Maine Educational Assessment (MEA) for Science

2018 - 2019: EQUATING REPORT

measured progress

2018 - 2019 Maine Educational Assessment (MEA) for Science Equating Report

The purpose of this document is to summarize the equating results obtained from Measured Progress for MEA for Science. Presented in this report are various program summary statistics and specific results related to the equating study.

The results of this report are organized as follows:

1. Aggregate Results
    1. Percentage of Students by Achievement Level Categories
    2. Raw Scores Associated with Cutpoints
    3. Calibration Report
    4. Equating Item Summary Statistics
    5. Summary of Psychometric QC Activities
2. Grade Subject Results
    1. A/A, B/B, Delta, Test Characteristic Curve, Test Information Function, and Cumulative Scale Score Distribution Plots
    2. Lookup Tables
    3. Cumulative Scale Score Distribution Tables
    4. Rescore Analysis Results
    5. Tabled Delta Analysis Results
    6. Tabled B/B Analysis Results
    7. Final Item Parameters
    8. Decision Accuracy and Consistency (DAC)
    9. Fit Plots of Watchlist Items

The final results of this equating will be included as part of the 2018 - 2019 MEA for Science Technical Manual. If requested, Measured Progress will distribute and/or present this report at the next MEA TAC.

Section 1.1

Percentage of Students by Achievement Level Categories

Table 1.1.1

Percentage of Students by Achievement Level Categories

Science

Grade	Year	Count	1	2	3	4	3/4	Delta	Ave. SS
5	2019	13009	12	27	55	6	61	0.1	544.3
	2018	13260	11	28	53	8	61	-6.0	545.0
	2017	13000	9	23	61	6	67	4.3	545.6
	2016	13094	11	26	55	8	63	-2.0	545.0
	2015	13052	9	26	58	7	65	2.0	545.7
	2014	12980	8	29	53	10	63	-6.7	545.8
	2013	13111	9	22	59	10	70		546.8
8	2019	13066	10	20	47	22	70	3.1	849.1
	2018	12992	11	22	48	19	67	-2.0	847.5
	2017	12754	10	21	49	20	69	-4.1	848.9
	2016	12790	7	20	54	19	73	1.9	849.9
	2015	13069	7	22	52	19	71	-2.3	849.2
	2014	11857	7	19	51	23	73	3.4	850.1
	2013	13644	9	21	48	22	70		849.3
11	2019	12038	20	32	44	4	48	-0.1	1140.3
	2018	12310	21	31	43	5	48	1.2	1140.5
	2017	12216	22	31	42	5	47	0.4	1140.1
	2016	12291	21	33	41	6	47	3.7	1140.3
	2015	10054	25	32	38	4	43		1138.7

Section 1.2

Raw Scores Associated with Cutpoints

Table 1.2.1

Raw Scores Associated with Cutpoints

Subject	Grade	Cut Point	2018 Actual	2019 Actual	2019 Pred
Science	5	1–2	18	18	18
		2–3	27	27	27
		3–4	40	40	40
		Max Score	48	48	48
Science	8	1–2	20	20	20
		2–3	29	29	29
		3–4	42	42	42
		Max Score	56	56	56
Science	11	1–2	18	18	18
		2–3	28	28	28
		3–4	46	46	46
		Max Score	56	56	56

Section 1.3

Calibration Report

Calibration Report—Executive Summary

PARSCALE 4.1 was used for all analyses. All command files were set up in a way that all general settings were identical to last year. For example, the calibration statement reads:

CAL GRADED,LOGISTIC,CYCLE=(150,1,1,1,1),TPRIOR,SPRIOR,GPRIOR;

Thus, a 3PLM was used for all MC items, and a Graded Response Model was specified for the polytomous items. The logistic version of the IRT models was used, and default priors were used for all parameter estimates. Each item occupied its own unique block in the command file, and for most items initial guessing parameters were set to 0.25.

The resulting parameters demonstrated excellent model fit. In particular, the largest change in parameter values (from one iteration to the next) was decreasing and tended to flatten out towards the end of the calibration process. The number of Newton cycles to conversion for each grade/content for the initial calibrations are listed in the following table:

Table 1.3.1
Number of Cycles to Convergence

Subject	Grade	Initial Cycles
Science	Grade 5	28
Science	Grade 8	31
Science	Grade 11	60

For some items the guessing parameter was poorly estimated. This is not at all unusual as difficulty in estimating the c-parameter has been well documented in the psychometric literature. This often happens when item discrimination is low or the items are particularly easy. After carefully studying these items we found that fixing the lower asymptote (for example to a value of 0.00) resulted in stable and reasonable estimates for both the a and b parameters (relative to CTT statistics). This technique also produced item parameters that resulted in excellent model fit (comparing theoretical ICCs to observed ICCs).

Three methods of evaluating the suitability of the equating items were used: the delta analysis, the b/b analysis and the rescore analysis. As a result of all three analyses very few items were removed from the equating analysis. Results such as this are very common particularly, given the number of grade/content combinations, and the number and types of items in the program. Results from these analyses are included in Section II of this report.

Items flagged by the delta, b/b, or rescore analyses, or any item that required intervention during the calibration process, were compiled and placed in our item watch list, which includes the final actions taken on these items. The final watch list is presented in the following table:

Table 1.3.2

Final Items Watch List

Subject	Grade	ItemID	Reason	Action
Science	5	138289A	c-parameter	set c = 0
Science	5	248566	c-parameter	set c = 0
Science	5	96271	delta analysis	removed from equating
Science	8	153898	c-parameter	set c = 0
Science	8	153898	b/b analysis	removed from equating
Science	8	191064A	delta analysis	removed from equating
Science	11	166387A	c-parameter	set c = 0
Science	11	191140A	c-parameter	set c = 0
Science	11	191140A	delta analysis	removed from equating
Science	11	191147A	c-parameter	set c = 0
Science	11	191163A	c-parameter	set c = 0
Science	11	550251	c-parameter	set c = 0

The Stocking and Lord procedure was used to transform parameter estimates onto the operational scale. This procedure results in constants which were applied to the resulting IRT parameters for each grade/content. These transformation constants were found using the STUIRT program which can be found at the CASMA website: http://www.education.uiowa.edu/casma/. The Stocking & Lord transformation constants that were used in the equating process are listed in the following table:

Table 1.3.3

Stocking and Lord Constants

Subject	Grade	Slope	Intercept
Science	5	1.06	0.10
Science	8	1.07	0.14
Science	11	0.92	0.11

Section 1.4

Equating Item Summary Statistics

Table 1.4.1

Equating Item Summary Statistics

			P-Value		Point Biserial		a		b	
Subject	Grade	Year	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev
Science	05	2019	0.62	0.14	0.33	0.10	0.64	0.21	-0.29	1.00
		Previous	0.63	0.13	0.32	0.09	0.65	0.19	-0.04	0.99
Science	08	2019	0.63	0.12	0.36	0.08	0.72	0.22	-0.36	0.79
		Previous	0.64	0.13	0.35	0.10	0.69	0.21	-0.24	0.86
Science	11	2019	0.54	0.14	0.38	0.10	0.84	0.28	0.18	0.79
		Previous	0.54	0.13	0.39	0.10	0.90	0.32	0.27	0.70

Section 1.5

Summary of Psychometric QC Activities

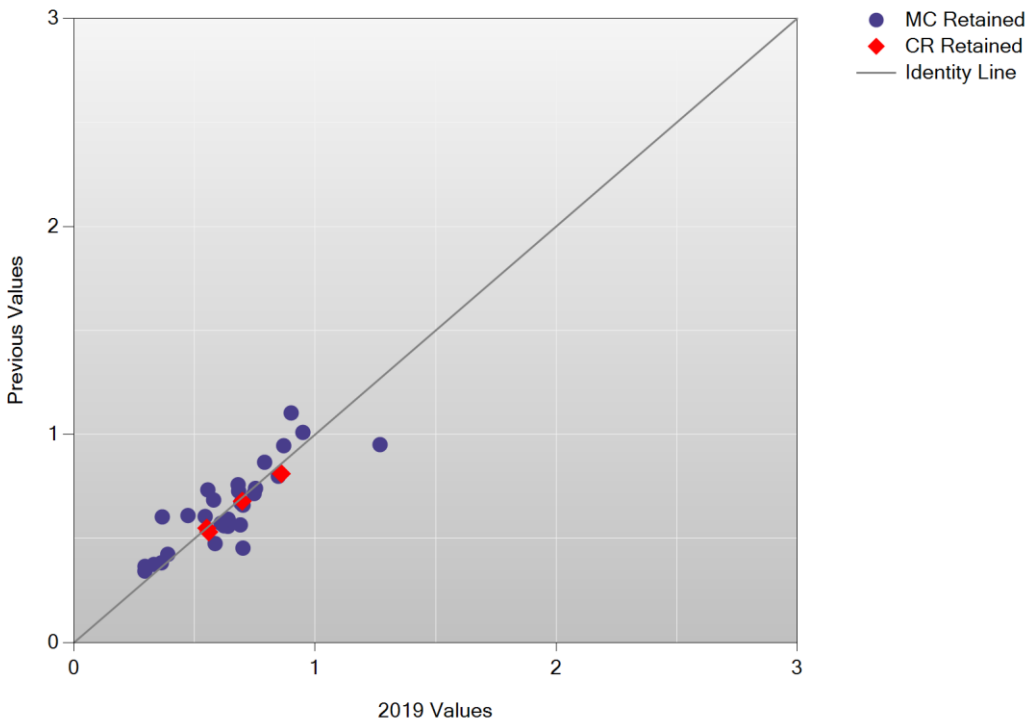
Summary of Psychometric Quality Control Activities

1. Copy match of equating items
2. Key verification process
3. Position shift analysis
4. Rescore analysis
    a. Stat > 0.5 (Crit) removed
5. Delta analysis
    a. Stat > 3 (Crit) removed
6. b/b analysis
    a. Stat > 3 (Crit) removed
7. Equating Analysis
    a. Reasonableness of item parameters
    b. Low a, high SE on b, c parameter poorly estimated
    c. Fit plot
    d. Normal end evaluation
    e. Delta plot
    f. a/a plot, b/b plot
    g. TCCs and information functions
    h. Achievement levels and scaled score distributions
8. Watch List (items were continuously evaluated)
    a. 8 criteria
    b. Statistical values
    c. Content

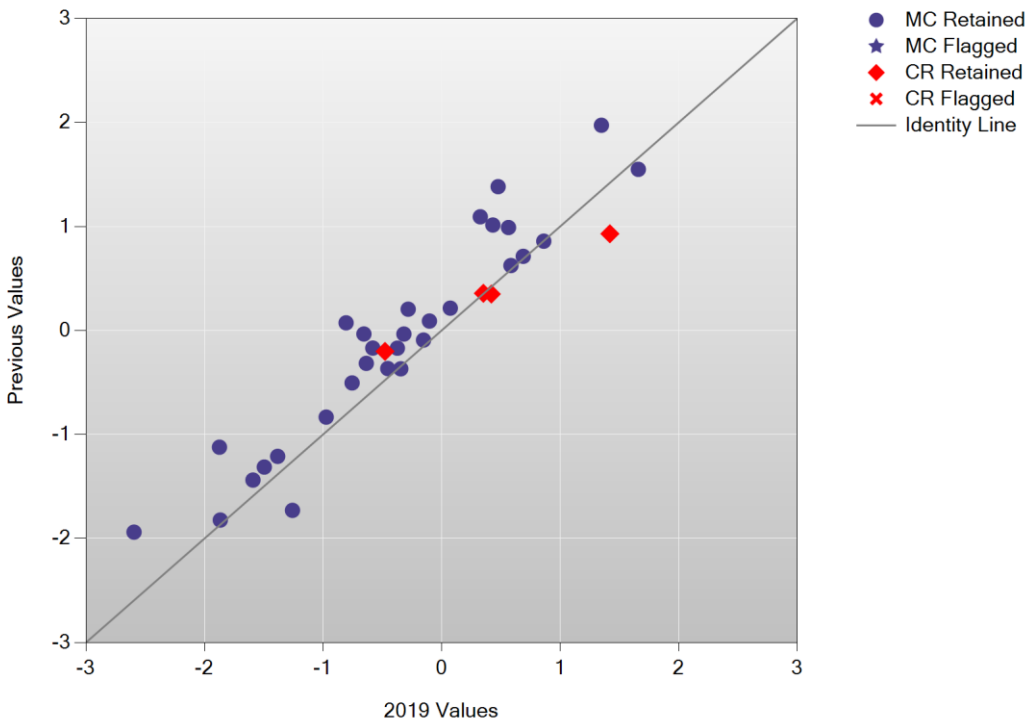
Section 2.1

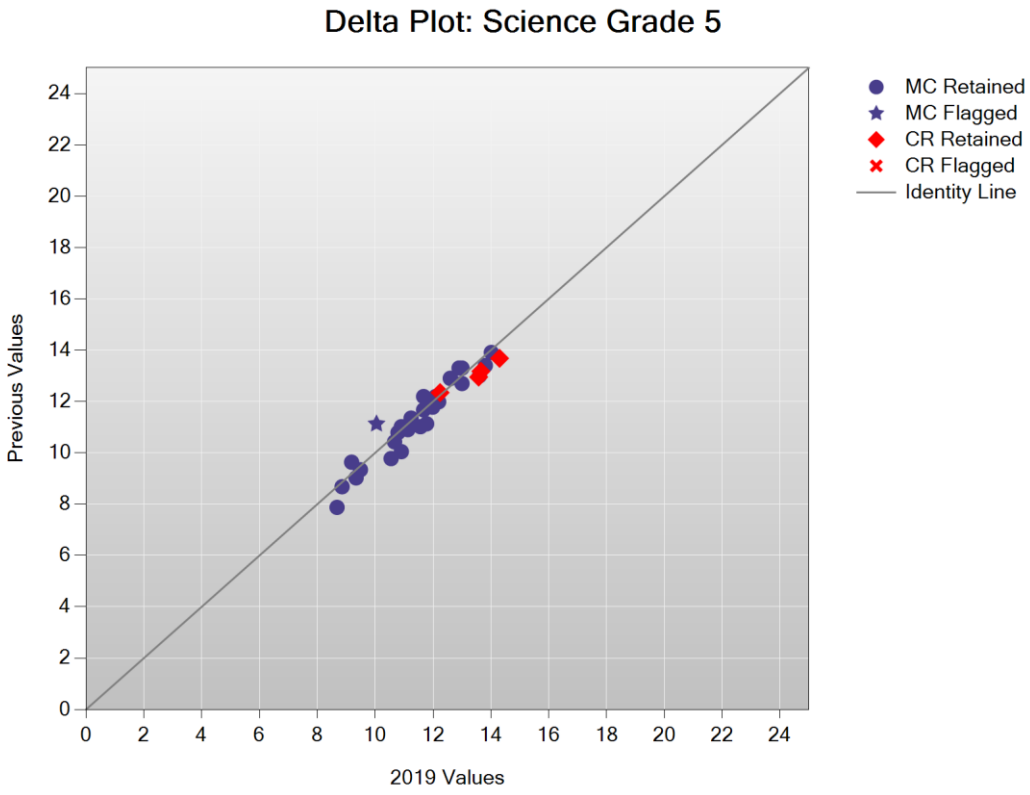
A/A, B/B, Delta, Test Characteristic Curve, Test Information Function, and Cumulative Scale Score Distribution Plots

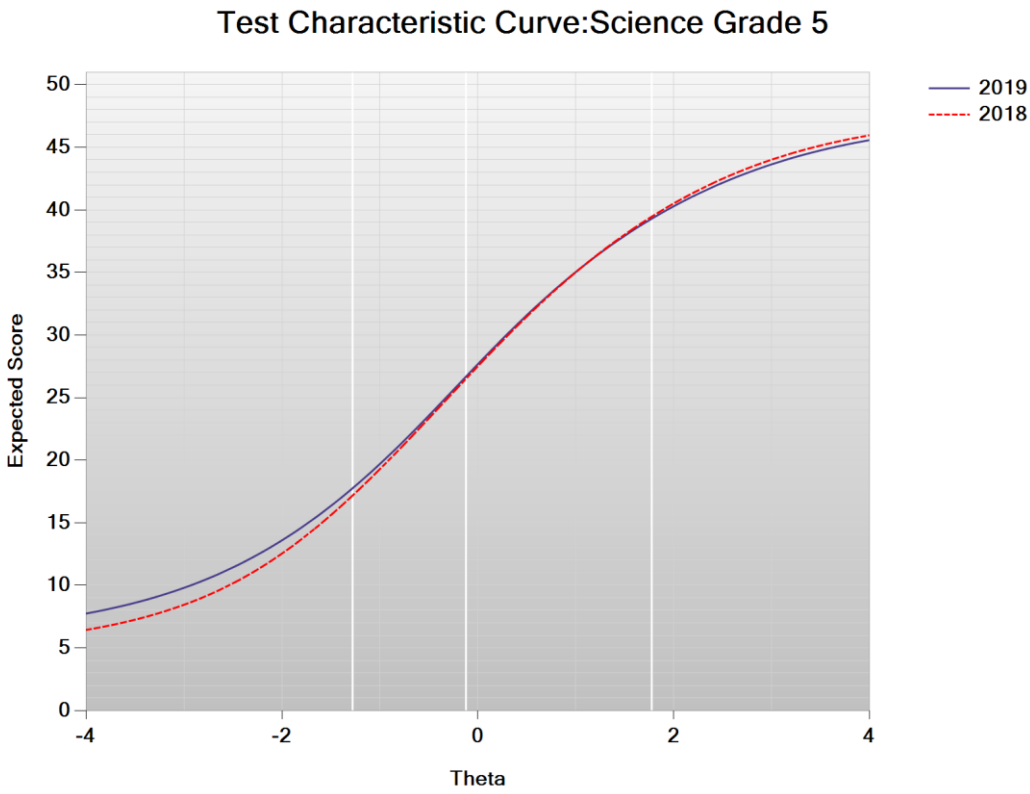
A/A Plot: Science Grade 5

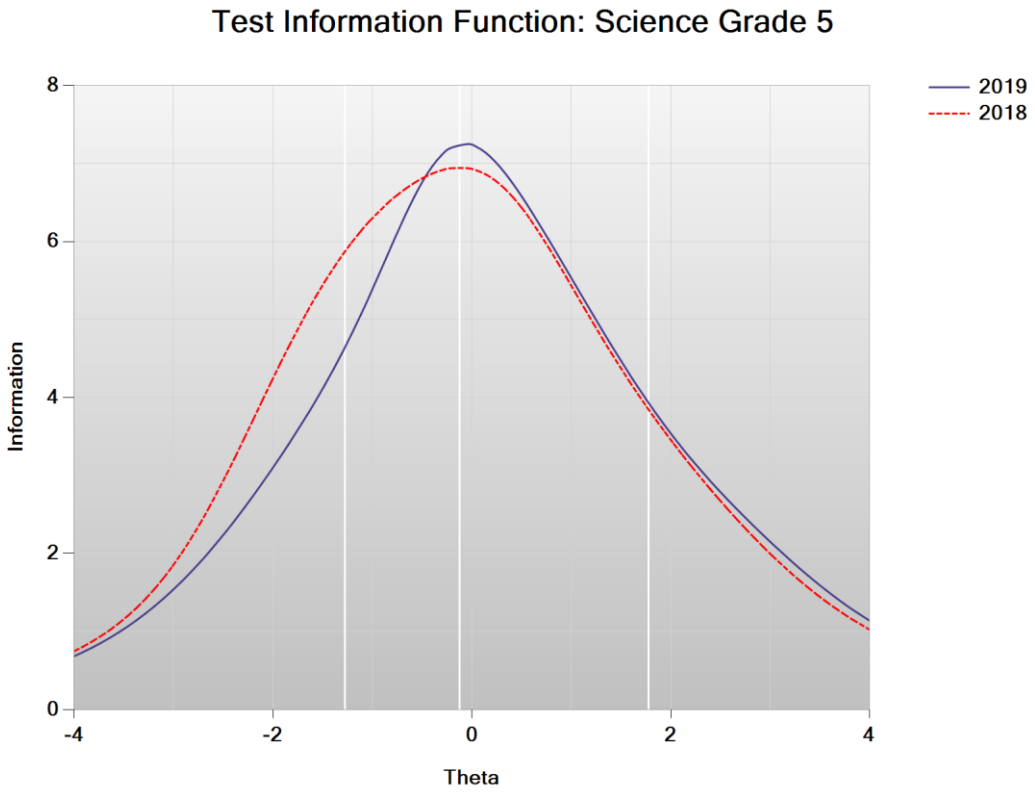


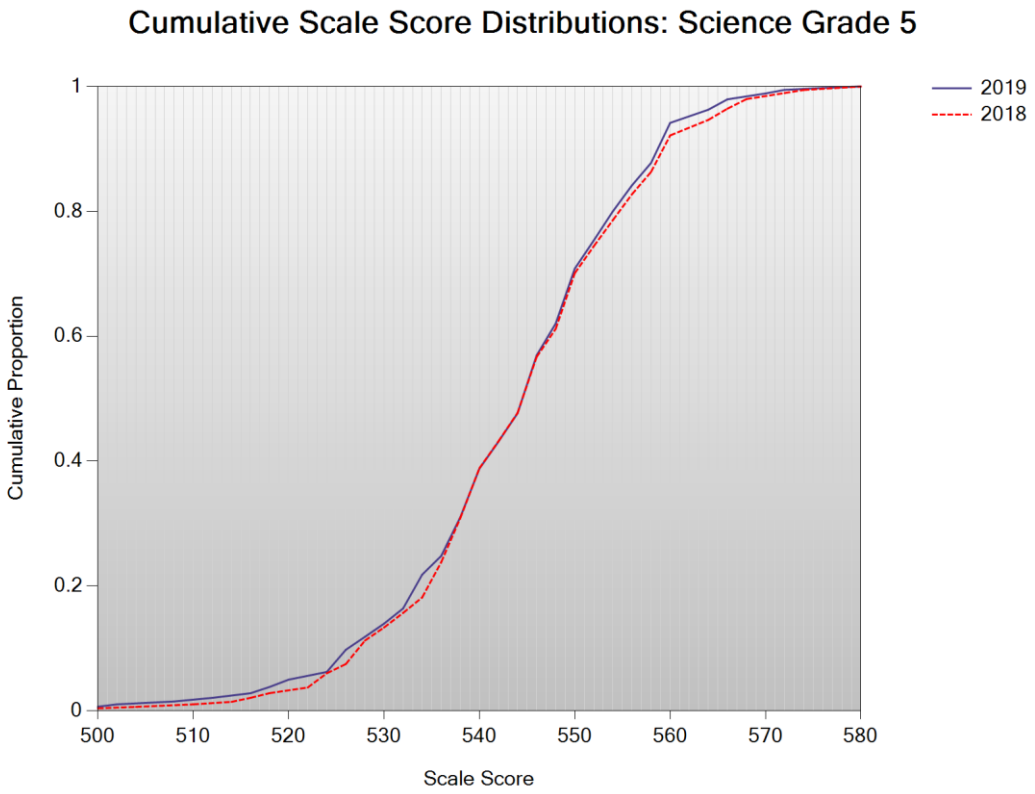
B/B Plot: Science Grade 5



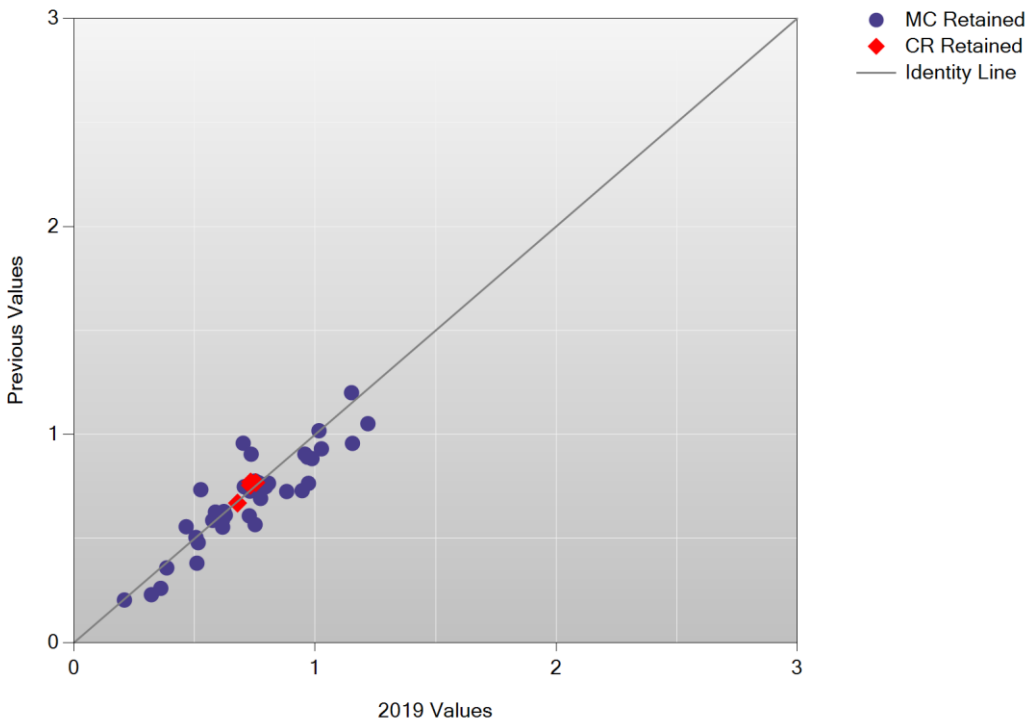

Delta Plot: Science Grade 5
MC Retained
MC Flagged
CR Retained
CR Flagged
Identity Line
Previous Values
2019 Values
0
2
4
6
8
10
12
14
16
18
20
22
24


Test Characteristic Curve:Science Grade 5
2019
2018
Expected Score
Theta
0
5
10
15
20
25
30
35
40
45
50
-4
-2
0
2
4

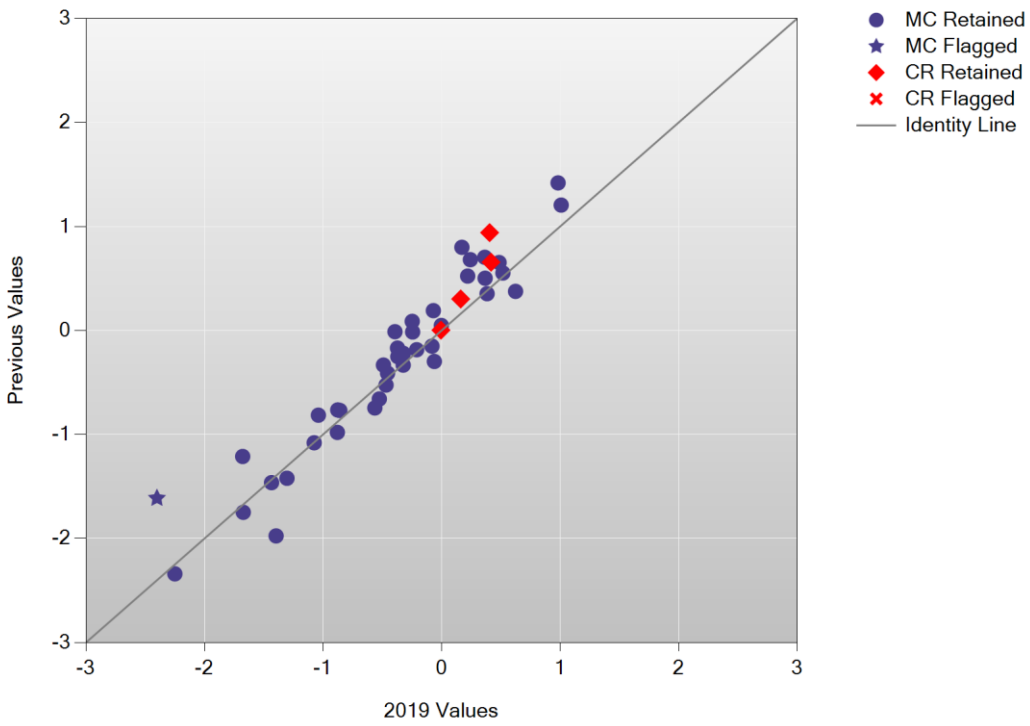

Test Information Function: Science Grade 5
Information
Theta
2019
2018
0
2
4
6
8
-4
-2
0
2
4

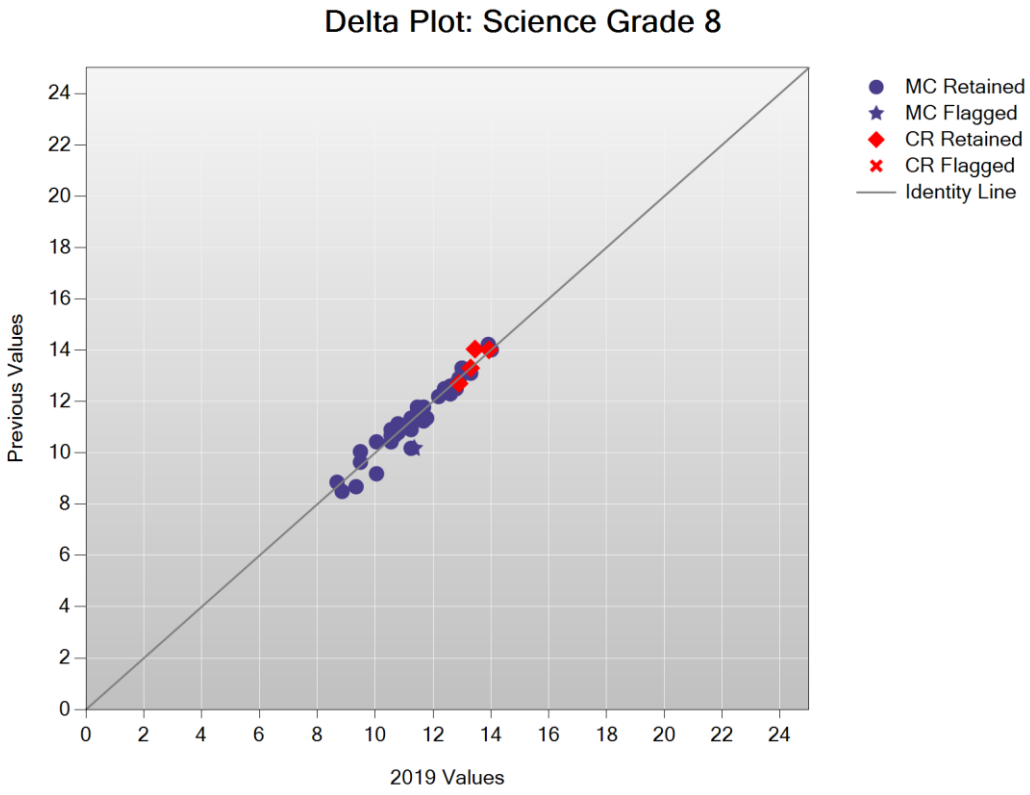

Cumulative Scale Score Distributions: Science Grade 5
Cumulative Proportion
Scale Score
2019
2018
0
0.2
0.4
0.6
0.8
1
500
510
520
530
540
550
560
570
580

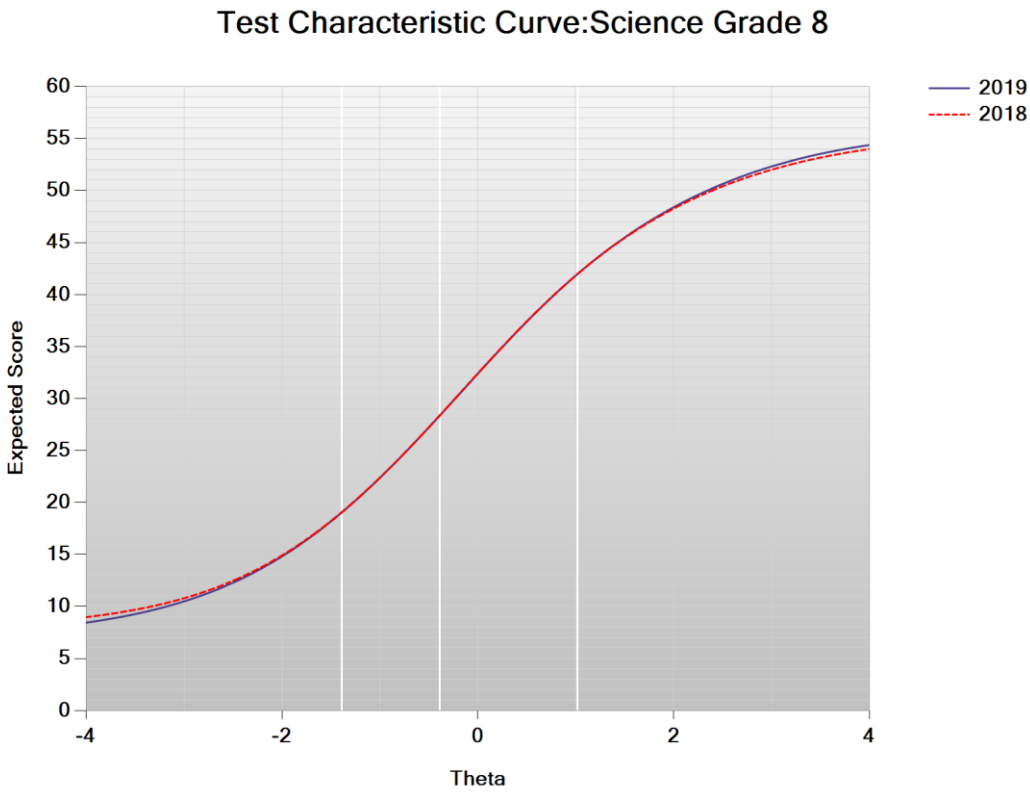
A/A Plot: Science Grade 8

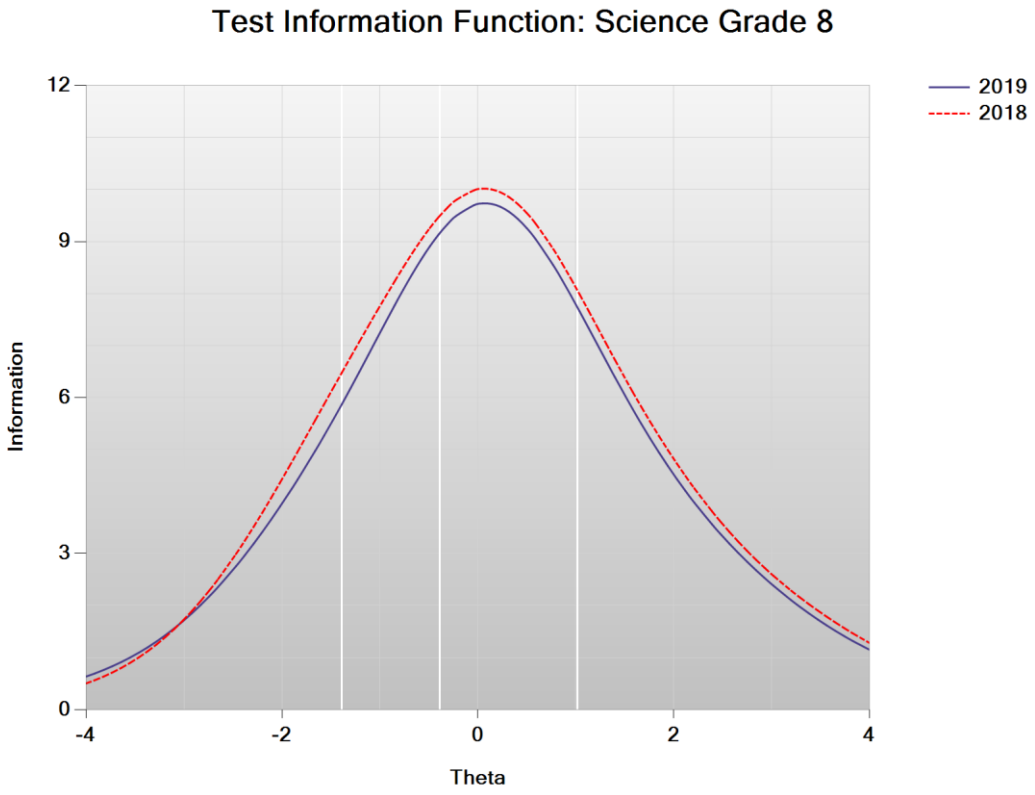


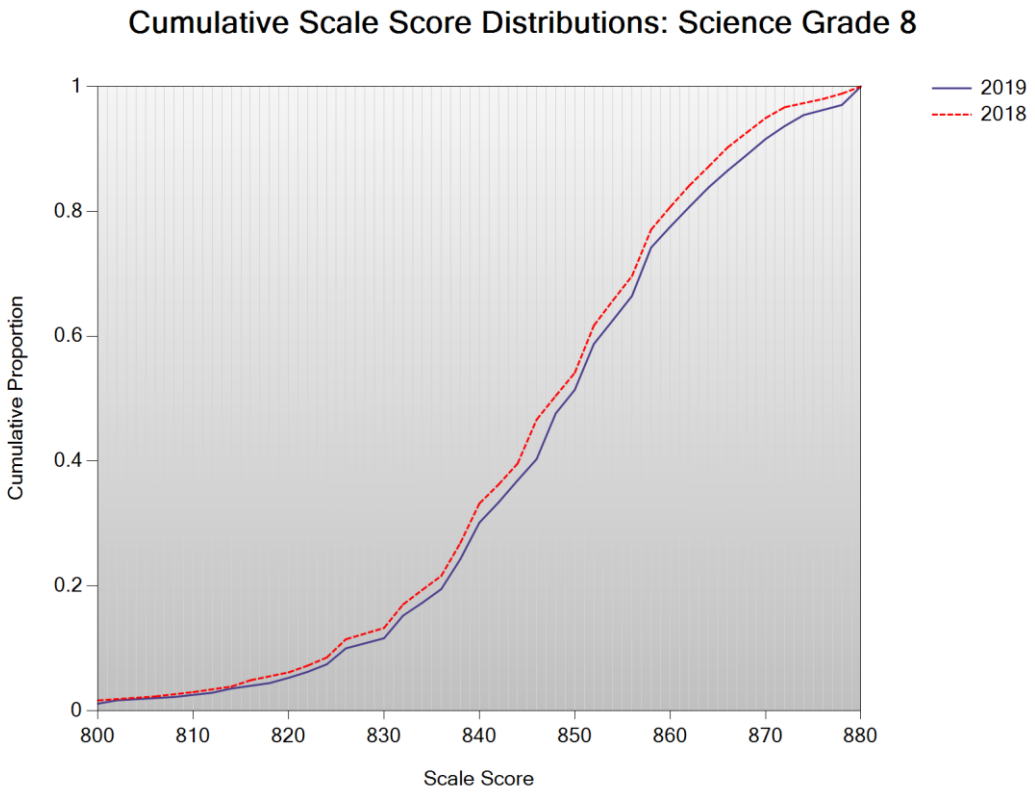
B/B Plot: Science Grade 8



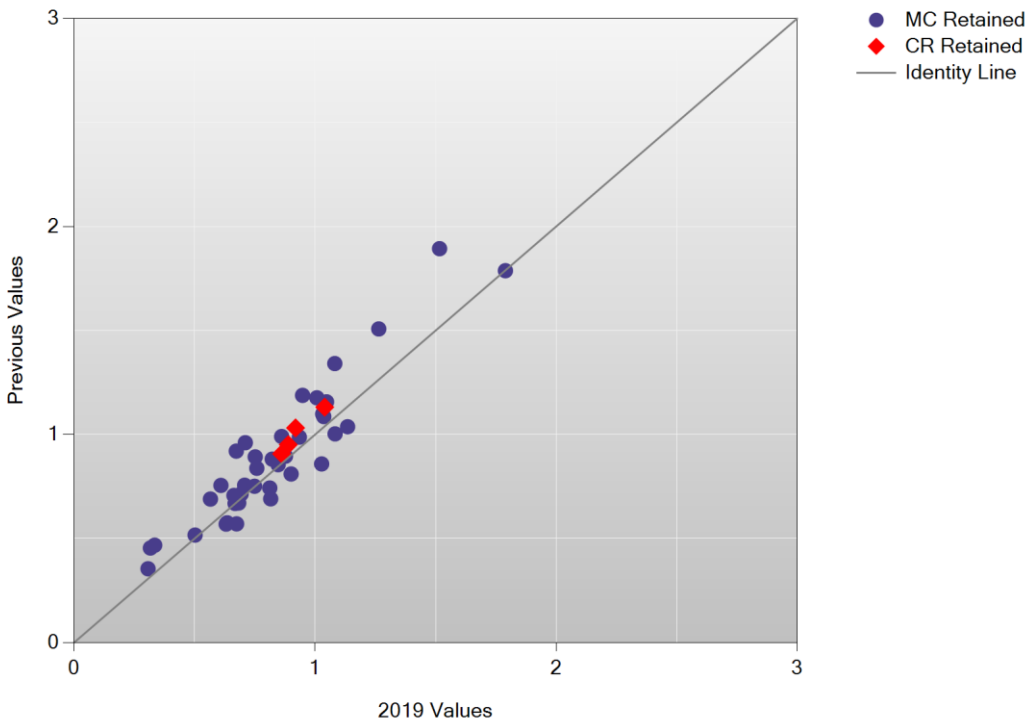

Delta Plot: Science Grade 8
MC Retained
MC Flagged
CR Retained
CR Flagged
Identity Line
Previous Values
2019 Values
0
2
4
6
8
10
12
14
16
18
20
22
24


Test Characteristic Curve:Science Grade 8
2019
2018
Expected Score
Theta
0
5
10
15
20
25
30
35
40
45
50
55
60
-4
-2
0
2
4

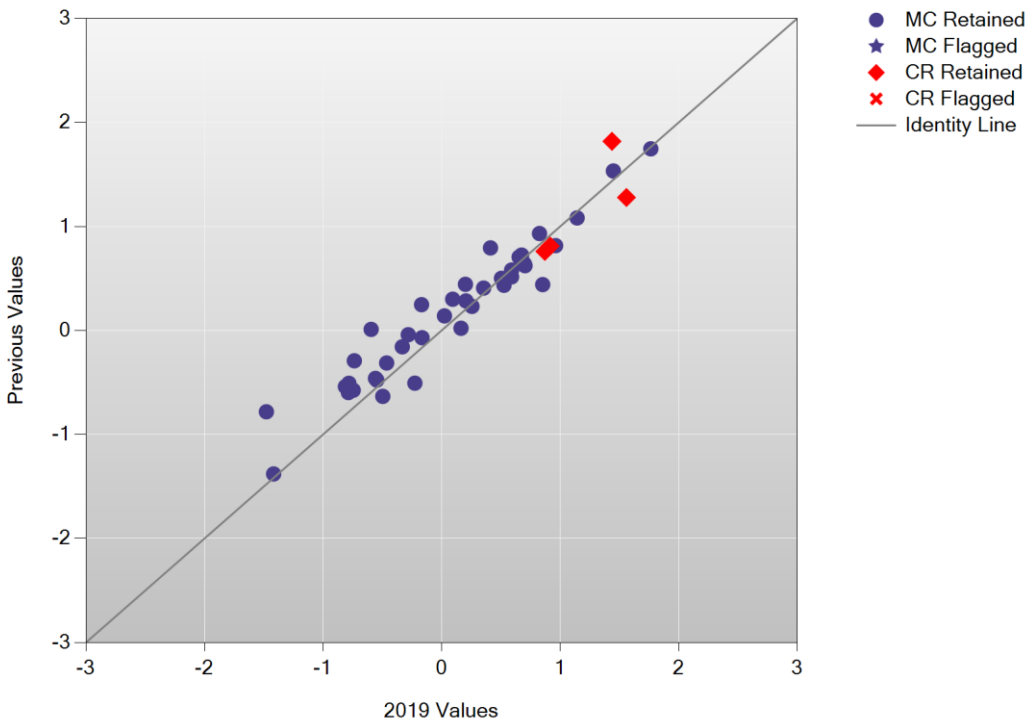

Test Information Function: Science Grade 8
2019
2018
Information
12
9
6
3
0
-4
-2
0
2
4
Theta

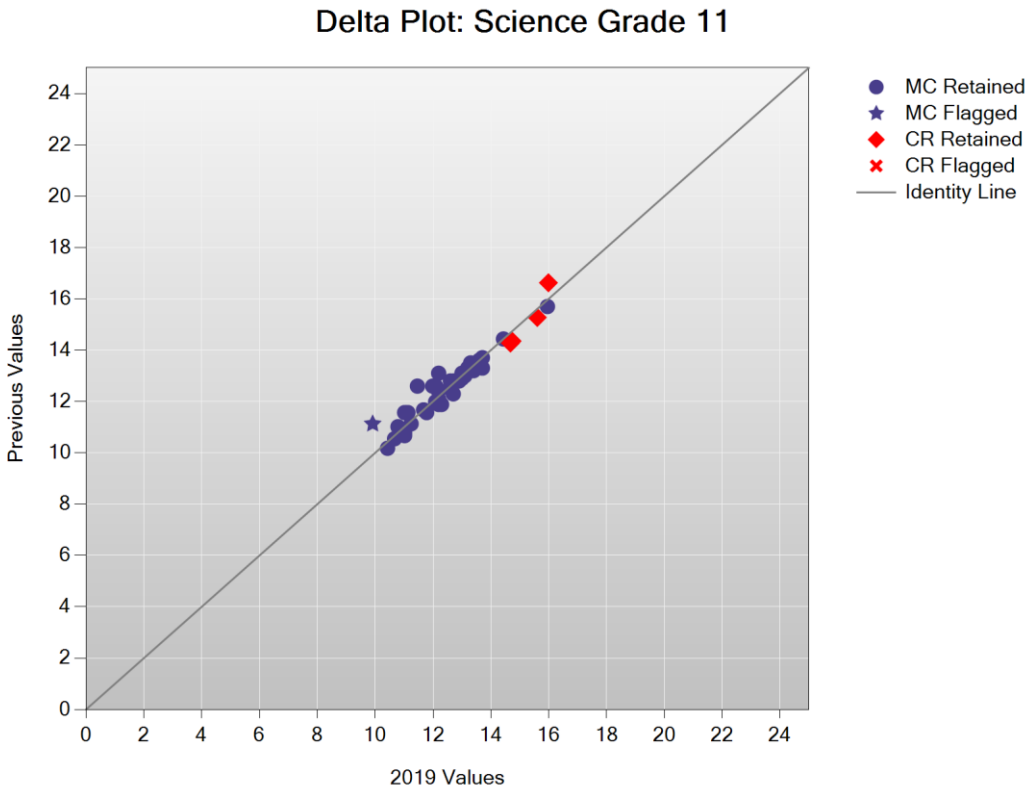

Cumulative Scale Score Distributions: Science Grade 8
2019
2018
Cumulative Proportion
1
0.8
0.6
0.4
0.2
0
800
810
820
830
840
850
860
870
880
Scale Score

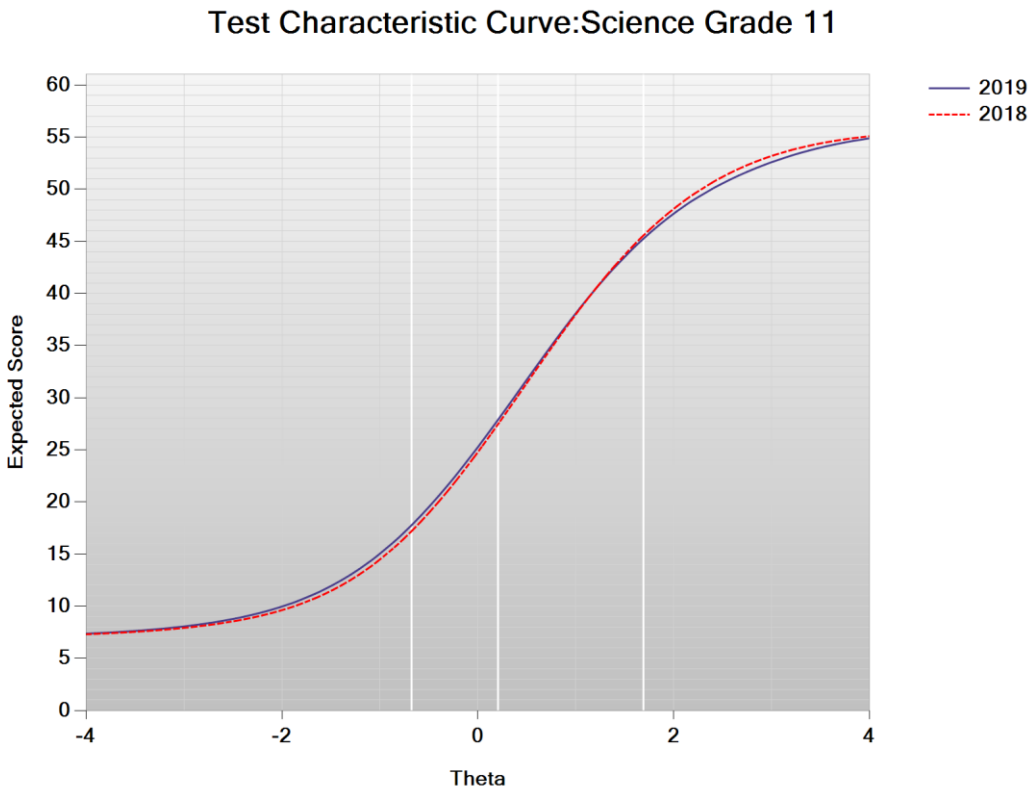
A/A Plot: Science Grade 11

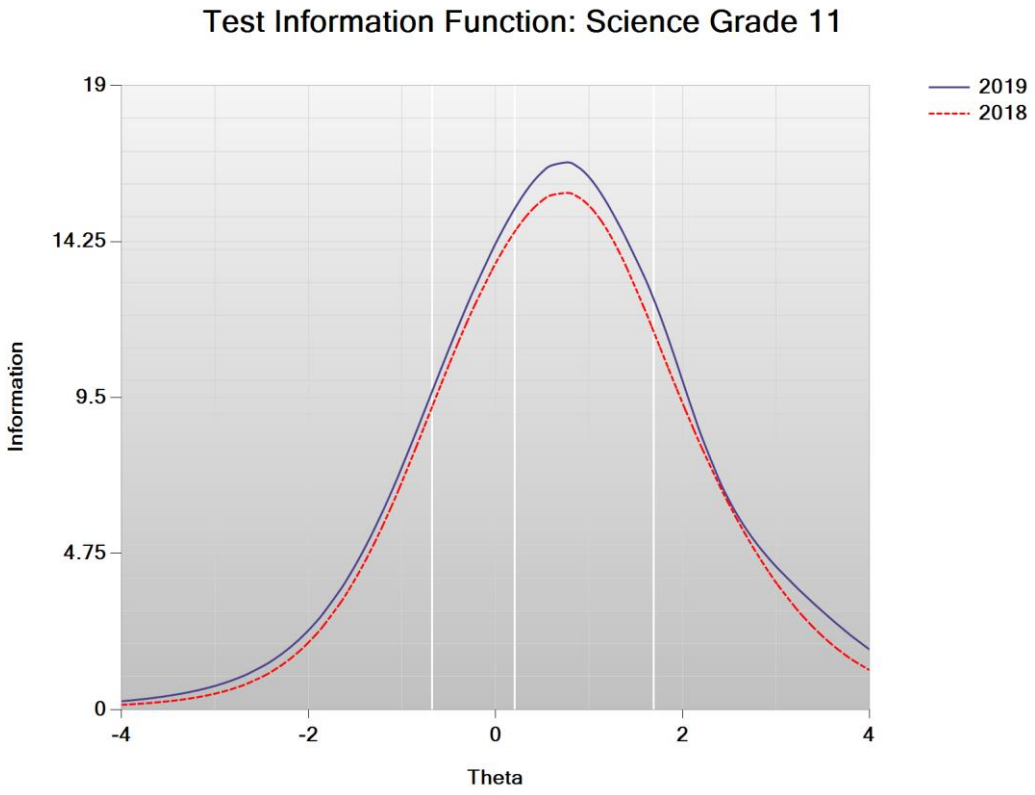


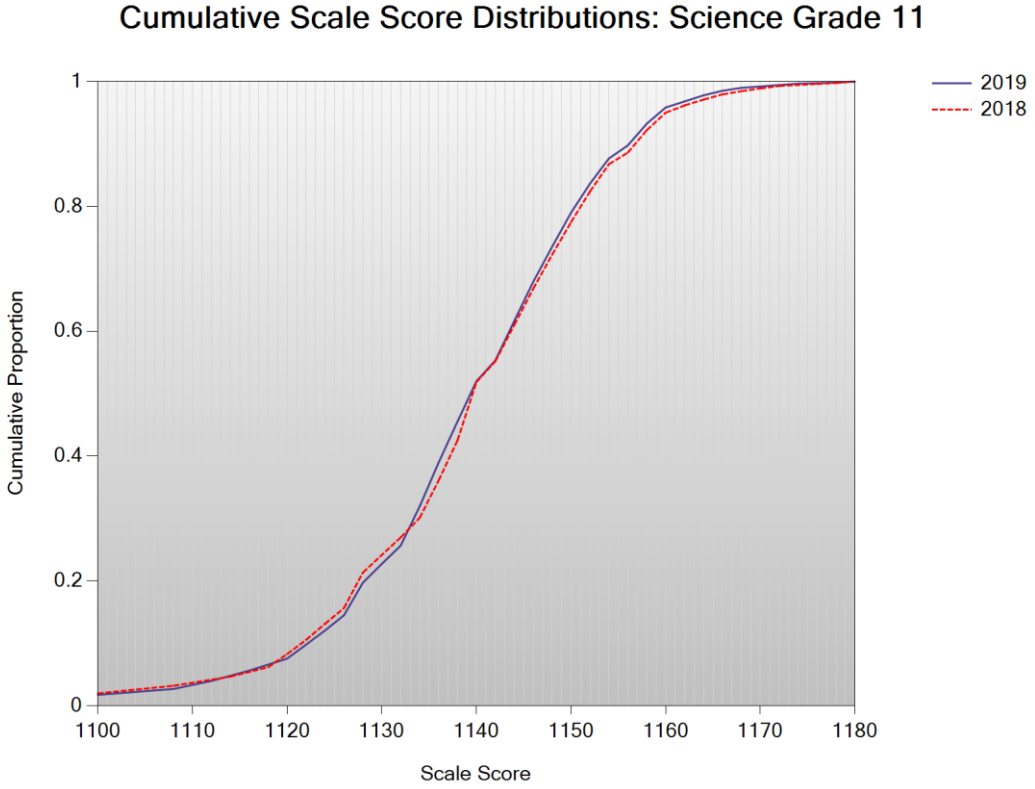
B/B Plot: Science Grade 11




Delta Plot: Science Grade 11
Previous Values
2019 Values
0
2
4
6
8
10
12
14
16
18
20
22
24
MC Retained
MC Flagged
CR Retained
CR Flagged
Identity Line


Test Characteristic Curve:Science Grade 11
Expected Score
Theta
0
5
10
15
20
25
30
35
40
45
50
55
60
-4
-2
0
2
4
2019
2018


Test Information Function: Science Grade 11
2019
2018
Information
19
14.25
9.5
4.75
0
-4
-2
0
2
4
Theta


Cumulative Scale Score Distributions: Science Grade 11
2019
2018
Cumulative Proportion
1
0.8
0.6
0.4
0.2
0
1100
1110
1120
1130
1140
1150
1160
1170
1180
Scale Score

Section 2.2

Lookup Tables

Table 2.2.1

Raw Score to Scale Score Lookup Table

Science Grade 5

Raw Score	Theta	Information	SE (Scale Score)	2019 Scale Score	2019 Achievement Level	2018 Scale Score	2018 Achievement Level
0	-7.769	0.04	10.0	500	1	500	1
1	-7.283	0.06	10.0	500	1	500	1
2	-6.796	0.08	10.0	500	1	500	1
3	-6.309	0.11	10.0	500	1	500	1
4	-5.823	0.16	10.0	500	1	500	1
5	-5.336	0.23	10.0	500	1	500	1
6	-4.849	0.34	10.0	500	1	500	1
7	-4.363	0.51	10.0	500	1	504	1
8	-3.834	0.78	10.0	502	1	510	1
9	-3.316	1.20	10.0	508	1	514	1
10	-2.930	1.63	8.0	512	1	516	1
11	-2.619	2.06	8.0	516	1	518	1
12	-2.355	2.47	6.0	518	1	522	1
13	-2.125	2.87	6.0	520	1	524	1
14	-1.919	3.26	6.0	524	1	524	1
15	-1.731	3.63	6.0	526	1	526	1
16	-1.557	3.99	6.0	526	1	528	1
17	-1.395	4.36	6.0	528	1	528	1
18	-1.242	4.73	4.0	530	2	530	2
19	-1.097	5.12	4.0	532	2	532	2
20	-0.959	5.51	4.0	534	2	534	2
21	-0.825	5.90	4.0	534	2	536	2
22	-0.696	6.27	4.0	536	2	536	2
23	-0.570	6.60	4.0	538	2	538	2
24	-0.447	6.87	4.0	538	2	538	2
25	-0.325	7.08	4.0	540	2	540	2
26	-0.203	7.21	4.0	540	2	540	2
27	-0.082	7.25	4.0	542	3	542	3
28	0.041	7.22	4.0	544	3	544	3
29	0.165	7.11	4.0	546	3	546	3
30	0.292	6.94	4.0	546	3	546	3
31	0.422	6.73	4.0	548	3	548	3
32	0.556	6.47	4.0	550	3	550	3
33	0.696	6.19	4.0	550	3	550	3
34	0.841	5.88	4.0	552	3	552	3
35	0.994	5.55	4.0	554	3	554	3
36	1.156	5.20	4.0	556	3	556	3
37	1.328	4.83	4.0	558	3	558	3

Table 2.2.1 (continued)

Raw Score to Scale Score Lookup Table

Science Grade 5

Raw Score	Theta	Information	SE (Scale Score)	2019 Scale Score	2019 Achievement Level	2018 Scale Score	2018 Achievement Level
38	1.513	4.44	4.0	560	3	560	3
39	1.713	4.05	6.0	560	3	560	3
40	1.932	3.66	6.0	564	4	564	4
41	2.175	3.26	6.0	566	4	566	4
42	2.450	2.86	6.0	570	4	568	4
43	2.766	2.44	6.0	572	4	572	4
44	3.146	1.98	8.0	576	4	574	4
45	3.633	1.46	8.0	580	4	580	4
46	4.000	1.14	10.0	580	4	580	4
47	4.000	1.14	10.0	580	4	580	4
48	4.000	1.14	10.0	580	4	580	4

Table 2.2.2
Raw Score to Scale Score Lookup Table
Science Grade 8

Raw Score	Theta	Information	SE (Scale Score)	2019 Scale Score	2019 Achievement Level	2018 Scale Score	2018 Achievement Level
0	-8.143	0.02	10.0	800	1	800	1
1	-7.652	0.03	10.0	800	1	800	1
2	-7.162	0.04	10.0	800	1	800	1
3	-6.672	0.06	10.0	800	1	800	1
4	-6.181	0.09	10.0	800	1	800	1
5	-5.691	0.13	10.0	800	1	800	1
6	-5.201	0.20	10.0	800	1	800	1
7	-4.710	0.31	10.0	800	1	800	1
8	-4.220	0.51	10.0	800	1	800	1
9	-3.642	0.91	10.0	800	1	800	1
10	-3.177	1.45	10.0	802	1	800	1
11	-2.838	2.00	10.0	808	1	806	1
12	-2.567	2.54	8.0	812	1	810	1
13	-2.341	3.06	8.0	814	1	814	1
14	-2.143	3.56	8.0	818	1	816	1
15	-1.968	4.05	8.0	820	1	820	1
16	-1.808	4.52	6.0	822	1	822	1
17	-1.660	4.97	6.0	824	1	824	1
18	-1.523	5.42	6.0	826	1	826	1
19	-1.393	5.85	6.0	826	1	826	1
20	-1.271	6.28	6.0	830	2	830	2
21	-1.153	6.69	6.0	832	2	832	2
22	-1.040	7.10	6.0	832	2	832	2
23	-0.931	7.49	6.0	834	2	834	2
24	-0.825	7.86	6.0	836	2	836	2
25	-0.722	8.20	4.0	838	2	838	2
26	-0.621	8.53	4.0	838	2	838	2
27	-0.521	8.82	4.0	840	2	840	2
28	-0.423	9.08	4.0	840	2	840	2
29	-0.326	9.30	4.0	842	3	842	3
30	-0.230	9.48	4.0	844	3	844	3
31	-0.133	9.61	4.0	846	3	846	3
32	-0.037	9.70	4.0	848	3	846	3
33	0.060	9.73	4.0	848	3	848	3
34	0.158	9.72	4.0	850	3	850	3
35	0.256	9.64	4.0	852	3	852	3
36	0.357	9.52	4.0	852	3	852	3
37	0.459	9.34	4.0	854	3	854	3

Table 2.2.2 (continued)

Raw Score to Scale Score Lookup Table

Science Grade 8

Raw Score	Theta	Information	SE (Scale Score)	2019 Scale Score	2019 Achievement Level	2018 Scale Score	2018 Achievement Level
38	0.564	9.11	4.0	856	3	856	3
39	0.673	8.83	4.0	858	3	858	3
40	0.784	8.50	4.0	858	3	858	3
41	0.900	8.13	4.0	860	3	860	3
42	1.022	7.72	6.0	862	4	862	4
43	1.149	7.27	6.0	864	4	864	4
44	1.283	6.80	6.0	866	4	866	4
45	1.426	6.30	6.0	868	4	868	4
46	1.579	5.79	6.0	870	4	870	4
47	1.744	5.26	6.0	872	4	872	4
48	1.924	4.73	6.0	874	4	876	4
49	2.122	4.20	6.0	878	4	878	4
50	2.344	3.67	8.0	880	4	880	4
51	2.596	3.13	8.0	880	4	880	4
52	2.894	2.59	8.0	880	4	880	4
53	3.260	2.02	10.0	880	4	880	4
54	3.753	1.40	10.0	880	4	880	4
55	4.000	1.15	10.0	880	4	880	4
56	4.000	1.15	10.0	880	4	880	4

Table 2.2.3

Raw Score to Scale Score Lookup Table

Science Grade 11

Raw Score	Theta	Information	SE (Scale Score)	2019 Scale Score	2019 Achievement Level	2018 Scale Score	2018 Achievement Level
0	-14.568	0.00	10.0	1100	1	1100	1
1	-13.134	0.00	10.0	1100	1	1100	1
2	-11.700	0.00	10.0	1100	1	1100	1
3	-10.266	0.00	10.0	1100	1	1100	1
4	-8.832	0.01	10.0	1100	1	1100	1
5	-7.397	0.02	10.0	1100	1	1100	1
6	-5.963	0.05	10.0	1100	1	1100	1
7	-4.529	0.15	10.0	1100	1	1100	1
8	-3.062	0.67	10.0	1100	1	1100	1
9	-2.386	1.50	10.0	1108	1	1108	1
10	-1.990	2.44	8.0	1112	1	1114	1
11	-1.708	3.44	8.0	1116	1	1118	1
12	-1.487	4.46	6.0	1120	1	1120	1
13	-1.303	5.46	6.0	1122	1	1122	1
14	-1.145	6.43	6.0	1124	1	1124	1
15	-1.005	7.36	4.0	1126	1	1126	1
16	-0.878	8.25	4.0	1128	1	1128	1
17	-0.761	9.09	4.0	1128	1	1128	1
18	-0.653	9.87	4.0	1130	2	1132	2
19	-0.551	10.61	4.0	1132	2	1132	2
20	-0.454	11.29	4.0	1134	2	1134	2
21	-0.361	11.93	4.0	1134	2	1136	2
22	-0.272	12.52	4.0	1136	2	1136	2
23	-0.186	13.07	4.0	1136	2	1138	2
24	-0.103	13.58	4.0	1138	2	1138	2
25	-0.021	14.06	4.0	1138	2	1140	2
26	0.059	14.51	4.0	1140	2	1140	2
27	0.138	14.92	4.0	1140	2	1140	2
28	0.215	15.30	4.0	1142	3	1142	3
29	0.292	15.65	4.0	1144	3	1144	3
30	0.368	15.95	4.0	1144	3	1144	3
31	0.444	16.21	4.0	1146	3	1146	3
32	0.520	16.42	4.0	1146	3	1146	3
33	0.597	16.57	4.0	1148	3	1148	3
34	0.674	16.65	4.0	1148	3	1148	3
35	0.751	16.67	4.0	1150	3	1150	3
36	0.830	16.61	4.0	1150	3	1150	3
37	0.910	16.46	4.0	1152	3	1152	3

Table 2.2.3 (continued)

Raw Score to Scale Score Lookup Table

Science Grade 11

Raw Score	Theta	Information	SE (Scale Score)	2019 Scale Score	2019 Achievement Level	2018 Scale Score	2018 Achievement Level
38	0.992	16.24	4.0	1152	3	1152	3
39	1.076	15.93	4.0	1154	3	1154	3
40	1.163	15.55	4.0	1154	3	1154	3
41	1.254	15.11	4.0	1156	3	1156	3
42	1.348	14.61	4.0	1158	3	1158	3
43	1.447	14.05	4.0	1158	3	1158	3
44	1.551	13.43	4.0	1160	3	1160	3
45	1.661	12.71	4.0	1160	3	1160	3
46	1.780	11.84	4.0	1164	4	1162	4
47	1.908	10.79	4.0	1164	4	1164	4
48	2.050	9.58	4.0	1166	4	1166	4
49	2.207	8.29	4.0	1168	4	1168	4
50	2.386	7.02	6.0	1172	4	1170	4
51	2.592	5.89	6.0	1174	4	1172	4
52	2.834	4.90	6.0	1178	4	1176	4
53	3.125	3.98	6.0	1180	4	1178	4
54	3.502	2.97	8.0	1180	4	1180	4
55	4.000	1.83	10.0	1180	4	1180	4
56	4.000	1.83	10.0	1180	4	1180	4

Section 2.3

Cumulative Scale Score Distribution Tables

Table 2.3.1

Cumulative Scale Score Distribution

Science Grade 5

Scale Score	N	Proportion	Cumulative Proportion
500	79	0.00607	0.00607
502	49	0.00377	0.00984
508	60	0.00461	0.01445
512	75	0.00577	0.02022
516	96	0.00738	0.02760
518	131	0.01007	0.03767
520	153	0.01176	0.04943
524	160	0.01230	0.06173
526	463	0.03559	0.09732
528	269	0.02068	0.11800
530	275	0.02114	0.13913
532	317	0.02437	0.16350
534	705	0.05419	0.21770
536	391	0.03006	0.24775
538	807	0.06203	0.30979
540	1012	0.07779	0.38758
542	564	0.04335	0.43093
544	591	0.04543	0.47636
546	1207	0.09278	0.56914
548	663	0.05096	0.62011
550	1145	0.08802	0.70813
552	591	0.04543	0.75356
554	606	0.04658	0.80014
556	540	0.04151	0.84165
558	468	0.03598	0.87762
560	834	0.06411	0.94173
564	275	0.02114	0.96287
566	216	0.01660	0.97948
570	123	0.00945	0.98893
572	75	0.00577	0.99470
576	40	0.00307	0.99777
580	29	0.00223	1.00000

Table 2.3.2
Cumulative Scale Score Distribution
Science Grade 8

Scale Score	N	Proportion	Cumulative Proportion
800	142	0.01087	0.01087
802	70	0.00536	0.01623
808	70	0.00536	0.02158
812	89	0.00681	0.02839
814	88	0.00674	0.03513
818	114	0.00872	0.04385
820	111	0.00850	0.05235
822	125	0.00957	0.06192
824	158	0.01209	0.07401
826	333	0.02549	0.09949
830	212	0.01623	0.11572
832	474	0.03628	0.15200
834	267	0.02043	0.17243
836	288	0.02204	0.19447
838	627	0.04799	0.24246
840	766	0.05863	0.30109
842	421	0.03222	0.33331
844	462	0.03536	0.36867
846	446	0.03413	0.40280
848	956	0.07317	0.47597
850	495	0.03788	0.51385
852	961	0.07355	0.58740
854	499	0.03819	0.62559
856	507	0.03880	0.66440
858	1012	0.07745	0.74185
860	435	0.03329	0.77514
862	415	0.03176	0.80690
864	405	0.03100	0.83790
866	353	0.02702	0.86492
868	328	0.02510	0.89002
870	337	0.02579	0.91581
872	271	0.02074	0.93655
874	232	0.01776	0.95431
878	210	0.01607	0.97038
880	387	0.02962	1.00000

Table 2.3.3

Cumulative Scale Score Distribution

Science Grade 11

Scale Score	N	Proportion	Cumulative Proportion
1100	205	0.01703	0.01703
1108	114	0.00947	0.02650
1112	154	0.01279	0.03929
1116	200	0.01661	0.05591
1120	232	0.01927	0.07518
1122	268	0.02226	0.09744
1124	274	0.02276	0.12020
1126	292	0.02426	0.14446
1128	629	0.05225	0.19671
1130	363	0.03015	0.22686
1132	354	0.02941	0.25627
1134	755	0.06272	0.31899
1136	845	0.07019	0.38918
1138	794	0.06596	0.45514
1140	777	0.06455	0.51969
1142	402	0.03339	0.55308
1144	761	0.06322	0.61630
1146	754	0.06263	0.67893
1148	678	0.05632	0.73526
1150	658	0.05466	0.78992
1152	560	0.04652	0.83643
1154	485	0.04029	0.87672
1156	252	0.02093	0.89766
1158	419	0.03481	0.93246
1160	312	0.02592	0.95838
1164	235	0.01952	0.97790
1166	88	0.00731	0.98521
1168	56	0.00465	0.98987
1172	54	0.00449	0.99435
1174	27	0.00224	0.99659
1178	20	0.00166	0.99826
1180	21	0.00174	1.00000

Section 2.4

Rescore Analysis Results

Table 2.4.1

Rescore Analysis

Science Grade 5

Item Id	Max	Old Mean	New Mean	Old StDev	New StDev	Effect Size	Discard
165328A	4	1.67317	1.61463	1.02685	0.94598	-0.05701	False
191018A	4	2.07843	2.13725	1.20905	1.07858	0.04865	False
191047A	4	2.16585	2.21463	1.13406	1.11266	0.04301	False
468930	4	2.07353	1.73529	1.06881	1.07755	-0.31646	False

Table 2.4.2

Rescore Analysis

Science Grade 8

Item Id	Max	Old Mean	New Mean	Old StDev	New StDev	Effect Size	Discard
469354	4	1.71078	1.85294	0.98245	0.97654	0.14470	False
469905	4	1.67805	1.76585	1.10425	1.20611	0.07952	False
470376	4	2.22927	2.32683	0.89723	1.05511	0.10874	False
65117	4	1.94146	2.08780	1.04623	1.14279	0.13988	False

Table 2.4.3

Rescore Analysis

Science Grade 11

Item Id	Max	Old Mean	New Mean	Old StDev	New StDev	Effect Size	Discard
164367A	4	0.85854	1.09268	0.99237	1.03668	0.23595	False
470892	4	1.16832	0.90594	1.13794	0.83818	-0.23057	False
546738	4	1.63902	1.63902	1.10100	1.12304	0.00000	False
550207	4	1.70244	1.60000	1.20629	1.20294	-0.08492	False

Section 2.5

Tabled Delta Analysis Results

Table 2.5.1

Delta Analysis

Science Grade 5

Item Id	Old P	New P	Old Delta	New Delta	Max	Discard	Std Dist
138205A	0.70000	0.70000	10.90240	10.90240	1	False	-0.72417
138266A	0.63000	0.63000	11.67259	11.67259	1	False	-0.75551
138268A	0.62000	0.60000	11.77808	11.98661	1	False	-0.97821
138269A	0.71000	0.71000	10.78646	10.78646	1	False	-0.71946
138289A	0.82000	0.81000	9.33854	9.48841	1	False	-1.22554
164093A	0.50000	0.44000	13.00000	13.60388	1	False	0.56186
165111A	0.58000	0.63000	12.19243	11.67259	1	False	1.18301
165321A	0.47000	0.51000	13.30108	12.89972	1	False	0.69124
165328A	0.43250	0.37250	13.68005	14.30096	4	False	0.65373
166403A	0.51000	0.54000	12.89972	12.59827	1	False	0.33099
166842A	0.41000	0.40000	13.91018	14.01339	1	False	-1.23563
166843A	0.66000	0.67000	11.35015	11.24035	1	False	-0.32847
169211A	0.86000	0.85000	8.67872	8.85427	1	False	-1.22869
169229A	0.69000	0.68000	11.01660	11.12920	1	False	-1.15332
191013A	0.46000	0.42000	13.40173	13.80757	1	False	-0.16835
191015A	0.77000	0.70000	10.04461	10.90240	1	False	1.39879
191018A	0.48250	0.43500	13.17552	13.65463	4	False	0.09867
191027A	0.90000	0.86000	7.87379	8.67872	1	False	1.11120
191032A	0.60000	0.58000	11.98661	12.19243	1	False	-0.97998
191043A	0.69000	0.64000	11.01660	11.56616	1	False	0.27642
191047A	0.56500	0.57500	12.34537	12.24353	4	False	-0.39898
199466	0.50500	0.44250	12.94987	13.57854	4	False	0.65328
228134	0.70000	0.68000	10.90240	11.12920	1	False	-0.94496
228155	0.74000	0.72000	10.42662	10.66863	1	False	-0.90699
248521	0.84000	0.82000	9.02217	9.33854	1	False	-0.68383
248566	0.58000	0.59000	12.19243	12.08982	1	False	-0.38986
466901	0.68000	0.62000	11.12920	11.77808	1	False	0.65536
467335	0.69000	0.70000	11.01660	10.90240	1	False	-0.29831
467356	0.53000	0.50000	12.69892	13.00000	1	False	-0.59187
547304	0.47000	0.50000	13.30108	13.00000	1	False	0.31323
96271	0.68000	0.77000	11.12920	10.04461	1	True	3.35527
96274	0.80000	0.83000	9.63352	9.18334	1	False	1.02452
96581	0.79000	0.73000	9.77432	10.54875	1	False	1.07357
97064	0.51000	0.54000	12.89972	12.59827	1	False	0.33099

Table 2.5.2

Delta Analysis

Science Grade 8

Item Id	Old P	New P	Old Delta	New Delta	Max	Discard	Std Dist
138322A	0.67000	0.66000	11.24035	11.35015	1	False	-0.94235
138367A	0.49000	0.47000	13.10028	13.30108	1	False	-0.10976
138455A	0.70000	0.67000	10.90240	11.24035	1	False	-0.06577
153664	0.87000	0.85000	8.49444	8.85427	1	False	-0.55683
153851	0.70000	0.73000	10.90240	10.54875	1	False	0.81944
153898	0.74000	0.77000	10.42662	10.04461	1	False	1.05374
164358A	0.62000	0.63000	11.77808	11.67259	1	False	-0.43503
165644A	0.66000	0.62000	11.35015	11.77808	1	False	0.42062
165948A	0.66000	0.67000	11.35015	11.24035	1	False	-0.31332
165954A	0.55000	0.52000	12.49735	12.79939	1	False	0.16950
187328	0.77000	0.81000	10.04461	9.48841	1	False	1.87797
191063A	0.47000	0.50000	13.30108	13.00000	1	False	0.01786
191064A	0.76000	0.66000	10.17479	11.35015	1	True	3.27582
191069A	0.54000	0.54000	12.59827	12.59827	1	False	-1.07483
191074A	0.80000	0.81000	9.63352	9.48841	1	False	0.25058
191076A	0.72000	0.73000	10.66863	10.54875	1	False	-0.10595
191077A	0.86000	0.82000	8.67872	9.33854	1	False	0.74795
191086A	0.65000	0.64000	11.45872	11.56616	1	False	-0.89937
191090A	0.57000	0.54000	12.29450	12.59827	1	False	0.12766
191101A	0.51000	0.51000	12.89972	12.89972	1	False	-1.00184
191107A	0.72000	0.72000	10.66863	10.66863	1	False	-0.60956
191112A	0.64000	0.65000	11.56616	11.45872	1	False	-0.37551
228096	0.76000	0.67000	10.17479	11.24035	1	False	2.81458
228125	0.83000	0.77000	9.18334	10.04461	1	False	1.71639
250949	0.52000	0.51000	12.79939	12.89972	1	False	-0.60464
258114	0.71000	0.72000	10.78646	10.66863	1	False	-0.14313
258140	0.58000	0.58000	12.19243	12.19243	1	False	-0.97849
258144	0.62000	0.65000	11.77808	11.45872	1	False	0.46338
258147	0.68000	0.71000	11.12920	10.78646	1	False	0.71871
469354	0.39750	0.45500	14.03929	13.45215	4	False	1.04080
469789	0.74000	0.73000	10.42662	10.54875	1	False	-1.06401
469859	0.53000	0.52000	12.69892	12.79939	1	False	-0.62843
469905	0.40000	0.40750	14.01339	13.93592	4	False	-1.05763
470097	0.40000	0.40000	14.01339	14.01339	1	False	-0.73222
470179	0.38000	0.41000	14.22192	13.91018	1	False	-0.16028
470220	0.65000	0.64000	11.45872	11.56616	1	False	-0.89937
470376	0.53000	0.51000	12.69892	12.89972	4	False	-0.20693
470447	0.71000	0.71000	10.78646	10.78646	1	False	-0.63809
541774	0.67000	0.63000	11.24035	11.67259	1	False	0.41214
63442	0.68000	0.68000	11.12920	11.12920	1	False	-0.72107

Table 2.5.2 (continued)

Delta Analysis

Science Grade 8

Item Id	Old P	New P	Old Delta	New Delta	Max	Discard	Std Dist
64657	0.85000	0.86000	8.85427	8.67872	1	False	0.56712
65117	0.47000	0.47000	13.30108	13.30108	4	False	-0.90467
96613	0.71000	0.71000	10.78646	10.78646	1	False	-0.63809
97788	0.55000	0.56000	12.49735	12.39612	1	False	-0.62706

Table 2.5.3

Delta Analysis

Science Grade 11

Item Id	Old P	New P	Old Delta	New Delta	Max	Discard	Std Dist
138232A	0.73000	0.72000	10.54875	10.66863	1	False	-0.21556
138280A	0.44000	0.44000	13.60388	13.60388	1	False	-1.12001
138282A	0.71000	0.70000	10.78646	10.90240	1	False	-0.26554
138295A	0.51000	0.50000	12.89972	13.00000	1	False	-0.63617
153427	0.54000	0.65000	12.59827	11.45872	1	False	2.98988
164111A	0.71000	0.70000	10.78646	10.90240	1	False	-0.26554
164363A	0.63000	0.63000	11.67259	11.67259	1	False	-0.83555
164367A	0.18250	0.22750	16.62352	15.98842	4	False	1.67048
166387A	0.60000	0.59000	11.98661	12.08982	1	False	-0.49056
167546A	0.45000	0.47000	13.50265	13.30108	1	False	-0.43261
167605A	0.52000	0.51000	12.79939	12.89972	1	False	-0.62116
167607A	0.54000	0.54000	12.59827	12.59827	1	False	-0.97189
191117A	0.64000	0.69000	11.56616	11.01660	1	False	0.60136
191118A	0.47000	0.43000	13.30108	13.70550	1	False	0.45765
191120A	0.25000	0.23000	15.69796	15.95539	1	False	-0.45259
191123A	0.68000	0.67000	11.12920	11.24035	1	False	-0.33420
191140A	0.68000	0.78000	11.12920	9.91123	1	True	3.07081
191142A	0.50000	0.49000	13.00000	13.10028	1	False	-0.65094
191147A	0.64000	0.68000	11.56616	11.12920	1	False	0.17450
191149A	0.54000	0.60000	12.59827	11.98661	1	False	0.98874
191151A	0.48000	0.46000	13.20061	13.40173	1	False	-0.29821
191152A	0.49000	0.58000	13.10028	12.19243	1	False	2.18550
191154A	0.44000	0.44000	13.60388	13.60388	1	False	-1.12001
191161A	0.72000	0.69000	10.66863	11.01660	1	False	0.63138
191163A	0.76000	0.74000	10.17479	10.42662	1	False	0.33969
191166A	0.49000	0.50000	13.10028	13.00000	1	False	-0.87584
196922	0.52000	0.54000	12.79939	12.59827	1	False	-0.53788
228234	0.52000	0.53000	12.79939	12.69892	1	False	-0.91944
248451	0.61000	0.58000	11.88272	12.19243	1	False	0.30751
258239	0.54000	0.59000	12.59827	12.08982	1	False	0.59750
258242	0.28500	0.25750	15.27221	15.60429	4	False	-0.10689
471225	0.36000	0.36000	14.43384	14.43384	1	False	-1.05954
473541	0.56000	0.58000	12.39612	12.19243	1	False	-0.58751
473557	0.71000	0.69000	10.78646	11.01660	1	False	0.16737
473562	0.47000	0.48000	13.30108	13.20061	1	False	-0.84555
473639	0.43000	0.43000	13.70550	13.70550	1	False	-1.13498
473753	0.69000	0.71000	11.01660	10.78646	1	False	-0.69047
473802	0.59000	0.58000	12.08982	12.19243	1	False	-0.50805
477967	0.64000	0.62000	11.56616	11.77808	1	False	-0.01656
477988	0.57000	0.53000	12.29450	12.69892	1	False	0.60591

Table 2.5.3 (continued)

Delta Analysis

Science Grade 11

Item Id	Old P	New P	Old Delta	New Delta	Max	Discard	Std Dist
546738	0.37500	0.33750	14.27456	14.67718	4	False	0.30747
550207	0.36750	0.33250	14.35393	14.73208	4	False	0.20301
550251	0.61000	0.57000	11.88272	12.29450	1	False	0.69447

Section 2.6

Tabled B/B Analysis Results

Table 2.6.1

b/b Analysis

Science Grade 5

Item Id	Old b	New b	Std Dist	Flag
138205A	-0.50427	-0.75536	-1.26931	False
138266A	0.21490	0.07343	-0.76583	False
138268A	-0.09207	-0.15260	-0.36124	False
138269A	-1.21040	-1.38329	-0.86238	False
138289A	-1.93919	-2.59525	0.60343	False
164093A	0.85904	0.86219	-0.08966	False
165111A	0.99042	0.56450	-0.39797	False
165321A	1.09376	0.32635	1.26232	False
165328A	0.93018	1.41999	2.26786	False
166403A	1.01448	0.43254	0.35968	False
166842A	1.54984	1.65995	0.40203	False
166843A	-0.31602	-0.63549	-0.96544	False
169211A	-1.82271	-1.86721	-0.21569	False
169229A	-0.03399	-0.31825	-1.12516	False
191013A	1.97402	1.34833	0.60946	False
191015A	-0.36579	-0.45396	-0.48457	False
191018A	0.35055	0.41950	0.24939	False
191027A	-1.31316	-1.49594	-0.90632	False
191032A	0.09109	-0.10249	-1.01372	False
191043A	-0.16982	-0.37317	-1.05088	False
191047A	-0.20119	-0.47727	-1.17138	False
199466	0.35791	0.35228	-0.11261	False
228134	0.20514	-0.28217	-0.13099	False
228155	-1.72957	-1.25809	2.28317	False
248521	-1.43816	-1.59176	-0.75989	False
248566	0.07357	-0.80602	1.76642	False
466901	-0.36808	-0.34441	0.05794	False
467335	-0.16902	-0.58063	-0.51280	False
467356	0.62477	0.58513	-0.28801	False
547304	1.38323	0.47688	1.94752	False
96271	-0.03341	-0.65546	0.51315	False
96274	-1.12192	-1.87426	1.10241	False
96581	-0.83285	-0.97397	-0.72308	False
97064	0.71329	0.68883	-0.21786	False

Table 2.6.2
b/b Analysis
Science Grade 8

Item Id	Old b	New b	Std Dist	Flag
138322A	-0.33224	-0.49074	-0.73179	False
138367A	0.55267	0.51725	-0.06974	False
138455A	-0.41048	-0.45594	-0.66127	False
153664	-1.46318	-1.43476	-0.77858	False
153851	-0.76386	-0.87609	-0.78334	False
153898	-1.61234	-2.40192	3.90707	True
164358A	-0.01404	-0.24447	-0.45792	False
165644A	-0.33261	-0.32390	-0.28066	False
165948A	-0.01147	-0.39338	0.48542	False
165954A	0.68108	0.24244	0.45892	False
187328	-1.21154	-1.67844	1.67449	False
191063A	0.50255	0.36707	-0.72131	False
191064A	-0.74515	-0.56335	0.57232	False
191069A	0.35398	0.38371	0.22748	False
191074A	-0.76887	-0.85861	-0.92086	False
191076A	-0.97987	-0.87963	-0.06525	False
191077A	-1.07981	-1.07508	-0.71580	False
191086A	0.04859	-0.00249	-0.44422	False
191090A	-0.29790	-0.06122	1.16020	False
191101A	0.52369	0.21988	-0.29556	False
191107A	-1.97539	-1.39638	2.37404	False
191112A	0.19101	-0.06950	-0.38292	False
228096	-0.65839	-0.52553	0.31473	False
228125	-1.42117	-1.30444	-0.20474	False
250949	0.37625	0.62381	1.59826	False
258114	-2.34017	-2.25057	-0.87861	False
258140	0.80015	0.17133	1.57964	False
258144	0.08805	-0.24801	0.14481	False
258147	-0.25128	-0.36966	-1.02647	False
469354	0.94127	0.40513	0.92412	False
469789	-0.81440	-1.03957	-0.05121	False
469859	0.65387	0.48505	-0.84615	False
469905	0.65674	0.41767	-0.77239	False
470097	1.20594	1.00893	-0.71880	False
470179	1.41960	0.98270	0.04251	False
470220	-0.18479	-0.20997	-0.41085	False
470376	0.00345	-0.00546	-0.20601	False
470447	-0.16917	-0.37232	-0.54287	False
541774	-0.15072	-0.08140	0.19724	False
63442	-0.21974	-0.32273	-0.91532	False

Table 2.6.2 (continued)

b/b Analysis

Science Grade 8

Item Id	Old b	New b	Std Dist	Flag
64657	-1.74827	-1.67343	-0.64563	False
65117	0.30308	0.16107	-0.87158	False
96613	-0.52469	-0.46888	-0.09239	False
97788	0.70435	0.36434	-0.16900	False

Table 2.6.3
b/b Analysis
Science Grade 11

Item Id	Old b	New b	Std Dist	Flag
138232A	-0.50787	-0.78227	-0.48446	False
138280A	1.53392	1.44940	-0.00850	False
138282A	-0.31239	-0.46390	-1.03393	False
138295A	0.64130	0.69837	-0.45310	False
153427	0.30098	0.09370	-0.24164	False
164111A	-0.57444	-0.74591	-0.94331	False
164363A	-0.15694	-0.33155	-0.85253	False
164367A	1.81931	1.43732	2.22861	False
166387A	-0.59647	-0.78644	-1.04838	False
167546A	0.79424	0.41234	1.35044	False
167605A	0.58178	0.59089	-0.72343	False
167607A	0.40805	0.35434	-0.99554	False
191117A	-0.50642	-0.22572	2.02760	False
191118A	0.81626	0.96213	-0.00800	False
191120A	1.74747	1.76523	-0.51086	False
191123A	-0.47647	-0.54698	-0.35084	False
191140A	-0.78165	-1.47841	2.11058	False
191142A	0.44134	0.85306	2.09393	False
191147A	-0.53953	-0.81215	-0.52349	False
191149A	0.14057	0.02395	-0.98631	False
191151A	0.72545	0.67486	-0.92793	False
191152A	0.44434	0.20116	0.12159	False
191154A	0.62326	0.70386	-0.28002	False
191161A	-0.63316	-0.49606	1.17411	False
191163A	-1.37956	-1.41733	0.64163	False
191166A	0.51600	0.59011	-0.23167	False
196922	0.43480	0.52642	-0.04486	False
228234	0.28472	0.20565	-1.05984	False
248451	0.02161	0.16388	0.64819	False
258239	0.24848	-0.16932	1.12371	False
258242	1.27923	1.55984	0.49828	False
471225	1.08260	1.14358	-0.80471	False
473541	0.50213	0.50511	-0.69631	False
473557	-0.46055	-0.55806	-0.54534	False
473562	0.70605	0.65400	-0.93476	False
473639	0.93250	0.82576	-0.37452	False
473753	-0.29107	-0.73623	0.84508	False
473802	-0.06932	-0.16519	-0.86929	False
477967	-0.04027	-0.28120	-0.30837	False
477988	0.23186	0.25627	-0.32137	False

Table 2.6.3 (continued)

b/b Analysis

Science Grade 11

Item Id	Old b	New b	Std Dist	Flag
546738	0.81212	0.91622	-0.28428	False
550207	0.76075	0.87168	-0.19455	False
550251	0.01098	-0.59461	2.17840	False

Section 2.7

Final Item Parameters

Table 2.7.1

IRT Parameters for Dichotomous Items

Science Grade 5

	Parameters and Measures of Standard Error					
Item ID	a	SE(a)	b	SE(b)	c	SE(c)
96271	0.58517	0.03399	-0.60055	0.14264	0.37326	0.03844
165111A	0.65931	0.04362	0.69597	0.07348	0.40960	0.01834
191027A	0.74349	0.02938	-1.49377	0.10552	0.21099	0.04746
467335	0.64195	0.02778	-0.52102	0.08732	0.19719	0.03109
169229A	0.64004	0.03083	-0.24218	0.08754	0.25905	0.02824
138269A	0.31128	0.01594	-1.37405	0.21540	0.11125	0.04849
165321A	0.34390	0.02376	0.44287	0.15859	0.11166	0.03721
138205A	0.60080	0.02391	-0.70672	0.08847	0.12874	0.03259
138266A	0.79691	0.03453	0.17408	0.05090	0.27282	0.01776
191013A	0.51127	0.04046	1.52898	0.06724	0.22161	0.01846
138289A	0.34020	0.01311	-2.66206	0.10033	0.00000	0.00000
166842A	0.52173	0.04664	1.86015	0.07015	0.24578	0.01647
228155	0.27596	0.02212	-1.24099	0.43805	0.22001	0.07909
248566	0.27637	0.01061	-0.76055	0.04912	0.00000	0.00000
96275	0.54363	0.02271	-1.08534	0.11945	0.13706	0.04237
96581	0.64877	0.01809	-0.93904	0.04953	0.04670	0.01904
191032A	0.70258	0.02618	-0.01288	0.05000	0.11984	0.01908
228134	0.84706	0.03253	-0.20383	0.05098	0.24352	0.01990
166403A	0.89289	0.03736	0.55572	0.03550	0.24688	0.01281
466901	0.60111	0.02408	-0.26998	0.07150	0.11206	0.02554
169211A	0.60034	0.01893	-1.88833	0.08246	0.07503	0.03293
248521	0.55015	0.02187	-1.59560	0.13228	0.13996	0.05014
96274	0.44430	0.02051	-1.89583	0.20142	0.16633	0.06396
97064	0.70794	0.03994	0.82810	0.05228	0.30458	0.01556
547304	0.54436	0.02975	0.60285	0.07043	0.16080	0.02194
467356	0.36540	0.02885	0.71789	0.15281	0.14901	0.03676
138268A	0.65896	0.02624	-0.06613	0.05949	0.13276	0.02180
166843A	0.65105	0.02177	-0.57932	0.06020	0.07960	0.02356
191015A	1.19408	0.03498	-0.38640	0.02831	0.16001	0.01450
467311	1.27260	0.03748	-0.23254	0.02517	0.17591	0.01281
164093A	0.81803	0.03892	1.01234	0.03431	0.21378	0.01131
191043A	0.57300	0.02592	-0.30054	0.08956	0.15388	0.03006

Table 2.7.2

IRT Parameters for Polytomous Items

Science Grade 5

	Parameters and Measures of Standard Error													
Item ID	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)	d3	SE(d3)	d4	SE(d4)
165328A	0.51778	0.00470	1.60514	0.01859	3.23391	0.02579	1.80150	0.02152	-0.89136	0.03005	-4.14403	0.09999	0.00000	0.00000
191018A	0.65620	0.00590	0.54187	0.01437	1.96392	0.02129	0.77596	0.01757	-0.56601	0.01881	-2.17387	0.02995	0.00000	0.00000
191047A	0.52558	0.00474	-0.41118	0.01773	2.24911	0.03316	0.78648	0.02345	-0.69129	0.02104	-2.34431	0.02591	0.00000	0.00000
199466	0.80881	0.00715	0.47043	0.01181	1.96378	0.01936	0.69849	0.01488	-0.55277	0.01590	-2.10951	0.02726	0.00000	0.00000

Table 2.7.3

IRT Parameters for Dichotomous Items

Science Grade 8

	Parameters and Measures of Standard Error					
Item ID	a	SE(a)	b	SE(b)	c	SE(c)
258114	0.19413	0.01327	-2.27946	0.40662	0.12817	0.05784
470220	0.54576	0.02809	-0.08875	0.10074	0.20961	0.03050
258147	0.69916	0.03152	-0.26019	0.07687	0.28405	0.02575
470447	0.72031	0.03153	-0.26304	0.07230	0.27838	0.02489
191086A	0.89167	0.03515	0.13399	0.04311	0.27431	0.01621
165644A	0.53532	0.02372	-0.21106	0.08800	0.12318	0.02877
97788	0.47039	0.03077	0.52780	0.10988	0.21521	0.02925
187328	0.47424	0.01944	-1.66524	0.14896	0.12707	0.04989
63442	1.07547	0.03424	-0.20981	0.03266	0.20083	0.01529
191077A	0.75099	0.03056	-1.01750	0.08969	0.25533	0.03586
191063A	0.72180	0.02922	0.53073	0.04116	0.14734	0.01495
191069A	0.95550	0.03759	0.54860	0.03237	0.24417	0.01214
191107A	0.33449	0.01529	-1.36243	0.17220	0.09424	0.04149
138367A	0.82140	0.03225	0.69196	0.03293	0.16113	0.01215
258140	0.65313	0.03053	0.32060	0.06157	0.21588	0.02030
165948A	0.57874	0.02741	-0.28565	0.09554	0.20264	0.03082
258144	0.90186	0.03048	-0.12959	0.03942	0.18062	0.01686
153664	0.91907	0.02495	-1.40364	0.04315	0.05696	0.02106
191074A	1.13520	0.03825	-0.78511	0.04311	0.25383	0.02176
228125	0.58413	0.01774	-1.26373	0.06755	0.05974	0.02502
191076A	0.67668	0.02267	-0.80767	0.06547	0.09618	0.02676
153851	0.67919	0.02331	-0.80387	0.06791	0.10645	0.02774
138322A	0.57293	0.02469	-0.39018	0.08857	0.14517	0.03023
64657	0.73974	0.02036	-1.65986	0.05207	0.04844	0.02116
96613	0.69916	0.02996	-0.36671	0.07568	0.24872	0.02672
228096	0.57318	0.02524	-0.42752	0.09307	0.15896	0.03150
153898	0.29814	0.01202	-2.44194	0.10146	0.00000	0.00000
470179	0.68392	0.03523	1.19165	0.04064	0.17605	0.01279
164358A	0.94614	0.02937	-0.12579	0.03333	0.13823	0.01497
165954A	0.43280	0.02409	0.39694	0.10177	0.10800	0.02852
541774	0.90538	0.03278	0.04928	0.03958	0.22187	0.01600
469789	0.55676	0.01879	-0.97938	0.07823	0.07448	0.02827
470097	0.48937	0.02994	1.21981	0.06299	0.12231	0.01903
191101A	0.47925	0.02291	0.37272	0.07679	0.08739	0.02342
191112A	1.07191	0.03771	0.06205	0.03308	0.26280	0.01404
138455A	0.65740	0.02670	-0.35282	0.07274	0.17299	0.02653
250949	0.88095	0.03978	0.80636	0.03563	0.26789	0.01202
191090A	0.35781	0.01793	0.07094	0.11809	0.07316	0.02919
469859	0.71343	0.03315	0.65739	0.04668	0.21637	0.01568

Table 2.7.3 (continued)

IRT Parameters for Dichotomous Items

Science Grade 8

	Parameters and Measures of Standard Error					
Item ID	a	SE(a)	b	SE(b)	c	SE(c)
191064A	0.57372	0.02244	-0.46813	0.07942	0.10585	0.02807

Table 2.7.4

IRT Parameters for Polytomous Items

Science Grade 8

	Parameters and Measures of Standard Error													
Item ID	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)	d3	SE(d3)	d4	SE(d4)
469354	0.63122	0.00564	0.57159	0.01659	2.57348	0.02577	1.70982	0.02067	-1.62883	0.02499	-2.65448	0.03636	0.00000	0.00000
469905	0.70203	0.00648	0.58506	0.01363	2.03573	0.02088	0.11687	0.01652	-0.61213	0.01803	-1.54046	0.02320	0.00000	0.00000
470376	0.68220	0.00602	0.13080	0.01402	1.96401	0.02361	1.15956	0.01907	-0.73599	0.01756	-2.38759	0.02705	0.00000	0.00000
65117	0.68107	0.00615	0.30958	0.01391	1.90982	0.02204	0.84977	0.01760	-0.88292	0.01844	-1.87668	0.02400	0.00000	0.00000

Table 2.7.5

IRT Parameters for Dichotomous Items

Science Grade 11

	Parameters and Measures of Standard Error					
Item ID	a	SE(a)	b	SE(b)	c	SE(c)
191117A	0.69129	0.03961	-0.10091	0.09513	0.30706	0.03171
167546A	0.61562	0.03035	0.48499	0.05658	0.09361	0.02123
138230A	1.34529	0.04976	0.74670	0.01904	0.16894	0.00817
191140A	0.66313	0.01757	-1.25119	0.03289	0.00000	0.00000
473541	0.77027	0.04580	0.57018	0.05795	0.31868	0.01921
550251	0.34423	0.01287	-0.43964	0.03719	0.00000	0.00000
471225	1.65116	0.07686	1.15646	0.01905	0.23181	0.00636
166387A	0.33362	0.01286	-0.61579	0.04184	0.00000	0.00000
153427	1.12776	0.04818	0.19240	0.03634	0.32701	0.01525
473557	0.81799	0.03203	-0.40608	0.05998	0.14878	0.02771
248451	1.17765	0.04450	0.25684	0.02855	0.23629	0.01329
191142A	0.88804	0.04901	0.88969	0.03791	0.27238	0.01341
191154A	1.11804	0.04626	0.75268	0.02460	0.19286	0.01016
191123A	0.81482	0.03041	-0.39590	0.05558	0.12104	0.02607
191163A	0.54616	0.01573	-1.19510	0.03735	0.00000	0.00000
196922	1.03204	0.04836	0.58975	0.03381	0.28941	0.01316
228234	0.36357	0.02543	0.29520	0.16210	0.10694	0.04079
191118A	1.09667	0.05357	0.98984	0.02715	0.24230	0.00980
191120A	1.94864	0.12534	1.72729	0.02490	0.17740	0.00444
138232A	0.89477	0.02838	-0.61196	0.04514	0.08191	0.02342
477967	0.72698	0.03061	-0.15185	0.06207	0.12867	0.02612
138280A	0.77331	0.06017	1.43727	0.04834	0.30403	0.01307
258239	0.73373	0.03029	-0.04912	0.05599	0.11607	0.02365
477988	0.98027	0.03804	0.34168	0.03200	0.16939	0.01433
138282A	1.23558	0.03989	-0.31961	0.03076	0.16969	0.01742
473753	0.92152	0.03025	-0.56968	0.04586	0.09928	0.02403
167607A	0.75423	0.03830	0.43174	0.05274	0.20925	0.01997
164363A	1.12269	0.03384	-0.19808	0.02787	0.09702	0.01507
191161A	0.88373	0.03396	-0.34915	0.05329	0.16792	0.02522
164111A	0.72193	0.02826	-0.57857	0.07198	0.11585	0.03209
473802	0.73233	0.02889	-0.04532	0.05229	0.09646	0.02231
191166A	0.68654	0.03923	0.64823	0.05650	0.20220	0.02030
473562	1.37626	0.05553	0.70690	0.02130	0.24557	0.00905
138295A	0.95473	0.04774	0.74764	0.03494	0.26776	0.01310
191147A	0.74335	0.01709	-0.63940	0.02061	0.00000	0.00000
473639	1.14034	0.05028	0.86462	0.02483	0.21658	0.00970
167605A	1.17893	0.05076	0.64895	0.02657	0.26366	0.01092
191152A	1.01737	0.04241	0.29108	0.03570	0.24592	0.01532
191149A	0.82512	0.03715	0.12835	0.05183	0.21305	0.02113

Table 2.7.5 (continued)

IRT Parameters for Dichotomous Items

Science Grade 11

	Parameters and Measures of Standard Error					
Item ID	a	SE(a)	b	SE(b)	c	SE(c)
191151A	0.93736	0.04272	0.72605	0.03173	0.19729	0.01270

Table 2.7.6

IRT Parameters for Polytomous Items

Science Grade 11

	Parameters and Measures of Standard Error													
Item ID	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)	d3	SE(d3)	d4	SE(d4)
164367A	1.13202	0.01219	1.42618	0.00989	1.45494	0.01160	0.56284	0.01246	-0.44759	0.01883	-1.57020	0.04152	0.00000	0.00000
258242	1.00026	0.01018	1.53869	0.01061	1.97356	0.01331	0.73170	0.01347	-0.69827	0.02397	-2.00698	0.05964	0.00000	0.00000
546738	0.93734	0.00886	0.94768	0.01083	1.86819	0.01548	0.58378	0.01331	-0.70700	0.01824	-1.74497	0.03167	0.00000	0.00000
550207	0.96746	0.00953	0.90678	0.01057	1.45813	0.01387	0.54501	0.01294	-0.45316	0.01598	-1.54997	0.02741	0.00000	0.00000

Section 2.8

Decision Accuracy and Consistency (DAC)

Table 2.8.1

DAC Results

Science Grade 5

N	Reliability	Kappa		Accuracy	Consistency	F Pos	F Neg
13009	0.87	0.50	Overall	0.79	0.70	0.12	0.10
			Cut 1	0.95	0.93	0.02	0.03
			Cut 2	0.89	0.85	0.05	0.06
			Cut 3	0.94	0.92	0.05	0.01
			Perf 1	0.79	0.67		
			Perf 2	0.72	0.60		
			Perf 3	0.82	0.79		
			Perf 4	0.57	0.33		

Table 2.8.2

DAC Results

Science Grade 8

N	Reliability	Kappa		Accuracy	Consistency	F Pos	F Neg
13066	0.90	0.54	Overall	0.78	0.69	0.11	0.12
			Cut 1	0.96	0.94	0.02	0.02
			Cut 2	0.91	0.87	0.04	0.05
			Cut 3	0.91	0.87	0.05	0.04
			Perf 1	0.80	0.68		
			Perf 2	0.67	0.55		
			Perf 3	0.80	0.74		
			Perf 4	0.80	0.70		

Table 2.8.3

DAC Results

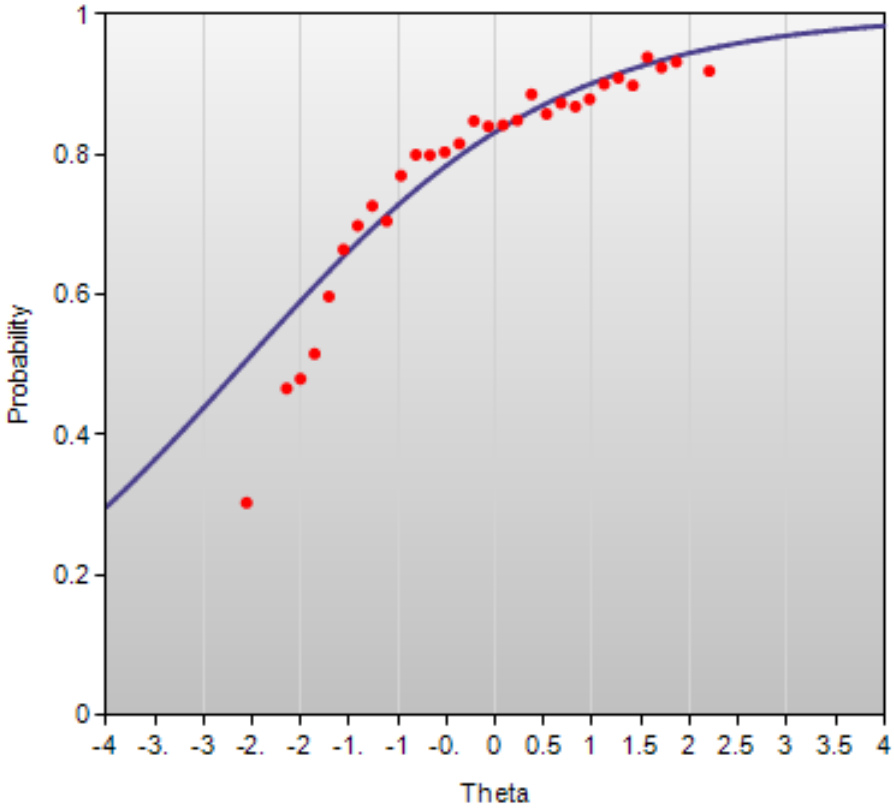
Science Grade 11

N	Reliability	Kappa		Accuracy	Consistency	F Pos	F Neg
12038	0.89	0.54	Overall	0.78	0.70	0.12	0.10
			Cut 1	0.93	0.90	0.03	0.03
			Cut 2	0.89	0.85	0.05	0.06
			Cut 3	0.96	0.95	0.04	0.00
			Perf 1	0.82	0.73		
			Perf 2	0.74	0.64		
			Perf 3	0.79	0.75		
			Perf 4	1.00	0.32		

Section 2.9

Fit Plots of Watchlist Items

Science Grade 5: 138289A



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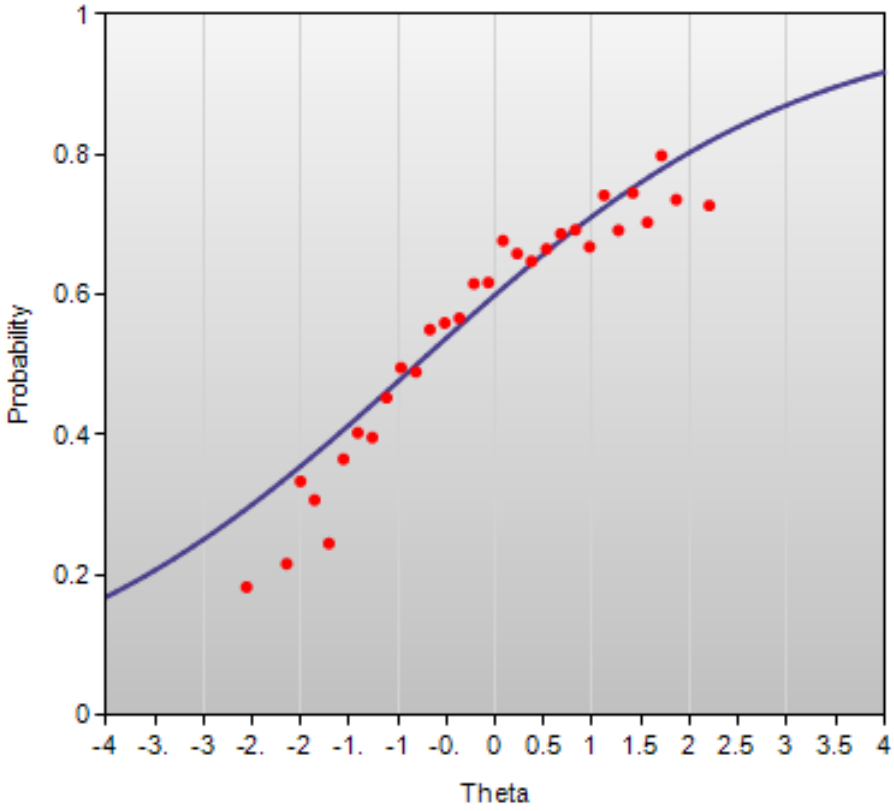

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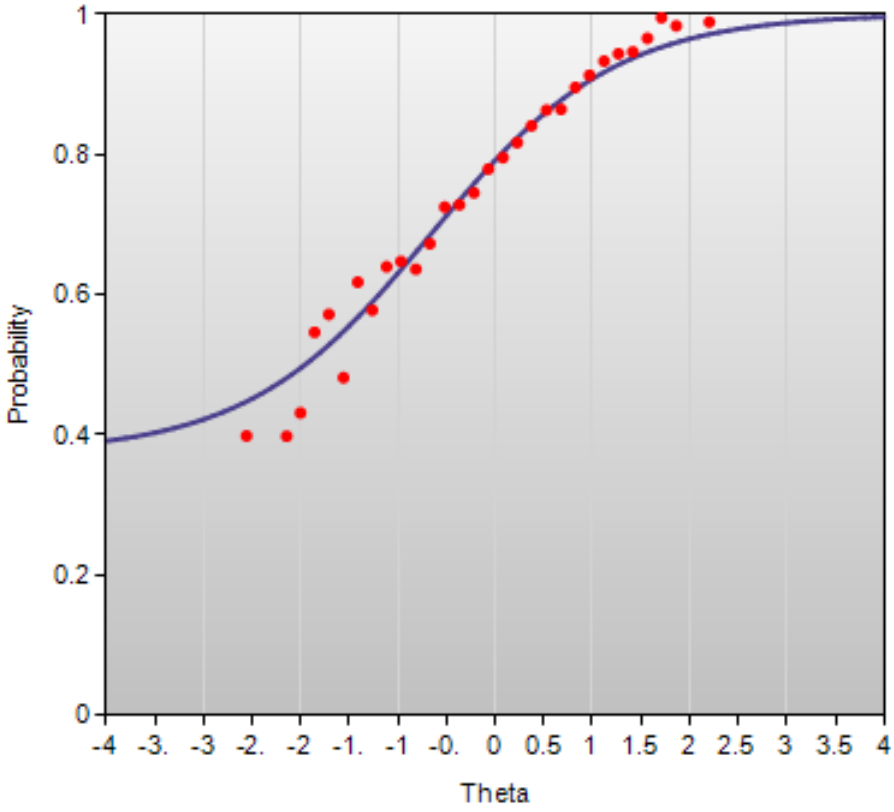

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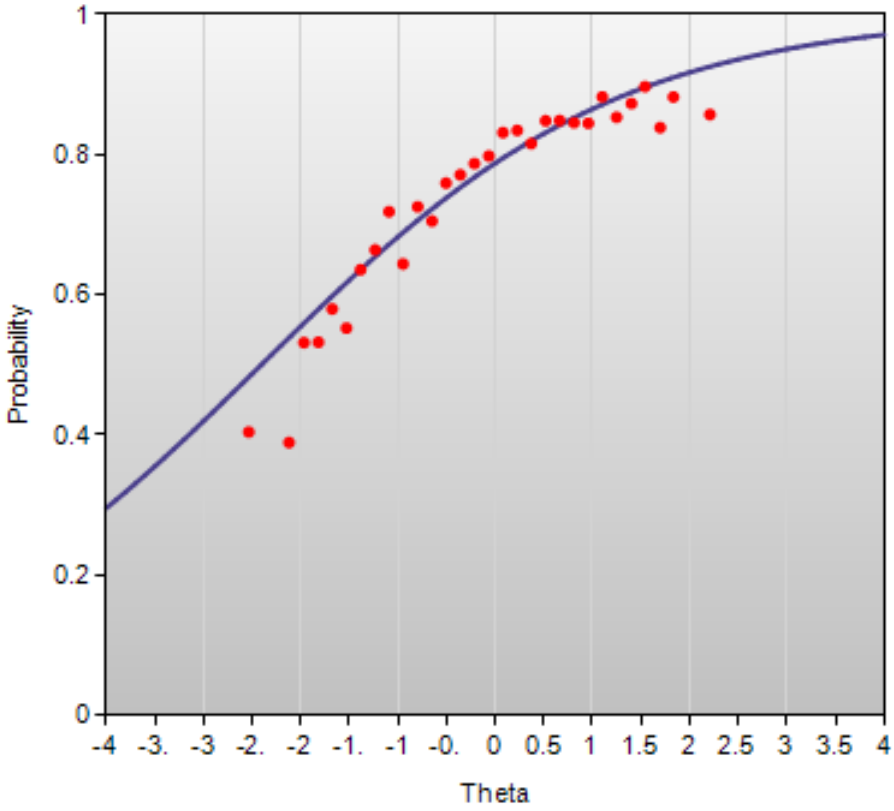

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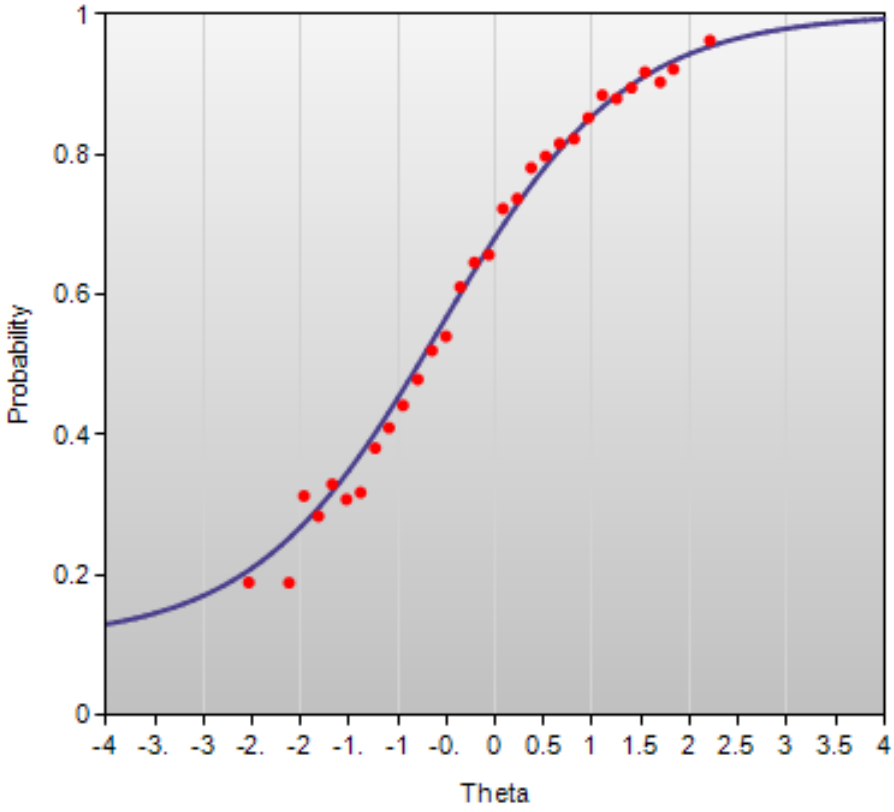

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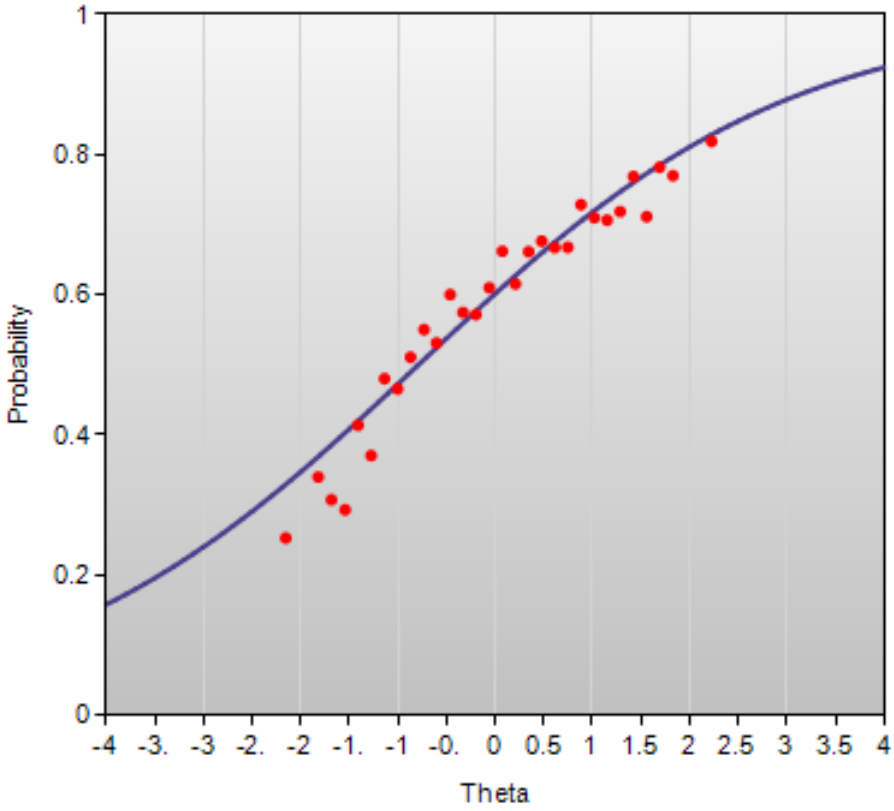

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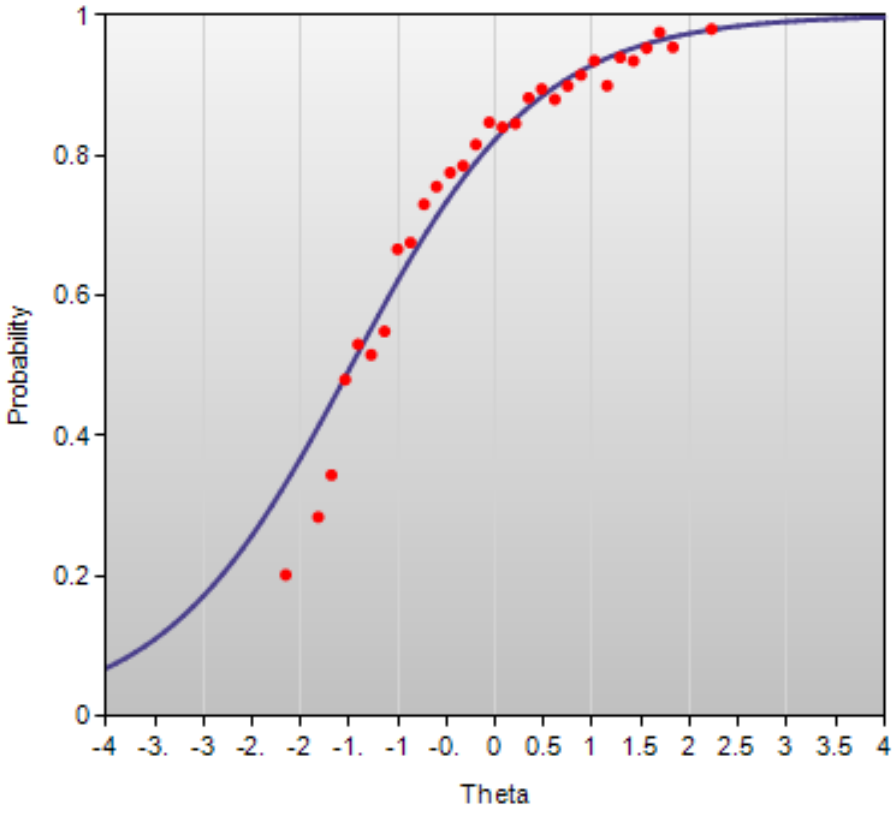

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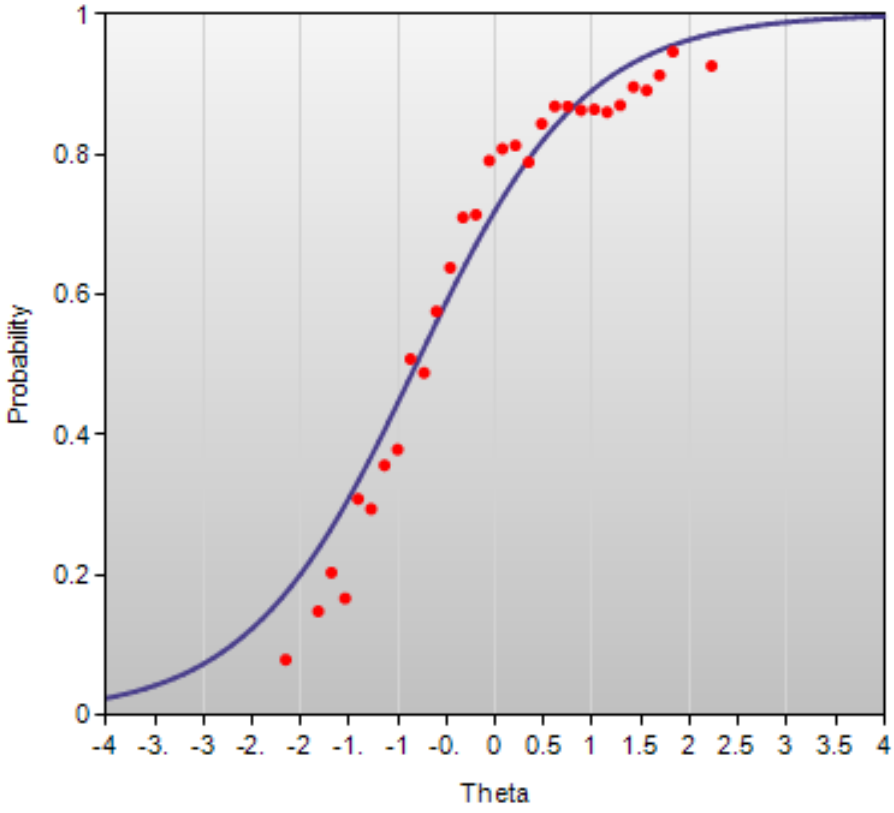

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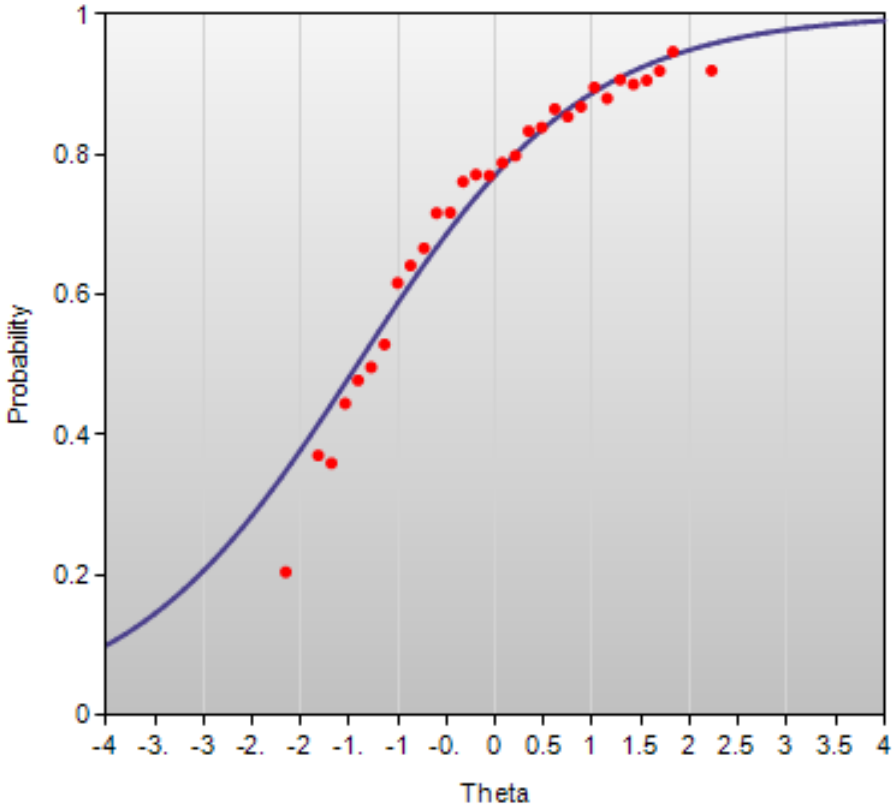
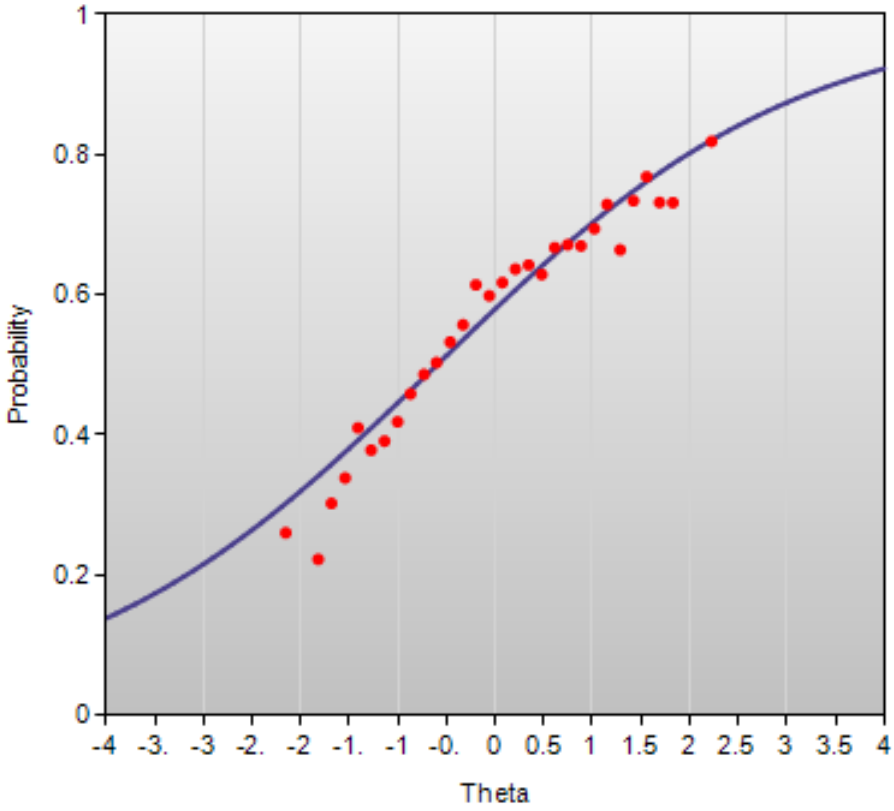
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