

## APPENDIX 15: RAW-TO-SCALE SCORE TABLES

Table 15–1. Grade 4—Overall Test

Raw Score	Scale Score	SS SE	Frequency	Frequency Percent	Cumulative Frequency	Cumulative Percent
0	100	106	0	0.00	0	0.00
1	100	59	0	0.00	0	0.00
2	100	43	2	0.02	2	0.02
3	100	36	0	0.00	2	0.02
4	100	32	1	0.01	3	0.03
5	101	29	2	0.02	5	0.05
6	114	27	2	0.02	7	0.07
7	126	25	5	0.05	12	0.13
8	136	24	15	0.16	27	0.29
9	145	23	18	0.19	45	0.48
10	154	22	42	0.45	87	0.93
11	162	21	47	0.50	134	1.43
12	170	21	77	0.82	211	2.25
13	177	20	89	0.95	300	3.20
14	184	20	105	1.12	405	4.32
15	190	19	117	1.25	522	5.56
16	197	19	126	1.34	648	6.91
17	203	19	169	1.80	817	8.71
18	209	18	162	1.73	979	10.43
19	214	18	169	1.80	1148	12.23
20	220	18	194	2.07	1342	14.30
21	226	18	191	2.04	1533	16.34
22	231	18	231	2.46	1764	18.80
23	237	18	237	2.53	2001	21.33
24	242	18	214	2.28	2215	23.61
25	248	18	228	2.43	2443	26.04
26	253	18	249	2.65	2692	28.69
27	258	18	252	2.69	2944	31.38
28	264	18	284	3.03	3228	34.40
29	269	18	255	2.72	3483	37.12
30	275	18	296	3.15	3779	40.27
31	281	18	298	3.18	4077	43.45
32	287	18	308	3.28	4385	46.73
33	292	19	334	3.56	4719	50.29
34	299	19	315	3.36	5034	53.65
35	305	19	327	3.49	5361	57.14
36	311	20	377	4.02	5738	61.15
37	318	20	372	3.96	6110	65.12
38	325	21	336	3.58	6446	68.70
39	333	21	434	4.63	6880	73.32
40	341	22	348	3.71	7228	77.03
41	350	23	351	3.74	7579	80.77

**Table 15–1 (continued). Grade 4—Overall Test**

Raw Score	Scale Score	SS SE	Frequency	Frequency Percent	Cumulative Frequency	Cumulative Percent
42	359	24	344	3.67	7923	84.44
43	369	25	331	3.53	8254	87.97
44	381	27	271	2.89	8525	90.86
45	394	29	264	2.81	8789	93.67
46	410	32	220	2.34	9009	96.01
47	430	36	193	2.06	9202	98.07
48	456	43	112	1.19	9314	99.26
49	500	60	57	0.61	9371	99.87
50	572	106	12	0.13	9383	100.00

**Table 15–2. Grade 4—Inquiry, Technology, and Nature of Science**

Raw Score	Scale Score	SS SE	Frequency	Frequency Percent	Cumulative Frequency	Cumulative Percent
0	100	108	2	0.02	2	0.02
1	100	62	19	0.20	21	0.22
2	101	46	30	0.32	51	0.54
3	132	39	81	0.86	132	1.41
4	155	34	172	1.83	304	3.24
5	174	32	210	2.24	514	5.48
6	190	30	299	3.19	813	8.66
7	205	29	374	3.99	1187	12.65
8	219	28	408	4.35	1595	17.00
9	232	27	425	4.53	2020	21.53
10	244	27	511	5.45	2531	26.97
11	257	27	534	5.69	3065	32.67
12	269	27	582	6.20	3647	38.87
13	282	27	694	7.40	4341	46.26
14	295	28	708	7.55	5049	53.81
15	309	29	742	7.91	5791	61.72
16	324	30	812	8.65	6603	70.37
17	341	32	774	8.25	7377	78.62
18	361	35	704	7.50	8081	86.12
19	385	39	572	6.10	8653	92.22
20	416	46	447	4.76	9100	96.98
21	464	62	225	2.40	9325	99.38
22	541	108	58	0.62	9383	100.00

**Table 15–3. Grade 4—Concepts of Physical Science**

Raw Score	Scale Score	SS SE	Frequency	Frequency Percent	Cumulative Frequency	Cumulative Percent
0	100	108	65	0.69	65	0.69
1	115	63	244	2.60	309	3.29
2	166	49	567	6.04	876	9.34
3	202	44	808	8.61	1684	17.95
4	235	43	1102	11.74	2786	29.69
5	267	44	1371	14.61	4157	44.30
6	305	49	1595	17.00	5752	61.30
7	358	64	1851	19.73	7603	81.03
8	436	109	1780	18.97	9383	100.00

**Table 15–4. Grade 4—Concepts of Life Science**

Raw Score	Scale Score	SS SE	Frequency	Frequency Percent	Cumulative Frequency	Cumulative Percent
0	100	109	6	0.06	6	0.06
1	100	64	39	0.42	45	0.48
2	123	50	131	1.40	176	1.88
3	161	45	297	3.17	473	5.04
4	194	42	602	6.42	1075	11.46
5	224	42	929	9.90	2004	21.36
6	255	42	1435	15.29	3439	36.65
7	287	44	1723	18.36	5162	55.01
8	325	49	1775	18.92	6937	73.93
9	378	63	1590	16.95	8527	90.88
10	455	108	856	9.12	9383	100.00

**Table 15–5. Grade 4—Concepts of Earth Science**

Raw Score	Scale Score	SS SE	Frequency	Frequency Percent	Cumulative Frequency	Cumulative Percent
0	100	107	45	0.48	45	0.48
1	126	61	175	1.87	220	2.34
2	174	46	449	4.79	669	7.13
3	206	41	791	8.43	1460	15.56
4	233	38	1017	10.84	2477	26.40
5	258	38	1118	11.92	3595	38.31
6	283	39	1250	13.32	4845	51.64
7	310	41	1265	13.48	6110	65.12
8	343	47	1287	13.72	7397	78.83
9	393	62	1229	13.10	8626	91.93
10	468	108	757	8.07	9383	100.00

**Table 15–6. Grade 8—Overall Test**

<b>Raw Score</b>	<b>Scale Score</b>	<b>SS SE</b>	<b>Frequency</b>	<b>Frequency Percent</b>	<b>Cumulative Frequency</b>	<b>Cumulative Percent</b>
0	100	121	0	0.00	0	0.00
1	100	67	1	0.01	1	0.01
2	100	48	0	0.00	1	0.01
3	100	40	0	0.00	1	0.01
4	100	35	0	0.00	1	0.01
5	100	32	1	0.01	2	0.02
6	100	29	3	0.03	5	0.05
7	108	28	2	0.02	7	0.08
8	119	26	3	0.03	10	0.11
9	129	25	9	0.10	19	0.21
10	139	24	11	0.12	30	0.33
11	147	23	13	0.14	43	0.47
12	155	23	29	0.32	72	0.79
13	163	22	48	0.52	120	1.31
14	170	21	52	0.57	172	1.88
15	177	21	53	0.58	225	2.46
16	183	21	75	0.82	300	3.28
17	190	20	91	0.99	391	4.28
18	196	20	87	0.95	478	5.23
19	202	20	91	0.99	569	6.22
20	208	20	104	1.14	673	7.36
21	213	19	154	1.68	827	9.04
22	219	19	134	1.47	961	10.51
23	224	19	146	1.60	1107	12.10
24	230	19	166	1.82	1273	13.92
25	235	19	174	1.90	1447	15.82
26	241	19	153	1.67	1600	17.49
27	246	19	172	1.88	1772	19.37
28	251	19	200	2.19	1972	21.56
29	257	19	201	2.20	2173	23.76
30	262	19	188	2.06	2361	25.81
31	267	19	215	2.35	2576	28.17
32	272	19	221	2.42	2797	30.58
33	278	19	230	2.51	3027	33.10
34	283	19	255	2.79	3282	35.88
35	288	19	257	2.81	3539	38.69
36	294	19	299	3.27	3838	41.96
37	299	19	289	3.16	4127	45.12
38	305	19	288	3.15	4415	48.27
39	310	19	272	2.97	4687	51.25
40	316	19	315	3.44	5002	54.69
41	322	20	305	3.33	5307	58.03
42	328	20	292	3.19	5599	61.22
43	334	20	302	3.30	5901	64.52
44	340	20	309	3.38	6210	67.90
45	346	21	304	3.32	6514	71.22

**Table 15–6 (continued). Grade 8—Overall Test**

Raw Score	Scale Score	SS SE	Frequency	Frequency Percent	Cumulative Frequency	Cumulative Percent
46	353	21	279	3.05	6793	74.27
47	360	21	301	3.29	7094	77.56
48	367	22	293	3.20	7387	80.77
49	374	22	254	2.78	7641	83.54
50	382	23	219	2.39	7860	85.94
51	390	23	222	2.43	8082	88.37
52	398	24	217	2.37	8299	90.74
53	408	25	200	2.19	8499	92.93
54	417	26	154	1.68	8653	94.61
55	428	28	147	1.61	8800	96.22
56	441	29	123	1.34	8923	97.56
57	455	32	80	0.87	9003	98.44
58	472	35	62	0.68	9065	99.11
59	493	40	49	0.54	9114	99.65
60	521	48	23	0.25	9137	99.90
61	569	67	8	0.09	9145	99.99
62	600	121	1	0.01	9146	100.00

**Table 15–7. Grade 8—Inquiry and Nature of Science**

Raw Score	Scale Score	SS SE	Frequency	Frequency Percent	Cumulative Frequency	Cumulative Percent
0	100	122	2	0.02	2	0.02
1	100	68	14	0.15	16	0.17
2	100	50	42	0.46	58	0.63
3	125	43	74	0.81	132	1.44
4	150	39	167	1.83	299	3.27
5	171	36	208	2.27	507	5.54
6	190	34	279	3.05	786	8.59
7	207	33	359	3.93	1145	12.52
8	223	33	393	4.30	1538	16.82
9	239	32	419	4.58	1957	21.40
10	255	32	502	5.49	2459	26.89
11	271	33	592	6.47	3051	33.36
12	288	33	704	7.70	3755	41.06
13	305	34	771	8.43	4526	49.49
14	323	36	864	9.45	5390	58.93
15	344	38	941	10.29	6331	69.22
16	367	40	920	10.06	7251	79.28
17	394	45	779	8.52	8030	87.80
18	430	52	622	6.80	8652	94.60
19	483	69	356	3.89	9008	98.49
20	566	121	138	1.51	9146	100.00

**Table 15–8. Grade 8—Concepts of Physical Science**

Raw Score	Scale Score	SS SE	Frequency	Frequency Percent	Cumulative Frequency	Cumulative Percent
0	100	122	7	0.08	7	0.08
1	100	70	52	0.57	59	0.65
2	153	53	161	1.76	220	2.41
3	189	46	405	4.43	625	6.83
4	219	42	646	7.06	1271	13.90
5	244	40	869	9.50	2140	23.40
6	269	39	1045	11.43	3185	34.82
7	292	39	1182	12.92	4367	47.75
8	315	39	1175	12.85	5542	60.59
9	339	40	1017	11.12	6559	71.71
10	363	41	827	9.04	7386	80.76
11	389	43	696	7.61	8082	88.37
12	420	48	519	5.67	8601	94.04
13	467	65	342	3.74	8943	97.78
14	544	119	203	2.22	9146	100.00

**Table 15–9. Grade 8—Concepts of Life Science**

Raw Score	Scale Score	SS SE	Frequency	Frequency Percent	Cumulative Frequency	Cumulative Percent
0	100	123	8	0.09	8	0.09
1	100	71	21	0.23	29	0.32
2	110	53	97	1.06	126	1.38
3	146	45	164	1.79	290	3.17
4	174	41	292	3.19	582	6.36
5	199	39	353	3.86	935	10.22
6	220	37	504	5.51	1439	15.73
7	241	36	655	7.16	2094	22.90
8	261	36	771	8.43	2865	31.33
9	281	37	823	9.00	3688	40.32
10	302	37	940	10.28	4628	50.60
11	324	39	1030	11.26	5658	61.86
12	349	42	1057	11.56	6715	73.42
13	378	47	1007	11.01	7722	84.43
14	417	55	791	8.65	8513	93.08
15	476	73	469	5.13	8982	98.21
16	567	125	164	1.79	9146	100.00

**Table 15–10. Grade 8—Concepts of Earth Science**

Raw Score	Scale Score	SS SE	Frequency	Frequency Percent	Cumulative Frequency	Cumulative Percent
0	100	123	10	0.11	10	0.11
1	100	71	49	0.54	59	0.65
2	138	54	179	1.96	238	2.60
3	177	48	347	3.79	585	6.40
4	209	45	596	6.52	1181	12.91
5	238	43	936	10.23	2117	23.15
6	267	43	1161	12.69	3278	35.84
7	295	44	1393	15.23	4671	51.07
8	325	45	1363	14.90	6034	65.97
9	358	49	1280	14.00	7314	79.97
10	399	56	1023	11.19	8337	91.15
11	458	72	614	6.71	8951	97.87
12	547	124	195	2.13	9146	100.00

**Table 15–11. Grade 10—Overall Test**

Raw Score	Scale Score	SS SE	Frequency	Frequency Percent	Cumulative Frequency	Cumulative Percent
0	100	128	0	0.00	0	0.00
1	100	71	0	0.00	0	0.00
2	100	51	0	0.00	0	0.00
3	100	43	1	0.01	1	0.01
4	100	38	1	0.01	2	0.02
5	100	34	2	0.02	4	0.05
6	100	32	2	0.02	6	0.07
7	112	30	2	0.02	8	0.09
8	124	28	6	0.07	14	0.16
9	135	27	6	0.07	20	0.23
10	145	26	16	0.18	36	0.41
11	154	25	22	0.25	58	0.66
12	163	24	33	0.37	91	1.03
13	171	24	44	0.50	135	1.53
14	179	23	59	0.67	194	2.19
15	186	22	65	0.73	259	2.93
16	193	22	75	0.85	334	3.78
17	200	22	83	0.94	417	4.72
18	207	21	82	0.93	499	5.64
19	213	21	128	1.45	627	7.09
20	220	21	111	1.26	738	8.34
21	226	21	138	1.56	876	9.91
22	232	20	161	1.82	1037	11.73
23	238	20	133	1.50	1170	13.23
24	244	20	160	1.81	1330	15.04
25	249	20	184	2.08	1514	17.12
26	255	20	204	2.31	1718	19.43

**Table 15–11 (continued). Grade 10—Overall Test**

<b>Raw Score</b>	<b>Scale Score</b>	<b>SS SE</b>	<b>Frequency</b>	<b>Frequency Percent</b>	<b>Cumulative Frequency</b>	<b>Cumulative Percent</b>
27	261	20	173	1.96	1891	21.38
28	266	20	207	2.34	2098	23.72
29	272	20	231	2.61	2329	26.33
30	278	20	202	2.28	2531	28.62
31	283	20	233	2.63	2764	31.25
32	289	20	230	2.60	2994	33.85
33	294	20	286	3.23	3280	37.09
34	300	20	257	2.91	3537	39.99
35	306	20	239	2.70	3776	42.70
36	311	20	261	2.95	4037	45.65
37	317	20	295	3.34	4332	48.98
38	323	20	274	3.10	4606	52.08
39	329	20	300	3.39	4906	55.47
40	335	20	276	3.12	5182	58.59
41	341	21	305	3.45	5487	62.04
42	347	21	293	3.31	5780	65.36
43	353	21	297	3.36	6077	68.71
44	360	21	283	3.20	6360	71.91
45	366	22	286	3.23	6646	75.15
46	373	22	274	3.10	6920	78.25
47	380	22	308	3.48	7228	81.73
48	388	23	263	2.97	7491	84.70
49	396	23	204	2.31	7695	87.01
50	404	24	194	2.19	7889	89.20
51	412	25	189	2.14	8078	91.34
52	421	26	175	1.98	8253	93.32
53	431	26	120	1.36	8373	94.67
54	442	27	122	1.38	8495	96.05
55	453	29	104	1.18	8599	97.23
56	465	30	95	1.07	8694	98.30
57	479	32	66	0.75	8760	99.05
58	494	34	32	0.36	8792	99.41
59	512	36	24	0.27	8816	99.68
60	532	40	15	0.17	8831	99.85
61	558	45	8	0.09	8839	99.94
62	591	53	4	0.05	8843	99.99
63	600	72	1	0.01	8844	100.00
64	600	128	0	0.00	8844	100.00

**Table 15–12. Grade 10—Inquiry, Technology, Society, and Nature of Science**

Raw Score	Scale Score	SS SE	Frequency	Frequency Percent	Cumulative Frequency	Cumulative Percent
0	100	129	2	0.02	2	0.02
1	100	73	12	0.14	14	0.16
2	100	54	44	0.50	58	0.66
3	118	46	82	0.93	140	1.58
4	145	41	144	1.63	284	3.21
5	168	39	176	1.99	460	5.20
6	188	37	246	2.78	706	7.98
7	207	36	336	3.80	1042	11.78
8	225	35	365	4.13	1407	15.91
9	242	34	460	5.20	1867	21.11
10	259	34	490	5.54	2357	26.65
11	276	34	539	6.09	2896	32.75
12	293	35	569	6.43	3465	39.18
13	311	36	617	6.98	4082	46.16
14	330	37	707	7.99	4789	54.15
15	350	38	742	8.39	5531	62.54
16	373	41	838	9.48	6369	72.01
17	400	46	930	10.52	7299	82.53
18	437	56	830	9.38	8129	91.92
19	498	77	591	6.68	8720	98.60
20	595	133	124	1.40	8844	100.00

**Table 15–13. Grade 10—Concepts of Physical Science**

Raw Score	Scale Score	SS SE	Frequency	Frequency Percent	Cumulative Frequency	Cumulative Percent
0	100	129	10	0.11	10	0.11
1	127	73	96	1.09	106	1.20
2	183	55	283	3.20	389	4.40
3	219	47	552	6.24	941	10.64
4	248	43	850	9.61	1791	20.25
5	274	41	1027	11.61	2818	31.86
6	298	40	1105	12.49	3923	44.36
7	321	40	1134	12.82	5057	57.18
8	345	41	1118	12.64	6175	69.82
9	370	43	959	10.84	7134	80.66
10	398	46	749	8.47	7883	89.13
11	431	51	525	5.94	8408	95.07
12	475	60	301	3.40	8709	98.47
13	543	80	107	1.21	8816	99.68
14	600	134	28	0.32	8844	100.00

**Table 15–14. Grade 10—Concepts of Life Science**

Raw Score	Scale Score	SS SE	Frequency	Frequency Percent	Cumulative Frequency	Cumulative Percent
0	100	132	4	0.05	4	0.05
1	100	77	27	0.31	31	0.35
2	120	58	115	1.30	146	1.65
3	161	50	242	2.74	388	4.39
4	194	45	410	4.64	798	9.02
5	222	43	553	6.25	1351	15.28
6	248	42	746	8.44	2097	23.71
7	273	42	950	10.74	3047	34.45
8	298	43	1099	12.43	4146	46.88
9	326	45	1215	13.74	5361	60.62
10	357	48	1233	13.94	6594	74.56
11	393	53	1057	11.95	7651	86.51
12	438	60	715	8.08	8366	94.60
13	501	75	356	4.03	8722	98.62
14	590	128	122	1.38	8844	100.00

**Table 15–15. Grade 10—Concepts of Earth Science**

Raw Score	Scale Score	SS SE	Frequency	Frequency Percent	Cumulative Frequency	Cumulative Percent
0	100	130	9	0.10	9	0.10
1	100	75	35	0.40	44	0.50
2	137	57	129	1.46	173	1.96
3	177	50	266	3.01	439	4.96
4	210	46	457	5.17	896	10.13
5	238	43	700	7.91	1596	18.05
6	264	42	888	10.04	2484	28.09
7	289	41	1097	12.40	3581	40.49
8	313	41	1168	13.21	4749	53.70
9	338	42	1148	12.98	5897	66.68
10	363	43	978	11.06	6875	77.74
11	391	45	749	8.47	7624	86.21
12	422	48	546	6.17	8170	92.38
13	458	53	370	4.18	8540	96.56
14	505	62	213	2.41	8753	98.97
15	573	79	79	0.89	8832	99.86
16	600	131	12	0.14	8844	100.00