

APPENDIX J
RAW TO SCALED SCORE LOOK-UP TABLES

Table J-1. Raw to Scaled Score Look-Up Table—High School Biology

Raw Score	Theta	Information	SE (Scaled Score)	Scale Score		Achievement Levels	
				2021	2019	2021	2019
0	-12.649	0.000	10.000	200	200	1	1
1	-11.878	0.000	10.000	200	200	1	1
2	-11.107	0.000	10.000	202	200	1	1
3	-10.336	0.000	10.000	202	200	1	1
4	-9.565	0.000	10.000	204	200	1	1
5	-8.794	0.000	10.000	204	200	1	1
6	-8.023	0.001	10.000	206	200	1	1
7	-7.252	0.002	10.000	206	200	1	1
8	-6.481	0.006	10.000	208	200	1	1
9	-5.710	0.020	10.000	208	200	1	1
10	-4.939	0.066	10.000	210	200	1	1
11	-4.169	0.226	10.000	210	200	1	1
12	-3.272	0.956	5.517	212	204	1	1
13	-2.807	1.988	3.826	212	208	1	1
14	-2.511	3.119	3.054	214	210	1	1
15	-2.291	4.289	2.604	216	212	1	1
16	-2.114	5.461	2.308	216	214	1	1
17	-1.964	6.612	2.098	218	216	1	1
18	-1.833	7.724	1.941	218	218	1	1
19	-1.715	8.789	2.324	218	218	1	1
20	-1.607	9.800	3.005	220	220	2	2
21	-1.507	10.753	3.666	220	222	2	2
22	-1.413	11.643	4.312	220	224	2	2
23	-1.324	12.466	4.944	222	226	2	2
24	-1.239	13.218	5.567	224	228	2	2
25	-1.157	13.892	6.087	226	230	2	2
26	-1.077	14.487	5.961	228	232	2	2
27	-0.999	14.999	5.858	230	234	2	2
28	-0.923	15.431	5.776	232	236	2	2
29	-0.847	15.783	5.711	234	236	2	2
30	-0.773	16.060	5.560	236	238	2	2
31	-0.699	16.269	5.286	236	240	2	3
32	-0.625	16.412	5.023	238	242	2	3
33	-0.552	16.494	4.769	240	242	3	3
34	-0.478	16.515	4.523	242	244	3	3
35	-0.403	16.478	4.284	242	246	3	3
36	-0.328	16.380	4.052	244	246	3	3
37	-0.252	16.225	4.003	244	248	3	3
38	-0.175	16.014	4.030	246	250	3	3
39	-0.097	15.755	4.063	248	250	3	3

continued



Raw Score	Theta	Information	SE (Scaled Score)	Scale Score		Achievement Levels	
				2021	2019	2021	2019
40	-0.017	15.453	4.102	248	252	3	3
41	0.065	15.116	4.148	250	254	3	3
42	0.148	14.752	4.199	252	256	3	3
43	0.234	14.365	4.255	252	256	3	3
44	0.322	13.960	4.316	254	258	3	3
45	0.412	13.539	4.383	256	260	3	4
46	0.506	13.100	4.094	258	260	3	4
47	0.603	12.643	3.791	258	262	3	4
48	0.705	12.163	3.480	260	262	4	4
49	0.811	11.653	3.160	262	264	4	4
50	0.923	11.103	2.830	262	266	4	4
51	1.041	10.501	2.667	264	266	4	4
52	1.169	9.832	2.756	264	268	4	4
53	1.307	9.084	2.867	266	270	4	4
54	1.460	8.240	3.011	266	270	4	4
55	1.633	7.289	3.201	268	272	4	4
56	1.834	6.216	3.466	270	274	4	4
57	2.080	4.996	3.867	272	276	4	4
58	2.408	3.571	4.573	274	280	4	4
59	2.942	1.839	6.373	280	280	4	4
60	4.000	0.392	10.000	280	280	4	4

Note. Theta below -6 is truncated to -6.



Table J-2. Raw to Scaled Score Look-Up Table—High School Chemistry

Raw Score	Theta	Information	SE (Scaled Score)	Scale Score		Achievement Levels	
				2021	2019	2021	2019
0	-22.588	0.000	10.000	200	200	1	1
1	-20.425	0.000	10.000	200	200	1	1
2	-18.263	0.000	10.000	202	202	1	1
3	-16.100	0.000	10.000	202	202	1	1
4	-13.938	0.000	10.000	204	204	1	1
5	-11.775	0.001	10.000	204	204	1	1
6	-9.613	0.002	10.000	204	204	1	1
7	-7.450	0.009	10.000	206	206	1	1
8	-5.288	0.053	10.000	206	206	1	1
9	-3.076	0.703	5.405	206	206	1	1
10	-2.273	1.875	3.309	210	210	1	1
11	-1.870	2.970	2.629	212	212	1	1
12	-1.595	4.128	2.230	214	214	1	1
13	-1.385	5.400	1.950	214	214	1	1
14	-1.216	6.765	1.742	216	216	1	1
15	-1.072	8.183	1.584	216	216	1	1
16	-0.948	9.621	1.461	216	216	1	1
17	-0.837	11.053	1.363	216	216	1	1
18	-0.737	12.459	1.284	218	218	1	1
19	-0.645	13.826	1.219	218	218	1	1
20	-0.559	15.144	1.165	218	218	1	1
21	-0.478	16.403	1.119	218	218	1	1
22	-0.401	17.599	1.080	218	218	1	1
23	-0.328	18.725	1.627	220	220	2	2
24	-0.258	19.777	2.602	220	220	2	2
25	-0.189	20.753	3.559	220	220	2	2
26	-0.123	21.651	4.501	220	220	2	2
27	-0.059	22.471	5.431	222	222	2	2
28	0.005	23.213	6.351	224	224	2	2
29	0.067	23.878	7.265	228	226	2	2
30	0.128	24.468	7.233	230	228	2	2
31	0.189	24.983	7.158	232	230	2	2
32	0.249	25.423	7.003	234	232	2	2
33	0.309	25.788	6.713	236	234	2	2
34	0.369	26.075	6.433	238	238	2	2
35	0.429	26.279	6.164	240	240	3	3
36	0.489	26.396	5.905	242	240	3	3
37	0.549	26.421	5.655	244	242	3	3
38	0.610	26.348	5.415	246	244	3	3
39	0.671	26.170	5.392	246	246	3	3
40	0.734	25.886	5.422	248	248	3	3
41	0.797	25.491	5.464	250	250	3	3
42	0.862	24.986	5.519	252	250	3	3
43	0.928	24.373	5.588	254	252	3	3
44	0.996	23.655	5.237	256	254	3	3

continued



Raw Score	Theta	Information	SE (Scaled Score)	Scale Score		Achievement Levels	
				2021	2019	2021	2019
45	1.067	22.840	4.717	258	256	3	3
46	1.139	21.936	4.188	260	258	4	3
47	1.215	20.956	3.648	260	260	4	4
48	1.294	19.913	3.093	262	262	4	4
49	1.377	18.824	2.521	262	262	4	4
50	1.464	17.705	2.569	264	262	4	4
51	1.557	16.569	2.656	264	264	4	4
52	1.656	15.420	2.753	266	266	4	4
53	1.763	14.240	2.865	266	266	4	4
54	1.881	12.982	3.000	268	268	4	4
55	2.013	11.561	3.180	270	270	4	4
56	2.166	9.859	3.443	270	270	4	4
57	2.355	7.753	3.883	274	274	4	4
58	2.616	5.173	4.753	276	276	4	4
59	3.080	2.241	7.221	280	280	4	4
60	4.000	0.429	10.000	280	280	4	4

Note. Theta below -6 is truncated to -6.



Table J-3. Raw to Scaled Score Look-Up Table—High School Introductory Physics

Raw Score	Theta	Information	SE (Scaled Score)	Scale Score		Achievement Levels	
				2021	2019	2021	2019
0	-11.156	0.000	10.000	200	200	1	1
1	-10.439	0.000	10.000	200	200	1	1
2	-9.721	0.000	10.000	202	200	1	1
3	-9.003	0.001	10.000	202	200	1	1
4	-8.285	0.001	10.000	204	200	1	1
5	-7.567	0.003	10.000	204	200	1	1
6	-6.850	0.007	10.000	206	200	1	1
7	-6.132	0.019	10.000	206	200	1	1
8	-5.414	0.051	10.000	208	200	1	1
9	-4.696	0.152	10.000	208	200	1	1
10	-3.955	0.501	8.496	210	200	1	1
11	-3.160	1.752	4.545	210	204	1	1
12	-2.779	3.032	3.454	212	208	1	1
13	-2.518	4.298	2.901	214	210	1	1
14	-2.317	5.534	2.557	214	212	1	1
15	-2.151	6.720	2.320	216	214	1	1
16	-2.009	7.842	2.148	216	216	1	1
17	-1.883	8.892	2.017	218	216	1	1
18	-1.770	9.871	1.914	218	218	1	1
19	-1.666	10.786	2.115	218	218	1	1
20	-1.569	11.649	2.834	218	220	1	2
21	-1.478	12.473	3.524	220	222	2	2
22	-1.392	13.269	4.189	220	224	2	2
23	-1.310	14.045	4.830	222	226	2	2
24	-1.232	14.808	5.451	224	228	2	2
25	-1.156	15.558	6.055	226	230	2	2
26	-1.083	16.295	6.073	228	232	2	2
27	-1.011	17.014	5.943	230	232	2	2
28	-0.942	17.710	5.826	232	234	2	2
29	-0.874	18.374	5.719	232	236	2	2
30	-0.807	19.000	5.624	234	238	2	2
31	-0.741	19.579	5.392	236	240	2	3
32	-0.676	20.106	5.168	238	242	2	3
33	-0.612	20.573	4.955	240	242	3	3
34	-0.547	20.973	4.753	240	244	3	3
35	-0.483	21.303	4.560	242	246	3	3
36	-0.419	21.557	4.377	244	246	3	3
37	-0.355	21.733	4.217	244	248	3	3
38	-0.291	21.827	4.208	246	250	3	3
39	-0.225	21.839	4.207	246	250	3	3
40	-0.159	21.770	4.214	248	252	3	3
41	-0.092	21.618	4.228	250	254	3	3
42	-0.024	21.387	4.251	250	256	3	3
43	0.046	21.078	4.282	252	256	3	3
44	0.118	20.691	4.322	254	258	3	3

continued



Raw Score	Theta	Information	SE (Scaled Score)	Scale Score		Achievement Levels	
				2021	2019	2021	2019
45	0.191	20.229	4.371	256	260	3	4
46	0.267	19.691	4.124	256	260	3	4
47	0.346	19.075	3.706	258	262	3	4
48	0.429	18.380	3.278	260	262	4	4
49	0.515	17.602	2.837	260	262	4	4
50	0.606	16.736	2.382	262	264	4	4
51	0.702	15.775	1.968	262	264	4	4
52	0.806	14.712	2.038	262	266	4	4
53	0.919	13.532	2.125	264	266	4	4
54	1.044	12.216	2.236	264	268	4	4
55	1.184	10.734	2.385	266	270	4	4
56	1.348	9.049	2.598	268	270	4	4
57	1.551	7.118	2.929	268	272	4	4
58	1.823	4.908	3.528	270	276	4	4
59	2.277	2.436	5.007	274	280	4	4
60	4.000	0.149	10.000	280	280	4	4

Note. Theta below -6 is truncated to -6.



Table J-4. Raw to Scaled Score Look-Up Table—High School Technology/Engineering

Raw Score	Theta	Information	SE (Scaled Score)	Scale Score		Achievement Levels	
				2021	2019	2021	2019
0	-4.229	0.254	10.000	200	200	1	1
1	-2.818	2.626	4.548	202	202	1	1
2	-2.391	5.072	3.272	206	206	1	1
3	-2.133	7.353	2.718	206	208	1	1
4	-1.944	9.481	2.394	208	208	1	1
5	-1.792	11.466	2.177	210	210	1	1
6	-1.665	13.318	2.019	210	210	1	1
7	-1.554	15.047	1.900	212	212	1	1
8	-1.454	16.660	1.806	212	212	1	1
9	-1.364	18.164	1.729	212	212	1	1
10	-1.281	19.564	1.666	214	214	1	1
11	-1.204	20.866	1.613	214	214	1	1
12	-1.131	22.074	1.569	214	214	1	1
13	-1.062	23.192	1.530	214	216	1	1
14	-0.996	24.223	1.497	216	216	1	1
15	-0.933	25.170	1.469	216	216	1	1
16	-0.872	26.034	1.444	216	216	1	1
17	-0.813	26.818	1.423	216	218	1	1
18	-0.756	27.523	1.405	218	218	1	1
19	-0.701	28.150	1.389	218	218	1	1
20	-0.646	28.701	1.376	218	218	1	1
21	-0.593	29.174	1.364	218	218	1	1
22	-0.540	29.572	1.493	218	220	1	2
23	-0.488	29.894	2.197	220	220	2	2
24	-0.437	30.141	2.898	220	220	2	2
25	-0.386	30.312	3.599	220	220	2	2
26	-0.335	30.408	4.300	222	222	2	2
27	-0.284	30.428	5.005	222	224	2	2
28	-0.234	30.373	5.713	224	226	2	2
29	-0.183	30.242	6.414	226	228	2	2
30	-0.132	30.036	6.436	228	230	2	2
31	-0.081	29.755	6.466	230	232	2	2
32	-0.029	29.398	6.506	232	234	2	2
33	0.023	28.967	6.489	234	236	2	2
34	0.076	28.461	6.080	236	238	2	2
35	0.130	27.882	5.672	238	240	2	3
36	0.185	27.230	5.263	240	240	3	3
37	0.241	26.506	4.852	240	242	3	3
38	0.299	25.712	4.439	242	242	3	3
39	0.358	24.850	4.022	242	244	3	3
40	0.419	23.921	3.721	244	244	3	3
41	0.483	22.930	3.800	246	246	3	3
42	0.549	21.881	3.890	246	248	3	3
43	0.618	20.777	3.992	248	248	3	3
44	0.691	19.625	4.108	248	250	3	3
45	0.768	18.431	4.239	250	252	3	3

continued



Raw Score	Theta	Information	SE (Scaled Score)	Scale Score		Achievement Levels	
				2021	2019	2021	2019
46	0.849	17.205	4.387	252	252	3	3
47	0.935	15.956	4.556	254	254	3	3
48	1.028	14.695	4.747	256	256	3	3
49	1.128	13.433	4.641	256	258	3	3
50	1.236	12.184	4.496	258	260	3	4
51	1.355	10.956	4.348	260	262	4	4
52	1.486	9.759	4.196	262	262	4	4
53	1.632	8.597	4.041	264	264	4	4
54	1.797	7.471	4.304	266	266	4	4
55	1.986	6.384	4.656	268	268	4	4
56	2.208	5.336	5.093	270	272	4	4
57	2.478	4.316	5.663	274	274	4	4
58	2.827	3.260	6.516	278	278	4	4
59	3.353	1.964	8.394	280	280	4	4
60	4.000	0.858	10.000	280	280	4	4

Note. Theta below -6 is truncated to -6.