 (0.050)	-0.519 (0.029)			
M07_04A	M042114A	0.027		1.522 (0.062)	-0.108 (0.023)			
M07_04B	M042114B	0.035		1.553 (0.064)	0.169 (0.022)			
M07_05	M042112	0.043		0.871 (0.119)	1.140 (0.088)	0.313 (0.024)		
M07_06	M042109	0.016		1.527 (0.142)	0.968 (0.043)	0.214 (0.015)		
M07_07	M042050	0.015		1.074 (0.048)	0.628 (0.032)			
M07_08A	M042074A	0.037		1.019 (0.045)	0.487 (0.032)			
M07_08B	M042074B	0.037		0.954 (0.044)	0.662 (0.036)			

Item	RMSD		Slope (a _i)	Location (b _i)	Guessing (c _i)	Step 1 (d _{i1})	Step 2 (d _{i2})
	2015	2019					
MP07_06	MP52067	0.032			0.263 (0.021)		
MP07_07	MP52068	0.016			0.132 (0.008)		
MP07_08	MP52087	0.022					
MP07_09	MP52048	0.021					
MP07_10	MP52039	0.018					
MP07_11	MP52208	0.018			0.081 (0.005)		
MP07_12A	MP52419A	0.048			0.050 (0.018)		
MP07_12B	MP52419B	0.054			0.104 (0.022)		
MP07_13	MP52115	0.031			0.080 (0.008)		
MP07_14	MP52421	0.038					
MP09_01	MP62329	0.069	0.074	0.793 (0.043)	-0.836 (0.103)	0.184 (0.046)	
MP09_02	MP62151	0.019	0.025	1.247 (0.035)	0.717 (0.019)		
MP09_03	MP62346	0.024	0.038	1.185 (0.033)	0.646 (0.019)		
MP09_04	MP62212	0.015	0.019	1.397 (0.077)	1.090 (0.026)	0.124 (0.008)	
MP09_05	MP62056	0.021	0.018	1.244 (0.039)	1.127 (0.023)		
MP09_06	MP62317	0.017	0.021	1.328 (0.038)	0.823 (0.018)		
MP09_07	MP62350	0.016	0.019	1.389 (0.099)	1.538 (0.034)	0.129 (0.007)	
MP09_08	MP62078	0.029	0.031	1.441 (0.040)	0.612 (0.016)		
MP09_09	MP62284	0.042	0.052	0.676 (0.056)	0.412 (0.100)	0.290 (0.031)	
MP09_10	MP62245	0.019	0.024	1.273 (0.069)	0.642 (0.031)	0.204 (0.013)	
MP09_11	MP62287	0.022	0.029	1.283 (0.044)	1.390 (0.027)		
MP09_12A	MP62345A	0.047	0.045	0.589 (0.016)	0.447 (0.021)	0.267 (0.034)	-0.267 (0.038)
MP09_13	MP62115	0.024	0.018	1.507 (0.108)	1.358 (0.031)	0.202 (0.009)	
MP11_01	MP62271	0.040			0.526 (0.029)	0.252 (0.013)	
MP11_02	MP62152	0.014			0.348 (0.017)		
MP11_03	MP62215	0.023			0.655 (0.015)		
MP11_04	MP62143	0.023			0.804 (0.016)		
MP11_05	MP62230	0.020			1.358 (0.031)		
MP11_06	MP62095	0.014			0.550 (0.027)		
MP11_07	MP62076	0.017			0.231 (0.012)		
MP11_08	MP62030	0.054			0.050 (0.020)		
MP11_09	MP62171	0.048			-0.002 (0.042)		
MP11_10	MP62301	0.018			0.000 (0.032)		
MP11_11	MP62194	0.049			0.025 (0.058)		
MP11_12	MP62344	0.032			0.874 (0.028)		
MP11_13	MP62320	0.020			0.575 (27)4.7		

Item	RMSD		Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (d_{i1})	Step 2 (d_{i2})
	2015	2019					
MP08_01	MP72002	0					
MP08_02	MP72188	0			0.138 (0.023)		
MP08_03	MP72035	0					
MP08_04	MP72055	0					



Item	RMSD		Slope (a _i)	Location (b _i)	Guessing (c _i)	Step 1 (d _{i1})	Step 2 (d _{i2})
	2015	2019					
MP12_11	MP72139						
MP12_12	MP72229					-1.025 (0.143)	1.025 (0.170)
MP12_13	MP72171						
MP12_14A	MP72211A				0.220 (0.027)		
MP14_01	MP72005	0.039	0.704 (0.113)	0.125 (0.169)	0.100 (0.068)		
MP14_02	MP72021	0.036	0.916 (0.065)	0.241 (0.054)			
MP14_03	MP72026	0.057	0.651 (0.055)	0.615 (0.085)			
MP14_04A	MP72041A	0.024	1.268 (0.083)	0.104 (0.040)			
MP14_04B	MP72041B	0.035	1.471 (0.098)	0.364 (0.040)			
MP14_05	MP72223	0.019	1.948 (0.294)	0.663 (0.058)	0.250 (0.021)		
MP14_06	MP72094	0.053	1.172 (0.077)	-0.033 (0.041)			
MP14_07	MP72059	0.024	1.363 (0.096)	0.616 (0.048)			
MP14_08	MP72080	0.016	1.587 (0.217)	0.874 (0.061)	0.118 (0.017)		
MP14_09	MP72081	0.028	0.961 (0.075)	0.861 (0.072)			
MP14_10	MP72140	0.031	0.837 (0.062)	0.344 (0.060)			
MP14_11	MP72120	0.022	1.146 (0.085)	0.779 (0.060)			
MP14_12	MP72131	0.018	1.349 (0.119)	1.286 (0.076)			
MP14_13	MP72147	0.013	1.697 (0.149)	1.172 (0.060)			
MP14_14	MP72154	0.034	1.325 (0.164)	0.106 (0.075)	0.189 (0.035)		
MP14_15	MP72192	0.032	1.009 (0.157)	0.444 (0.104)	0.209 (0.040)		
MP14_16	MP72161	0.035	1.164 (0.084)	0.618 (0.054)			

Appendix 12D: Science Item Parameters from the paperTIMSS 2019 Concurrent Calibration—Grade 8

Item	RMSD 2015 2019	Slope (a _i)	Location (b _i)	Guessing (c _i)	Step 1 (d _{i1})	Step 2 (d _{i2})
Items Released in 2015:						
S01_01 S042258	0.018		0.186 (0.026)			
S01_02 S042005	0.024				-2.479 (0.126)	2.479 (0.131)
S01_03 S042016	0.019		0.135 (0.017)			
S01_04A S042300A	0.030					
S01_04B S042300B	0.056					
S01_04C S042300C	0.026					
S01_05 S042319	0.022					
S01_06 S042068	0.020		0.220 (0.017)			
S01_07 S042216	0.026		0.338 (0.029)			
S01_08 S042249	0.024		0.163 (0.032)			
S01_09 S042094	0.024		0.761 (0.041)			
S01_10A S042293A	0.040		0.393 (0.035)			
S01_10B S042293B	0.015		1.813 (0.092)			
S01_11 S042195	0.015		1.856 (0.118)			
S01_12 S042400	0.019		0.976 (0.040)			
S01_14 S042164	0.023		0.503 (0.056)	0.154 (0.024)		
S02_01 S062189	0.034	0.450 (0.022)	0.004 (0.038)		0.311 (0.069)	-0.311 (0.068)
S02_02 S062094	0.023	0.981 (0.087)	0.444 (0.063)	0.188 (0.026)		
S02_03 S062118	0.050	0.886 (0.041)	-0.004 (0.032)			
S02_04A S062103A	0.022	1.125 (0.109)	0.562 (0.060)	0.265 (0.024)		
S02_04B S062103B	0.027	0.723 (0.033)	1.006 (0.036)		0.218 (0.043)	-0.218 (0.060)
S02_05 S062010	0.028	0.513 (0.034)	0.830 (0.065)			
S02_06 S062253	0.024	0.876 (0.083)	0.852 (0.058)	0.115 (0.021)		
S02_07 S062051	0.023	0.905 (0.046)	0.776 (0.038)			
S02_08 S062044	0.019	1.091 (0.124)	1.326 (0.061)	0.121 (0.015)		
S02_09 S062046	0.032	0.896 (0.042)	0.166 (0.032)			
S02_10 S062149	0.029	0.442 (0.032)	0.908 (0.078)			
S02_11 S062268	0.035	0.997 (0.080)	-0.354 (0.091)	0.253 (0.039)		
S02_12 S062170	0.030	0.697 (0.088)	0.247 (0.146)	0.336 (0.044)		
S02_13 S062234	0.050	0.811 (0.033)	0.605 (0.027)		0.677 (0.037)	-0.677 (0.047)
S02_14 S062271	0.018	0.743 (0.110)	1.028 (0.101)	0.284 (0.031)		
S03_01 S052261	0.021	0.936 (0.037)		0.214 (0.025)		
S03_02Z S052092Z	0.068	0.366 (0.037)			0.998 (0.077)	-0.998 (0.095)
S03_03A S052263A	0.031	1.415 (0.037)				
S03_03B S052263B	0.029	0.712 (0.027)				
S03_04 S052265	0.039	0.904 (0.047)				
S03_05 S052280	0.026		0.418 (0.071)	0.259 (0.028)		

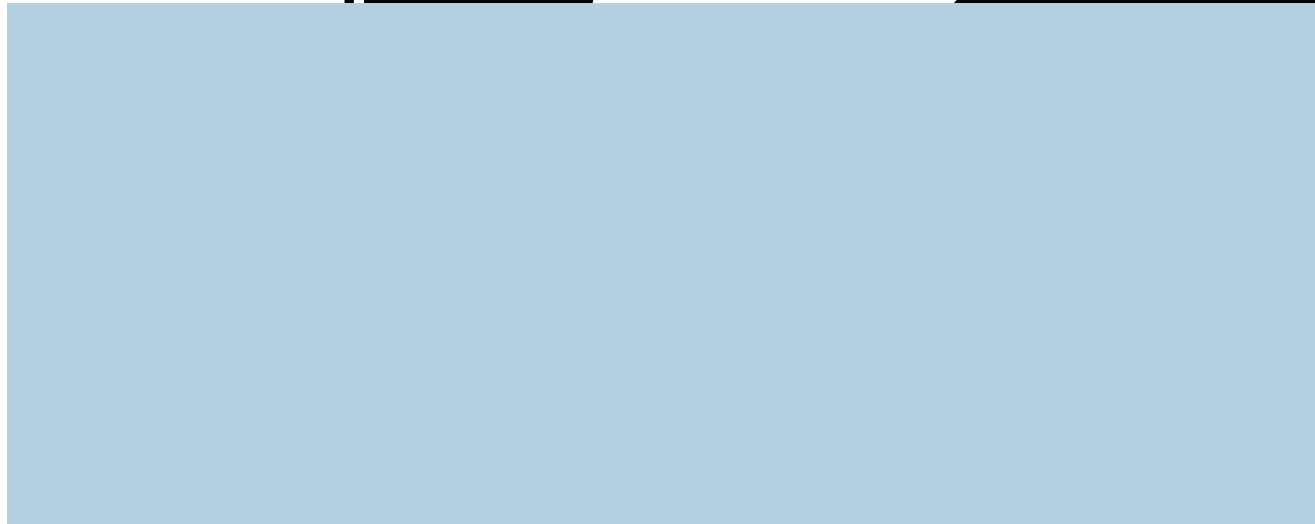
Item		RMSD		Slope (a _i)	Location (b _i)	Guessing (c _i)	Step 1 (d _{i1})	Step 2 (d _{i2})
		2015	2019					
S03_06	S052256	0.024				0.185 (0.020)		
S03_07Z	S052043Z	0.024						
S03_08	S052194	0.023				0.218 (0.021)		
S03_09	S052179	0.018				0.225 (0.023)		
S03_10	S052233	0.022						
S03_11	S052159	0.035				0.321 (0.061)		
S03_12A	S052289A	0.066				0.226 (0.055)		
S03_12B	S052289B	0.027				0.174 (0.033)		
S03_12C	S052289C	0.035						
S05_01	S042053	0.026		1.216 (0.092)	-0.167 (0.064)	0.243 (0.030)		
S05_02	S042408	0.019		0.740 (0.040)	0.630 (0.042)			
S05_03	S042015	0.024		0.902 (0.094)	0.629 (0.072)	0.223 (0.027)		
S05_04	S042309	0.041		0.369 (0.062)	1.045 (0.231)	0.166 (0.054)		
S05_05A	S042049A	0.050		1.048 (0.047)	-0.596 (0.035)			
S05_05B	S042049B	0.033		1.187 (0.052)	0.220 (0.026)			
S05_06	S042182	0.043		0.660 (0.060)	-0.466 (0.144)	0.186 (0.050)		
S05_07	S042402	0.017		0.909 (0.051)	1.126 (0.050)			
S05_08A	S042228A	0.018		1.465 (0.077)	1.100 (0.033)			
S05_08B	S042228B	0.023		1.336 (0.057)	0.012 (0.024)			
S05_08C	S042228C	0.022		1.542 (0.068)	0.504 (0.022)			
S05_09	S042126	0.020		0.806 (0.099)	0.214 (0.129)	0.402 (0.039)		
S05_10	S042210	0.021		0.985 (0.185)	1.587 (0.112)	0.312 (0.020)		
S05_11	S042176	0.023		1.069 (0.051)	0.650 (0.032)			
S05_12	S042211	0.022		0.885 (0.042)	0.110 (0.032)			
S05_13	S042135	0.030		0.791 (0.039)	-0.238 (0.038)			
S05_14	S042257	0.016		0.543 (0.106)	1.313 (0.164)	0.304 (0.040)		
S06_01	S052003	0.022			0.122 (0.108)			
S06_02	S052071	0.018			0.469 (0.043)			
S06_03	S052246	0.019			0.850 (0.092)			
S06_04	S052276	0.032			-0.025 (0.070)			
S06_05A	S052303A	0.030			0.011 (0.070)			
S06_05B	S052303B	0.021			0.005 (0.041)			
S06_06	S052125	0.028			0.051 (0.125)			
S06_07	S052145	0.022			0.001 (0.053)			
S06_08	S052049	0.037			0.690 (0.032)	0.456 (0.043)	-0.456 (0.059)	
S06_09	S052063	0.027			0.639 (0.092)	0.189 (0.038)		
S06_10	S052192	0.020			1.421 (0.092)	0.098 (0.017)		
S06_11	S052232	0.020			0.477 (0.085)	0.200 (0.039)		
S06_12	S052141	0.016			1.274 (0.031)			
S06_13	S052096	0.025			0.009 (0.091)	0.277 (0.036)		
S06_14	S052116	0.029			0.205 (0.022)	0.172 (0.039)	-0.172 (0.039)	



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Item	RMSD		Slope (a _i)	Location (b _i)	Guessing (c _i)	Step 1 (d _{1i})	Step 2 (d _{2i})	
	2015	2019						
SP03_06B	SP62116B	0.019	0.029	1.319 (0.041)	0.859 (0.018)			
SP03_06C	SP62116C	0.021	0.027	0.946 (0.035)	1.247 (0.033)			
SP03_07	SP62262	0.017	0.023	0.891 (0.080)	1.063 (0.051)	0.277 (0.017)		
SP03_08	SP62035	0.023	0.022	1.076 (0.077)	1.029 (0.036)	0.199 (0.013)		
SP03_09	SP62144	0.061	0.062	0.725 (0.040)	-0.600 (0.090)	0.163 (0.035)		
SP03_10	SP62162	0.023	0.025	0.777 (0.027)	0.813 (0.028)			
SP03_11	SP62233	0.021	0.015	0.927 (0.077)	0.753 (0.055)	0.343 (0.019)		
SP03_13	SP62171	0.039	0.031	0.384 (0.048)	0.825 (0.188)	0.185 (0.047)		
SP05_01	SP52076	0.030			0.052	0.257 (0.021)		
SP05_02	SP52272	0.037				0.018		
SP05_03A	SP52085A	0.020				(0.028)		
SP05_03B	SP52085B	0.045				(0.019)		
SP05_04	SP52094	0.026				(0.028)		
S505_02	S2116C	0.021	0.03	0.302	1.3380	1.38.239-1.535	1.6480	3.5(0.2)



Item	RMSD		Slope (a _i)	Location (b _i)	Guessing (c _i)	Step 1 (d _{i1})	Step 2 (d _{i2})
	2015	2019					
SP04_09	SP72921	0.021	0.766 (0.077)	1.371 (0.122)			
SP04_10	SP72234	0.029	1.141 (0.277)	1.472 (0.139)	0.167 (0.022)		
SP04_11	SP72251	0.020	1.064 (0.189)	0.855 (0.090)	0.208 (0.030)		
SP04_12	SP72284	0.046	0.786 (0.058)	-0.058 (0.055)			
SP04_13	SP72345	0.048	0.860 (0.054)	0.372 (0.040)		0.552 (0.056)	-0.552 (0.068)
SP04_14	SP72349	0.037	1.086 (0.134)	0.083 (0.089)	0.178 (0.039)		
SP04_15	SP72363	0.049	0.613 (0.102)	0.073 (0.188)	0.101 (0.067)		
SP08_01	SP72070			0.322	0.207 (0.099)		
SP08_02	SP72400			0.051			
SP08_03	SP72024			0.107	0.113 (0.045)		
SP08_04	SP72462			0.286	0.198 (0.086)		
SP08_05	SP72443			0.103	0.334 (0.030)		
SP08_06	SP72903			0.046		-0.090 (0.067)	0.090 (0.084)
SP08_07	SP72145			0.102			
SP08_08	SP72100			0.227	0.195 (0.073)		
SP08_10	SP72137			0.122	0.194 (0.046)		
SP08_11	SP72298			0.063			
SP08_12	SP72215			0.072		-0.538 (0.104)	
SP08_13	SP72260			0.071			
SP08_14	SP72265			0.063			
SP08_15	SP72347			0.099	0.186 (0.028)		
SP08_16	SP72351			0.077			
SP08_17	SP72367			0.076	0.156 (0.030)		
SP10_01	SP72033	0.033	0.649 (0.035)	0.355 (0.044)		-0.436 (0.084)	0.436 (0.094)
SP10_02	SP72440	0.043	0.670 (0.053)	-0.347 (0.063)			
SP10_03	SP72032	0.029	1.540 (0.315)	1.001 (0.083)	0.315 (0.024)		
SP10_04	SP72031	0.025	0.655 (0.139)	0.941 (0.143)	0.137 (0.047)		
SP10_05	SP72086	0.038	0.556 (0.049)	-0.161 (0.073)			
SP10_06	SP72005	0.038	1.030 (0.065)	0.729 (0.040)		0.248 (0.050)	-0.248 (0.070)
SP10_08	SP72123	0.033	0.551 (0.125)	-0.003 (0.329)	0.249 (0.095)		
SP10_09	SP72116	0.026	0.574 (0.180)	1.172 (0.213)	0.198 (0.060)		
SP10_10	SP72920	0.060	0.599 (0.036)	0.920 (0.061)		1.334 (0.071)	-1.334 (0.128)
SP10_11	SP72294	0.033	0.914 (0.066)	0.207 (0.051)			
SP10_12	SP72231	0.029	1.257 (0.239)	0.923 (0.088)	0.265 (0.027)		
SP10_13	SP72261	0.043	0.671 (0.053)	-0.379 (0.064)			
SP10_14	SP72220	0.041	1.761 (0.627)	1.732 (0.166)	0.210 (0.017)		
SP10_15	SP72348	0.074	0.805 (0.059)	-0.844 (0.065)			
SP10_16	SP72720	0.030	0.412 (0.179)	1.745 (0.333)	0.135 (0.090)		
SP12_01	SP72078		1.052	0.052			
SP12_02	SP72460			0.107	0.254 (0.036)		
SP12_03	SP72000			0.042		-0.024 (0.070)	0.024 (0.080)

Item	RMSD		Slope (a _i)	Location (b _i)	Guessing (c _i)	Step 1 (d _{i1})	Step 2 (d _{i2})
	2015	2019					
SP12_05	SP72901				0.273 (0.057)		
SP12_06	SP72038				0.103 (0.089)		
SP12_07	SP72120				0.092 (0.121)		
SP12_08	SP72143						
SP12_09	SP72523					0.309 (0.071)	-0.309 (0.084)
SP12_10	SP72168				0.176 (0.031)		
SP12_11	SP72205				0.244 (0.029)		
SP12_12	SP7229490.801209.46				0.1561.03.713281(0.09413.1533669.60)58480(0.2(0.)3.5(058))7.4370(0.)3.4(31		

