

Appendix A: Classical Item Statistics

Table A.1. Grade 5 ITA Classical Item Statistics

Item	Item Type	N-Count	Item Mean	P-value	PBIS	Prop A or 0pts	Prop B or 1pt	Prop C or 2pts	Prop D or 3pts	Prop 4 pts	Prop Omitting
1	XI	10803	1.746	0.873	0.368	0.107	0.041	0.853			0.000
2	MC	10803	0.445	0.445	0.198	0.099	0.211	0.244	0.445		0.000
3	MC	10803	0.574	0.574	0.450	0.074	0.574	0.243	0.108		0.000
4	MX	10803	0.663	0.332	0.406	0.575	0.186	0.239			0.000
5	MC	10803	0.434	0.434	0.388	0.204	0.434	0.257	0.105		0.000
6	MC	10803	0.539	0.539	0.389	0.109	0.127	0.225	0.539		0.000
7	MC	10803	0.449	0.449	0.285	0.085	0.165	0.301	0.449		0.000
8	MX	10803	0.628	0.314	0.502	0.661	0.050	0.289			0.000
9	MX	10803	0.597	0.299	0.442	0.624	0.155	0.221			0.000
10	MC	10803	0.400	0.400	0.242	0.214	0.216	0.400	0.170		0.000
11	XI	10803	0.487	0.487	0.370	0.512	0.487				0.000
12	MX	10803	0.793	0.397	0.543	0.520	0.167	0.313			0.000
13	MC	10803	0.463	0.463	0.472	0.463	0.183	0.206	0.147		0.001
14	MC	10803	0.656	0.656	0.458	0.072	0.214	0.057	0.656		0.001
15	MC	10803	0.400	0.400	0.383	0.202	0.131	0.267	0.400		0.001
16	MX	10803	0.414	0.104	0.504	0.696	0.218	0.066	0.016	0.004	0.000
17	MC	10803	0.289	0.289	0.184	0.217	0.289	0.270	0.222		0.002
18	MC	10803	0.179	0.179	0.081	0.268	0.130	0.179	0.421		0.002
19	XI	10803	0.326	0.326	0.184	0.673	0.326				0.002
20	MX	10803	0.639	0.320	0.498	0.545	0.267	0.186			0.002
21	OE	10803	0.610	0.305	0.438	0.488	0.413	0.098			0.000
22	MX	10803	0.819	0.410	0.567	0.515	0.147	0.336			0.002
23	MX	10803	0.812	0.406	0.593	0.471	0.243	0.285			0.002
24	MX	10803	0.663	0.332	0.420	0.499	0.336	0.164			0.002
25	XI	10800	0.846	0.423	0.393	0.297	0.556	0.145			0.002
26	MC	10803	0.496	0.496	0.451	0.074	0.496	0.233	0.196		0.002

Table A.2. Grade 8 ITA Classical Item Statistics

Item	Item Type	N-Count	Item Mean	P-value	PBIS	Prop A or 0pts	Prop B or 1pt	Prop C or 2pts	Prop D or 3pts	Prop 4 pts	Prop Omitting
1	MC	10203	0.403	0.403	0.372	0.597	0.403				0.000
2	MC	10203	0.396	0.396	0.255	0.375	0.396	0.159	0.070		0.000
3	MX	10203	0.668	0.334	0.353	0.634	0.063	0.303			0.000
4	XI	10203	1.030	0.515	0.472	0.209	0.550	0.240			0.001
5	MX	10203	0.284	0.142	0.487	0.788	0.139	0.073			0.000
6	MC	10203	0.696	0.696	0.378	0.189	0.696	0.078	0.036		0.002
7	MX	10203	0.647	0.324	0.433	0.663	0.023	0.312			0.002
8	MC	10203	0.502	0.502	0.278	0.238	0.181	0.502	0.077		0.002
9	MX	10203	0.548	0.274	0.303	0.617	0.214	0.167			0.002
10	MC	10203	0.244	0.244	0.255	0.754	0.244				0.002
11	MX	10203	0.715	0.358	0.446	0.532	0.217	0.249			0.003
12	MC	10203	0.684	0.684	0.476	0.313	0.684				0.003
13	MC	10203	0.465	0.465	0.348	0.081	0.359	0.092	0.465		0.003
14	XI	10203	0.701	0.351	0.548	0.333	0.628	0.036			0.003
15	XI	10203	0.468	0.234	0.504	0.609	0.308	0.080			0.003
16	MC	10203	0.521	0.521	0.521	0.208	0.521	0.204	0.063		0.004
17	MX	10203	0.874	0.219	0.668	0.481	0.266	0.172	0.060	0.021	0.000
18	MC	10203	0.379	0.379	0.354	0.147	0.197	0.271	0.379		0.007
19	MX	10203	0.692	0.346	0.277	0.428	0.437	0.128			0.008
20	MC	10203	0.570	0.570	0.525	0.074	0.161	0.188	0.570		0.008
21	MC	10203	0.442	0.442	0.628	0.550	0.442				0.008
22	MC	10203	0.371	0.371	0.541	0.621	0.371				0.008
23	MC	10203	0.530	0.530	0.429	0.190	0.530	0.134	0.138		0.008
24	MX	10203	0.524	0.262	0.438	0.544	0.371	0.077			0.008
25	MX	10203	0.932	0.466	0.349	0.433	0.185	0.373			0.009
26	MC	10203	0.617	0.617	0.414	0.059	0.212	0.103	0.617		0.009
27	MX	10203	0.843	0.422	0.515	0.469	0.201	0.321			0.009
28	MC	10203	0.547	0.547	0.374	0.190	0.194	0.061	0.547		0.009
29	MX	10203	0.500	0.250	0.216	0.552	0.377	0.062			0.009
30	MC	10203	0.485	0.485	0.513	0.113	0.215	0.179	0.485		0.009
31	MC	10203	0.417	0.417	0.173	0.209	0.212	0.417	0.153		0.009
32	MC	10203	0.191	0.191	0.323	0.800	0.191				0.009
33	MC	10203	0.504	0.504	0.295	0.093	0.134	0.504	0.260		0.009
34	MX	10203	0.429	0.215	0.294	0.654	0.246	0.091			0.009
35	MX	10203	0.554	0.277	0.253	0.628	0.171	0.191			0.009

Table A.3. Biology ITA Classical Item Statistics

Item	Item Type	N-Count	Item Mean	P-value	PBIS	Prop A or 0pts	Prop B or 1pt	Prop C or 2pts	Prop D or 3pts	Prop 4 pts	Prop Omitting
1	MC	10041	0.650	0.650	0.329	0.091	0.650	0.125	0.134		0.000
2	MC	10041	0.626	0.626	0.405	0.071	0.112	0.626	0.191		0.000
3	MX	10041	0.590	0.295	0.424	0.510	0.389	0.100			0.000
4	XI	10041	1.041	0.521	0.429	0.383	0.193	0.424			0.000
5	MC	10041	0.139	0.139	0.146	0.860	0.139				0.001
6	XI	10041	1.387	0.694	0.557	0.050	0.513	0.437			0.001
7	MC	10041	0.840	0.840	0.422	0.043	0.840	0.067	0.049		0.001
8	MX	10041	1.310	0.655	0.661	0.251	0.186	0.562			0.001
9	XI	10041	0.589	0.589	0.279	0.410	0.589				0.001
10	MX	10041	0.922	0.461	0.425	0.310	0.455	0.234			0.001
11	XI	10041	0.923	0.462	0.387	0.234	0.607	0.158			0.001
12	XI	10041	1.146	0.573	0.429	0.099	0.652	0.247			0.001
13	MC	10041	0.376	0.376	0.111	0.161	0.376	0.247	0.214		0.001
14	MC	10041	0.558	0.558	0.438	0.185	0.152	0.558	0.103		0.002
15	XI	10041	0.757	0.757	0.461	0.241	0.757				0.002
16	MX	10041	1.106	0.553	0.679	0.415	0.058	0.524			0.002
17	MC	10041	0.307	0.307	0.358	0.233	0.208	0.250	0.307		0.002
18	OE	10041	1.231	0.410	0.710	0.383	0.170	0.280	0.167		0.000
19	MC	10041	0.430	0.430	0.414	0.070	0.144	0.352	0.430		0.003
20	MC	10041	0.568	0.568	0.532	0.143	0.153	0.568	0.133		0.003
21	XI	10041	1.376	0.688	0.369	0.076	0.466	0.455			0.003
22	MC	10041	0.413	0.413	0.229	0.227	0.237	0.413	0.120		0.003
23	OE	10041	0.696	0.348	0.574	0.409	0.486	0.105			0.000
24	MC	10041	0.498	0.498	0.435	0.499	0.498				0.004
25	XI	10041	0.456	0.228	0.482	0.648	0.240	0.108			0.004
26	XI	10041	0.573	0.573	0.505	0.423	0.573				0.004
27	MC	10041	0.386	0.386	0.551	0.228	0.230	0.152	0.386		0.004
28	MX	10041	0.717	0.359	0.598	0.595	0.087	0.315			0.004
29	MC	10041	0.420	0.420	0.311	0.316	0.152	0.420	0.109		0.004
30	MX	10041	0.434	0.217	0.128	0.636	0.285	0.074			0.004
31	MX	10041	0.560	0.280	0.313	0.634	0.165	0.198			0.004
32	XI	10041	1.294	0.647	0.630	0.252	0.193	0.551			0.004
33	MC	10041	0.300	0.300	0.249	0.300	0.337	0.239	0.120		0.004
34	MX	10041	0.883	0.442	0.666	0.461	0.187	0.348			0.004
35	MC	10041	0.479	0.479	0.372	0.089	0.225	0.479	0.203		0.004

Appendix B: Differential Item Functioning

Table B.1. 2019 Grade 5 ITA Differential Item Functioning Statistical Flags

Item	Item Type	Male vs. Female			White vs. Black/African-American			White vs. Hispanic/Latino			Non-English Learners vs. English Learners			Non-SWD vs. SWD		
		N-Count (Reference)	N-Count (Focal)	Flag	N-Count (Reference)	N-Count (Focal)	Flag	N-Count (Reference)	N-Count (Focal)	Flag	N-Count (Reference)	N-Count (Focal)	Flag	N-Count (Reference)	N-Count (Focal)	Flag
1	XI	5519	5284	A	4537	3295	A	4537	2019	A	9532	1271	A	8896	1907	B-
2	MC	5519	5284	A	4537	3295	A	4537	2019	A	9532	1271	A	8896	1907	A
3	MC	5519	5284	A	4537	3295	A	4537	2019	A	9532	1271	A	8896	1907	A
4	MX	5519	5284	A	4537	3295	A	4537	2019	A	9532	1271	A	8896	1907	A
5	MC	5519	5284	A	4537	3295	A	4537	2019	A	9532	1271	A	8896	1907	A
6	MC	5519	5284	A	4537	3295	A	4537	2019	A	9532	1271	A	8896	1907	A
7	MC	5519	5284	A	4537	3295	A	4537	2019	A	9532	1271	A	8896	1907	A
8	MX	5519	5284	A	4537	3295	A	4537	2019	A	9532	1271	A	8896	1907	A
9	MX	5519	5284	A	4537	3295	A	4537	2019	A	9532	1271	A	8896	1907	A
10	MC	5519	5284	A	4537	3295	A	4537	2019	A	9532	1271	A	8896	1907	A
11	XI	5519	5284	A	4537	3295	A	4537	2019	A	9532	1271	A	8896	1907	A
12	MX	5519	5284	A	4537	3295	A	4537	2019	A	9532	1271	A	8896	1907	A
13	MC	5519	5284	A	4537	3295	A	4537	2019	A	9532	1271	A	8896	1907	A
14	MC	5519	5284	A	4537	3295	A	4537	2019	A	9532	1271	A	8896	1907	A
15	MC	5519	5284	A	4537	3295	A	4537	2019	A	9532	1271	A	8896	1907	A
16	MX	5519	5284	A	4537	3295	A	4537	2019	A	9532	1271	A	8896	1907	A
17	MC	5519	5284	A	4537	3295	A	4537	2019	A	9532	1271	A	8896	1907	A
18	MC	5519	5284	A	4537	3295	A	4537	2019	A	9532	1271	A	8896	1907	A
19	XI	5519	5284	A	4537	3295	A	4537	2019	A	9532	1271	A	8896	1907	A
20	MX	5519	5284	A	4537	3295	A	4537	2019	A	9532	1271	A	8896	1907	A
21	OE	5519	5284	A	4537	3295	A	4537	2019	A	9532	1271	A	8896	1907	A
22	MX	5519	5284	A	4537	3295	A	4537	2019	A	9532	1271	A	8896	1907	A
23	MX	5519	5284	A	4537	3295	A	4537	2019	A	9532	1271	A	8896	1907	A
24	MX	5519	5284	A	4537	3295	A	4537	2019	A	9532	1271	A	8896	1907	A
25	XI	5518	5282	A	4537	3294	A	4537	2017	A	9530	1270	A	8896	1904	A
26	MC	5519	5284	A	4537	3295	A	4537	2019	A	9532	1271	A	8896	1907	A

Table B.2. 2019 Grade 8 ITA Differential Item Functioning Statistical Flags

		Male vs. Female			White vs. Black/African-American			White vs. Hispanic/Latino			Non-English Learners vs. English Learners			Non-SWD vs. SWD		
		N-Count (Reference)	N-Count (Focal)	Flag	N-Count (Reference)	N-Count (Focal)	Flag	N-Count (Reference)	N-Count (Focal)	Flag	N-Count (Reference)	N-Count (Focal)	Flag	N-Count (Reference)	N-Count (Focal)	Flag
1	MC	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
2	MC	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
3	MX	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
4	XI	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
5	MX	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
6	MC	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
7	MX	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
8	MC	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
9	MX	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
10	MC	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
11	MX	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
12	MC	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
13	MC	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
14	XI	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
15	XI	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
16	MC	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
17	MX	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
18	MC	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
19	MX	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
20	MC	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
21	MC	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
22	MC	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
23	MC	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
24	MX	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
25	MX	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
26	MC	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
27	MX	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
28	MC	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
29	MX	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
30	MC	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
31	MC	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	B-	8668	1535	A

32	MC	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
33	MC	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
34	MX	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A
35	MX	5118	5085	A	4403	3181	A	4403	1783	A	9748	455	A	8668	1535	A

Table B.3. 2019 Biology ITA Differential Item Functioning Statistical Flags

Item	Item Type	Male vs. Female			White vs. Black/African-American			White vs. Hispanic/Latino			Non-English Learners vs. English Learners			Non-SWD vs. SWD		
		N-Count (Reference)	N-Count (Focal)	Flag	N-Count (Reference)	N-Count (Focal)	Flag	N-Count (Reference)	N-Count (Focal)	Flag	N-Count (Reference)	N-Count (Focal)	Flag	N-Count (Reference)	N-Count (Focal)	Flag
1	MC	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A
2	MC	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A
3	MX	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A
4	XI	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A
5	MC	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A
6	XI	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A
7	MC	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A
8	MX	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A
9	XI	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A
10	MX	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A
11	XI	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A
12	XI	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A
13	MC	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A
14	MC	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A
15	XI	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A
16	MX	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A
17	MC	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A
18	OE	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A
19	MC	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	B+	8700	1341	A
20	MC	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A
21	XI	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A
22	MC	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A
23	OE	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A
24	MC	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	C-	8700	1341	A
25	XI	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A
26	XI	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A
27	MC	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A
28	MX	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A
29	MC	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A
30	MX	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A
31	MX	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A

32	XI	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A
33	MC	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A
34	MX	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A
35	MC	5116	4925	A	4604	3037	A	4604	1625	A	9627	414	A	8700	1341	A

Appendix C: Item Level Rasch Statistics

Table C.1. 2019 Grade 5 ITA Rasch Difficulties, SEs, Steps, and Fit Statistics

Item	<i>b</i>	SE	Infit	Step 1	Step 2	Step 3	Step 4
1	-1.765	0.017	0.94	0.012	-3.542		
2	-0.157	0.020	1.11				
3	-0.733	0.020	0.91				
4	0.181	0.013	1.13	0.644	-0.282		
5	-0.104	0.020	0.96				
6	-0.571	0.020	0.96				
7	-0.174	0.020	1.04				
8	0.166	0.012	1.04	2.120	-1.788		
9	0.290	0.013	1.07	0.934	-0.354		
10	0.046	0.021	1.07				
11	-0.344	0.020	0.97				
12	-0.063	0.012	0.96	0.595	-0.721		
13	-0.239	0.020	0.90				
14	-1.114	0.021	0.89				
15	0.051	0.021	0.97				
16	1.610	0.015	0.96	0.771	1.279	1.967	2.424
17	0.595	0.022	1.10				
18	1.274	0.026	1.12				
19	0.406	0.021	1.11				
20	0.293	0.014	0.97	0.239	0.348		
21	0.578	0.016	0.99	-0.305	1.460		
22	-0.113	0.012	0.93	0.711	-0.937		
23	-0.068	0.013	0.88	0.120	-0.257		
24	0.307	0.014	1.05	-0.091	0.705		
25	0.032	0.016	1.02	-1.198	1.261		
26	-0.381	0.020	0.92				

Table C.2. 2019 Grade 8 ITA Rasch Difficulties, SEs, Steps, and Fit Statistics

Item	<i>b</i>	SE	Infit	Step 1	Step 2	Step 3	Step 4
1	-0.015	0.021	0.97				
2	0.017	0.021	1.06				
3	0.054	0.013	1.25	1.785	-1.677		
4	-0.535	0.016	0.94	-1.668	0.599		
5	1.071	0.018	0.91	1.369	0.773		
6	-1.373	0.022	0.95				
7	0.070	0.013	1.15	2.865	-2.725		
8	-0.466	0.021	1.04				
9	0.398	0.015	1.20	0.580	0.217		
10	0.796	0.024	1.03				
11	0.048	0.013	1.07	0.347	-0.252		
12	-1.313	0.022	0.86				
13	-0.299	0.021	0.99				
14	0.794	0.020	0.84	-1.200	2.788		
15	0.803	0.017	0.91	0.233	1.373		
16	-0.548	0.021	0.86				
17	0.763	0.012	0.82	-0.020	0.231	1.228	1.615
18	0.095	0.021	0.98				
19	0.296	0.016	1.16	-0.559	1.152		
20	-0.767	0.021	0.85				
21	-0.194	0.021	0.78				
22	0.133	0.021	0.84				
23	-0.587	0.021	0.93				
24	0.747	0.017	0.97	-0.081	1.575		
25	-0.344	0.013	1.22	0.230	-0.918		
26	-0.988	0.021	0.92				
27	-0.191	0.013	0.98	0.256	-0.639		
28	-0.664	0.021	0.97				
29	0.879	0.017	1.17	-0.074	1.832		
30	-0.389	0.021	0.86				
31	-0.084	0.021	1.12				
32	1.133	0.026	0.98				
33	-0.475	0.021	1.03				
34	0.796	0.017	1.12	0.559	1.033		
35	0.340	0.014	1.30	0.829	-0.149		

Table C.3. 2019 Biology ITA Rasch Difficulties, SEs, Steps, and Fit Statistics

Item	<i>b</i>	SE	Infit	Step 1	Step 2	Step 3	Step 4
1	-0.800	0.022	1.04				
2	-0.685	0.022	0.97				
3	0.971	0.017	1.06	0.118	1.824		
4	-0.163	0.013	1.24	0.294	-0.620		
5	1.975	0.030	1.11				
6	-1.409	0.019	0.87	-2.980	0.163		
7	-1.973	0.028	0.89				
8	-0.669	0.014	0.77	-0.250	-1.088		
9	-0.506	0.022	1.09				
10	0.100	0.016	1.10	-0.728	0.929		
11	0.158	0.018	1.06	-1.317	1.632		
12	-0.627	0.019	0.99	-2.380	1.127		
13	0.497	0.022	1.23				
14	-0.359	0.022	0.96				
15	-1.391	0.025	0.89				
16	-0.262	0.013	0.82	1.548	-2.072		
17	0.852	0.023	0.99				
18	0.321	0.011	0.83	0.362	-0.449	1.049	
19	0.239	0.022	0.97				
20	-0.407	0.022	0.87				
21	-1.193	0.018	1.06	-2.416	0.030		
22	0.321	0.022	1.14				
23	0.775	0.017	0.88	-0.395	1.945		
24	-0.078	0.021	0.96				
25	1.136	0.017	0.97	0.938	1.335		
26	-0.429	0.022	0.89				
27	0.450	0.022	0.84				
28	0.395	0.013	0.93	1.730	-0.940		
29	0.287	0.022	1.06				
30	1.335	0.018	1.33	0.754	1.915		
31	0.754	0.015	1.28	1.234	0.273		
32	-0.640	0.014	0.84	-0.262	-1.019		
33	0.888	0.023	1.09				
34	0.124	0.013	0.82	0.607	-0.358		
35	0.010	0.021	1.02				

Appendix D: Conditional Standard Error of Measurement

**Table D.1. 2019 Online ITA Conditional Standard Error
of Measurement (CSEM) of Scale Score (SS)**

	Grade 5		Grade 8		Biology	
Raw	SS	CSEM	SS	CSEM	SS	CSEM
0	321		388		405	
1	392	59	439	42	449	36
2	433	42	469	30	475	26
3	457	35	487	25	492	22
4	474	31	500	22	504	19
5	489	28	511	20	514	18
6	501	27	520	18	522	16
7	512	25	527	17	530	15
8	522	24	534	16	536	14
9	531	23	540	15	541	14
10	540	22	546	15	547	13
11	548	21	551	14	551	12
12	555	21	555	14	555	12
13	562	20	560	13	559	12
14	569	20	564	13	563	11
15	575	19	568	13	567	11
16	581	19	572	12	570	11
17	587	19	575	12	573	10
18	593	19	579	12	576	10
19	599	19	582	12	579	10
20	604	19	585	11	582	10
21	610	19	588	11	585	10
22	616	19	591	11	588	10
23	622	19	594	11	591	10
24	627	19	597	11	593	10
25	634	19	600	11	596	10
26	640	20	603	11	599	10
27	646	20	606	11	601	10
28	653	21	609	11	604	10
29	661	21	612	11	607	10
30	668	22	615	11	609	10
31	677	23	618	11	612	10
32	686	24	621	11	615	10

	Grade 5		Grade 8		Biology	
Raw	SS	CSEM	SS	CSEM	SS	CSEM
33	696	25	625	11	618	10
34	707	27	628	12	620	10
35	720	29	631	12	623	10
36	735	32	635	12	626	10
37	753	36	638	12	630	11
38	779	43	642	13	633	11
39	821	61	646	13	636	11
40	894		650	13	640	11
41			654	14	644	12
42			659	14	648	12
43			664	15	652	12
44			669	15	657	13
45			675	16	662	14
46			681	17	668	14
47			689	18	674	15
48			698	20	682	17
49			708	22	691	18
50			721	25	702	21
51			740	31	717	25
52			771	42	742	35
53			822		784	

Notes:

CSEM at minimum and maximum scores left intentionally blank, because sufficient information is not available to accurately estimate these values.

Figure D.1. 2019 Grade 5 Online ITA CSEM by Scale Score Plot

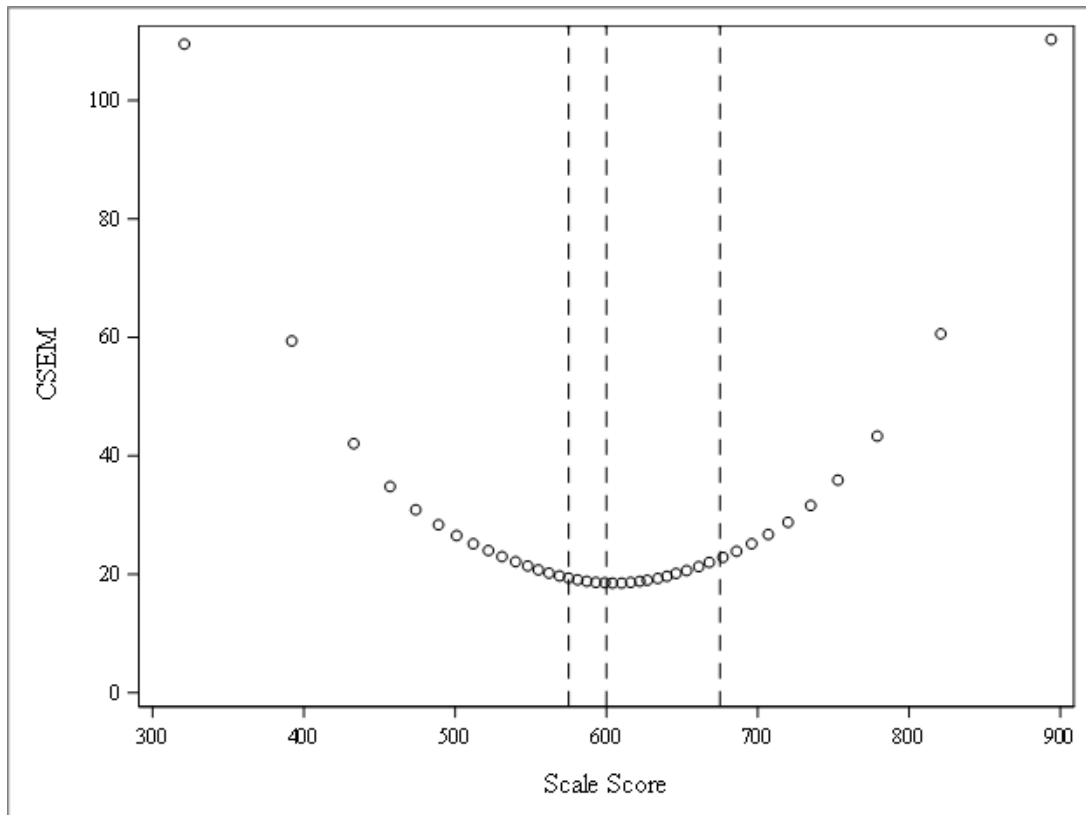


Figure D.2. 2019 Grade 8 Online ITA CSEM by Scale Score Plot

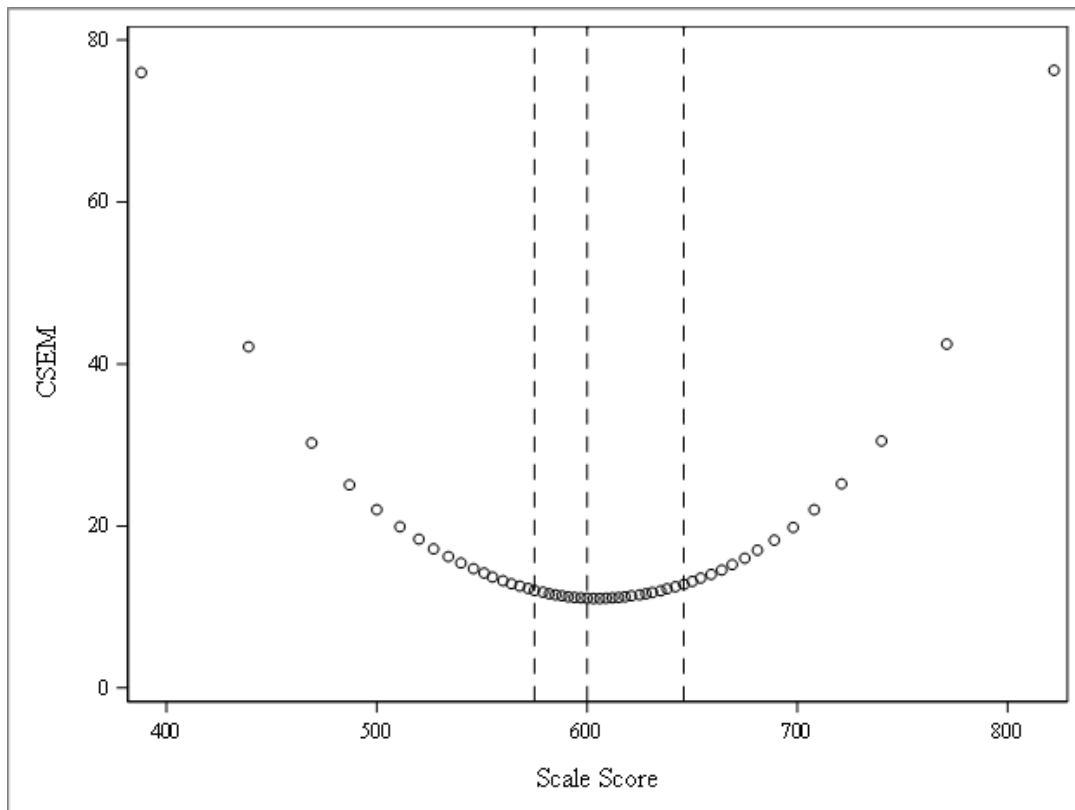
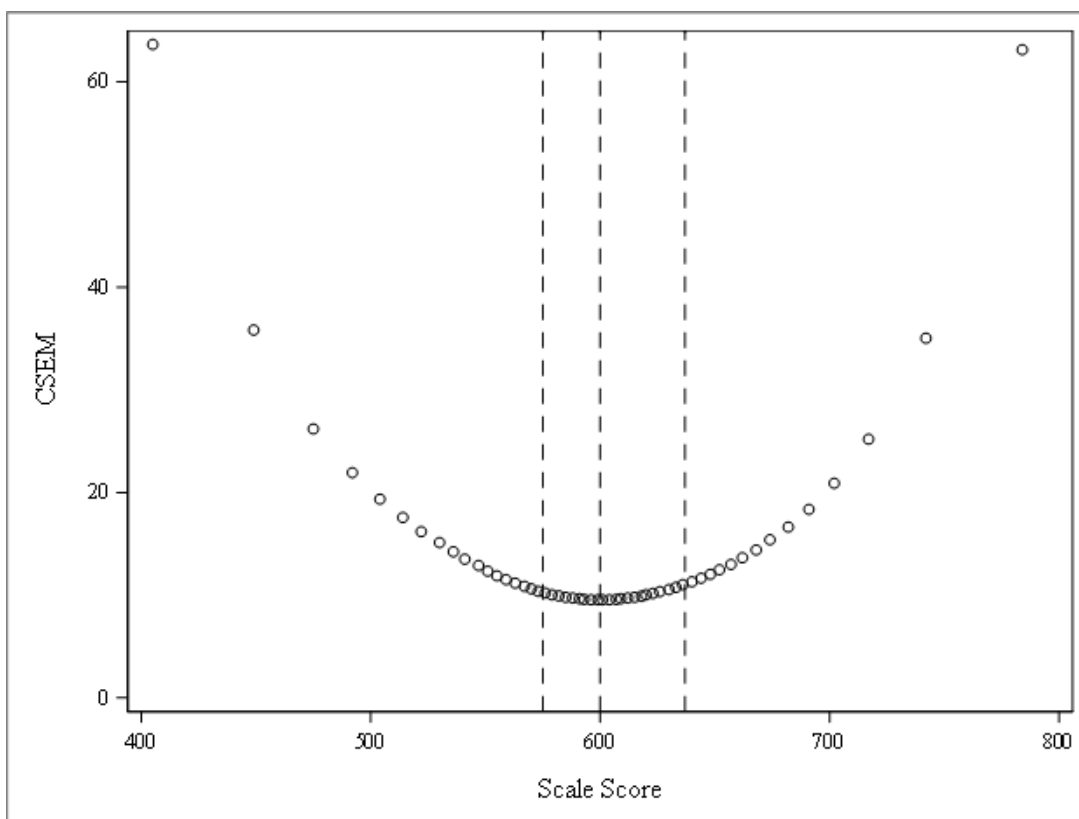
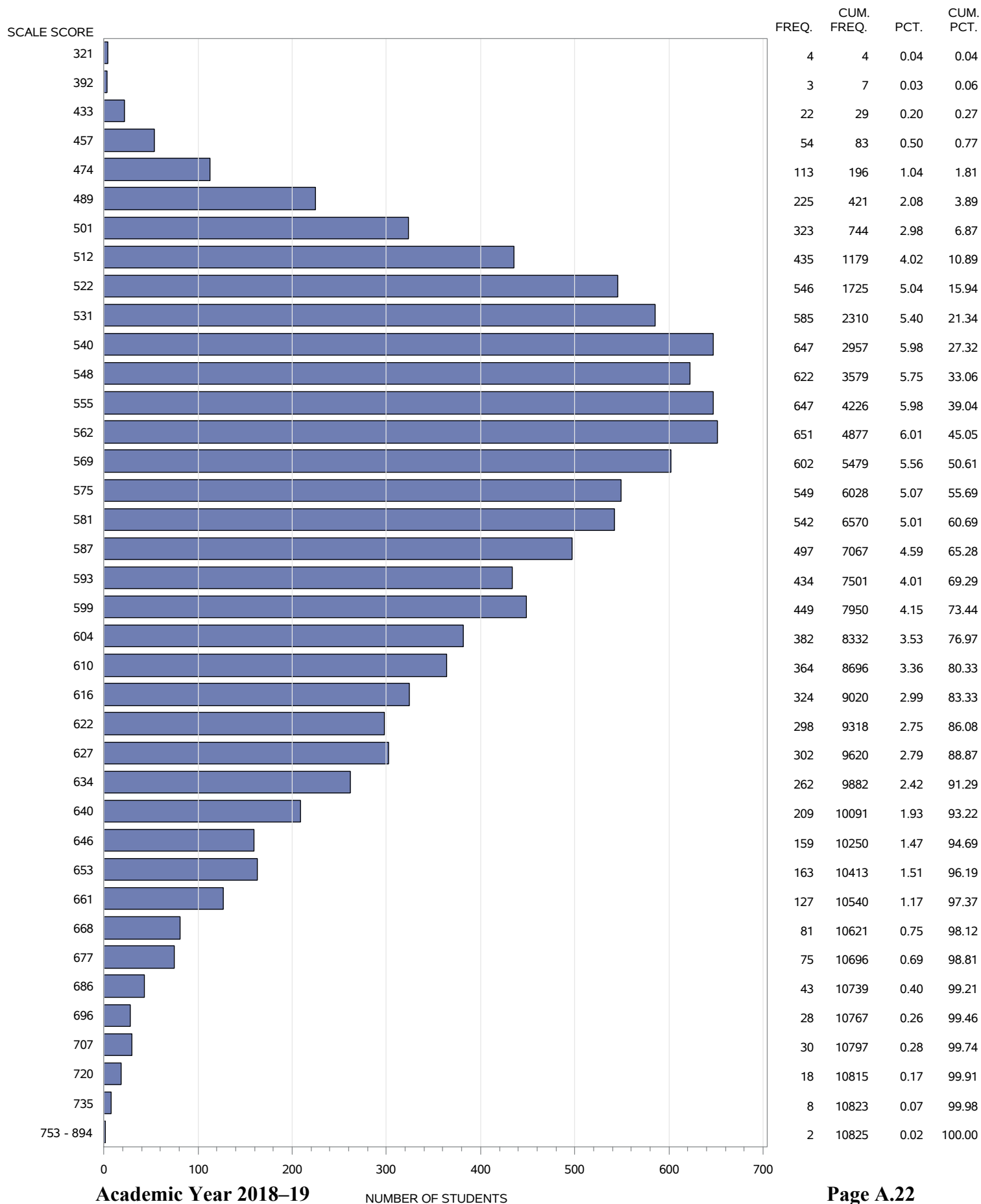


Figure D.3. 2019 Biology Online ITA CSEM by Scale Score Plot

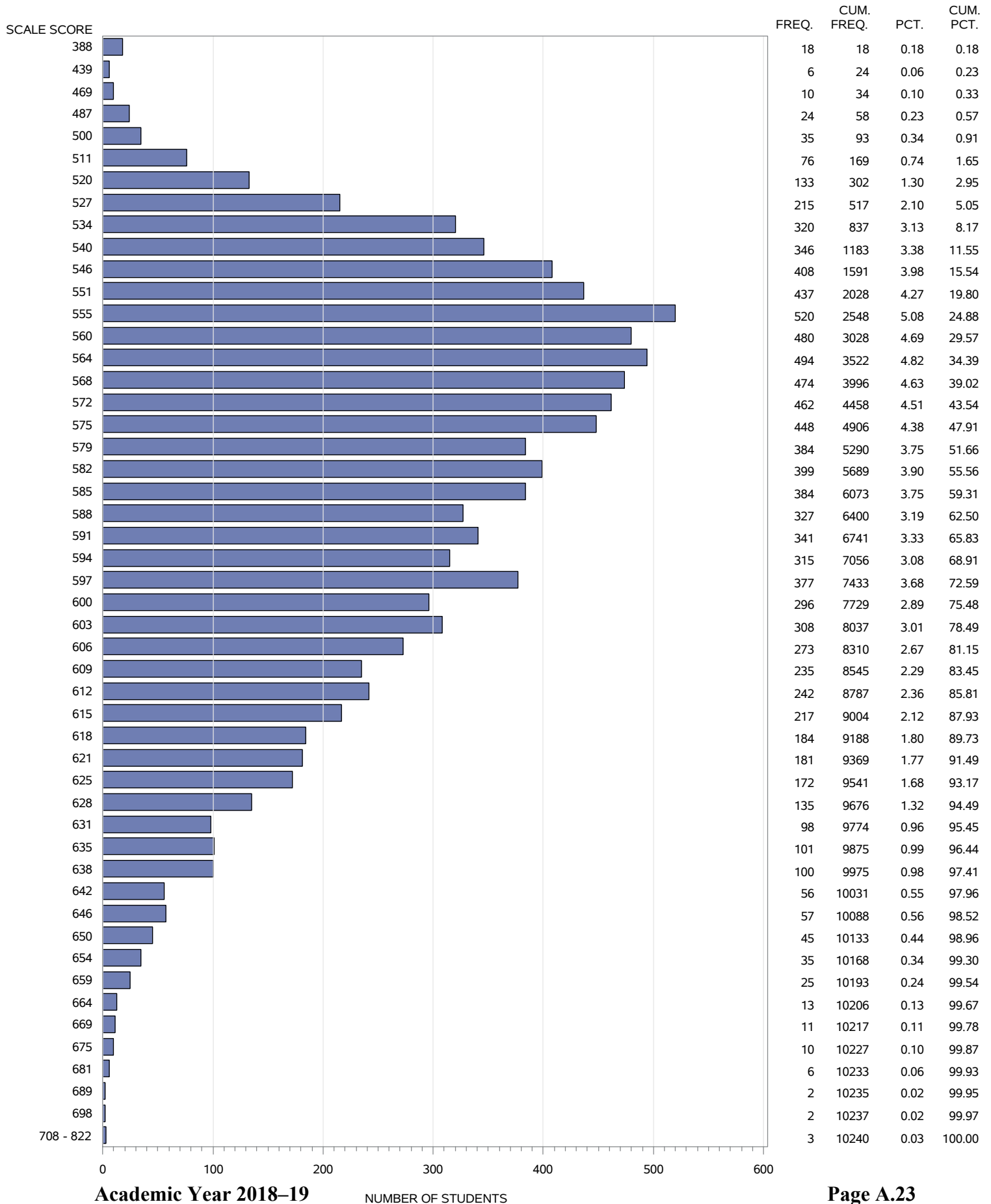


Appendix E: Frequency Distribution of Scale Scores

**Figure E.1. 2019 Grade 5 ITA
Frequency Distribution of Scale Scores
Online Students Only**



**Figure E.2. 2019 Grade 8 ITA
Frequency Distribution of Scale Scores
Online Students Only**



**Figure E.3. 2019 Biology ITA
Frequency Distribution of Scale Scores
Online Students Only**

