2022 RICAS Technical Report

Prepared by Cognia and the

Rhode Island Department of Education

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https://www.ride.ri.gov/

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Preface

Changes to Report from Previous Years

The following is the technical documentation for the SY 2021–2022 administration of the Rhode Island Comprehensive Assessment System (RICAS) English language arts (ELA) and mathematics tests. It follows the new format for RICAS technical reports first implemented in SY 2020-2021 and, for this year, contextualizes that information within an argument-based validity framework.

Because the tests administered in RICAS are the Massachusetts Comprehensive Assessment System (MCAS) ELA and mathematics grades 3–8 tests, much of the information related to their technical quality was traditionally referenced in the RICAS technical report by directing readers to MCAS documentation produced by the Massachusetts Department of Elementary and Secondary Education (DESE). This stand-alone technical report includes any necessary technical information from MCAS directly. Additionally, MCAS Technical Reports in their entirety are available directly on the DESE website:

doe.mass.edu/mcas/tech/?section=techreports.

Because some information in the report is provided by the Rhode Island Department of Education (RIDE) and other information is provided by DESE in Massachusetts, Table A-1 presents an overview of the report's chapters and sections. The source column indicates that either Rhode Island (RI), Massachusetts (MA), or both states provided the information presented in each section of the report.

Interpretational Cautions due to COVID-19

From a technical standpoint, the SY 2021–2022 RICAS administration was consistent with previous years' administrations. Test design, development, and administration were all conducted according to standard operating procedure. This standardization allows for individual student score interpretations to hold, as in previous years. It demonstrates what individual students know and can do. However, the aggregate, system-level score interpretations require more caution because of the differences in participation.

To elaborate, the primary differences are not in administration but instead relate to differences in participation rates from the previous administration. SY 2020–2021 was an anomaly compared to previous administrations and SY 2021–2022 due to COVID-19. The unprecedented changes in learning and instruction due to COVID-19 necessitate the entry for Chapter 6 in the 2022 Differences column in Table 1 provided below. It is highlighted to warn readers that comparison of some of the data presented in Chapter 6 to previous years is inappropriate, due to unknown differences in the testing population.

Specifically, interpretations of statistics that are population dependent, such as item difficulties, item-total correlations, and reliability in 2022 are dependent on a population that may be dissimilar to the population tested in 2021. Those differences include not only changes to learning and instruction but also differences in participation from previous administrations. While participation rates are detailed in Appendix B, it is unclear to what extent differences in participation are random and these impacts have not been fully studied or quantified. These same cautions also apply to aggregations presented in referenced MCAS and RICAS Appendices.

Specifically, these data should not be used by readers to make causal claims about COVID-19–related decelerations, recoveries, or fluctuations in learning. Those cautions are listed for the following reasons:

- The complex substantive mechanisms through which the pandemic has created decelerations, recoveries, and/or fluctuations in measured learning outcomes is unknown;

- Differences in participation rates relative to past years do not allow for direct comparisons of historical trends as the underlying sample compositions may be notably different for some districts; and
- Variations in learning mode (i.e., in-person, remote) between the 2021 and 2022 school years, across districts, were driven by curricular activities and other compensating factors (e.g., school policies, environment, family circumstances). These variations were not measured/tracked and, consequently, explanatory variables could not be included in the scoring models.

Table 1 Information Source (RIDE or DESE) by Chapter and Section and Differences

Chapter	Section	Description	Data Source	2022 Differences
1	All	Overview	RIDE	None
2	2.1	Test Design and Development Appropriateness	RIDE	None
	2.2	Content Standards	RIDE	
	2.3	Performance Standards	RIDE and DESE	
	2.4	ELA	DESE	
	2.5	Mathematics	DESE	
	2.6	Item and Test Development	DESE	
3	All	Test Administration	RIDE	None
4	All	Scoring	RIDE	None
5	All	Reporting	RIDE	None
6	All	CTT, DIF, and Dimensionality	RIDE	Unknown differences in population, learning and instruction
7	All	IRT Analysis	DESE	Unknown differences in population, learning and instruction 2021: Scale connections created primarily through pre-equating 2022: Scale connections created through post-equating
8	All	Reliability	RIDE	None
9	All	Validity	DESE	Argument based validity framework

Chapter 1. Introduction to the Rhode Island Comprehensive Assessment System

Chapter 1 provides an overview of the purpose and organization of this report, including the comparison between MCAS and the RICAS. Also provided are updates for the 2022 administrations, the intended interpretations and uses of the RICAS test scores, and the framework for constructing the validity arguments in this report.

1.1 Purposes of the RICAS and This Report

The RICAS is Rhode Island's state assessment program in ELA and mathematics at grades 3–8 is designed to meet the federal requirements of the Every Student Succeeds Act (ESSA). In addition to fulfilling ESSA assessment requirements, the specific purposes of the RICAS tests are:

1) to provide information to parents/guardians and students on Rhode Island student achievement on the state's ELA and mathematics content standards,

2) to provide information to support program evaluation and improvement at the school and district level, and

(3) to provide academic achievement and growth information used as part of the state's school accountability program to inform parents/guardians and the public about the performance of Rhode Island schools.

Beginning in the 2017–2018 school year, RIDE adopted the MCAS ELA and mathematics tests as its state assessments in ELA and mathematics at grades 3–8. The tests are administered in Rhode Island under a licensing agreement with Massachusetts DESE and labeled RICAS for their use in Rhode Island. The use of the MCAS tests at grades 3–8 is part of Rhode Island's transition from the use of the Partnership for the Assessment of Readiness for College and Careers (PARCC) tests at grades 3–8 and high school as its state assessments. In high school, the PARCC tests have been replaced by the SAT.

The adoption of the MCAS tests reflects a continuation of Rhode Island's policy to partner with other states to offer a high-quality state assessment. With the increased assessment requirements of the No Child Left Behind Act in 2001, RIDE determined that it would not be feasible to develop and sustain a high-quality assessment program on its own. From 2003–2014, Rhode Island partnered with New Hampshire, Vermont, and Maine in the New England Common Assessment Program (NECAP). With the adoption of the Common Core State Standards (CCSS) and the creation of national assessment consortia, Rhode Island joined PARCC, administering the PARCC tests from 2015–2017.

As Massachusetts and other states left the PARCC consortium, it was no longer clear that PARCC would be able to offer long-term stability in assessment to support the state's improvement efforts. MCAS, in contrast, has been regarded as a model for high-quality and stable state assessment since its inception in 1998. In 2017, Massachusetts developed MCAS tests to fully align with college- and career-ready content

standards and established rigorous performance standards consistent with those established by PARCC. With the updated tests and performance standards in place, Rhode Island began administration of the Massachusetts tests in spring 2018.

The main purpose of this 2022 RICAS Technical Report is to document the technical quality and essential design characteristics of the 2022 RICAS ELA and mathematics tests in grades 3–8, to present evidence of the validity, reliability, and fairness of the use of the tests as part of the Rhode Island state assessment program.

Because the RICAS tests administered in Rhode Island are the MCAS ELA and mathematics tests, much of the information related to their technical quality is provided by the MCAS Technical Reports produced by the Massachusetts DESE. That information has been reproduced in this report for the purpose of clarity; consequently, DESE, Massachusetts, and MCAS are all referenced in this report. Additionally, MCAS Technical Reports are available directly on the DESE website: doe.mass.edu/mcas/tech/?section=techreports.

This report contains information specific to the administration of the tests in Rhode Island intended to augment the information reproduced from the MCAS Technical Report, to document any differences in the assessment policies and procedures between Rhode Island and Massachusetts, and to provide additional background information about the RICAS program.

The information contained in this report, prepared by Cognia for RIDE, in conjunction with information provided by Massachusetts, demonstrates that MCAS grades 3–8 ELA and mathematics tests are technically sound, function well for students in Rhode Island, and are appropriate instruments to assess the performance of Rhode Island students on the state's content standards.

This report is primarily intended for users with a working understanding of psychometrics and educational measurement. It assumes knowledge of measurement concepts such as reliability and validity as well as statistical concepts of correlation and central tendency. For some sections, the reader is presumed to have basic familiarity with advanced topics in measurement and applied statistics such as item response theory (IRT) and factor analysis.

1.2 Organization of This Report

This report provides information regarding the spring 2022 administration of the RICAS tests in ELA and mathematics, including a description and results of analyses conducted to provide evidence of the technical quality and design characteristics of those tests.

1.2.1 MCAS and RICAS Comparison

The RICAS tests were administered, scored, and processed by Cognia, the state's assessment contractor for the RICAS tests. Cognia is also the Massachusetts assessment contractor for the MCAS tests. Unless noted in this report, all processes and procedures used in administering, processing, scoring, and reporting of the results of the spring 2022 RICAS tests were identical to the corresponding procedures used for the MCAS tests. Table 1-1 provides a summary of the relationship between key aspects of the RICAS and MCAS testing programs.

Table 1-1 Relationship between 2022 RICAS and MCAS Tests on Critical Test Components

Test Component	RICAS and MCAS
Test Content	Identical
Test Design	Identical
Test Administration	Identical
Mode of Administration	RI offers Spanish language forms in mathematics.
Administration Platform	Identical
Scoring	
Machine-scored items	Identical
Hand-scored items	Identical
Psychometric Quality	Identical
Reporting	
Scaled scores	Identical
Achievement levels	Identical

Cognia conducted all the analyses described in this report. The analyses described and presented here are consistent with the types of analyses conducted for the MCAS tests.

All analyses are based only on Rhode Island students, unless otherwise specified.

The specific analyses of Rhode Island students included in this report were identified by the Rhode Island Technical Advisory Committee (RI-TAC) as necessary and useful to provide evidence of the validity, reliability, and fairness of the use of the MCAS tests as the Rhode Island state assessments in ELA and mathematics in grades 3–8.

This information includes the following:

- Chapter 2: Test Design and Development – information related to the MCAS design and development of the tests used for RICAS
- Chapter 3: Test Administration – information related to test administration policies and procedures, including protocols to monitor test security
- Chapter 4: Scoring – information on machine scored items and hand-scoring procedures for short-answer, constructed-response, and essay items, including information on the level of interrater agreement among raters.
- Chapter 5: Reporting – detailed information on the type of student-level test scores reported to parents/guardians and a description of the quality assurance procedures used to ensure the accuracy of the reporting of those results.
- Chapter 6: Classical Item Analysis – a description of and summary results from the Classical Item analyses conducted with Rhode Island students as part of the full analyses provided to demonstrate technical quality of the test. Analyses include Classical Item Statistics, Differential Item Functioning, and Dimensionality.
- Chapter 7: Item Response Theory Analysis – a description and results from the IRT analyses conducted with Rhode Island students as part of the full analyses provided to demonstrate technical quality of the test. Results of calibration, scaling, equating, and setting of performance standards are provided.
- Chapter 8: Reliability – a description of and summary results from the Reliability analyses conducted with Rhode Island students as part of the full analyses provided to demonstrate the

technical quality of the test. Results of reliability, subgroup reliability, and decision consistency and accuracy are provided.

- Chapter 9: Validity – information related to validity evidence supporting the intended uses and interpretations of RICAS test scores.

Additionally, a set of appendices is provided, containing the following information:

- Appendix A – Accommodations
- Appendix B – Participation Rates
- Appendix C – Interrater Consistency
- Appendix D – Achievement Level Distributions
- Appendix E – Sample Reports
- Appendix F – Item-Level Classical Statistics
- Appendix G – Score Distributions
- Appendix H – Differential Item Functioning Results
- Appendix I – 21-22 MCAS Equating Report
- Appendix J – Reliability

1.3 Updates for the 2022 administration

In addition to changes detailed throughout this document, the following changes were made for the 2022 RICAS administration. As recovery from the pandemic progressed in 2021–2022, RIDE endeavored to return to regular administration of the RICAS.

DESE implemented a two-step equating method for ELA to prevent impacts of changes in dimensionality from adversely affecting the maintenance of ELA scales from year to year. Because RIDE administers the MCAS tests for ELA grades 3–8, these changes also apply to RICAS. This topic is discussed in more detail in Section 6.3.

1.4 Intended Interpretations and Uses of the RICAS Test Scores

The purposes for administering RICAS include measuring student proficiency relative to standards. Because these standards did not change across administrations, individual student scores can be interpreted in a similar way to previous administrations. Another stated purpose of RICAS is the use of assessment results for state and federal accountability and reporting. Related to the recovery from the COVID-19 pandemic, instruction and assessment trended toward a return to standard in-person practices, although the instructional impact of COVID-19 continues to be monitored.

The RICAS is designed, developed, and implemented to elicit student performances whose qualities are then evaluated and quantified as item and test scores supporting a predefined set of intended interpretations. The resulting test score interpretations are, in turn, applied to inform a predefined set of intended uses. These intended interpretations and uses of test scores and a structure for their validation are described in the sections that follow.

1.4.1 Intended Interpretations of the RICAS Test Scores

For grades 3 through 8, in ELA and mathematics, RICAS scores provide reliable and valid information about student knowledge and ability as defined by the content standards for the grade and subject being assessed.

1.4.2 Intended Uses of the RICAS Test Scores

Interpretations of RICAS test scores are intended for the following uses:

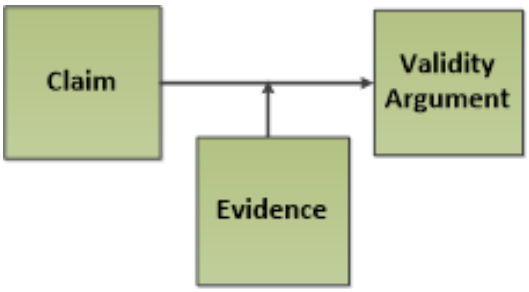
- Parents/guardians and students can use test scores and their underlying interpretations to monitor academic achievement and participate in decisions regarding student learning to support student growth.
- Educators can use test scores and their underlying interpretations to support curricular planning and identify instructional needs at both the classroom and individual student level.
- School- and district-level administrators can use test scores and their underlying interpretations to support program evaluation and improvements at the school and district levels.
- State-level administrators can use test scores and their underlying interpretations to monitor academic achievement and growth as required by state accountability programs and inform parents/guardians and the public of schools' performances on these metrics.
- Federal administrators can use test scores and their underlying interpretations to verify that ESSA federal accountability requirements are met.

1.4.3 Validation Arguments for RICAS

This technical report describes all essential components of the design, implementation, scoring, psychometric analyses, and reporting procedures of the RICAS program. These processes contribute to the accumulation of validity evidence supporting the intended interpretations and uses of RICAS test scores. Because the interpretation and uses of test scores, rather than the tests themselves, are evaluated for validity, this report presents documentation to substantiate these intended interpretations and uses of test scores (AERA, APA, & NCME, 2014, p. 11).

Each chapter in this report contributes important information about the RICAS program: test design and development, standards alignment, test administration, scoring, classical item analyses, IRT linking and scaling, and reporting. The information to support validity arguments for intended interpretations and uses of RICAS test scores, summarized in the last section of each chapter then compiled and fully summarized in Chapter 9, is presented as claims: elements that underlie the interpretations and uses articulated within the validity argument. Strength of the validity argument is established by providing evidence supporting each of these claims. The logic of the validity argument structure is shown in Figure 1-1.

Figure 1-1. Logic of Validity Arguments for Tests



The phrase “intended score interpretations for uses” appears several times in the Standards for Educational and Psychological Testing (“Standards” for short in the following; AERA et al., 2014) and is the core of the field’s views on validity and validation.

For RICAS (and assessment programs more generally), the phrase refers broadly to information related to test performance (e.g., total scores/scale scores, aggregations of total/scale scores, the percentage of students at or above a given level) supported by supplementary information (e.g., achievement level achievement level descriptors for achievement level classifications, item design information for marker items on the scale).

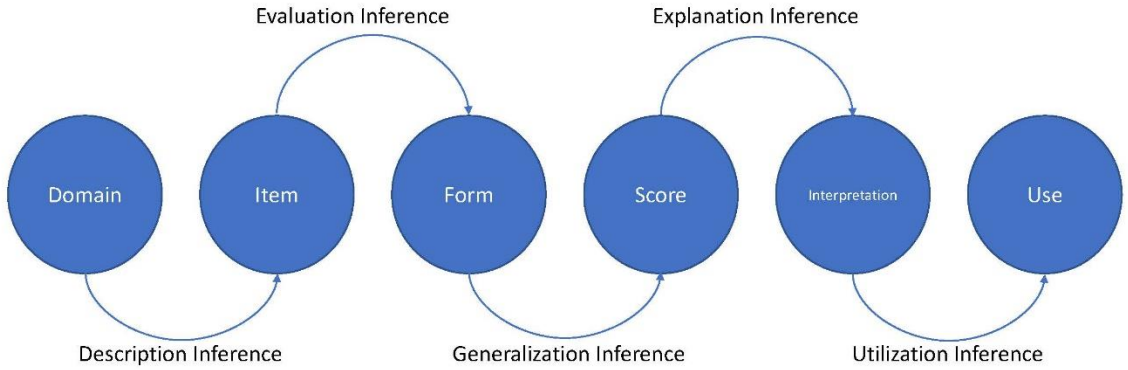
The Standards also provides a framework for describing sources of evidence that should be considered when constructing a validity argument. These sources include evidence based on the following five areas: test content, response processes, internal structure, relationship to other variables, and consequences of testing. These sources address different aspects of supporting evidence for validity arguments but are not considered distinct types of validity. Instead, each contributes to a body of evidence about the individual validity arguments and overall arguments for the validity of intended score interpretations and uses. Moreover, these sources represent only a partial list of potential sources of evidence that informed RICAS design, development, test administration, analysis, and reporting processes that are relevant to the overall validity arguments for intended interpretations and uses of RICAS test scores and related information. Hence, this document will use Chappelle’s (2020) framework based on Kane’s work.

Validity arguments are crafted to not just provide evidence that all steps in the test design, development, and implementation process are taken correctly, but that they are working together to ensure that the resulting scores validly support intended interpretations and uses. The arguments and the logical inferential steps they provide are structured based upon the framework developed by Chappelle (2020) and can be summarized as follows (also seen in Figure 1-2):

1) Description Inference: Items sample from the target domain appropriately such that high quality forms can be produced. (Domain to Item)
2) Evaluation Inference: Forms sample from items appropriately such that observed scores reflective of the domain can be produced. (Item to Form)
3) Generalization Inference: Observed scores on individual forms are reliable such that they are reflective of expected scores across forms. (Form to Score)
4) Explanation Inference: Expected scores are associated with classification cuts such that classification decisions are interpretable. (Score to Interpretation)
5) Utilization Inferences: Interpretations of scores and classifications are used as intended and only in ways considered appropriate and fair. (Interpretation to Use)

Evidence for these inferences and the claims that comprise them is provided at the end of each chapter. It identifies the specific inference and claims and describes the relevant evidence. This evidence is then gathered and organized according to the structure of inferences presented above.

Figure 1-2. Chappelle (2020)'s Framework: The Arguments and the Inferential Steps



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Chapter 2. Test Design and Development

There were no changes in test design or development for the SY 2021–2022 administration of the RICAS program. The adherence to previous years' blueprints allows for defensible comparisons of where students are relative to grade-level expectations as outlined in the grades 3–8 ELA and mathematics standards despite COVID-related learning disruptions. Chapter 2 is primarily drawn from MCAS technical reporting and relates to the RICAS use of those assessments.

2.1 Appropriateness of Using Massachusetts Standards

Before adopting the MCAS tests as its state assessment, it was necessary to determine the appropriateness of the Massachusetts content and performance standards for use in Rhode Island.

To meet the requirements of the Every Student Succeeds Act (ESSA) and provide valid and useful information to Rhode Island parents/guardians, students, and schools, the state assessments must be aligned to the state's content standards.

In addition, to support the state's commitment to ensure that Rhode Island's educational system holds high expectations for all students and that Rhode Island graduates are well prepared for postsecondary education, work, and life, the state must establish rigorous performance standards that signal whether students are on track for success in high school and college and career readiness as they progress through elementary and middle school.

The following sections describe the steps taken by Rhode Island to make the appropriate determinations for content and performance standards followed by descriptions of the test designs for ELA and mathematics.

2.2 Content Standards

In 2010, Rhode Island adopted the Common Core State Standards (CCSS) as its state content standards in ELA and mathematics. In July 2010, the Massachusetts Board of Elementary and Secondary Education also adopted the CCSS in ELA and mathematics as the core of its PK–12 content standards.

In March 2011, Massachusetts adopted revised Curriculum Frameworks in ELA and mathematics, which are the state's academic content standards. As described at the time by Mitchell Chester, Massachusetts Commissioner of Elementary and Secondary Education, the 2011 Curriculum Framework "merges the Common Core State Standards for Mathematics with additional Massachusetts standards and other features." Rhode Island transitioned to the Rhode Island Core Standards from the CCSS on March 9, 2021. The Rhode Island Core Standards mirror the Massachusetts Curriculum Frameworks.

2.3 PERFORMANCE STANDARDS

In addition to the alignment of the tests to Rhode Island's academic content standards, and for the MCAS tests to be appropriate for Rhode Island, it was essential that the performance standards established for those tests were consistent with the rigorous performance standards that Rhode Island adopted when it began administering the PARCC tests in 2015. More technical details on the determination of the cut point are provided in section 7.5 in Chapter 7.

2.4 ELA

2.4.1 ELA Standards

The 2022 RICAS grades 3–8 ELA tests, including all matrix items, were aligned to and measured the following learning standards as articulated within the Rhode Island Core Standards.

- Anchor Standards for Reading
    - Key Ideas and Details (Standards 1–3)
    - Craft and Structure (Standards 4–6)
    - Integration of Knowledge and Ideas (Standards 7–9)
- Anchor Standards for Language
    - Conventions of Standard English (Standards 1 and 2)
    - Knowledge of Language (Standard 3)
    - Vocabulary Acquisition and Use (Standards 4–6)
- Anchor Standards for Writing
    - Text Types and Purposes (Standards 1–3)
    - Production and Distribution of Writing (Standards 4–6)

2.4.2 ELA Item Types

The grades 3–8 ELA tests used several item types, as shown in Table 2-1.

Table 2-1 ELA Item Types and Score Points

Item Type	Possible Raw Score Points	Grade Levels
Multiple-choice (SR)	0 or 1	3–8
Two-part, multiple-choice (SR)	0, 1, or 2	3–8
Technology-enhanced (SR)	0, 1, or 2	3–8
Constructed-response (CR)	0, 1, 2, or 3	3–4
Essay (ES)	0 to 7	3–5
	0 to 8	6–8

SR = selected-response, CR = constructed-response, ES = essay

2.4.3 ELA Passage Types

Passages used in the ELA tests are authentic published passages that possess the characteristics required for use in ELA tests; no passages were specifically written for the RICAS tests. They are identified and reviewed by test developers, including DESE test developers. Passages must:

- be of interest to and appropriate for students in the grade being addressed;
- have a clear beginning, middle, and end;
- contain appropriate content;
- support the development of a sufficient number of unique assessment items; and
- be free of bias and sensitivity issues.

Passages ranged in length from approximately 600 to 2500 words per passage set. Word counts were slightly reduced at lower grades. Passage sets consisted of either a single passage or paired/tripled passages. Passages are categorized into one of two types:

- **Literary passages**—Literary passages represent a variety of genres: poetry, drama, fiction, biographies, memoirs, folktales, fairy tales, myths, legends, narratives, diaries, journal entries, speeches, and essays. Literary passages are not necessarily fictional passages.
- **Informational passages**—Informational passages are reference materials, editorials, encyclopedia articles, and general nonfiction. Informational passages are drawn from a variety of sources, including magazines, newspapers, and books.

In grades 3–8, there is one common form per grade. Each common form included three passage sets, with forms in some grades containing two literary passage sets and one informational passage set. Forms in other grades contained one literary passage set and two informational passage sets. Across the forms, sets may be single, paired, or tripled selections.

The RICAS ELA test is designed to include a selection of passage sets with a balanced representation of male and female characters; races and ethnicities; and urban, suburban, and rural settings. Another important consideration is that passages be of interest to the age group being tested.

The main difference among the passages used for grades 3–8 is their degree of complexity, which results from increasing levels of sophistication in language and concepts, as well as passage length. Test developers use a variety of readability formulas to aid in the selection of passages appropriate at each grade level. In addition, subject-matter experts use their grade-level expertise when participating in passage selection as members of the Assessment Development Committees (ADCs).

2.4.4 ELA Form Design

All items are coded to ELA framework standards. There are no stand-alone items on the tests; all vocabulary, grammar, and mechanics questions are associated with a passage set; more details on the number of items at different grades is provided below.

Students read a passage set and answer questions that follow. Question types include selected-response items, constructed-response items (grades 3 and 4 only), and essay items. Approximately 20% of the items were technology-enhanced items such as inline choice, hot spots, and drag and drop that require the student to choose from a range of options presented.

Common Portion

Grades 3–4

The common portion of each test at grades 3 and 4 included three passage sets, and the matrix portion included two passage sets. One of the common passage-sets included ten or twelve 1 or 2-point selected-response items plus one 7-point text-based essay item; one of them included eleven or twelve 1 or 2-point selected-response items and one 3-point constructed-response item, and one of them included seven or eight 1 or 2- point selected-response items.

Each test contained a total of 44 common points distributed across two testing sessions.

Grade 5

The common portion of each test at grade 5 included three passage sets, and the matrix portion included two passage sets. Passage sets included eleven 1 or 2-point selected-response items and one 7-point text-based essay item or seven 1 or 2- point selected-response items.

The test contained a total of 48 common points distributed across two testing sessions.

Grades 6–8

The common portion of each test at grades 6–8 included three passage sets, and the matrix portion included two passage sets. Passage sets included eleven or twelve 1 or 2-point selected-response items and one 8-point text-based essay item or seven or eight 1-point items.

Each test contained a total of 50 common points distributed across two testing sessions.

Matrix Portion

For grades 3–8, the matrix portion included two passage sets. In grades 3–4, the matrix passage set included eight to eleven 1 or 2-point selected-response items, and either two constructed-response items or one essay. The other matrix passage set included seven 1- or 2-point machine-scored items. In grades 5–8, the matrix passage set included eight or nine 1- or 2-point selected-response items, and one essay item.

The grades 3–8 tests were administered to most students on the computer and to some students with accommodations on a paper form. Tables 2-2 (for the computer-based forms) and 2-3 (for the paper-based forms) list the distribution of common and matrix items in each 2022 ELA test, by grade.

Table 2-2 Distribution of ELA Common and Matrix Items by Grade and Item Type—Computer-based Test (CBT)

Grade	Test	# of Forms	Items per Form							
			Common				Matrix			
			SR (1 pt.)	SR (2 pt.)	CR	ES	SR (1 pt.)	SR (2 pt.)	CR	ES
3	ELA	1	24	5	1	1	14	2	0	1
4	ELA	1	24	5	1	1	14	2	2	1
5	ELA	1	24	5	0	2	14	2	0	2
6	ELA	1	24	6	0	2	14	2	0	1
7	ELA	1	26	4	0	2	14	2	0	1
8	ELA	1	24	5	0	2	14	2	0	1

Table 2-3 Distribution of ELA Common and Matrix Items by Grade and Item Type—Paper-based Test (PBT)[1]

Grade	Test	# of Forms	Items per Form							
			Common				Matrix			
			SR (1 pt.)	SR (2 pt.)	CR	ES	SR (1 pt.)	SR (2 pt.)	CR	ES
3	ELA	1	24	5	1	1	14	3	0-2	0-1
4	ELA	1	24	5	1	1	14	3	0-2	0-1
5	ELA	1	24	5	0	2	14	3	0	2
6	ELA	1	24	5	0	2	14	3	0	1
7	ELA	1	26	4	0	2	14	3	0	1
8	ELA	1	24	5	0	2	14	3	0	1

[1] *The paper form is derived from Form 1 of the CBT.*

Testing Times

Table 2-4 shows the recommended testing times. RICAS tests are untimed; therefore, the times shown in the table are approximate.

Table 2-4 ELA Recommended Testing Times, Grades 3–8

Grade	Session 1 Recommended Testing Time (min)	Session 2 Recommended Testing Time (min)	Total Recommended Testing Time (min)
3	120–150	120–150	240–300
4	120–150	120–150	240–300
5	120–150	120–150	240–300
6	120–150	120–150	240–300
7	120–150	120–150	240–300
8	120–150	120–150	240–300

2.4.5 ELA Blueprints

Table 2-5 shows the target and actual percentages of common item points by reporting category. Reporting categories are based on the anchor standards in the 2017 Massachusetts curriculum framework for ELA.

Table 2-5 Target (and Actual) Distribution of ELA Common Item Points by Reporting Category

Reporting Category	% of Points at Each Grade (+/-5%)					
	3	4	5	6	7	8
Language	25 (30)	25 (25)	25(29)	25 (26)	25 (22)	25 (24)
Reading	65 (61)	65 (57)	55 (54)	55 (54)	55 (58)	55 (56)
Writing	10 (09)	10 (18)	20(17)	25 (20)	20 (20)	20 (20)
Total	100	100	100	100	100	100

2.4.6 ELA Cognitive Levels

Each item on the ELA tests is assigned a cognitive level based on Norman Webb's Depth of Knowledge (DoK) Framework. Cognitive levels are not synonymous with item difficulty. The cognitive level provides information about each item based on the complexity of the mental processing a student must use to answer the item correctly. Levels are assigned by developers and reviewed by an assessment development committee. The three cognitive levels used in ELA tests are described below.

Level I (Identify/Recall)—Level I items require that the student recognize basic information presented in the text. Examples of skills at this level include identifying main ideas/facts/details; recalling and locating details; identifying genre or setting; and identifying definitions, parts of speech, or functions of punctuation. Key words include identify, list, match, recognize, describe, and distinguish.

Level II (Infer/Analyze)—Level II items require that the student understand a given text by making inferences and drawing conclusions related to the text. Examples of skills at this level include understanding the whole text (Big Picture)/generalizing; interpreting, making connections, visualizing, and forming questions; explaining a character's role/motives; determining whether an idea is fact or opinion; filtering important information and key concepts; and determining the meaning of a word in context. Key words include infer, analyze, describe, interpret, determine, conclude, explain, summarize, and classify.

Level III (Evaluate/Apply)—Level III items require that the student understand multiple points of view and be able to project his or her own judgments or perspectives on the text. Examples of skills at this level include understanding another point of view; analyzing/evaluating an author's purpose, style, and message; arguing/defending a point of view with evidence from the text; using reasoning to determine an outcome; applying information from the text; and synthesizing elements of text(s) to create a whole. Key words include critique, evaluate, analyze, predict, agree/disagree, argue/defend, apply, synthesize, judge, compare, and contrast.

Each cognitive level is represented in the ELA tests.

2.4.7 ELA Reference Materials

The use of bilingual word-to-word dictionaries was allowed during ELA tests only for current and former English language learners (ELLs). No other reference materials were allowed during the ELA tests.

2.5 MATHEMATICS

2.5.1 Mathematics Standards

The 2022 RICAS grades 3–8 mathematics tests, including all field-test items, were aligned to, and measured the learning standards as articulated within the Rhode Island Core Standards.

- Domains for grades 3–5
    - Operations and Algebraic Thinking
    - Number and Operations in Base Ten
    - Number and Operations—Fractions
    - Geometry
    - Measurement and Data
- Domains for grades 6 and 7
    - Ratios and Proportional Relationships
    - The Number System

- Expressions and Equations
- Geometry
- Statistics and Probability

- Domains for grade 8
  - The Number System
  - Expressions and Equations
  - Functions
  - Geometry
  - Statistics and Probability

2.5.2 Mathematics Item Types

The 2022 mathematics tests included several item types, as shown in Table 2-6.

Table 2-6 Mathematics Item Types and Score Points

Item Type	Possible Raw Score Points	Grade Levels
Multiple-choice (SR)	0 or 1	3–8
Multiple-select (SR)	0 or 1	3–8
Technology-enhanced (SA)/(SR)/(CR)	0 or 1 0, 1, or 2	3 4–8
Short-answer (SA)	0 or 1	3–8
Constructed-response (CR)	0, 1, 2, or 3 0, 1, 2, 3, or 4	3 4–8

2.5.3 Form Test Design

Test Design by Grade

Grade 3

The common portion of the grade 3 test included thirty-six 1-point selected-response or short-answer items and four 3-point constructed-response items.

The matrix portion included three 1-point selected-response or short-answer items and one 3-point constructed-response item.

The test contained a total of 48 common points distributed across two testing sessions.

Grades 4–6

The common portion of the grades 4–6 tests included thirty-four 1-point selected-response or short-answer items, two 2-point selected-response items, and four 4-point constructed-response items.

The matrix portion included two 1-point selected-response or short-answer items, one 2-point selected-response or short-answer item, and one 4-point constructed-response item.

Each test contained a total of 54 common points distributed across two testing sessions.

Grades 7–8

The common portion of the grades 7–8 tests included thirty-four 1-point selected-response or short-answer items, two 2-point selected-response items, and four 4-point constructed-response items.

The matrix portion included two 1-point selected-response or short-answer items, two 2-point selected-response or short-answer items, and two 4-point constructed-response items.

Each test contained a total of 54 common points distributed across two testing sessions. Items in session 2 were developed to assess content where the students may need a calculator. These items were either calculator-neutral (calculators are permitted but not required to answer the question) or calculator-active (students are expected to use a calculator to answer the question).

Table 2-7 shows the distribution of common and matrix points on the 2022 mathematics tests, as well as recommended testing times. Since RICAS tests are untimed, the times shown are approximate.

Table 2-7 Mathematics Recommended Testing Times and Common/Matrix Points per Test, Grades 3–8

Grade	# of Sessions	Session 1 Recommended Testing Time (in minutes)	Session 2 Recommended Testing Time (in minutes)	Total Recommended Testing Time (in minutes)	Common Points	Matrix Points
3	2	90	90	180	48	6
4–8	2	90	90	180	54	8–9

The grades 3–8 mathematics tests were administered to most students on the computer and to some students with accommodations on a paper form. Tables 2-8 (for the computer-based forms) and 2-9 (for the paper form) show the distribution of common and matrix item types.

Table 2-8 Distribution of Mathematics Common and Matrix Items by Grade and Item Type—Computer-based Test (CBT)

Grade	# of Forms	Common				Matrix	
		SR/MS SA/TE		CR		SR/MS SA/TE	CR
		(1 pt.)	(2 pt.)	(3 pt.)	(4 pt.)	(1 or 2 pt.)	(3 or 4 pt.)
3	1	36	0	4	0	3	1
4	1	34	2	0	4	3	1
5	1	34	2	0	4	3	1
6	1	34	2	0	4	3	1
7	1	34	2	0	4	4	2
8	1	34	2	0	4	4	2

Table 2-9 Distribution of Mathematics Common and Matrix Items by Grade and Item Type—Paper-based Test (PBT)

Grade	# of Forms	Common				Matrix	
		SR/MS/SA		CR		SR/MS/SA	CR
		(1 pt.)	(2 pt.)	(3 pt.)	(4 pt.)	(1 or 2 pt.)	(3 or 4 pt.)
3	1	36	0	4	0	3	1
4	1	34	2	0	4	3	1
5	1	34	2	0	4	3	1
6	1	34	2	0	4	3	1
7	1	34	2	0	4	4	2
8	1	34	2	0	4	4	2

2.5.4 Mathematics Blueprints

Tables 2-10 through 2-13 show the target and actual percentages of common item points by reporting category. Reporting categories are based on the Rhode Island Core Standards.

Table 2-10 Target (and Actual) Distribution of Mathematics Common Item Points by Reporting Category, Grades 3–5

Domain	% of Points at Each Grade (+/-5%)		
	3	4	5
Operations and Algebraic Thinking	30 (29)	20 (20)	15 (15)
Number and Operations in Base Ten	15 (15)	20 (19)	30 (30)
Number and Operations – Fractions	20 (21)	30 (30)	25 (26)
Geometry	10 (10)	10 (11)	10 (13)
Measurement and Data	25 (25)	20 (20)	20 (17)
Total	**100**	**100**	**100**

Table 2-11 Target (and Actual) Distribution of Mathematics Common Item Points by Reporting Category, Grades 6 and 7

Domain	% of Points at Each Grade (+/-5%)	
	6	7
Ratios and Proportional Relationships	20 (20)	20 (20)
The Number System	20 (20)	20 (19)
Expressions and Equations	30 (30)	25 (26)
Geometry	15 (15)	15 (15)
Statistics and Probability	15 (15)	20 (20)
Total	**100**	**100**

Table 2-12 Target (and Actual) Distribution of Mathematics Common Item Points by Reporting Category, Grade 8

Domain	% of Points (+/-5%)
The Number System and Expressions and Equations	40 (39)
Functions	20 (20)
Geometry	30 (30)
Statistics and Probability	10 (11)
Total	**100**

2.5.5 Mathematics Cognitive Levels

Each item on the mathematics test is assigned a cognitive level based on Norman Webb's Depth of Knowledge (DoK) Framework. Cognitive levels are not synonymous with difficulty. The cognitive level provides information about each item based on the complexity of the mental processing a student must use to answer the item correctly. The three cognitive levels used in the mathematics tests are described below.

- **Level I (Recall and Recognition)**—Level I items require that the student recall mathematical definitions, notations, simple concepts, and procedures, and apply common, routine procedures or algorithms (that may involve multiple steps) to solve a well-defined problem.
- **Level II (Analysis and Interpretation)**—Level II items require that the student engage in mathematical reasoning beyond simple recall in a more flexible thought process, and in enhanced organization of thinking skills. These items require a student to make a decision about the approach needed, to represent or model a situation, or to use one or more non-routine procedures to solve a well-defined problem.

- **Level III (Judgment and Synthesis)**—Level III items require that the student perform more abstract reasoning, planning, and evidence-gathering. To answer questions of this cognitive level, a student must engage in reasoning about an open-ended situation with multiple decision points, represent or model unfamiliar mathematical situations, and solve more complex, non-routine, or less well-defined problems.

Cognitive Levels I and II are represented by items in all grades and across item types. Cognitive Level III is best represented by constructed-response items; Cognitive Level III items were included at each grade, whenever possible.

2.5.6 Mathematics Reference Materials

Rulers were provided to students in grades 3–8. Handheld rulers were provided to students taking the paper version of the mathematics test. Students taking the computer-based mathematics test had access to two separate computer-based rulers: a centimeter ruler and a 1/8-inch ruler; students were not permitted to use handheld rulers on the computer-based test.

Reference sheets were provided to students in grades 5–8. These sheets contain information, such as formulas, that students may need to answer certain items.

The second session of the grades 7–8 mathematics tests was a session where calculator use was permitted. All items included in this session were either calculator-neutral (calculators are permitted but not required to answer the question) or calculator-active (students are expected to use a calculator to answer the question). Each student taking the computer-based grade 7 mathematics test had access to a five-function calculator during session 2 of the mathematics test. Each student taking the computer-based grade 8 mathematics test had access to a scientific calculator during session 2. Students taking the paper-based mathematics tests in grades 7–8 had access to comparable handheld calculators.

2.6 Item and Test Development Process

Table 2-13 provides a detailed view of the item and test development process, in chronological order.

Table 2-13 Overview of Item and Test Development Process

Phase	Development Step	Detail of the Process
Initial Item Design	Selection of reading passages (for ELA only)	Cognia's test developers find potential passages and present them to DESE for initial approval; DESE-approved passages go to Assessment Development Committees (ADCs) composed of experienced educators, and then to a Bias and Sensitivity Committee (BSC) for review and recommendations. ELA items are not developed until passages have been reviewed by an ADC and a BSC. With the ADC and BSC recommendations, DESE makes the final determination as to which passages will be developed and used on a future RICAS test.
	Development of initial item versions	Cognia's test developers generate items and edit items from subcontractors that are aligned to Massachusetts standards and specifications.
Item Review and Refinement	Review of initial item versions by DESE and educators	1. Cognia sends draft items to DESE test developers for review. 2. DESE test developers review and edit items prior to presenting the items to ADCs. 3. ADCs review items and make recommendations. 4. BSC reviews items and makes recommendations.
	Revision of initial items based on review	DESE test developers edit & revise items based on recommendations from ADC & BSC.
Item Review and Refinement	Independent expert review of revised items	Experts from higher education and practitioners review all field-tested items for content accuracy. Each item is reviewed by at least two independent expert reviewers. Comments and suggested edits are provided to DESE staff for review.

continued

Phase	Development Step	Detail of the Process
Operational Field Testing	Benchmark paper selection for CR and essay scoring	DESE and Cognia test developers meet to determine appropriate benchmark papers for training of scorers of field-tested constructed-response items and essays. Scoring rubrics and notes are reviewed and edited during benchmarking meetings. During the scoring of field-tested items, Cognia contacts DESE test developers with any unforeseen issues.
	Item performance review based on data from field tests	ADCs review field-test statistics and recommend items for the common-eligible status, for re-field-testing (with edits, for mathematics, since ELA is passage-based), or for rejection. BSC also reviews items and recommends items to become common-eligible or to be rejected.
Final Form Construction	Test form construction I: Proposition of items for operational use	DESE provides target performance-level cut scores to Cognia's test developers. Cognia proposes sets of common items (items that count toward student scores) and matrix items. Matrix items consist of field-test and equating items, which do not count toward student scores. Each common set of items is delivered with proposed cut scores, including test characteristic curves (TCCs) and test information functions (TIFs).
	Test form construction II: Selection of items for operational use	DESE test developers and editorial staff review and edit proposed sets of items. Cognia and DESE test developers and editorial staff meet to review edits and changes to tests. Psychometricians are available to provide statistical information for changes to the common form. Approved common-eligible items become part of the common item set and are used to determine individual student scores.
Public Release	Public release of select common items	Approximately 50% of common items in grades 3–8 are released to the public, and the remaining items are returned to the common-eligible pools to be used on future MCAS/RICAS tests. An item description (a statement specifying the content of the item) is released for each common item (both released and non-released).

2.6.1 Item Review and Refinement

DESE Initial Item Review

All passages, items, and scoring guides are reviewed by DESE test developers before presentation to the ADCs for review. Passage selection information can be found in section 2.4.3. The DESE test developers evaluate new items for the following as well as other characteristics:

- **Alignment**: Are the items aligned to the standards?
- **Content**: Is the content accurate? Does the item elicit a response that shows a depth of understanding of the subject?
- **Contexts**: Are contexts grade-level appropriate? Are they realistic? Are they interesting to students?
- **Grade-level appropriateness**: Are the content, language, and contexts appropriate for the grade level?
- **Creativity**: Does the item demonstrate creativity regarding approaches to items and contexts?
- **Distractors**: Have the distractors for selected-response items been chosen based on plausible construct-related errors? What are the distractor rationales?
- **Mechanics**: How well are the items written? Are they grammatically correct? Do they follow the conventions of item writing? Is the wording grade-level appropriate and accessible for all students?
- **Technology**: Are the items scored appropriately? Is the item making the best use of the technology? Is there another type of item that is more appropriate?

After initial review, DESE and the contractor’s test developers discuss and revise the proposed item sets in preparation for ADC review.

Assessment Development Committee (ADC) and Bias & Sensitivity Committee (BSC) Reviews

ADCs and the BSCs are each composed of approximately 10–12 Massachusetts educators from across the state. Each ADC and BSC meeting is co-facilitated by DESE and Cognia's test developers. There is an ADC for each content area and grade (e.g., ELA grade 3), and there are two BSCs—one for grades 3–7 and one for grades 8 and 10. All ADC and BSC recommendations remain with each item. ADC and BSC members meet several times a year to review new passages and items, and to review data from field-test items. Members review items using Pearson's online platform ABBI. Each participant enters his or her "vote" and recommendations, and the facilitators record the consensus of the committee. DESE takes the recommendations of the ADCs and the BSCs into consideration and makes the final decision to approve items to become field-test eligible.

ADC Passage Review (ELA Only)

ELA ADCs review passages before any corresponding items are written. Committee members consider all the elements noted in section 2.4.3. Committee members are also asked to consider whether a passage is well known or comes from a book that is widely taught, since such a passage is likely to provide an unfair advantage to those students who are familiar with it. Committee members vote to accept or reject each passage, and the facilitators record the consensus of the group.

For each passage recommended for acceptance, committee members provide suggestions for item development. They also provide recommendations for the presentation of the passage, including suggestions for the purpose-setting statement, words to be footnoted or redacted, and graphics, illustrations, or photographs to be included with the text.

ADC Item Review

Once DESE test developers have reviewed and edited new items and scoring guides, the items are reviewed by the ADCs. Committees review items for the characteristics noted above. Members vote to accept, accept with edits (members may include suggested edits), or reject each item. The meeting facilitators record the consensus/majority opinion of the group.

BSC Passage and Item Review

After passages and items have been approved by the ADCs, they are also reviewed by a separate BSC. The role of the committee is to identify whether a passage or item contains material that is likely to significantly favor or disadvantage one group of students for reasons that are not educationally relevant. The purpose of the committee's review is to ensure that the ability to answer an item correctly reflects a student's learning, not cultural opportunities or life experiences. Specifically, a passage or item should be flagged by the committee if it is insensitive or disrespectful to a student's ethnic, religious, or cultural background (including disability, socio-economic status, and regional differences). The BSC votes to accept, accept with edits (including suggested edits), or reject (including their reasoning) each passage or item. The meeting facilitators record the consensus of the group.

External Content Expert Item Review

When items are selected to be included on the field-test portion of the RICAS, they are submitted to expert reviewers for their feedback. The task of the expert reviewer is to consider the accuracy of the content of items. Each item is reviewed by two independent expert reviewers. All experts hold a doctoral degree (either in the content they are reviewing or in the field of education) and are affiliated with institutions of higher education in either teaching or research positions. Each expert reviewer has been approved by the DESE. The External Content Experts recommend either accepting or rejecting the item, including their reasoning. Expert reviewers' comments remain with each item.

Editing of Recommended Items

DESE test developers review the recommendations of the ADC, BSC, and expert reviewers and determine whether to revise or reject an item based on the suggested edits. The items are also reviewed and edited by DESE and Cognia editors to ensure adherence to style guidelines in *The Chicago Manual of Style*, *American Heritage Dictionary*, RICAS Style Guidelines, and to sound testing principles. According to these principles, all items should:

- demonstrate correct grammar, punctuation, usage, and spelling;
- be written in a clear, concise style;
- contain unambiguous descriptions of what is required for a student to attain a maximum score;
- be written at a reading level that allows students to demonstrate their knowledge of the subject matter being tested.

Items that pass the reviews listed in this section are approved to be field-tested.

2.6.2 Operational Field-Testing of Items

Only Massachusetts student data are used for field-test analyses. Rhode Island field-test data are not used for item evaluation. Field-tested items appear in the matrix portions of the tests. Each matrix item is typically answered by a minimum of 1,500 students, resulting in enough responses to yield reliable performance data.

Scoring of Field-Tested Items

All field-tested items, except for constructed-response items and essays, are machine-scored. These items include multiple-choice, multiple-select, short-answer, and technology-enhanced items.

All field-tested constructed-response items and essays are hand-scored. To train scorers, DESE works closely with the scoring staff to refine rubrics and scoring notes, and to select benchmark papers that exemplify the score points and variations within each score point. Approximately 2,000 student responses are scored per field-tested constructed-response item or essay. See Chapter 4 for additional information on scorers and scoring.

Data Review of Field-Tested Items

Data Review by DESE

DESE test developers review all item statistics prior to making them available for review by the ADCs and BSCs. An item displaying statistics that indicate it did not perform as expected is closely reviewed and if it is found to be flawed it is rejected from the pool of items. After ADC and BSC reviews of item statistics, DESE test developers make final decisions regarding any recommendations.

Data Review by ADCs

The ADCs meet to review the field-test items with their associated statistics. ADCs review the following item statistics:

- item difficulty/mean item score,
- item discrimination,
- Differential Item Functioning (DIF) for the following subgroups:
    - female compared with male [gender/sex]

    - African American/Black compared with White [ethnicity I]
    - Hispanic or Latino/a compared with White [ethnicity II]
    - Current or former ELLs compared with non-ELLs [language status]

- distribution of scores across answer options and score points,
- distribution of answer options and score points across quartiles, and
- distribution of unique student responses (for some items).

The ADCs make one of the following recommendations for each field-tested item:

- accept
- edit and field-test again (this recommendation is made for mathematics items only, since ELA items are passage-based)
- reject (not eligible for operational use)

Data Review by BSCs

The BSC also reviews the statistics for the field-tested items. The committee reviews only the items that the ADCs have accepted. The BSC pays special attention to items that show DIF when comparing the following subgroups of test takers:

- female compared with male [gender/sex]
- African American/Black compared with White [ethnicity I]
- Hispanic or Latino/a compared with White [ethnicity II]
- Current or former ELLs compared with non-ELLs [language status]

2.6.3 Final Form Construction

Cognia's test developers propose a set of previously field-tested or common, non-released items to be used in the common portion of the test. Test developers work closely with psychometricians to ensure that the proposed tests meet the statistical requirements set forth by DESE. In preparation for meeting with the DESE test developers, the Cognia's test developers consider the following criteria in selecting items to propose for the common portion of the test:

- **Content coverage/match to test design and blueprints**. The test designs and blueprints stipulate a specific number of items per item type and per reporting category for each content area. A broad coverage of standards and cognitive skills is expected. The previous year's common test should also be considered, and items should not be duplicated.
- **Item difficulty and complexity**. Item statistics drawn from the data analysis of items are used to ensure similar levels of difficulty and complexity from year to year as well as high-quality psychometric characteristics. Items can be "reused" if they have not been released and not used the previous year. When an item is reused in the common portion of the test, the latest usage statistics accompany that item.
- **"Clueing" items**. Items are reviewed for any information that might "clue" or help the student answer another item.

- **Item types**. A variety of item types, including approximately 20–30% technology-enhanced items, are selected to populate the common slots.

Field-test items are also selected during form construction. Field-test items are drawn from the field-test eligible pools and should mirror the operational test to the extent needed. If a standard or reporting category is lacking in the common eligible item pool, items should be chosen to fill this need.

During assembly of the test forms, the following criteria are considered:

- **Key patterns**. The sequence of keys (correct answers) is reviewed to ensure that the key order appears random.
- **Option balance**. Items are balanced across forms so that each form contains a roughly equivalent number of key options (As, Bs, Cs, and Ds).
- **"Clueing" items**. Items are reviewed for any information that might "clue" or help the student answer another item.
- **Item types**. A variety of item types should populate the matrix slots.

The proposed operational test is posted for DESE to review. DESE test developers consider the proposed items, make recommendations for changes, and then meet with Cognia's test developers to construct the final forms of the tests.

After form construction meetings, the test forms enter several rounds of review by test developers and editors. Items are checked to ensure that requested changes were made after the test construction meetings, and to ensure that all items are scoring correctly. In addition, items are checked again for any grammatical or "fatal flaw" errors, and these are corrected before the test forms are published.

2.6.4 Special Edition Test Forms

Students with Disabilities

RICAS is accessible to students with disabilities through the universal design of test items, provision of special edition test forms, and the availability of a range of accommodations and accessibility features for students taking the standard tests. To be eligible to receive a special edition test form, a student must have a disability that is documented either in an individualized education program (IEP) or in a 504 plan. All RICAS operational tests were available in the following special editions for students with disabilities:

- **Paper**—Form 1 of the operational CBT was produced to appear on paper. Items which used interactions not assessable on paper (typically technology enhanced items) were replaced with items that asked similar questions in a paper assessable manner.
- **Large-print**—Form 1 of the operational test was translated into a large-print edition. The large-print edition contains all common and matrix items found in Form 1.
- **Braille**—This form included only the common items found in the operational test with the following characteristics:
    - If an item indicates bias toward students with visual disabilities (e.g., if it includes a complex graphic that a student taking the Braille test could not reasonably be expected to comprehend as rendered), then simplification of the graphic is considered, with appropriate rewording of the item text, as necessary.

- If a graphic such as a photograph cannot be rendered in Braille, or if the graphic is not needed for the student to respond to the item, the graphic is replaced with descriptive text or a caption or eliminated altogether.
- Three-dimensional shapes that are rendered in two dimensions in print are rendered on the Braille test as “front view,” “top view,” and/or “side view,” and are accompanied where necessary by a three-dimensional wooden or plastic manipulative wrapped in a Braille-labeled plastic bag.

Modifications to original test items for the Braille version of the test are made only when necessary, as determined by the Braille test subcontractor and DESE staff, and only when they do not provide clues or assistance to the student or change what the item is measuring. When successful modification of an item or graphic is not possible, all or part of the item is omitted, and may be replaced with a similar item.

- **Screen reader**—This accommodation was available only for those students who are blind or have a visual disability. Students who used a screen reader were also given a separate hard-copy Braille edition test to have the appropriate Braille graphics. All answers are entered onscreen, either by the student using a Braille writing device, or by the test administrator.
- **Text-to-speech**—This functionality was embedded in the grades 3–8 CBTs. Students typically use headphones with this format but may also be tested individually in a separate setting to minimize distractions to other students (from hearing what is being read aloud).

Appendix A details other accommodations that did not require a special edition test form and lists accessibility features that were available to all students, such as screen magnification and highlighting. After testing was completed, RIDE received a list with the number of students who participated in the 2022 RICAS with each accommodation, based on information compiled in the Personal Needs Profile in PearsonAccess Next.

Spanish Edition Test Forms

Spanish editions of the spring grades 3–8 mathematics tests were available to any ELL student with a low level of English proficiency who was receiving or had received mathematics instruction in Spanish. More detail can be found in Section 3.4.1.

2.7 Evidence in Support of Validity Arguments Regarding Test Design and Development

1.1 ***Description Inference:*** Observations of performance on the RICAS reflect the knowledge and abilities articulated in the RICAS content standards with appropriate assessment tasks representing the full breadth and depth of the domain as articulated within these standards.

1.1.1 **Claim:** Expected knowledge and abilities are thoroughly articulated and considered appropriate to the grade and subject being assessed.

Evidence: The appropriateness and official adoption of the content standards is articulated specifically in subsections 2.1 and 2.2. Subsequent sections in this chapter then describe how these

standards are used to guide test design, development, and implementation processes for all grades and subjects.

1.1.2 **Claim:** Assessment tasks are developed to provide evidence of the expected knowledge and abilities for each grade and subject being assessed.

Evidence: Subsections 2.4.1 for ELA and 2.5.1 for Mathematics explicitly state that items across all grades within those subjects "were aligned to and measured the … learning standards as articulated in the Rhode Island Core Standards," detailing the specific standards addressed by items available for RICAS assessments. Subsections 2.4.2, 2.4.3, and 2.4.6 describe item types, passage types, and cognitive levels for items on the ELA assessments. Subsections 2.5.2 and 2.5.5 describe the item types and cognitive levels for items on the mathematics assessments. Subsection 2.6.1 describes item development and review procedures, and Subsection 2.6.2 describes item field testing and subsequent review, acceptance, and revision processes. Together, these subsections describe an overall process of item development that ensures items effectively target the expected knowledge and abilities of the grades being assessed.

1.2 ***Evaluation Inference:*** Each test form (an organized sampling of assessment tasks) results in an observed score that reflects a student's knowledge and abilities in the subject being assessed through appropriate test assembly, administration, and scoring procedures.

1.2.1 **Claim:** Each form is constructed to draw from available items such that the underlying domain of knowledge and abilities is adequately sampled.

Evidence: Subsections 2.4.4 and 2.4.5 describe the test design specifications and blueprints for ELA Exams. Subsections 2.5.3 and 2.5.4 describe the same for Mathematics. Subsections 2.6.3 and 2.6.4 describe the item selection and test form review processes that ensure design and blueprint specifications are met and that elements of test construction that can potentially confound interpretability are avoided. Together, these processes work such that each form draws a sampling of high-quality items that represent the underlying of knowledge and abilities defined within the content standards.

1.2.4 **Claim:** Items on the assessment demonstrate appropriate statistical quality.

Evidence: Subsection 2.6.2 describes the review process for evaluating items flagged by field-test analyses.

1.3 ***Generalization Inference:*** The observed score from any specific form testing a given grade and subject is reflective of the expected score on any potential form of the test for that grade and subject.

1.3.1 **Claim:** Task specifications adequately inform production or selection of items with similar content and statistical characteristics.

Evidence: Claim 1.1.2, with evidence from throughout Chapter 2, establishes that the task specifications and resulting item development efforts result in assessment tasks representative of expected knowledge and ability being assessed. Subsection 2.6.3 describes, among other criteria, the need to meet the broad requirements of expected standards and cognitive skills while avoiding unnecessary duplication of items from previous years' forms. Subsection 2.6.4 describes the rigorous process of form review to ensure that these requirements are met on forms that are accepted for operational administration. These form construction processes, applied to items meeting Claim 1.1.2, provide evidence that task specifications are adequately informing production and selection of items with similar content and statistical characteristics.

1.3.2 **Claim:** Test specifications result in forms of similar length and task distribution.

Evidence: Claim 1.2.1, again gathering evidence from Chapter 2, establishes that test construction processes are designed to implement specifications that result in forms of similar length and task distribution. Subsection 2.6.3 describes the application of those processes to realize those specifications while avoiding unnecessary duplication of items. Subsection 2.6.4 describes the rigorous review process that verifies that these specifications are met prior to acceptance of the form for operational administration.

1.4 ***Explanation Inference*****:** Expected scores are attributable to proficiency in the target knowledge and abilities.

1.4.1 **Claim:** Cut scores are established through defensible standard setting methods.

Evidence: Section 2.3 summarizes the process by which performance standards were established for RICAS. Standard setting activities conducted for the MCAS in 2017 were observed by RIDE staff and technical advisors and rigorously evaluated for consistency with RICAS performance expectations.

Chapter 3. Test Administration

Rhode Island test administrations were standardized, and the design was not significantly changed from previous years. As COVID-19 recovery progressed in 2021–2022, assessment and instructional practices likewise returned to standard, in-person protocols.

There were no major irregularities in test administration reported by schools or districts. Though the overall participation rate was high, important differences in participation rates and population demographics were observed between the SY 2020–2021 and 2021–2022 administrations. For more information, consult Appendix B of the 2021 and 2022 RICAS technical reports. The participation rates in SY 2020–2021 was an anomaly due to COVID-19. As a result, comparing aggregated student results across years and comparison of historical trends should only be used when the context of those differences is studied and known.

3.1 Test Administration Schedule

The standard grades 3–8 RICAS tests were administered in two modes, computer-based and paper-based, during two overlapping periods in spring 2022, as shown in Table 3-1.

Table 3-1 Grades 3–8 ELA and Mathematics Test Administration Schedule

Content Area	Complete the Student Registration/ Personal Needs Profile (SR/PNP) Process	Receive Test Administration Materials	Test Administration Windows	Deadline for Return of Materials to Contractor (for PBT Only)
ELA	1/27/22 – 2/18/22	3/16/22	3/28/22 – 4/29/22	5/3/22
Mathematics	1/27/22 – 2/18/22	4/13/22	4/25/22 – 6/1/22	5/31/22

3.2 Security Requirements

Principals were responsible for ensuring that all test administrators complied with the requirements and instructions contained in the Test Coordinator's Manual and Test Administrator's Manuals. In addition, other administrators, educators, and staff within the school were responsible for complying with the same requirements. Schools and school staff who violated the test security requirements were subject to numerous sanctions and penalties, including employment consequences, delays in reporting of test results, the invalidation of test results, the removal of school personnel from future RICAS administrations, and possible licensure consequences for licensed educators.

If test content is breached, quick identification and resolution of the breach are critical to the integrity of a testing program. Full security requirements, including details about responsibilities of principals and test administrators, examples of testing irregularities, guidance for establishing and following a document tracking system, and lists of approved and unapproved resource materials, can be found in the *Spring 2022 Test Coordinator's Manual* (TCM), *Grades 3–8* and the *2022 Test Administrator's Manuals* (TAMs). In spring 2022, there was one TAM for grades 3–8 CBTs and one TAM for grades 3–8 PBTs. The primary delivery mode was computer-based, with paper-based delivery as accommodation only for students with disabilities.

3.3 Participation Requirements

Students in grades 3–8 are expected to participate in RICAS tests for the grade in which they are enrolled and reported to RIDE through the enrollment census.

Participation requirements and guidelines for ELL students and students with significant disabilities are provided in the sections that follow; the participation rates are presented in Appendix B.

See Part III of the *Test Coordinator's Manual* for information about scheduling test administration, including make-up sessions for students who are absent on the day of testing.

3.4 Students Not Tested on Standard Tests

A very small number of students educated with Rhode Island public funds were not required to take the standard RICAS tests. These students were strictly limited to the following categories:

- First-year ELL students who enrolled in U.S. schools after April 1, 2021, for whom ELA testing is not required. (First-year ELL students must participate in RICAS or Dynamic Learning Maps (DLM) mathematics tests.) See the *RICAS Accessibility and Accommodations Manual, 2022* for details on how ELL students participate in spring 2022 RICAS.
- Students with significant cognitive disabilities who are eligible for the alternate assessment, the Dynamic Learning Maps (DLM) Assessment. For more information, refer to the DLM page of the RIDE website: https://www.ride.ri.gov/InstructionAssessment/Assessment/DLMAssessments.aspx.
- Rare and unique situations in which a student is unable to participate in statewide assessments due to a documented, significant, and incapacitating medical emergency that extends across the entire (or remaining) test window.

More details about test administration policies and participation requirements for non-disabled students, for students with disabilities, for ELL students, and for students educated in alternate settings can be found in the *Test Coordinator's Manual*. Data concerning the number of students tested with accommodations are available in Appendix A of this document.

3.4.1 Spanish Edition Test Forms

Spanish-Speaking Students

Spanish editions of the spring grades 3–8 mathematics tests were available to any ELL student with a low level of English proficiency who was receiving or had received mathematics instruction in Spanish. The Spanish edition of the grades 3–8 mathematics tests contained all common and matrix items found in Form 1 of the operational test.

Cognia employed two independent translators to complete the translation of the grades 3–8 mathematics test to Spanish. The translation process was as follows:

- A set of translation rules or parameters was generated, taking the following into consideration: vocabulary, usage, and consistency over the years. These rules were provided to both translators.
- The first translator translated from English to Spanish. The second translator proofread the work of the first translator. Discrepancies between the two translations were resolved by the first translator.

- The Publishing Department reviewed the graphics in Spanish.
- The script that the teacher read when administering the test was also translated into Spanish and was included as Appendix A of the *Test Administrator's Manual*.

The Spanish editions of the grades 3–8 mathematics tests were available in both paper and online formats. Human read-aloud in Spanish was also available to students.

3.5 Administration Procedures

It is the test coordinator's responsibility to coordinate the school's RICAS test administration. This coordination responsibility includes the following:

- understanding and enforcing the test security requirements and test administration protocols
- ensuring that students participate in testing according to the requirements in section 3.2 of this report
- coordinating the school's test administration schedule and ensuring that tests are scheduled during the prescribed testing window, and in the prescribed order
- ensuring that accommodations are properly administered and that transcriptions, if required for any accommodation, are properly completed
- completing the Principal's Certification of Proper Test Administration (PCPA) and ensuring the accuracy of information provided on the form
- providing RIDE with the school's correct contact information

More details about test administration procedures, including ordering test materials, scheduling test administration, designating and training qualified test administrators, identifying testing spaces, meeting with students, providing accurate student information, and accounting for and returning test materials, can be found in the *Test Coordinator's Manual*.

The RICAS program is supported by the RICAS Service Center, which includes a toll-free telephone line and email answered by staff members who provide support to schools and districts. The RICAS Service Center operates weekdays from 7:00 a.m. to 5:00 p.m. (Eastern Time), Monday through Friday.

3.6 Evidence in Support of Validity Arguments Regarding Test Administration

1.2 ***Evaluation Inference:*** Each test form as an organized sampling of assessment tasks, results in an observed score that reflects a student's knowledge and abilities in the subject being assessed through appropriate test assembly, administration, and scoring procedures.

1.2.2 **Claim:** The assessment is administered under appropriate conditions.

Evidence: Chapter 3 describes standardized test administration processes for the RICAS. This includes schedules, security requirements, administration procedures, and practices for non-standard administrations. Chapter 3 further references *Test Administrators Manuals* and *Test Coordinators Manuals* for more details of administration procedures, administrator responsibilities, and irregularity tracking.

Chapter 4. Scoring

There was no change to scoring procedures in SY 2020–2021 versus the previous administrations. Previously, RICAS human scoring followed a center-based scoring model where scorers worked in an in-person scoring environment. In response to both industry-wide changes and the necessities of limiting in-person work environments due to the COVID-19 pandemic, starting with the RICAS 2020–2021 administration for all grades and contents requiring human scoring shifted to a virtual/synchronous scoring model. This scoring model means that the scorers completed the work from their homes as a team of scorers working the same time schedule and communicating via tools like Teams. The primary difference is that the scorers are not in the same room physically.

This model maintained the same stringent quality control measures that were applied in the center-based regional scoring model used previously. The similarity of rater training and behavior to previous administrations suggests that scoring (and by extension the results of that scoring) are comparable to previous administrations. This scoring model (virtual/synchronous) was used for the RICAS 2021-2022 administration.

4.1 Preparation

4.1.1 Preparation of Student Response Booklets

Scoring of the 2022 RICAS tests was conducted by Pearson.

For paper-based tests, Cognia scanned each RICAS student answer booklet. Images for operational items were transferred via FTP site to Pearson for uploading into the ePEN scoring platform. For computer-based tests, images were uploaded into the appropriate scoring platform so that all scoring was conducted in a similar manner, regardless of the method of test administration.

A set of quality-control procedures was enacted for scanning paper test forms. These procedures included:

- checks of the answer booklet codes against the grade level, to ensure that the correct answer booklets were scanned in each batch;
- counting checks, to ensure that all booklets were accounted for; and
- spot checks, in which the scanned results were checked against randomly selected answer booklets to ensure that the scanners were working as intended.

For computer-based test takers, DESE had previously reviewed all items in the online item bank (ABBI) and approved all selected-response answer keys during test construction. The item scoring specifications (in Question and Test Interoperability [QTI]) were configured using the test maps and keys provided for the tests. Once the scoring system was configured, a quality-assurance group verified that the selected responses entered by the student for an item as shown in the uploaded image corresponded to the response recorded in the database, for both the pre-score and the scored student data files.

Scoring for selected-response items was verified against the specific DESE requirements for the item; the requirement of the test map, which includes the QTI response; and the keys and validations made for an individual student's derived scores per level of the test. This process included a review of all score-value-related fields—such as raw scores, object scores (part one and part two of multi-part items), strand

scores, performance levels, pass/fail indicators, attempt rules, and scaled scores—against the tables provided by Pearson psychometrics.

4.1.2 Preparation for Scoring Constructed-Response Items

Scoring responses to short-answer, constructed-response, and essay items began by first preparing the documents for scoring. Student identification information, demographic information, and school contact information was converted to alphanumeric format. Digitized student responses to constructed-response items were sorted into specific content areas, grade levels, and items before being scored.

Scoring consistency across scoring departments on all item types was established by conducting the following activities:

- For Field Test items, Cognia facilitated benchmarking meetings in meeting rooms at a hotel in downtown Portsmouth, New Hampshire. This activity is required to determine items' suitability for inclusion in operational assessments. Cognia provided annotated anchor, practice, and qualification sets for all existing items to Pearson for review in advance of scoring. Content specialists at Pearson and Cognia consulted with each other to address any questions and ensure clarity of training materials.
- For operational ELA items that needed to be re-benchmarked due to modifications, content specialists from Cognia, Pearson, and DESE collaborated on the establishment of final scoring decisions.
- Weekly meetings between the Cognia and Pearson scoring departments were held to address any issues and questions before and during scoring.

4.2 Benchmarking Meetings

Samples of student responses to field-test items were read, scored, and discussed by members of Cognia's Scoring Services and Content Development and Publishing (CDP) Departments and by DESE test developers. Each benchmarking meeting is content- and grade-specific (e.g., grade 6 ELA). All decisions were recorded and considered final upon DESE signoff.

The primary goals of the field-test benchmarking meetings were to

- revise, as necessary, an item's scoring guide and/or scoring rubric;
- revise, as necessary, an item's scoring notes based on student responses—these, along with scoring guides, provide detailed information about how to score an item;
- assign final score points to a given set of student responses; and
- approve anchor and training sets of responses that are used to train scorers.

4.3 Machine-Scored Items

Student responses to selected-response and short-answer items were machine-scored by PearsonAccess Next (PAN) Scoring. PAN is a next-generation, web-based technology platform for end-to-end administration of large-scale assessments. Student responses with multiple marks (possible only on paper-based tests) and blank responses were assigned zero points.

4.4 HAND-SCORED ITEMS

Once responses to hand-scored items for a student were sorted into item-specific groups, student responses were scored. In short, all like items (asset ids) are grouped together and scored as a group opposed to the entire student scored as a collective unit, the items are scored as collective units. Scorers within each item group scored one response at a time. However, if there was a need to see a student's responses across all the hand-scored items, scoring leadership had access to the student's entire answer booklet. Details on the procedures used to hand-score student responses are provided later in this chapter.

4.4.1 Scoring Plan and Staff

The following scoring plan summarizes the approach to the scoring of RICAS administrations for all grades and contents:

- All scoring was conducted applying a virtual/synchronous scoring model maintaining the same stringent quality control measures that were applied in a center-based, regional scoring environment.
- Prior to the start of scoring, scorers attended connectivity sessions to support their readiness for virtual/synchronous scoring and to answer any technology-related questions.
- Scorers evaluated student work on a fixed daily schedule under constant supervision of leadership.
- Training and all interaction between leadership and scorers occurred live via Teams (Pearson) and/or via pre-recorded training module or a recording of live training.
- Breakout rooms were used to facilitate scorer training and individualized coaching.
- DESE had remote access to the scoring systems and Teams links were provided to observe training sessions and scoring.
- Scorers worked in a non-public setting and were required to be on camera during training, scoring, and any one-on-one or group coaching sessions.
- A post-scoring survey was sent out to all MCAS and RICAS scoring associates to elicit feedback on their scoring experience. The results were shared with DESE.

The following staff members were involved with scoring the 2022 RICAS responses:

Cognia Staff

- The *Scoring Director for Content and Quality* provided guidance, direction, and leadership to RICAS scoring.
- The *Scoring Director for Operations and Logistics* and *Scoring Operations Managers* provided guidance and oversight of all operational and logistical matters related to scoring.
- The *Scoring Project Manager* was responsible for the communication and coordination of RICAS scoring between Cognia and Pearson, and between Cognia and RIDE.
- *Scoring Content Specialists* facilitated all benchmarking meetings to ensure consistency of content area benchmarking and field-test scoring across all grade levels. Scoring

content specialists prepared training materials for all operational scoring of ELA and mathematics grades 3–8 prior to scoring by Pearson. They also fielded any questions between Pearson and Cognia to ensure a consistent scoring approach across the scoring groups and years.

- *Scoring Supervisors* were responsible for the training and qualification of both scorers and Scoring Team Leaders, and for ensuring quality targets for their assigned items during field testing.
- *Scoring Team Leaders* provided support and direction to scorers on quality, accuracy, and timely completion of scoring during field testing.

Pearson Staff

- The *Scoring Portfolio Manager* was responsible for the coordination, management, and oversight of RICAS scoring for Pearson.
- The *Scoring Project Manager* oversaw communication and coordination of RICAS scoring between Pearson and Cognia.
- *Scoring Content Specialists* ensured consistency of content area scoring across all grade levels. Scoring content specialists monitored the quality of scoring and worked closely with a group of scoring directors to ensure the accurate and timely completion of scoring. Scoring content specialists also coordinated communication with their counterparts at Cognia regarding the training materials.
- *Scoring Directors* were responsible for the training and qualification of both scorers and scoring supervisors and ensuring quality targets for their assigned items.
- *Scoring Supervisors* provided support and direction to scorers on quality, accuracy, and timely scoring completion.
- *Automated Scoring Team Members* were responsible for training and monitoring the scoring performance of the Intelligent Essay Assessor (IEA) on the subset of the ELA prompts selected for automated scoring.

4.4.2 Scorer Recruitment and Qualifications

RICAS scorers, a diverse group of individuals with a wide range of backgrounds, ages, and experiences, were recruited to meet contract requirements. These requirements included successful completion of at least two years of college, although hiring preference was given to individuals with a four-year college degree. Those scoring high school students' responses must have at least a 4-year degree and must either have a degree related to the content they were working on OR have at least two classes related to the content and have prior experience in the content area.

Teachers, tutors, and administrators (e.g., principals, guidance counselors) currently under contract or employed by or in Massachusetts schools, and people under 18 years of age were not eligible to score RICAS responses. Potential scorers were required to apply, and submit documentation of qualifications, such as résumés and transcripts, which were carefully reviewed. Regardless of their qualifications, potential scorers who did not clearly demonstrate content area knowledge or have at least two college courses with average or above-average grades in the content area they wished to score were eliminated from the applicant pool. A summary of scorers' backgrounds is provided in Table 4-1.

Table 4-1. Summary of Scorer and Scoring Leadership Backgrounds (Operational Scoring)

Pearson Education	Scorers		Leadership	
	Number	Percent	Number	Percent
Master's degree/doctorate	506	40	52	47
Bachelor's degree	1249	100	109	100
Associate's degree/more than 48 college credits	0	0	0	0
Less than 48 college credits	0	0	0	0
TOTAL	1755	-	161	-
Teaching Experience				
College instructor	0	0	0	0
Teaching certificate or experience	868	69	71	65
No teaching certificate or experience	381	31	38	35
Scoring Experience				
3+ years of experience	363	29	84	77
1–3 years of experience	244	20	20	18
No previous experience as scorer/first season	642	51	5	5

4.4.3 Scorer Training

Scoring content specialists had overall responsibility for ensuring that responses were scored consistently, fairly, and according to the approved scoring guidelines. Scoring materials were carefully compiled and checked for consistency and accuracy. Student identification information, demographic information, and school contact information were not visible to scorers. The sequence and manner in which the materials were presented to scorers was standardized to ensure that all scorers had the same training environment and scoring experience, regardless of content, grade level, or item scored.

Three training methods were used to train scorers of RICAS hand-scored items:

1) live group training via Teams
2) recording of live group training
3) pre-recorded interactive modules

Scorers started the training process by receiving an overview of RICAS; this general orientation included the purpose and goal of the testing program and any unique features of the test and the testing population. Scorer training for a specific item to be scored always started with a thorough review and discussion of the scoring guide, which consisted of the task, the scoring rubric, and any specific scoring notes for that task. All scoring guides were previously approved by the DESE during field-test benchmarking meetings and used without any additions or deletions.

As part of training, prospective scorers carefully reviewed three different sets of student responses, some of which had been used to train scorers when the item was a field-test item on MCAS:

Anchor sets are DESE-approved sets consisting of two or three sample responses at each score point. Each response represents a typical response, rather than an unusual or uncommon one; is solid and has a true score, meaning that this response has a precise score. Anchor sets are used to exemplify each score point.

Practice sets may include unusual, discussion-provoking responses, illustrating the range of responses encountered in operational scoring (including exceptionally creative approaches; extremely short or disorganized responses; responses that demonstrate attributes of both higher-score anchor papers and lower-score anchor papers; and responses that show traits of multiple score points). Practice sets are used to refine the scorers' understanding of how to apply the scoring rules across a wide range of responses.

Qualifying sets consist of 10 responses that are clear, typical examples of each of the possible score points. Qualifying sets are used to determine whether scorers can score consistently according to the RIDE-approved scoring standards.

Meeting or surpassing the minimum acceptable standard on an item's qualifying set was an absolute requirement for scoring student responses to that item. An individual scorer must have attained a scoring accuracy rate of 70% exact and 90% exact-plus-adjacent agreement[1] (at least 7 out of the 10 were exact score matches and either zero or one discrepant) on either of two potential qualifying sets. For multi-trait ELA items, each scorer had to meet the 70% / 90% passing threshold for each individual trait.

4.4.4 Leadership Training

Scoring content specialists also had overall responsibility for ensuring that scoring leadership (Cognia scoring supervisors and Pearson scoring directors) continued their history of scoring consistently, fairly, and according to the approved scoring guidelines. Once they had completed their item-specific training, scoring leadership was required to meet or surpass a qualification standard of at least 80% exact and 90% exact-plus-adjacent scoring accuracy. For multi-trait ELA items, scoring leadership had to meet the 80% and 90% passing threshold for each individual trait.

4.4.5 Methodology for Scoring Hand-Scored Polytomous Items

All Operational items in grades 3-8 Mathematics and ELA were selected from items which had been field tested in previous years. For operational scoring, a 10% sample of the human scored ELA essay responses were scored via automated scoring using Pearson's Intelligent Essay Assessor (IEA). All other 3–8 ELA and Mathematics responses were done by human scorers at a rate of 10% human-to-human double-blind scoring rate. Information on how the IEA works and how it was used on the RICAS essay scoring is provided in section 4.4.7 below.

4.4.6 Monitoring of Scoring Quality

The 2022 RICAS tests included constructed-response items and essays (in addition to selected-response and short-answer items) that were scored by hand. Hand-scored items included the following:

- constructed-response items with assigned scores of 0-3 (ELA grades 3 and 4 only)
- constructed-response items with assigned scores of 0-3 (mathematics grade 3) and 0-4 (mathematics grades 4-8)
- essays with assigned scores for two traits, Idea Development and Language Conventions. In ELA grades 3-5 the Idea Development score ranged from 0-4 and for ELA grades 6-8 the scores ranged from 0-5. For All grades of ELA essays, the trait Language Conventions was scored on a range from 0-3 points.

For each of these hand-scored items, a scoring guide was created. For examples of item-specific scoring guides, see the RICAS Student Work/Scoring Guides webpage at http://ricas.pearsonsupport.com/released-items/.

Non-numeric scores assigned by Cognia and Pearson could be designated as:

- Blank: The written response form is completely blank.
- Unreadable: The response cannot be read because of poor penmanship, or spelling cannot be deciphered, or writing is too small, too faint to see, or only partially visible.

[1] *"Adjacent agreement" means that a pair of scores (for the same response) are only off by one point. "Exact-plus-adjacent agreement" means that a pair of scores are either the same or off by only one point.*

- Non-English: Response was written entirely in a language other than English or without enough English or numbers to provide a score.
- Off Topic: Response does not address the topic or task for the item. The response is irrelevant to the item prompt, or the response states that the student is refusing to participate in testing.
- Direct Copy: Direct copy of text from the passage or item prompt.

Scorers could also flag a response as a “Crisis” response, which would be sent to scoring leadership for immediate attention.

A response would be flagged as a “Crisis” response if it indicated:

- perceived, credible desire to harm self or others;
- perceived, credible, and unresolved instances of mental, physical, or sexual abuse;
- presence of language or thoughts that may require professional intervention;
- sexual knowledge well beyond the student’s developmental age;
- ongoing, unresolved misuse of legal/illegal substances (including alcohol);
- knowledge of or participation in real, unresolved criminal activity; or
- direct or indirect request for adult intervention/assistance (e.g., crisis pregnancy, doubt about how to handle a serious problem at home).

Scoring Approach

Single-Scoring

All student responses received at least one human score. This was the only human response unless the response was independently read and scored by two human scorers (i.e., it was slotted for double-blind scoring).

Double-Blind Scoring

In double-blind scoring, a response is independently read and scored by two human scorers. These scorers were not aware that double-blind scoring was taking place. For a double-blind response that received adjacent scores (i.e., two scores within one point of each other), the higher score was used. Any double-blind response with discrepant scores greater than one point was sent to an arbitration queue and was read by scoring leadership, in which case the expert score that resolved the scoring discrepancy was used. 10% of the student responses were given a double-blind score. The IEA scoring platform was treated as a human scorer and 10% of those scores were double blind scored by a human for validity.

A description of how the IEA functions and how it was used is provided in section 4.4.7.

Read-Behind Scoring

In addition to the double-blind scoring, scoring leadership, at random points throughout the scoring shift, engaged in read-behind (back-read) scoring for each scorer assigned to their team. In this process, scoring leadership views responses recently scored by a particular scorer and assigns a score to that same response. Scoring leadership then compared scores and advised / counseled the scorer as necessary.

4.4.7 Double-Blind Scoring with the Intelligent Essay Assessor (IEA)

The Intelligent Essay Assessor (IEA) is used to score student responses to essay prompts.[2] Like human scorers, IEA evaluates the content and meaning of text, as well as grammar, style, and mechanics. IEA learns to score via a range of machine learning and natural language processing technologies. The engine is trained individually on each prompt and trait using hundreds or thousands of human-scored student responses.

IEA measures the content and quality of responses by determining the features human scorers evaluate when scoring a response. Given a set of human-scored responses to a prompt, IEA computes hundreds of different metrics that characterize each response in various ways. Some examples of these metrics include:

- number of grammar errors
- types of grammar errors
- variety of words
- maturity of words
- variety of sentence types
- coherence of the response
- similarity of the response to other responses and/or source materials

All these different metrics are fed to machine learning algorithms that determine which of them best predict the scores assigned by human scorers.

IEA was used operationally for the third consecutive year as the second double-blind score. IEA was trained before the operational assessment was administered using responses collected during the field test and scored by trained human scorers. For each prompt, IEA was trained using approximately 1,300 responses per prompt and then evaluated using approximately 640 responses. Table 4-2 includes the specific N counts for each prompt. The responses were randomly assigned to each set (training or evaluation). Performance on the evaluation set was measured using a variety of criteria comparing IEA with human scoring using the standard metrics shown in Table 4-3.

Table 4-2. N Counts by Prompt

Grade	Prompt	Training Set Size	Evaluation Set Size
3	EL912362165	1,284	624
4	EL909132428	1,297	635
5	EL806746086	1,345	696
5	EL834856783	1,301	628
6	EL911525969	1,296	640
6	EL913132900	1,297	633
7	EL811753816	1,309	652
7	EL909750218	1,305	645
8	EL836248600	1,287	630
8	EL911774388	1,276	620

[2] *Additional information about IEA can be found in Foltz, P. W., Streeter, L. A., Lochbaum, K. E., & Landauer, T. K (2013). Implementation and applications of the Intelligent Essay Assessor. Handbook of Automated Essay Evaluation, M. Shermis & J. Burstein, (Eds.). Pp. 68-88. Routledge, NY, NY.*

Table 4-3. Metrics for Evaluating Automated Scoring[3]

Measure	Threshold
Pearson R	≥ 0.70
Quadratic Weighted Kappa (QWK)	≥ 0.70
Kappa	≥ 0.40
Exact Agreement	≥ 65% (or better than human-human agreement)
Per score point agreement	≥ 50% (or better than human-human agreement)
Standardized Mean Difference (SMD)	Within |0.15|

Ten prompts met the required performance criteria and were approved by DESE to be scored by IEA as the double-blind score to monitor quality during the operational assessment. Scoring performance on the operational assessment is described in the next section.

Table 4-4 shows a comparison of IEA to human scoring on the validity papers, by exact score point (validity papers are student responses with known scores interspersed among the other student responses; these papers are used to check scoring accuracy). As shown below, IEA scoring accuracy on these validity papers is similar to or slightly higher than the human scoring accuracy at most score points. IEA accuracy tends to be higher than human accuracy at the highest score point, as seen in the Idea Development agreement statistics for grades 3-8. An exception to this trend appears at times in the higher score points (4 or 5) when there is a low percentage of responses at these score points, making it difficult to identify responses that solidly meet the criteria for validity responses and limiting scorers' opportunity to score such. As a result, the validity pool for a score point of 4 or 5 is a smaller sample size than other score points.

Table 4-4. Comparison of Human and IEA Agreement with Validity Papers—ELA

Grade	UIN	Trait	Validity	N	Exact Agreement	Exact Agreement by Score Point					
						0	1	2	3	4	5
3	EL912362165	Idea Development	IEA	40	83%	100%	75%	73%	80%	100%	--
			Human		88%	98%	91%	84%	72%	74%	--
		Conventions	IEA		88%	50%	94%	82%	100%	--	--
			Human		90%	61%	97%	83%	90%	--	--
4	EL909132428	Idea Development	IEA	88	94%	94%	100%	88%	94%	100%	--
			Human		89%	97%	93%	88%	77%	70%	--
		Conventions	IEA		96%	100%	96%	96%	92%	--	--
			Human		92%	99%	95%	87%	89%	--	--
5	EL806746086	Idea Development	IEA	57	95%	100%	100%	88%	100%	0%	--
			Human		87%	98%	94%	69%	72%	38%	--
		Conventions	IEA		97%	100%	100%	93%	92%	--	--
			Human		86%	93%	92%	67%	81%	--	--
	EL834856783	Idea Development	IEA	73	82%	97%	100%	50%	85%	64%	--
			Human		90%	99%	78%	78%	64%	62%	--
		Conventions	IEA		85%	75%	100%	60%	89%	--	--
			Human		90%	89%	95%	79%	91%	--	--
6	EL911525969	Idea Development	IEA	119	98%	100%	97%	100%	94%	100%	100%
			Human		85%	96%	92%	80%	73%	58%	58%
		Conventions	IEA		98%	100%	97%	100%	92%	--	--
			Human		83%	93%	79%	75%	81%	--	--
	EL913132900	Idea Development	IEA	28	100%	100%	100%	100%	100%	100%	100%
			Human		93%	99%	92%	91%	80%	52%	75%
		Conventions	IEA		100%	100%	100%	100%	100%	--	--
			Human		94%	99%	91%	90%	87%	--	--
7	EL811753816	Idea Development	IEA	108	83%	96%	88%	82%	83%	54%	86%
			Human		83%	95%	90%	83%	63%	50%	54%
		Conventions	IEA		98%	100%	95%	100%	97%	--	--
			Human		88%	95%	84%	82%	85%	--	--

continued

[3] *Williamson, D. M., Xi, X., & Breyer, F. J. (2012). A framework for evaluation and use of automated scoring. Educational Measurement: Issues and Practices, 31, 2.*

Grade	UIN	Trait	Validity	N	Exact Agreement	Exact Agreement by Score Point					
						0	1	2	3	4	5
7	EL909750218	Idea Development	IEA	48	75%	80%	82%	100%	60%	71%	50%
			Human		83%	87%	93%	80%	69%	77%	70%
		Conventions	IEA		88%	100%	92%	73%	88%	--	--
			Human		87%	97%	88%	73%	89%	--	--
8	EL836248600	Idea Development	IEA	96	93%	100%	95%	94%	94%	76%	100%
			Human		81%	97%	84%	80%	74%	64%	51%
		Conventions	IEA		97%	100%	84%	100%	100%	--	--
			Human		87%	94%	73%	80%	93%	--	--
	EL911774388	Idea Development	IEA	90	84%	100%	100%	91%	58%	69%	100%
			Human		80%	97%	89%	85%	76%	49%	61%
		Conventions	IEA		98%	100%	95%	95%	100%	--	--
			Human		90%	97%	87%	84%	92%	--	--

4.4.8 Monitoring of Scoring Quality

Once RICAS scorers met or exceeded the minimum standard on a qualifying set and were allowed to begin scoring, they were constantly monitored throughout the entire scoring window to ensure they scored student responses as accurately and consistently as possible. If a scorer fell below the minimum standard on any of the quality-control indicators, some form of intervention occurred, ranging from counseling to retraining to dismissal. Scorers were required to meet or exceed the minimum standard of 70% exact and 90% exact-plus-adjacent agreement on the following quality control methods listed and further defined below:

- validity responses
- read-behind scoring (RBs)/back-reading,
- double-blind scoring (DBs), and
- compilation reports (summary of scoring agreement statistics).

Validity responses were used to monitor the scorer's accuracy of scoring. These responses were approved by scoring leadership and distributed to scorers based on a percentage of their total number of responses scored. For the first two days, validity responses routed to scorers comprised 6% of their responses for ELA and 3% for mathematics. Starting with the third day of live scoring, these rates were reduced to 4% for ELA and 2% for mathematics. At the third-day rate, a full shift of scoring was expected to result in 6–19 validity responses per day in ELA and around 8 validity responses per day in mathematics, based on expected read rates.

Alert messages were issued to scorers who did not meet minimum validity metrics after 10 validity responses. If, after an additional five validity responses, the scorer had not improved, ePEN, the scoring platform, automatically blocked that scorer, and launched a 10-response targeted calibration set. The scorer was required to attain at least 70% exact agreement and 90% exact-plus-adjacent agreement on this calibration set to continue scoring the item for which the calibration set was administered. If the scorer passed the targeted calibration, ePEN was unblocked and the scorer regained admission to operational responses. The scorer was required to continue maintaining scoring standards for validity, as validity statistics continued to be checked every 10 validity responses. If validity fell below scoring standards at any of these subsequent intervals, the scorer was released from the project and all scores assigned immediately reset.

Read-behinds involved responses that were first read and scored by a scorer, then read and scored by a member of scoring leadership. Scoring leadership would, at various points during the scoring shift,

conduct a review of submitted scorer work. After the scorer scored the response, scoring leadership would give his or her own score to the response and then compare his or her score to the scorer's score. Read-behinds were performed at least 10 times for each full-time day shift scorer and at least five times for each evening shift and partial-day shift scorer. Scorers who fell below the 70% exact and 90% exact-plus-adjacent score agreement standard were counseled, given extra monitoring assignments such as additional read-behinds, and allowed to resume scoring if they demonstrated the ability to meet the scoring standards after the intervention.

Double-blinds involved responses scored independently by two different scorers. Scorers knew in advance that some of the responses they scored were going to be scored by others, but they had no way of knowing what responses would be scored by another scorer, or whether they were the first, second, or only scorer. Double-blind scoring served as an indicator for agreement of scoring between two scorers. Responses given discrepant scores by two independent scorers were read and scored by scoring leadership.

Compilation reports were generated daily. Compilation reports displayed all the statistics for each scorer, including the percentage of exact, adjacent, and discrepant scores on the backreads as well as the percentage of exact, adjacent, and discrepant scores on validity sets. As scoring leadership conducted backreads, the scorers' overall percentages on the compilation report were automatically calculated and updated. If the compilation report at the end of the scoring shift listed any individuals who were still below the 70% exact and 90% exact-plus-adjacent standard, their scores for that day were voided. Responses with voided scores were returned to the scoring queue for other scorers to score.

4.4.9 Interrater Consistency

Interrater consistency statistics are the result of the processes implemented to ensure valid and reliable hand-scoring of items and, as such, provide evidence of scoring stability. Double-blind scoring was one of the processes used to monitor the quality of the hand-scoring of student responses for constructed-response items. For student constructed-response questions in grades 3–8, 10% were randomly selected and scored independently by two different scorers. Results of the double-blind scoring were used during the scoring process to identify scorers who required retraining or other intervention, and they are presented here as evidence of scoring consistency on the RICAS tests.

A third score was required for any score category in which there was not an exact agreement between scorer one and scorer two. A third score was also required as a confirmation score when either scorer one and/or scorer two provided a score of M for Demonstration of Skills and Concepts and Independence or a score of 1 for Level of Complexity.

Summaries of the interrater consistency results are presented in Tables 4-5 for ELA and 4-6 for mathematics by grade. The tables show the number of score categories, the number of included scores, the percent exact agreement, the percent adjacent agreement, the correlation between the first two sets of scores, the percent of responses that required a third score, and linearly-weighted (LW) Kappa as a measure of agreement scorer consistency by accounting for chance agreement. Interrater consistency data are available at the item level in Appendix C.

Table 4-5 Summary of Interrater Consistency Statistics Organized across Items by Content Area and Grade—ELA

Content Area	Grade	Number of Score Categories	Number of Included Scores	Percent Exact	Percent Adjacent	Correlation	% of Third Scores	LW Kappa
ELA	3	4	1,802	71.75	26.64	0.73	2.39	0.63
		5	875	67.89	30.17	0.81	2.63	0.66
	4	4	1,889	74.01	24.67	0.80	2.22	0.71
		5	932	70.17	28.00	0.84	2.47	0.72
	5	4	1,898	70.76	28.71	0.81	1.90	0.69
		5	1,898	73.50	24.82	0.85	1.90	0.71
	6	4	1,878	71.67	28.01	0.84	1.54	0.72
		6	1,878	71.67	26.89	0.84	1.54	0.72
	7	4	1,951	74.12	25.42	0.86	2.41	0.75
		6	1,951	65.56	32.39	0.83	2.41	0.69
	8	4	2,006	73.98	25.17	0.88	1.94	0.77
		6	2,006	70.44	28.17	0.90	1.94	0.78

Note. LW = linearly-weighted

Table 4-6 Summary of Interrater Consistency Statistics Organized across Items by Content Area and Grade—Mathematics

Content Area	Grade	Number of Score Categories	Number of Included Scores	Percent Exact	Percent Adjacent	Correlation	% of Third Scores	LW Kappa
Mathematics	3	4	3,849	91.14	8.60	0.97	0.26	0.92
	4	5	3,918	86.47	12.69	0.96	0.84	0.90
	5	5	3,931	82.32	16.38	0.94	1.30	0.86
	6	5	3,870	86.28	12.64	0.95	1.09	0.88
	7	5	3,817	86.77	12.34	0.95	0.89	0.89
	8	5	3,901	82.67	15.79	0.94	1.54	0.85

Note. LW = linearly-weighted

Table 4-7 provides a summary of the "validity" statistics. These statistics denote accuracy in scoring; they provide an average of the human and IEA agreement with the validity responses (e.g., agreement with the true scores for each essay).

Table 4-7. Summary of Validity Statistics[1]

Subject	Grade	Number of Score Categories[2]	Number of Validity Reads[3]	Exact Agreement	Agreement by Score Point 0	1	2	3	4	5
ELA	3	4 (SR)	3,553	89.2	95.1	91.5	63.1	65.3	--	--
		4 (Conv)	3,153	90.4	76.7	97.0	82.5	89.0	--	--
		5 (ID)	3,153	88.5	97.8	91.5	83.9	69.7	73.4	--
	4	4 (SR)	3,725	83.2	91.9	83.0	73.3	76.8	--	--
		4 (Conv)	3,265	92.4	99.2	94.5	86.6	89.2	--	--
		5 (ID)	3,265	89.5	96.8	93.3	88.0	76.6	74.2	--
	5	4 (Conv)	6,654	88.1	91.3	93.4	73.4	85.5	--	--
		5 (ID)	6,654	88.1	98.4	93.1	74.0	68.7	61.5	--
	6	4 (Conv)	6,590	88.4	96.6	85.0	80.5	83.7	--	--
		6 (ID)	6,590	88.6	97.9	92.2	84.1	76.5	56.7	66.4
	7	4 (Conv)	6,906	87.4	95.7	85.8	78.0	86.4		
		6 (ID)	6,906	83.6	91.8	91.5	82.2	66.4	67.1	63.6
	8	4 (Conv)	6,918	88.1	95.1	80.6	82.7	92.2	--	--
		6 (ID)	6,918	81.5	97.1	86.9	83.7	76.0	58.0	57.2

continued

Subject	Grade	Number of Score Categories[2]	Number of Validity Reads[3]	Exact Agreement	Agreement by Score Point				
					0	1	2	3	4	5
Mathematics	3	4	8,215	96.4	99.1	95.4	94.3	96.2	--	--
	4	5	7,670	94.9	95.5	96.1	89.2	95.4	97.1	--
	5	5	7,855	92.6	99.3	92.3	91.1	86.1	95.0	--
	6	5	8,462	93.1	97.0	94.0	91.8	88.9	93.4	--
	7	5	8,585	90.6	98.0	88.3	90.4	87.6	92.4	--
	8	5	8,616	89.8	96.9	90.0	84.3	85.5	93.2	--

[1]Includes all operational and equating items for ELA and mathematics.
[2]SR= Short response; Conv= Conventions; ID=Idea Development
[3] This column displays the number of validity reads (how many times all the responses were scored against validity papers) that occurred, not the number of validity papers used.

4.5 Evidence in Support of Validity Arguments Regarding Scoring

1.2 ***Evaluation Inference:*** Each test form as an organized sampling of assessment tasks, results in an observed score that reflects a student's knowledge and abilities in the subject being assessed through appropriate test assembly, administration, and scoring procedures.

1.2.3 **Claim:** The scoring procedures and models produce scores accurately reflective of targeted knowledge and abilities.

Evidence: Chapter 4 has detailed sections describing the scoring process for machine-scored and hand-scored items on RICAS assessments. This includes detailed descriptions of preparation, benchmark meetings, recruitment and training of scorers, monitoring of scoring quality, and interrater consistency.

Chapter 5. Reporting

5.1 Reporting of Results

Results on the RICAS were reported in terms of achievement levels that describe student achievement in relation to established state standards. There are four achievement levels for ELA and mathematics for students in grades 3–8:

Level 1: Not Meeting Expectations

Level 2: Partially Meeting Expectations

Level 3: Meeting Expectations

Level 4: Exceeding Expectations

Students were given a separate achievement-level classification in each content area. Reports are generated at the student level. The achievement level distributions are provided in Appendix D.

Parent/Guardian Reports and student results labels were printed and mailed to districts for distribution to parents/guardians and schools. The Parent/Guardian Report is also available to schools in PearsonAccess Next (PAN). Parent/Guardian Report PDFs were run by grade and school and posted online for school, district, and state access.

5.2 Parent/Guardian Report

The Parent/Guardian Report (based on the MCAS report design) or "Individual Student Report" was generated for each student who participated in the RICAS tests. The report is a stand-alone single page (11" x 17") color report that is folded; see Appendix E for a sample report. Two full-color copies of each student's report were printed: one for the parent/guardian and one for the school's records. The report is designed to present parents/guardians with a detailed summary of their child's RICAS performance and to enable comparisons with other students at the school, district, and state levels. Three of the four sections are developed by Cognia/Pearson while one section is developed by RIDE.

Outside Portion

The outside portion of the Parent/Guardian Report has two pages, a front page and a back page. The front page provides student identification information, including student name, grade, date of birth, Student ID (SASID), school name, and district name.

The front page also presents general information about the test, website information for parent/guardian resources, and a summary of the student's results for each content area. This summary provides important information for each content area at a glance, including the student's achievement level, scaled score, range of scores, and growth percentile.

In 2022, a QR code was added to the front page. The QR code led parents/guardians to a video specific to their student. The video explained the results of the RICAS tests in context. The videos were produced by Pearson's Spotlight team and were produced in English and in the student's home language when the home language was in the top 10 languages in Rhode Island. See section 5.4 and an accompanying document on reporting business requirements for more information.

The back page of the report is provided by RIDE and contains contextual information about the educational mission and strategic roadmap of the department.

Inside Portion

The inside portion of the report also has two pages, one dedicated to ELA results and one dedicated to mathematics results.

Each page contains the achievement level, scaled score, and standard error of the scaled score for each content area tested. If the student does not receive a scaled score, the reason is displayed after “Your Child’s Achievement Level.” Each achievement level has its own distinct color, and that color is used throughout the report to highlight important report elements based on the student’s achievement level and score. These report elements include the student’s earned achievement level, scaled score, the visual scale’s achievement-level title and achievement-level cut scores, and the comparison of the student’s scaled score to the average scaled score at the student’s school, district, and the state levels.

If the student received a score previously, their earned scaled score from that year’s test is also displayed along with the current year scaled score for each content area tested. The previous scaled score is displayed in the color corresponding to the achievement level earned that year. If available, up to 3 years of scores including the current year score is displayed in a table. A student growth percentile (SGP) for each content area tested is displayed with a comparison to the average SGP for the student’s school and district. An SGP describes the student’s learning over time compared to his or her academic peers (peers are other students with similar scores on previous state tests).

The student’s performance in each content area’s reporting categories is also displayed using pictographs and text that indicates the points earned by the student versus the total points possible in that reporting category. For each reporting category, the average number of points earned by students scoring close to 500 is also displayed for comparison purposes. The student’s performance on individual test questions is reported at the bottom of the results page in a simplified item response grid. The grid indicates the points earned and points possible for each test question included on the grid. Essay questions are indicated on the grid.

5.3 Student Results Labels

The other report that is produced for each student is the *Student Results Label*. The labels are printed and shipped to districts. Each label contains the following information for a student: the student’s name, their SASID, grade, date of birth, test date, school code, school name, and district name. The student’s results for each subject are also reported. The student’s earned achievement level and scaled score are provided for each subject tested. If the student does not test in one of the subjects, the reason appears on the label. Files are organized by grade, district, and school. Labels are sorted by last name then first name.

5.4 Reporting Business Requirements

To ensure that RICAS results are processed and reported accurately, a document specifying business requirements is prepared before reporting results. The business requirements are adhered to in the processing and analyses of the RICAS test data and in preparation of the reporting results. These rules specify which, if any, student data needs to be excluded from school-, district-, and state-level summary computations. At an individual student level, the business requirements document describes how any special cases should be treated for reporting purposes.

5.5 Quality Assurance

Quality assurance measures are implemented throughout the process of analysis and reporting at Cognia. The data processors and data analysts perform routine quality-control checks of their computer programs. When data are handed off to different units within the data team, the sending unit verifies that the data are accurate before handoff. Additionally, when a unit receives a data set, the first step is to verify the accuracy of the data. Once new report designs were approved by RIDE, reports were run using demonstration data to test the application of the decision rules. The populated reports were then approved by RIDE.

Another type of quality assurance measure used at Cognia is parallel processing. One data analyst is responsible for writing all programs required to populate the student-level and aggregate reporting tables for the administration. Each reporting table is assigned to a second data analyst who uses the decision rules to independently program the reporting table. The production and quality-assurance tables are compared; when there is 100% agreement, the tables are released for report generation.

The third aspect of quality control involves procedures to check the accuracy of reported data. Using a sample of schools and districts, the quality assurance group verifies that the reported information is correct. There are two sets of samples selected that may not be mutually exclusive. The first set includes samples that satisfy all the following criteria:

- one-school district
- two-school district
- multi-school district
- private school
- special school (e.g., a charter school)
- small school that does not have enough students to report aggregations
- school with excluded (not tested) students

The second set of samples includes districts or schools that have unique reporting situations that require the implementation of a decision rule. This set is necessary to ensure that each rule is applied correctly.

The quality-assurance group uses a checklist to implement its procedures. Once the checklist is completed, sample reports are circulated for review by psychometric and program management staff. The appropriate sample reports are then sent to RIDE for review and signoff.

5.6 Additional Resources

In addition to the resources provided within the score reports, RIDE provides online resources to assist students, families, teachers, administrators, and the public to interpret the meanings of test scores and apply their interpretations toward appropriate and valid uses of the test results. Most of these resources are available through web pages linked to the RICAS Assessments page of the RIDE website (https://www.ride.ri.gov/InstructionAssessment/Assessment/RICASAssessments.aspx). Stakeholder-specific resources are described in further detail below.

5.6.1 Students and Their Families

For students and their families, a “Resources for Families” page (https://www.ride.ri.gov/InstructionAssessment/Assessment/ResourcesforFamilies.aspx) provides general information about Rhode Island’s content standards and the RICAS program. Links to more detailed resources are found throughout the page and include:

An Assessment Results page (https://www.ride.ri.gov/Assessment-Results), provides access to the Rhode Island Assessment Data Portal and guides its use. Additionally, it contains links to the following guides for interpretation and use of RICAS results and reports:

A “Family Guide to Understanding RICAS” (https://www.ride.ri.gov/Portals/0/Uploads/Documents/Instruction-and-Assessment-World-Class-Standards/Assessment/Results/RICAS/RICAS-For-Families-2022%2012_6_22.pdf?ver=pSvetR2y9E_s9YLAJtGLDw%3d%3d), which provides not only guidance for properly interpreting RICAS results, but also on appropriate use of the results.

A RICAS Individual Student Report (ISR) Guide (https://www.ride.ri.gov/Portals/0/Uploads/Documents/Instruction-and-Assessment-World-Class-Standards/Assessment/Results/RICAS/RICAS-ISR-Guide-2022.pdf?ver=_mt9kdv36Ko149e7bRyFqg%3d%3d), explaining the different components of the ISR each student receives, how to interpret them, and how to use them to work with teachers to help their child succeed.

5.6.2 Educators and Administrators

The Assessment Results page of the RIDE Website (https://www.ride.ri.gov/Assessment-Results) provides Educator and Administrator Access to the Rhode Island Assessment Data Portal, providing data at the state, district, school, grade, and student levels. There are also short videos that walk educators through the Student Data Portal and explain each of the data elements.

A Student Data Portal User Guide (https://www3.ride.ri.gov/StudentDataPortal/docs/UserGuide.pdf) is linked on this page, describing types of data and reports that are available, guidance for interpreting and using these data and reports and descriptions of access and permissions for different user types.

5.7 Evidence in Support of Validity Arguments Regarding Reporting

1.5 ***Utilization Inference 1:*** RICAS score reports provide students and their families with classification and score information that is useful, fair, and appropriate for monitoring academic achievement and participating in decisions regarding student learning.

1.5.1 **Claim:** Students and their families understand the meaning of scores and classifications, appropriate uses and interpretations of those scores and classifications, and any limits on their interpretability, as applied to monitoring academic achievement and participating in decisions regarding student learning.

Evidence: Chapter 5 describes how results are reported to students and their families, Section 5.2 describes details of the information included in the score reports. This includes important

score and classification information, but also explanations of what this information means. Section 5.6 and Subsection 5.6.1 describe additional resources that students and their families may use to improve their understanding of this score information.

1.5.2 **Claim:** Interpretations of scores and classifications are genuinely useful to students and their families for the purposes of monitoring academic achievement and participating in decisions regarding their learning.

Evidence: Section 5.2 describes details of the information included in the score reports. This includes information about how families can help improve their child's learning. Section 5.6 and Subsection 5.6.1 describe resources available to students and families that can be used to apply test results to take appropriate actions toward furthering the student's education.

1.6 ***Utilization Inference 2:*** RICAS score reports provide educators with classification and score information that is useful, fair, and appropriate for supporting curricular planning and identifying instructional needs at both the classroom and individual student level.

1.6.1 **Claim:** Educators understand the meaning of scores and classifications, appropriate uses and interpretations of those scores and classifications, and any limits on their interpretability, as applied to curricular planning and identification of instructional needs.

Evidence: Section 5.6 and Subsection 5.6.2 describe the reporting tools that educators may use to access the score results of individual students and the group of students that they teach, as well as resources available to educators providing guidance for accurately interpreting scores.

1.6.2 **Claim:** Interpretations of scores and classifications are genuinely useful to educators for the purposes of curricular planning and identification of instructional needs.

Evidence: Section 5.6 and Subsection 5.6.2 describe resources available to educators that provide guidance for applying test scores and interpretations of test scores to their instruction.

1.7 ***Utilization Inference 3:*** RICAS score reports provide school- and district-level administrators with classification and score information that is useful, fair, and appropriate for supporting program evaluations and improvements at school and district levels.

1.7.1 **Claim**: School and district-level administrators understand the meaning of scores and classifications, appropriate uses and interpretations of those scores and classifications, and any limits on their interpretability, as applied to program evaluations and improvements at school and district levels.

Evidence: Section 5.6 and Subsection 5.6.2 describe the reporting tools that administrators may use to access the score results of individual students and group-level data of students in their schools and districts, as well as resources available to administrators providing guidance for accurately interpreting scores.

1.7.2 **Claim**: Interpretations of scores and classifications are genuinely useful to school- and district-level administrators for the purposes of program evaluations and improvements.

Evidence: Section 5.6 and Subsection 5.6.2 describe resources available to administrators that provide guidance for applying test scores and interpretations of test scores to program evaluation and improvement.

1.8 ***Utilization Inference 4:*** RICAS score reports provide state administrators with classification and score information that is useful, fair, and appropriate for monitoring academic achievement and growth as required by state accountability programs and informing the public of schools' performances on these metrics.

1.8.1 **Claim:** State and federal administrators understand the meaning of scores and classifications, appropriate uses and interpretations of those scores and classifications, and any limits on their interpretability, as applied to monitoring academic achievement and growth as required by state and federal accountability programs.

Evidence: Section 5.6 and Subsection 5.6.2 describe the reporting tools that administrators may use to access the score results of individual students and group-level data of students in schools, districts, and the state, as well as resources available to administrators providing guidance for accurately interpreting scores.

1.8.2 **Claim:** Interpretations of scores and classifications are genuinely useful to state and federal administrators for the purposes of monitoring academic achievement and growth as required by state and federal accountability programs.

Evidence: Section 5.6 and Subsection 5.6.2 describe resources available to administrators that provide guidance for applying test scores and interpretations of test scores to federal accountability programs.

Chapter 6. Classical Item Analysis

There were no substantial changes to classical item analysis procedures in SY 2021–2022 versus SY 2020–2021. Interpretations of differences using classical item analyses are always difficult, as such statistics are population dependent. Even so, interpretations cannot be made in the same way as previous years.

The disruptions due to COVID-19 and the non-uniform instructional delivery make comparison of aggregated classical test statistics to previous administrations inappropriate for the purposes of quantifying the differences between testing populations. However, it is still appropriate to use classical item statistics to flag items for potential issues in item quality, especially as these issues are further investigated by content experts for additional analysis.

A complete evaluation of a test's quality must include an evaluation of each item. Items should predominantly assess the knowledge and skills that are identified as part of the domain being tested and should avoid assessing irrelevant factors. Items should also be unambiguous and free of grammatical errors, potentially insensitive content or language, and other confounding characteristics. In addition, items must not unfairly disadvantage students—in particular, racial, ethnic, or gender groups (AERA et al., 2014).

Both qualitative and quantitative analyses have been conducted to ensure that 2022 RICAS items meet these standards. This section presents statistical evaluations in four parts: (1) difficulty indices, (2) item-test correlations, (3) DIF statistics, and (4) dimensionality analyses. The item analyses presented here are based on the statewide administration of the RICAS assessments in spring 2022. Note that the information presented in this section is based only on the operational items, since student scores are calculated on those items.

6.1 Classical Difficulty and Discrimination Indices

All selected-response and constructed-response items are evaluated in terms of item difficulty according to standard classical test theory (CTT) practices. Difficulty is commonly defined as the average proportion of points achieved on an item and is measured by obtaining the average score on an item and dividing it by the maximum possible score for the item.

Selected-response items are scored dichotomously (correct vs. incorrect), so, for these items, the difficulty index is simply the proportion of students who correctly answered the item. Constructed-response items and essay items are scored polytomously, meaning that a student can achieve scores other than just 0 or 1 (e.g., 0, 1, 2, 3, or 4 for a 4-point constructed-response item). By computing the difficulty index as the average proportion of points achieved, the indices for the different item types are placed on a similar scale, ranging from 0.0 to 1.0 regardless of the item type.

Although this index is traditionally described as a measure of difficulty, it is properly interpreted as an easiness index, because larger values indicate easier items. An index of 0.0 indicates that all students earned 0% of the item points, and an index of 1.0 indicates that all students received full credit for the item (i.e., all the item points).

A summary of the distributions of item difficulty and item discrimination statistics for each grade and content area combination is presented in Table 6-1. Note that these are presented in the aggregate for all items combined as well as separately by item type: selected response (SR), constructed response (CR), and essay (ES). The mean difficulty and discrimination values as well as their standard deviations shown

in the table are within generally acceptable and expected ranges. Note that an “item” is defined as a scorable opportunity for psychometric purposes. For example, each trait is treated as a separate item for an essay scored on multiple traits.

Table 6-1 Summary of Item Difficulty and Discrimination Statistics by Content Area and Grade

Content Area	Grade	Item Type	Number of Items	Difficulty		Discrimination	
				Mean	Standard Deviation	Mean	Standard Deviation
ELA	3	ALL	32	0.58	0.15	0.45	0.10
		SR	24	0.62	0.11	0.43	0.10
		CR	6	0.54	0.16	0.50	0.11
		ES	2	0.23	0.09	0.56	0.09
	4	ALL	32	0.56	0.15	0.42	0.11
		SR	24	0.59	0.13	0.40	0.10
		CR	6	0.54	0.12	0.46	0.11
		ES	2	0.28	0.08	0.62	0.07
	5	ALL	33	0.63	0.18	0.49	0.09
		SR	24	0.69	0.13	0.46	0.08
		CR	5	0.61	0.13	0.52	0.03
		ES	4	0.28	0.08	0.62	0.07
	6	ALL	33	0.57	0.15	0.49	0.10
		SR	24	0.61	0.13	0.45	0.05
		CR	5	0.54	0.09	0.51	0.05
		ES	4	0.31	0.06	0.72	0.01
	7	ALL	34	0.56	0.13	0.46	0.12
		SR	26	0.60	0.11	0.41	0.06
		CR	4	0.52	0.05	0.48	0.05
		ES	4	0.35	0.08	0.74	0.02
	8	ALL	33	0.64	0.15	0.46	0.14
		SR	24	0.68	0.11	0.40	0.10
		CR	5	0.63	0.13	0.52	0.04
		ES	4	0.39	0.09	0.76	0.01
Mathematics	3	ALL	40	0.54	0.18	0.46	0.12
		SR	16	0.55	0.17	0.43	0.11
		CR	24	0.53	0.18	0.48	0.13
	4	ALL	40	0.50	0.17	0.49	0.11
		SR	11	0.59	0.16	0.43	0.11
		CR	29	0.46	0.16	0.52	0.11
	5	ALL	40	0.49	0.16	0.48	0.13
		SR	17	0.50	0.18	0.40	0.12
		CR	23	0.47	0.14	0.53	0.11
	6	ALL	41	0.42	0.17	0.46	0.14
		SR	15	0.47	0.17	0.37	0.11
		CR	26	0.39	0.17	0.51	0.13
	7	ALL	42	0.37	0.19	0.45	0.15
		SR	19	0.44	0.16	0.32	0.10
		CR	23	0.31	0.19	0.55	0.11
	8	ALL	40	0.44	0.13	0.46	0.13
		SR	21	0.48	0.12	0.38	0.10
		CR	19	0.40	0.14	0.54	0.11

Caution should be exercised when comparing indices across grade levels for the purpose of comparing students in different grade levels and content areas. Differences may be due not only to differences in the item statistics on the test but also may be affected by differences in student abilities and/or differences in the standards and/or curricula taught in each grade. It is reasonable to compare the indices to common benchmarks in the field for the purpose of confirming the items meet industry recognized standards of quality.

Difficulty indices for selected-response items tend to be higher (indicating that students performed better on these items) than the difficulty indices for constructed-response items because selected-response items can be answered correctly by simply identifying rather than providing the correct answer, or by guessing. Similarly, discrimination indices for those constructed-response items with more than two points tend to be larger than those for dichotomous items because of the greater variability of the former (i.e., the partial credit these items allow). The restriction of range (i.e., only two score categories) in dichotomous items tends to make the discrimination indices lower. Note that these patterns are more consistent within item type, so when interpreting classical item statistics, comparisons should be emphasized among items of the same type.

In addition to the item difficulty and discrimination summaries presented above, item-level CTT statistics for all items, on which the distributions in Table 6-1 are based, are provided in Appendix F. Furthermore, item-level score point distributions are provided for constructed-response items in Appendix G; for each item, the percentage of students who received each score point is presented.

As with Table 6-1, the individual item difficulty and discrimination indices are within generally acceptable and expected ranges. Very few items were answered correctly at near-chance or near-perfect rates. Similarly, the positive discrimination indices indicate that students who performed well on individual items tended to perform well overall.

There were only a few items with low discrimination values below 0.20, or very high or very low item difficulty values included on the 2022 RICAS tests. These items were included because their statistical values did not negatively impact the quality of the tests, and their inclusion ensured that content specifications were appropriately covered.

6.2 Differential Item Functioning

Subgroup differences in performance should be examined when sample sizes permit and actions should be taken to ensure that differences in performance are attributable to construct-relevant, rather than irrelevant, factors (AERA et al., 2014; Joint Committee on Testing Practices, 2004). As part of the effort to identify such problems, psychometricians evaluated the 2022 RICAS items in terms of DIF statistics. One application of the DIF statistics is to use them to evaluate item quality in the item review process.

For the 2022 RICAS, the standardization DIF procedure (Dorans & Kulick, 1986) was employed to evaluate subgroup differences, which denote significant group-level differences in performance for examinees with equivalent achievement levels on the test. The standardization DIF procedure is designed to identify items for which subgroups of interest perform differently and beyond the impact of differences in overall achievement. The DIF procedure calculates the difference in item performance for two groups of students (at a time) matched for achievement on the total test. Specifically, average item performance is calculated for students at every total score. Then an overall average is calculated, weighting the total score distribution so that it is the same for the two groups. DIF statistics were calculated for all subgroups with at least 75 students.

DIF for MCAS items is evaluated initially at the time of field-testing. When differential performance between two groups occurs on an item (i.e., a DIF index in the “low” or “high” categories, explained below), it may or may not indicate actual item bias. Consequently, all items with either high or low DIF are examined by content experts and educators to try to identify the cause. If subgroup differences in performance can be traced to differential experience such as geographical living conditions or access to technology, the inclusion of such items is reconsidered during the item review process. If content experts do not identify a source of bias on the item, the item may be eligible for operational form construction.

The main DIF index produced under the standardization procedure has a theoretical range from -1.0 to 1.0 for selected-response items and constructed-response items; the latter uses an adjusted index.

Dorans and Holland (1993) suggested that index values between -0.05 and 0.05 denote either a negligible amount of DIF or the absence of DIF. The majority of 2022 RICAS items fell within this range. Dorans and Holland further stated that items with values between -0.10 and -0.05 and between 0.05 and 0.10 (i.e., "low" DIF) should be inspected to ensure that no possible effect is overlooked, and that items with values outside the -0.10 to 0.10 range (i.e., "high" DIF) are more unusual and should be examined very carefully before being used operationally.

DIF analyses were conducted for all subgroups defined in the No Child Left Behind Act, for which the sample size was at least 75 students for both the focal and reference groups separately. Six subgroup comparisons were evaluated for DIF:

- male compared with female
- not ELL compared with ELL[4]
- not economically disadvantaged compared with economically disadvantaged
- White compared with African American or Black
- White compared with Hispanic or Latino
- students with disabilities compared with students without disabilities

After the 2022 spring administration, DIF analyses were conducted again as a post-hoc quality check based on the operational data. The tables in Appendix H present the number of items classified as either "low" or "high" DIF, in total and by group favored. Very few items exhibited high DIF in the operational data, which suggested that the item review that occurred after the MCAS field-testing effectively ruled out items displaying large DIF for the RICAS operational spring tests.

6.3 Dimensionality Analysis

Because tests are constructed with multiple content area subcategories and their associated knowledge and skills, the potential exists for the invocation of multiple dimensions beyond the common primary dimension. Generally, the subcategories are highly correlated with each other; therefore, a primary dimension typically explains the majority of variance in test scores. The presence of one dominant primary dimension is the primary psychometric assumption to support the use of the unidimensional IRT models that are used for calibrating and scaling the items administered on the 2022 RICAS assessments.

The purpose of dimensionality analysis is to investigate (a) whether violation of the assumption of test unidimensionality is statistically detectable and, if so, (b) quantify the degree to which unidimensionality is violated, and (c) specify the structure of the multidimensionality. Dimensionality analyses were performed on the operational items for all RICAS test forms used during the spring 2022 administration. A total of 12 computer-based test forms were analyzed; the results for these analyses are reported below.

The dimensionality analyses were conducted using the nonparametric IRT-based methods DIMTEST (Stout, 1987; Stout, Froelich, & Gao, 2001) and DETECT (Zhang & Stout, 1999). Nonparametric techniques are often preferred because they avoid strong parametric modeling assumptions while still adhering to the fundamental principles of IRT.

Both DIMTEST and DETECT methods use as their basic statistical building block the estimated average conditional covariances for item pairs. A conditional covariance is the covariance between two items

[4] *ELL = English Language Learner (includes current and former English Language Learners).*

conditioned on true score (expected value of observed score) for the rest of the test, and the average conditional covariance is obtained by averaging across all possible conditioning scores. When a test is strictly unidimensional, all conditional covariances are expected to take on values within random noise of zero, indicating statistically independent item responses for examinees with equal expected scores. Nonzero conditional covariances are essentially violations of the principle of local independence, and such local dependence implies multidimensionality. Thus, nonrandom patterns of positive and negative conditional covariances are indicative of multidimensionality.

DIMTEST is a hypothesis-testing procedure for detecting violations of local independence. The data are first randomly divided into a training sample and a cross-validation sample. Then an exploratory analysis of the conditional covariances is conducted on the training sample data to find the cluster of items that displays the greatest evidence of local dependence. The cross-validation sample is then used to test whether the conditional covariances of the selected cluster of items display local dependence, conditioning on total score from the nonclustered items. The DIMTEST statistic follows a standard normal distribution under the null hypothesis of unidimensionality.

DETECT is an effect-size measure of multidimensionality. As with DIMTEST, the data are first randomly divided into a training sample and a cross-validation sample (these samples are drawn independently of those used with DIMTEST). The training sample is used to find a set of mutually exclusive and collectively exhaustive clusters of items that best fit a systematic pattern of positive conditional covariances for pairs of items from the same cluster and negative conditional covariances for pairs composed of items from different clusters. Next, the clusters from the training sample are used with the cross-validation sample data to average the conditional covariances: within-cluster conditional covariances are summed; from this sum, the between-cluster conditional covariances are subtracted. This difference is divided by the total number of item pairs, and this average is multiplied by 100 to yield an index of the average violation of local independence for an item pair. DETECT values less than 0.2 indicate very weak multidimensionality (or near unidimensionality); values of 0.2 to 0.4, weak to moderate multidimensionality; values of 0.4 to 1.0, moderate to strong multidimensionality; and values greater than 1.0, very strong multidimensionality (Roussos & Ozbek, 2006).

DIMTEST and DETECT were applied to the operational items of the RICAS tests administered during spring 2022. The data for each grade were split into a training sample and a cross-validation sample. For all grades, there were over 9,600 student examinees per test form in both ELA and mathematics, so every training sample and cross-validation sample had at least 4,800 students. After randomly splitting the data into training and cross-validation samples, DIMTEST was applied to each data set to see if the null hypothesis of unidimensionality would be rejected. DETECT was then applied to each data set for which the DIMTEST null hypothesis was rejected to estimate the effect size of the multidimensionality.

The results of the DIMTEST analyses indicated that the null hypothesis was rejected at a significance level of 0.01 for every data set. Because strict unidimensionality is an idealization that almost never holds exactly for a given data set, the statistical rejections in the DIMTEST results were not surprising. Indeed, because of the large sample sizes involved in the data sets, DIMTEST would be expected to be sensitive to even quite small violations of unidimensionality.

DETECT was then used to estimate the effect size for the violations of local independence for the 2021 and 2022 tests. Table 6-2 displays the multidimensionality effect-size estimates from DETECT.

Table 6-2 Multidimensionality Effect Sizes by Grade and Content Area

Content Area	Grade	Multidimensionality Effect Size	
		2021	2022
ELA	3	0.15	0.15
	4	0.13	0.21
	5	0.21	0.21
	6	0.30	0.25
	7	0.30	0.30
	8	0.19	0.30
	Average	**0.21**	**0.24**
Mathematics	3	0.21	0.20
	4	0.16	0.18
	5	0.16	0.18
	6	0.13	0.13
	7	0.10	0.13
	8	0.18	0.18
	Average	**0.16**	**0.17**

The DETECT values indicate weak (0.2 < DETECT < 0.4) or very weak (DETECT < 0.2) multidimensionality for all the 2022 RICAS test forms, which are consistent with previous year's results.

The way in which DETECT divided the tests into clusters was investigated to determine whether there were any discernible patterns with respect to the selected-response and constructed-response item types. Inspection of the DETECT clusters indicated that selected-response/constructed-response separation generally occurred much more strongly with ELA than with mathematics, a pattern that has been consistent across all previous years. Specifically, for the ELA test forms, every grade had one set of clusters dominated by selected-response items and another set of clusters dominated by essay items. On the mathematics test forms, there was less clear evidence of consistent separation of selected-response and constructed-response items.

In summary, for the 2022 dimensionality analyses, the violations of local independence, as evidenced by the DETECT effect sizes, were either weak or very weak in all test forms. The patterns with respect to the selected-response and constructed-response items were consistent with those in the previous year, with ELA tending to display more separation than mathematics. However, this separation did not result in an effect size that would suggest use of a unidimensional IRT model is inappropriate.

6.4 Evidence in Support of Validity Arguments Regarding Classical Item Analyses

1.2 ***Evaluation Inference:*** Each test form, an organized sampling of assessment tasks, results in an observed score that reflects a student's knowledge and abilities in the subject being assessed through appropriate test assembly, administration, and scoring procedures.

1.2.4 **Claim:** Items on the assessment demonstrate appropriate statistical quality.

Evidence: Chapter 6 describes the classical item analysis procedures conducted to ensure that all items meet the standards of quality outlined by the Standards (AERA et al., 2014) and Code of Fair Testing Practices in Education (Joint Committee on Testing Practices, 2004). Differential

Item Functioning (DIF) analysis, presented in Section 6.2, provides evidence that the items are free of systematic biases.

1.3 ***Generalization Inference:*** The observed score from any specific form testing a given grade and subject is reflective of the expected score on any potential form of the test for that grade and subject.

1.3.2 **Claim:** Test specifications result in forms of similar length and task distribution.

Evidence: Dimensionality analyses, presented in Section 6.3, provide evidence that any differences in length or task distribution are small enough that interpretation of the resulting scores is preserved.

1.3.3 **Claim:** Statistical analyses of observed scores on specific forms show that they are good predictors of expected scores on other potential forms.

Evidence: DIF analysis and subsequent review of items classified as exhibiting DIF, described in Section 6.2, support observed score generalization to expected score by ruling out the items specific to SY 21-22 forms as sources of bias in the scores.

Chapter 7. Item Response Theory Analysis

7.1 Overview

As reported in Chapter 1, RICAS uses the Massachusetts MCAS ELA and Mathematics items and test forms. The IRT processes used to link and scale MCAS administrations are managed by DESE and Cognia and are leveraged by RIDE in the sense that the results of those processes are used to establish the RICAS IRT model and subsequent reporting scale.

Chapter 7 describes the procedures used to calibrate, equate, and scale the MCAS tests. During these psychometric analyses, several quality-control procedures and checks on the processes were conducted. These procedures included:

- evaluations of the calibration processes (e.g., checking the number of cycles required for convergence for reasonableness);
- checking item parameters and their standard errors for reasonableness;
- examination of test characteristic curves (TCCs) and test information function (TIF) curves for reasonableness;
- evaluation of model fit (e.g., test level, item-level, and person-level);
- evaluation of equating items (e.g., delta analyses, b-b analyses, beta analyses);
- examination of a-plots and b-plots for reasonableness; and
- evaluation of the scaling results (e.g., comparing look-up tables to the previous year's).

Chapter 7 is reprinted with minor modifications from the MCAS technical report to provide added clarity within this document.

7.2 IRT

All RICAS items were calibrated using IRT on the MCAS data. IRT uses mathematical models to define a relationship between an unobserved measure of student performance, usually referred to as theta (θ), and the probability [$P(\theta)$] of getting a dichotomous item correct or of getting a particular score on a polytomous item (Hambleton, Swaminathan, & Rogers, 1991; Hambleton & Swaminathan, 1985). In IRT, it is assumed that all items are independent measures of the same construct (i.e., of the same θ). Another way to think of θ is as a mathematical representation of the latent trait of interest. Several common IRT models are used to specify the relationship between θ and $P(\theta)$ (van der Linden, 2016; Hambleton & van der Linden, 1997; Hambleton & Swaminathan, 1985). The process of determining the mathematical relationship between θ and $P(\theta)$ is called *item calibration*. After items are calibrated, they are defined by a set of parameters that specify a nonlinear, monotonically increasing relationship between θ and $P(\theta)$. Once the item parameters are known, an estimate of θ for each student can be calculated. This estimate $\hat{\theta}$ is considered to be an estimate of the student's true score or a general representation of student performance. IRT has characteristics that may be preferable to those of raw scores for equating purposes

because it specifically models examinee responses at the item level and facilitates equating to an IRT-based item pool (Kolen & Brennan, 2014).

For the 2022 RICAS tests, the three-parameter logistic (3PL) model was used for traditional four-option selected-response items, and the two-parameter logistic (2PL) model was used for binary-scored selected-response and technology-enhanced items (Hambleton & van der Linden, 1997; Hambleton, Swaminathan, & Rogers, 1991). The graded-response model (GRM) was used for polytomous items (Nering & Ostini, 2010), including polytomously scored multi-part items, constructed-response items, and essays.

The 3PL model for selected-response items can be defined as:

$$P_i(\theta_j) = P(U_i = 1|\theta_j) = c_i + (1 - c_i)\frac{exp[Da_i(\theta_j - b_i)]}{1+exp[Da_i(\theta_j - b_i)]},$$

where
U represents the scored response on an item,
i indexes the items,
j indexes students,
α represents item discrimination,
b represents item difficulty,
c is the pseudo guessing parameter,
θ is the student's latent person parameter, and
D is a normalizing constant equal to 1.701.

For the 2PL model, this equation reduces to the following:

$$P_i(\theta_j) = P(U_i = 1|\theta_j) = \frac{exp[Da_i(\theta_j - b_i)]}{1+exp[Da_i(\theta_j - b_i)]}.$$

In the GRM for polytomous items, an item is scored in $k + 1$ graded categories that can be viewed as a set of k dichotomies. At each point of dichotomization (i.e., at each threshold), a two-parameter model can be used to model the probability that a student's response falls at or above a particular ordered category, given ϑ. This implies that a polytomous item with $k + 1$ categories can be characterized by k item category threshold curves (ICTCs) of the 2PL form:

$$P_{ik}^{*}(\theta_j) = P(\theta_j) = \frac{exp[Da_i(\theta_j - b_i + d_{ik})]}{1+exp[Da_i(\theta_j - b_i + d_{ik})]},$$

where
U indexes the scored response on an item,
i indexes the items,
j indexes students,
k indexes threshold,
θ is the student's latent person parameter,
α represents item discrimination,
b represents item difficulty,
d represents threshold, and
D is a normalizing constant equal to 1.701.

After computing k ICTCs in the GRM, $k+1$ item category characteristic curves (ICCCs), which indicate the probability of responding to a particular category given ϑ, are derived by subtracting adjacent ICTCs:

$$P_{ik}(\theta_j) = P(\theta_j) = P^*_{ik}(\theta_j) - P^*_{i(k+1)}(\theta_j),$$

where
i indexes the items,
j indexes students,
k indexes threshold,
θ is the student ability,
P_{ik} represents the probability that the score on item *i* falls in category k, and
P^*_{ik} represents the probability that the score on item *i* falls at or above the threshold k ($P^*_{i0} = 1$ and $P^*_{i(m+1)} = 0$).

The GRM is also commonly expressed as:

$$P_{ik}(\theta_j) = \frac{exp[Da_i(\theta_j - b_i + d_k)]}{1+exp[Da_i(\theta_j - b_i + d_k)]} - \frac{exp[Da_i(\theta_j - b_i + d_{k+1})]}{1+exp[Da_i(\theta_j - b_i + d_{k+1})]}.$$

Finally, the item characteristic curve (ICC) for a polytomous item is computed as a weighted sum of ICCCs, where each ICCC is weighted by a score assigned to a corresponding category. The expected score for a student with a given theta is expressed as:

$$E(U_i|\theta_j) = \sum_k^{m+1} w_{ik} P_{ik}(\theta_j),$$

where w_{ik} is the weighting constant and is equal to the number of score points for score category *k* on item *i*.

Note that for a dichotomously scored item, $E(U_i|\theta_j) = P_i(\theta_j)$. For more information about item calibration and determination, see Lord and Novick (1968), Hambleton and Swaminathan (1985), or Baker and Kim (2004).

TCCs display the expected (average) raw score associated with each θ_j value typically between -4.0 and 4.0. Mathematically, the TCC is computed by summing the ICCs of all items that contribute to the raw score. Using the notation introduced earlier in this section, the expected raw score at a given value of θ_j is as follows:

$$E(X|\theta_j) = \sum_{i=1}^{n} E(U_i|\theta_j),$$

where
i indexes the items (and *n* is the number of items contributing to the raw score),
j indexes students (here, θ_j runs from -4 to 4), and
$E(X|\theta_j)$ is the expected raw score for a student of ability θ_j.

The expected raw score monotonically increases with θ_j, consistent with the notion that students of high ability tend to earn higher raw scores than students of low ability. Most TCCs are “S-shaped”: they are flatter at the ends of the distribution and steeper in the middle.

The TIF displays the amount of statistical information that the test provides at each value of θ_j. Information functions depict test precision across the entire latent trait continuum. There is an inverse

relationship between the information of a test and its standard error of measurement (SEM). For long tests, the SEM at a given θ_j is approximately equal to the inverse of the square root of the statistical information at θ_j (Hambleton, Swaminathan, & Rogers, 1991), as follows:

$$SEM(\theta_j) = \frac{1}{\sqrt{I(\theta_j)}}.$$

Compared to the tails, TIFs are often higher near the middle of the θ distribution where most students are located. This is by design. Test items are often selected with middle difficulty levels and high discriminating powers so that test information is maximized for the majority of candidates who are expected to take a test.

7.3 IRT Results

IRT calibration was conducted using flexMIRT 3.03 (Cai, 2012) on the CBT items in all the grades. Because paper test forms are treated as accommodated forms, item parameters for computer-based items were applied to their paper counterparts. The tables in Appendix I provide the IRT item parameters and associated standard errors of all operational scoring items on the 2022 RICAS tests. The MCAS equating report in Appendix I contains graphs of the TCCs and TIFs, which are defined in the previous section. While the information provided in Appendix I pertains solely to the MCAS equating process, it should be noted that the RICAS assessment program utilized the MCAS equating results to report the student scores. The RICAS achievement level distributions are available in Appendix D.

The number of cycles required for convergence for each grade and content area during the IRT analysis can be found in Table 7-1. The number of cycles required for convergence fell within acceptable ranges (less than 150) for all tests.

Table 7-1. Number of Cycles Required for Convergence

Content Area	Grade	Initial Cycles	FCIP Cycles
ELA	3	52	8
	4	32	12
	5	89	11
	6	45	16
	7	34	24
	8	46	31
Mathematics	3	54	--
	4	60	--
	5	35	--
	6	56	--
	7	91	--
	8	31	--

7.4 Equating

Section 7.4 summarizes the equating procedure and results to place the 2022 MCAS tests on the same scale as the previous year. An equating report provides complete documentation of the quality-control procedures and results of the 2022 MCAS equating (Appendix I).

The purpose of equating is to ensure that scores obtained from different forms of a test are comparable to one another. Equating may be used if multiple test forms are administered in the same year; or one year's forms may be equated to those used in the previous year. Equating ensures that students are not given an unfair advantage or disadvantage because the test form they took is easier or harder than that taken by other students. See Chapter 2 for more information about how the test development process supports successful equating. To call out an example, Cognia test developers and psychometricians closely collaborated to ensure that the constructed forms are representative from both content and statistical perspectives. Specifically, the Content team strived to meet the content coverage stipulated in the test design and blueprints while considering the item difficulty and complexity. Then, psychometricians evaluated the forms to ensure that the proposed forms were statistically comparable to the reference form (typically, the previous year's operational form).

General Equating Approach

For RICAS, the raw-to-scaled score lookup tables are produced using the on-scale IRT parameters from the MCAS bank. Hence, it is crucial to understand the equating procedure used in maintaining the MCAS item bank.

The 2022 administration of the MCAS used a raw-score-to-theta equating procedure in which test forms were equated to the theta scale established on the reference form (i.e., the form used in the most recent standard setting). The groups of students who take equating items on the different test forms are never strictly equivalent to the groups who took the tests in the reference years. IRT is particularly useful for equating scenarios that involve nonequivalent groups (Allen & Yen, 1979). Equating for the MCAS uses the anchor test–nonequivalent groups design described by Petersen, Kolen, and Hoover (1989). In this equating design, no assumption is made about the equivalence of the examinee groups taking different test forms (i.e., naturally occurring groups are assumed). Comparability is instead evaluated by using a set of anchor items (also called equating items), assuming they perform in the same way in both groups and thus can accurately measure the differences in the two groups.

For mathematics, the item parameter estimates for 2022 test forms were placed on the reference scale using the Stocking-Lord method (SL; Stocking & Lord, 1983). The estimates of the item parameters for the anchor items were used to estimate the SL transformation. The SL method estimates the combination of slope and intercept values that minimize the squared difference between the test characteristic curves cumulated over examinees. Then, the estimated SL constants were applied to linearly transform the freely calibrated parameter estimates to put them on the reference scale.

However, a two-step equating approach was taken for ELA because of the presence of the essays. The first step for ELA involved applying the SL method for all items except the essay items; thus, isolating any dimensionality variability in the essay items from the estimation of the equating relationship across years. Then, the writing items were brought onto the scale established in the first step by applying the fixed common item parameters (FCIP2; Kim, 2006) method. The FCIP2 method is based on the IRT principle of item parameter invariance. According to this principle, the equating items for both tests should have the same item parameters. After the item parameters for the non-essay items were put on the reference scale (the first step), the FCIP2 method was employed to place the essay items onto the operational scale (the second step). This method is performed by fixing the parameters of the "equating" items (in this case, all non-essay items) to their previously obtained on-scale values and then calibrating using flexMIRT to place the remaining items (in this case, the essay items) on scale.

Parameter Drift Evaluations

Prior to implementing the SL method, two evaluations of the equating items were conducted to check for parameter drift, as follows.

- **Delta method:** compares two years' delta values (the percent correct transformed into a scale "with an effective range of 6 [very easy item] to 20 [very difficult item]"[5]) for equating items and flags an item if its standardized distance to the principal axis line is at or above 3 in absolute value.
- ***b-b* method:** compares current year's freely estimated IRT difficulty parameters with the previous year's values for equating items, and flags an item if its standardized distance to the principal axis line is at or above 3 in absolute value.

During the implementation of the SL method, a third evaluation of the equating items was conducted to check for parameter drift, as follows.

- **IRT curve-based beta method:** a measure of the weighted average difference between the item response function (IRF) curves between two years for each equating item (Jiang, Roussos & Yu, 2017; Wang & Roussos, 2018). The current year's IRF is calculated based on transformed item parameters using the SL constants estimated with all equating items. The difference index is denoted as β, its estimate is denoted as $\hat{\beta}$. Mathematically, it can be expressed as $\beta = \int (P(\theta, R) - P(\theta, F)) f_F(\theta) d\theta$, where $P(\theta, R)$ and $P(\theta, F)$ indicate the IRFs for the reference (i.e., previous administrations) and focal (i.e., current year) groups, respectively, and $f_F(\theta)$ is the density function for θ in the focal group. The difference index is denoted as β, its estimate is denoted as $\hat{\beta}$, and the following threshold is used to categorize an item into negligible, moderate, or large drift:
  - $|\hat{\beta}| < 0.05$, negligible drift
  - $0.05 \leq |\hat{\beta}| < 0.1$, moderate drift
  - $|\hat{\beta}| \geq 0.1$, large drift

Detailed results from each drift analysis, along with Delta and *b*-plots are presented in Appendix I.

Content Review

Following the statistical evaluation, each of the flagged items went through a content review process to further investigate whether there are construct-irrelevant or relevant factors that may have resulted in the item parameter drift. Anything pertaining to the content being measured is considered a construct relevant factor, such as any instructional shift in certain content areas. A list of content irrelevant factors follows:

- changes to item administration mode
- word/graphic changes to any part of the item
- change to option order
- change in position (e.g., beginning of test vs. end of test)
- whether an item experiences "clueing" in one administration but not in the other
- whether there are test security risks associated with the flagged items
- any other difference that may affect the testing experience.

[5] *Walker, M. E. (2014, May 13). Enhancing the Equating of Item Difficulty Metrics: Estimation of Reference Distribution. ETS Research Report Series. P. 1. Retrieved 1.10.20 from: https://onlinelibrary.wiley.com/doi/full/10.1002/ets2.12006*

An item is removed from the equating set if a construct irrelevant reason is identified in the content review. If a content relevant reason is identified, an item is kept as an equating item. If the content review does not find any reason, an item is removed if it is flagged by any of these three criteria: (1) standardized distance in the delta plot ≥ 3, (2) *b*-*b* standardized distance in the *b*-*b* plot ≥ 3, and (3) $|\hat{\beta}| \geq 0.1$.

The equating items that remained following these evaluation procedures these evaluation procedures were then employed in the SL method, and the linking relationship obtained from the SL method was used to transform the item parameters for all items in the 2022 MCAS administration onto the target scale. The transformed item parameters were then used to build the raw score to theta look-up tables for the 2022 RICAS tests. The SL constants are presented in Table 7-2.

Table 7-2. Stocking and Lord Constants

Content Area	Grade	Slope	Intercept
ELA	3	1.12	-0.15
	4	1.04	-0.30
	5	1.10	-0.22
	6	1.44	-0.33
	7	1.29	-0.29
	8	1.38	-0.18
Mathematics	3	1.11	-0.11
	4	1.04	-0.01
	5	1.01	-0.17
	6	1.01	-0.09
	7	1.08	-0.17
	8	1.02	-0.16

7.5 Reported Scale Scores and Achievement Standards

Because the θ scale used in IRT calibrations is not understood by most stakeholders, reporting scales were developed for the MCAS ELA and mathematics tests in grades 3–8, which then were applied to RICAS. The reporting scales are linear transformations of the underlying θ scale. As the three θ cutpoints from the standard setting have equal intervals (see Section 2.3 for more detail on cuts), one single linear transformation was sufficient to transform the θ scale from each achievement level category on one reporting scale.

Student scores on the RICAS tests are reported in integer values from 440 to 560. Because the same transformation is applied to all achievement-level categories, and the reported scaled scores preserve the interval scale properties (except for the truncated scaled scores at the lower and upper end of the score scale), it is appropriate to calculate means and standard deviations with scaled scores.

By providing information that is more specific about the position of a student's results, scaled scores supplement achievement-level scores. Students' raw scores (i.e., total number of points) on the 2022 RICAS tests were translated to scaled scores using a data analysis process called *scaling*, which simply converts from one scale to another. In the same way that a given temperature can be expressed on either the Fahrenheit or the Celsius scale, or the same distance can be expressed in either miles or kilometers, student scores on the 2022 RICAS tests can be expressed in raw or scaled scores.

It is important to note that converting from raw scores to scaled scores does not change students' achievement level classifications. Given the relative simplicity of raw scores, it is fair to question why scaled scores for the RICAS are reported instead of raw scores. The answer is that scaled scores make the reporting of results consistent. To illustrate, standard setting typically results in different raw cut scores across content areas. The raw cut score between *Partially Meeting Expectations* and *Meeting*

Expectations could be, for example, 35 in grade 3 mathematics but 33 in grade 4 mathematics, yet both of these raw scores would be transformed to scaled scores of 500. It is this uniformity across scaled scores that facilitates the understanding of student performance. The psychometric advantage of scaled scores over raw scores comes from their being linear transformations of θ. Since the θ scale is used for equating, scaled scores are comparable from one year to the next. Raw scores are not.

The scaled scores are obtained by a simple translation of ability estimates ($\hat{\theta}$) using the linear relationship between threshold values on the θ metric and their equivalent values on the scaled score metric. Students' ability estimates are obtained by mapping their raw scores through the TCC. Scale scores are calculated using the following linear equation:

$$SS = m\hat{\theta} + b,$$

where
m is the slope and
b is the intercept.

A separate linear transformation is used for each grade and content area combination. Table 7-3 shows the slope and intercept terms used to calculate the scaled scores for each grade and content area. Note that the values in Table 7-3 will not change unless the standards are reset.

Table 7-3. Scale Score Slopes and Intercepts by Content Area and Grade

Content Area	Grade	Slope	Intercept
ELA	3	18.839	499.785
	4	18.846	499.421
	5	17.686	499.335
	6	18.984	500.202
	7	19.098	499.791
	8	19.900	498.981
Mathematics	3	21.357	499.413
	4	20.938	498.869
	5	19.039	499.525
	6	19.870	500.165
	7	20.758	499.353
	8	20.172	500.170

Massachusetts conducted standard setting activities in August 2017 to establish achievement level cut scores on the new MCAS tests using standardized methods consistent with what is used in the professional field. RIDE staff and technical advisors observed those standard setting procedures and analyzed the results of the standard setting process. Although results of the new tests are reported in terms of four achievement levels, *Not Meeting Expectations*, *Partially Meeting Expectations*, *Meeting Expectations*, and *Exceeding Expectations*, rather than the five levels used to report PARCC results, analyses indicate that the MCAS performance standards are consistent with and as rigorous as the PARCC performance standards previously used in Rhode Island.

Across all grade levels 3–8, results from Rhode Island and Massachusetts suggest that performance at the Meeting Expectations level on the MCAS tests (level 3) is roughly equivalent to performance at the Met Expectations level on the PARCC tests (level 4), in terms of the resulting proportions of students classified above and below those levels.

Cutpoints for grades 3–8 ELA and mathematics RICAS tests were set via standard setting in 2017 by DESE and MCAS for grades 3–8 ELA and mathematics tests (see the *2017 Next-Generation MCAS and MCAS-Alt Technical Report* for the 2017 standard setting report). The standard setting establishes the theta cutpoints used for reporting each year. These theta cuts are presented in Table 7-4. The operational cut scores will remain fixed throughout the assessment program unless standards are reset. Also shown in the table are the cutpoints on the reporting score scale.

Table 7-4 Cut Scores on the Theta Metric and Reporting Scale by Content Area and Grade

Content Area	Grade	Theta			Scale Score				
		Cut 1	Cut 2	Cut 3	Min	Cut 1	Cut 2	Cut 3	Max
ELA	3	-1.581	0.011	1.604	440	470	500	530	560
	4	-1.561	0.031	1.623	440	470	500	530	560
	5	-1.659	0.038	1.734	440	470	500	530	560
	6	-1.591	-0.011	1.570	440	470	500	530	560
	7	-1.560	0.011	1.582	440	470	500	530	560
	8	-1.456	0.051	1.559	440	470	500	530	560
Mathematics	3	-1.377	0.027	1.432	440	470	500	530	560
	4	-1.379	0.054	1.487	440	470	500	530	560
	5	-1.551	0.025	1.601	440	470	500	530	560
	6	-1.518	-0.008	1.502	440	470	500	530	560
	7	-1.414	0.031	1.476	440	470	500	530	560
	8	-1.496	-0.008	1.479	440	470	500	530	560

7.6 Evidence in Support of Validity Arguments Regarding Item Response Theory Analyses

1.2 ***Evaluation Inference:*** Each test form, an organized sampling of assessment tasks, results in an observed score that reflects a student's knowledge and abilities in the subject being assessed through appropriate test assembly, administration, and scoring procedures.

1.2.3 **Claim:** The scoring procedures and models produce scores accurately reflective of targeted knowledge and abilities.

Evidence: Section 7.2 describes the scoring models used for items on the RICAS, describing the models used in detail and citing the references that establish the appropriateness of these models for placing student performances on a common scale for scoring purposes.

1.2.4 **Claim:** Items on the assessment demonstrate appropriate statistical quality.

Evidence: Section 7.3 describes IRT results referring to tables within the equating report (Appendix I) that describe quality control checks on items and procedures for making interventions based on items being flagged during these checks.

1.3 ***Generalization Inference:*** The observed score from any specific form testing a given grade and subject is reflective of the expected score on any potential form of the test for that grade and subject.

1.3.4 **Claim:** Equating and scaling methods accurately place scores from different forms onto a common scale.

Evidence: Section 7.4 describes equating procedures in detail and summarizes results from the full equating report, provided in Appendix I. Section 7.5 describes the processes of applying equating and scaling results to place raw scores onto RICAS score scales. These sections demonstrate a high level of rigor in selection, application, and interpretation of equating results, placing scores from the SY 21-22 forms on the same scales as forms from prior years.

Chapter 8. Reliability

8.1 Reliability and Standard Errors of Measurement

Although an individual item's performance is an important factor in evaluating an assessment, a complete evaluation must also address the way items grouped in a set function together and complement one another. Tests that function well provide a dependable assessment of a student's level of ability. Just like the measurement of physical properties such as temperature, any measurement tool contains some amount of measurement error, which leads to different results if the measurements were taken multiple times. The quality of items, as the tools to measure the latent ability, determines the degree to which a given student's score can be higher or lower than his or her true ability on a test.

There are several ways to estimate an assessment's reliability. The approach that was implemented to assess the reliability of the 2022 RICAS tests is the α coefficient of Cronbach (1951). This approach is most easily understood as an extension of a related procedure, the split-half reliability. In the split-half approach, a test is split in half, and students' scores on the two half-tests are correlated. To estimate the correlation between two full-length tests, the Spearman-Brown correction (Spearman, 1910; Brown, 1910) is applied. If the correlation is high, this is evidence that the items complement one another and function well as a group, suggesting that measurement error is minimal. The split-half method requires psychometricians to select items that contribute to each half-test score. This decision may have an impact on the resulting correlation since each different possible split of the test into halves will result in a different correlation.

Cronbach's α eliminates the item selection impact by comparing individual item variances to total test variance, and it has been shown to be the average of all possible split-half correlations. Along with the split-half reliability, Cronbach's α is referred to as a coefficient of internal consistency. The term "internal" indicates that the index is measured internal to each test of interest, using data that come only from the test itself (Anastasi & Urbina, 1997).

The formula for Cronbach's α is given as follows:

$$a = \frac{n}{n-1}\left[1 - \frac{\sum_{i=1}^{n} \sigma^2_{(Y_i)}}{\sigma^2_x}\right],$$

where
i indexes the item,
n is the total number of items,
$\sigma^2_{(Y_i)}$ represents individual item variance, and
σ^2_x represents the total test variance.

Table 8-1 presents descriptive statistics, Cronbach's *α* coefficient, and the raw score standard error of measurement (SEM) for each content area and grade. Statistics are based on operational items from online test forms, which were taken by most of the student examinee population. The reliability estimates range from 0.89 to 0.93, which is a generally acceptable range.

Table 8-1. Raw Score Descriptive Statistics, Cronbach's Alpha, and SEMs by Content Area and Grade

Content Area	Grade	Number of Students	Raw Score			Alpha (α)	SEM
			Maximum	Mean	Standard Deviation		
ELA	3	9,663	44	23.07	8.97	0.90	2.84
	4	9,739	44	22.65	8.87	0.89	2.95
	5	9,858	48	26.46	10.11	0.91	2.97
	6	9,842	50	24.72	10.78	0.92	3.04
	7	10,036	50	24.76	10.63	0.91	3.16
	8	10,276	50	28.30	10.59	0.91	3.14
Mathematics	3	9,762	48	23.49	11.56	0.93	3.10
	4	9,834	54	24.72	13.14	0.93	3.42
	5	9,960	54	23.51	12.45	0.92	3.43
	6	9,880	54	20.56	11.77	0.92	3.28
	7	10,043	54	17.24	11.32	0.91	3.31
	8	10,276	54	20.85	12.26	0.92	3.46

Because of the dependency of the *α* coefficients on the test-taking population and the test characteristics, precautions need to be taken when making inferences about the quality of one test by comparing its reliability to that of another test from a different grade or content area. To elaborate, reliability coefficients are highly influenced by test-taking population characteristics such as the range of individual differences in the group (i.e., variability within the population), average ability level of the population that took the exams, test designs, test difficulty, test length, ceiling or floor effect, and influence of guessing. Hence, "the reported reliability coefficient is only applicable to samples similar to that on which it was computed" (Anastasi & Urbina, 1997, p.107). It is reasonable to compare the indices to common benchmarks in the field for the purpose of confirming the tests meet similar industry recognized standards of quality.

8.2 Subgroup Reliability

The reliability coefficients discussed in the previous section were based on the overall population of students who took the 2022 RICAS online forms. Appendix J presents reliabilities for various subgroups of interest for ELA and mathematics, respectively. Cronbach's *α* coefficients were calculated based only on the members of the subgroup in question in the computations; values are calculated only for subgroups with 10 or more students. The reliability coefficients for subgroups range from 0.82 to 0.95 across the tests, with a median of 0.91 and a standard deviation of 0.02, indicating that reliabilities are generally within a reasonable range.

For several reasons, the subgroup reliability results should be interpreted with caution. Reliabilities are dependent not only on the measurement properties of a test but also on the statistical distribution of the studied subgroup. For example, subgroup sizes may vary considerably, which results in natural variation in reliability coefficients. Alternatively, *α*, which is a type of correlation coefficient, may be artificially depressed for subgroups with little variability (Draper & Smith, 1998).

8.3 Reporting Subcategory Reliability

Reliabilities were calculated for the reporting subcategories within the 2022 RICAS content areas. Results and reporting category descriptions are presented in Appendix J. The reliability coefficients for the reporting subcategories range from 0.41 to 0.88, with a median of 0.74 and a standard deviation of 0.12. Because they are based on a subset of items rather than the full test, subcategory reliabilities were typically lower than were overall test score reliabilities, approximately to the degree expected based on the classical test theory (Haertel, 2006), and interpretations should take this into account. Qualitative

differences among grades and content areas once again preclude valid inferences about the reliability of the full test score based on statistical comparisons among subtests.

8.4 Reliability of Achievement Level Categorization

The accuracy and consistency of classifying students into achievement levels are critical components of a standards-based reporting framework (Livingston & Lewis, 1995). For the 2022 RICAS tests, students were classified into one of four achievement levels: *Not Meeting Expectations*, *Partially Meeting Expectations*, *Meeting Expectations*, or *Exceeding Expectations*.

Cognia conducted decision accuracy and consistency (DAC) analyses to determine the statistical accuracy and consistency of the classifications. This section explains the methodologies used to assess the reliability of classification decisions and gives the results of these analyses.

Accuracy refers to the extent to which achievement classifications based on test scores match the classifications that would have been assigned if the scores did not contain any measurement error. Accuracy must be estimated because errorless test scores do not exist. Consistency measures the extent to which classifications based on test scores match the classifications based on scores from a second, parallel form of the same test. Consistency can be evaluated directly from actual responses to test items if two complete and parallel forms of the test are administered to the same group of students. In operational testing programs, however, such a design is usually impractical. Instead, techniques have been developed to estimate both the accuracy and the consistency of classifications based on a single administration of a test. The Livingston and Lewis (1995) technique was used for the 2022 RICAS tests because it is easily adaptable to all types of testing formats, including mixed formats.

The DAC estimates reported in Tables 8-2 and 8-3 make use of "true scores" in the classical test theory sense. A true score is the score that would be obtained if a test had no measurement error. True scores cannot be observed and so must be estimated. In the Livingston and Lewis (1995) method, estimated true scores are used to categorize students into their "true" classifications.

For the 2022 RICAS tests, after various technical adjustments (described in Livingston & Lewis, 1995), a four-by-four contingency table of accuracy was created for each content area and grade, where cell $[i,j]$ represented the estimated proportion of students whose true score fell into classification i (where i = 1 to 4) and observed score fell into classification j (where j = 1 to 4). The sum of the diagonal entries (i.e., the proportion of students whose true and observed classifications matched) signified overall accuracy.

To calculate consistency, true scores were used to estimate the joint distribution of classifications on two independent, parallel test forms. Following statistical adjustments (per Livingston & Lewis, 1995), a new four-by-four contingency table was created for each content area and grade and populated by the proportion of students who would be categorized into each combination of classifications according to the two (hypothetical) parallel test forms. Cell $[i,j]$ of this table represented the estimated proportion of students whose observed score on the first form would fall into classification i (where i = 1 to 4) and whose observed score on the second form would fall into classification j (where j = 1 to 4). The sum of the diagonal entries (i.e., the proportion of students categorized by the two forms into the same classification) signified overall consistency.

Cognia also measured consistency on the 2022 RICAS tests using Cohen's (1960) coefficient κ (kappa), which assesses the proportion of consistent classifications after removing the proportion of consistent classifications that would be expected by chance. It is calculated using the following formula:

$$\kappa = \frac{(\text{Observed agreement}) - (\text{Chance agreement})}{1 - (\text{Chance agreement})} = \frac{\sum_i C_{ii} - \sum_i C_{i.} C_{.i}}{1 - \sum_i C_{i.} C_{.i}},$$

where
$C_{i.}$ is the proportion of students whose observed achievement level would be level i (where i = 1–4) on the first hypothetical parallel form of the test;
$C_{.i}$ is the proportion of students whose observed achievement level would be level i (where i = 1–4) on the second hypothetical parallel form of the test; and
C_{ii} is the proportion of students whose observed achievement level would be level i (where i = 1–4) on both hypothetical parallel forms of the test.

Because κ is corrected for chance, its values are lower than other consistency estimates.

8.5 Decision Accuracy and Consistency Results

DAC analyses were conducted both for the overall population and for subpopulations at each performance achievement level. Results of the DAC analyses are provided in Tables 8-2 and 8-3 for the 2022 RICAS tests.

Table 8-2 includes overall accuracy indices with consistency indices displayed in parentheses next to the accuracy values, as well as overall kappa values. Overall ranges for accuracy (0.81–0.85), consistency (0.74–0.79), and kappa (0.61–0.68) indicate that most students were classified accurately and consistently with respect to measurement error and chance. Accuracy and consistency values conditional on achievement level are also given. For these calculations, the denominator is the proportion of students associated with a given achievement level. For example, the conditional accuracy value is 0.83 for *Not Meeting Expectations* for the grade 3 ELA test. This figure indicates that among the students whose true scores placed them in this classification, 83% would be expected to be in this classification when categorized according to their observed scores. Similarly, a consistency value of 0.75 indicates that 75% of students with observed scores in the *Not Meeting Expectations* level would be expected to score in this classification again if a second, parallel test form was taken.

Because one use of RICAS tests is the placement of student test scores into achievement levels, an important concern is the accuracy and consistency of decisions around achievement level thresholds. In this case, accuracy at the *Partially Meeting Expectations/Meeting Expectations* threshold is critically important, which summarizes the percentage of students who are correctly classified either above or below the particular cutpoint. Table 8-3 provides the accuracy and consistency estimates and false positive and false negative decision rates at each cutpoint for the 2022 RICAS tests. A false positive is the proportion of students whose observed scores were above the cut and whose true scores were below the cut. A false negative is the proportion of students whose observed scores were below the cut and whose true scores were above the cut.

In Table 8-3, the accuracy and consistency indices at the *Partially Meeting Expectations/Meeting Expectations* threshold range from 0.91–0.94 and 0.87–0.91, respectively. The false positive and false negative decision rates at the *Partially Meeting Expectations/Meeting Expectations* threshold range from 3%–5% and 3%–4%, respectively. These results indicate that nearly all students were correctly classified with respect to being above or below the *Partially Meeting Expectations/Meeting Expectations* cutpoint.

Table 8-2. Summary of Decision Accuracy (and Consistency) Results by Content Area and Grade—Overall and Conditional on Achievement Level

Content Area	Grade	Overall	Kappa	Conditional on Achievement Level			
				Not Meeting Expectations	Partially Meeting Expectations	Meeting Expectations	Exceeding Expectations
ELA	3	0.81 (0.74)	0.61	0.83 (0.75)	0.81 (0.75)	0.81 (0.73)	0.76 (0.57)
	4	0.82 (0.75)	0.61	0.83 (0.76)	0.84 (0.79)	0.77 (0.70)	0.72 (0.40)
	5	0.84 (0.78)	0.66	0.81 (0.76)	0.86 (0.82)	0.83 (0.75)	0.82 (0.62)
	6	0.82 (0.75)	0.64	0.89 (0.84)	0.80 (0.73)	0.78 (0.70)	0.72 (0.54)
	7	0.84 (0.77)	0.66	0.88 (0.83)	0.84 (0.78)	0.80 (0.73)	0.72 (0.49)
	8	0.84 (0.78)	0.67	0.88 (0.83)	0.86 (0.81)	0.77 (0.71)	0.72 (0.52)
Mathematics	3	0.83 (0.75)	0.64	0.88 (0.81)	0.83 (0.76)	0.80 (0.74)	0.60 (0.40)
	4	0.84 (0.78)	0.66	0.87 (0.80)	0.87 (0.82)	0.78 (0.72)	0.64 (0.40)
	5	0.85 (0.79)	0.68	0.88 (0.81)	0.86 (0.82)	0.82 (0.75)	0.71 (0.46)
	6	0.85 (0.79)	0.68	0.88 (0.81)	0.86 (0.81)	0.83 (0.77)	0.72 (0.47)
	7	0.84 (0.77)	0.64	0.87 (0.80)	0.85 (0.80)	0.77 (0.68)	0.77 (0.55)
	8	0.84 (0.78)	0.64	0.86 (0.79)	0.85 (0.81)	0.78 (0.69)	0.82 (0.65)

Table 8-3. Summary of Decision Accuracy (and Consistency) Results by Content Area and Grade—Conditional on Cutpoint

Content Area	Grade	Not Meeting Expectations / Partially Meeting Expectations			Partially Meeting Expectations / Meeting Expectations			Meeting Expectations / Exceeding Expectations		
		Accuracy (consistency)	False Positive	False Negative	Accuracy (consistency)	False Positive	False Negative	Accuracy (consistency)	False Positive	False Negative
ELA	3	0.93 (0.91)	0.03	0.03	0.91 (0.87)	0.05	0.04	0.97 (0.96)	0.02	0.01
	4	0.93 (0.90)	0.04	0.03	0.91 (0.88)	0.05	0.04	0.98 (0.97)	0.02	0.00
	5	0.94 (0.92)	0.04	0.02	0.92 (0.89)	0.05	0.03	0.98 (0.97)	0.02	0.00
	6	0.93 (0.90)	0.03	0.04	0.93 (0.90)	0.04	0.04	0.96 (0.95)	0.02	0.01
	7	0.93 (0.91)	0.04	0.03	0.93 (0.90)	0.04	0.03	0.97 (0.96)	0.02	0.01
	8	0.94 (0.91)	0.03	0.03	0.93 (0.90)	0.03	0.04	0.97 (0.96)	0.02	0.01
Mathematics	3	0.94 (0.91)	0.03	0.03	0.92 (0.89)	0.04	0.04	0.97 (0.95)	0.02	0.01
	4	0.94 (0.92)	0.03	0.03	0.93 (0.90)	0.03	0.04	0.97 (0.96)	0.02	0.00
	5	0.94 (0.91)	0.03	0.03	0.93 (0.90)	0.03	0.04	0.99 (0.98)	0.01	0.00
	6	0.94 (0.91)	0.03	0.03	0.93 (0.90)	0.04	0.03	0.99 (0.98)	0.01	0.00
	7	0.92 (0.89)	0.04	0.04	0.93 (0.90)	0.03	0.04	0.98 (0.98)	0.01	0.00
	8	0.92 (0.88)	0.04	0.04	0.94 (0.91)	0.03	0.03	0.99 (0.98)	0.01	0.00

The indices in Tables 8-2 and 8-3 are derived from Livingston and Lewis's (1995) method of estimating DAC. Livingston and Lewis discuss two versions of the accuracy and consistency tables. A standard version performs calculations for forms parallel to the form taken. An "adjusted" version adjusts the results of one form to match the observed score distribution obtained in the data. The tables use the standard version for two reasons: (1) This "unadjusted" version can be considered a smoothing of the data, thereby decreasing the variability of the results; and (2) for results dealing with the consistency of two parallel forms, the unadjusted tables are symmetrical, indicating that the two parallel forms have the same statistical properties. This second reason is consistent with the notion of forms that are parallel (i.e., it is more intuitive and interpretable for two parallel forms to have the same statistical distribution).

As with other methods of evaluating reliability, DAC statistics that are calculated based on small groups can be expected to be lower than those calculated based on larger groups. For this reason, the values presented in Tables 8-2 and 8-3 should be interpreted with caution. In addition, it is important to remember that it might be inappropriate to compare DAC statistics across grades and content areas.

8.6 Evidence in Support of Validity Arguments Regarding Reliability

1.3 ***Generalization Inference:*** The observed score from any specific form testing a given grade and subject is reflective of the expected score on any potential form of the test for that grade and subject.

1.3.3 **Claim:** Statistical analyses of observed scores on specific forms show that they are good predictors of expected scores on other potential forms.

Evidence: Section 8.1 describes the process for analyzing the reliability of RICAS forms and the results of these analyses. These analyses establish the reliability of each form. Subject to the equating and scaling methods placing scores from forms on the same scale, adequate reliability of individual forms establishes them as good predictors of expected score.

1.4 ***Explanation Inference*****:** Expected scores are attributable to proficiency in the target knowledge and abilities.

1.4.2 **Claim:** Tests are assembled with adequate precision near cut points.

Evidence: Sections 8.4 and 8.5 describe decision accuracy and consistency analysis procedures and results. Accuracy and consistency rates were reported as being adequately high while false positive and negatives demonstrated strong agreement between true score and observed score classification decisions.

Chapter 9. Validity Arguments Supporting Intended Interpretations and Uses of Test Scores

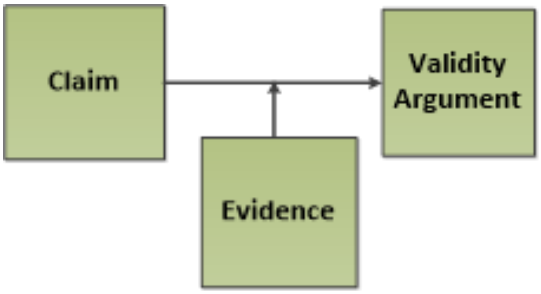
9.1 Rationale for Validity Argument-Centered Technical Reporting

Chapter 9 presents the primary intended interpretations and uses for RICAS test scores, the assumptions that underlie these score interpretations and uses, and the evidence supporting these assumptions. A validity argument logic model is introduced and applied to the evidence and assumptions to produce a structured argument in support of all intended score interpretations and uses. The structure applied to the validity argument closely follows the Chappelle (2020) framework, which provides a chain of inferences, each building on the previous, to preserve the interpretations as defined by the content standards such that they are realized within the resulting test scores and applicable to the intended uses of the RICAS program.

The Standards (2014) define validity as "the degree to which evidence and theory support the interpretations of test scores for proposed uses of tests" (p. 11). Elaborating on that definition, the Standards assert that "it is the interpretations of test scores for proposed uses that are evaluated, not the test itself" (p. 11) and that "validation logically begins with an explicit statement of the proposed interpretation of test scores, along with a rationale for the relevance of the interpretation to the proposed use" (p. 11). This definition applies specifically to intended interpretations and uses of test scores, rather than to the broader program of curriculum and instruction in which a testing program is embedded or to the surrounding education and school improvement policies and aspirations for student learning.

The Standards further state that "a sound *validity argument* integrates various strands of evidence into a coherent account of the degree to which existing evidence and theory support the intended interpretations of test scores for specific uses" (p. 21; emphasis added). An emerging common practice in state assessment programs is to construct validity arguments based on Toulmin's model of argumentation (Toulmin, 1958). A model for validity arguments, derived from the Toulmin model, is shown in Figure 9-1.

Figure 9-1. Validity Argument Logic Model



9.2 Validity Argument for Interpretation and Use of RICAS Test Scores

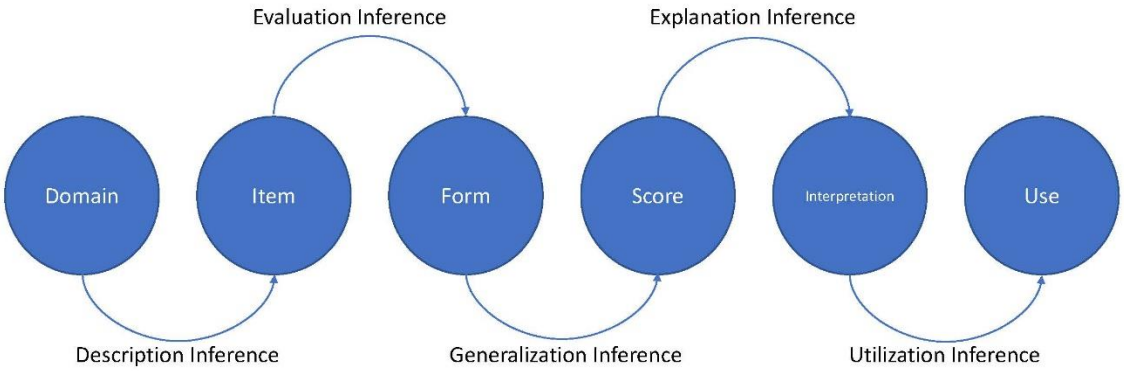
For the RICAS, the overarching validity argument is that the existing design, procedural, and psychometric evidence supports all intended score interpretations and uses of resulting test scores. Each of the interpretation and use inferences is comprised of one or more claims requiring supporting evidence. With all claims backing an inference supported by evidence, the inference is upheld. With all inferences upheld, the argument for the validity of the interpretations and uses is thusly made.

Specifically, the structure of the validation argument in this technical report follows closely Chapelle et al. (2018) and differentiates five layers:

1) **Description Inference**: Items sample from the target domain appropriately such that high quality forms can be produced. (Domain to Item)
2) **Evaluation Inference**: Forms sample from items appropriately such that observed scores reflective of the domain can be produced. (Item to Form)
3) **Generalization Inference**: Observed scores on individual forms are reliable such that they are reflective of expected scores across forms. (Form to Score)
4) **Explanation Inference**: Expected scores are associated with classification cuts such that classification decisions are interpretable. (Score to Interpretation)
5) **Utilization Inferences:** Interpretations of scores and classifications are used as intended and only in ways considered appropriate and fair. (Interpretation to Use)

See Figure 9-2 for a visual representation of Chappelle's framework.

Figure 9-2. Chappelle (2020)'s Framework: The Arguments and the Inferential Steps



It is important for the gathering of information in support of the Generalization Inference (3) to define what is meant by the term "form" in this context. A test form is not just the set of items on which the score is based, but the structure of the exam in terms of all elements that can affect an individual's performance. This can include, among other things, the raters scoring an exam, the occasion on which the exam is administered, and the setting in which it is administered. Generalization from observed to expected score is optimized when all sources of potential variability of test scores are identified and accounted for such that observed scores maximally reflect a student's ability and not the influence of unwanted sources of variance.

Evidence in support of these five layers of the validation argument is presented in two main sections:

Section 9.2.1 presents inferences that support the intended interpretations of RICAS test scores, their necessary claims, and evidence supporting those claims (inferences 1.1 to 1.4).

Section 9.2.2 presents separate inferences for an intended use of the RICAS test scores, each presented with its necessary claims and supporting evidence (inferences 1.5 to 1.8).

9.2.1 Claims Supporting Intended Interpretations of RICAS Test Scores

1.1 ***Description Inference:*** Observations of performance on the RICAS reflect the knowledge and abilities articulated in the RI Core Standards with appropriate assessment tasks representing the full breadth and depth of the domain as articulated within these standards.

1.1.1 **Claim:** Expected knowledge and abilities are thoroughly articulated and considered appropriate to the grade and subject being assessed.

Evidence: The need for alignment of the assessments to the content standards is made clear in the introductory paragraph in Chapter 1, referencing the goal of measuring student proficiency relative to these standards. The direct link between the content standards and the assessments throughout the test design, development, and implementation processes for all grades and subjects is thoroughly articulated in Chapter 2.

1.1.2 **Claim:** Assessment tasks are developed to provide evidence of the expected knowledge and abilities for each grade and subject being assessed.

Evidence: Subsections 2.4.1 for ELA and 2.5.1 for Mathematics detail the specific standards addressed by items available for RICAS assessments. Subsections 2.4.2, 2.4.3, and 2.4.6 describe item types, passage types, and cognitive levels for items on the ELA assessments. Subsections 2.5.2 and 2.5.5 describe the item types and cognitive levels for items on the mathematics assessments. Subsection 2.6.1 describes item development and review procedures, and Subsection 2.6.2 describes item field testing and subsequent review, acceptance, and revision processes. Together, these subsections describe an overall process of item development that ensures items effectively target the expected knowledge and abilities of the grades being assessed.

1.2 ***Evaluation Inference:*** Each test form, an organized sampling of assessment tasks, results in an observed score that reflects a student's knowledge and abilities in the subject being assessed through appropriate test assembly, administration, and scoring procedures.

1.2.1 **Claim:** Each form is constructed to draw from available items such that the underlying domain of knowledge and abilities is adequately sampled.

Evidence: Subsections 2.4.4 and 2.4.5 describe the test design specifications and blueprints for ELA Exams. Subsections 2.5.3 and 2.5.4 describe the same for Mathematics. Subsections 2.6.3 and 2.6.4 describe the item selection and test form review processes that ensure design and blueprint specifications are met and that elements of test construction that can potentially confound interpretability are avoided. Together, these processes work such that each form draws a sampling of high-quality items that represent the underlying of knowledge and abilities defined within the content standards.

1.2.2 **Claim:** The assessment is administered under appropriate conditions.

Evidence: Chapter 3 describes test administration processes for the RICAS. This includes schedules, security requirements, administration procedures, and practices for non-standard administrations. Chapter 3 further references *Test Administrators Manuals* and *Test Coordinators Manuals* for more details of administration procedures, administrator responsibilities, and irregularity tracking. Together, the evidence given in Chapter 3 demonstrate that the administration was properly designed and implemented, quality-control procedures worked as intended, and there were no notable threats to validity from the administration.

1.2.3 **Claim:** The scoring procedures and models produce scores accurately reflective of targeted knowledge and abilities.

Evidence: Chapter 4 has detailed sections describing the scoring process for machine-scored items and hand-scored, polytomous items on RICAS assessments. These steps, in conjunction with the appropriate item and blueprint design described under Sections 2.4 and 2.5, support this claim. The design and implementation of the machine- and hand-scoring procedures is also documented in Chapter 4, which shows that the procedures adhere to industry-accepted practices and standards. Section 7.2 describes the scoring models used for items on the RICAS, describing the models used in detail and citing the references that establish the appropriateness of these models for placing student performances on a common scale for scoring purposes.

1.2.4 **Claim**: Items on the assessment demonstrate appropriate statistical quality.

Evidence: Chapter 6 describes the classical item analysis procedures conducted to ensure that all items adhere to industry-accepted practices and standards (AERA et al., 2014). Differential Item Functioning (DIF) analysis, presented in Section 6.2, provides evidence that the items are free of systematic biases. Subsection 2.6.2 describes the review process for evaluating items flagged by these and other field-test analyses. Section 7.3 describes IRT results referring to tables within the equating report (Appendix I) that describe quality control checks on items and procedures for making interventions based on items being flagged during these checks.

1.3 ***Generalization Inference:*** The observed score from any specific form testing a given grade and subject is reflective of the expected score on any potential form of the test for that grade and subject.

1.3.1 **Claim**: Task specifications adequately inform production or selection of items with similar content and statistical characteristics.

Evidence: Claim 1.1.2, with evidence from throughout Chapter 2, establishes that the task specifications and resulting item development efforts result in assessment tasks representative of expected knowledge and ability being assessed. Subsection 2.6.3 describes the essential procedural steps taken to meet the broad requirements of expected standards and cognitive skills while avoiding unnecessary duplication of items from previous years' forms. Subsection 2.6.4 describes the rigorous process of form review to ensure that these requirements are met on forms that are accepted for operational administration. These form construction processes, applied to items meeting Claim 1.1.2, provide evidence that task specifications are adequately informing production and selection of items with similar content and statistical characteristics.

1.3.2 **Claim:** Test specifications result in forms of similar length and task distribution.

Evidence: Claim 1.2.1, again gathering evidence from Chapter 2, establishes that test construction processes are designed to implement specifications that result in forms of similar length and task distribution. Subsection 2.6.3 describes the application of those processes to realize those specifications while avoiding unnecessary duplication of items. Subsection 2.6.4 describes the rigorous review process that verifies that these specifications are met prior to acceptance of the form for operational administration. Dimensionality analyses presented in Section 6.3, provide evidence that any differences in length or task distribution are small enough that interpretation of the resulting scores is preserved.

1.3.3 **Claim:** Statistical analyses of observed scores on specific forms show that they are good predictors of expected scores on other potential forms.

Evidence: Section 8.1 describes the process for analyzing the reliability of RICAS forms and the results of these analyses. These analyses establish the reliability of each form, which meets professional standards for reliability for tests like RICAS. Subject to the equating and scaling methods placing scores from forms on the same scale, adequate reliability of individual forms establishes them as good predictors of expected scores on other potential forms. Differential Item Functioning (DIF) analyses and subsequent review of items classified as exhibiting DIF, described in Section 6.2, support observed score generalization to expected score by ruling out the items specific to SY 21-22 forms as sources of bias in the scores.

1.3.4 **Claim:** Equating and scaling methods accurately place scores from different forms onto a common scale.

Evidence: Section 7.2 describes equating procedures in detail, Subsection 7.2.1 summarizes results from the full equating report, provided in Appendix I. Section 7.3 describes the processes of

applying equating results to place raw scores onto RICAS score scales. These sections demonstrate a high level of rigor in selection, application, and interpretation of equating results, placing scores from the SY 21-22 forms on the same scales as forms from prior years.

1.4 ***Explanation Inference*****:** Expected scores are attributable to proficiency in the target knowledge and abilities.

1.4.1 **Claim:** Cut scores are established through defensible standard setting methods.

Evidence: Section 2.3 summarizes the process by which performance standards were established for RICAS. Standard setting activities conducted for the MCAS in 2017 were observed by RIDE staff and technical advisors, rigorously evaluated for consistency with RICAS performance expectations, and deemed sufficient for a sound and technically appropriate implementation in the context of RICAS.

1.4.2 **Claim:** Tests are assembled with adequate precision near cut points.

Evidence: Sections 8.4 and 8.5 describe decision accuracy and consistency analysis procedures and results. Accuracy and consistency rates were reported that most students were classified accurately and consistently with respect to measurement error and chance; false positive and negatives demonstrated strong agreement between true score and observed score classification decisions.

9.2.2 Claims Supporting Intended Uses of RICAS Test Scores

With evidence provided in support of RICAS scores preserving intended interpretations of the content standards, validation of the primary intended uses of these scores requires evidence that these interpretations can be applied to each use in an appropriate, fair, and just way.

Evidence for each use should show that the intended audience (i.e., those using the scores):

1) understands the meaning of scores and classifications, appropriate uses and interpretations of those scores and classifications, and any limits on their interpretability, as applied to the intended use, and
2) find the scores and classifications genuinely useful for that intended use.

The evidence described in this section pertains to the aspects that relate to activities performed by Cognia/Pearson and RIDE. Evidence regarding the resulting utility of the information is outside the scope of this report.

1.5 ***Utilization Inference 1:*** RICAS score reports provide students and their families with classification and score information that is useful, presented fairly, and appropriate for monitoring academic achievement and participating in decisions regarding student learning.

1.5.1 **Claim:** Students and their families understand the meaning of scores and classifications, appropriate uses and interpretations of those scores and classifications, and any limits on their interpretability, as applied to monitoring academic achievement and participating in decisions regarding student learning.

Evidence: Chapter 5 describes how results are reported to students and their families, Section 5.2 describes details of the information included in the score reports. This includes important score and classification information, and explanations of what this information means. Section 5.6 and Subsection 5.6.1 describe additional resources that students and their families may use to improve their understanding of this score information. Cognia/Pearson and RIDE provided materials and other implementation supports (e.g., town halls, professional development/educational sessions) that put all stakeholders in a strong position to be able to understand the *intended* meanings and uses of the RICAS scores.

1.5.2 **Claim:** Interpretations of scores and classifications are genuinely useful to students and their families for the purposes of monitoring academic achievement and participating in decisions regarding their learning.

Evidence: Section 5.2 describes details of the information included in the score reports. This includes information about how families can help improve their child's learning. Section 5.6 and Subsection 5.6.1 describe resources available to students and families that can be used to apply test results to take appropriate actions toward furthering the student's education.

1.6 ***Utilization Inference 2:*** RICAS score reports provide educators with classification and score information that is useful, presented fairly, and appropriate for supporting curricular planning and identifying instructional needs at both the classroom and individual student level.

1.6.1 **Claim:** Educators understand the meaning of scores and classifications, appropriate uses and interpretations of those scores and classifications, and any limits on their interpretability, as applied to curricular planning and identification of instructional needs.

Evidence: Section 5.6 and Subsection 5.6.2 describe the reporting tools that educators may use to access the score results of individual students and the group of students that they teach, as well as resources available to educators providing guidance for accurately interpreting scores.

1.6.2 **Claim:** Interpretations of scores and classifications are genuinely useful to educators for the purposes of curricular planning and identification of instructional needs.

Evidence: Section 5.6 and Subsection 5.6.2 describe resources available to educators that provide guidance for applying test scores and interpretations of test scores to their instruction.

1.7 ***Utilization Inference 3:*** RICAS score reports provide school- and district-level administrators with classification and score information that is useful, presented fairly, and appropriate for supporting program evaluations and improvements at school and district levels.

1.7.1 **Claim:** School- and district-level administrators understand the meaning of scores and classifications, appropriate uses and interpretations of those scores and classifications, and any limits on their interpretability, as applied to program evaluations and improvements at school and district levels.

Evidence: Section 5.6 and Subsection 5.6.2 describe the reporting tools that administrators may use to access the score results of individual students and group-level data of students in their schools and districts, as well as resources available to administrators providing guidance for accurately interpreting scores.

1.7.2 **Claim:** Interpretations of scores and classifications are genuinely useful to school- and district-level administrators for the purposes of program evaluations and improvements.

Evidence: Section 5.6 and Subsection 5.6.2 describe resources available to administrators that provide guidance for applying test scores and interpretations of test scores to program evaluation and improvement.

1.8 ***Utilization Inference 4:*** RICAS score reports provide state administrators with classification and score information that is useful, presented fairly, and appropriate for monitoring academic achievement and growth as required by state accountability programs and informing the public of schools' performances on these metrics.

1.8.1 **Claim:** State and federal administrators understand the meaning of scores and classifications, appropriate uses and interpretations of those scores and classifications, and any limits on their interpretability, as applied to monitoring academic achievement and growth as required by state and federal accountability programs.

Evidence: Section 5.6 and Subsection 5.6.2 describe the reporting tools that administrators may use to access the score results of individual students and group-level data of students in schools, districts, and the state, as well as resources available to administrators providing guidance for accurately interpreting scores.

1.8.2 **Claim:** Interpretations of scores and classifications are genuinely useful to state and federal administrators for the purposes of monitoring academic achievement and growth as required by state and federal accountability programs.

Evidence: Section 5.6 and Subsection 5.6.2 describe resources available to administrators that provide guidance for applying test scores and interpretations of test scores to federal accountability programs.

9.3 VALIDATION SUMMARY

Validity arguments for the RICAS are crafted to not just provide evidence that all steps in the test design, development, and implementation process are taken correctly, but that they are working together to ensure that the resulting scores validly support intended interpretations and uses. In other words, each argument should not only be considered individually, but also considered as a whole. The reader should consider the chain of evidence and whether it provides a compelling argument to support the way test scores are being used.

The arguments and the logical inferential steps they provide can be summarized as follows. The Description and Evaluation Inferences concern the selection of appropriate items and their arrangement into forms that accurately reflect the domain being measured. The Generalization Inference ensures that scores obtained from individual forms are reliable indicators of the expected scores across all forms. The Explanation inference links expected scores to classification decisions, ensuring that these decisions are interpretable. Finally, the Utilization Inferences emphasize the importance of using scores and classifications appropriately and fairly, in ways consistent with the intended interpretations of the test. Together, the evidence described in this technical report supports the key claims across the five layers of the framework outlined in Chapelle et al. (2018):

- Following the Chappelle (2020) framework, we have provided a chain of inferences, each building on the previous, to preserve the interpretations as defined by the content standards such that they are realized within the resulting test scores and applicable to the intended uses of the RICAS program. By establishing the description inference, providing evidence that the items used in the assessment target the domain as defined by the standards, we argue that we can create individual forms that produce a test score reflective of achievement on that domain.
- We present evidence we have created such individual forms that these forms do elicit test scores reflecting achievement on the intended domain, which in turn is able to provide a classification for a student achievement level and that such classification decisions are interpretable.
- Finally, we provide evidence to support that the test score and classification interpretations are clearly enough explained as to be used as intended and only in ways considered appropriate and fair. We use this chain of evidence, as a whole, to assert the scores and classifications resulting from RICAS tests are interpretable and used in a way that is intended and fair.

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Appendices

APPENDIX A

ACCOMMODATIONS

Table A-1. Numbers of Students Tested with and Without Accommodations by Content Area and Grade

Content Area	Grade	Number of Students Tested	
		With Accommodations	Without Accommodations
ELA	3	797	8,866
	4	1,034	8,705
	5	1,055	8,803
	6	1,220	8,622
	7	1,135	8,901
	8	1,034	9,242
Mathematics	3	1,945	7,817
	4	2,021	7,813
	5	1,904	8,056
	6	1,592	8,288
	7	1,424	8,619
	8	1,391	8,885

Table A-2. Numbers of Students Tested with Accommodations by Accommodation Type and Grade—ELA

Description	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Color Contrast	7	32	10	3	3	7
Black on Cream	6	9	1	2	3	1
Black on Light Blue	0	14	5	0	0	6
Black on Light Magenta	0	2	1	0	0	0
White on Black	1	6	3	1	0	0
Yellow on Blue	0	0	0	0	0	0
Dark Gray on Pale Green	0	1	0	0	0	0
Answer Masking	62	63	57	16	17	17
Large Print Test Edition	8	8	9	7	6	4
Screen Reader Edition	0	0	0	0	1	0
Assistive Technology	5	3	4	0	3	0
Braille Test Edition	8	8	8	7	6	4
Human Read Aloud as a Non-Standard Accommodation	75	68	31	26	29	21
Human Signer as a Standard Accommodation	3	1	4	2	4	6
Human Signer as a Non-Standard Accommodation	0	0	0	0	1	0
Text-to-Speech	109	125	85	191	181	135
Human Scribe as a Non-Standard Accommodation	48	40	31	12	15	5
Speech-to-Text as a Non-Standard Accommodation	60	56	58	51	40	31
Typed Responses	8	8	8	7	6	4
Spell-checker	38	39	48	39	53	44
Word Prediction	40	37	40	32	25	18
Graphic Organizer/Reference Sheet	604	812	912	852	817	681
Any Other accommodation	41	43	38	23	25	14
Bilingual Dictionary and Glossary	63	67	52	279	249	284

Table A-3. Numbers of Students Tested with Accommodations by Accommodation Type and Grade—Mathematics

Description	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Color Contrast	6	31	11	3	2	7
Black on Cream	5	9	1	2	2	1
Black on Light Blue	0	11	5	0	0	6
Black on Light Magenta	0	3	1	0	0	0
White on Black	1	7	4	1	0	0
Yellow on Blue	0	0	0	0	0	0
Dark Gray on Pale Green	0	1	0	0	0	0
Answer Masking	62	66	56	12	14	16
Large Print Test Edition	1	1	2	1	0	1
Screen Reader Edition	0	0	0	0	0	0
Assistive Technology	3	2	4	0	2	0
Braille Test Edition	0	0	0	0	1	0
Human Read Aloud as a Standard Accommodation	85	77	37	27	32	17
Human Signer as a Standard Accommodation	3	1	3	2	4	7
Text-to-Speech	1,658	1,617	1,475	1,025	708	710
Human Scribe as a Standard Accommodation	38	23	26	12	9	4
Speech-to-Text as a Standard Accommodation	48	38	51	24	28	23
Typed Responses	0	0	0	0	0	0
Calculation Device on Non-Calculator Session	98	89	115	172	272	265
Graphic Organizer/Reference Sheet	603	802	865	803	717	618
Any Other accommodation	0	0	0	0	0	0
Spanish	68	82	104	152	155	174
Bilingual Dictionary and Glossary	29	57	41	311	299	340

APPENDIX B

PARTICIPATION RATES

Table B-1. Summary of Participation by Student Subgroup English Language Arts, Grades 3–8

Description	Number Tested	Percent Tested
All Students	59,414	100.00
ELL	9,533	16.05
Economically Disadvantaged	26,537	44.66
African American	5,309	8.94
Asian	2,045	3.44
Hispanic	17,005	28.62
Native American/Alaska Native	436	0.73
White	31,496	53.01
Pacific Islander/Hawaiian	81	0.14
Multiracial	3,042	5.12
Male	30,374	51.12
Female	29,013	48.83
Special Education	9,224	15.52

Table B-2. Summary of Participation by Student Subgroup Mathematics, Grades 3–8

Description	Number Tested	Percent Tested
All Students	59,755	100.00
ELL	10,121	16.94
Economically Disadvantaged	26,632	44.57
African American	5,332	8.92
Asian	2,104	3.52
Hispanic	17,270	28.90
Native American/Alaska Native	433	0.72
White	31,511	52.73
Pacific Islander/Hawaiian	82	0.14
Multiracial	3,023	5.06
Male	30,571	51.16
Female	29,157	48.79
Special Education	9,151	15.31

APPENDIX C

INTERRATER CONSISTENCY

Table C-1. Item-Level Interrater Consistency Statistics—ELA Grade 3

Item Number	Number of Score Categories	Number of Responses Scored Twice	Percent Exact	Percent Adjacent	Correlation	Percent of Third Scores	LW Kappa
EL835251909	4	927	70.77	27.08	0.70	2.16	0.61
EL912362165#SCORE_TRAIT_Conv	4	875	72.80	26.17	0.76	2.63	0.66
EL912362165#SCORE_TRAIT_Ideadev	5	875	67.89	30.17	0.81	2.63	0.66

Table C-2. Item-Level Interrater Consistency Statistics—ELA Grade 4

Item Number	Number of Score Categories	Number of Responses Scored Twice	Percent Exact	Percent Adjacent	Correlation	Percent of Third Scores	LW Kappa
EL800957624	4	957	76.18	21.84	0.81	1.99	0.73
EL909132428#SCORE_TRAIT_Conv	4	932	71.78	27.58	0.80	2.47	0.68
EL909132428#SCORE_TRAIT_Ideadev	5	932	70.17	28.00	0.84	2.47	0.72

Table C-3. Item-Level Interrater Consistency Statistics—ELA Grade 5

Item Number	Number of Score Categories	Number of Responses Scored Twice	Percent Exact	Percent Adjacent	Correlation	Percent of Third Scores	LW Kappa
EL806746086#SCORE_TRAIT_Conv	4	950	69.05	30.32	0.78	2.11	0.66
EL806746086#SCORE_TRAIT_Ideadev	5	950	66.11	32.21	0.74	2.11	0.61
EL834856783#SCORE_TRAIT_Conv	4	948	72.47	27.11	0.83	1.69	0.71
EL834856783#SCORE_TRAIT_Ideadev	5	948	80.91	17.41	0.91	1.69	0.81

Table C-4. Item-Level Interrater Consistency Statistics—ELA Grade 6

Item Number	Number of Score Categories	Number of Responses Scored Twice	Percent Exact	Percent Adjacent	Correlation	Percent of Third Scores	LW Kappa
EL911525969#SCORE_TRAIT_Conv	4	925	71.35	28.22	0.84	1.41	0.72
EL911525969#SCORE_TRAIT_Ideadev	6	925	74.05	24.76	0.85	1.41	0.75
EL913132900#SCORE_TRAIT_Conv	4	953	71.98	27.81	0.84	1.68	0.73
EL913132900#SCORE_TRAIT_Ideadev	6	953	69.36	28.96	0.82	1.68	0.70

Table C-5. Item-Level Interrater Consistency Statistics—ELA Grade 7

Item Number	Number of Score Categories	Number of Responses Scored Twice	Percent Exact	Percent Adjacent	Correlation	Percent of Third Scores	LW Kappa
EL811753816#SCORE_TRAIT_Conv	4	976	76.33	23.46	0.87	2.46	0.78
EL811753816#SCORE_TRAIT_Ideadev	6	976	64.24	33.40	0.84	2.46	0.69
EL909750218#SCORE_TRAIT_Conv	4	975	71.90	27.38	0.84	2.36	0.73
EL909750218#SCORE_TRAIT_Ideadev	6	975	66.87	31.38	0.83	2.36	0.70

Table C-6. Item-Level Interrater Consistency Statistics—ELA Grade 8

Item Number	Number of Score Categories	Number of Responses Scored Twice	Percent Exact	Percent Adjacent	Correlation	Percent of Third Scores	LW Kappa
EL836248600#SCORE_TRAIT_Conv	4	998	72.24	26.55	0.86	2.10	0.76
EL836248600#SCORE_TRAIT_Ideadev	6	998	68.54	30.16	0.89	2.10	0.76
EL911774388#SCORE_TRAIT_Conv	4	1,008	75.69	23.81	0.89	1.79	0.79
EL911774388#SCORE_TRAIT_Ideadev	6	1,008	72.32	26.19	0.91	1.79	0.79

Table C-7. Item-Level Interrater Consistency Statistics—Mathematics Grade 3

Item Number	Number of Score Categories	Number of Responses Scored Twice	Percent Exact	Percent Adjacent	Correlation	Percent of Third Scores	LW Kappa
MA286752A	4	955	87.33	11.83	0.91	0.84	0.86
MA286752A_ES	4	7	100.00	0.00	1.00	0.00	--
MA297478A	4	964	98.65	1.35	0.99	0.00	0.99
MA297478A_ES	4	7	100.00	0.00	1.00	0.00	--
MA297478A_PA	4	1	100.00	0.00	--	0.00	--
MA300753A	4	949	92.73	7.27	0.98	0.00	0.95
MA300753A_ES	4	6	100.00	0.00	1.00	0.00	--
MA735951978	4	953	85.52	14.27	0.93	0.21	0.87
MA735951978_ES	4	7	100.00	0.00	1.00	0.00	--

Table C-8. Item-Level Interrater Consistency Statistics—Mathematics Grade 4

Item Number	Number of Score Categories	Number of Responses Scored Twice	Percent Exact	Percent Adjacent	Correlation	Percent of Third Scores	LW Kappa
MA302496A	5	963	80.17	18.48	0.91	1.35	0.84
MA302496A_ES	5	9	100.00	0.00	1.00	0.00	--
MA311579A	5	977	92.12	7.37	0.98	0.51	0.95
MA311579A_ES	5	9	100.00	0.00	1.00	0.00	--
MA900750814	5	974	82.03	16.84	0.94	1.13	0.87
MA900750814_ES	5	9	100.00	0.00	1.00	0.00	--
MA903574399	5	968	91.01	8.57	0.97	0.41	0.94
MA903574399_ES	5	9	100.00	0.00	1.00	0.00	--

Table C-9. Item-Level Interrater Consistency Statistics—Mathematics Grade 5

Item Number	Number of Score Categories	Number of Responses Scored Twice	Percent Exact	Percent Adjacent	Correlation	Percent of Third Scores	LW Kappa
MA298005	5	970	82.37	15.67	0.92	1.96	0.85
MA298005_ES	5	10	100.00	0.00	1.00	0.00	--
MA301608	5	972	77.26	21.09	0.89	1.65	0.79
MA301608_ES	5	9	100.00	0.00	1.00	0.00	--
MA802310847	5	975	92.21	7.59	0.98	0.21	0.95
MA802310847_ES	5	10	100.00	0.00	1.00	0.00	--
MA901073764	5	976	76.74	21.82	0.92	1.43	0.83
MA901073764_ES	5	9	100.00	0.00	1.00	0.00	--

Table C-10. Item-Level Interrater Consistency Statistics—Mathematics Grade 6

Item Number	Number of Score Categories	Number of Responses Scored Twice	Percent Exact	Percent Adjacent	Correlation	Percent of Third Scores	LW Kappa
MA307234	5	962	82.74	15.70	0.94	1.56	0.88
MA307234_ES	5	13	100.00	0.00	1.00	0.00	--
MA703253363	5	952	84.66	13.55	0.94	1.79	0.86
MA703253363_ES	5	16	100.00	0.00	1.00	0.00	--
MA900337563	5	947	87.96	11.19	0.94	0.84	0.89
MA900337563_ES	5	16	100.00	0.00	1.00	0.00	--
MA902139605	5	951	88.96	10.83	0.94	0.21	0.89
MA902139605_ES	5	13	100.00	0.00	1.00	0.00	--

Table C-11. Item-Level Interrater Consistency Statistics—Mathematics Grade 7

Item Number	Number of Score Categories	Number of Responses Scored Twice	Percent Exact	Percent Adjacent	Correlation	Percent of Third Scores	LW Kappa
MA306566	5	909	86.80	11.44	0.93	1.76	0.86
MA306566_ES	5	11	100.00	0.00	1.00	0.00	--
MA717236235	5	959	81.13	18.14	0.94	0.73	0.87
MA717236235_ES	5	14	100.00	0.00	1.00	0.00	--
MA802914027	5	947	90.39	9.19	0.96	0.42	0.92
MA802914027_ES	5	10	100.00	0.00	1.00	0.00	--
MA900936469	5	953	88.14	11.12	0.96	0.73	0.91
MA900936469_ES	5	14	100.00	0.00	1.00	0.00	--

Table C-12. Item-Level Interrater Consistency Statistics—Mathematics Grade 8

Item Number	Number of Score Categories	Number of Responses Scored Twice	Percent Exact	Percent Adjacent	Correlation	Percent of Third Scores	LW Kappa
MA307515	5	931	80.99	16.54	0.93	2.47	0.84
MA307515_ES	5	16	100.00	0.00	1.00	0.00	--
MA311459	5	954	86.27	12.89	0.93	0.84	0.87
MA311459_ES	5	10	100.00	0.00	1.00	0.00	--
MA715920050	5	991	78.20	19.68	0.93	2.12	0.85
MA715920050_ES	5	14	92.86	7.14	0.93	0.00	--
MA715920050_PA	5	1	100.00	0.00	--	0.00	--
MA902400539	5	970	84.43	14.74	0.94	0.82	0.86
MA902400539_ES	5	14	100.00	0.00	1.00	0.00	--

APPENDIX D

ACHIEVEMENT LEVEL DISTRIBUTIONS

Table D-1. Achievement-Level Distributions by Grade—ELA

Grade	Achievement Level	Percent in Level	
		2022	2021
3	Not Meeting Expectations	19.41	13.76
	Partially Meeting Expectations	44.03	45.88
	Meeting Expectations	31.57	35.72
	Exceeding Expectations	4.98	4.64
4	Not Meeting Expectations	21.67	16.24
	Partially Meeting Expectations	49.30	48.30
	Meeting Expectations	26.49	32.83
	Exceeding Expectations	2.55	2.63
5	Not Meeting Expectations	17.74	18.36
	Partially Meeting Expectations	50.51	48.26
	Meeting Expectations	28.25	30.00
	Exceeding Expectations	3.50	3.38
6	Not Meeting Expectations	32.10	28.21
	Partially Meeting Expectations	36.72	39.23
	Meeting Expectations	25.72	26.04
	Exceeding Expectations	5.47	6.53
7	Not Meeting Expectations	28.80	26.48
	Partially Meeting Expectations	42.01	44.83
	Meeting Expectations	25.74	25.10
	Exceeding Expectations	3.46	3.59
8	Not Meeting Expectations	27.54	26.89
	Partially Meeting Expectations	43.45	44.33
	Meeting Expectations	24.87	25.60
	Exceeding Expectations	4.14	3.18

Table D-2. Achievement-Level Distributions by Grade—Mathematics

Grade	Achievement Level	Percent in Level	
		2022	2021
3	Not Meeting Expectations	24.84	35.38
	Partially Meeting Expectations	40.14	39.55
	Meeting Expectations	30.99	23.04
	Exceeding Expectations	4.04	2.03
4	Not Meeting Expectations	23.68	33.89
	Partially Meeting Expectations	46.13	45.28
	Meeting Expectations	27.02	19.07
	Exceeding Expectations	3.17	1.75
5	Not Meeting Expectations	23.90	28.70
	Partially Meeting Expectations	50.16	51.03
	Meeting Expectations	24.31	19.06
	Exceeding Expectations	1.64	1.21
6	Not Meeting Expectations	23.77	32.07
	Partially Meeting Expectations	48.87	50.15
	Meeting Expectations	25.65	16.46
	Exceeding Expectations	1.72	1.32
7	Not Meeting Expectations	29.61	30.80
	Partially Meeting Expectations	47.67	48.85
	Meeting Expectations	20.14	18.51
	Exceeding Expectations	2.57	1.84
8	Not Meeting Expectations	28.65	36.57
	Partially Meeting Expectations	50.59	47.38
	Meeting Expectations	18.40	14.91
	Exceeding Expectations	2.36	1.14

APPENDIX E

SAMPLE REPORTS

Spring 2022 RICAS Test
Slip Sheet

District Name: Demonstration District A
School Name: Demonstration School 1
School Code: 12-34567
Grade/Content: Grade 3
Report Type: Label Report

21R4012

LASTNAME1, FIRSTNAME

SASID: 1234567890
Grade: 03
School: Demonstration School 1
School Code: 1234567
District: Demonstration District A
Birth Date: 11/21/2011
Test Date: Spring 2022

English Language Arts	Mathematics
Scaled Score: 519	**Scaled Score:** 491
Achievement Level:	**Achievement Level:**
Meeting Expectations	Partially Meeting Expectations

LASTNAME2, FIRSTNAME

SASID: 1234567891
Grade: 03
School: Demonstration School 1
School Code: 1234567
District: Demonstration District A
Birth Date: 10/20/2011
Test Date: Spring 2022

English Language Arts	Mathematics
Scaled Score: 495	**Scaled Score:** 501
Achievement Level:	**Achievement Level:**
Partially Meeting Expectations	Meeting Expectations

LASTNAME3, FIRSTNAME

SASID: 1234567892
Grade: 03
School: Demonstration School 1
School Code: 1234567
District: Demonstration District A
Birth Date: 09/19/2011
Test Date: Spring 2022

English Language Arts	Mathematics
Scaled Score: 508	**Scaled Score:** 505
Achievement Level:	**Achievement Level:**
Meeting Expectations	Meeting Expectations

LASTNAME4, FIRSTNAME

SASID: 1234567893
Grade: 03
School: Demonstration School 1
School Code: 1234567
District: Demonstration District A
Birth Date: 08/18/2011
Test Date: Spring 2022

English Language Arts	Mathematics
Scaled Score: 499	**Scaled Score:** 507
Achievement Level:	**Achievement Level:**
Partially Meeting Expectations	Meeting Expectations

LASTNAME5, FIRSTNAME

SASID: 1234567894
Grade: 03
School: Demonstration School 1
School Code: 1234567
District: Demonstration District A
Birth Date: 07/17/2011
Test Date: Spring 2022

English Language Arts	Mathematics
Scaled Score: 482	**Scaled Score:** 492
Achievement Level:	**Achievement Level:**
Partially Meeting Expectations	Partially Meeting Expectations

LASTNAME6, FIRSTNAME

SASID: 1234567895
Grade: 03
School: Demonstration School 1
School Code: 1234567
District: Demonstration District A
Birth Date: 06/16/2011
Test Date: Spring 2022

English Language Arts	Mathematics
Scaled Score: 555	**Scaled Score:** 522
Achievement Level:	**Achievement Level:**
Exceeding Expectations	Meeting Expectations

LASTNAME7, FIRSTNAME

SASID: 1234567896
Grade: 03
School: Demonstration School 1
School Code: 1234567
District: Demonstration District A
Birth Date: 05/15/2011
Test Date: Spring 2022

English Language Arts	Mathematics
Scaled Score: 455	**Scaled Score:** 461
Achievement Level:	**Achievement Level:**
Not Meeting Expectations	Not Meeting Expectations

LASTNAME8, FIRSTNAME

SASID: 1234567897
Grade: 03
School: Demonstration School 1
School Code: 1234567
District: Demonstration District A
Birth Date: 04/14/2011
Test Date: Spring 2022

English Language Arts	Mathematics
Scaled Score: 543	**Scaled Score:** 536
Achievement Level:	**Achievement Level:**
Exceeding Expectations	Exceeding Expectations

LASTNAME9, FIRSTNAME

SASID: 1234567898
Grade: 03
School: Demonstration School 1
School Code: 1234567
District: Demonstration District A
Birth Date: 03/13/2011
Test Date: Spring 2022

English Language Arts	Mathematics
Scaled Score: 529	**Scaled Score:** 511
Achievement Level:	**Achievement Level:**
Meeting Expectations	Meeting Expectations

LASTNAME10, FIRSTNAME

SASID: 1234567899
Grade: 03
School: Demonstration School 1
School Code: 1234567
District: Demonstration District A
Birth Date: 02/12/2011
Test Date: Spring 2022

English Language Arts	Mathematics
Scaled Score: 499	**Scaled Score:** 507
Achievement Level:	**Achievement Level:**
Partially Meeting Expectations	Meeting Expectations

Accelerating learning by providing the academic, social-emotional, and wrap-around services that our school communities need to ensure a high-quality education for ***every single student*** in Rhode Island.

Where We Are

While the Rhode Island Department of Education's (RIDE) efforts to better serve students and families factor in the impact of the COVID-19 pandemic, RIDE is looking beyond to address the root issues that impede students from thriving at every level of their education.

The COVID-19 pandemic brought new challenges to our schools, and parents, teachers, and administrators worked together over the last two years to address and overcome these challenges. Last year's assessment results revealed the cumulative impact of the COVID-19 pandemic on student's academic achievement has been large.

They placed a spotlight on a new baseline for schools across Rhode Island and the need to accelerate learning for all students. In alignment with the findings and recommendations of the Learning, Equity & Accelerated Pathways (LEAP) Task Force, RIDE and local education agencies remain committed to rebuilding and reimagining Rhode Island's educational system, offering greater access to enriching learning opportunities, and helping students leap ahead in academic achievement.

Where We're Going

RIDE is focused on preparing students to thrive as lifelong learners, which begins with the work set out in Rhode Island's Strategic Plan for Public Education: 2022-2027. The plan lays out ambitious, achievable goals to build a stronger, more resilient educational ecosystem across our state that will allow every Rhode Island student to succeed. It will take a long, constant effort to bring them to fruition, but there is no doubt that, if we set our sights on a better education system and forge forward as one, we can make it a reality.

Join us to improve education!

Scan the QR code to access important information and resources for your family

Paving the Way with Absolute Priorities

The following LEAP absolute priorities accompanied by the 2022 RICAS assessment data will help accelerate student learning and move our pre-kindergarten through grade twelve system forward.

- Energize our school communities by launching a statewide back-to-school campaign
- \+ Ensure all students have access to high-quality & personalized support through extended learning, before/after school partnerships, & summer learning
- \+ Universally screen all students and align resources to need
- \+ Improve and support student transitions across grades and systems
- \+ Close the digital divide

RIDE Rhode Island Department of Education

Spring 2022 RICAS Individual Student Report

RIDE Rhode Island Department of Education

Name:	**District:**
SASID:	**School:**
Date of Birth:	**Grade:** 5

This report provides your child's results from the 2022 Rhode Island Comprehensive Assessment System (RICAS) tests in English Language Arts (reading and writing) and mathematics.

The COVID-19 pandemic brought new challenges to our schools, and parents, teachers, and administrators worked together over the last two years to address and overcome these challenges. Last year's assessment results revealed the cumulative impact of the COVID-19 pandemic on students' academic achievement has been large. In alignment with the findings from the Learning, Equity & Accelerated Pathways (LEAP) Task Force, RIDE and local education agencies remain committed to rebuilding and reimagining Rhode Islands educational system, offering greater access to enriching learning opportunities, and helping students leap ahead in academic achievement.

We thank you for your participation in these tests which helped guide this critical work to improve outcomes for students. While it is important to acknowledge the pandemic's impact, we must now focus on understanding your child's understanding of ELA and mathematics knowledge and skills. We hope this report can help inform and empower you as you advocate for your child. You know your child best. For more information on how to understand the results, visit www.RIDE.ri.gov/Assessment-Results.

Scan for English

Scan for a personalized video about your child's results.

For each subject, the report shows:

- Your child's score between 440 and 560 and their achievement level
- How your child performed in reading and mathematics based on the test reporting categories
- A growth score that shows how your child performed compared to other students who scored similarly

Your Child's Overall Results

English Language Arts

Achievement Level

Partially Meeting Expectations

Score

477

(Score range: 440-560)

Growth Percentile

14

Details on page 2

Mathematics

Achievement Level

Not Meeting Expectations

Score

461

(Score range: 440-560)

Growth Percentile

20

Details on page 3

Did you know that establishing family routines can help your child succeed?
Make a habit of setting up designated times for homework, reading, mealtimes, family conversations, bedtime, and leaving for school each day.

What do I do next?
After reviewing this report, it is critical that you attend family-teacher conferences **and discuss with your child's teachers your questions and concerns**. Don't be afraid to speak up. Children whose families stress the value of education are more likely to find it important, as well.

How can I support my child's education?

- School attendance matters, *every single day*. Missing just two days of school a month is chronically absent, so make it a priority to get your child to school on time daily.
- Establish daily reading routines, let your child see *you* read, and encourage your child to read for fun all year long.
- Get involved and stay connected to your child's school, however and whenever you can.
- Share your voice! Help improve your child's school by participating in SurveyWorks every year.
- Start a conversation. Ask questions. Talk to your child about what they're learning, and show an interest in the subjects that excite them.

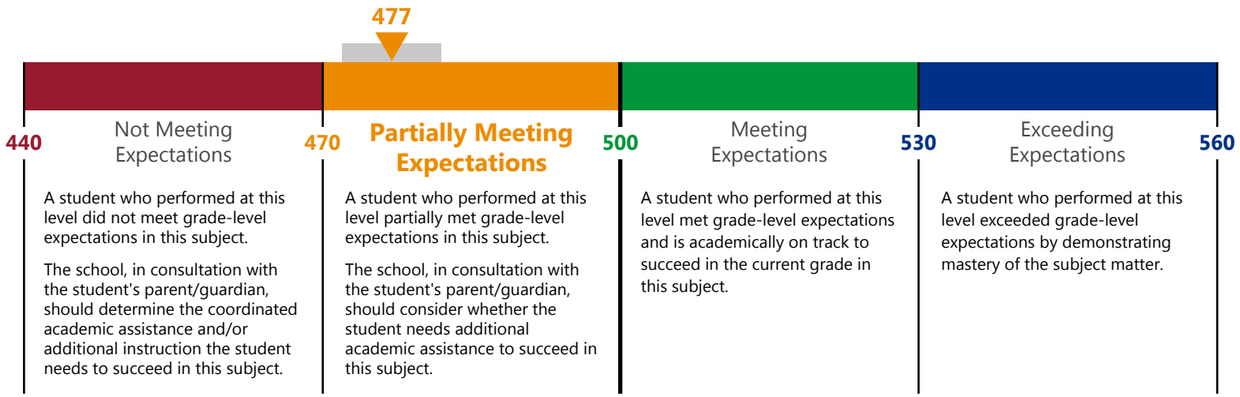
Remember, you are also your child's teacher, and you play an important role in setting your child up for success.

Name:
SASID:

Grade 5
Spring 2022
Computer-based test

English Language Arts

Your Child's Achievement Level:	**Partially Meeting Expectations**
Your Child's Score:	**477**



Not Meeting Expectations

A student who performed at this level did not meet grade-level expectations in this subject.

The school, in consultation with the student's parent/guardian, should determine the coordinated academic assistance and/or additional instruction the student needs to succeed in this subject.

Partially Meeting Expectations

A student who performed at this level partially met grade-level expectations in this subject.

The school, in consultation with the student's parent/guardian, should consider whether the student needs additional academic assistance to succeed in this subject.

Meeting Expectations

A student who performed at this level met grade-level expectations and is academically on track to succeed in the current grade in this subject.

Exceeding Expectations

A student who performed at this level exceeded grade-level expectations by demonstrating mastery of the subject matter.

The horizontal gray bar shown in the graphics above and below show the range of likely scores your child would receive if he or she took the test multiple times.

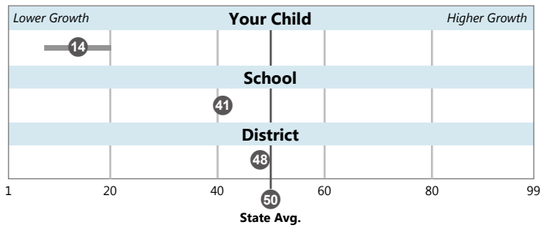
Achievement

How your child performed compared to students in their school, district, and state.

Your Child's Grade	Your Child's Score	Year	Average Score School	Average Score District	Average Score State
5	477	2022	483	488	490
4	488	2021			

2022 Student Growth Percentiles

Your child's score this year is the same as or better than 14 percent of Rhode Island students who had a similar score to your child on the assessment(s) in a previous year(s).



How your child performed in each reporting category and on each individual test question

Reporting Category	Points Earned by Your Child	Total Possible Points	Average Points School	Average Points District	Average Points State	Average Points Earned by Students Meeting Expectations
Reading	15	26	15.7	16.6	16.9	21.4
Language†	4	14	6.4	7.5	7.8	9.7
Writing ‡	1	8	1.0	1.6	1.8	1.9

† The Language reporting category includes the standard English convention scores.
‡ The Writing reporting category is based on the idea development scores.

Individual Test Questions

Question Number	1	2	3	4	5	6	7	8	9	10	11	12 CV	12 ID	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31 CV	31 ID
Points Earned	1/1	0/1	0/1	1/1	0/1	1/1	0/1	0/1	1/1	0/2	1/2	1/3	0/4	0/1	1/1	0/2	0/1	0/1	0/1	1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1	2/2	1/1	1/1	0/2	1/3	1/4

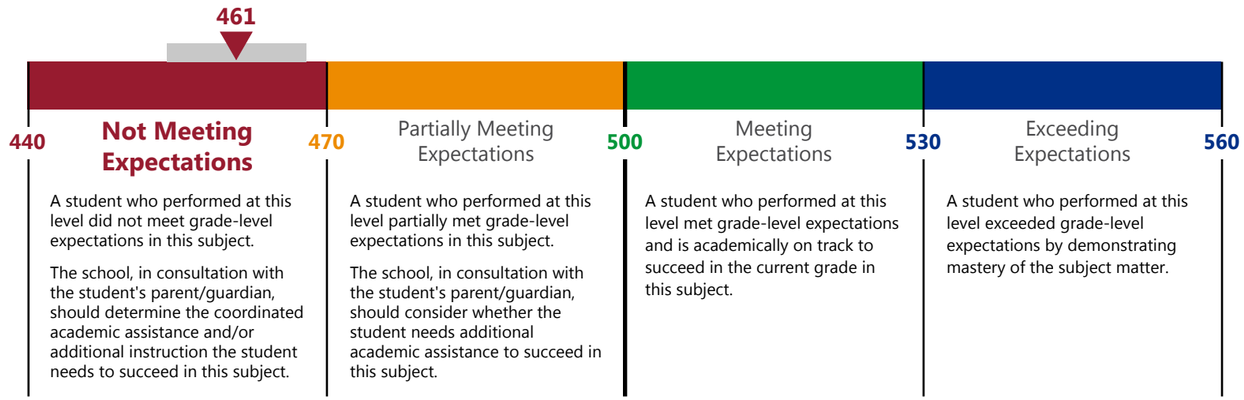
Key x/y = x points earned out of y points possible Blank space = no answer N/A = Item not administered
ID = Essay idea development score CV = Essay conventions score

Name:
SASID:

Grade 5
Spring 2022
Computer-based test

Mathematics

Your Child's Achievement Level:	**Not Meeting Expectations**
Your Child's Score:	**461**



Not Meeting Expectations

A student who performed at this level did not meet grade-level expectations in this subject.

The school, in consultation with the student's parent/guardian, should determine the coordinated academic assistance and/or additional instruction the student needs to succeed in this subject.

Partially Meeting Expectations

A student who performed at this level partially met grade-level expectations in this subject.

The school, in consultation with the student's parent/guardian, should consider whether the student needs additional academic assistance to succeed in this subject.

Meeting Expectations

A student who performed at this level met grade-level expectations and is academically on track to succeed in the current grade in this subject.

Exceeding Expectations

A student who performed at this level exceeded grade-level expectations by demonstrating mastery of the subject matter.

The horizontal gray bar shown in the graphics above and below show the range of likely scores your child would receive if he or she took the test multiple times.

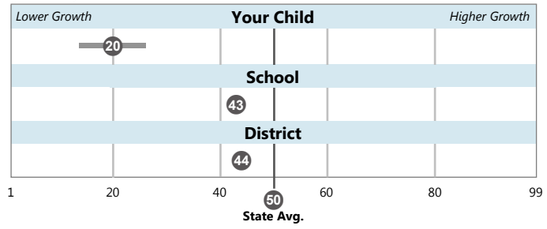
Achievement

How your child performed compared to students in their school, district, and state.

Your Child's Grade	Your Child's Score	Year	Average Score School	Average Score District	Average Score State
5	461	2022	475	480	486
4	459	2021			

2022 Student Growth Percentiles

Your child's score this year is the same as or better than 20 percent of Rhode Island students who had a similar score to your child on the assessment(s) in a previous year(s).



How your child performed in each reporting category and on each individual test question

Reporting Category	Points Earned by Your Child	Total Possible Points	Average Points School	Average Points District	Average Points State	Average Points Earned by Students Meeting Expectations
Operations & Algebraic Thinking	0	8	2.9	3.4	3.6	4.9
Number & Operations in Base Ten	2	16	4.9	6.3	7.4	10.5
Number & Operations-Fractions	1	14	3.9	4.4	5.7	8.3
Measurement & Data	4	9	2.4	2.7	3.6	4.9
Geometry	2	7	2.2	2.8	3.3	4.9

Individual Test Questions

Question Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Points Earned	1/1	0/1	0/1	0/1	0/1	1/1	0/1	0/1	0/4	0/1	0/1	0/1	1/4	0/1	0/2	0/1	0/1	0/1	0/1	0/1	1/1	0/1	0/1	0/4	0/1	1/4	1/1	0/1	0/1	0/2	1/1	0/1	1/1	0/1	0/1	0/1	1/1	0/1	0/1	0/1

Key x/y = x points earned out of y points possible Blank space = no answer N/A = Item not administered

APPENDIX F

ITEM-LEVEL CLASSICAL STATISTICS

Table F-1. Item-Level Classical Test Theory Statistics—ELA Grade 3

Item Number	Type	Difficulty	Discrimination	Percent Omitted (%)
EL912362165#SCORE_TRAIT_Conv	ES	0.29	0.62	2
EL912362165#SCORE_TRAIT_Ideadev	ES	0.16	0.49	2
EL912365258	OR	0.62	0.51	0
EL912440150	OR	0.63	0.44	0
EL912460887	MC	0.60	0.46	0
EL912462780	MC	0.63	0.51	0
EL912463130	MC	0.72	0.48	0
EL912463283	MC	0.66	0.46	0
EL912463417	MC	0.62	0.51	0
EL916532720	MC	0.78	0.54	0
EL916535053	MC	0.76	0.39	0
EL916535595	OR	0.57	0.38	1
EL292647	MC	0.66	0.55	0
EL292648	MC	0.69	0.49	0
EL292654	MC	0.49	0.39	0
EL292656	OR	0.73	0.65	0
EL292657	MC	0.59	0.32	0
EL835251909	OR	0.34	0.59	1
EL835276438	OR	0.37	0.40	1
EL835280082	MC	0.48	0.34	0
EL835281423	MC	0.49	0.26	0
EL835281675	MC	0.67	0.46	0
EL835338102	MC	0.69	0.52	0
EL835338434	MC	0.76	0.49	0
EL835338750	MC	0.58	0.27	0
EL835338894	MC	0.63	0.48	0
EL835339761	MC	0.79	0.52	0
EL835340904	MC	0.57	0.44	0
EL835341639	MC	0.44	0.29	0
EL905643350	MC	0.52	0.28	0
EL912651426	MC	0.57	0.47	0
EL916150555	MC	0.42	0.29	0

Blank values represent no omitted responses on an item, and 0% is a result of rounding for very small values.

Table F-2. Item-Level Classical Test Theory Statistics—ELA Grade 4

Item Number	Type	Difficulty	Discrimination	Percent Omitted (%)
EL909132428#SCORE_TRAIT_Conv	ES	0.33	0.67	1
EL909132428#SCORE_TRAIT_Ideadev	ES	0.22	0.57	1
EL909145470	MC	0.88	0.43	0
EL909147325	MC	0.46	0.29	0
EL909150609	MC	0.68	0.37	0
EL909151025	MC	0.40	0.31	0
EL909153399	OR	0.52	0.43	0
EL909155188	MC	0.69	0.20	0
EL909156962	MC	0.56	0.35	0
EL909157777	MC	0.47	0.26	0
EL913040076	OR	0.57	0.46	0
EL913342853	OR	0.47	0.42	4
EL800853520	OR	0.68	0.56	0
EL800937262	OR	0.64	0.29	0
EL800937934	MC	0.49	0.50	0
EL800938150	MC	0.42	0.32	0
EL800939230	MC	0.60	0.41	0
EL800940688	MC	0.72	0.52	0
EL800940863	MC	0.74	0.54	0
EL800941423	MC	0.69	0.39	0
EL800941788	MC	0.64	0.41	0
EL800943061	MC	0.76	0.52	0
EL800957624	OR	0.36	0.59	1
EL804278958	MC	0.53	0.45	0
EL307617	MC	0.68	0.49	0
EL307622	MC	0.52	0.40	0
EL307624	MC	0.67	0.44	0
EL911976285	MC	0.35	0.29	0
EL914243985	MC	0.62	0.45	0
EL914273301	MC	0.64	0.50	0
EL914444197	MC	0.52	0.43	0
EL914444576	MC	0.40	0.22	0

Blank values represent no omitted responses on an item, and 0% is a result of rounding for very small values.

Table F-3. Item-Level Classical Test Theory Statistics—ELA Grade 5

Item Number	Type	Difficulty	Discrimination	Percent Omitted (%)
EL806706594	OR	0.71	0.55	0
EL806707883	MC	0.78	0.43	0
EL806708176	MC	0.36	0.19	0
EL806709102	MC	0.42	0.51	0
EL806709302	MC	0.58	0.31	0
EL806709547	MC	0.89	0.41	0
EL806709790	MC	0.77	0.52	0
EL806710293	MC	0.56	0.45	0
EL806712207	MC	0.85	0.47	0
EL806746086#SCORE_TRAIT_Conv	ES	0.36	0.66	1
EL806746086#SCORE_TRAIT_Ideadev	ES	0.27	0.64	1
EL806756112	OR	0.46	0.48	1
EL827636609	MC	0.64	0.45	0
EL302392	MC	0.87	0.47	0
EL302393	MC	0.85	0.55	0
EL302401	MC	0.74	0.44	0
EL302402	MC	0.68	0.43	0
EL834856783#SCORE_TRAIT_Conv	ES	0.33	0.66	1
EL834856783#SCORE_TRAIT_Ideadev	ES	0.17	0.52	1
EL834950831	OR	0.77	0.54	0
EL834952362	OR	0.50	0.49	0
EL834972269	MC	0.61	0.50	0
EL834972500	MC	0.76	0.54	0
EL834976700	MC	0.72	0.49	0
EL834977047	MC	0.78	0.53	0
EL834977330	MC	0.64	0.44	0
EL834978026	MC	0.68	0.50	0
EL834978663	MC	0.67	0.46	0
EL834979059	MC	0.75	0.44	0
EL834979779	MC	0.71	0.51	0
EL912500446	MC	0.57	0.37	--
EL912579695	MC	0.72	0.53	0
EL912584876	OR	0.62	0.53	0

Blank values represent no omitted responses on an item, and 0% is a result of rounding for very small values.

Table F-4. Item-Level Classical Test Theory Statistics—ELA Grade 6

Item Number	Type	Difficulty	Discrimination	Percent Omitted (%)
EL835401351	OR	0.63	0.51	0
EL835402993	MC	0.54	0.31	0
EL835415824	MC	0.65	0.51	0
EL835417652	MC	0.66	0.46	0
EL835419727	MC	0.62	0.50	0
EL835420555	MC	0.67	0.47	0
EL835420875	OR	0.52	0.53	0
EL835421418	MC	0.76	0.46	0
EL835421936	MC	0.55	0.36	0
EL835422818	MC	0.65	0.42	0
EL903544223	MC	0.77	0.48	0
EL911525969#SCORE_TRAIT_Conv	ES	0.36	0.73	1
EL911525969#SCORE_TRAIT_Ideadev	ES	0.28	0.71	1
EL308506	MC	0.33	0.40	0
EL308510	MC	0.47	0.45	0
EL308512	MC	0.66	0.47	0
EL308513	MC	0.52	0.39	--
EL308518	MC	0.74	0.55	0
EL913132900#SCORE_TRAIT_Conv	ES	0.37	0.73	1
EL913132900#SCORE_TRAIT_Ideadev	ES	0.24	0.71	1
EL913133585	OR	0.47	0.55	--
EL913135249	OR	0.64	0.43	0
EL913137826	MC	0.57	0.43	0
EL913146798	MC	0.47	0.45	0
EL913147467	MC	0.65	0.45	0
EL913177923	MC	0.76	0.50	0
EL913179570	MC	0.63	0.41	0
EL916444331	OR	0.45	0.55	1
EL916473284	MC	0.34	0.40	0
EL917825386	MC	0.55	0.49	0
EL917861668	MC	0.77	0.43	0
EL918180282	MC	0.61	0.42	0
EL920039686	MC	0.81	0.50	0

Blank values represent no omitted responses on an item, and 0% is a result of rounding for very small values.

Table F-5. Item-Level Classical Test Theory Statistics—ELA Grade 7

Item Number	Type	Difficulty	Discrimination	Percent Omitted (%)
EL909281464	MC	0.77	0.45	0
EL909375770	MC	0.47	0.48	0
EL909470766	MC	0.77	0.46	0
EL909471269	MC	0.57	0.37	0
EL909471961	MC	0.67	0.36	0
EL909747660	MC	0.73	0.48	0
EL909748887	MC	0.48	0.37	0
EL909749262	OR	0.59	0.50	0
EL909750218#SCORE_TRAIT_Conv	ES	0.44	0.74	1
EL909750218#SCORE_TRAIT_Ideadev	ES	0.30	0.71	1
EL909752861	MC	0.75	0.49	0
EL909764274	MC	0.60	0.33	0
EL911458693	MC	0.50	0.42	0
EL911550107	MC	0.56	0.32	0
EL811653297	MC	0.74	0.48	--
EL811653729	MC	0.62	0.38	0
EL811659059	MC	0.61	0.46	0
EL811660409	OR	0.53	0.49	--
EL811661018	MC	0.67	0.39	0
EL811720784	MC	0.47	0.43	0
EL811721117	MC	0.51	0.36	0
EL811723366	MC	0.66	0.40	0
EL811734832	MC	0.70	0.48	0
EL811735509	MC	0.47	0.40	0
EL811735935	OR	0.50	0.53	0
EL811753816#SCORE_TRAIT_Conv	ES	0.40	0.76	2
EL811753816#SCORE_TRAIT_Ideadev	ES	0.26	0.74	2
EL314056	MC	0.63	0.43	0
EL314058	MC	0.50	0.43	0
EL314063	MC	0.62	0.53	0
EL912364723	OR	0.46	0.41	0
EL912448606	MC	0.54	0.34	0
EL912450318	MC	0.44	0.36	0
EL916135715	MC	0.50	0.33	0

Blank values represent no omitted responses on an item, and 0% is a result of rounding for very small values.

Table F-6. Item-Level Classical Test Theory Statistics—ELA Grade 8

Item Number	Type	Difficulty	Discrimination	Percent Omitted (%)
EL911558166	MC	0.80	0.36	0
EL911657712	MC	0.71	0.36	0
EL911659849	OR	0.84	0.51	0
EL911763814	MC	0.79	0.51	0
EL911764401	MC	0.73	0.44	0
EL911774388#SCORE_TRAIT_Conv	ES	0.45	0.76	2
EL911774388#SCORE_TRAIT_Ideadev	ES	0.30	0.74	2
EL911862506	MC	0.88	0.43	0
EL911946437	MC	0.70	0.49	0
EL913755133	MC	0.79	0.44	0
EL913761016	OR	0.64	0.47	0
EL914324180	MC	0.54	0.20	0
EL914376798	MC	0.54	0.21	0
EL309393	MC	0.48	0.36	0
EL309397	MC	0.64	0.40	0
EL309401	MC	0.57	0.46	0
EL836248600#SCORE_TRAIT_Conv	ES	0.48	0.77	2
EL836248600#SCORE_TRAIT_Ideadev	ES	0.31	0.76	2
EL836438880	MC	0.76	0.49	0
EL836448634	OR	0.60	0.49	0
EL836455548	OR	0.57	0.54	0
EL836456432	MC	0.68	0.38	0
EL836459385	MC	0.75	0.47	0
EL836461762	MC	0.68	0.48	0
EL836463708	MC	0.46	0.31	0
EL836464683	MC	0.76	0.53	0
EL836547482	MC	0.82	0.48	0
EL900353074	MC	0.76	0.51	0
EL904652080	MC	0.71	0.29	0
EL913447634	MC	0.58	0.29	--
EL913448483	OR	0.50	0.58	0
EL917559756	MC	0.64	0.47	0
EL919039373	MC	0.56	0.31	0

Blank values represent no omitted responses on an item, and 0% is a result of rounding for very small values.

Table F-7. Item-Level Classical Test Theory Statistics—Mathematics Grade 3

Item Number	Type	Difficulty	Discrimination	Percent Omitted (%)
MA306346	MC	0.48	0.62	0
MA306355	OR	0.78	0.45	0
MA286752A	OR	0.29	0.64	1
MA303418	MC	0.54	0.54	0
MA310877	MC	0.36	0.24	0
MA735579087	MC	0.38	0.50	0
MA735659609	OR	0.77	0.44	2
MA735662802	OR	0.66	0.58	0
MA297478A	OR	0.71	0.58	0
MA900371363	OR	0.33	0.32	2
MA900374565	MC	0.61	0.46	0
MA900376906	OR	0.56	0.57	0
MA900379786	MC	0.27	0.26	0
MA900437563	OR	0.46	0.53	1
MA900440136	OR	0.46	0.41	1
MA900571833	MC	0.70	0.42	0
MA900574704	MC	0.80	0.38	0
MA900578884	OR	0.38	0.45	1
MA902576979	MC	0.39	0.33	0
MA905135964	OR	0.29	0.21	0
MA303411	MC	0.39	0.36	0
MA310835	MC	0.61	0.62	0
MA703080328	OR	0.23	0.35	0
MA306288	OR	0.47	0.61	0
MA306339	OR	0.56	0.54	0
MA310895	OR	0.42	0.39	0
MA735732140	MC	0.81	0.43	0
MA735767424	OR	0.61	0.50	0
MA735951978	OR	0.40	0.72	1
MA736029388	OR	0.60	0.56	1
MA300753A	OR	0.55	0.70	1
MA834448527	OR	0.86	0.37	0
MA900371208	MC	0.51	0.36	0
MA900374280	MC	0.74	0.47	0
MA900430931	OR	0.23	0.39	3
MA900445883	MC	0.51	0.48	0
MA901139069	OR	0.73	0.49	0
MA902238195	OR	0.68	0.31	0
MA260575	OR	0.71	0.48	0
MA264568	MC	0.73	0.45	0

Blank values represent no omitted responses on an item, and 0% is a result of rounding for very small values.

Table F-8. Item-Level Classical Test Theory Statistics—Mathematics Grade 4

Item Number	Type	Difficulty	Discrimination	Percent Omitted (%)
MA279790	OR	0.73	0.43	0
MA307692	MC	0.63	0.28	0
MA623833763	OR	0.53	0.57	1
MA704652242	OR	0.48	0.30	0
MA307066	OR	0.39	0.45	0
MA307310	MC	0.56	0.52	0
MA800607912	OR	0.63	0.58	1
MA800633803	OR	0.56	0.47	0
MA803738583	OR	0.27	0.61	0
MA900662785	MC	0.49	0.58	0
MA900740880	OR	0.48	0.54	0
MA900750814	OR	0.71	0.64	0
MA900751683	MC	0.43	0.42	0
MA900755205	OR	0.35	0.54	0
MA900775955	OR	0.49	0.48	0
MA900843428	MC	0.58	0.60	0
MA900845776	MC	0.75	0.33	0
MA903537924	OR	0.60	0.52	0
MA903574399	OR	0.41	0.72	0
MA903869200	OR	0.36	0.44	0
MA227864	OR	0.72	0.35	0
MA247687	MC	0.86	0.32	0
MA286765	MC	0.58	0.44	0
MA704650142	OR	0.52	0.49	0
MA714230904	OR	0.21	0.41	0
MA294263	OR	0.16	0.47	0
MA800767155	OR	0.58	0.56	0
MA302496A	OR	0.40	0.70	1
MA311579A	OR	0.60	0.64	0
MA900749728	OR	0.21	0.32	0
MA900751271	OR	0.64	0.40	0
MA900754381	MC	0.35	0.52	0
MA900842465	OR	0.46	0.61	0
MA903053494	OR	0.57	0.58	0
MA903134963	OR	0.50	0.58	0
MA903673001	OR	0.36	0.57	0
MA903757124	OR	0.23	0.44	1
MA907358909	OR	0.26	0.55	0
MA227395	MC	0.46	0.35	0
MA307326	MC	0.81	0.35	0

Blank values represent no omitted responses on an item, and 0% is a result of rounding for very small values.

Table F-9. Item-Level Classical Test Theory Statistics—Mathematics Grade 5

Item Number	Type	Difficulty	Discrimination	Percent Omitted (%)
MA301608	OR	0.36	0.55	1
MA311301	MC	0.28	0.16	0
MA298005	OR	0.51	0.61	1
MA715102107	OR	0.88	0.27	0
MA715102342	OR	0.44	0.65	0
MA801176573	OR	0.46	0.49	1
MA801650702	MC	0.58	0.53	0
MA801654509	MC	0.44	0.50	0
MA801668672	MC	0.74	0.46	0
MA804575779	OR	0.50	0.51	0
MA804577344	OR	0.52	0.54	0
MA804577928	OR	0.43	0.47	0
MA804583343	OR	0.42	0.50	0
MA900664816	MC	0.63	0.48	0
MA900941108	MC	0.48	0.34	0
MA901081374	MC	0.11	0.17	0
MA903733887	OR	0.52	0.60	0
MA908431377	OR	0.57	0.33	0
MA310322	OR	0.65	0.48	0
MA311307	MC	0.63	0.46	0
MA272788	MC	0.80	0.34	0
MA280507	MC	0.34	0.27	0
MA624345222	OR	0.40	0.53	0
MA311287	MC	0.67	0.46	0
MA301145	MC	0.63	0.57	0
MA301831	MC	0.29	0.39	0
MA303755	OR	0.40	0.46	0
MA802310847	OR	0.51	0.66	0
MA804580860	OR	0.32	0.52	0
MA900983475	OR	0.37	0.68	0
MA901073764	OR	0.39	0.70	1
MA903581246	OR	0.29	0.38	0
MA904134029	MC	0.50	0.37	0
MA904333760	OR	0.24	0.54	0
MA904338797	OR	0.54	0.58	0
MA207523	OR	0.49	0.59	0
MA282154	MC	0.55	0.59	--
MA287421	OR	0.66	0.52	0
MA301593	MC	0.56	0.41	0
MA303749	MC	0.34	0.37	0

Blank values represent no omitted responses on an item, and 0% is a result of rounding for very small values.

Table F-10. Item-Level Classical Test Theory Statistics—Mathematics Grade 6

Item Number	Type	Difficulty	Discrimination	Percent Omitted (%)
MA301497	MC	0.52	0.35	0
MA703177677	OR	0.61	0.50	1
MA703178216	OR	0.23	0.31	1
MA703178717	OR	0.25	0.37	0
MA703253363	OR	0.21	0.68	2
MA272299	MC	0.73	0.44	0
MA298171	MC	0.51	0.46	0
MA303713	OR	0.68	0.48	0
MA736363428	OR	0.58	0.48	1
MA736365457	OR	0.69	0.33	0
MA805276878	MC	0.40	0.11	0
MA736510525	OR	0.27	0.52	1
MA900283851	OR	0.54	0.66	0
MA900454764	OR	0.59	0.54	1
MA900462230	OR	0.59	0.52	0
MA900470149	MC	0.71	0.34	0
MA900763184	OR	0.53	0.54	0
MA902139605	OR	0.45	0.69	1
MA264407	MC	0.41	0.49	0
MA301231	OR	0.37	0.56	0
MA272301	MC	0.32	0.23	0
MA298153	MC	0.63	0.47	0
MA307234	OR	0.50	0.69	1
MA703149118	OR	0.35	0.60	0
MA703181586	OR	0.35	0.50	0
MA703181586P	OR	0.35	0.50	0
MA713648266	OR	0.24	0.54	0
MA714280042	OR	0.18	0.30	0
MA293850	MC	0.54	0.46	0
MA311654	MC	0.58	0.32	0
MA311664	OR	0.21	0.56	1
MA736452061	MC	0.26	0.42	--
MA805104699	OR	0.15	0.55	0
MA736481231	OR	0.40	0.60	1
MA805166085	OR	0.18	0.17	1
MA900281418	MC	0.58	0.47	0
MA900337563	OR	0.29	0.70	1
MA900437517	OR	0.30	0.41	0
MA900540139	MC	0.24	0.40	0
MA900541677	MC	0.23	0.29	0
MA908142878	MC	0.36	0.26	0

Blank values represent no omitted responses on an item, and 0% is a result of rounding for very small values.

Table F-11. Item-Level Classical Test Theory Statistics—Mathematics Grade 7

Item Number	Type	Difficulty	Discrimination	Percent Omitted (%)
MA624047703	OR	0.32	0.52	0
MA298208	MC	0.37	0.44	0
MA703872935	OR	0.53	0.48	0
MA703872935P	OR	0.53	0.48	0
MA713848070	OR	0.22	0.57	0
MA717236235	OR	0.32	0.76	2
MA298183	MC	0.42	0.25	0
MA306632	MC	0.35	0.36	0
MA311107	MC	0.39	0.19	0
MA802914027	OR	0.31	0.74	4
MA804458974	OR	0.27	0.50	1
MA900553374	OR	0.17	0.58	1
MA900554929	MC	0.43	0.52	0
MA900556478	MC	0.29	0.36	0
MA900559852	MC	0.41	0.30	0
MA900740124	OR	0.21	0.56	0
MA900741988	OR	0.20	0.50	2
MA900745156	OR	0.25	0.65	1
MA903153837	MC	0.32	0.24	0
MA208377	MC	0.83	0.36	0
MA219513	MC	0.71	0.45	0
MA306625	OR	0.08	0.44	0
MA259184	MC	0.74	0.43	0
MA703857670	OR	0.73	0.45	0
MA703857670P	OR	0.73	0.45	0
MA713849179	OR	0.23	0.52	0
MA282220	MC	0.51	0.31	0
MA303697	MC	0.30	0.29	0
MA306566	OR	0.18	0.73	6
MA314790	OR	0.15	0.57	1
MA804677297	MC	0.18	0.13	0
MA801363142	MC	0.31	0.30	0
MA801653090	MC	0.42	0.23	0
MA900831542	OR	0.50	0.45	0
MA900936469	OR	0.30	0.79	2
MA903155316	OR	0.52	0.52	0
MA904158907	MC	0.51	0.36	0
MA904222253	OR	0.28	0.56	1
MA250531	MC	0.41	0.33	0
MA306487	MC	0.42	0.31	0
MA306506	OR	0.10	0.36	0
MA306559	OR	0.08	0.46	1

Blank values represent no omitted responses on an item, and 0% is a result of rounding for very small values.

Table F-12. Item-Level Classical Test Theory Statistics—Mathematics Grade 8

Item Number	Type	Difficulty	Discrimination	Percent Omitted (%)
MA311386	OR	0.42	0.51	0
MA715919547	OR	0.30	0.50	0
MA259251	MC	0.30	0.35	0
MA311392	MC	0.37	0.24	0
MA704833889	OR	0.32	0.45	1
MA311459	OR	0.21	0.72	4
MA800475031	OR	0.57	0.45	0
MA901135378	MC	0.61	0.47	0
MA901135957	MC	0.31	0.32	0
MA901137084	MC	0.43	0.33	0
MA901137701	MC	0.63	0.33	0
MA901139314	MC	0.49	0.49	0
MA901142533	MC	0.45	0.31	0
MA901143488	OR	0.34	0.45	0
MA901143832	MC	0.57	0.54	0
MA901252301	OR	0.42	0.60	0
MA902262781	MC	0.31	0.33	0
MA902281251	OR	0.50	0.58	0
MA902283272	OR	0.60	0.48	0
MA307515	OR	0.23	0.73	2
MA307538	MC	0.44	0.36	0
MA301689	MC	0.32	0.36	0
MA311428	MC	0.40	0.49	0
MA275045	MC	0.55	0.48	0
MA715920050	OR	0.55	0.68	2
MA800475574	MC	0.65	0.40	0
MA800562180	OR	0.49	0.53	0
MA803864446	OR	0.61	0.41	0
MA804466151	MC	0.68	0.26	0
MA901248805	OR	0.62	0.60	0
MA902268353	OR	0.23	0.46	0
MA902284919	MC	0.44	0.53	0
MA902305954	OR	0.33	0.44	0
MA902359126	OR	0.34	0.55	0
MA902400539	OR	0.21	0.69	3
MA905271170	MC	0.57	0.44	0
MA905906652	OR	0.36	0.41	0
MA908451759	MC	0.47	0.17	0
MA264730	MC	0.54	0.51	0
MA301683	MC	0.45	0.27	0

Blank values represent no omitted responses on an item, and 0% is a result of rounding for very small values.

APPENDIX G

SCORE DISTRIBUTIONS

Table G-1. Item-Level Score Distributions for SR and OR Items and ESs—ELA

Grade	Item Number	Total Possible Points	Percent of Students at Score Point					
			0	1	2	3	4	5
3	EL912362165#SCORE_TRAIT_Conv	3	30.22	51.64	11.36	4.49		
	EL912362165#SCORE_TRAIT_Ideadev	4	54.82	26.20	11.98	3.25	1.46	
	EL912365258	2	26.81	22.57	50.45			
	EL912440150	2	26.47	20.08	53.34			
	EL916535595	2	10.93	62.18	25.77			
	EL292656	2	21.50	11.29	67.12			
	EL835251909	3	23.86	53.21	17.19	4.87		
	EL835276438	2	31.29	60.48	7.04			
4	EL909132428#SCORE_TRAIT_Conv	3	29.38	46.74	16.31	6.19		
	EL909132428#SCORE_TRAIT_Ideadev	4	44.99	28.30	17.88	6.03	1.43	
	EL909153399	2	38.02	19.31	42.65			
	EL913040076	2	22.89	39.16	37.73			
	EL913342853	2	24.69	49.92	21.74			
	EL800853520	2	22.51	19.62	57.85			
	EL800937262	2	9.07	52.68	37.89			
	EL800957624	3	27.79	41.49	22.59	7.47		
5	EL806706594	2	23.53	10.90	65.54			
	EL806746086#SCORE_TRAIT_Conv	3	24.50	46.53	21.15	6.84		
	EL806746086#SCORE_TRAIT_Ideadev	4	25.00	46.78	20.14	6.18	0.92	
	EL806756112	2	29.30	47.67	22.36			
	EL834856783#SCORE_TRAIT_Conv	3	31.56	45.70	12.33	9.66		
	EL834856783#SCORE_TRAIT_Ideadev	4	67.58	8.16	12.02	8.62	2.87	
	EL834950831	2	8.53	28.66	62.55			
	EL834952362	2	36.97	26.33	36.67			
	EL912584876	2	32.86	9.51	57.60			
6	EL835401351	2	17.66	37.85	44.47			
	EL835420875	2	29.45	36.46	34.05			
	EL911525969#SCORE_TRAIT_Conv	3	32.21	35.22	22.36	9.03		
	EL911525969#SCORE_TRAIT_Ideadev	5	15.62	43.83	25.46	10.83	2.63	0.45
	EL913132900#SCORE_TRAIT_Conv	3	30.55	34.59	24.22	9.64		
	EL913132900#SCORE_TRAIT_Ideadev	5	24.42	40.54	23.56	8.13	1.94	0.41
	EL913133585	2	40.99	23.44	35.57			
	EL913135249	2	30.16	12.11	57.67			
	EL916444331	2	30.97	46.44	21.89			
7	EL909749262	2	37.40	7.10	55.45			
	EL909750218#SCORE_TRAIT_Conv	3	23.34	34.54	26.74	14.25		
	EL909750218#SCORE_TRAIT_Ideadev	5	15.64	39.93	25.66	13.41	3.86	0.37
	EL811660409	2	39.03	15.76	45.21			
	EL811735935	2	19.45	60.05	20.00			
	EL811753816#SCORE_TRAIT_Conv	3	27.44	34.13	25.87	10.98		
	EL811753816#SCORE_TRAIT_Ideadev	5	24.11	37.30	25.12	7.80	3.20	0.89
	EL912364723	2	34.59	38.25	27.12			
8	EL911659849	2	13.39	5.72	80.86			
	EL911774388#SCORE_TRAIT_Conv	3	22.00	35.36	21.56	19.18		
	EL911774388#SCORE_TRAIT_Ideadev	5	20.60	35.40	22.05	12.86	5.40	1.79
	EL913761016	2	14.78	42.63	42.54			
	EL836248600#SCORE_TRAIT_Conv	3	23.92	23.57	30.53	19.90		
	EL836248600#SCORE_TRAIT_Ideadev	5	20.05	29.06	27.14	14.51	6.11	1.05
	EL836448634	2	24.90	29.46	45.61			
	EL836455548	2	21.67	42.45	35.84			
	EL913448483	2	26.37	46.25	27.02			

Table G-2 Item-Level Score Distributions for SR and OR Items—Mathematics

Grade	Item Number	Total Possible Points	Percent of Students at Score Point					
			0	1	2	3	4	5
3	MA306355	1	21.43	78.37				
	MA286752A	3	43.15	29.24	21.96	4.96		
	MA735659609	1	21.11	77.20				
	MA735662802	1	33.48	66.37				
	MA297478A	3	12.06	16.63	16.65	54.27		
	MA900371363	1	65.35	32.77				
	MA900376906	1	43.92	55.83				
	MA900437563	1	52.96	46.47				
	MA900440136	1	53.31	45.87				
	MA900578884	1	61.66	37.77				
	MA905135964	1	71.21	28.64				
	MA703080328	1	76.42	23.33				
	MA306288	1	52.65	47.11				
	MA306339	1	43.58	56.12				
	MA310895	1	57.89	41.86				
	MA735767424	1	38.57	61.28				
	MA735951978	3	31.87	29.93	22.21	15.34		
	MA736029388	1	38.28	60.28				
	MA300753A	3	23.91	20.44	19.67	35.28		
	MA834448527	1	13.54	86.37				
	MA900430931	1	73.32	23.37				
	MA901139069	1	26.59	73.27				
	MA902238195	1	32.37	67.50				
	MA260575	1	29.05	70.56				
4	MA279790	1	26.48	73.41				
	MA623833763	1	46.62	52.80				
	MA704652242	1	51.28	48.33				
	MA307066	1	60.62	39.23				
	MA800607912	1	35.90	63.11				
	MA800633803	1	43.40	56.29				
	MA803738583	2	52.80	40.36	6.59			
	MA900740880	1	52.18	47.72				
	MA900750814	4	6.85	8.65	15.95	30.86	37.51	
	MA900755205	1	64.80	35.03				
	MA900775955	1	50.86	48.98				
	MA903537924	1	40.09	59.82				
	MA903574399	4	28.29	19.20	24.47	15.58	12.04	
	MA903869200	1	63.90	35.84				
	MA227864	1	28.30	71.58				
	MA704650142	1	47.85	52.01				
	MA714230904	1	78.49	21.30				
	MA294263	1	83.33	16.41				
	MA800767155	1	42.28	57.53				
	MA302496A	4	18.09	35.60	19.67	17.87	8.22	

continued

Grade	Item Number	Total Possible Points	Percent of Students at Score Point					
			0	1	2	3	4	5
4	MA311579A	4	14.08	17.80	13.76	22.25	31.91	
	MA900749728	1	78.24	21.27				
	MA900751271	1	36.29	63.54				
	MA900842465	1	54.04	45.85				
	MA903053494	2	15.33	54.72	29.72			
	MA903134963	1	49.66	50.04				
	MA903673001	1	64.26	35.53				
	MA903757124	1	76.61	22.84				
	MA907358909	1	73.30	26.38				
5	MA301608	4	19.16	40.76	21.53	10.44	7.16	
	MA298005	4	15.76	9.23	44.51	14.84	14.92	
	MA715102107	1	11.55	88.37				
	MA715102342	1	56.05	43.76				
	MA801176573	1	53.51	45.79				
	MA804575779	2	27.39	43.89	28.55			
	MA804577344	1	47.72	52.15				
	MA804577928	1	57.20	42.52				
	MA804583343	1	57.57	42.00				
	MA903733887	1	47.63	52.07				
	MA908431377	1	42.55	57.31				
	MA310322	1	35.04	64.90				
	MA624345222	1	59.76	40.12				
	MA303755	1	59.20	40.50				
	MA802310847	4	20.92	19.59	15.71	22.11	21.28	
	MA804580860	2	45.62	45.38	8.85			
	MA900983475	1	63.02	36.69				
	MA901073764	4	28.78	21.45	26.15	11.43	11.61	
	MA903581246	1	70.87	28.69				
	MA904333760	1	76.01	23.91				
	MA904338797	1	46.03	53.86				
	MA207523	1	51.06	48.55				
	MA287421	1	33.98	65.90				
6	MA703177677	1	38.41	60.89				
	MA703178216	1	76.57	22.77				
	MA703178717	1	74.52	25.35				
	MA703253363	4	59.41	16.56	7.24	7.64	7.58	
	MA303713	1	32.25	67.67				
	MA736363428	1	41.47	57.71				
	MA736365457	1	30.94	68.66				
	MA736510525	1	72.07	27.42				
	MA900283851	2	20.47	49.08	29.96			
	MA900454764	1	39.54	59.39				
	MA900462230	1	40.82	58.97				
	MA900763184	1	47.13	52.83				
	MA902139605	4	7.95	27.73	44.15	15.46	4.03	
	MA301231	1	62.79	36.91				

continued

Grade	Item Number	Total Possible Points	Percent of Students at Score Point					
			0	1	2	3	4	5
6	MA307234	4	14.23	27.77	22.20	10.88	23.91	
	MA703149118	1	64.54	35.24				
	MA703181586	2	42.86	44.76	12.30			
	MA703181586P	2	42.86	44.76	12.30			
	MA713648266	1	75.75	24.07				
	MA714280042	1	81.51	18.30				
	MA311664	1	78.13	21.32				
	MA805104699	1	84.45	15.28				
	MA736481231	1	59.00	40.17				
	MA805166085	1	81.53	17.66				
	MA900337563	4	33.11	36.47	11.45	13.05	4.63	
	MA900437517	1	69.45	30.48				
7	MA624047703	1	67.38	32.37				
	MA703872935	1	47.24	52.60				
	MA703872935P	1	47.24	52.60				
	MA713848070	1	77.35	22.48				
	MA717236235	4	38.15	22.17	15.99	12.95	8.82	
	MA802914027	4	35.70	17.47	29.31	5.46	7.93	
	MA804458974	1	72.53	26.92				
	MA900553374	1	82.03	16.57				
	MA900740124	1	78.44	21.24				
	MA900741988	1	78.29	20.11				
	MA900745156	2	59.80	28.89	10.56			
	MA306625	1	91.56	8.06				
	MA703857670	1	26.55	73.36				
	MA703857670P	1	26.55	73.36				
	MA713849179	2	60.33	31.98	7.47			
	MA306566	4	60.07	11.97	10.73	7.45	4.00	
	MA314790	1	84.25	14.91				
	MA900831542	1	50.04	49.82				
	MA900936469	4	40.93	23.50	13.21	10.94	9.09	
	MA903155316	1	48.24	51.65				
	MA904222253	1	71.63	27.72				
	MA306506	1	89.33	10.34				
	MA306559	1	90.82	8.43				
8	MA311386	1	57.85	41.90				
	MA715919547	1	69.40	30.40				
	MA704833889	1	67.54	31.67				
	MA311459	4	47.48	28.64	9.68	5.98	4.46	
	MA800475031	1	43.02	56.88				
	MA901143488	1	65.78	34.12				
	MA901252301	1	57.76	41.95				
	MA902281251	2	35.15	30.32	34.38			
	MA902283272	1	40.41	59.53				
	MA307515	4	59.44	12.74	8.06	8.13	9.68	
	MA715920050	4	16.65	14.69	18.62	25.85	22.40	

continued

Grade	Item Number	Total Possible Points	Percent of Students at Score Point					
			0	1	2	3	4	5
8	MA800562180	1	50.91	49.01				
	MA803864446	1	38.80	61.13				
	MA901248805	1	37.63	61.89				
	MA902268353	2	61.23	30.72	7.81			
	MA902305954	1	66.25	33.41				
	MA902359126	1	66.04	33.63				
	MA902400539	4	53.87	21.31	8.43	7.87	5.45	
	MA905906652	1	63.95	35.83				

APPENDIX H

DIFFERENTIAL ITEM FUNCTIONING RESULTS

Table H-1. Number of Items Classified as "Low" or "High" DIF, Overall and by Group Favored—ELA

Grade	Group		Item Type	Number of Items	Number "Low"			Number "High"		
	Reference	Focal			Total	Favoring		Total	Favoring	
						Reference	Focal		Reference	Focal
3	Male	Female	MC	24	1	1	0	0	0	0
			OR	6	1	0	1	0	0	0
			ES	2	0	0	0	0	0	0
	Not ELL	ELL	MC	24	4	3	1	0	0	0
			OR	6	0	0	0	0	0	0
			ES	2	0	0	0	0	0	0
	Not Economically Disadvantaged	Economically Disadvantaged	MC	24	0	0	0	0	0	0
			OR	6	0	0	0	0	0	0
			ES	2	0	0	0	0	0	0
	White	African American	MC	24	1	1	0	0	0	0
			OR	6	0	0	0	0	0	0
			ES	2	0	0	0	0	0	0
		Hispanic / Latino	MC	24	0	0	0	0	0	0
			OR	6	1	1	0	0	0	0
			ES	2	0	0	0	0	0	0
	Students Without Disabilities	Students with Disabilities	MC	24	1	1	0	0	0	0
			OR	6	1	1	0	0	0	0
			ES	2	0	0	0	0	0	0
	Online	Paper	MC	24	0	0	0	0	0	0
			OR	6	0	0	0	0	0	0
			ES	2	0	0	0	0	0	0
4	Male	Female	MC	24	0	0	0	1	1	0
			OR	6	1	1	0	0	0	0
			ES	2	2	0	2	0	0	0
	Not ELL	ELL	MC	24	3	3	0	1	1	0
			OR	6	0	0	0	0	0	0
			ES	2	0	0	0	0	0	0
	Not Economically Disadvantaged	Economically Disadvantaged	MC	24	3	3	0	0	0	0
			OR	6	0	0	0	0	0	0
			ES	2	0	0	0	0	0	0
	White	African American	MC	24	3	3	0	0	0	0
			OR	6	0	0	0	0	0	0
			ES	2	0	0	0	0	0	0
		Hispanic / Latino	MC	24	4	4	0	0	0	0
			OR	6	0	0	0	0	0	0
			ES	2	0	0	0	0	0	0
	Students Without Disabilities	Students with Disabilities	MC	24	4	4	0	0	0	0
			OR	6	3	3	0	0	0	0
			ES	2	1	1	0	0	0	0
	Online	Paper	MC	24	0	0	0	0	0	0
			OR	6	0	0	0	0	0	0
			ES	2	0	0	0	0	0	0
5	Male	Female	MC	24	1	1	0	1	1	0
			OR	5	0	0	0	0	0	0
			ES	4	0	0	0	0	0	0

continued

Grade	Group		Item Type	Number of Items	Number "Low"			Number "High"		
	Reference	Focal			Total	Favoring		Total	Favoring	
						Reference	Focal		Reference	Focal
5	Not ELL	ELL	MC	24	3	3	0	0	0	0
			OR	5	0	0	0	0	0	0
			ES	4	0	0	0	0	0	0
	Not Economically Disadvantaged	Economically Disadvantaged	MC	24	0	0	0	0	0	0
			OR	5	0	0	0	0	0	0
			ES	4	0	0	0	0	0	0
	White	African American	MC	24	1	1	0	0	0	0
			OR	5	0	0	0	0	0	0
			ES	4	0	0	0	0	0	0
		Hispanic / Latino	MC	24	2	2	0	0	0	0
			OR	5	0	0	0	0	0	0
			ES	4	0	0	0	0	0	0
	Students Without Disabilities	Students with Disabilities	MC	24	3	3	0	0	0	0
			OR	5	1	1	0	0	0	0
			ES	4	1	1	0	0	0	0
	Online	Paper	MC	24	0	0	0	0	0	0
			OR	5	0	0	0	0	0	0
			ES	4	0	0	0	0	0	0
6	Male	Female	MC	24	1	1	0	0	0	0
			OR	5	0	0	0	0	0	0
			ES	4	1	0	1	0	0	0
	Not ELL	ELL	MC	24	3	3	0	0	0	0
			OR	5	1	1	0	0	0	0
			ES	4	0	0	0	0	0	0
	Not Economically Disadvantaged	Economically Disadvantaged	MC	24	1	1	0	0	0	0
			OR	5	0	0	0	0	0	0
			ES	4	0	0	0	0	0	0
	White	African American	MC	24	4	3	1	0	0	0
			OR	5	0	0	0	0	0	0
			ES	4	0	0	0	0	0	0
		Hispanic / Latino	MC	24	2	2	0	0	0	0
			OR	5	0	0	0	0	0	0
			ES	4	0	0	0	0	0	0
	Students Without Disabilities	Students with Disabilities	MC	24	2	0	2	0	0	0
			OR	5	0	0	0	0	0	0
			ES	4	1	1	0	1	1	0
	Online	Paper	MC	24	0	0	0	0	0	0
			OR	5	0	0	0	0	0	0
			ES	4	0	0	0	0	0	0
7	Male	Female	MC	26	3	1	2	1	1	0
			OR	4	0	0	0	0	0	0
			ES	4	0	0	0	0	0	0
	Not ELL	ELL	MC	26	4	4	0	0	0	0
			OR	4	0	0	0	0	0	0
			ES	4	0	0	0	0	0	0
	Not Economically Disadvantaged	Economically Disadvantaged	MC	26	0	0	0	0	0	0
			OR	4	0	0	0	0	0	0
			ES	4	0	0	0	0	0	0

continued

Grade	Group		Item Type	Number of Items	Number "Low"			Number "High"		
	Reference	Focal			Total	Favoring		Total	Favoring	
						Reference	Focal		Reference	Focal
7	White	African American	MC	26	2	2	0	0	0	0
			OR	4	0	0	0	0	0	0
			ES	4	0	0	0	0	0	0
		Hispanic / Latino	MC	26	1	1	0	0	0	0
			OR	4	0	0	0	0	0	0
			ES	4	0	0	0	0	0	0
	Students Without Disabilities	Students with Disabilities	MC	26	2	0	2	0	0	0
			OR	4	0	0	0	0	0	0
			ES	4	2	2	0	0	0	0
	Online	Paper	MC	26	0	0	0	0	0	0
			OR	4	0	0	0	0	0	0
			ES	4	0	0	0	0	0	0
8	Male	Female	MC	24	2	2	0	0	0	0
			OR	5	1	1	0	0	0	0
			ES	4	0	0	0	0	0	0
	Not ELL	ELL	MC	24	3	3	0	0	0	0
			OR	5	0	0	0	0	0	0
			ES	4	0	0	0	0	0	0
	Not Economically Disadvantaged	Economically Disadvantaged	MC	24	0	0	0	0	0	0
			OR	5	0	0	0	0	0	0
			ES	4	0	0	0	0	0	0
	White	African American	MC	24	0	0	0	0	0	0
			OR	5	0	0	0	0	0	0
			ES	4	0	0	0	0	0	0
		Hispanic / Latino	MC	24	1	1	0	0	0	0
			OR	5	0	0	0	0	0	0
			ES	4	0	0	0	0	0	0
	Students Without Disabilities	Students with Disabilities	MC	24	2	2	0	0	0	0
			OR	5	0	0	0	0	0	0
			ES	4	3	3	0	0	0	0
	Online	Paper	MC	24	0	0	0	0	0	0
			OR	5	0	0	0	0	0	0
			ES	4	0	0	0	0	0	0

Table H-2. Number of Items Classified as "Low" or "High" DIF, Overall and by Group Favored—Mathematics

Grade	Group		Item Type	Number of Items	Number "Low"			Number "High"		
	Reference	Focal			Total	Favoring		Total	Favoring	
						Reference	Focal		Reference	Focal
3	Male	Female	MC	16	2	2	0	2	2	0
			OR	24	4	3	1	0	0	0
	Not ELL	ELL	MC	16	1	0	1	0	0	0
			OR	24	0	0	0	0	0	0
	Not Economically Disadvantaged	Economically Disadvantaged	MC	16	0	0	0	0	0	0
			OR	24	0	0	0	0	0	0
	White	African American	MC	16	1	1	0	0	0	0
			OR	24	5	3	2	0	0	0
		Hispanic / Latino	MC	16	0	0	0	0	0	0
			OR	24	2	2	0	0	0	0
	Students Without Disabilities	Students with Disabilities	MC	16	0	0	0	0	0	0
			OR	24	1	0	1	0	0	0
	Online	Paper	MC	16	0	0	0	0	0	0
			OR	24	0	0	0	0	0	0
4	Male	Female	MC	11	1	0	1	0	0	0
			OR	29	5	2	3	0	0	0
	Not ELL	ELL	MC	11	0	0	0	0	0	0
			OR	29	1	0	1	0	0	0
	Not Economically Disadvantaged	Economically Disadvantaged	MC	11	0	0	0	0	0	0
			OR	29	1	1	0	0	0	0
	White	African American	MC	11	1	0	1	1	1	0
			OR	29	7	6	1	2	2	0
		Hispanic / Latino	MC	11	0	0	0	0	0	0
			OR	29	3	3	0	0	0	0
	Students Without Disabilities	Students with Disabilities	MC	11	0	0	0	0	0	0
			OR	29	3	2	1	0	0	0
	Online	Paper	MC	11	0	0	0	0	0	0
			OR	29	0	0	0	0	0	0
5	Male	Female	MC	17	2	1	1	0	0	0
			OR	23	2	1	1	1	1	0
	Not ELL	ELL	MC	17	0	0	0	0	0	0
			OR	23	5	5	0	0	0	0
	Not Economically Disadvantaged	Economically Disadvantaged	MC	17	0	0	0	0	0	0
			OR	23	0	0	0	0	0	0
	White	African American	MC	17	2	1	1	0	0	0
			OR	23	5	4	1	1	1	0
		Hispanic / Latino	MC	17	0	0	0	0	0	0
			OR	23	0	0	0	0	0	0
	Students Without Disabilities	Students with Disabilities	MC	17	1	0	1	0	0	0
			OR	23	4	4	0	0	0	0
	Online	Paper	MC	17	0	0	0	0	0	0
			OR	23	0	0	0	0	0	0

continued

Grade	Group		Item Type	Number of Items	Number "Low"			Number "High"		
	Reference	Focal			Total	Favoring		Total	Favoring	
						Reference	Focal		Reference	Focal
6	Male	Female	MC	15	3	2	1	0	0	0
			OR	26	4	4	0	0	0	0
	Not ELL	ELL	MC	15	1	1	0	0	0	0
			OR	26	2	2	0	0	0	0
	Not Economically Disadvantaged	Economically Disadvantaged	MC	15	0	0	0	0	0	0
			OR	26	1	1	0	0	0	0
	White	African American	MC	15	3	1	2	0	0	0
			OR	26	2	1	1	0	0	0
		Hispanic / Latino	MC	15	1	1	0	0	0	0
			OR	26	2	2	0	0	0	0
	Students Without Disabilities	Students with Disabilities	MC	15	2	1	1	1	1	0
			OR	26	5	5	0	0	0	0
	Online	Paper	MC	15	0	0	0	0	0	0
			OR	26	0	0	0	0	0	0
7	Male	Female	MC	19	6	2	4	0	0	0
			OR	23	2	2	0	0	0	0
	Not ELL	ELL	MC	19	3	3	0	1	1	0
			OR	23	3	3	0	0	0	0
	Not Economically Disadvantaged	Economically Disadvantaged	MC	19	1	1	0	0	0	0
			OR	23	2	2	0	0	0	0
	White	African American	MC	19	2	2	0	0	0	0
			OR	23	2	1	1	0	0	0
		Hispanic / Latino	MC	19	2	2	0	0	0	0
			OR	23	2	2	0	0	0	0
	Students Without Disabilities	Students with Disabilities	MC	19	3	3	0	0	0	0
			OR	23	2	2	0	2	2	0
	Online	Paper	MC	19	0	0	0	0	0	0
			OR	23	0	0	0	0	0	0
8	Male	Female	MC	21	1	1	0	0	0	0
			OR	19	1	0	1	0	0	0
	Not ELL	ELL	MC	21	3	2	1	0	0	0
			OR	19	1	1	0	0	0	0
	Not Economically Disadvantaged	Economically Disadvantaged	MC	21	0	0	0	0	0	0
			OR	19	0	0	0	0	0	0
	White	African American	MC	21	4	4	0	0	0	0
			OR	19	2	1	1	0	0	0
		Hispanic / Latino	MC	21	2	1	1	0	0	0
			OR	19	0	0	0	0	0	0
	Students Without Disabilities	Students with Disabilities	MC	21	3	2	1	0	0	0
			OR	19	2	2	0	1	1	0
	Online	Paper	MC	21	0	0	0	0	0	0
			OR	19	0	0	0	0	0	0

APPENDIX I

2021–2022 MCAS EQUATING REPORT

Massachusetts Comprehensive Assessment System

2021–2022: EQUATING REPORT

cognia™

2021–2022 Massachusetts Comprehensive Assessment System Equating Report

The purpose of this document is to summarize the psychometric calibration and equating results obtained from Cognia for Next-Gen MCAS. Presented in this report are various program summary statistics and specific results related to the study.

The results of this report are organized as follows:

1. Aggregate Results
    1. Percentage of Students by Achievement Levels Categories
    2. Raw Scores Associated with Cutpoints
    3. Calibration Report
    4. Equating Item Summary Statistics
2. Grade Subject Results
    1. A/A, B/B, Beta, 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. Tabled Beta Analysis Results
    8. Final Item Parameters
    9. Decision Accuracy and Consistency (DAC)
    10. Fit Plots of Watchlist Items

The final results of this equating will be included as part of the 2021 - 2022 Next-Gen MCAS Technical Manual. If requested, Cognia will distribute and/or present this report at the next MCAS TAC.

Section 1.1

Percentage of Students by Achievement Levels Categories

Table 1.1.1

Percentage of Students by Achievement Levels Categories

English Language Arts

Grade	Year	Count	NM	PM	ME	EE	ME+EE	Delta	Ave. SS
3	2022	61648	13	41	39	7	46	-6.9	497.1
	2021	50011	8	39	43	10	53	-5.7	500.1
	2019	63602	6	36	48	11	58	5.8	504.8
	2018	43046	6	41	43	10	53	1.0	501.8
	2017	26459	7	41	43	8	52		500.1
4	2022	62100	14	46	36	4	40	-11.2	493.8
	2021	50867	11	38	45	6	51	-2.7	498.9
	2019	65450	7	39	44	10	54	-0.5	502.6
	2018	69078	7	38	44	10	55	3.5	502.2
	2017	63918	8	41	43	8	51		500.1
5	2022	63620	11	47	37	5	42	-7.1	495.6
	2021	51362	10	41	41	8	49	-5.0	497.9
	2019	67933	6	39	47	8	54	-1.5	501.9
	2018	69390	6	38	49	7	56	4.4	502.3
	2017	28547	7	42	46	5	51		499.9
6	2022	63887	20	37	35	8	43	-7.2	494.0
	2021	51319	19	31	37	13	50	-5.7	498.4
	2019	67612	11	33	42	13	56	3.4	502.5
	2018	53988	10	38	42	11	52	-0.7	501.3
	2017	29369	8	39	47	6	53		500.3
7	2022	65584	17	40	37	6	42	-3.2	493.7
	2021	51120	17	37	39	7	46	-4.8	495.6
	2019	67462	11	39	42	9	50	3.6	499.8
	2018	66410	13	40	39	8	47	-6.5	497.4
	2017	30209	8	38	48	6	53		500.2
8	2022	67919	16	40	36	7	43	-0.3	494.8
	2021	50822	15	41	37	7	44	-10.0	496.2
	2019	67350	11	35	42	12	54	1.1	500.6
	2018	69486	13	34	42	10	52	1.1	499.6
	2017	65314	9	40	43	8	51		499.5
10	2022	65193	7	34	51	9	60	-6.4	502.9
	2021	67110	8	26	46	20	66	2.3	508.1
	2019	67067	6	31	50	14	64		507.3

Table 1.1.2

Percentage of Students by Achievement Levels Categories

Mathematics

Grade	Year	Count	NM	PM	ME	EE	ME+EE	Delta	Ave. SS
3	2022	53433	13	39	40	8	48	9.8	497.5
	2021	45242	20	42	32	6	38	-18.0	491.2
	2019	56176	7	37	45	11	56	7.2	503.0
	2018	43501	11	40	40	9	49	-3.2	499.1
	2017	26659	11	37	44	8	52		499.2
4	2022	53577	10	40	43	7	50	10.9	498.8
	2021	45553	17	44	34	4	39	-17.8	491.7
	2019	57629	6	37	47	10	57	7.7	503.0
	2018	69779	11	40	42	7	49	-1.9	498.0
	2017	64473	10	39	44	6	51		498.7
5	2022	55635	10	48	38	5	42	3.1	496.5
	2021	46011	13	47	35	5	39	-15.5	493.5
	2019	60444	5	40	48	6	55	8.0	501.7
	2018	70083	9	45	42	5	47	-2.7	497.7
	2017	29285	8	42	42	8	49		499.4
6	2022	56939	9	43	42	6	48	8.9	498.2
	2021	46699	16	45	34	5	39	-18.9	493.4
	2019	61719	6	37	46	12	58	9.6	504.0
	2018	54582	9	43	42	6	48	-4.2	498.4
	2017	29704	9	39	46	6	52		499.7
7	2022	59311	13	45	34	8	42	2.7	495.5
	2021	46839	13	48	32	7	39	-13.4	494.9
	2019	62495	9	39	41	12	53	5.3	501.0
	2018	66925	12	40	40	8	47	-0.9	497.7
	2017	30144	9	43	40	8	48		498.9
8	2022	62311	12	48	32	8	40	4.4	495.8
	2021	47150	16	48	32	4	36	-15.1	492.0
	2019	62817	8	41	40	11	51	0.4	501.5
	2018	70044	11	39	42	8	51	1.1	498.9
	2017	66077	9	42	40	9	49		500.3
10	2022	61296	7	39	41	12	54	-1.4	503.0
	2021	57770	9	36	43	12	55	-7.4	502.2
	2019	64481	6	32	48	14	63		506.9

Table 1.1.3

Percentage of Students by Achievement Levels Categories

Science

Grade	Year	Count	NM	PM	ME	EE	ME+EE	Delta	Ave. SS
5	2022	56846	12	39	40	8	48	-0.1	498.5
	2021	45455	12	39	41	8	49	-6.8	498.2
	2019	60476	7	38	45	10	55		502.5
8	2022	62926	13	41	39	6	46	0.6	496.3
	2021	46950	11	44	36	9	45	-5.3	497.6
	2019	62933	8	41	41	9	50		500.5

Section 1.2

Raw Scores Associated with Cutpoints

Table 1.2.1
Raw Scores Associated with Cutpoints

Subject	Grade	Cut Point	2022 Actual	2022 Pred
English Language Arts	3	NM–PM	14	11
		PM–ME	28	25
		ME–EE	37	35
English Language Arts	4	NM–PM	15	13
		PM–ME	29	26
		ME–EE	39	37
English Language Arts	5	NM–PM	16	14
		PM–ME	33	31
		ME–EE	43	42
English Language Arts	6	NM–PM	19	15
		PM–ME	32	29
		ME–EE	42	40
English Language Arts	7	NM–PM	18	16
		PM–ME	32	31
		ME–EE	44	43
English Language Arts	8	NM–PM	22	18
		PM–ME	36	34
		ME–EE	45	44
English Language Arts	10	NM–PM	19	18
		PM–ME	37	34
		ME–EE	47	44
Mathematics	3	NM–PM	14	14
		PM–ME	30	30
		ME–EE	43	43
Mathematics	4	NM–PM	14	15
		PM–ME	33	34
		ME–EE	49	49
Mathematics	5	NM–PM	13	12
		PM–ME	33	33
		ME–EE	50	49
Mathematics	6	NM–PM	11	12
		PM–ME	28	29
		ME–EE	48	47
Mathematics	7	NM–PM	10	10
		PM–ME	25	25
		ME–EE	46	46
Mathematics	8	NM–PM	12	13
		PM–ME	32	32
		ME–EE	49	49

Table 1.2.1 (continued)
Raw Scores Associated with Cutpoints

Subject	Grade	Cut Point	2022 Actual	2022 Pred
Mathematics	10	NM–PM	11	12
		PM–ME	30	31
		ME–EE	52	52
Science	5	NM–PM	19	18
		PM–ME	34	34
		ME–EE	45	46
Science	8	NM–PM	16	16
		PM–ME	31	32
		ME–EE	45	46

Section 1.3

Calibration Report

Calibration Report—Executive Summary

FlexMIRT 3.03 was used for the IRT calibration at Cognia. All command files were set up in a way following general settings. The calibration convergence criterion was set to 0.001.

A 3PLM was used for standard four-option multiple choice (MC) items, a 2PLM was used for dichotomously scored short response items, multi-select items, and technology-enhanced items, and a Graded Response Model (GRM) was specified for the polytomously scored multi-part items and open response items. The logistic version of the IRT models was used. The prior distribution for the guessing parameter was set to be beta(5,17), and logNormal(0, 0.25) was used as the prior for the item discrimination parameter. No prior was supplied for the item difficulty parameter.

The calibration went smoothly and got converged in all subjects/grades. 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 IRT model fit was evaluated for each of the items. The resulting parameters demonstrated good model fit for most of the items.

In ELA a two-stage process was used to bring the item parameters onto the operational scale. First all items except the writing prompts were freely calibrated. Next the items except the writing prompts were placed onto scale using the Stocking and Lord procedure. These first two steps are referred to as stage 1. Next, the writing prompts were brought onto scale holding the parameters from stage 1 fixed, and a Fixed Common Item Parameter calibration using FlexMIRT. This two-stage process is used to assure that the writing prompt estimation process does not unduly influence the dimensional structure of the initial parameter estimation in Stage 1, providing for greater scale stability.

The first table in this section shows the number of cycles to achieve convergence in Stage 1 of the ELA procedure. The second table lists the Stocking and Lord transformation constants that were calculated in the second step of Stage 1. The third table shows the number of cycles to achieve convergence in the FCIP calibration runs for Stage 2.

Table 1.3.1.a
Number of Cycles to Convergence for ELA Calibration with no Writing Prompts

Subject	Grade	Initial Cycles
English Language Arts	Grade 3	52
English Language Arts	Grade 4	32
English Language Arts	Grade 5	89
English Language Arts	Grade 6	45
English Language Arts	Grade 7	34
English Language Arts	Grade 8	46
English Language Arts	Grade 10	49

Table 1.3.1.b
Stocking and Lord Constants for ELA Equating with no Writing Prompts

Subject	Grade	Slope	Intercept
English Language Arts	3	1.12	-0.15
English Language Arts	4	1.04	-0.30
English Language Arts	5	1.10	-0.22
English Language Arts	6	1.44	-0.33
English Language Arts	7	1.29	-0.29
English Language Arts	8	1.38	-0.18

Subject	Grade	Slope	Intercept
English Language Arts	10	1.09	-0.13

Table 1.3.1.c
Number of Cycles to Convergence for ELA FCIP Calibration with Writing Prompts Included

Subject	Grade	Initial Cycles	Equating Cycles
English Language Arts	Grade 3	33	8
English Language Arts	Grade 4	18	12
English Language Arts	Grade 5	81	11
English Language Arts	Grade 6	42	16
English Language Arts	Grade 7	59	24
English Language Arts	Grade 8	79	31
English Language Arts	Grade 10	88	41

The Math and Science tests were equated using a single stage procedure of freely calibrating all items and placing them on the operational scale using the Stocking and Lord procedure. The next table in this section lists the number of cycles to achieve convergence, followed by a table of the Stocking and Lord transformation constants.

Table 1.3.1.d
Number of Cycles to Convergence for Math and Science

Subject	Grade	Initial Cycles
Mathematics	Grade 3	54
Mathematics	Grade 4	60
Mathematics	Grade 5	35
Mathematics	Grade 6	56
Mathematics	Grade 7	91
Mathematics	Grade 8	31
Mathematics	Grade 10	63
Science	Grade 5	43
Science	Grade 8	45

Table 1.3.1.e
Stocking and Lord Constants for Math and Science

Subject	Grade	Slope	Intercept
Mathematics	3	1.11	-0.11
Mathematics	4	1.04	-0.01
Mathematics	5	1.01	-0.17
Mathematics	6	1.01	-0.09
Mathematics	7	1.08	-0.17
Mathematics	8	1.02	-0.16
Mathematics	10	1.01	-0.17
Science	5	1.13	-0.20
Science	8	1.05	-0.20

Four methods of evaluating the suitability of the equating items were used: the delta analysis, the b/b analysis, beta analysis and the rescore analysis. Results from the beta analyses were used to flag items that were reviewed by content personnel and no items were removed from the equating analysis. Results from these analyses are included in Section II of this report.

Items flagged by the delta method 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
English Language Arts	3	IA00450 (EL626050679)	beta analysis	retained for equating
English Language Arts	3	IA00451 (EL626050927)	beta analysis	retained for equating
English Language Arts	3	IA00452 (EL626051097)	beta analysis	retained for equating
English Language Arts	3	IA00458A (EL626052459#SCORE_TRAIT_Conv)	beta analysis	retained for equating
English Language Arts	4	IA00289 (EL309792)	beta analysis	retained for equating
English Language Arts	5	IA00505 (EL626355215)	beta analysis	retained for equating
English Language Arts	5	IA00506 (EL626355557)	beta analysis	retained for equating
English Language Arts	5	IA01672 (EL711827807)	beta analysis	retained for equating
English Language Arts	6	IA00520 (EL626865416)	beta analysis	retained for equating
English Language Arts	6	IA00530 (EL626868748)	beta analysis	retained for equating
English Language Arts	6	IA00531A (EL626869132#SCORE_TRAIT_Conv)	beta analysis	retained for equating
English Language Arts	7	IA00069 (EL292172)	beta analysis	retained for equating
English Language Arts	7	IA00070 (EL292176)	beta analysis	retained for equating
English Language Arts	7	IA00658 (EL628653398)	beta analysis	retained for equating
English Language Arts	7	IA00665A (EL628749729#SCORE_TRAIT_Conv)	beta analysis	retained for equating
English Language Arts	8	IA00059 (EL290800)	beta analysis	retained for equating
English Language Arts	8	IA00062 (EL290808)	beta analysis	retained for equating
English Language Arts	8	IA00064A (EL290818#SCORE_TRAIT_Conv)	beta analysis	retained for equating
English Language Arts	8	IA00064D (EL290818#SCORE_TRAIT_Ideadev)	beta analysis	retained for equating
English Language Arts	8	IA00371 (EL623951471)	beta analysis	retained for equating
English Language Arts	8	IA00374 (EL623952612)	beta analysis	retained for equating
English Language Arts	8	IA00379 (EL623955757)	beta analysis	retained for equating
English Language Arts	10	IA04110 (EL807953958)	beta analysis	retained for equating
English Language Arts	10	IA06626A (EL811561885#SCORE_TRAIT_Conv)	beta analysis	retained for equating
Mathematics	3	IA00930 (MA306359)	beta analysis	retained for equating
Mathematics	4	IA00861 (MA297629)	beta analysis	retained for equating
Mathematics	4	IA00958 (MA307055)	beta analysis	retained for equating
Mathematics	4	IA00963 (MA307085)	beta analysis	retained for equating
Mathematics	4	IA01055 (MA311572)	beta analysis	retained for equating
Mathematics	4	IA01093 (MA623879088)	beta analysis	retained for equating
Mathematics	4	IA02819 (MA713583365)	beta analysis	retained for equating
Mathematics	4	IA02841 (MA713774890)	beta analysis	retained for equating
Mathematics	5	IA01155 (MA624357395)	beta analysis	retained for equating
Mathematics	5	IA04970 (MA800974344)	beta analysis	retained for equating
Mathematics	6	IA00827 (MA287186)	beta analysis	retained for equating
Mathematics	6	IA02037 (MA217493)	beta analysis	retained for equating

Subject	Grade	ItemID	Reason	Action
Mathematics	7	IA00796 (MA259267)	beta analysis	retained for equating

Table 1.3.2 (continued)

Final Items Watch List

Subject	Grade	ItemID	Reason	Action
Mathematics	7	IA01011 (MA311109)	beta analysis	retained for equating
Mathematics	7	IA04486 (MA227988)	beta analysis	retained for equating
Mathematics	8	IA00979 (MA307472)	beta analysis	retained for equating
Mathematics	8	IA01042 (MA311448)	beta analysis	retained for equating
Mathematics	8	IA02495 (MA309741)	beta analysis	retained for equating
Mathematics	10	IA04800 (MA717740737)	beta analysis	retained for equating
Mathematics	10	IA04846 (MA735743236)	beta analysis	retained for equating
Mathematics	10	IA04993 (MA801434971)	beta analysis	retained for equating
Mathematics	10	IA05117 (MA804678931)	beta analysis	retained for equating
Mathematics	10	IA05144 (MA805372590)	beta analysis	retained for equating
Mathematics	10	IA05170 (MA806408603)	beta analysis	retained for equating
Science	8	IA05243 (SC289702)	beta analysis	retained for equating
Science	8	IA05245 (SC290144)	beta analysis	retained for equating

Section 1.4

Equating Item Summary Statistics

Table 1.4.1

Equating Item Summary Statistics

Subject	Grade	Year	P-Value		Point Biserial		a		b	
			Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev
English Language Arts	03	2022	0.54	0.18	0.49	0.09	1.11	0.38	0.16	0.77
		Previous	0.60	0.17	0.45	0.09	0.92	0.32	-0.05	0.71
English Language Arts	04	2022	0.60	0.18	0.43	0.10	0.85	0.20	-0.19	0.87
		Previous	0.67	0.17	0.42	0.09	0.77	0.16	-0.48	0.87
English Language Arts	05	2022	0.61	0.19	0.45	0.12	0.88	0.26	-0.23	0.83
		Previous	0.65	0.18	0.41	0.13	0.77	0.25	-0.53	0.85
English Language Arts	06	2022	0.62	0.15	0.47	0.14	0.90	0.22	-0.23	0.79
		Previous	0.71	0.16	0.42	0.16	0.67	0.27	-0.82	0.92
English Language Arts	07	2022	0.65	0.16	0.49	0.14	0.95	0.25	-0.44	0.76
		Previous	0.72	0.15	0.44	0.14	0.79	0.24	-0.98	0.84
English Language Arts	08	2022	0.61	0.14	0.47	0.16	0.94	0.32	-0.19	0.61
		Previous	0.67	0.13	0.43	0.15	0.71	0.26	-0.54	0.77
English Language Arts	10	2022	0.70	0.11	0.46	0.12	0.90	0.27	-0.76	0.61
		Previous	0.72	0.11	0.46	0.12	0.83	0.22	-0.93	0.68
Mathematics	03	2022	0.63	0.16	0.49	0.10	1.01	0.22	-0.35	0.79
		Previous	0.69	0.16	0.43	0.11	0.92	0.22	-0.51	0.89
Mathematics	04	2022	0.59	0.17	0.50	0.11	1.03	0.30	-0.20	0.68
		Previous	0.63	0.16	0.49	0.11	1.02	0.25	-0.19	0.60
Mathematics	05	2022	0.56	0.20	0.47	0.10	0.99	0.29	-0.11	0.85
		Previous	0.62	0.20	0.44	0.12	0.97	0.25	-0.29	0.91
Mathematics	06	2022	0.55	0.18	0.47	0.14	1.07	0.31	-0.02	0.89
		Previous	0.60	0.17	0.47	0.13	0.97	0.27	-0.15	0.90
Mathematics	07	2022	0.55	0.20	0.52	0.13	1.20	0.31	-0.09	0.74
		Previous	0.55	0.21	0.50	0.12	1.03	0.27	-0.34	0.79
Mathematics	08	2022	0.56	0.14	0.49	0.12	1.18	0.40	0.00	0.63
		Previous	0.61	0.15	0.49	0.10	1.08	0.33	-0.16	0.64
Mathematics	10	2022	0.45	0.16	0.47	0.16	1.11	0.45	0.46	0.79
		Previous	0.51	0.16	0.48	0.14	1.16	0.39	0.17	0.79

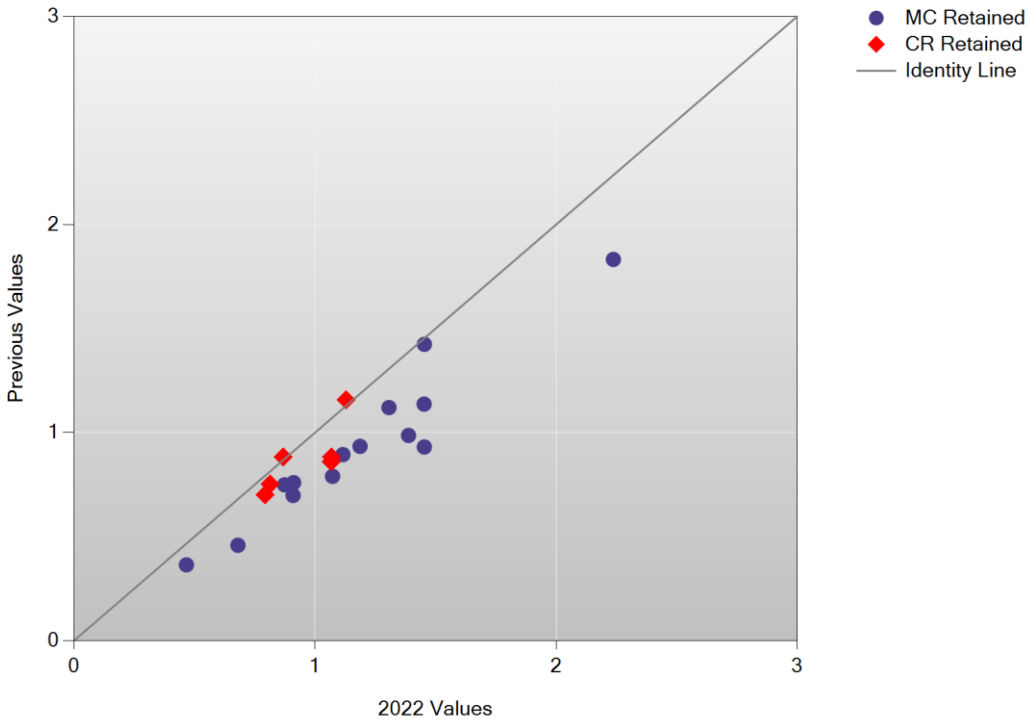
Table 1.4.1 (continued)
Equating Item Summary Statistics

Subject	Grade	Year	P-Value		Point Biserial		a		b	
			Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev
Science	05	2022	0.63	0.19	0.43	0.09	0.81	0.20	-0.41	0.96
		Previous	0.66	0.19	0.40	0.10	0.74	0.19	-0.60	1.01
Science	08	2022	0.56	0.18	0.43	0.13	0.88	0.38	-0.08	1.00
		Previous	0.59	0.17	0.41	0.13	0.81	0.33	-0.33	1.04

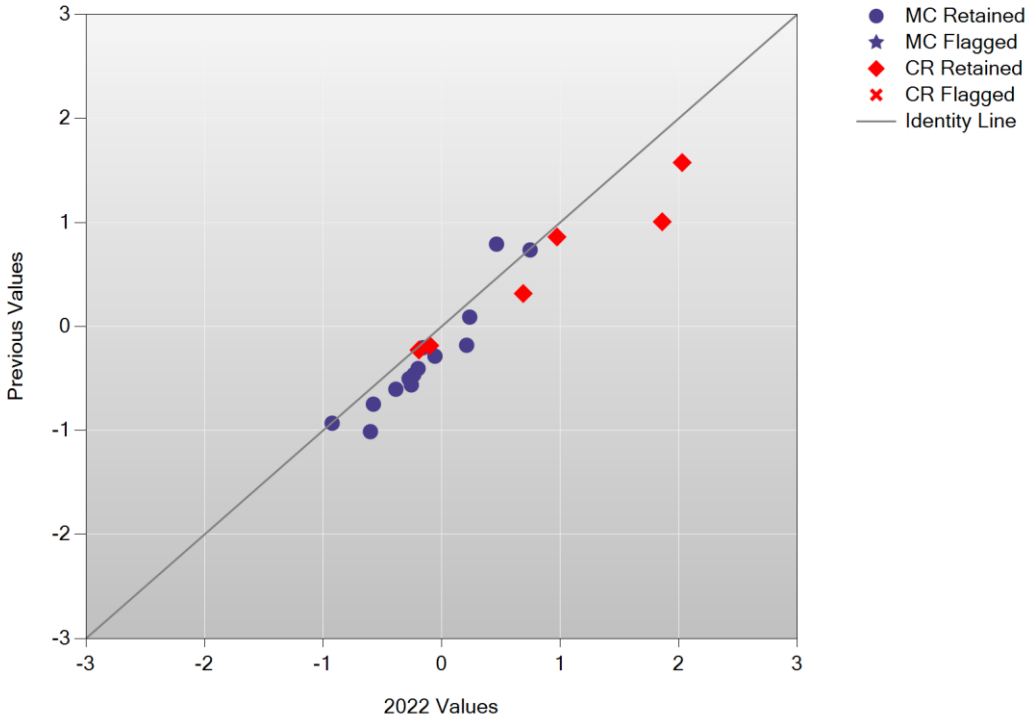
Section 2.1

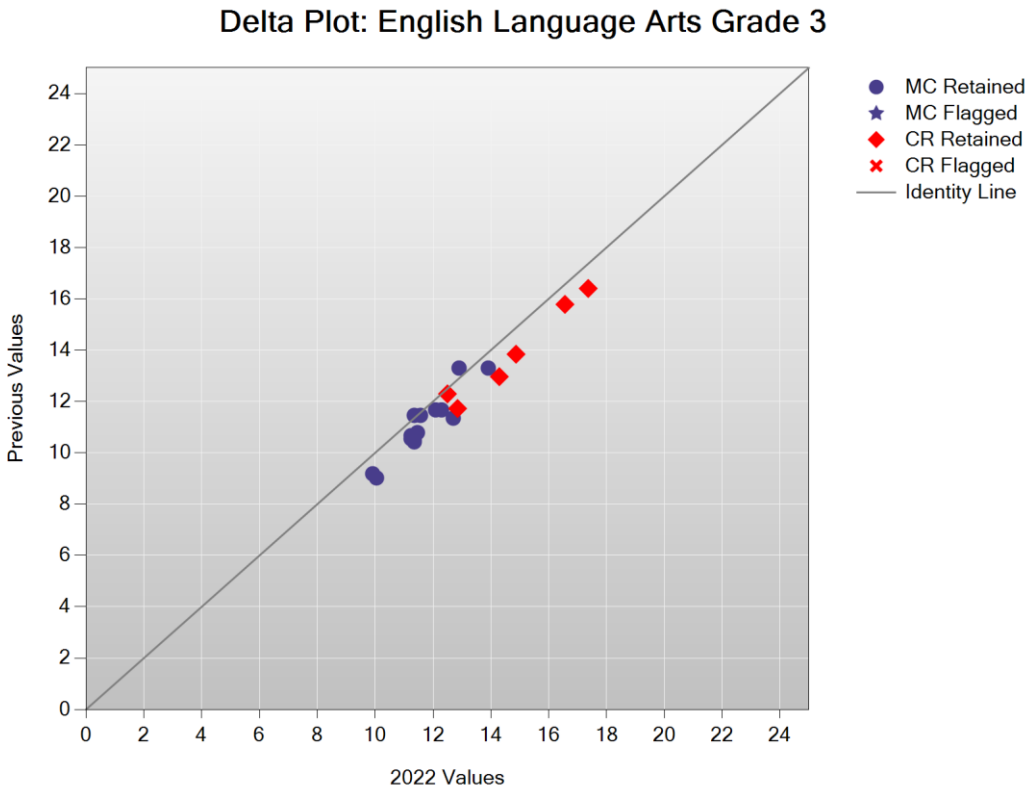
A/A, B/B, Beta, Delta, Test Characteristic Curve, Test Information Function, and Cumulative Scale Score Distribution Plots

A/A Plot: English Language Arts Grade 3



B/B Plot: English Language Arts Grade 3




Delta Plot: English Language Arts Grade 3
MC Retained
MC Flagged
CR Retained
CR Flagged
Identity Line
Previous Values
2022 Values
0
2
4
6
8
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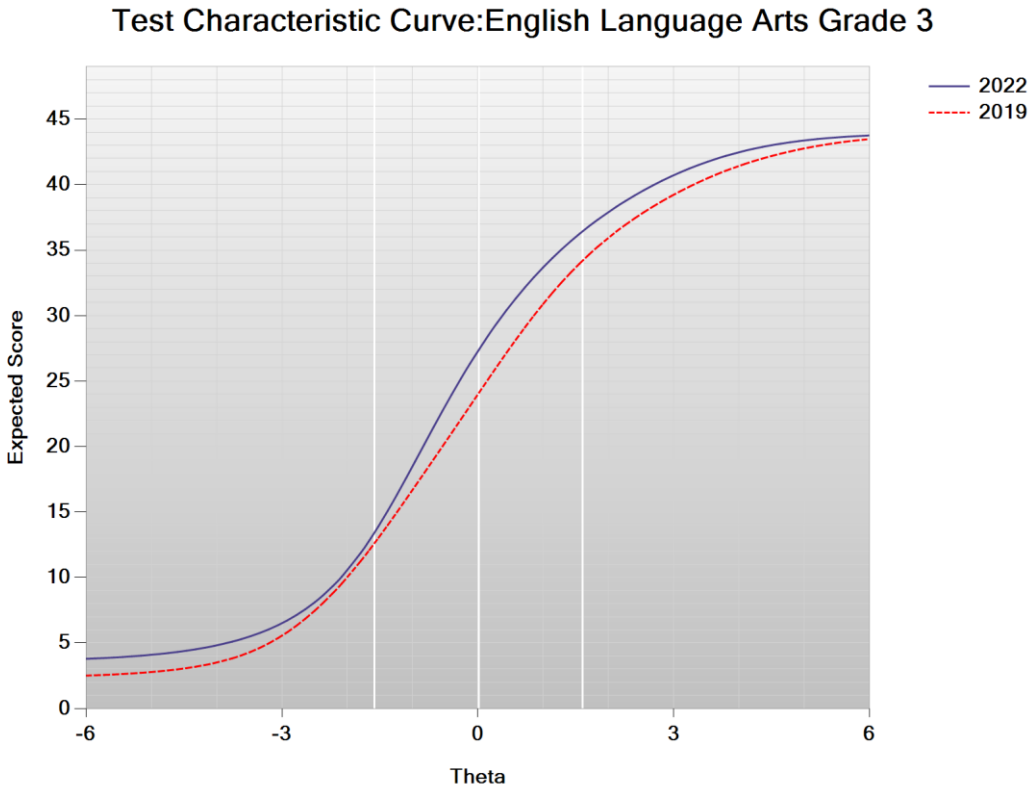
14
16
18
20
22
24


Test Characteristic Curve:English Language Arts Grade 3
2022
2019
Expected Score
Theta
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15
20
25
30
35
40
45
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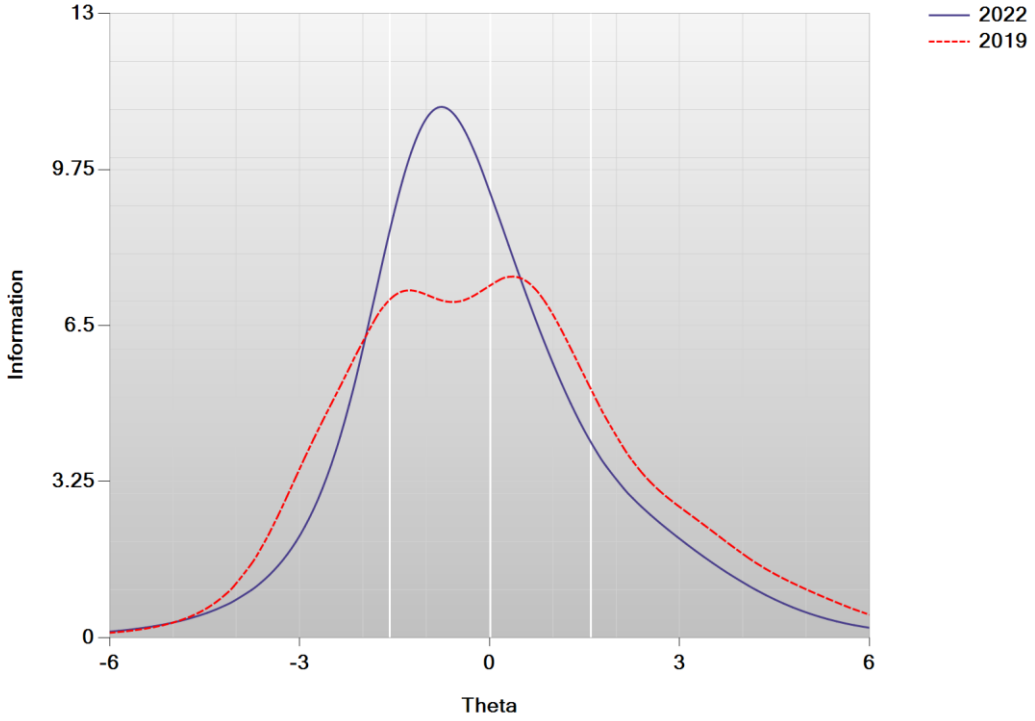
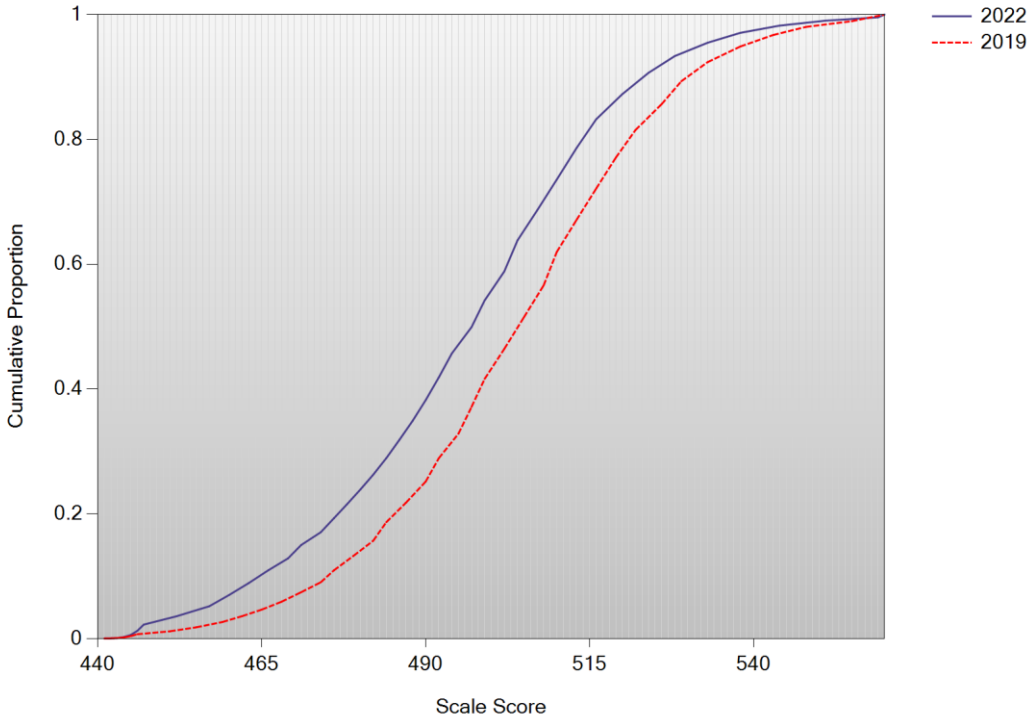
-3
0
3
6

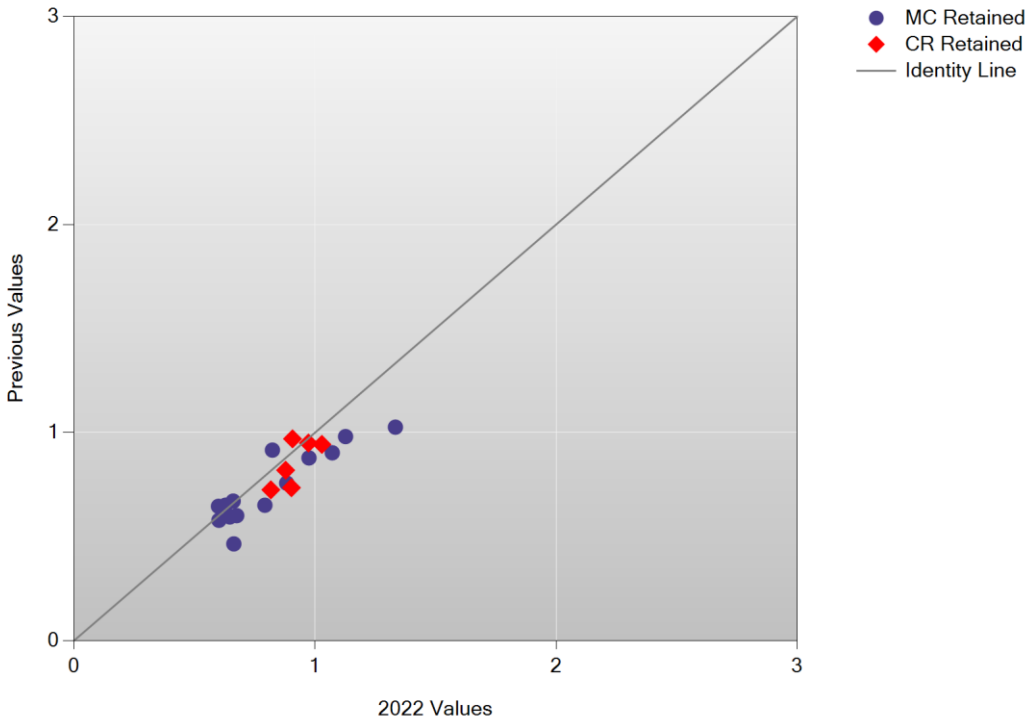
Test Information Function: English Language Arts Grade 3



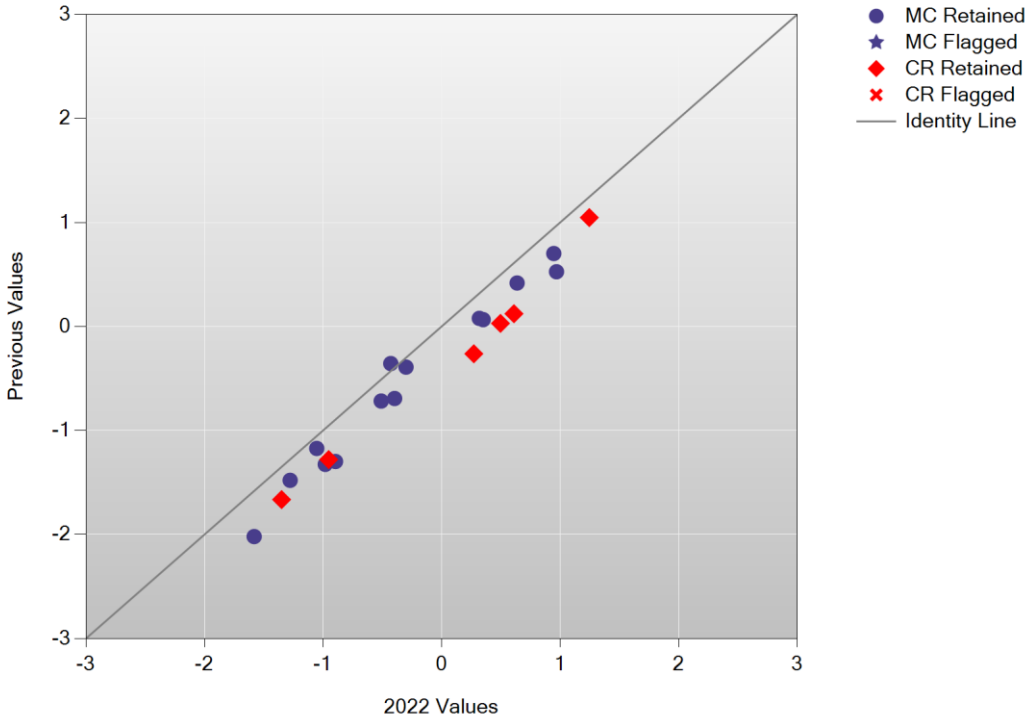
Cumulative Scale Score Distributions: English Language Arts Grade 3



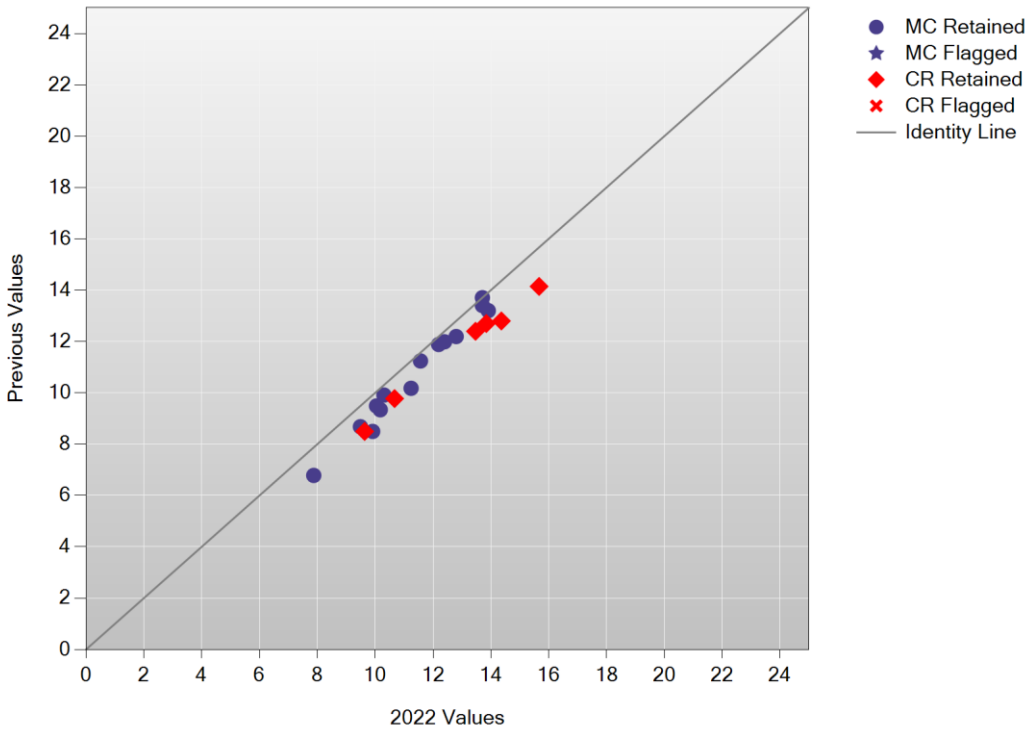
A/A Plot: English Language Arts Grade 4



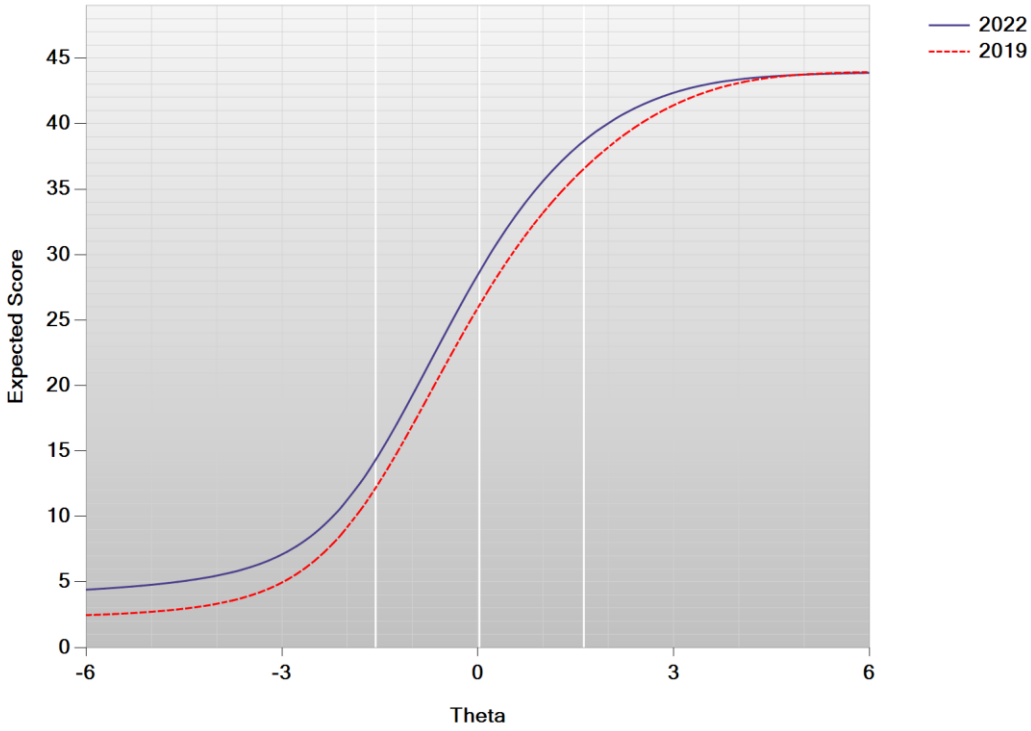
B/B Plot: English Language Arts Grade 4



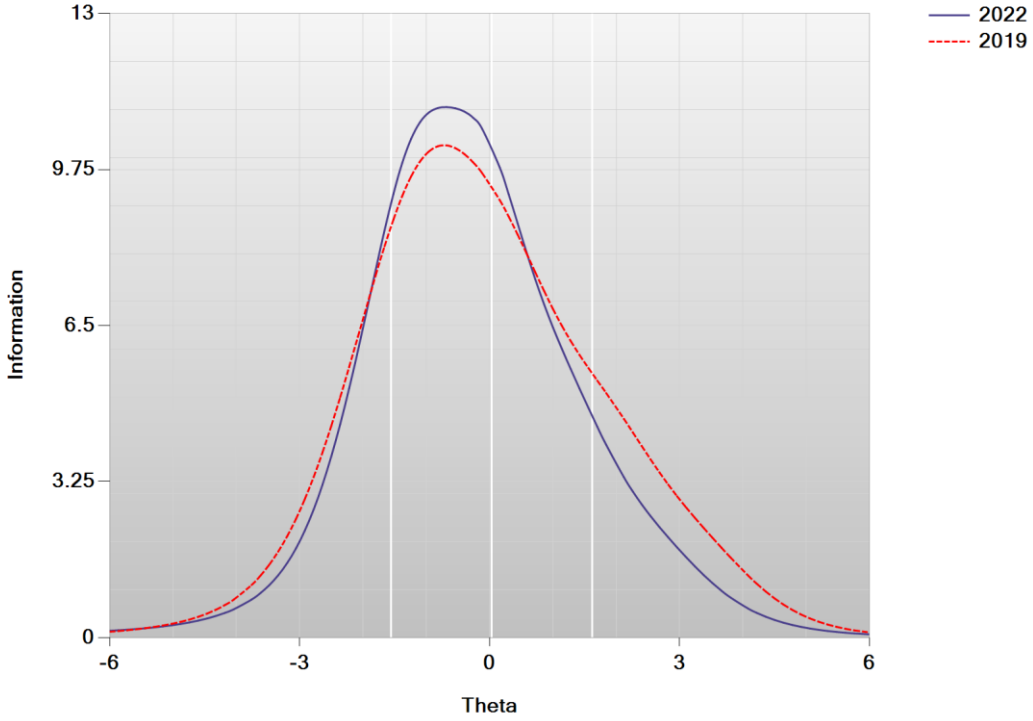
Delta Plot: English Language Arts Grade 4



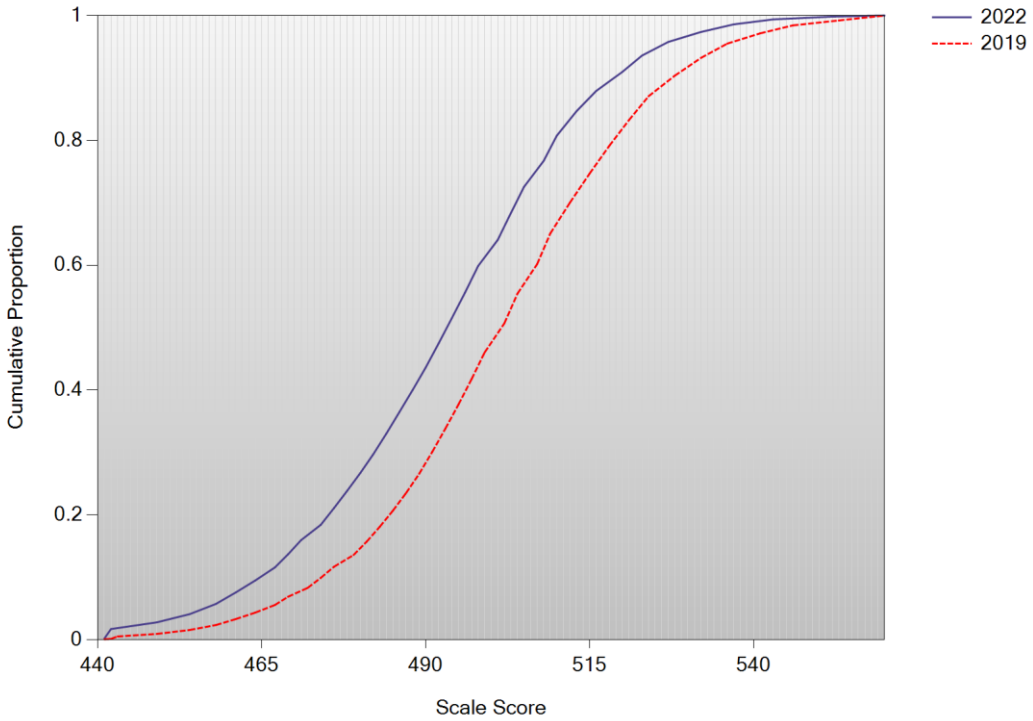
Test Characteristic Curve:English Language Arts Grade 4



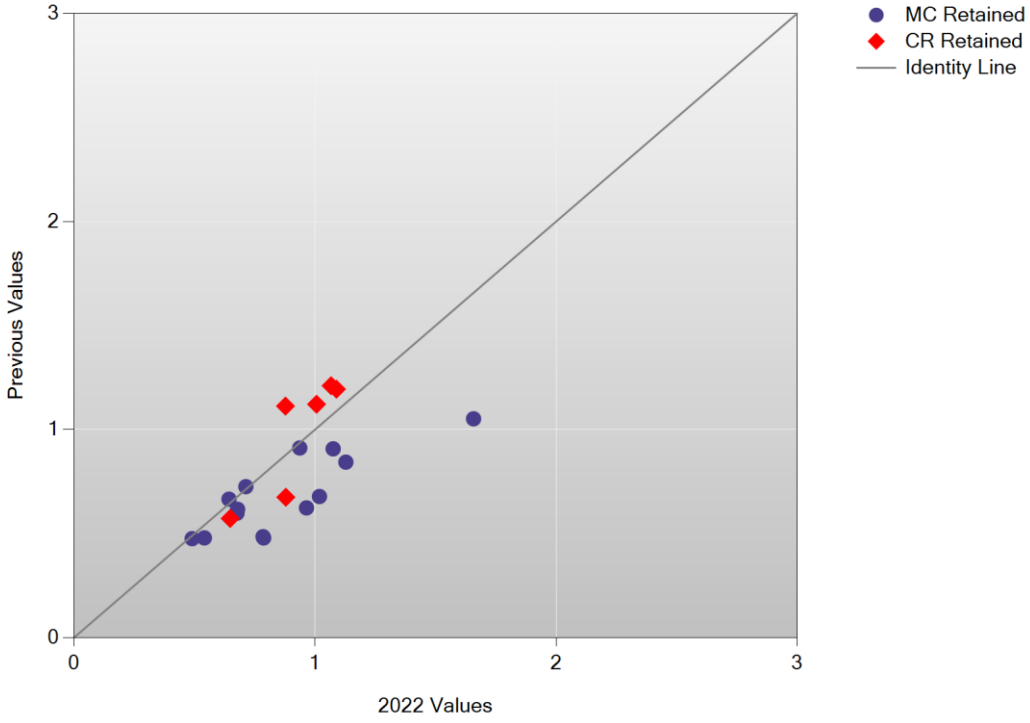
Test Information Function: English Language Arts Grade 4



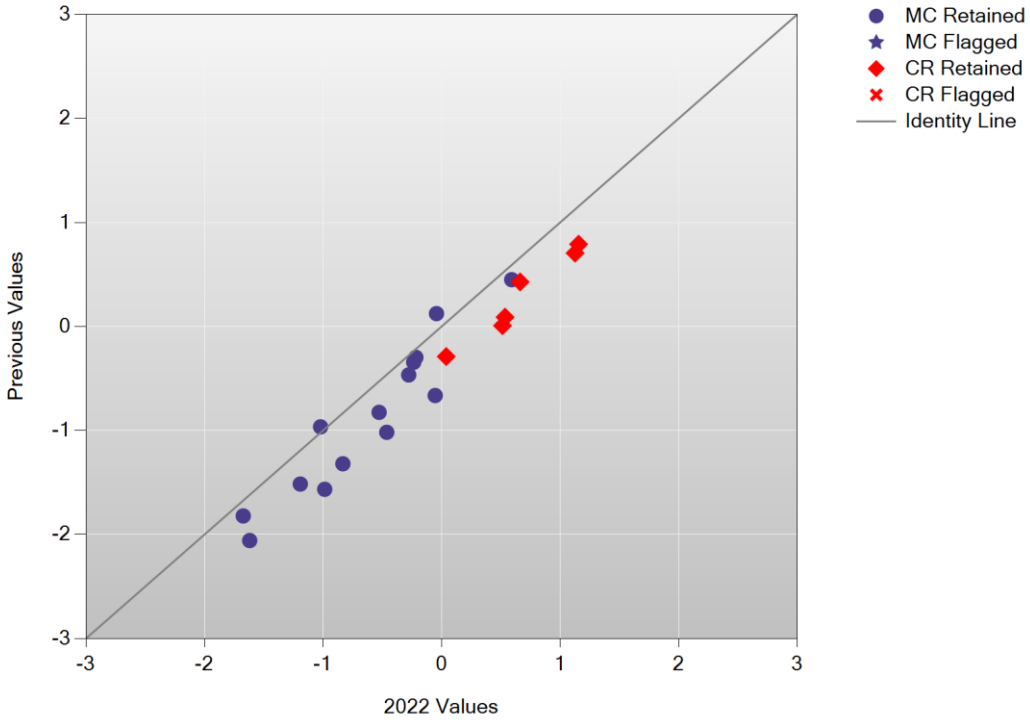
Cumulative Scale Score Distributions: English Language Arts Grade 4

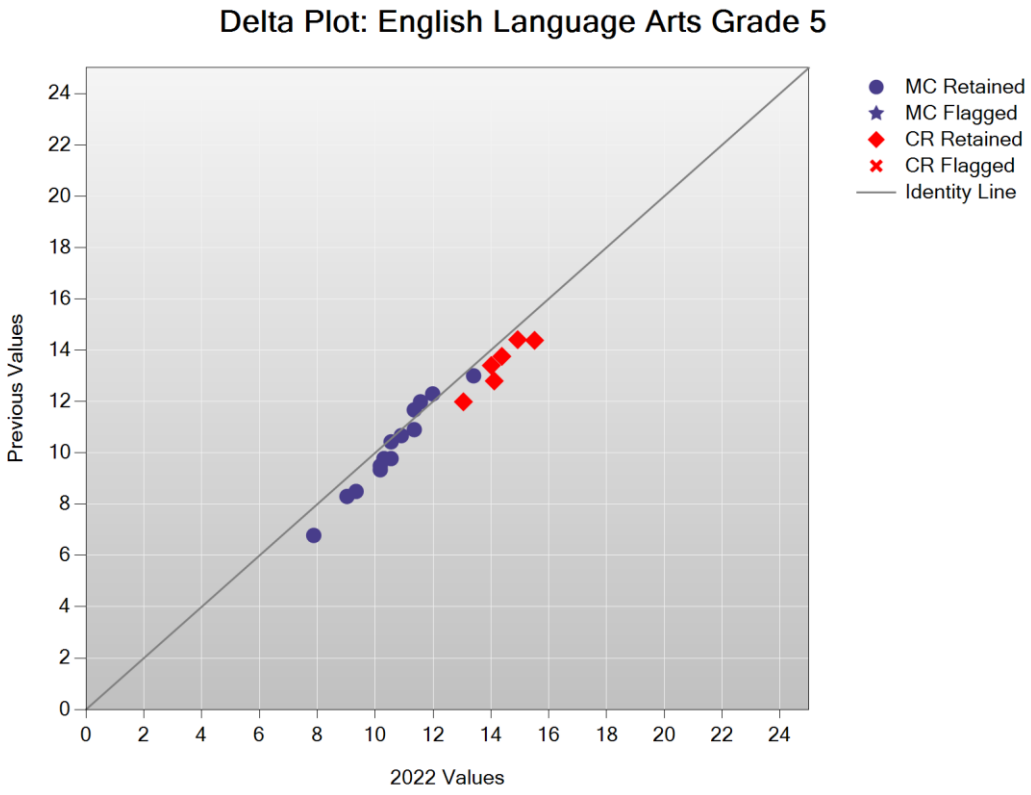


A/A Plot: English Language Arts Grade 5



B/B Plot: English Language Arts Grade 5




Delta Plot: English Language Arts Grade 5
MC Retained
MC Flagged
CR Retained
CR Flagged
Identity Line
Previous Values
2022 Values
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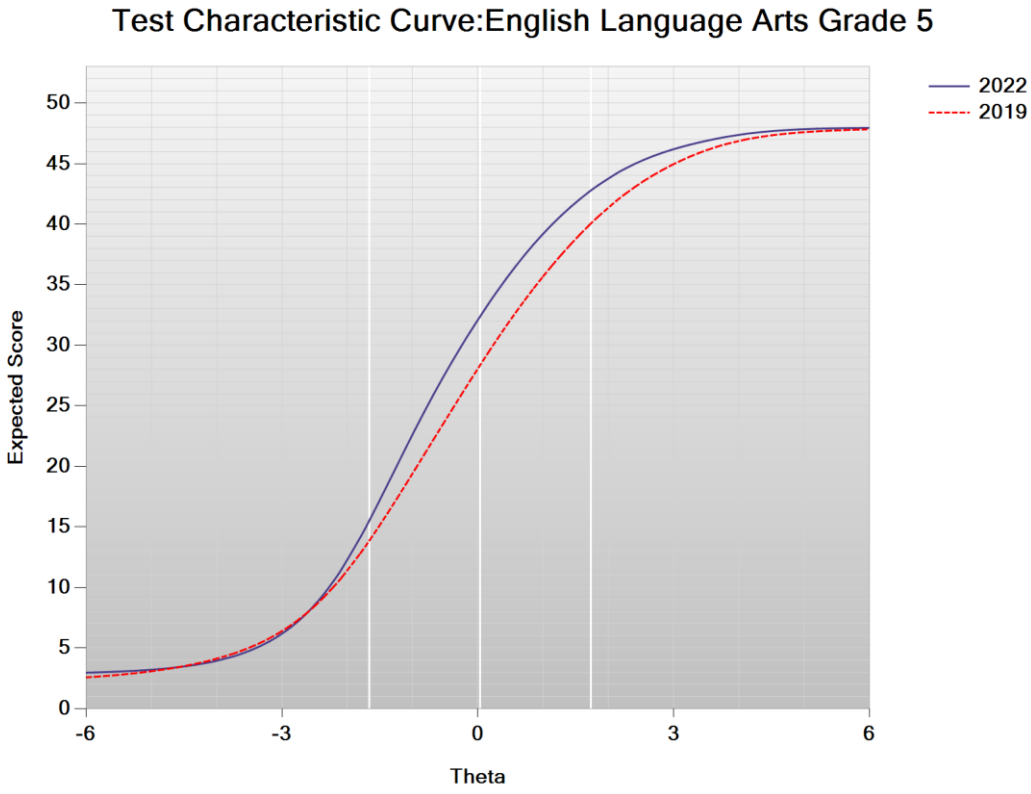
Test Characteristic Curve:English Language Arts Grade 5
2022
2019
Expected Score
Theta
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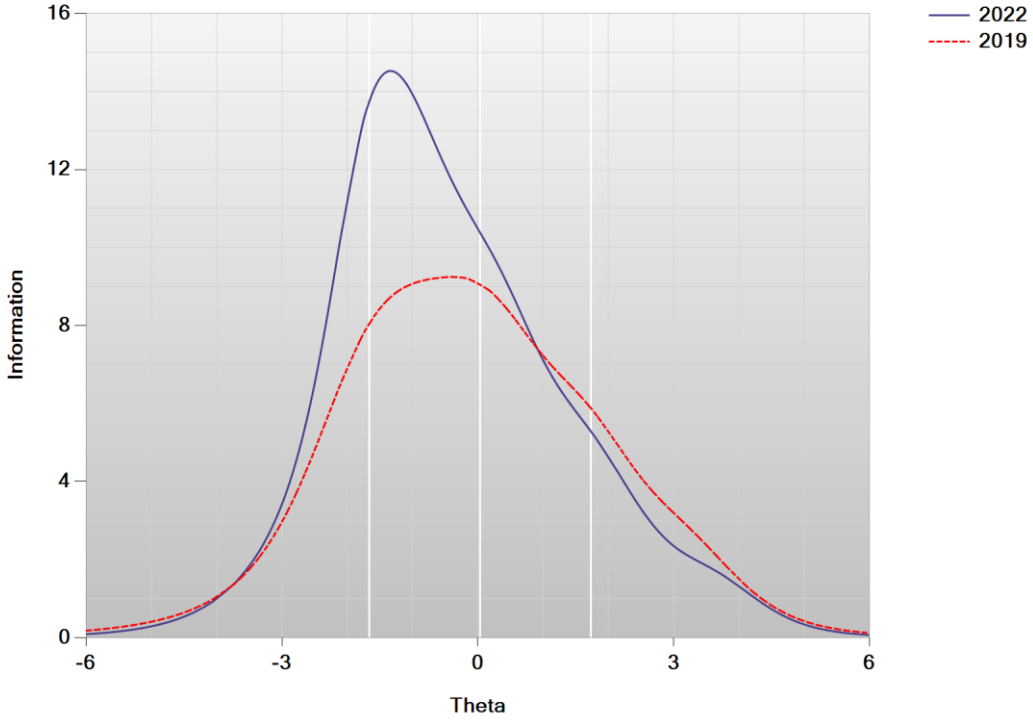
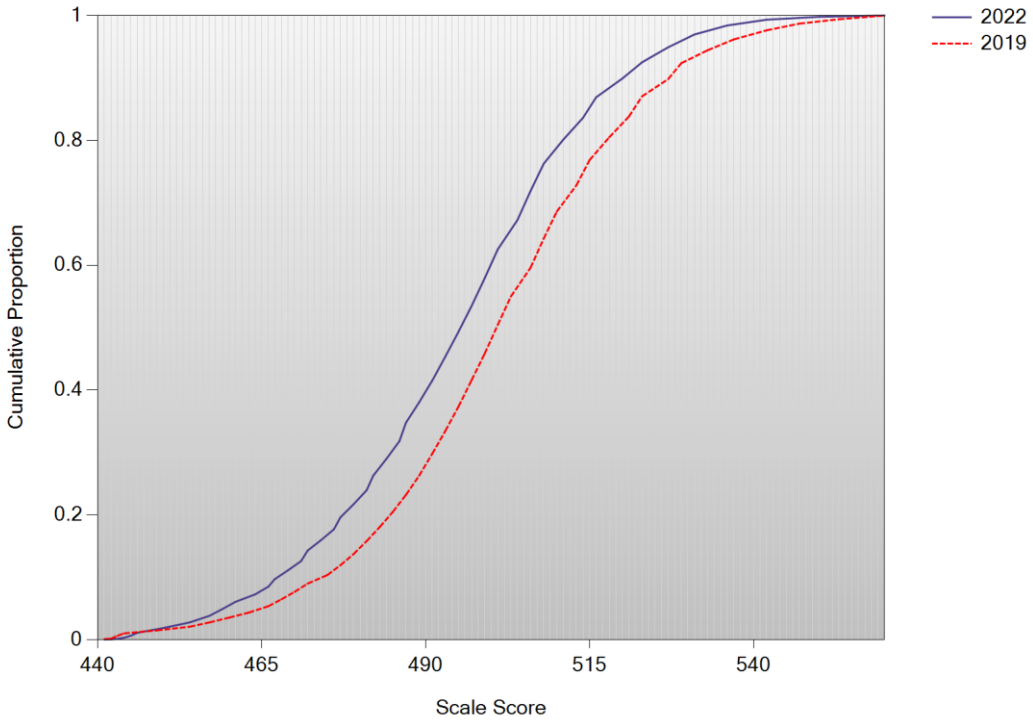
-3
0
3
6

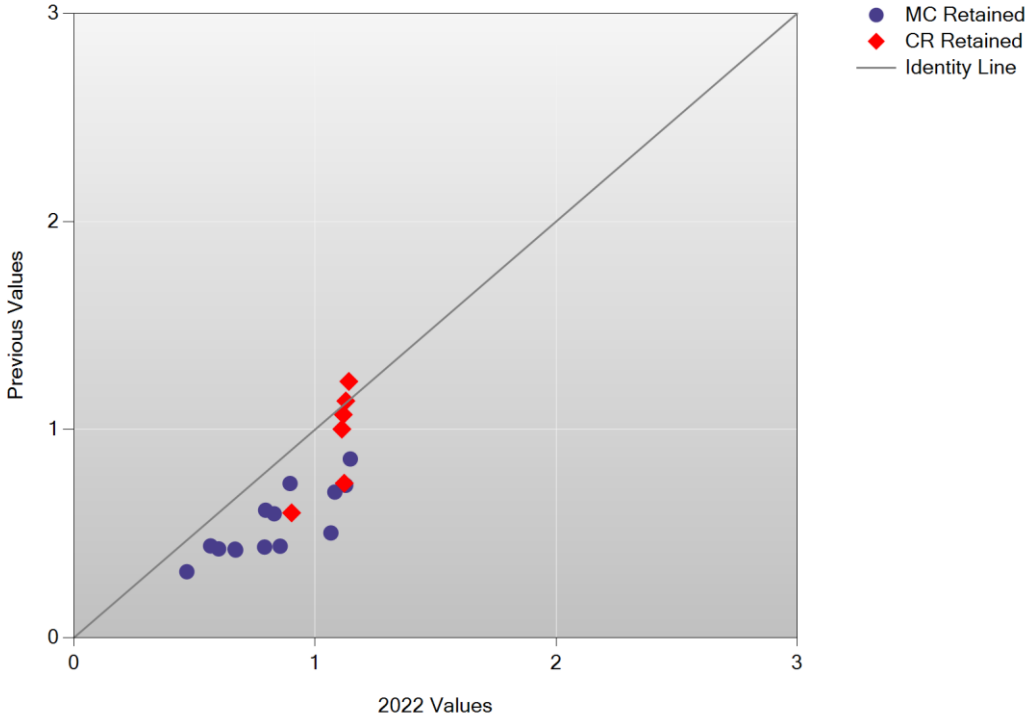
Test Information Function: English Language Arts Grade 5



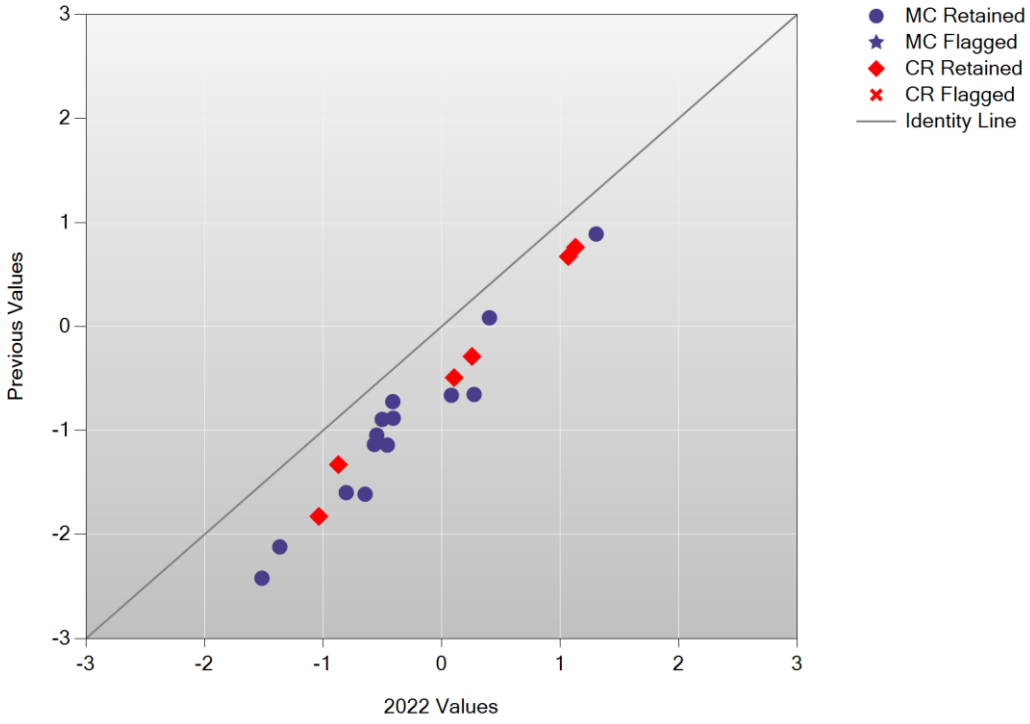
Cumulative Scale Score Distributions: English Language Arts Grade 5



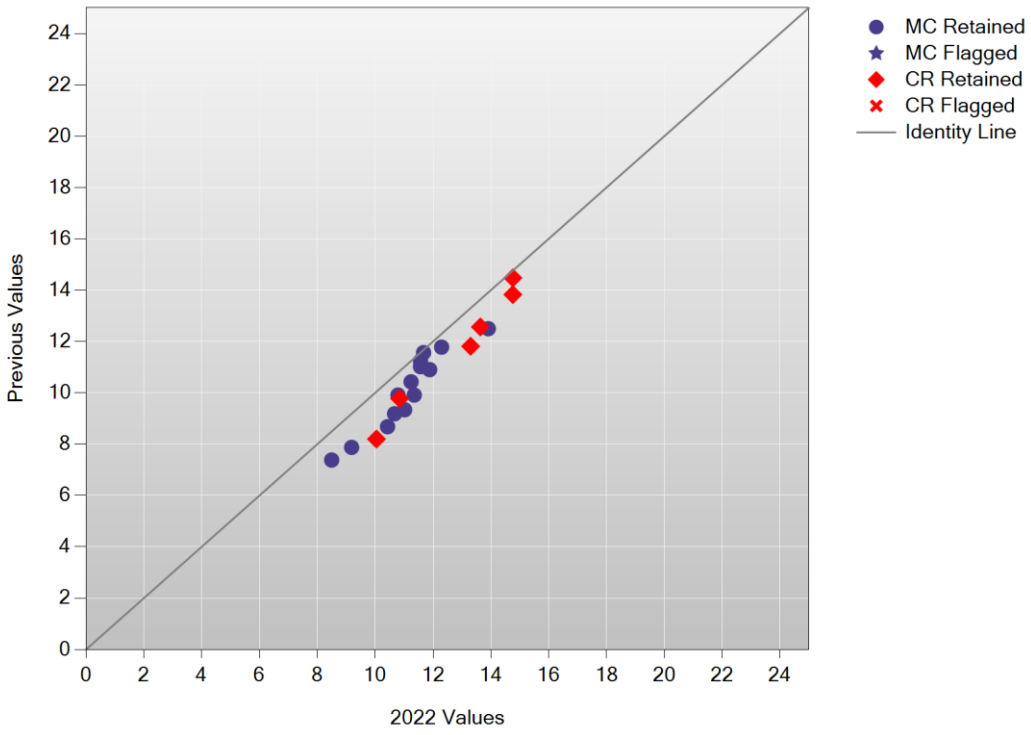
A/A Plot: English Language Arts Grade 6



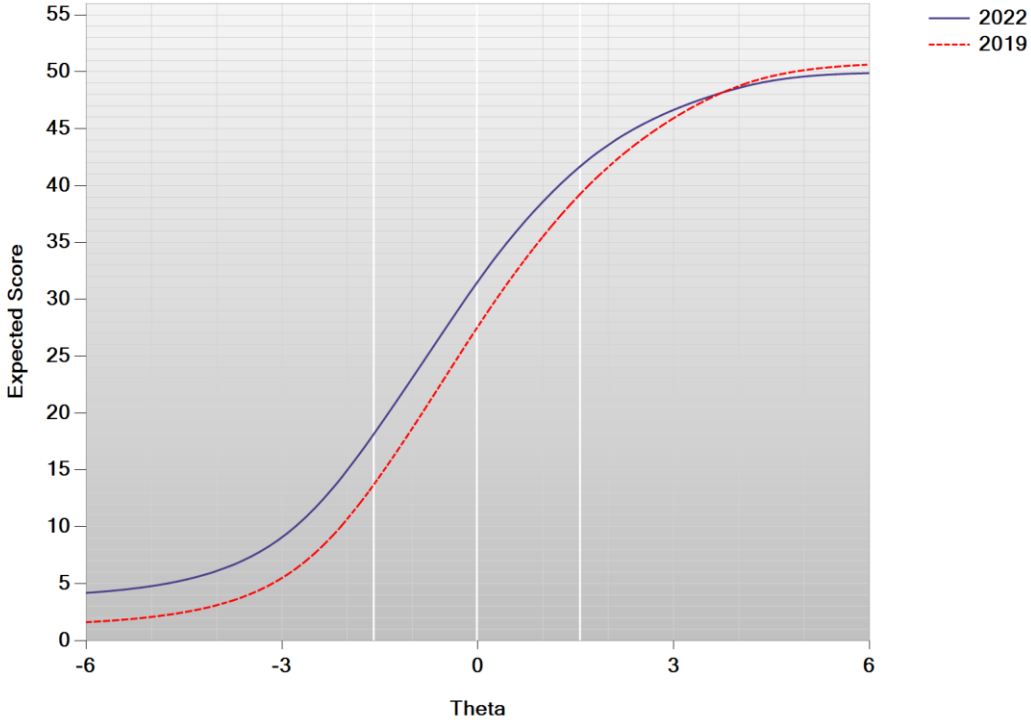
B/B Plot: English Language Arts Grade 6



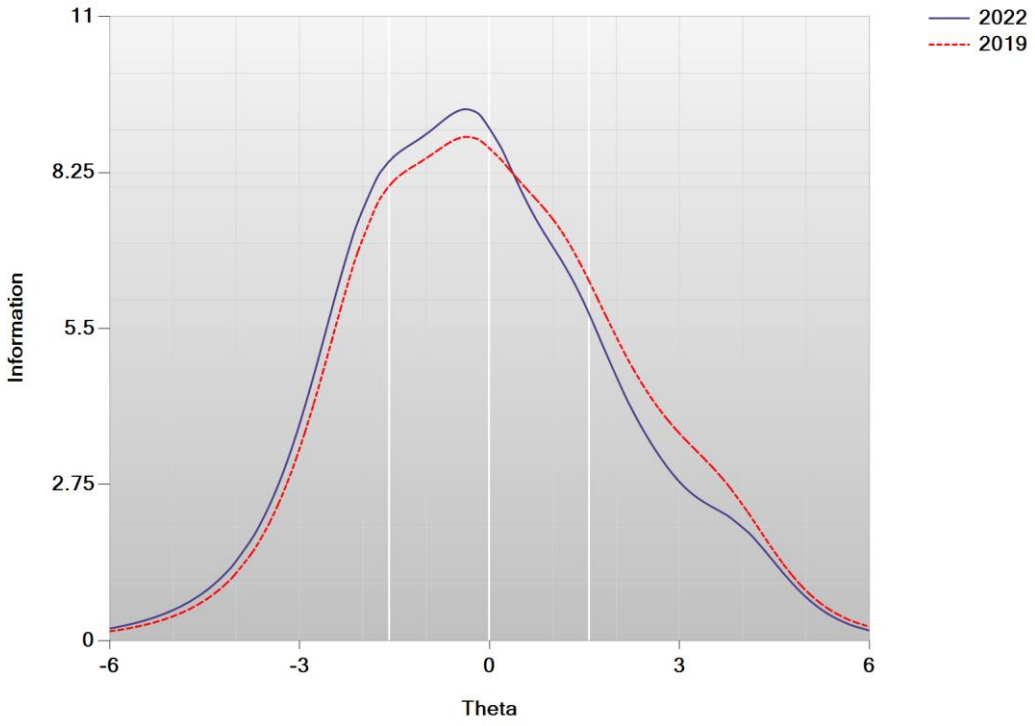
Delta Plot: English Language Arts Grade 6



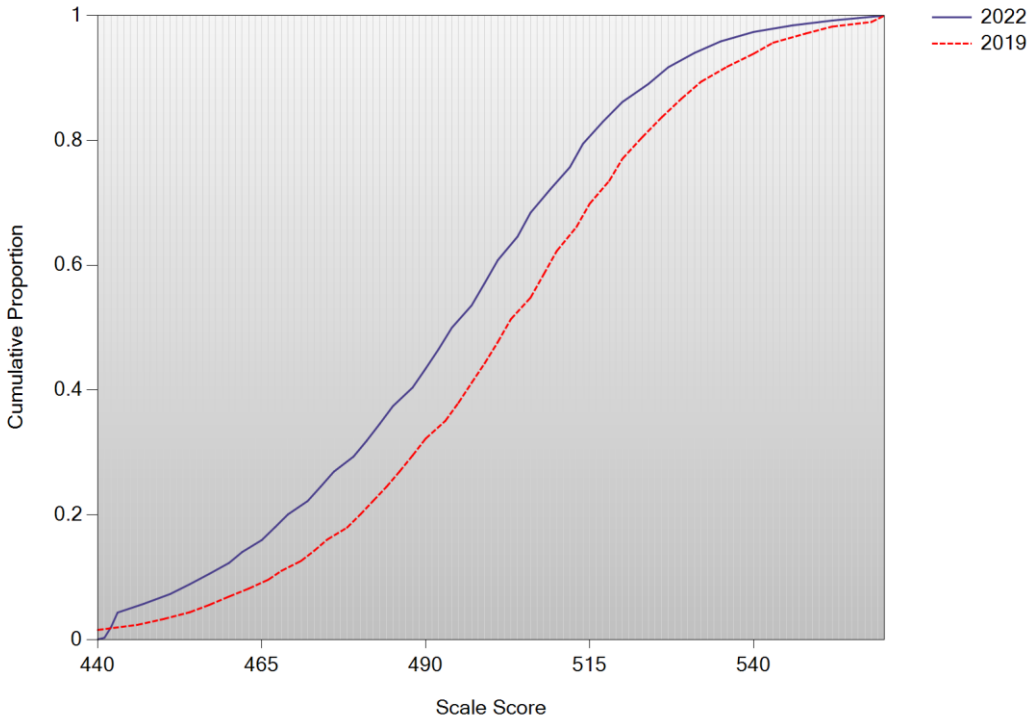
Test Characteristic Curve:English Language Arts Grade 6



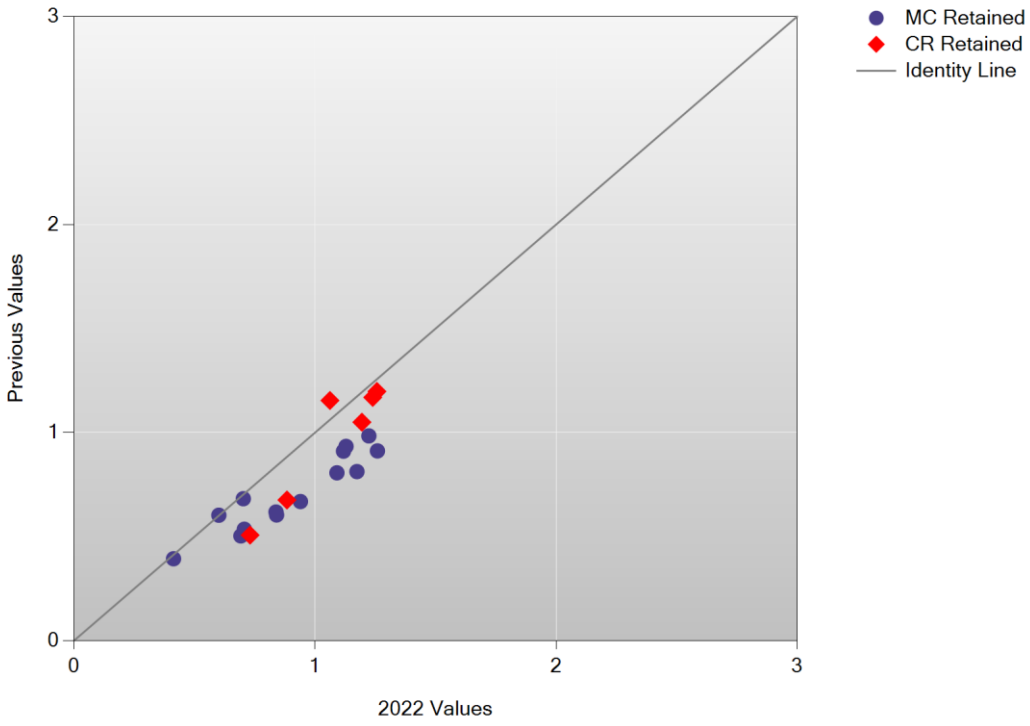
Test Information Function: English Language Arts Grade 6



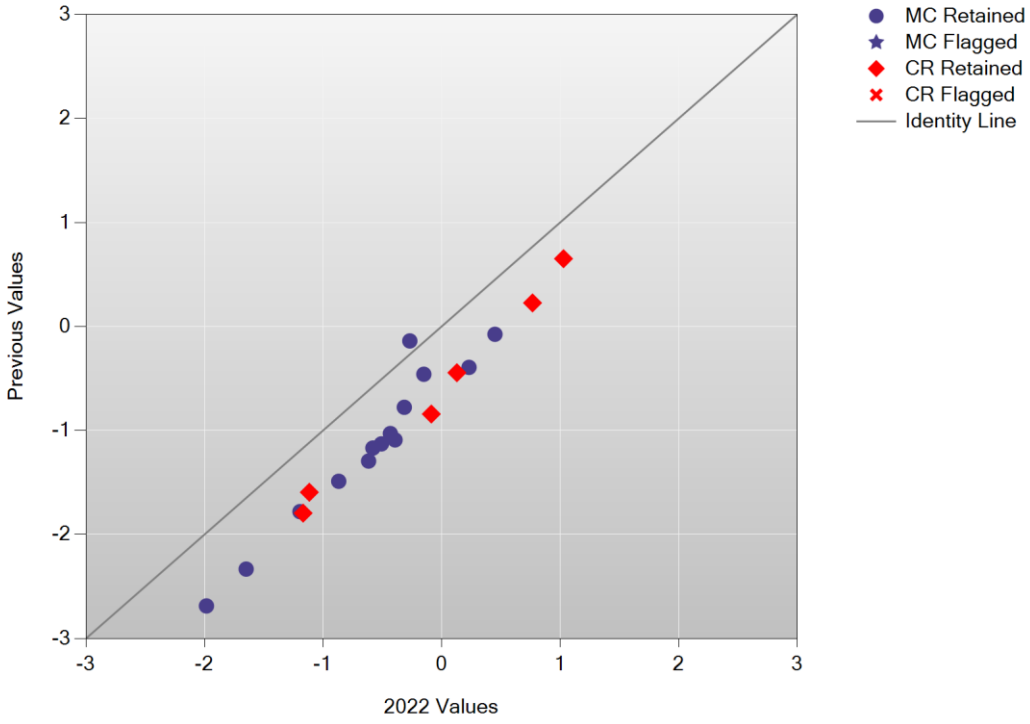
Cumulative Scale Score Distributions: English Language Arts Grade 6



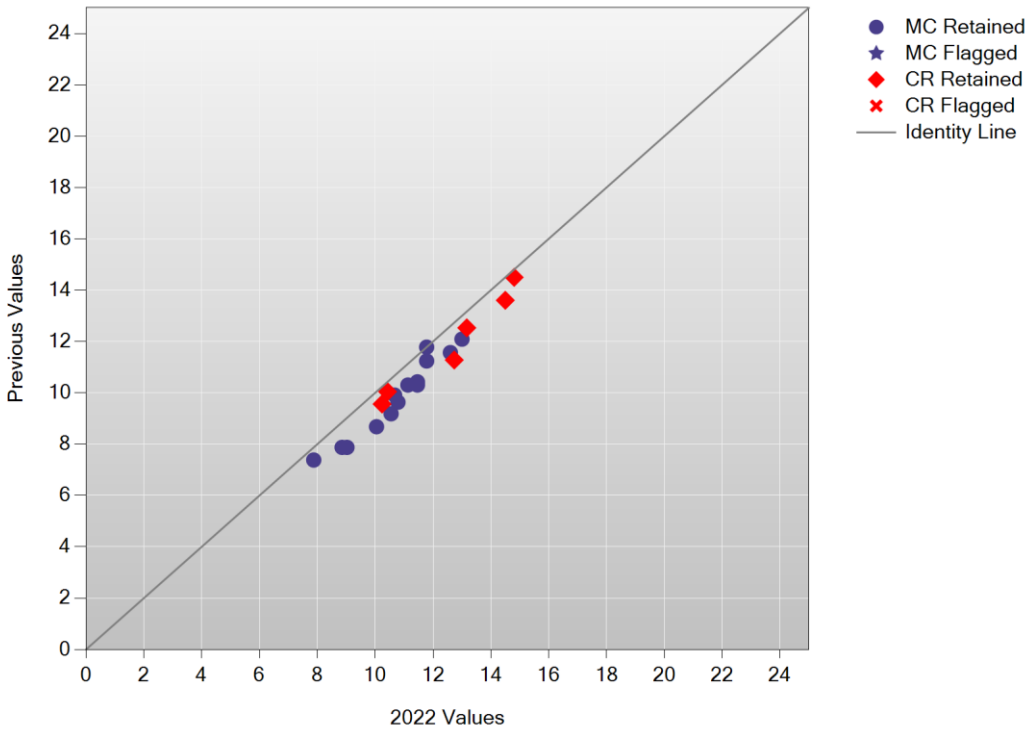
A/A Plot: English Language Arts Grade 7



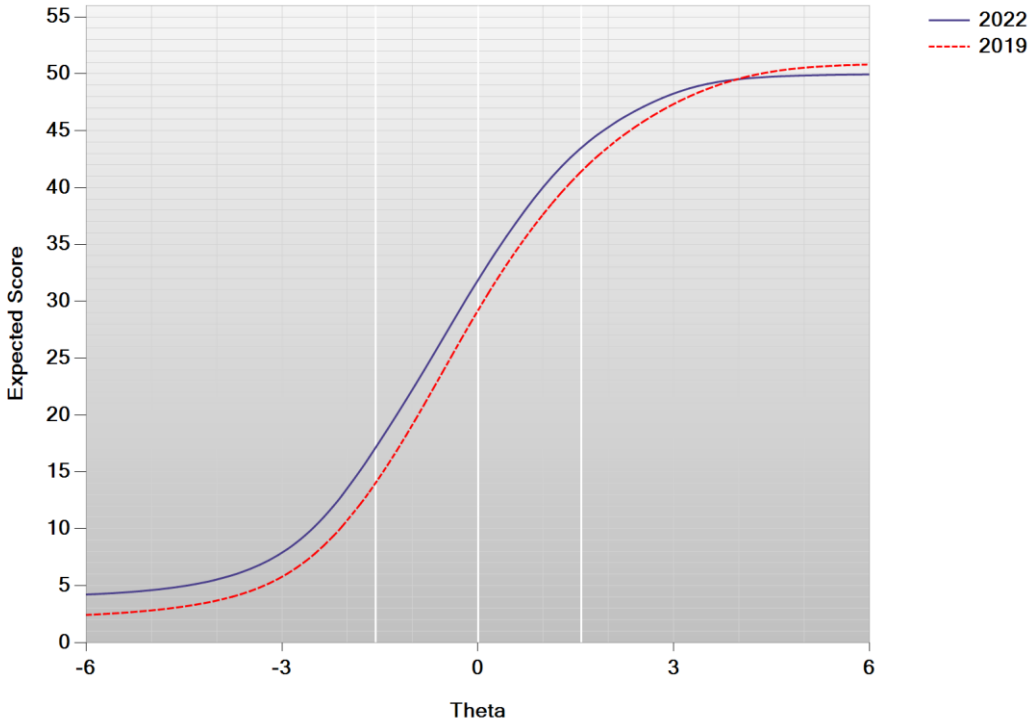
B/B Plot: English Language Arts Grade 7



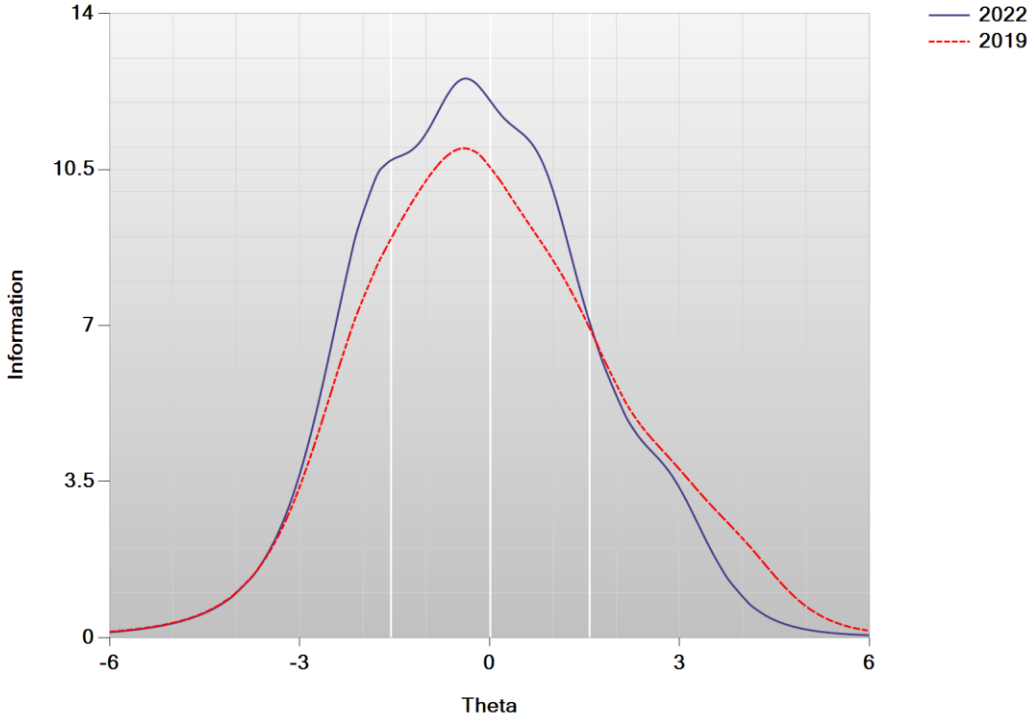
Delta Plot: English Language Arts Grade 7



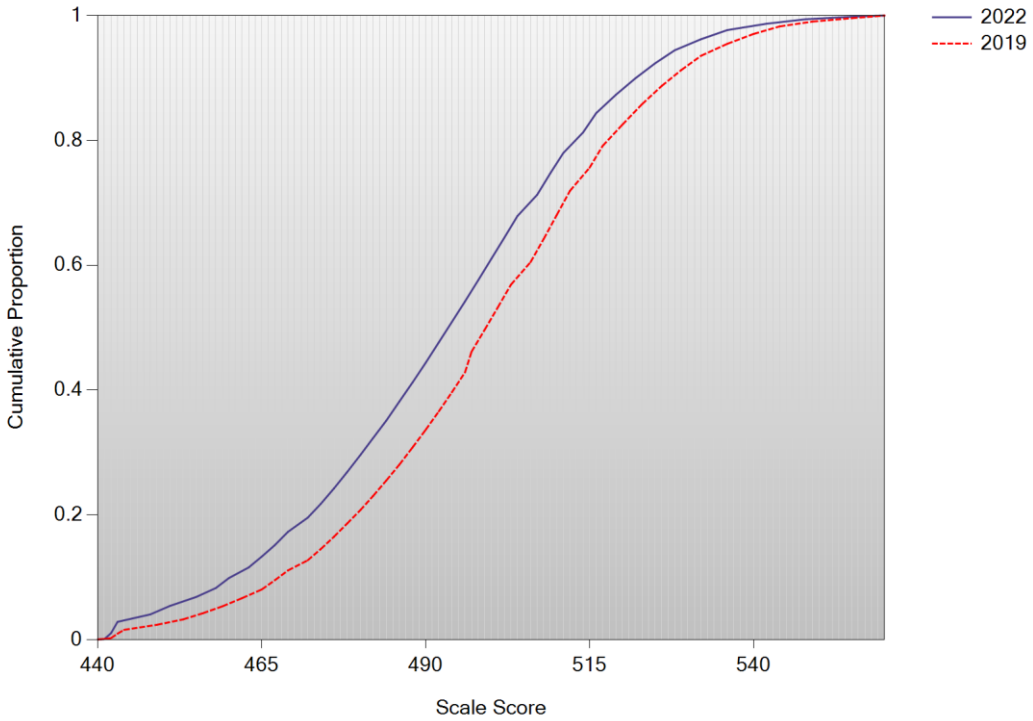
Test Characteristic Curve:English Language Arts Grade 7



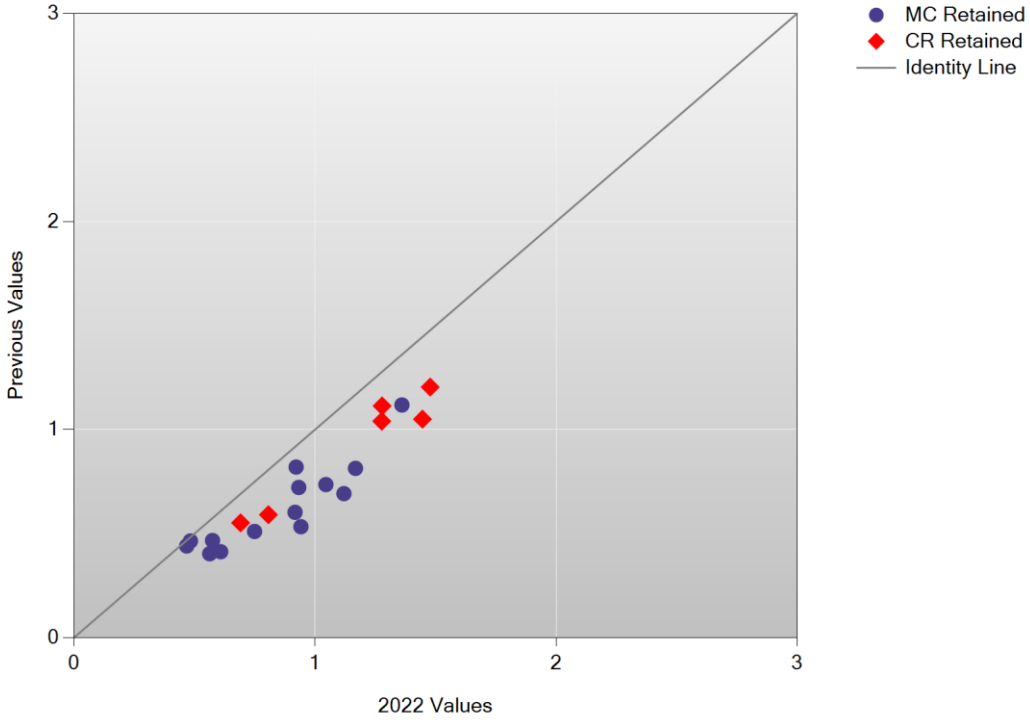
Test Information Function: English Language Arts Grade 7



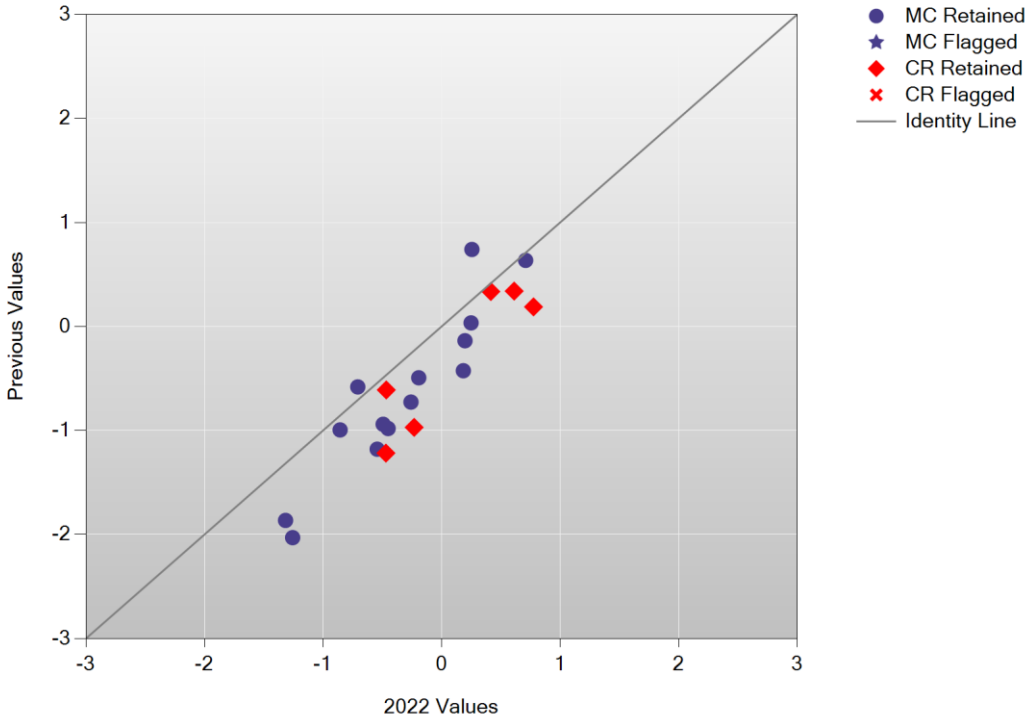
Cumulative Scale Score Distributions: English Language Arts Grade 7



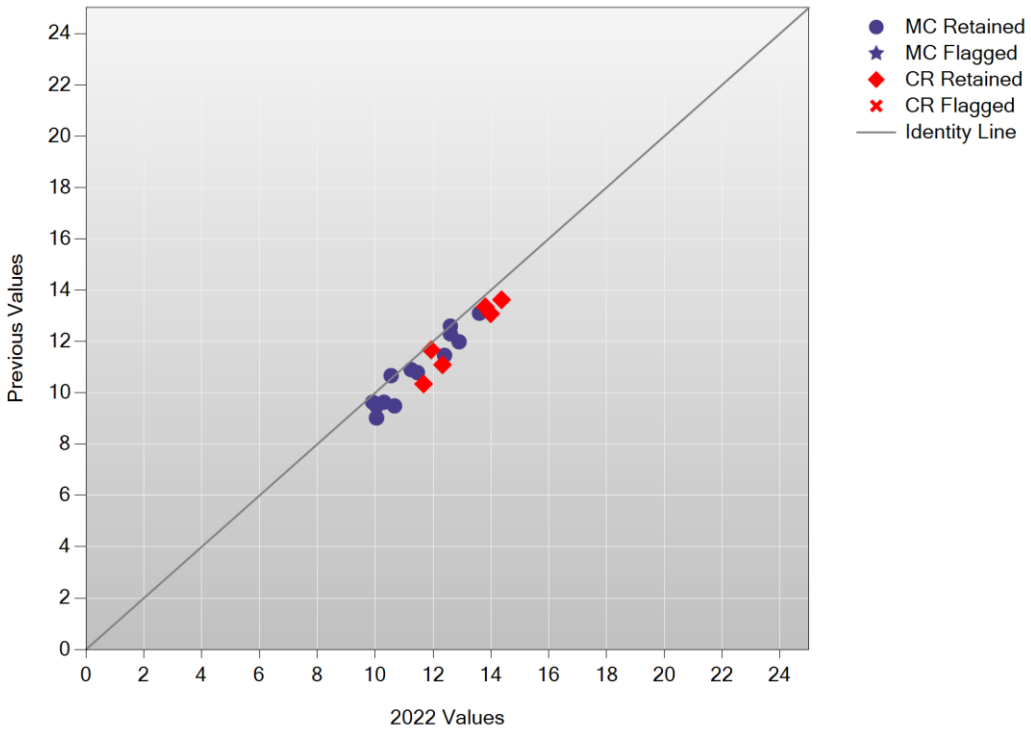
A/A Plot: English Language Arts Grade 8



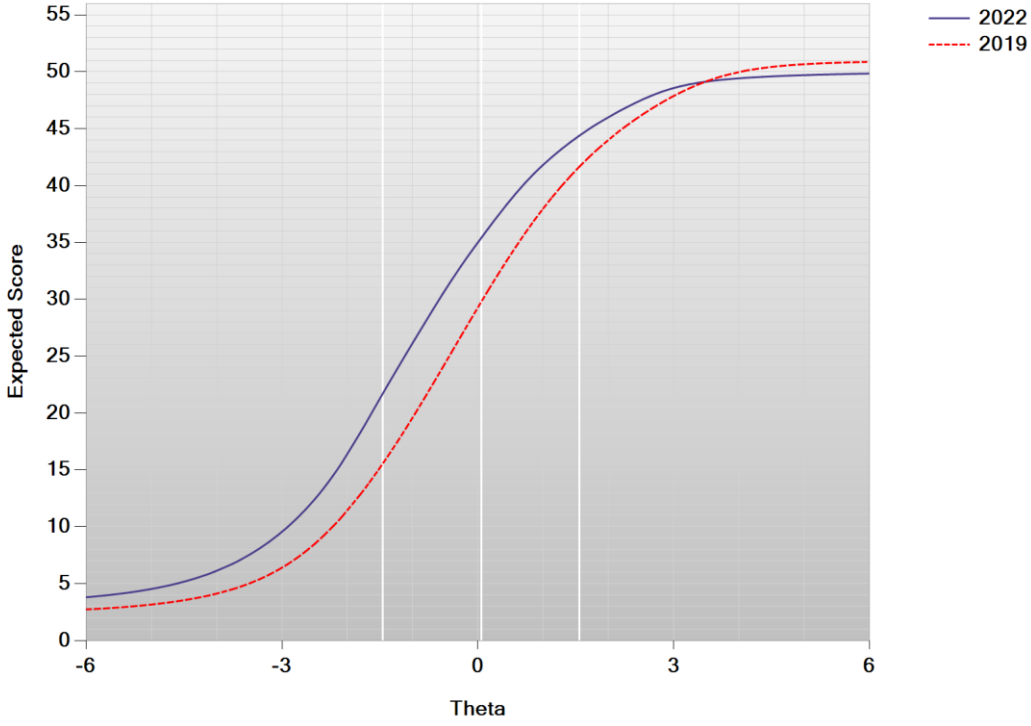
B/B Plot: English Language Arts Grade 8



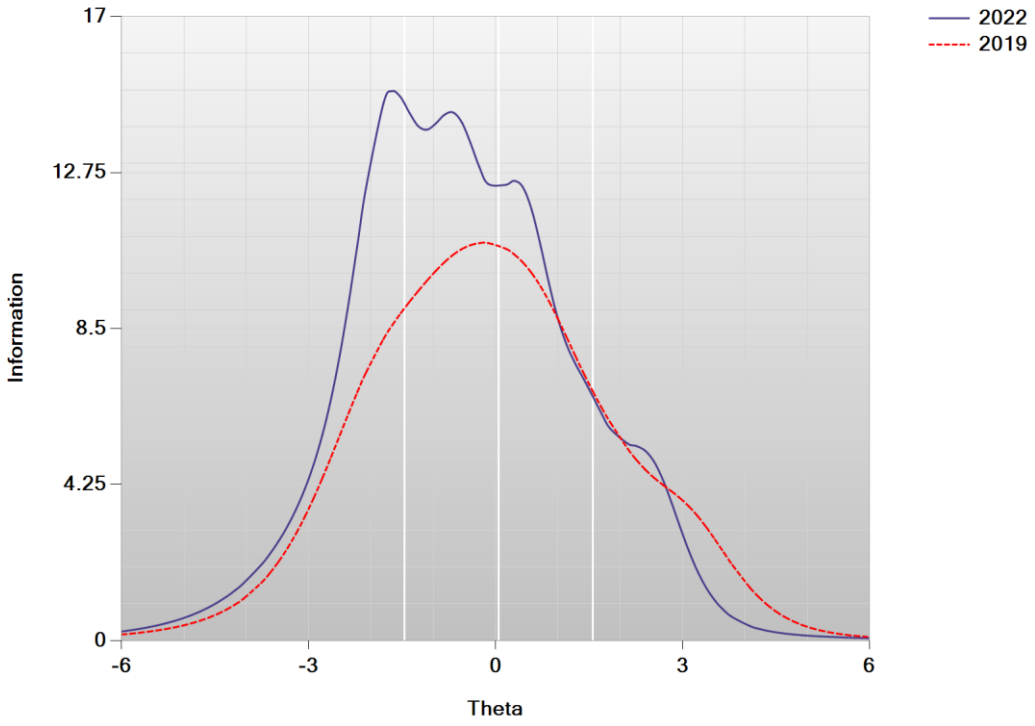
Delta Plot: English Language Arts Grade 8



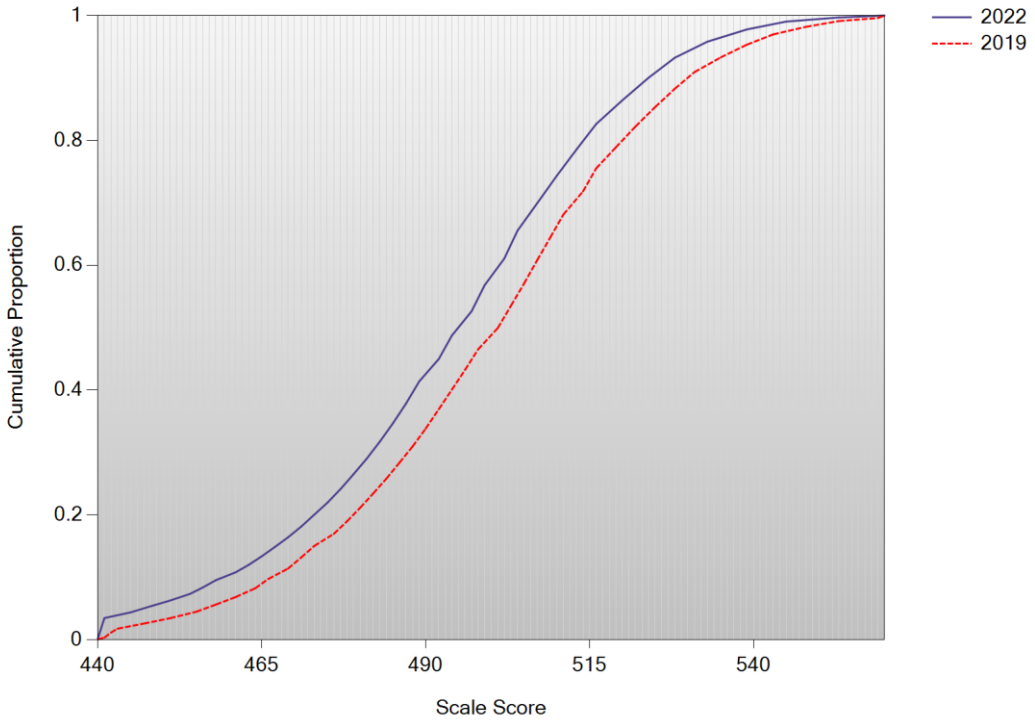
Test Characteristic Curve:English Language Arts Grade 8



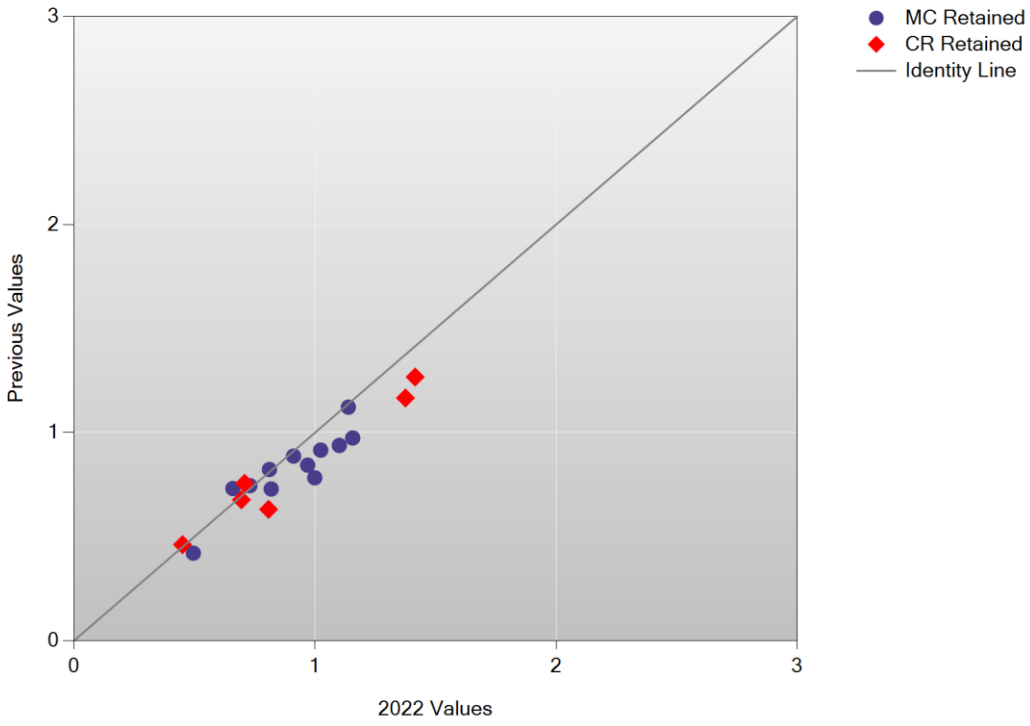
Test Information Function: English Language Arts Grade 8



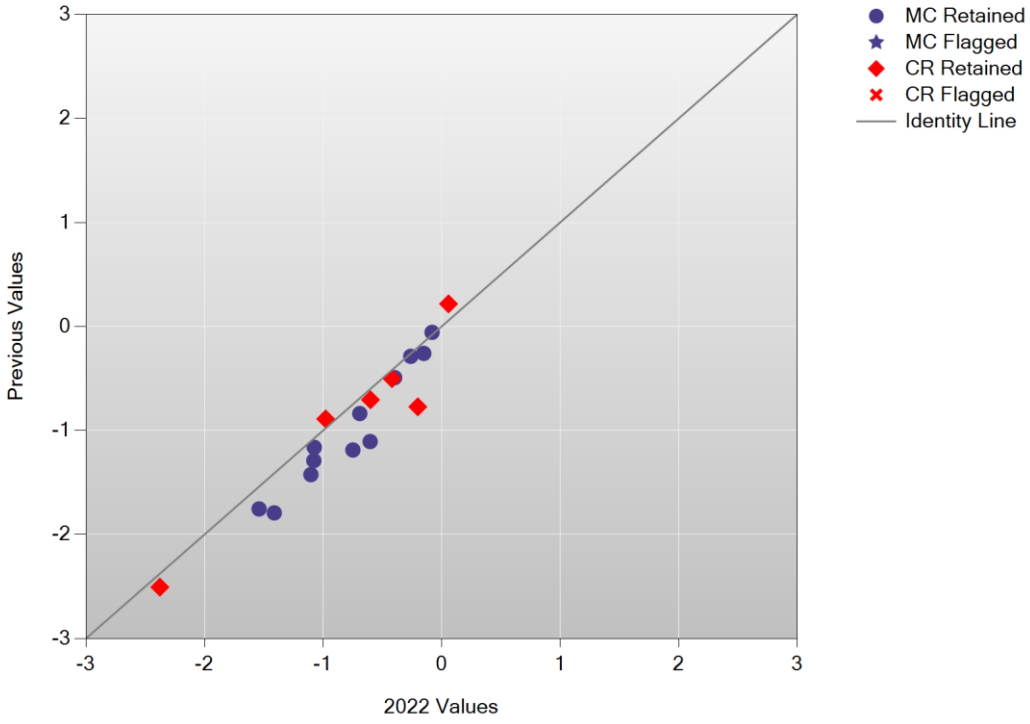
Cumulative Scale Score Distributions: English Language Arts Grade 8

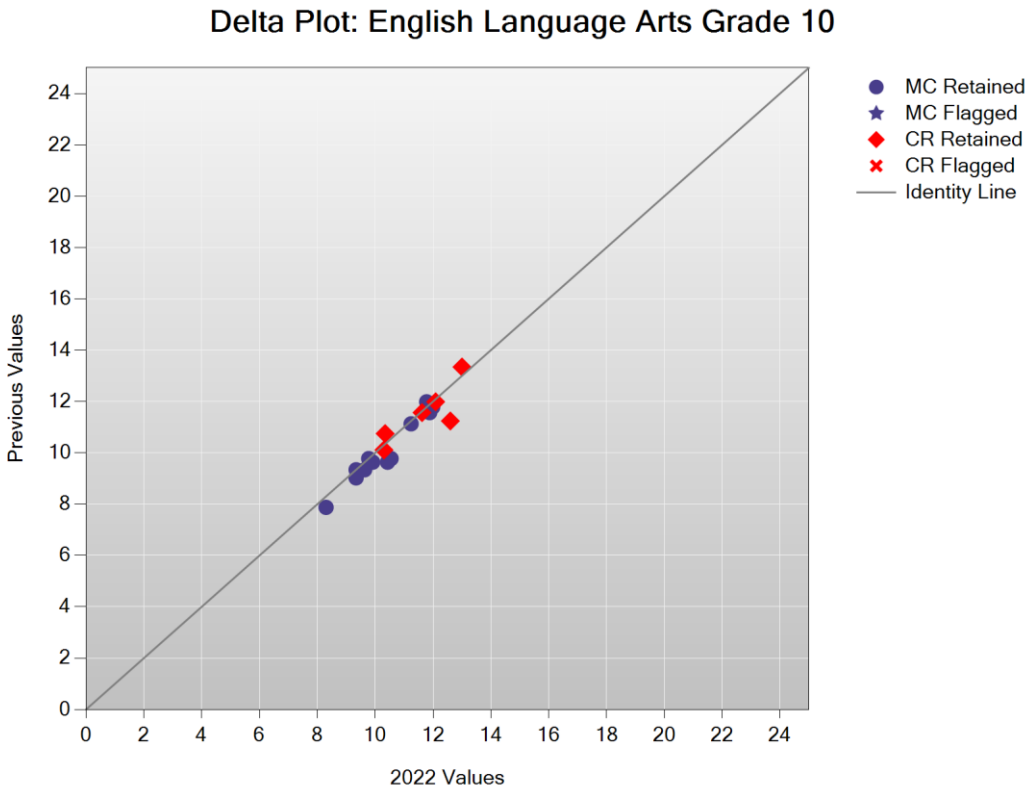


A/A Plot: English Language Arts Grade 10



B/B Plot: English Language Arts Grade 10




Delta Plot: English Language Arts Grade 10
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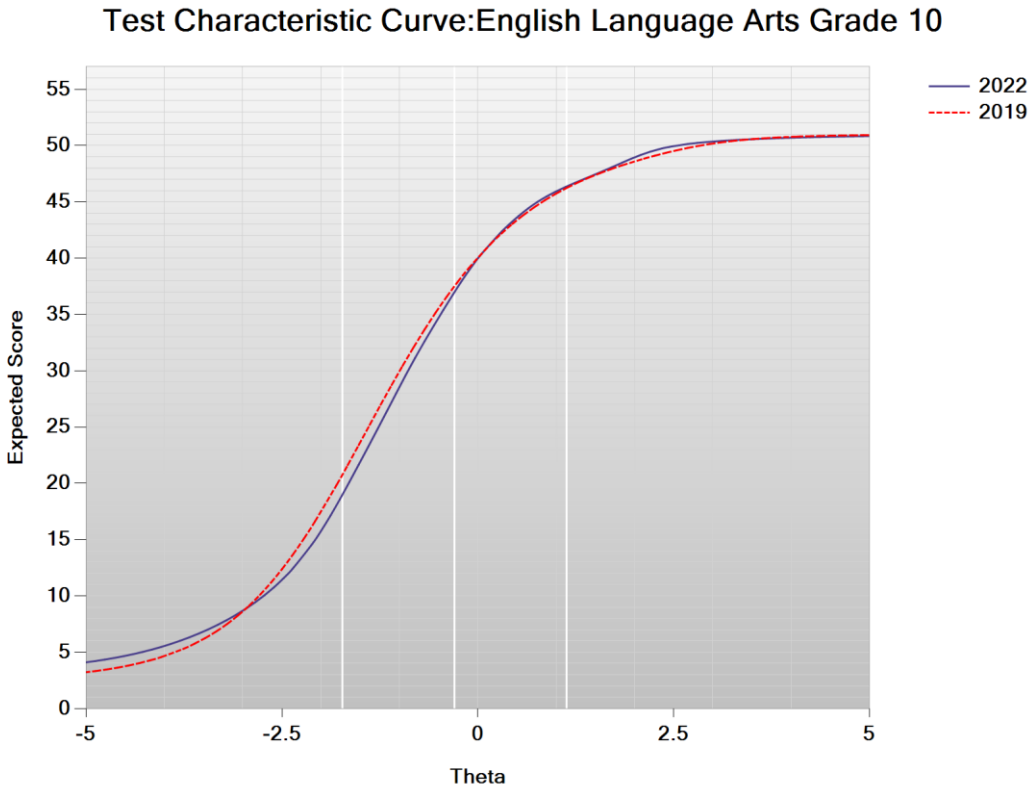
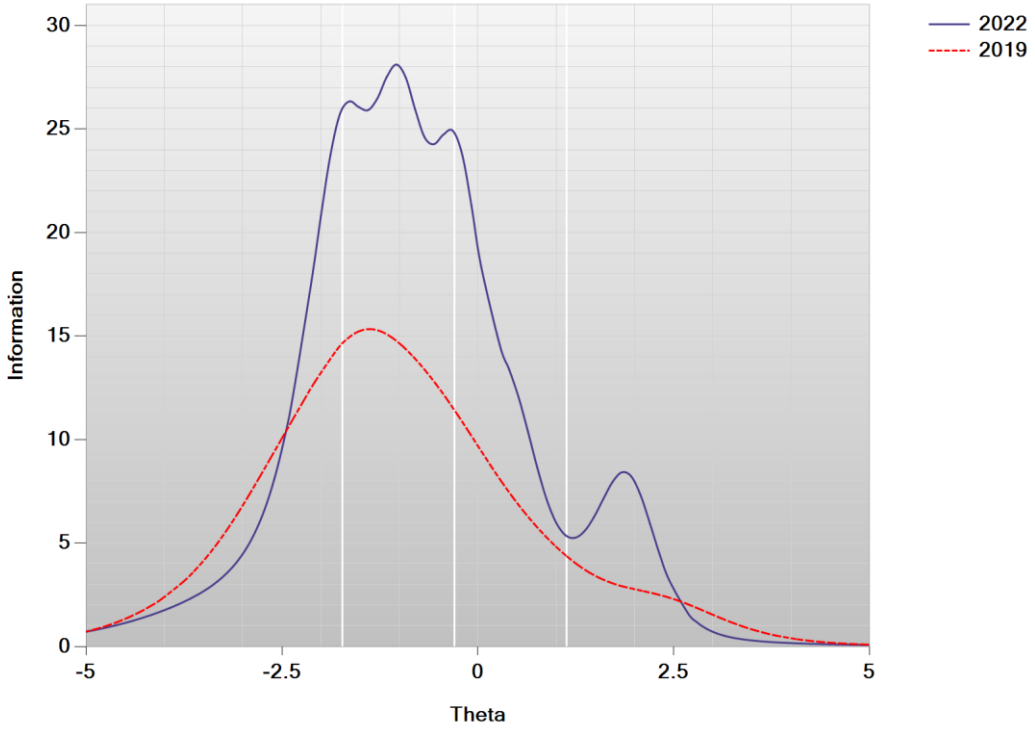
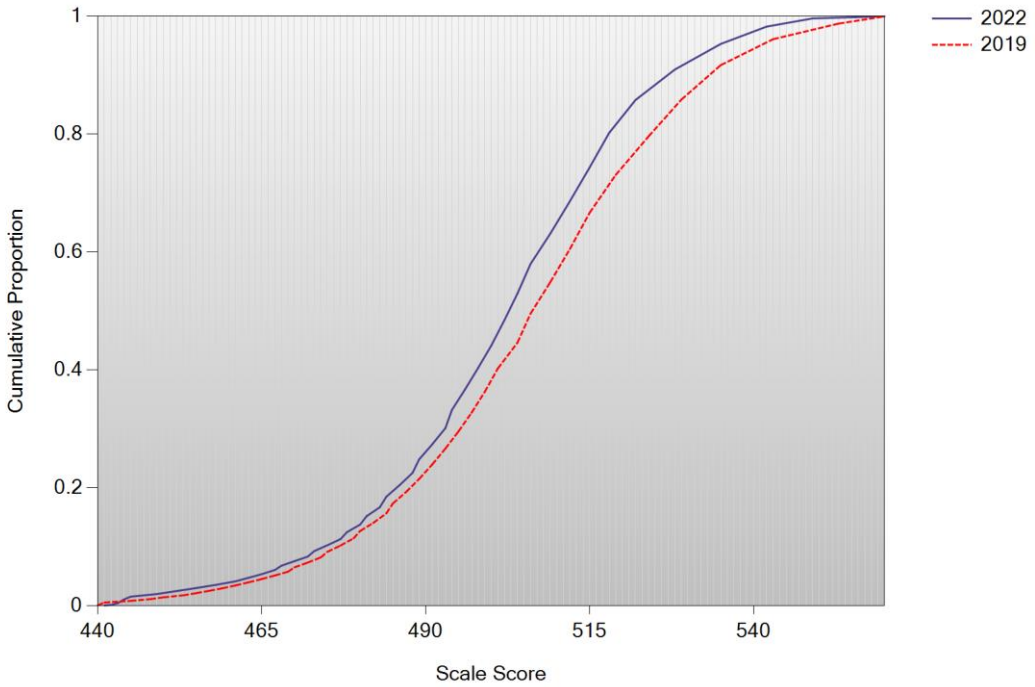
MC Flagged
CR Retained
CR Flagged
Identity Line
Previous Values
2022 Values
0
2
4
6
8
10
12
14
16
18
20
22
24


Test Characteristic Curve:English Language Arts Grade 10
2022
2019
Expected Score
Theta
0
5
10
15
20
25
30
35
40
45
50
55
-5
-2.5
0
2.5
5

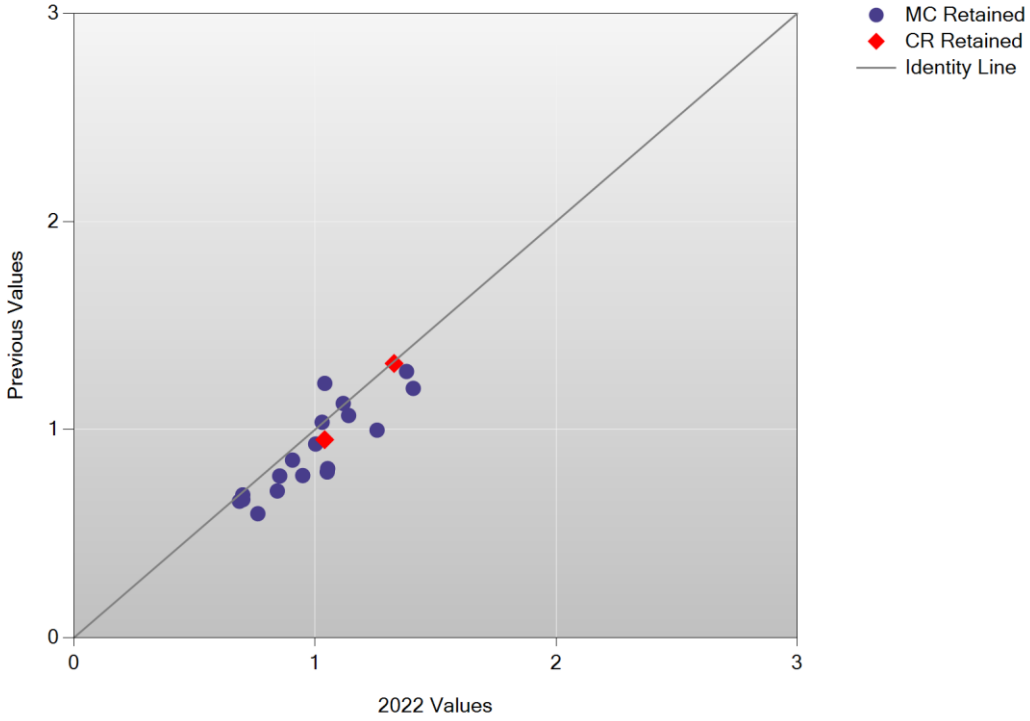
Test Information Function: English Language Arts Grade 10



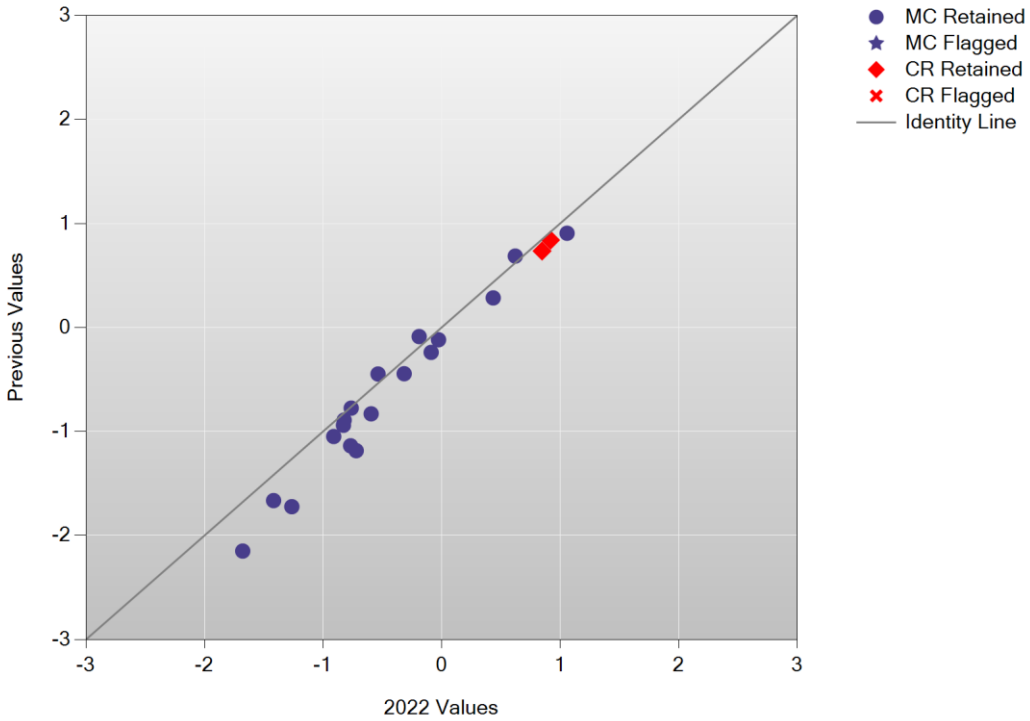
Cumulative Scale Score Distributions: English Language Arts Grade 10

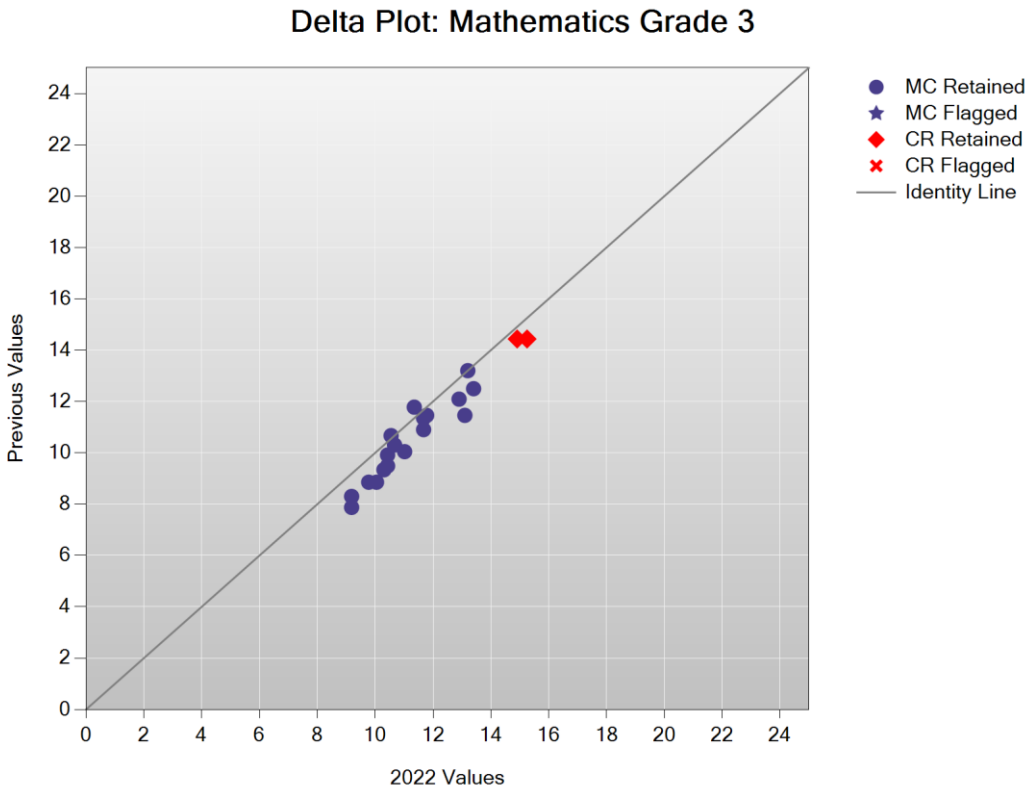


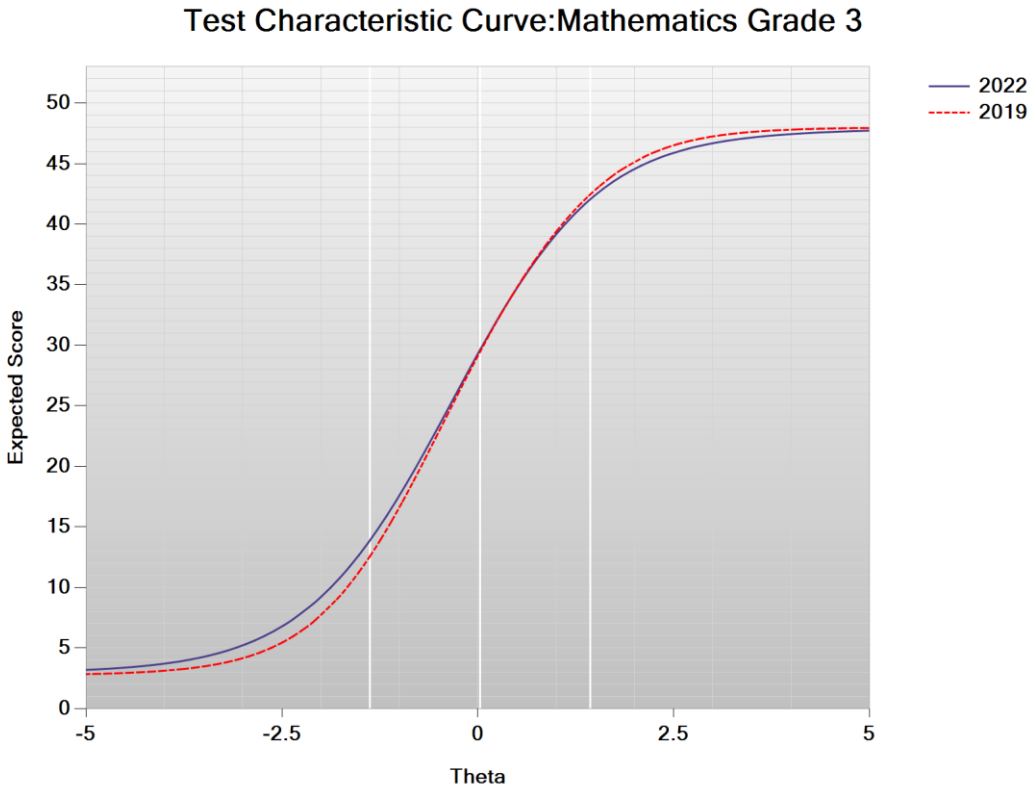
A/A Plot: Mathematics Grade 3



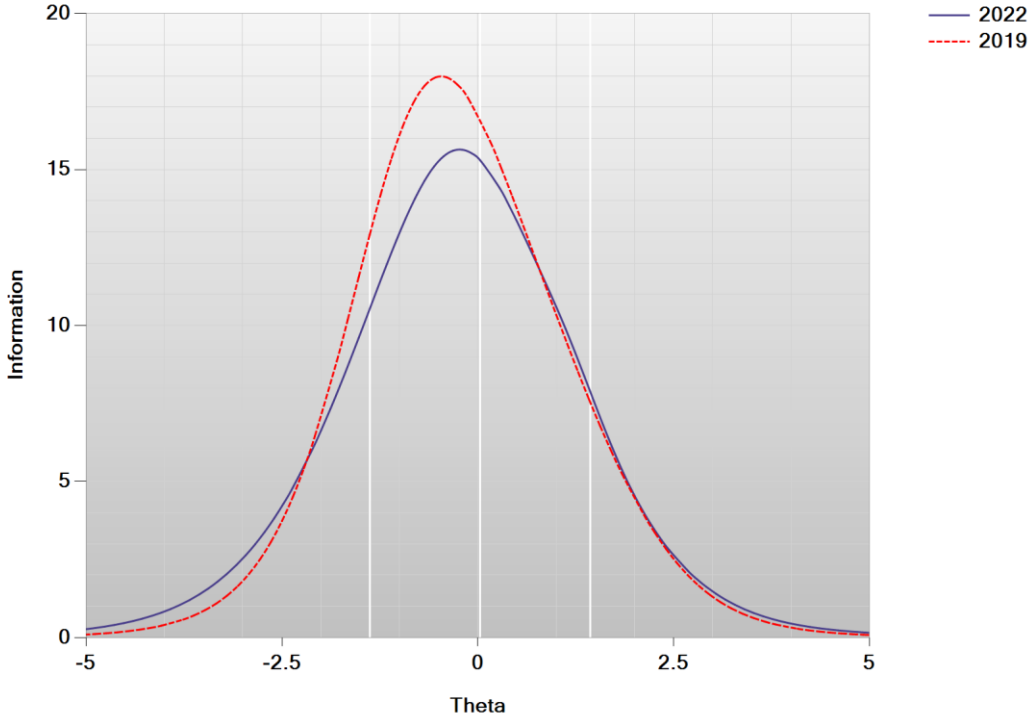
B/B Plot: Mathematics Grade 3



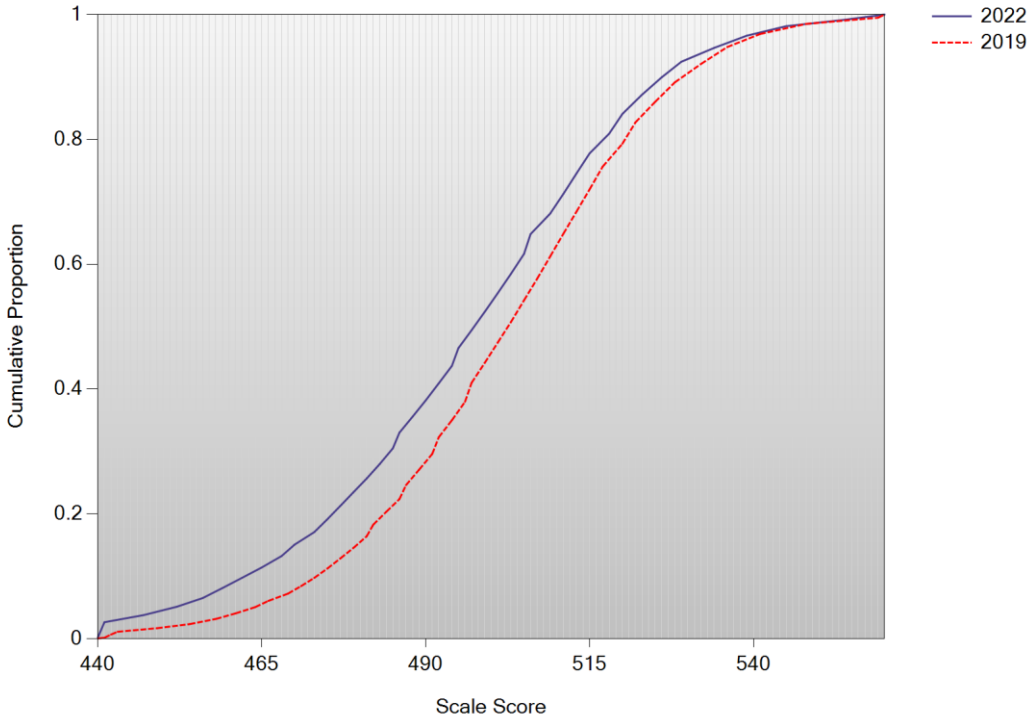

Delta Plot: Mathematics Grade 3
MC Retained
MC Flagged
CR Retained
CR Flagged
Identity Line
Previous Values
2022 Values
0
2
4
6
8
10
12
14
16
18
20
22
24


Test Characteristic Curve:Mathematics Grade 3
2022
2019
Expected Score
Theta
0
5
10
15
20
25
30
35
40
45
50
-5
-2.5
0
2.5
5

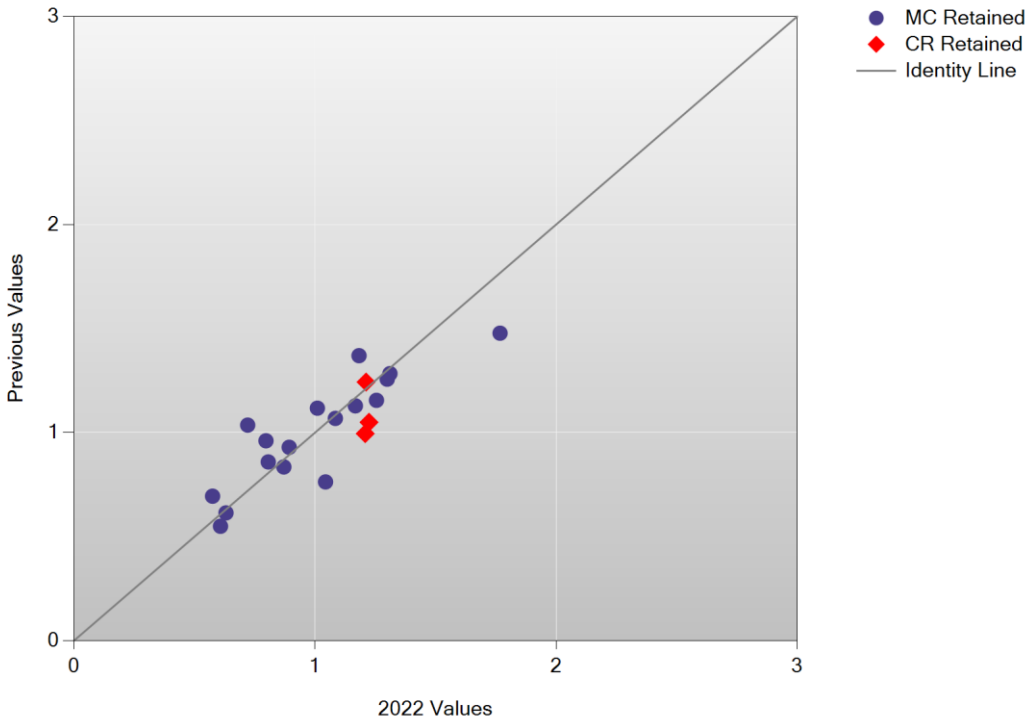
Test Information Function: Mathematics Grade 3



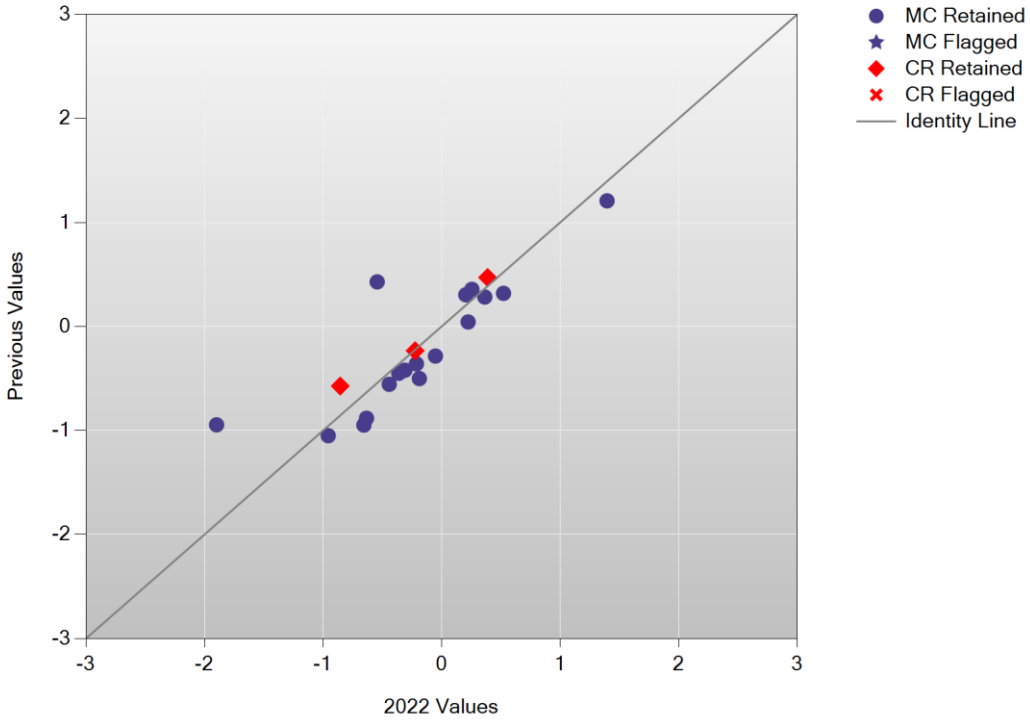
Cumulative Scale Score Distributions: Mathematics Grade 3

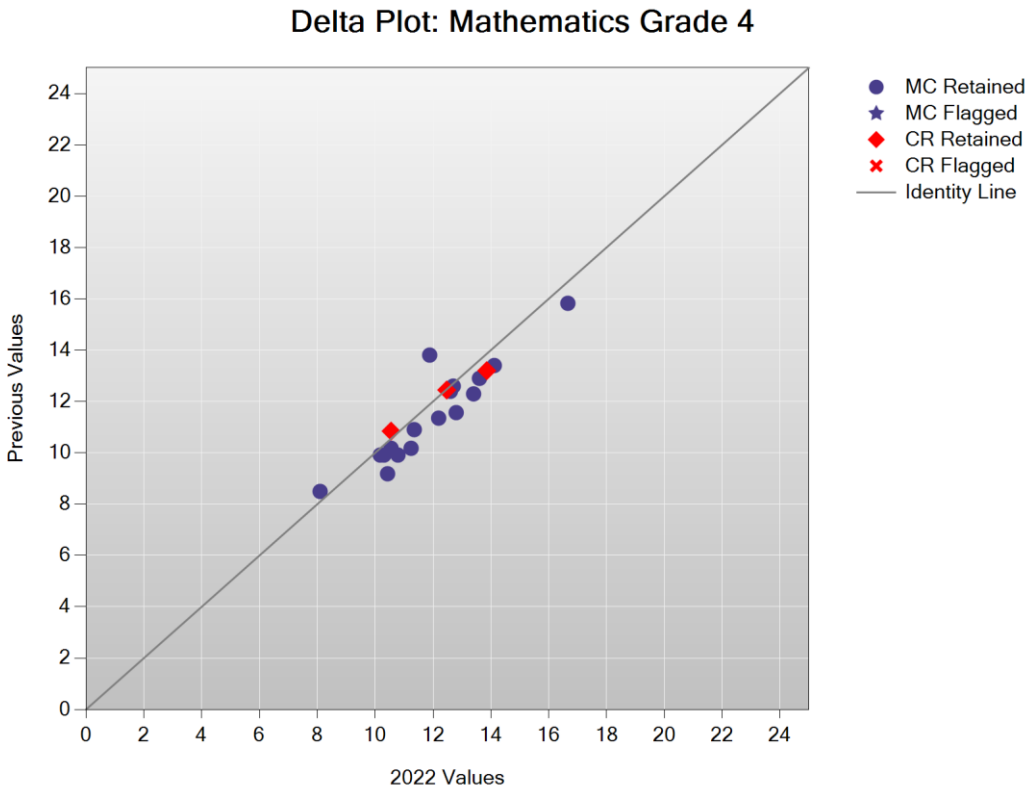


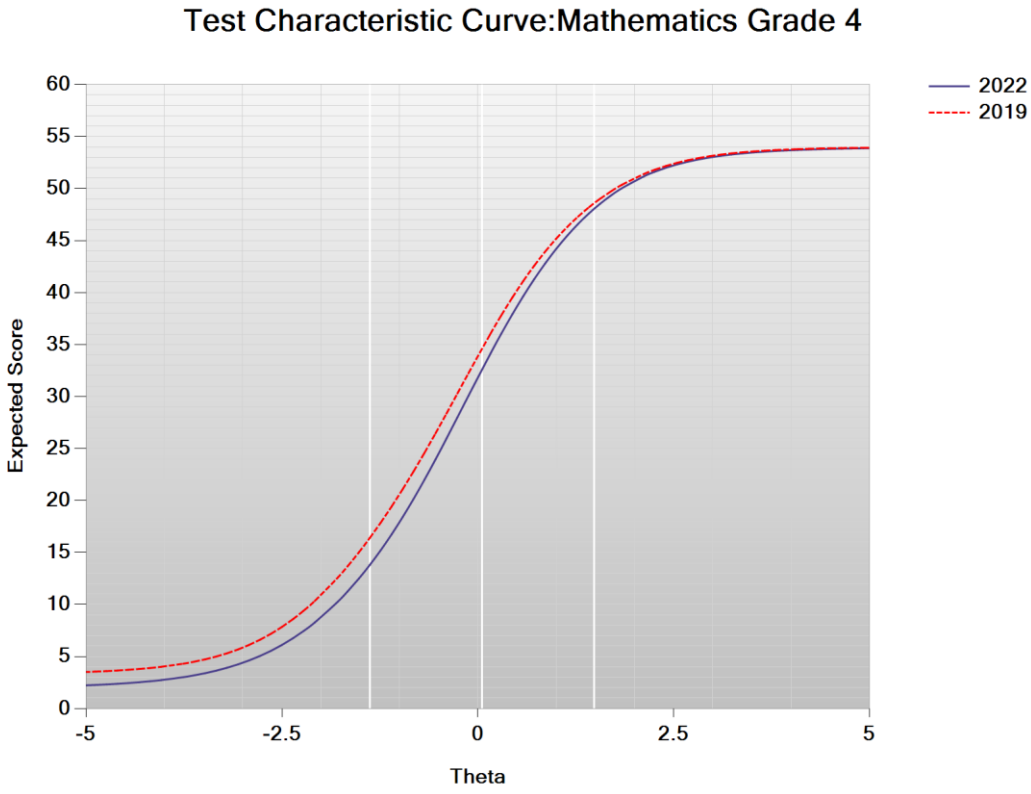
A/A Plot: Mathematics Grade 4

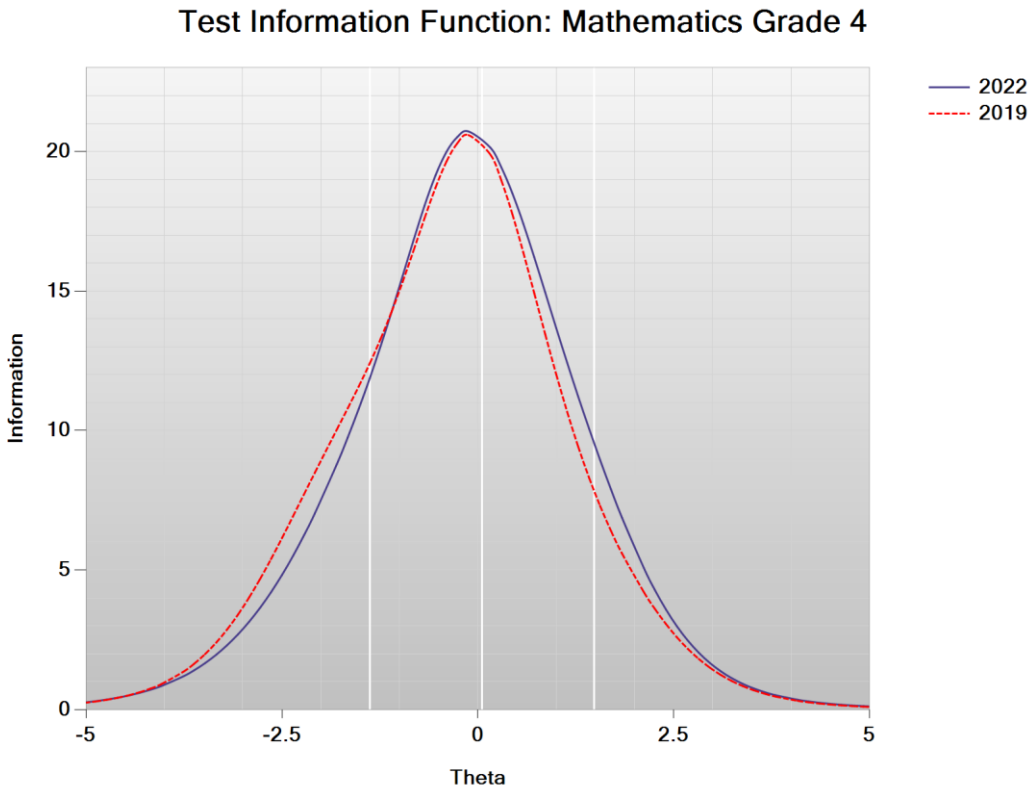


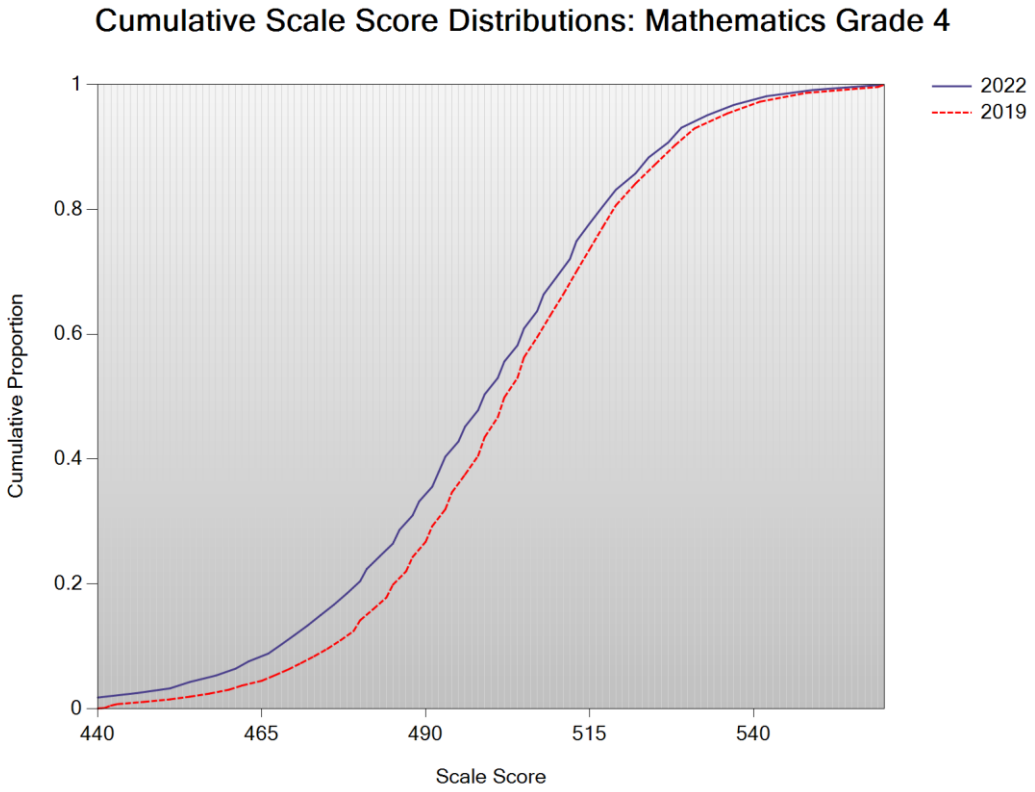
B/B Plot: Mathematics Grade 4



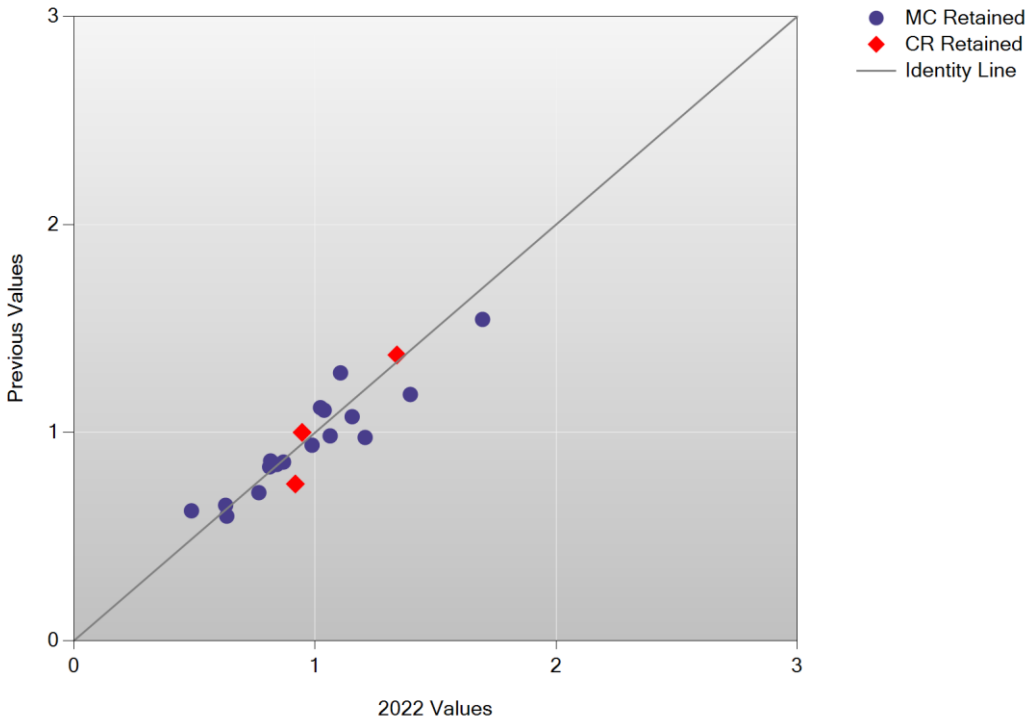

Delta Plot: Mathematics Grade 4
MC Retained
MC Flagged
CR Retained
CR Flagged
Identity Line
Previous Values
2022 Values
0
2
4
6
8
10
12
14
16
18
20
22
24


Test Characteristic Curve:Mathematics Grade 4
2022
2019
Expected Score
Theta
0
5
10
15
20
25
30
35
40
45
50
55
60
-5
-2.5
0
2.5
5

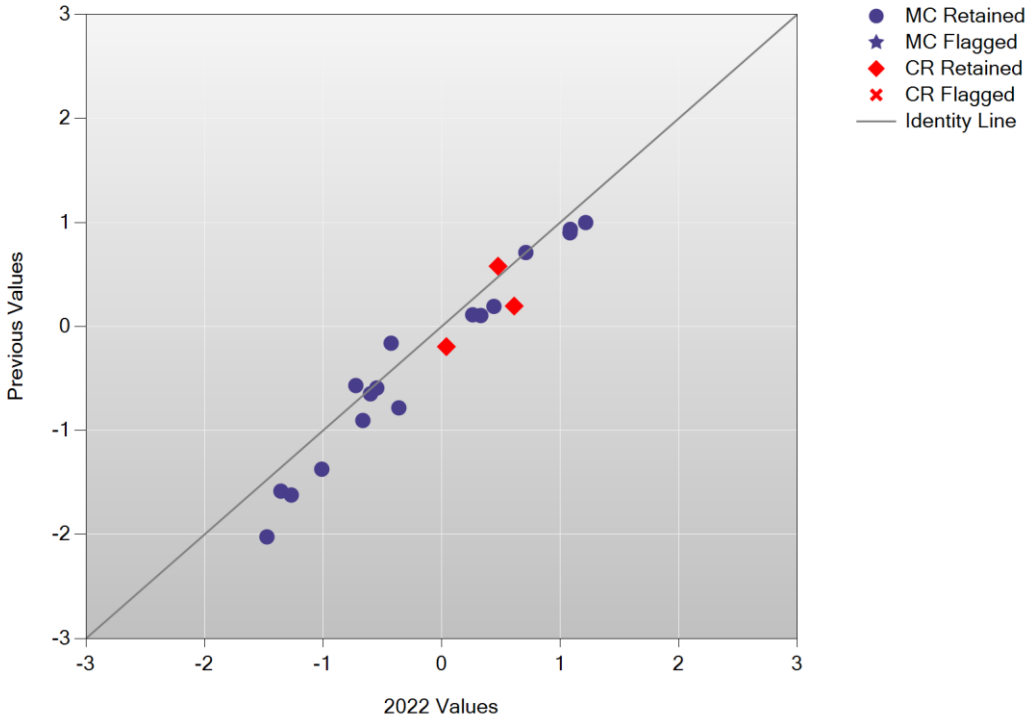

Test Information Function: Mathematics Grade 4
2022
2019
Information
20
15
10
5
0
-5
-2.5
0
2.5
5
Theta

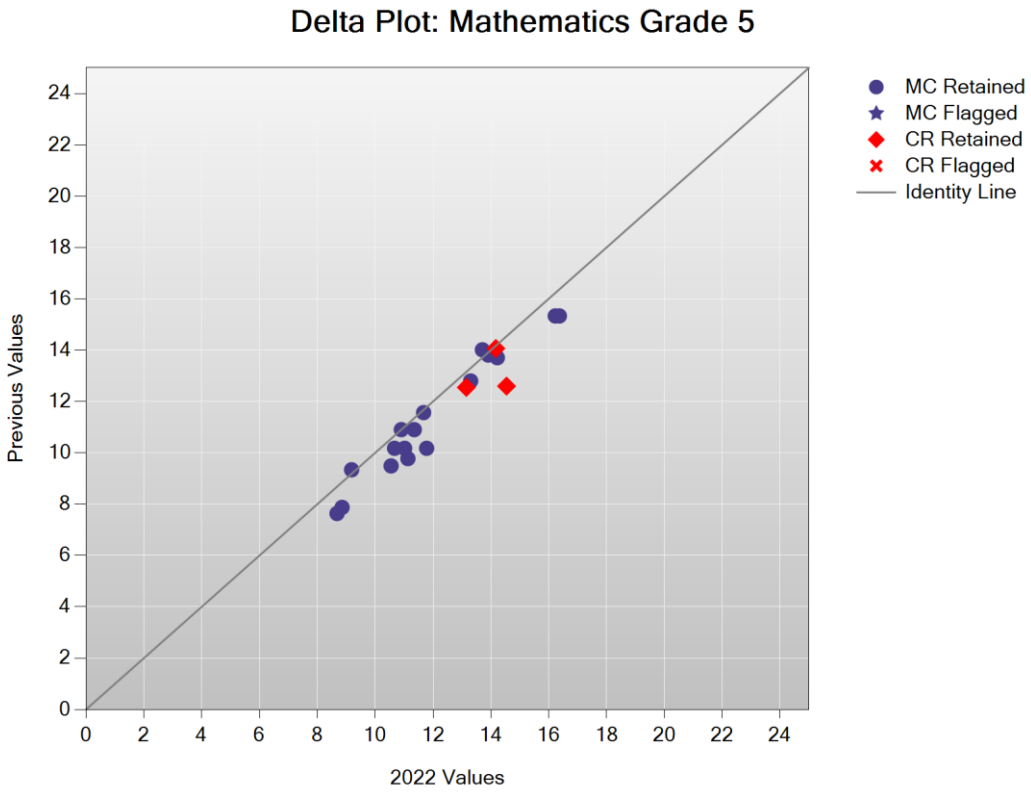

Cumulative Scale Score Distributions: Mathematics Grade 4
2022
2019
Cumulative Proportion
1
0.8
0.6
0.4
0.2
0
440
465
490
515
540
Scale Score

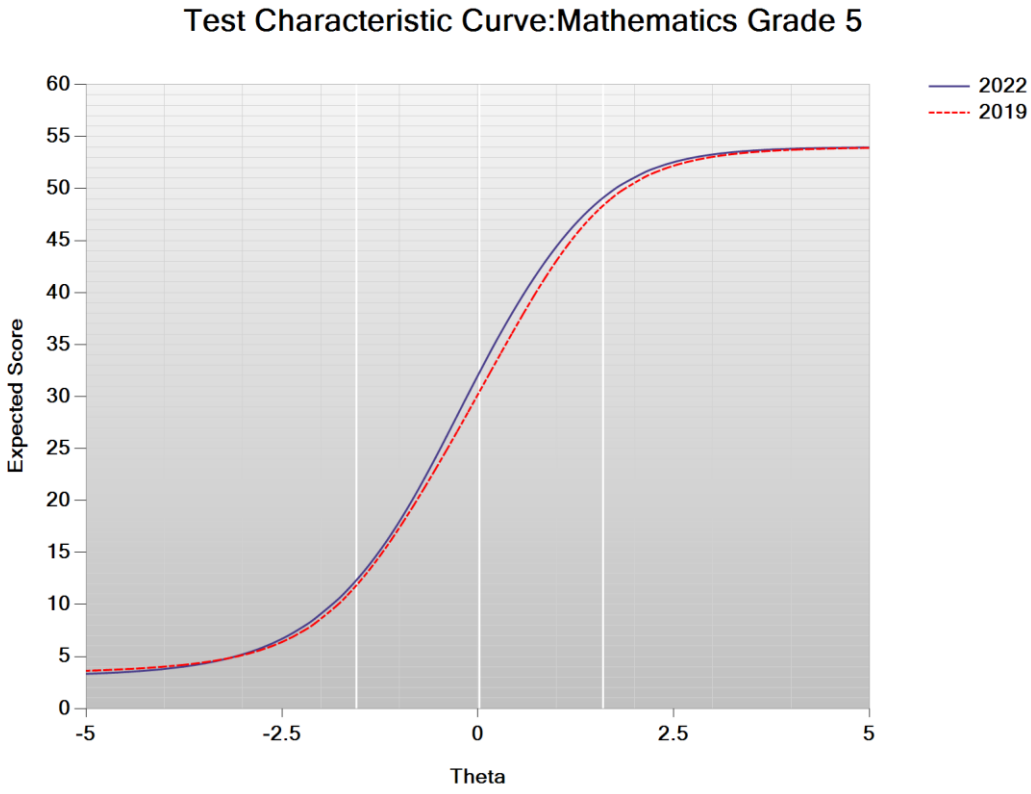
A/A Plot: Mathematics Grade 5

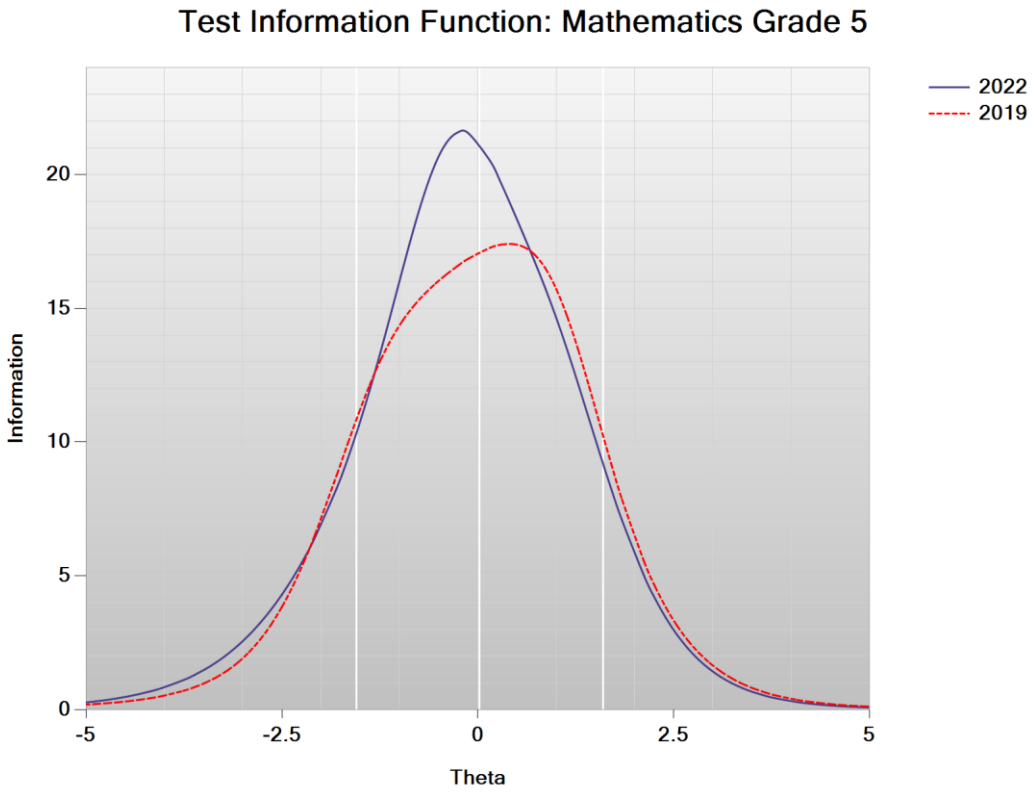


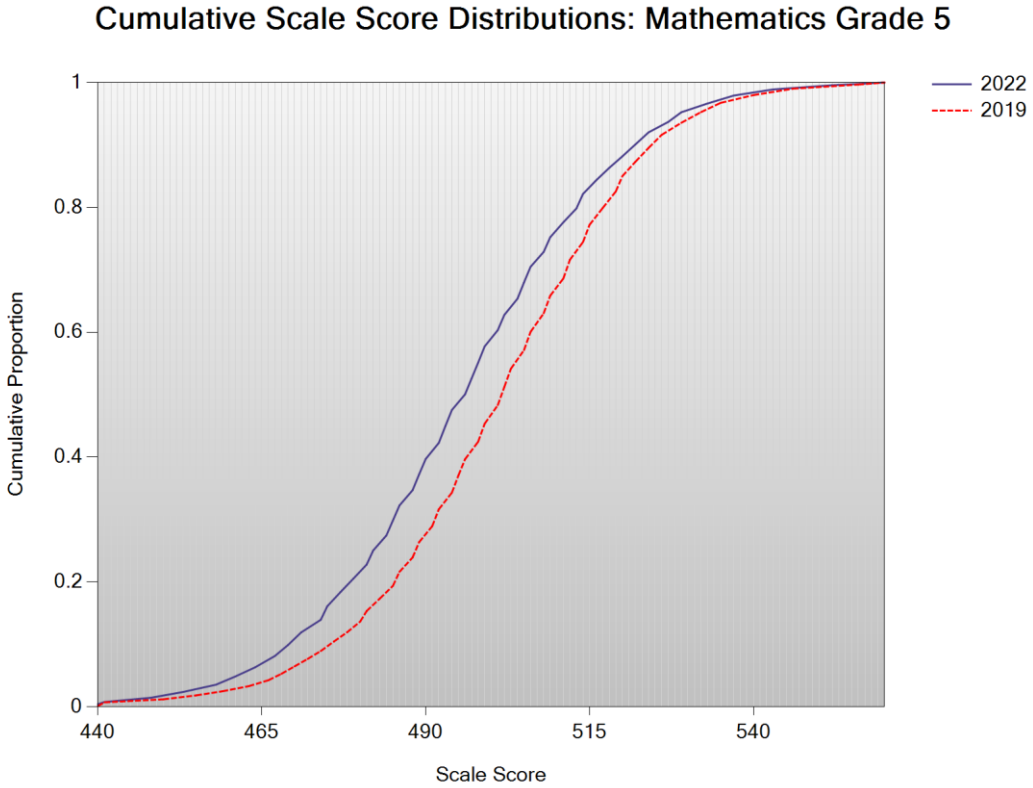
B/B Plot: Mathematics Grade 5



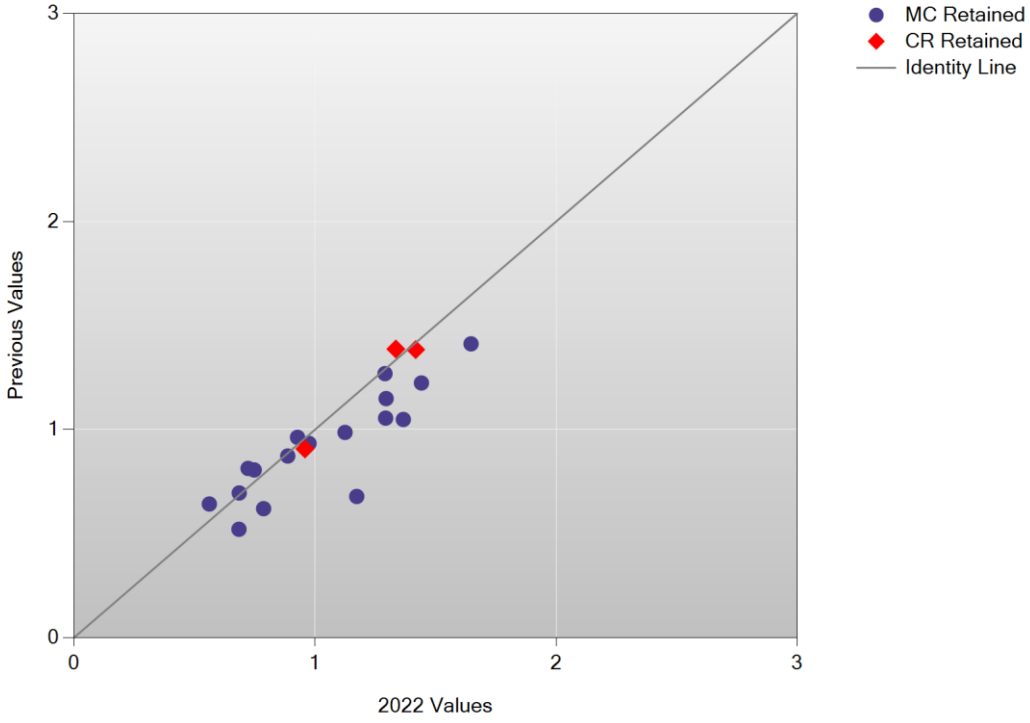

Delta Plot: Mathematics Grade 5
MC Retained
MC Flagged
CR Retained
CR Flagged
Identity Line
Previous Values
2022 Values
0
2
4
6
8
10
12
14
16
18
20
22
24


Test Characteristic Curve:Mathematics Grade 5
2022
2019
Expected Score
Theta
0
5
10
15
20
25
30
35
40
45
50
55
60
-5
-2.5
0
2.5
5

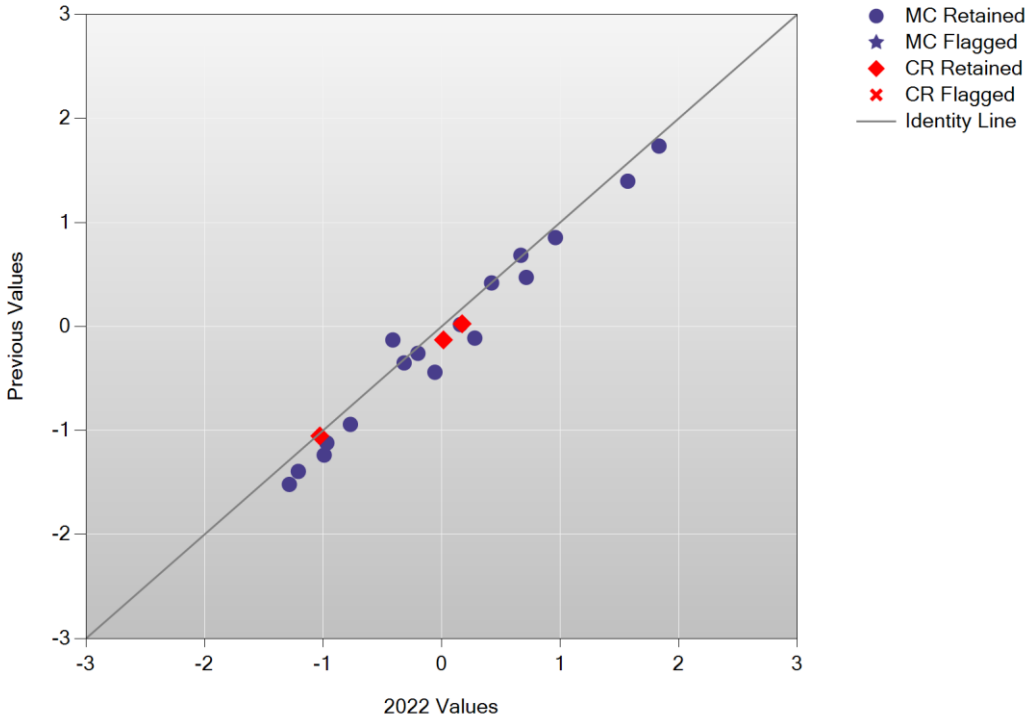

Test Information Function: Mathematics Grade 5
2022
2019
Information
20
15
10
5
0
-5
-2.5
0
2.5
5
Theta

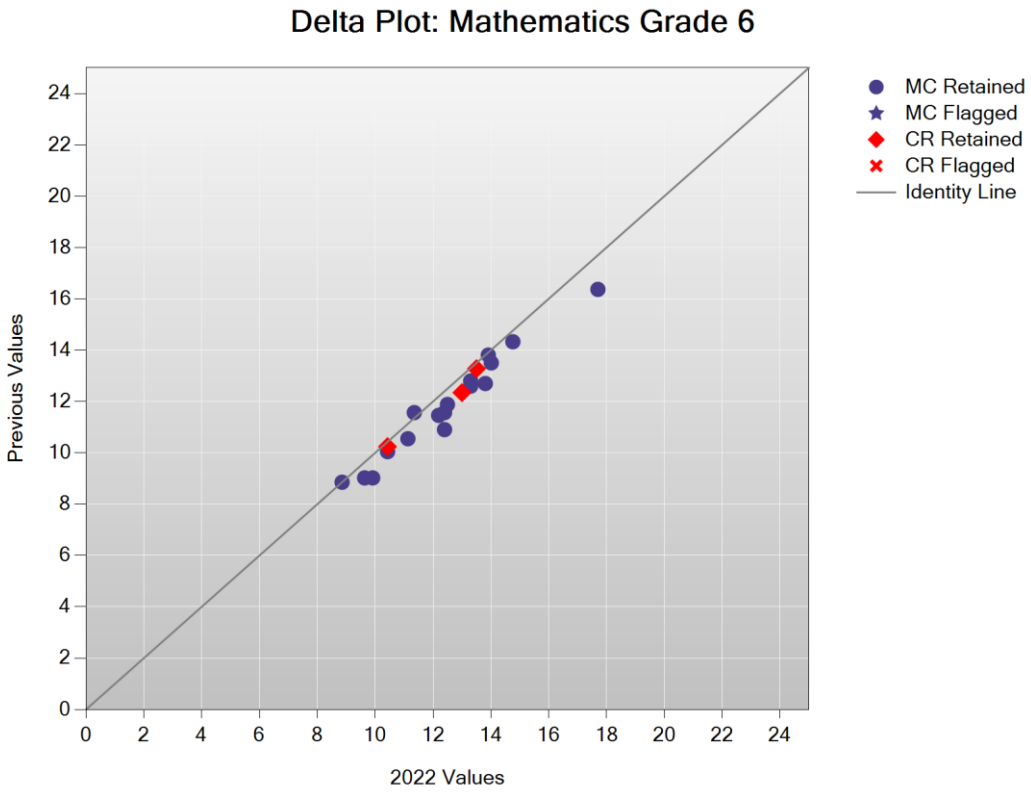

Cumulative Scale Score Distributions: Mathematics Grade 5
2022
2019
Cumulative Proportion
1
0.8
0.6
0.4
0.2
0
440
465
490
515
540
Scale Score

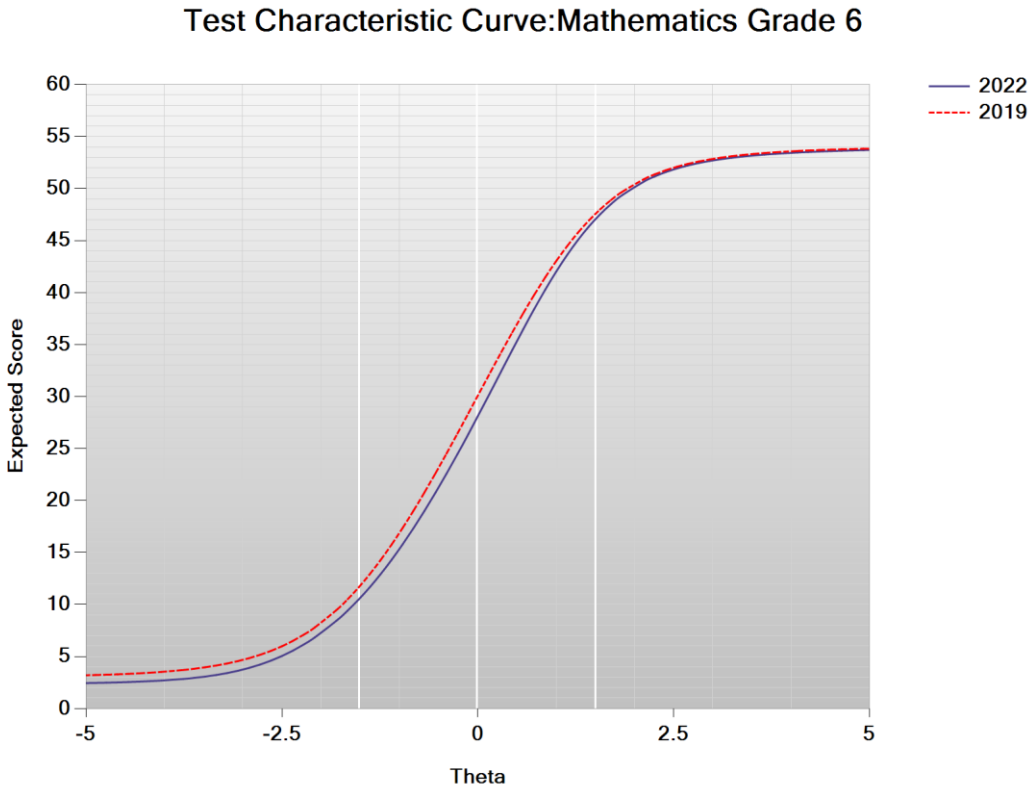
A/A Plot: Mathematics Grade 6

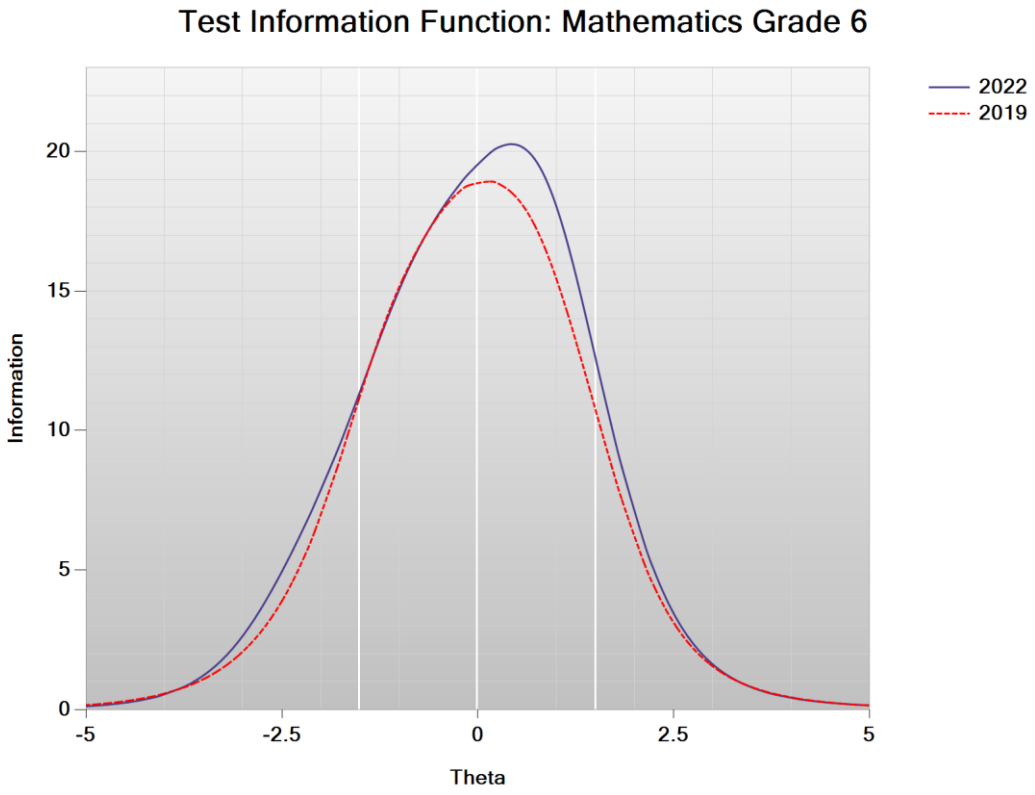


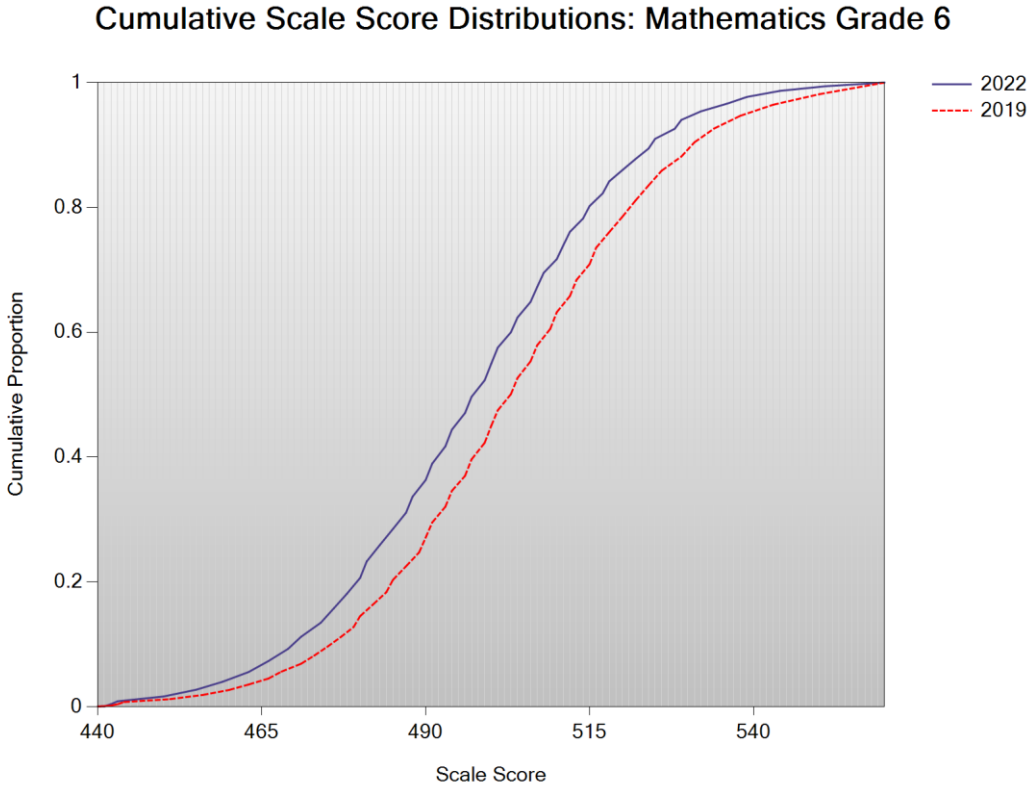
B/B Plot: Mathematics Grade 6



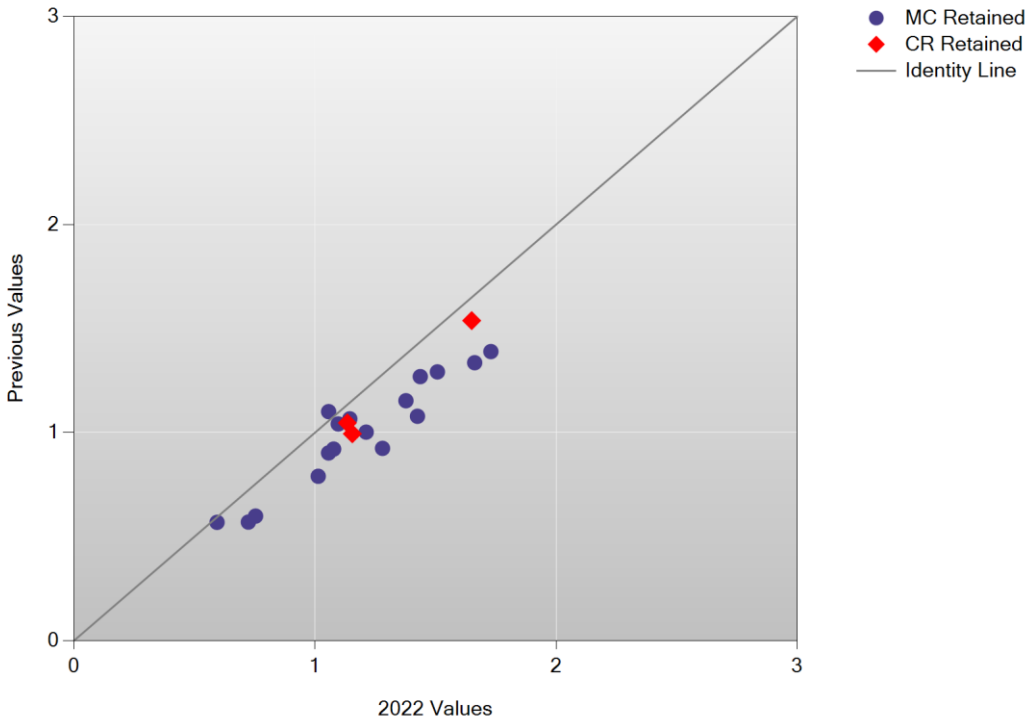

Delta Plot: Mathematics Grade 6
MC Retained
MC Flagged
CR Retained
CR Flagged
Identity Line
Previous Values
2022 Values
0
2
4
6
8
10
12
14
16
18
20
22
24


Test Characteristic Curve:Mathematics Grade 6
2022
2019
Expected Score
Theta
0
5
10
15
20
25
30
35
40
45
50
55
60
-5
-2.5
0
2.5
5

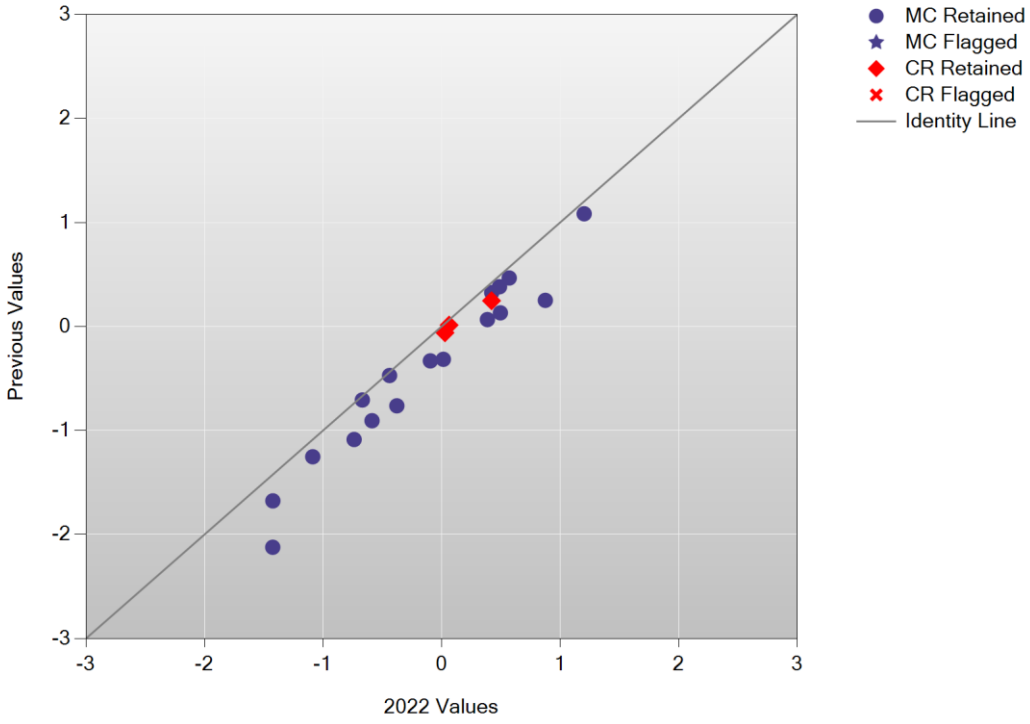

Test Information Function: Mathematics Grade 6
2022
2019
Information
20
15
10
5
0
-5
-2.5
0
2.5
5
Theta

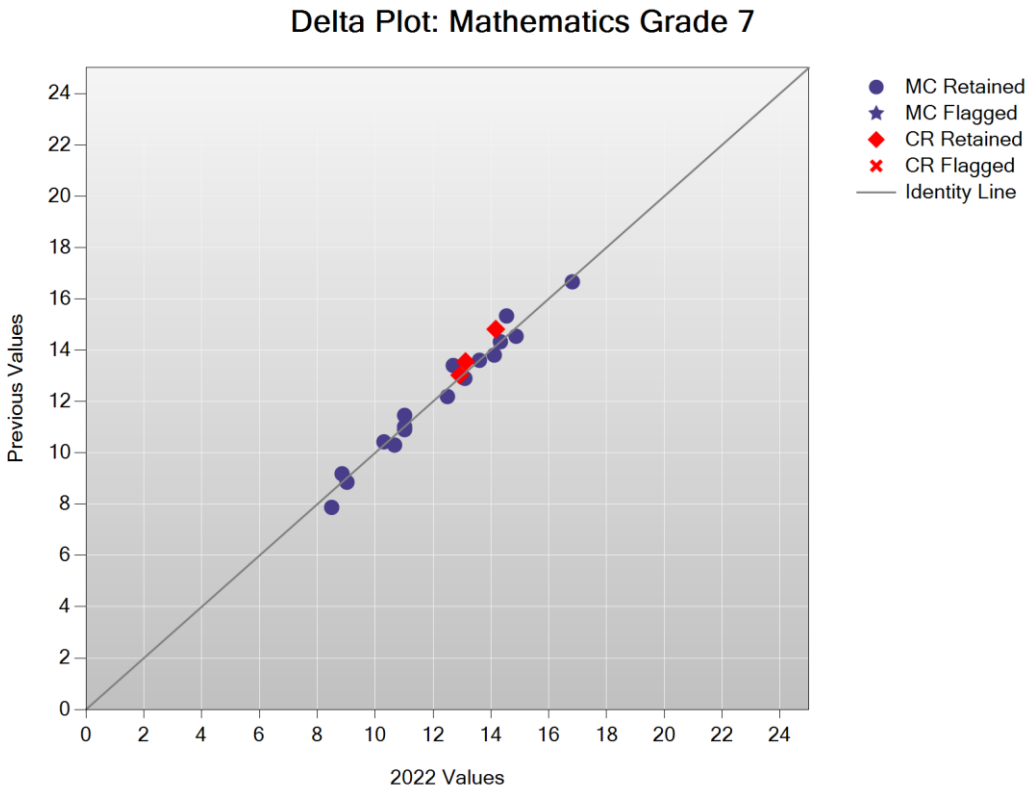

Cumulative Scale Score Distributions: Mathematics Grade 6
2022
2019
Cumulative Proportion
1
0.8
0.6
0.4
0.2
0
440
465
490
515
540
Scale Score

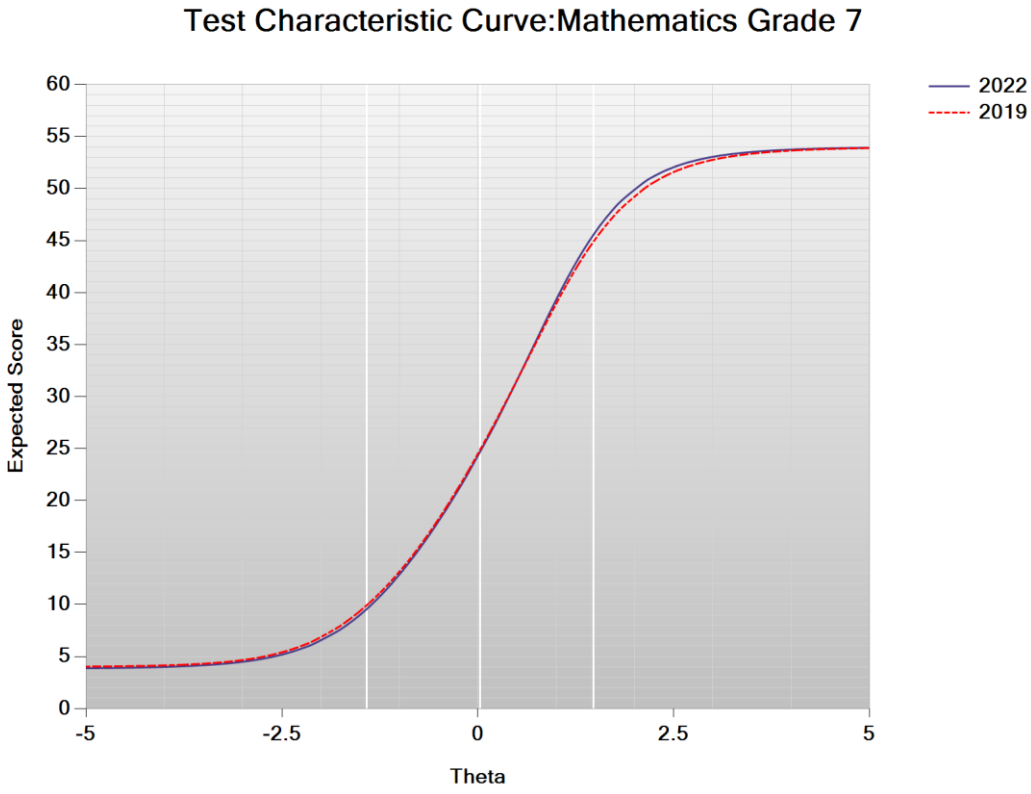
A/A Plot: Mathematics Grade 7



B/B Plot: Mathematics Grade 7




Delta Plot: Mathematics Grade 7
MC Retained
MC Flagged
CR Retained
CR Flagged
Identity Line
Previous Values
2022 Values
0
2
4
6
8
10
12
14
16
18
20
22
24


Test Characteristic Curve:Mathematics Grade 7
2022
2019
Expected Score
Theta
0
5
10
15
20
25
30
35
40
45
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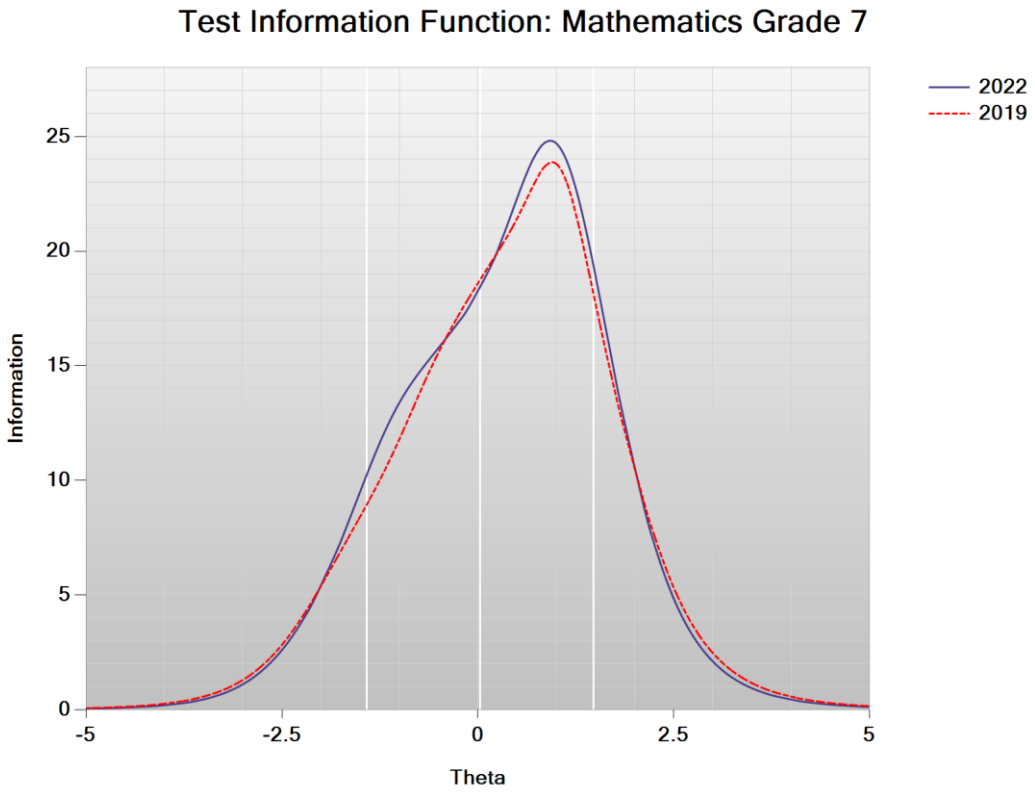
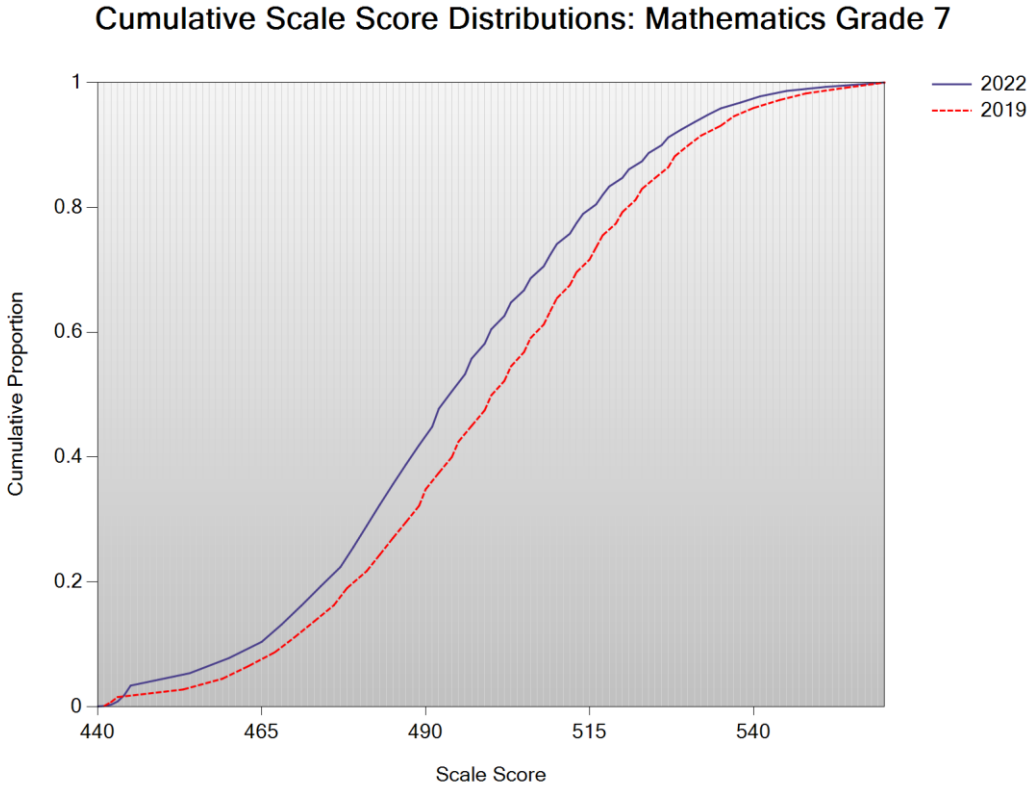
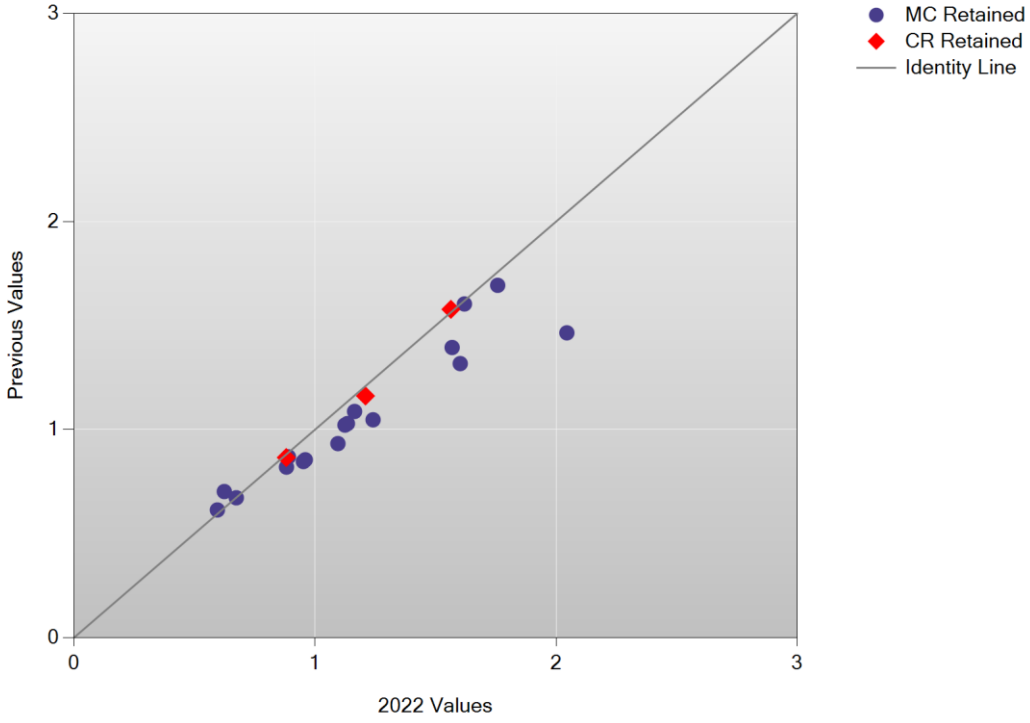
60
-5
-2.5
0
2.5
5

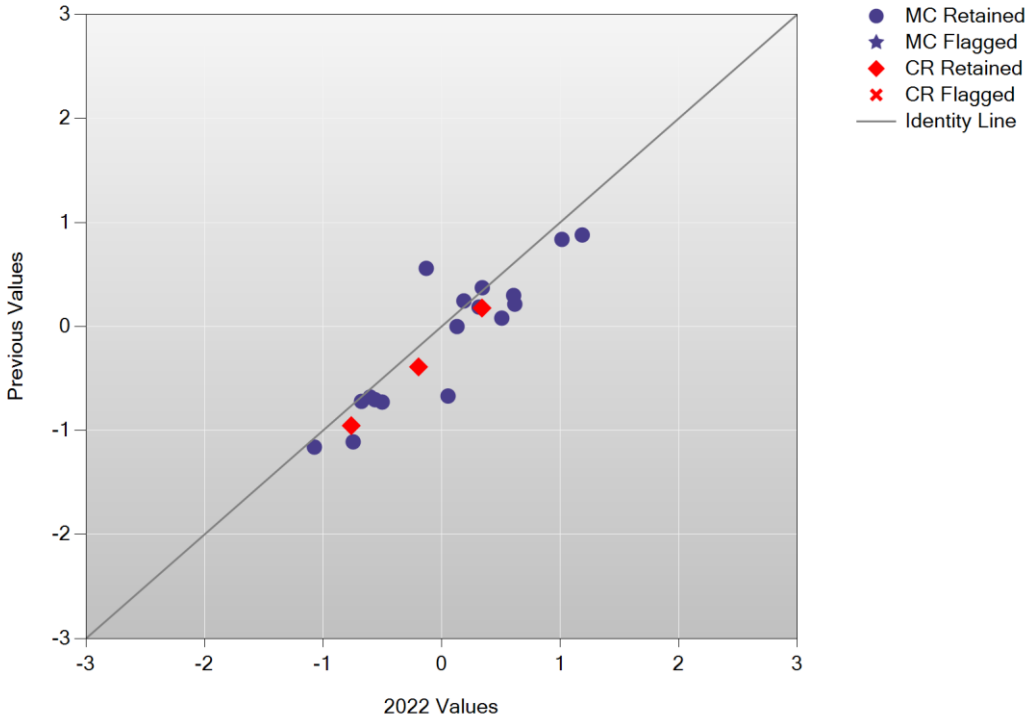

Test Information Function: Mathematics Grade 7
2022
2019
Information
25
20
15
10
5
0
-5
-2.5
0
2.5
5
Theta


Cumulative Scale Score Distributions: Mathematics Grade 7
2022
2019
Cumulative Proportion
1
0.8
0.6
0.4
0.2
0
440
465
490
515
540
Scale Score

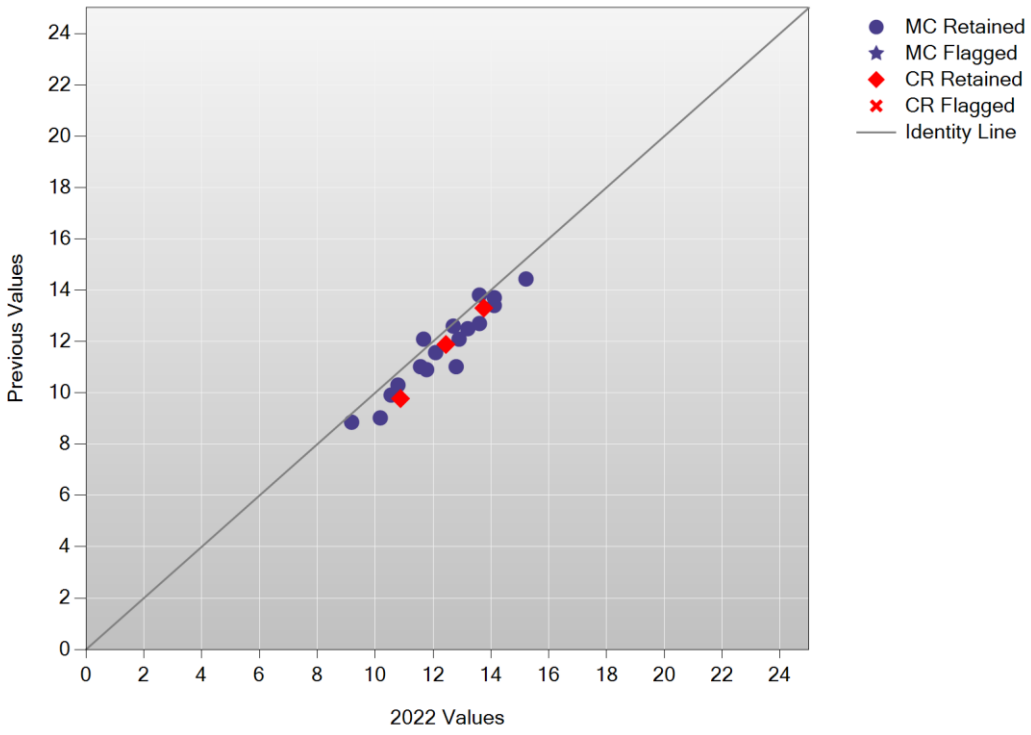
A/A Plot: Mathematics Grade 8



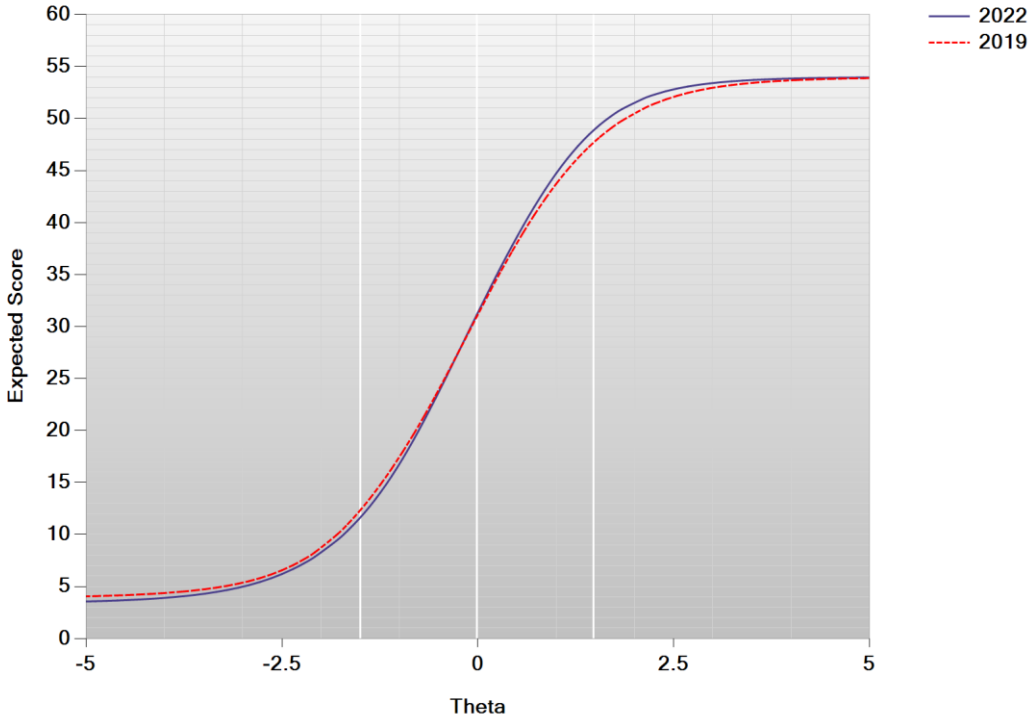
B/B Plot: Mathematics Grade 8

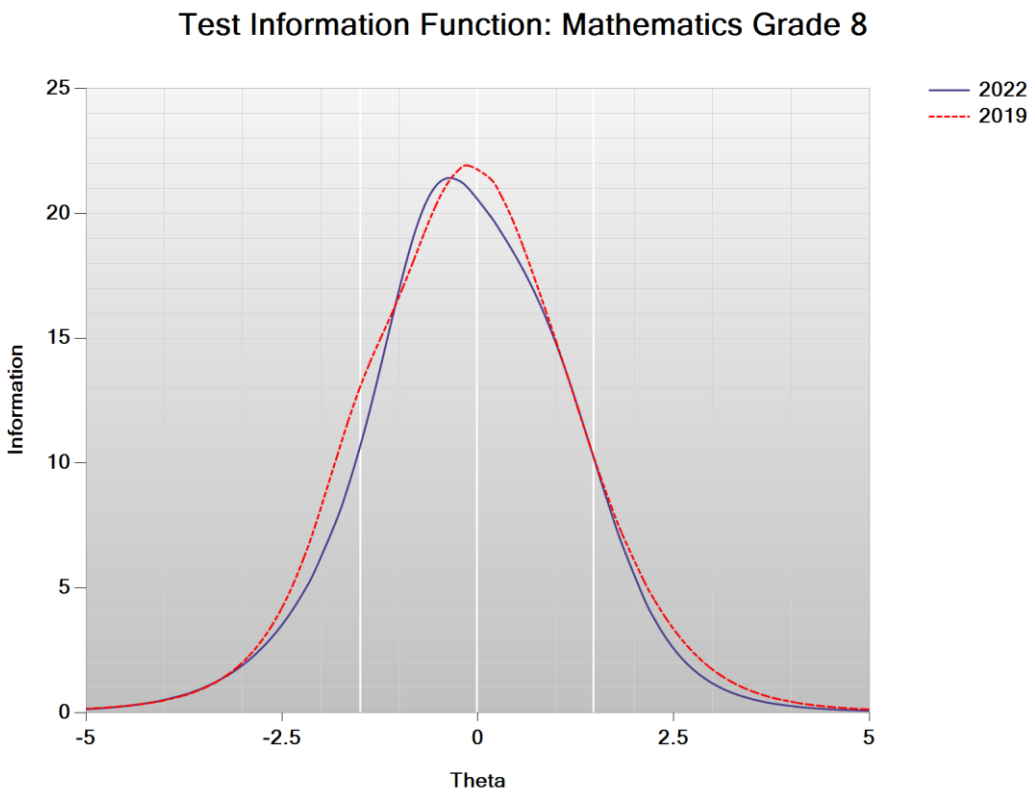


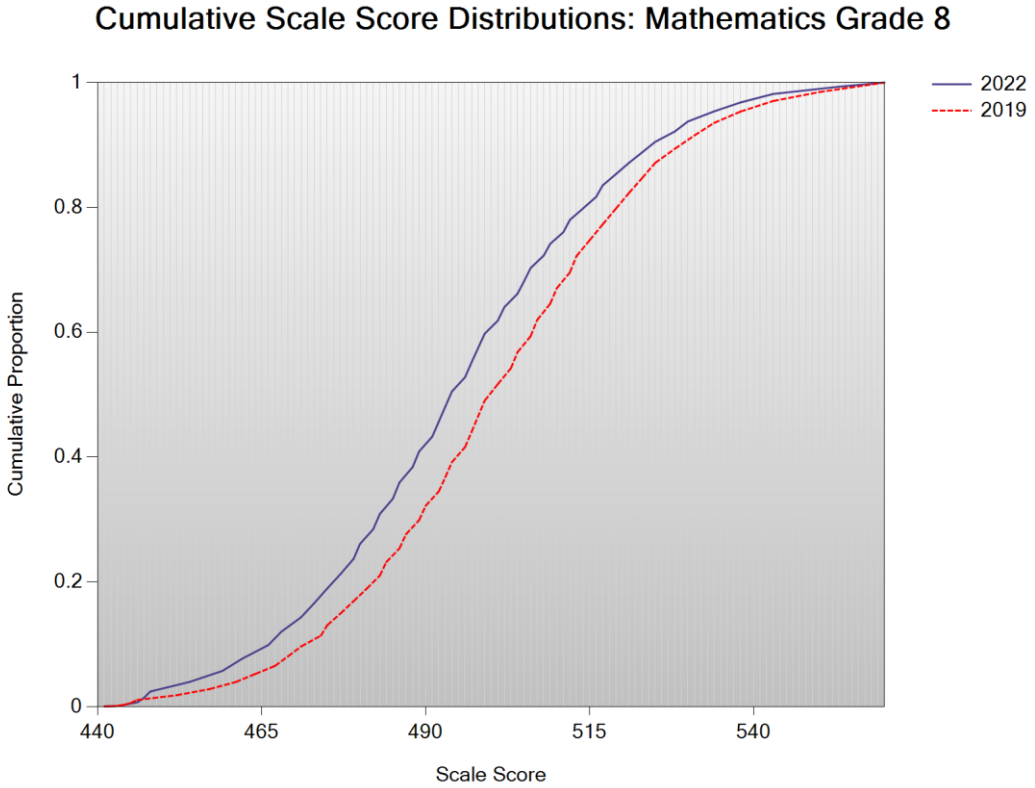
Delta Plot: Mathematics Grade 8



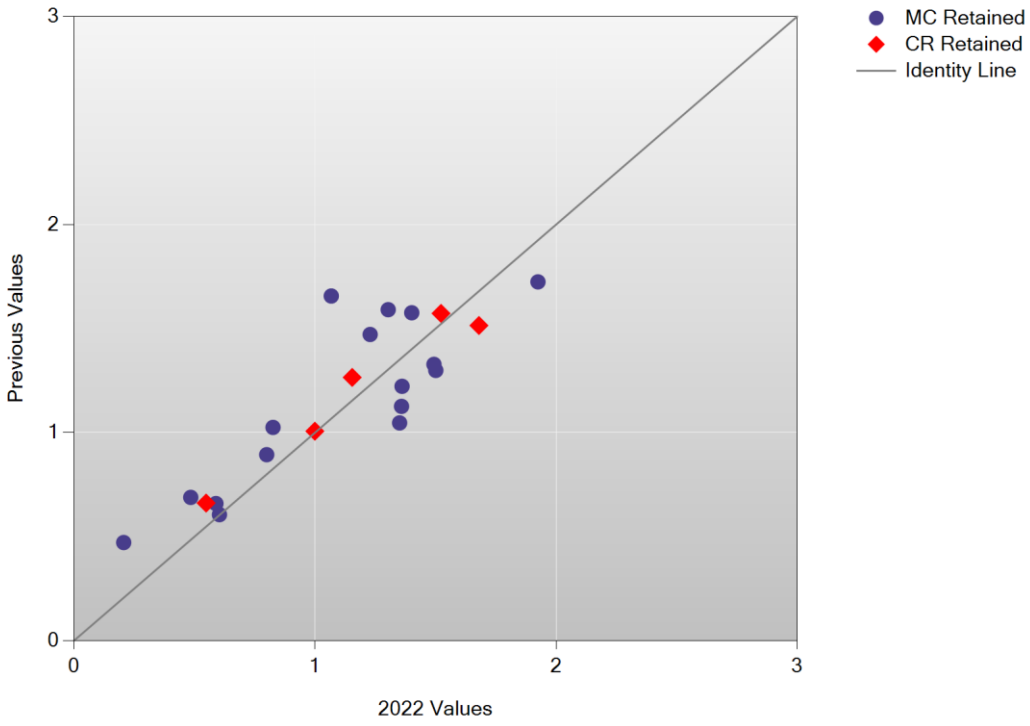
Test Characteristic Curve:Mathematics Grade 8



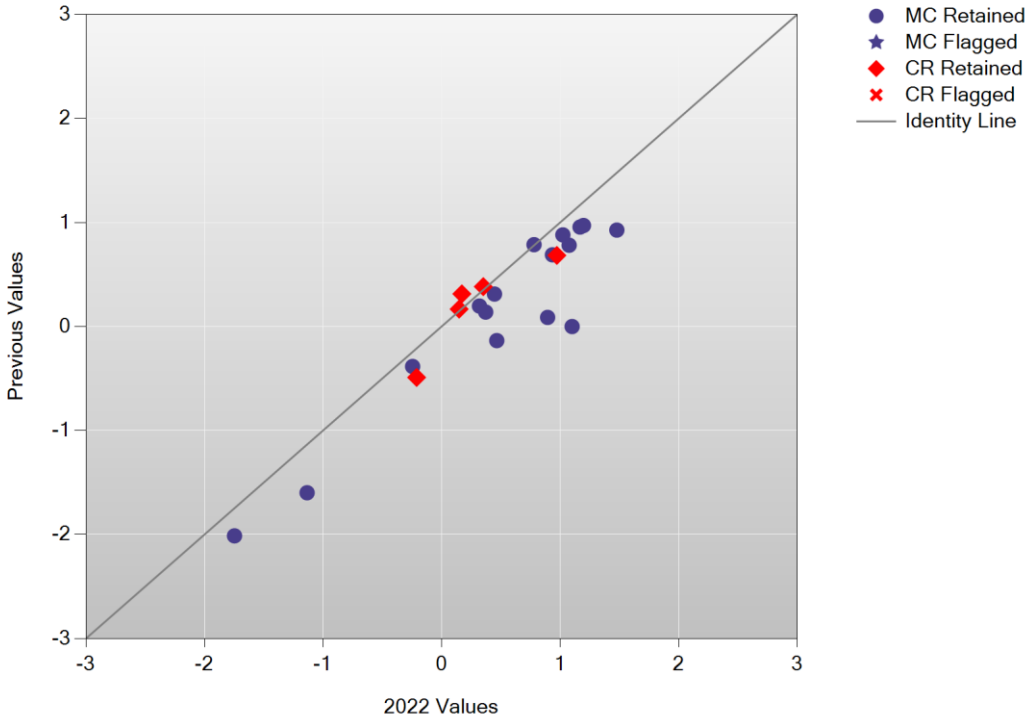

Test Information Function: Mathematics Grade 8
2022
2019
Information
25
20
15
10
5
0
-5
-2.5
0
2.5
5
Theta


Cumulative Scale Score Distributions: Mathematics Grade 8
2022
2019
Cumulative Proportion
1
0.8
0.6
0.4
0.2
0
440
465
490
515
540
Scale Score

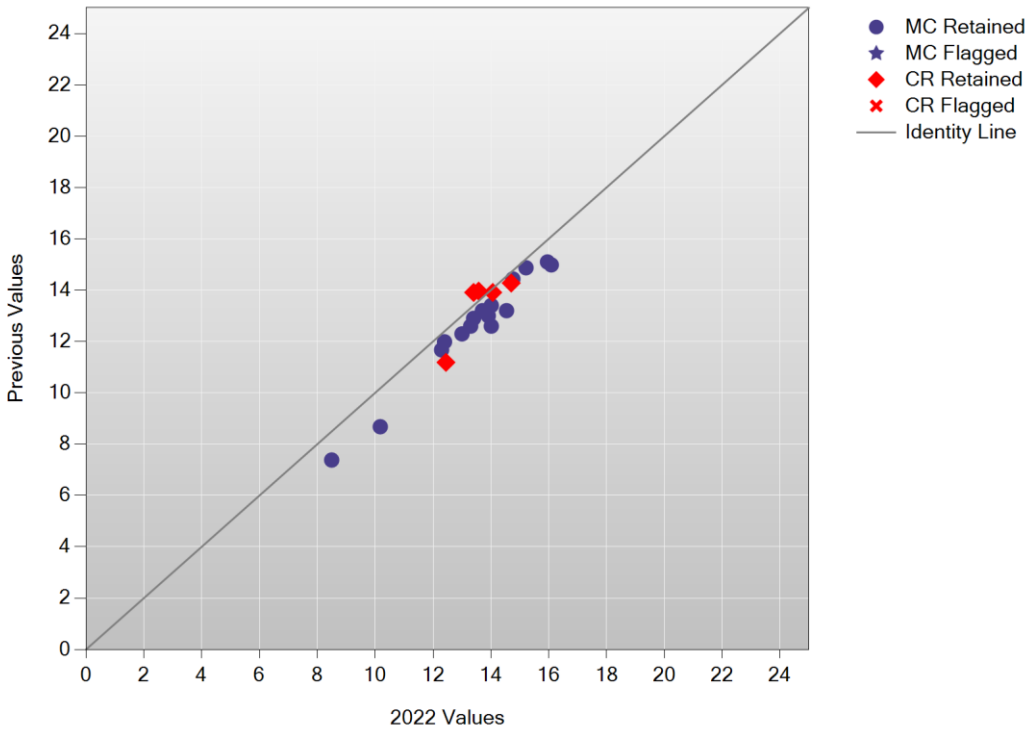
A/A Plot: Mathematics Grade 10



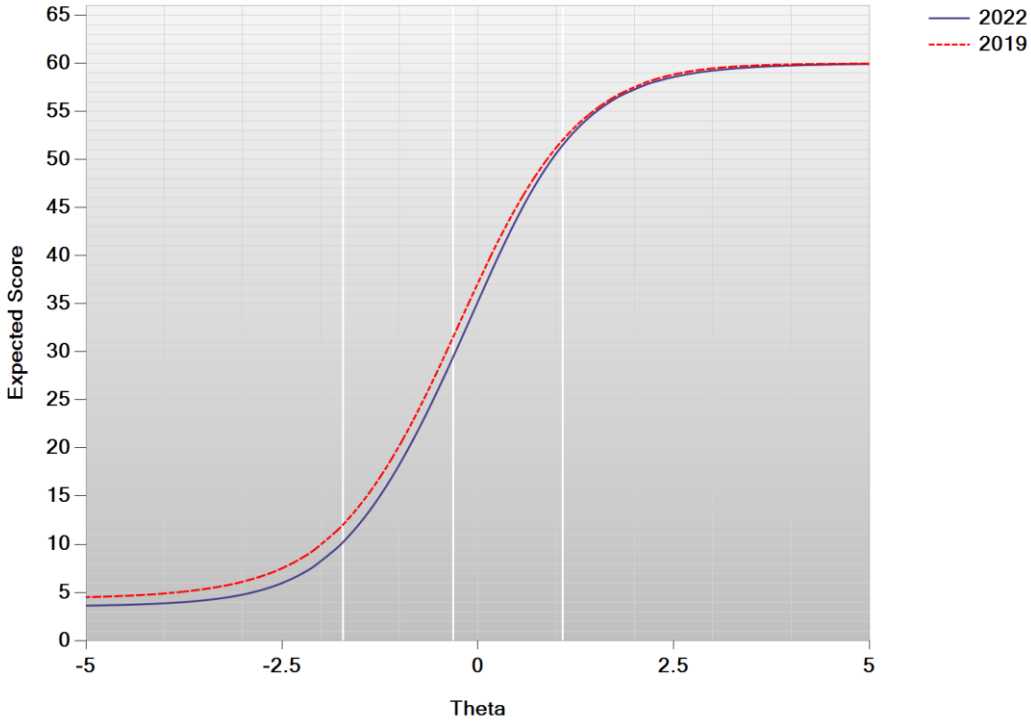
B/B Plot: Mathematics Grade 10



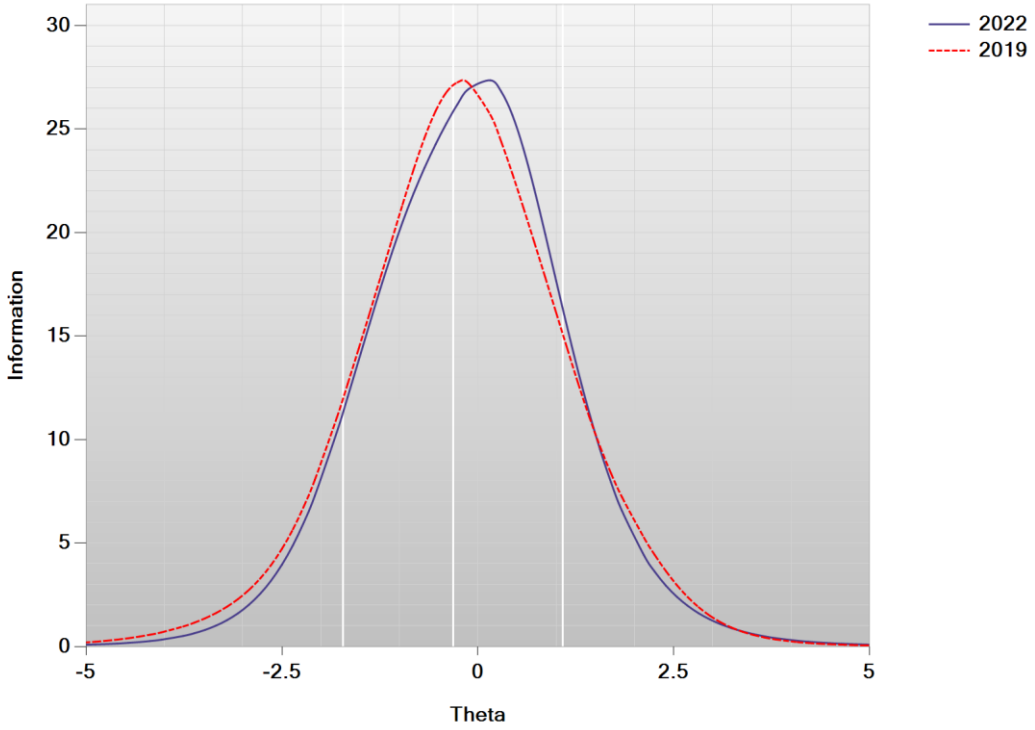
Delta Plot: Mathematics Grade 10



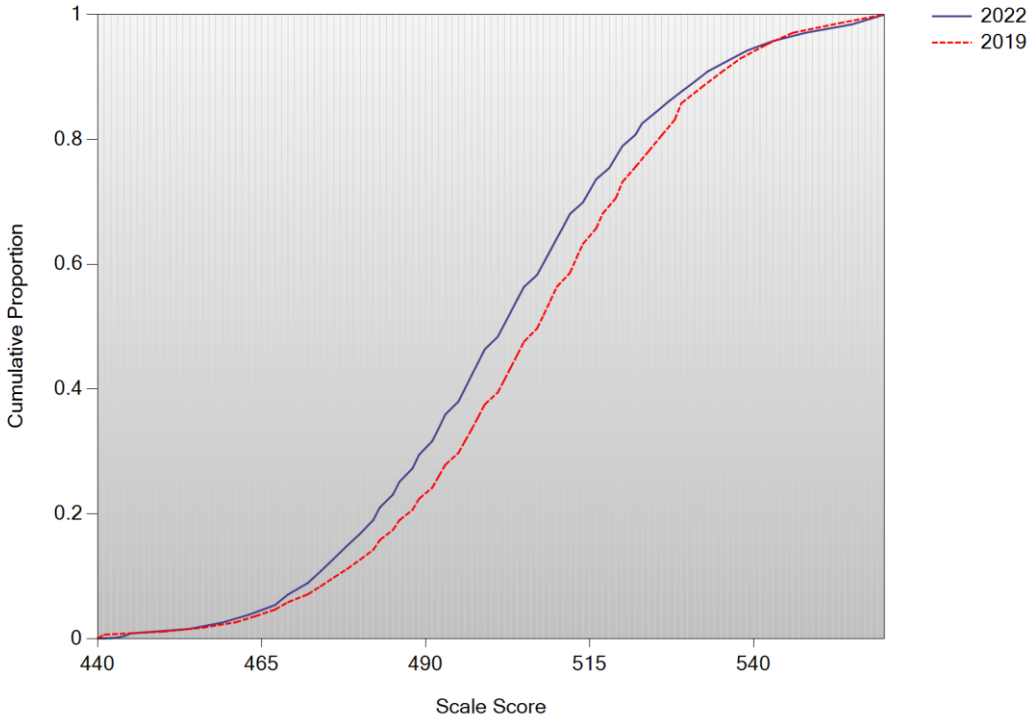
Test Characteristic Curve:Mathematics Grade 10



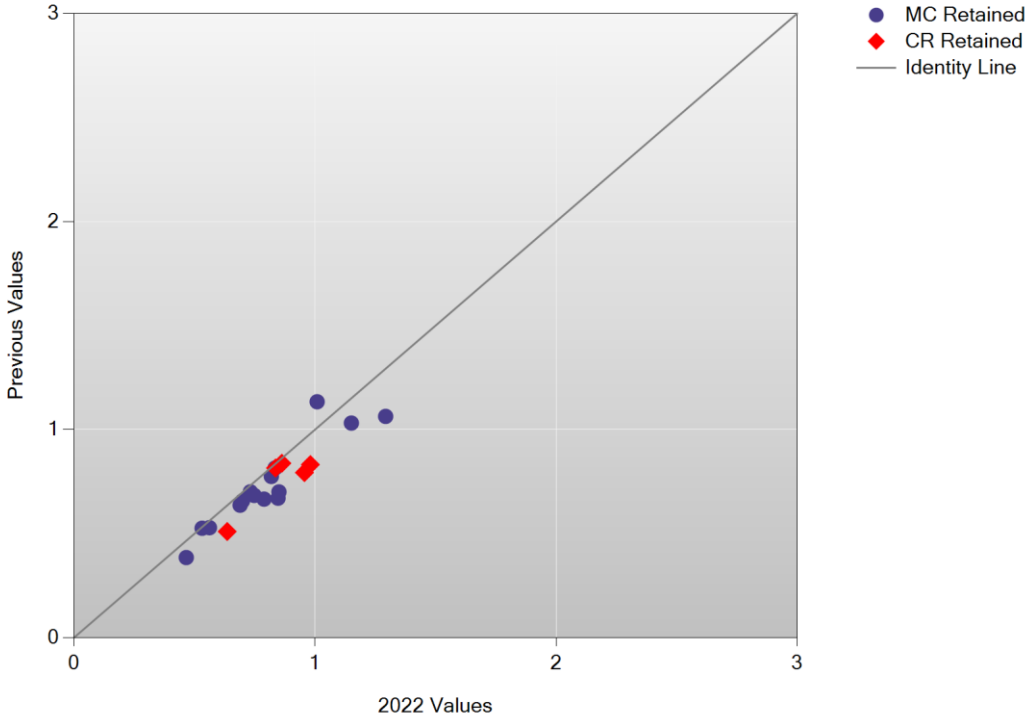
Test Information Function: Mathematics Grade 10



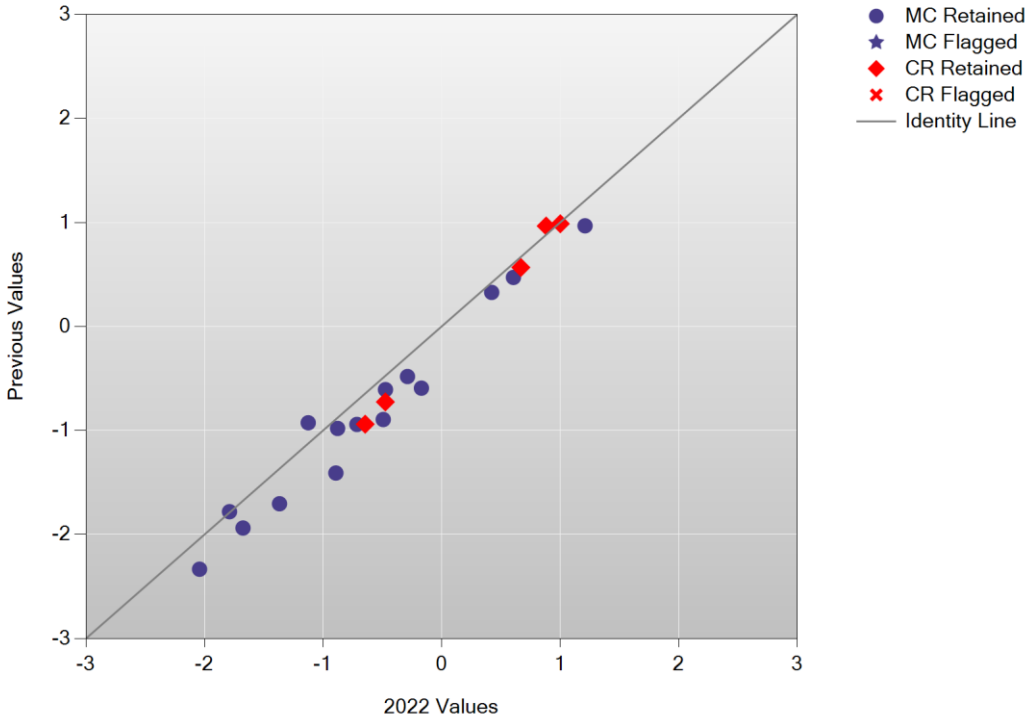
Cumulative Scale Score Distributions: Mathematics Grade 10

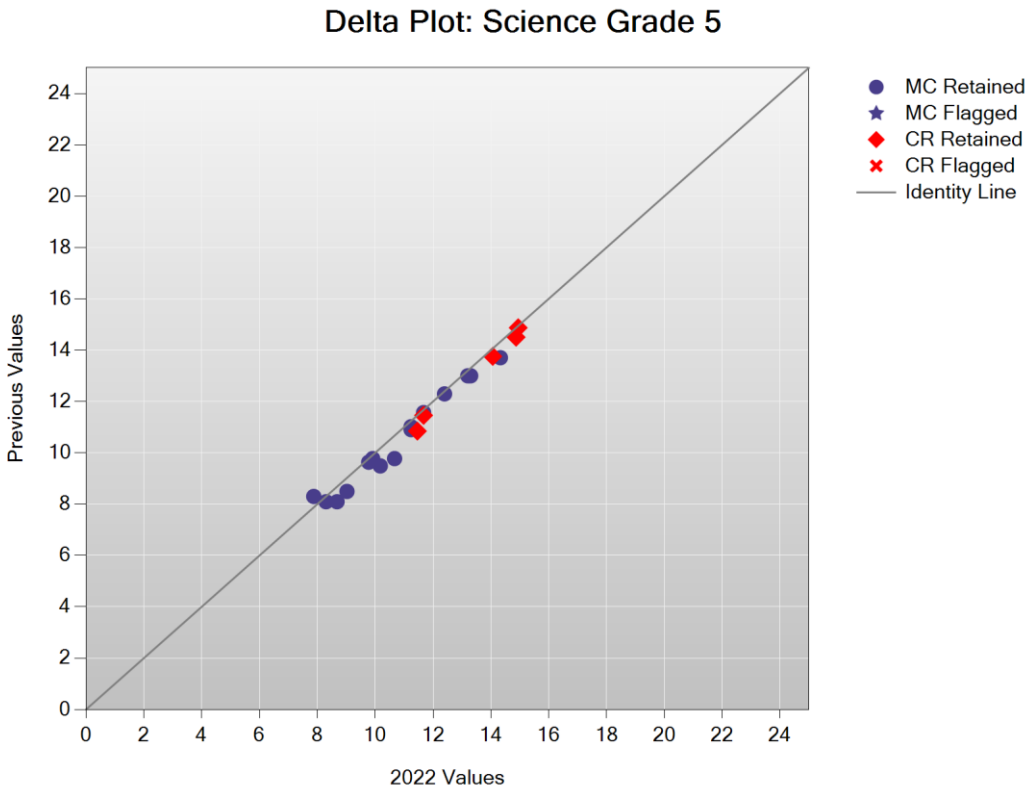


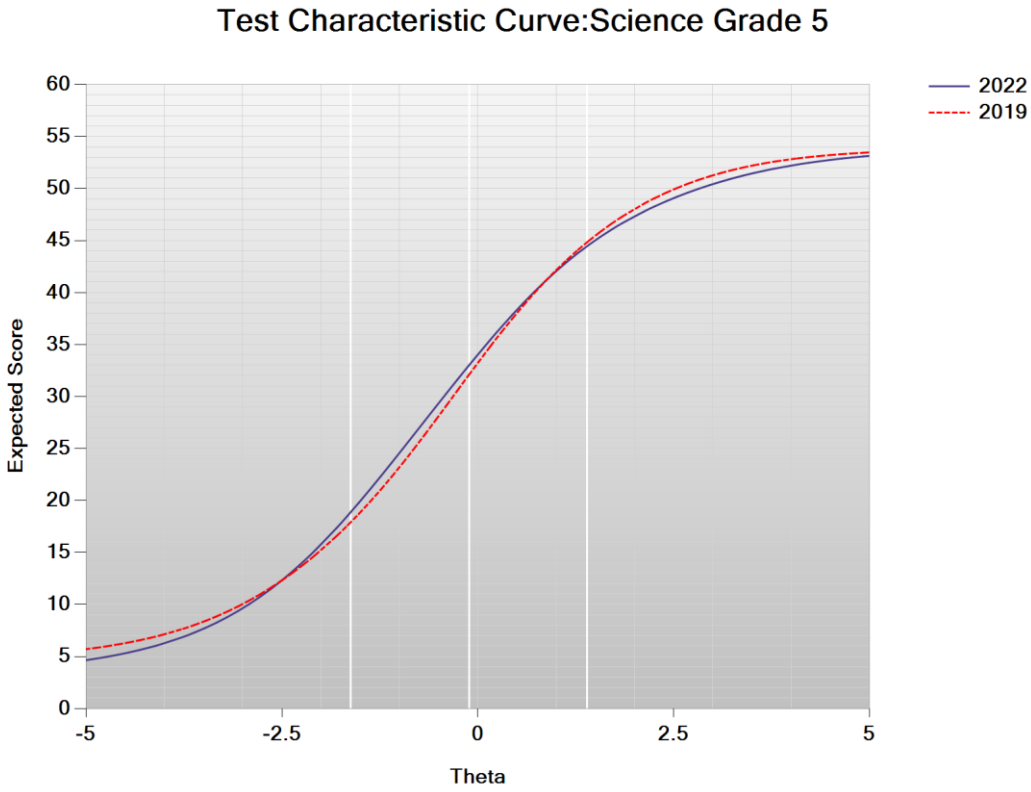
A/A Plot: Science Grade 5

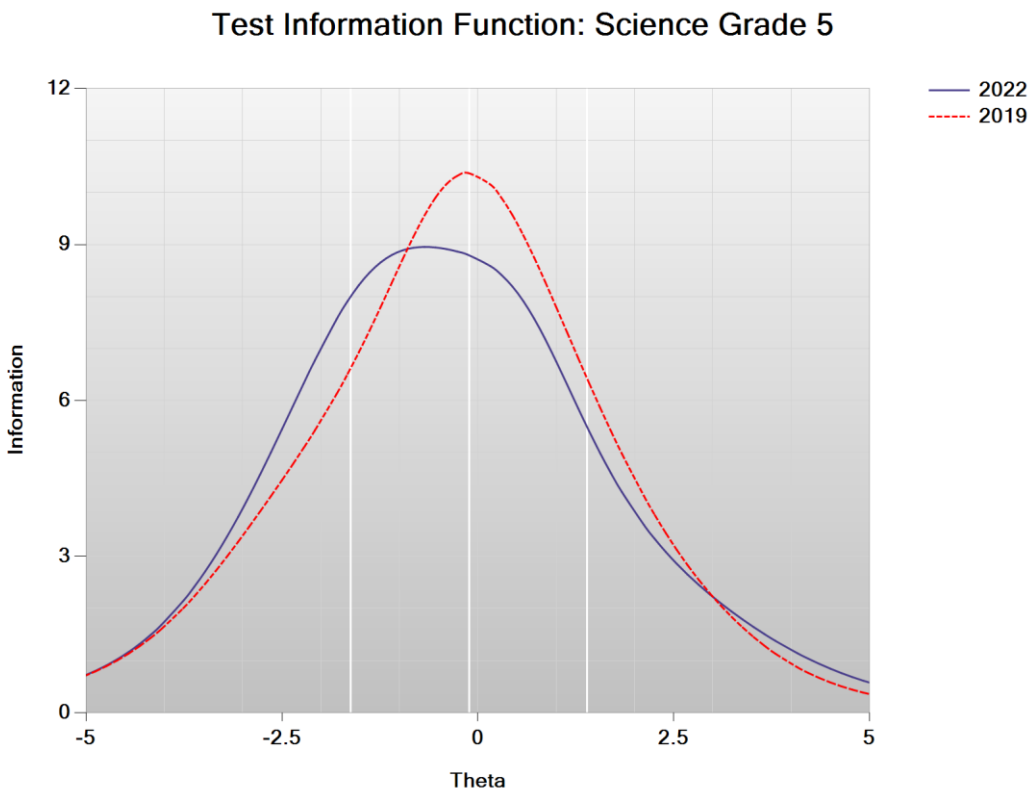


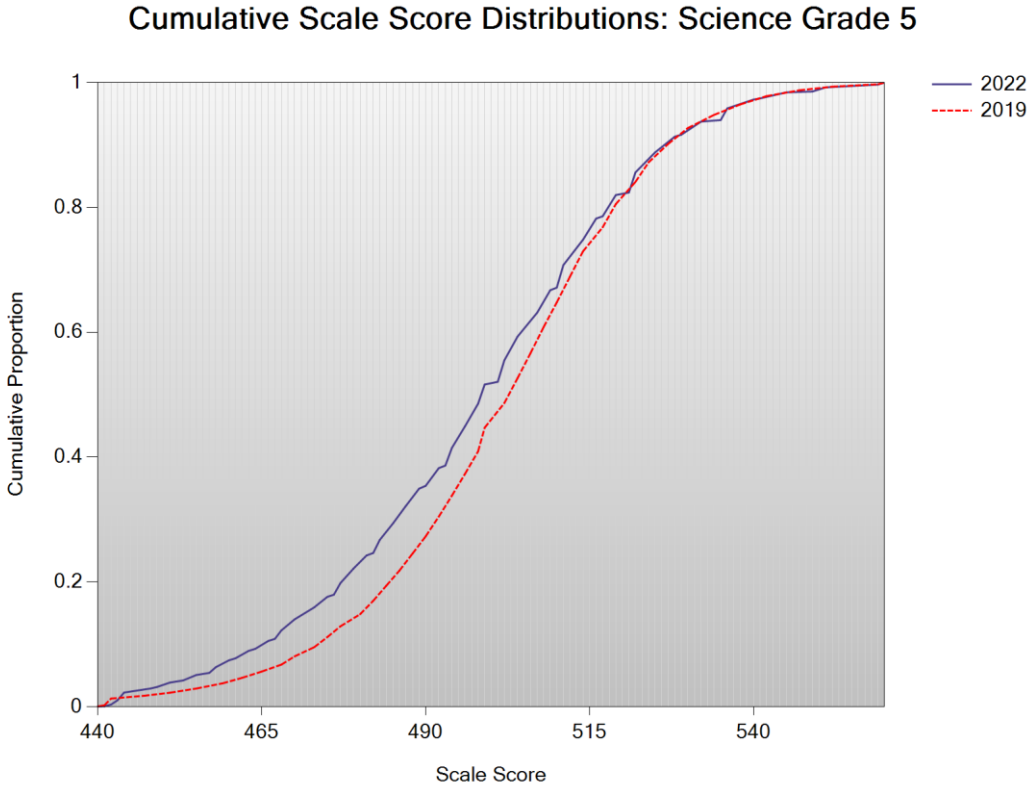
B/B Plot: Science Grade 5



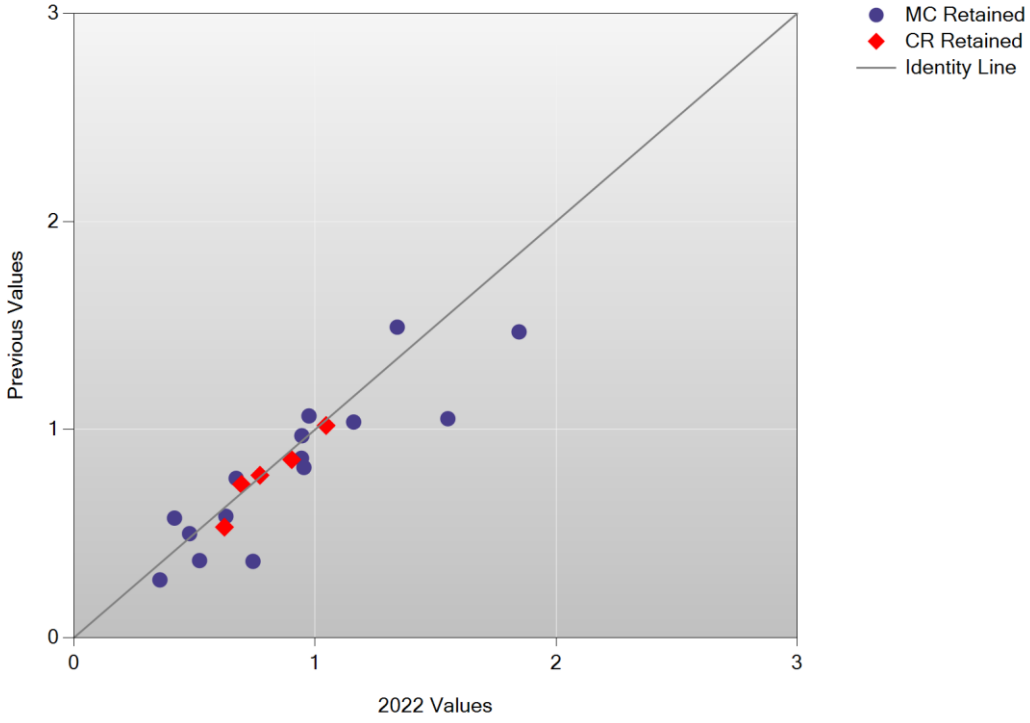

Delta Plot: Science Grade 5
MC Retained
MC Flagged
CR Retained
CR Flagged
Identity Line
Previous Values
2022 Values
0
2
4
6
8
10
12
14
16
18
20
22
24


Test Characteristic Curve:Science Grade 5
2022
2019
Expected Score
Theta
0
5
10
15
20
25
30
35
40
45
50
55
60
-5
-2.5
0
2.5
5

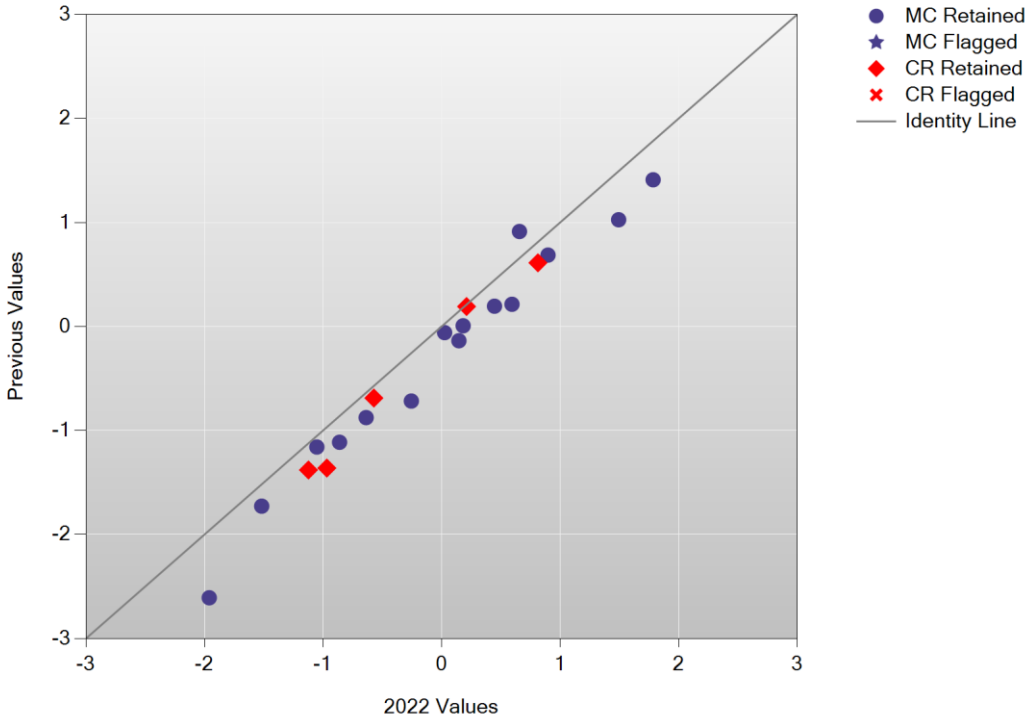

Test Information Function: Science Grade 5
2022
2019
Information
12
9
6
3
0
-5
-2.5
0
2.5
5
Theta

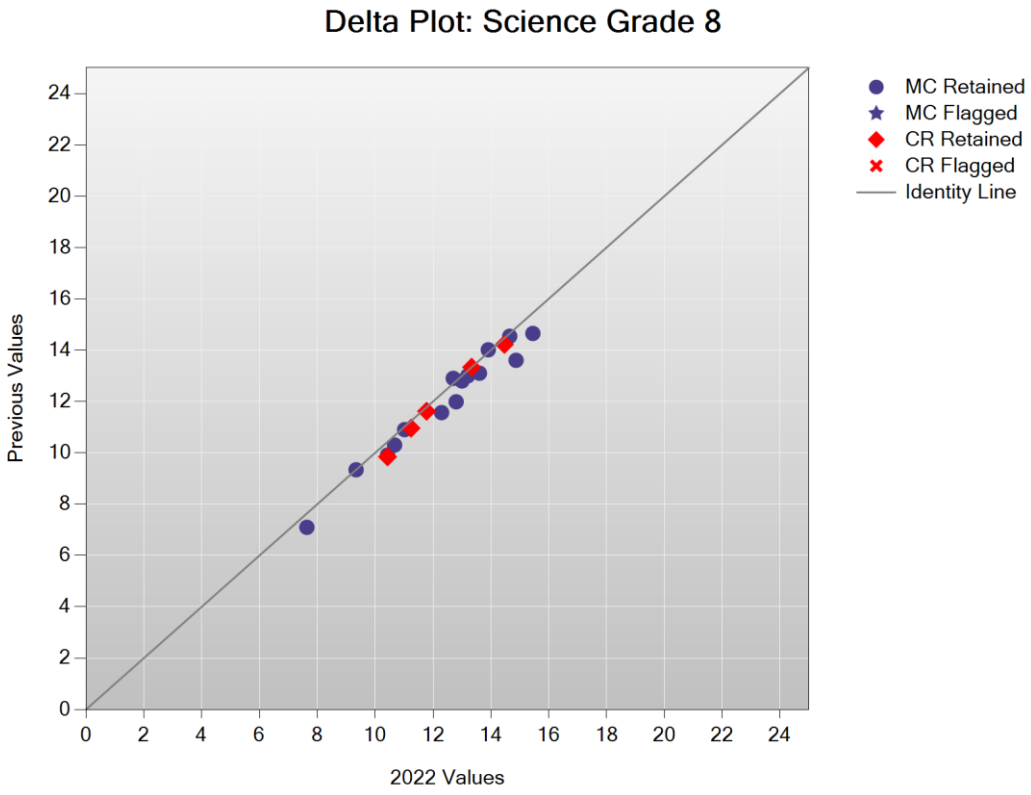

Cumulative Scale Score Distributions: Science Grade 5
2022
2019
Cumulative Proportion
1
0.8
0.6
0.4
0.2
0
440
465
490
515
540
Scale Score

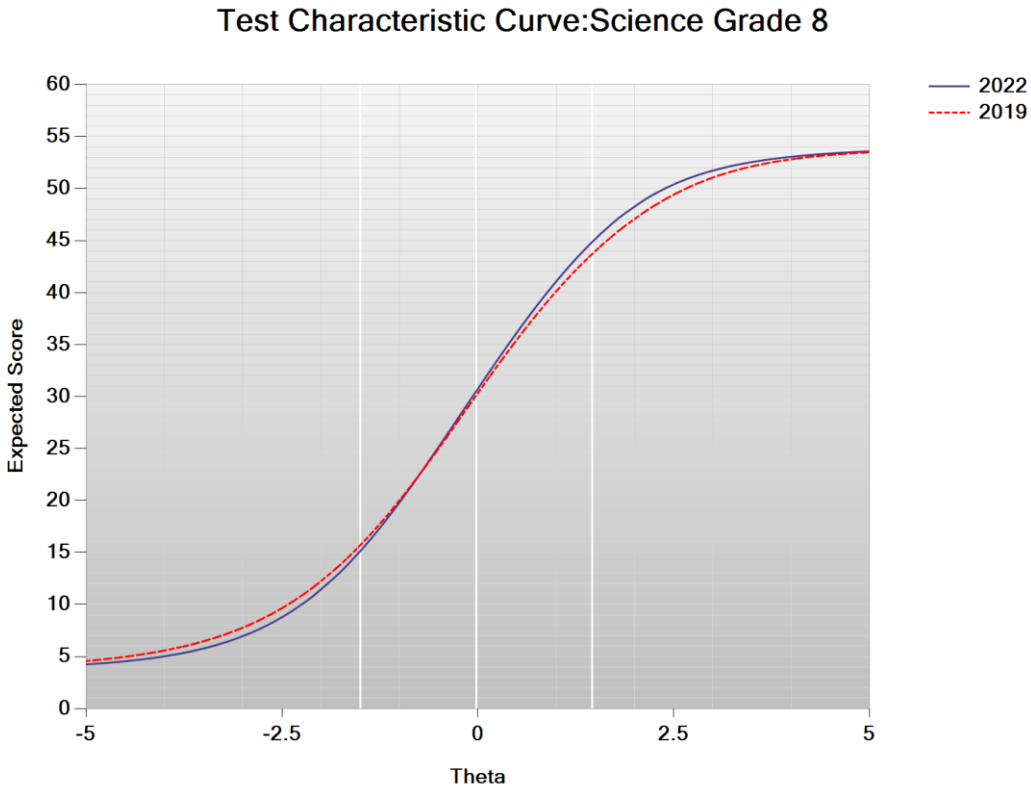
A/A Plot: Science Grade 8



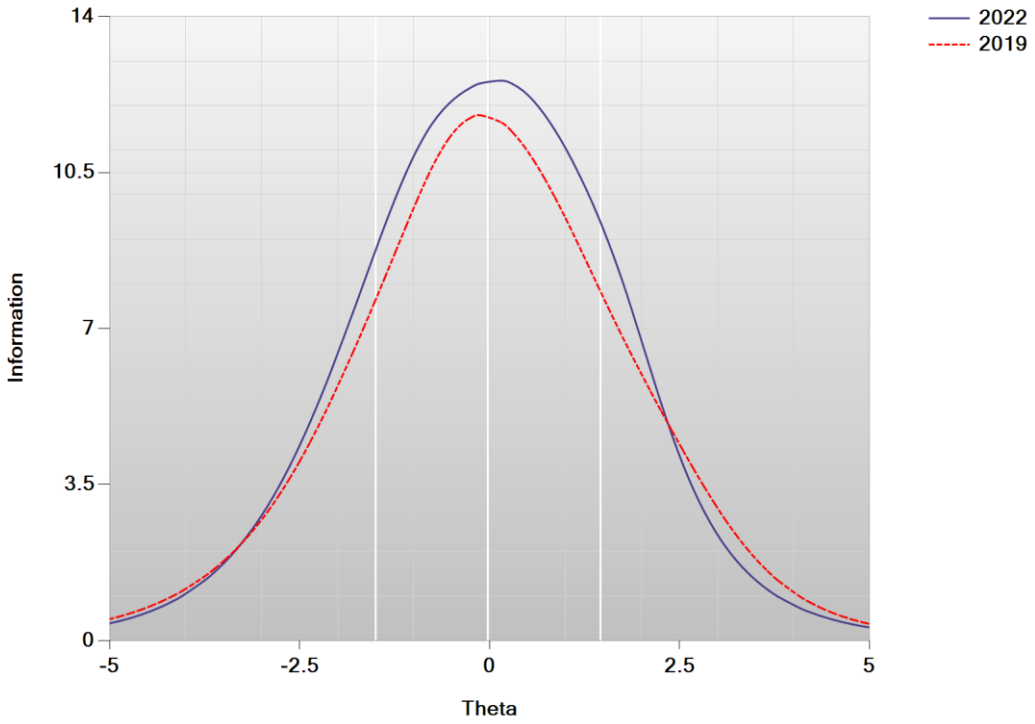
B/B Plot: Science Grade 8



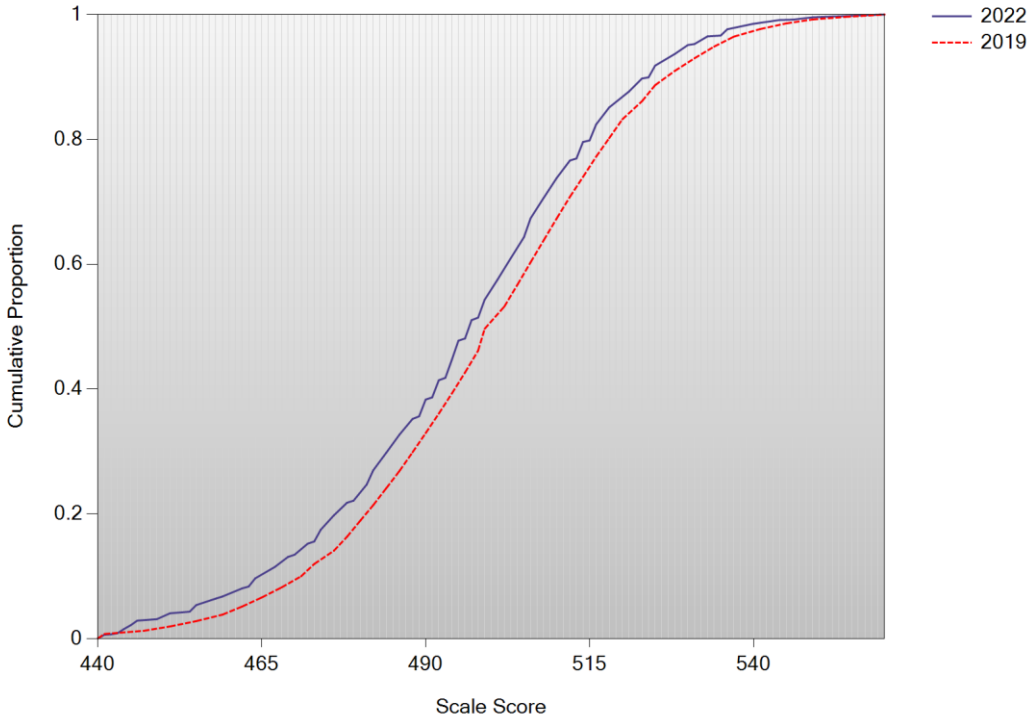

Delta Plot: Science Grade 8
MC Retained
MC Flagged
CR Retained
CR Flagged
Identity Line
Previous Values
2022 Values
0
2
4
6
8
10
12
14
16
18
20
22
24


Test Characteristic Curve:Science Grade 8
2022
2019
Expected Score
Theta
0
5
10
15
20
25
30
35
40
45
50
55
60
-5
-2.5
0
2.5
5

Test Information Function: Science Grade 8



Cumulative Scale Score Distributions: Science Grade 8



Section 2.2

Lookup Tables

Table 2.2.1
Raw Score to Scale Score Lookup Table
English Language Arts Grade 3

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
0	-3.173	1.77	10.0	440	1	440	1
1	-3.123	1.87	10.0	441	1	443	1
2	-3.073	1.97	10.0	442	1	446	1
3	-3.022	2.07	10.0	443	1	448	1
4	-2.972	2.18	10.0	444	1	451	1
5	-2.922	2.30	10.0	445	1	463	1
6	-2.871	2.43	10.0	446	1	471	2
7	-2.821	2.56	10.0	447	1	476	2
8	-2.526	3.51	10.0	452	1	481	2
9	-2.292	4.50	8.9	457	1	485	2
10	-2.096	5.49	8.0	460	1	489	2
11	-1.927	6.44	7.4	463	1	492	2
12	-1.776	7.33	7.0	466	1	495	2
13	-1.639	8.13	6.6	469	1	499	2
14	-1.511	8.84	6.3	471	2	502	3
15	-1.390	9.45	6.1	474	2	506	3
16	-1.275	9.97	6.0	476	2	510	3
17	-1.163	10.38	5.8	478	2	514	3
18	-1.054	10.69	5.8	480	2	518	3
19	-0.946	10.91	5.7	482	2	524	3
20	-0.838	11.03	5.7	484	2	530	4
21	-0.730	11.05	5.7	486	2	540	4
22	-0.621	10.98	5.7	488	2	555	4
23	-0.511	10.81	5.7	490	2	560	4
24	-0.398	10.57	5.8	492	2	N/A	N/A
25	-0.281	10.25	5.9	494	2	N/A	N/A
26	-0.161	9.86	6.0	497	2	N/A	N/A
27	-0.036	9.43	6.1	499	2	N/A	N/A
28	0.095	8.94	6.3	502	3	N/A	N/A
29	0.232	8.43	6.5	504	3	N/A	N/A
30	0.377	7.88	6.7	507	3	N/A	N/A
31	0.531	7.31	7.0	510	3	N/A	N/A
32	0.695	6.73	7.3	513	3	N/A	N/A
33	0.872	6.13	7.6	516	3	N/A	N/A
34	1.063	5.52	8.0	520	3	N/A	N/A
35	1.270	4.90	8.5	524	3	N/A	N/A
36	1.498	4.31	9.1	528	3	N/A	N/A
37	1.749	3.75	9.7	533	4	N/A	N/A

Table 2.2.1 (continued)
Raw Score to Scale Score Lookup Table
English Language Arts Grade 3

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
38	2.029	3.24	10.0	538	4	N/A	N/A
39	2.343	2.79	10.0	544	4	N/A	N/A
40	2.702	2.37	10.0	551	4	N/A	N/A
41	3.128	1.93	10.0	559	4	N/A	N/A
42	3.196	1.86	10.0	560	4	N/A	N/A
43	3.196	1.86	10.0	560	4	N/A	N/A
44	3.196	1.86	10.0	560	4	N/A	N/A

Table 2.2.2
Raw Score to Scale Score Lookup Table
English Language Arts Grade 4

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
0	-3.153	1.64	10.0	440	1	440	1
1	-3.137	1.68	10.0	440	1	443	1
2	-3.121	1.71	10.0	441	1	446	1
3	-3.105	1.75	10.0	441	1	448	1
4	-3.089	1.78	10.0	441	1	451	1
5	-3.073	1.82	10.0	442	1	461	1
6	-3.057	1.86	10.0	442	1	469	1
7	-3.041	1.90	10.0	442	1	474	2
8	-2.694	2.97	10.0	449	1	479	2
9	-2.434	4.09	9.3	454	1	482	2
10	-2.222	5.17	8.3	458	1	486	2
11	-2.042	6.20	7.6	461	1	489	2
12	-1.883	7.16	7.0	464	1	492	2
13	-1.739	8.02	6.7	467	1	495	2
14	-1.606	8.78	6.4	469	1	498	2
15	-1.482	9.43	6.1	471	2	501	3
16	-1.363	9.96	6.0	474	2	504	3
17	-1.249	10.36	5.9	476	2	508	3
18	-1.138	10.66	5.8	478	2	512	3
19	-1.030	10.85	5.7	480	2	516	3
20	-0.922	10.97	5.7	482	2	522	3
21	-0.816	11.03	5.7	484	2	528	3
22	-0.710	11.05	5.7	486	2	536	4
23	-0.603	11.04	5.7	488	2	549	4
24	-0.496	11.01	5.7	490	2	560	4
25	-0.389	10.95	5.7	492	2	N/A	N/A
26	-0.279	10.85	5.7	494	2	N/A	N/A
27	-0.168	10.69	5.8	496	2	N/A	N/A
28	-0.055	10.46	5.8	498	2	N/A	N/A
29	0.062	10.13	5.9	501	3	N/A	N/A
30	0.184	9.70	6.1	503	3	N/A	N/A
31	0.310	9.20	6.2	505	3	N/A	N/A
32	0.443	8.63	6.4	508	3	N/A	N/A
33	0.583	8.02	6.7	510	3	N/A	N/A
34	0.732	7.42	6.9	513	3	N/A	N/A
35	0.893	6.82	7.2	516	3	N/A	N/A
36	1.066	6.25	7.5	520	3	N/A	N/A
37	1.256	5.67	7.9	523	3	N/A	N/A

Table 2.2.2 (continued)
Raw Score to Scale Score Lookup Table
English Language Arts Grade 4

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
38	1.466	5.05	8.4	527	3	N/A	N/A
39	1.705	4.38	9.0	532	4	N/A	N/A
40	1.987	3.65	9.9	537	4	N/A	N/A
41	2.333	2.90	10.0	543	4	N/A	N/A
42	2.789	2.13	10.0	552	4	N/A	N/A
43	3.215	1.52	10.0	560	4	N/A	N/A
44	3.215	1.52	10.0	560	4	N/A	N/A

Table 2.2.3
Raw Score to Scale Score Lookup Table
English Language Arts Grade 5

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
0	-3.360	2.18	10.0	440	1	440	1
1	-3.308	2.33	10.0	441	1	442	1
2	-3.256	2.48	10.0	442	1	443	1
3	-3.204	2.64	10.0	443	1	445	1
4	-3.152	2.82	10.0	444	1	446	1
5	-3.101	3.01	10.0	445	1	455	1
6	-3.049	3.21	9.9	446	1	461	1
7	-2.796	4.44	8.4	450	1	466	1
8	-2.595	5.76	7.4	454	1	470	2
9	-2.426	7.13	6.6	457	1	474	2
10	-2.280	8.49	6.1	459	1	477	2
11	-2.149	9.77	5.7	461	1	481	2
12	-2.029	10.94	5.3	464	1	484	2
13	-1.918	11.96	5.0	466	1	487	2
14	-1.813	12.80	4.9	467	1	491	2
15	-1.713	13.47	4.7	469	1	494	2
16	-1.616	13.96	4.7	471	2	498	2
17	-1.521	14.29	4.7	472	2	502	3
18	-1.428	14.47	4.6	474	2	505	3
19	-1.336	14.53	4.6	476	2	510	3
20	-1.244	14.48	4.6	477	2	514	3
21	-1.152	14.33	4.7	479	2	519	3
22	-1.059	14.10	4.7	481	2	524	3
23	-0.965	13.81	4.8	482	2	530	4
24	-0.869	13.48	4.8	484	2	537	4
25	-0.772	13.11	4.9	486	2	546	4
26	-0.672	12.72	5.0	487	2	559	4
27	-0.569	12.33	5.0	489	2	560	4
28	-0.464	11.94	5.1	491	2	N/A	N/A
29	-0.356	11.57	5.2	493	2	N/A	N/A
30	-0.244	11.21	5.3	495	2	N/A	N/A
31	-0.130	10.86	5.4	497	2	N/A	N/A
32	-0.011	10.52	5.5	499	2	N/A	N/A
33	0.111	10.16	5.5	501	3	N/A	N/A
34	0.237	9.78	5.7	504	3	N/A	N/A
35	0.368	9.36	5.8	506	3	N/A	N/A
36	0.505	8.89	5.9	508	3	N/A	N/A
37	0.649	8.36	6.1	511	3	N/A	N/A

Table 2.2.3 (continued)
Raw Score to Scale Score Lookup Table
English Language Arts Grade 5

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
38	0.801	7.80	6.3	514	3	N/A	N/A
39	0.965	7.23	6.6	516	3	N/A	N/A
40	1.141	6.68	6.8	520	3	N/A	N/A
41	1.334	6.18	7.1	523	3	N/A	N/A
42	1.547	5.70	7.4	527	3	N/A	N/A
43	1.787	5.16	7.8	531	4	N/A	N/A
44	2.065	4.45	8.4	536	4	N/A	N/A
45	2.411	3.52	9.4	542	4	N/A	N/A
46	2.883	2.52	10.0	550	4	N/A	N/A
47	3.430	1.91	10.0	560	4	N/A	N/A
48	3.430	1.91	10.0	560	4	N/A	N/A

Table 2.2.4
Raw Score to Scale Score Lookup Table
English Language Arts Grade 6

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
0	-3.171	3.24	10.0	440	1	440	1
1	-3.154	3.30	10.0	440	1	442	1
2	-3.137	3.35	10.0	441	1	443	1
3	-3.120	3.41	10.0	441	1	445	1
4	-3.102	3.47	10.0	441	1	446	1
5	-3.085	3.52	10.0	442	1	448	1
6	-3.068	3.58	10.0	442	1	456	1
7	-3.051	3.64	9.9	442	1	462	1
8	-3.033	3.70	9.9	443	1	467	1
9	-3.016	3.77	9.8	443	1	472	2
10	-2.797	4.60	8.9	447	1	476	2
11	-2.606	5.38	8.2	451	1	481	2
12	-2.435	6.08	7.7	454	1	484	2
13	-2.279	6.69	7.3	457	1	488	2
14	-2.133	7.21	7.1	460	1	492	2
15	-1.996	7.64	6.9	462	1	496	2
16	-1.864	7.97	6.7	465	1	499	2
17	-1.736	8.23	6.6	467	1	503	3
18	-1.611	8.42	6.5	469	1	507	3
19	-1.489	8.55	6.5	472	2	510	3
20	-1.369	8.66	6.5	474	2	514	3
21	-1.249	8.74	6.4	476	2	519	3
22	-1.131	8.83	6.4	479	2	523	3
23	-1.013	8.92	6.4	481	2	528	3
24	-0.896	9.02	6.3	483	2	534	4
25	-0.779	9.13	6.3	485	2	540	4
26	-0.662	9.23	6.2	488	2	547	4
27	-0.545	9.31	6.2	490	2	557	4
28	-0.428	9.36	6.2	492	2	560	4
29	-0.311	9.36	6.2	494	2	560	4
30	-0.191	9.29	6.2	497	2	N/A	N/A
31	-0.070	9.15	6.3	499	2	N/A	N/A
32	0.054	8.95	6.3	501	3	N/A	N/A
33	0.182	8.68	6.4	504	3	N/A	N/A
34	0.314	8.37	6.6	506	3	N/A	N/A
35	0.452	8.04	6.7	509	3	N/A	N/A
36	0.595	7.71	6.8	512	3	N/A	N/A
37	0.745	7.40	7.0	514	3	N/A	N/A

Table 2.2.4 (continued)
Raw Score to Scale Score Lookup Table
English Language Arts Grade 6

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
38	0.903	7.11	7.1	517	3	N/A	N/A
39	1.068	6.82	7.3	520	3	N/A	N/A
40	1.244	6.49	7.5	524	3	N/A	N/A
41	1.431	6.09	7.7	527	3	N/A	N/A
42	1.634	5.60	8.0	531	4	N/A	N/A
43	1.859	5.01	8.5	535	4	N/A	N/A
44	2.112	4.38	9.1	540	4	N/A	N/A
45	2.403	3.75	9.8	546	4	N/A	N/A
46	2.744	3.15	10.0	552	4	N/A	N/A
47	3.150	2.63	10.0	560	4	N/A	N/A
48	3.150	2.63	10.0	560	4	N/A	N/A
49	3.150	2.63	10.0	560	4	N/A	N/A
50	3.150	2.63	10.0	560	4	N/A	N/A

Table 2.2.5
Raw Score to Scale Score Lookup Table
English Language Arts Grade 7

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
0	-3.131	3.09	10.0	440	1	440	1
1	-3.111	3.18	10.0	440	1	442	1
2	-3.091	3.26	10.0	441	1	443	1
3	-3.070	3.35	10.0	441	1	445	1
4	-3.050	3.43	10.0	442	1	447	1
5	-3.030	3.52	10.0	442	1	448	1
6	-3.010	3.62	10.0	442	1	455	1
7	-2.990	3.71	9.9	443	1	461	1
8	-2.970	3.81	9.8	443	1	465	1
9	-2.731	5.10	8.5	448	1	469	1
10	-2.534	6.34	7.6	451	1	473	2
11	-2.363	7.46	7.0	455	1	477	2
12	-2.210	8.44	6.6	458	1	480	2
13	-2.071	9.23	6.3	460	1	483	2
14	-1.940	9.84	6.1	463	1	487	2
15	-1.816	10.26	6.0	465	1	490	2
16	-1.696	10.53	5.9	467	1	494	2
17	-1.580	10.69	5.8	469	1	497	2
18	-1.466	10.77	5.8	472	2	501	3
19	-1.354	10.84	5.8	474	2	504	3
20	-1.244	10.92	5.8	476	2	508	3
21	-1.134	11.06	5.7	478	2	512	3
22	-1.027	11.26	5.7	480	2	517	3
23	-0.920	11.51	5.6	482	2	522	3
24	-0.815	11.79	5.6	484	2	528	3
25	-0.711	12.07	5.5	486	2	534	4
26	-0.608	12.30	5.4	488	2	543	4
27	-0.506	12.47	5.4	490	2	555	4
28	-0.403	12.54	5.4	492	2	560	4
29	-0.300	12.52	5.4	494	2	N/A	N/A
30	-0.196	12.40	5.4	496	2	N/A	N/A
31	-0.091	12.23	5.5	498	2	N/A	N/A
32	0.017	12.02	5.5	500	3	N/A	N/A
33	0.127	11.81	5.6	502	3	N/A	N/A
34	0.240	11.63	5.6	504	3	N/A	N/A
35	0.356	11.49	5.6	507	3	N/A	N/A
36	0.475	11.35	5.7	509	3	N/A	N/A
37	0.597	11.20	5.7	511	3	N/A	N/A

Table 2.2.5 (continued)
Raw Score to Scale Score Lookup Table
English Language Arts Grade 7

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
38	0.724	10.96	5.8	514	3	N/A	N/A
39	0.857	10.59	5.9	516	3	N/A	N/A
40	0.996	10.04	6.0	519	3	N/A	N/A
41	1.146	9.32	6.3	522	3	N/A	N/A
42	1.309	8.44	6.6	525	3	N/A	N/A
43	1.489	7.51	7.0	528	3	N/A	N/A
44	1.690	6.58	7.4	532	4	N/A	N/A
45	1.920	5.68	8.0	536	4	N/A	N/A
46	2.187	4.87	8.7	542	4	N/A	N/A
47	2.500	4.26	9.3	548	4	N/A	N/A
48	2.882	3.63	10.0	555	4	N/A	N/A
49	3.153	2.94	10.0	560	4	N/A	N/A
50	3.153	2.94	10.0	560	4	N/A	N/A

Table 2.2.6
Raw Score to Scale Score Lookup Table
English Language Arts Grade 8

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
0	-2.964	4.57	9.3	440	1	440	1
1	-2.958	4.60	9.3	440	1	441	1
2	-2.953	4.62	9.3	440	1	441	1
3	-2.947	4.65	9.2	440	1	442	1
4	-2.942	4.68	9.2	440	1	443	1
5	-2.936	4.71	9.2	441	1	444	1
6	-2.931	4.73	9.1	441	1	444	1
7	-2.925	4.76	9.1	441	1	451	1
8	-2.920	4.79	9.1	441	1	457	1
9	-2.914	4.82	9.1	441	1	462	1
10	-2.909	4.85	9.0	441	1	466	1
11	-2.724	5.96	8.2	445	1	470	2
12	-2.561	7.22	7.4	448	1	474	2
13	-2.413	8.61	6.8	451	1	478	2
14	-2.279	10.06	6.3	454	1	481	2
15	-2.156	11.47	5.9	456	1	485	2
16	-2.041	12.73	5.6	458	1	489	2
17	-1.932	13.76	5.4	461	1	492	2
18	-1.828	14.49	5.2	463	1	496	2
19	-1.726	14.88	5.2	465	1	499	2
20	-1.626	14.97	5.1	467	1	503	3
21	-1.526	14.81	5.2	469	1	507	3
22	-1.426	14.52	5.2	471	2	511	3
23	-1.325	14.21	5.3	473	2	516	3
24	-1.222	13.98	5.3	475	2	521	3
25	-1.118	13.91	5.3	477	2	527	3
26	-1.014	14.00	5.3	479	2	535	4
27	-0.909	14.18	5.3	481	2	545	4
28	-0.803	14.35	5.3	483	2	559	4
29	-0.697	14.40	5.2	485	2	560	4
30	-0.589	14.25	5.3	487	2	N/A	N/A
31	-0.479	13.89	5.3	489	2	N/A	N/A
32	-0.365	13.38	5.4	492	2	N/A	N/A
33	-0.247	12.85	5.6	494	2	N/A	N/A
34	-0.125	12.45	5.6	497	2	N/A	N/A
35	0.002	12.30	5.7	499	2	N/A	N/A
36	0.131	12.38	5.7	502	3	N/A	N/A
37	0.263	12.51	5.6	504	3	N/A	N/A

Table 2.2.6 (continued)
Raw Score to Scale Score Lookup Table
English Language Arts Grade 8

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
38	0.398	12.44	5.6	507	3	N/A	N/A
39	0.539	11.96	5.8	510	3	N/A	N/A
40	0.689	11.01	6.0	513	3	N/A	N/A
41	0.853	9.76	6.4	516	3	N/A	N/A
42	1.035	8.57	6.8	520	3	N/A	N/A
43	1.239	7.68	7.2	524	3	N/A	N/A
44	1.463	6.97	7.5	528	3	N/A	N/A
45	1.713	6.14	8.0	533	4	N/A	N/A
46	1.999	5.47	8.5	539	4	N/A	N/A
47	2.321	5.26	8.7	545	4	N/A	N/A
48	2.703	4.30	9.6	553	4	N/A	N/A
49	3.066	2.59	10.0	560	4	N/A	N/A
50	3.066	2.59	10.0	560	4	N/A	N/A

Table 2.2.7
Raw Score to Scale Score Lookup Table
English Language Arts Grade 10

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
0	-3.157	3.73	10.0	440	1	440	1
1	-3.132	3.83	10.0	441	1	441	1
2	-3.106	3.94	10.0	441	1	441	1
3	-3.081	4.05	10.0	442	1	442	1
4	-3.056	4.18	10.0	442	1	442	1
5	-3.031	4.30	10.0	443	1	443	1
6	-3.006	4.44	10.0	443	1	443	1
7	-2.981	4.58	9.8	444	1	444	1
8	-2.956	4.73	9.7	444	1	444	1
9	-2.931	4.89	9.5	445	1	445	1
10	-2.733	6.50	8.2	449	1	449	1
11	-2.564	8.55	7.2	452	1	453	1
12	-2.419	10.95	6.3	455	1	456	1
13	-2.291	13.56	5.7	458	1	459	1
14	-2.178	16.25	5.2	461	1	461	1
15	-2.075	18.90	4.8	463	1	464	1
16	-1.980	21.39	4.5	465	1	466	1
17	-1.892	23.51	4.3	467	1	468	1
18	-1.808	25.10	4.2	468	1	469	1
19	-1.727	26.02	4.1	470	2	472	2
20	-1.649	26.33	4.1	472	2	474	2
21	-1.571	26.22	4.1	473	2	475	2
22	-1.494	25.99	4.1	475	2	477	2
23	-1.418	25.90	4.1	477	2	479	2
24	-1.342	26.10	4.1	478	2	481	2
25	-1.266	26.60	4.1	480	2	482	2
26	-1.191	27.26	4.0	481	2	484	2
27	-1.117	27.85	4.0	483	2	486	2
28	-1.042	28.11	4.0	484	2	487	2
29	-0.967	27.88	4.0	486	2	489	2
30	-0.890	27.15	4.0	488	2	491	2
31	-0.812	26.11	4.1	489	2	493	2
32	-0.731	25.08	4.2	491	2	495	2
33	-0.647	24.40	4.3	493	2	497	2
34	-0.562	24.26	4.3	494	2	499	2
35	-0.475	24.56	4.2	496	2	501	3
36	-0.387	24.92	4.2	498	2	503	3
37	-0.297	24.82	4.2	500	3	505	3

Table 2.2.7 (continued)
Raw Score to Scale Score Lookup Table
English Language Arts Grade 10

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
38	-0.203	23.83	4.3	502	3	508	3
39	-0.104	21.84	4.5	504	3	510	3
40	0.004	19.25	4.8	506	3	513	3
41	0.123	16.73	5.1	509	3	516	3
42	0.254	14.85	5.4	512	3	519	3
43	0.400	13.38	5.7	515	3	523	3
44	0.565	11.46	6.2	518	3	527	3
45	0.762	8.60	7.2	522	3	531	4
46	1.019	5.85	8.7	528	3	537	4
47	1.347	5.51	8.9	535	4	543	4
48	1.685	7.73	7.6	542	4	550	4
49	2.016	7.85	7.5	549	4	559	4
50	2.538	2.44	10.0	559	4	560	4
51	2.559	2.29	10.0	560	4	560	4

Table 2.2.8
Raw Score to Scale Score Lookup Table
Mathematics Grade 3

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
0	-2.782	3.18	10.0	440	1	440	1
1	-2.771	3.21	10.0	440	1	441	1
2	-2.761	3.25	10.0	440	1	442	1
3	-2.751	3.28	10.0	441	1	443	1
4	-2.740	3.32	10.0	441	1	455	1
5	-2.730	3.35	10.0	441	1	462	1
6	-2.719	3.39	10.0	441	1	468	1
7	-2.445	4.44	10.0	447	1	473	2
8	-2.224	5.45	9.1	452	1	478	2
9	-2.039	6.42	8.4	456	1	482	2
10	-1.876	7.35	7.9	459	1	485	2
11	-1.731	8.24	7.4	462	1	489	2
12	-1.600	9.08	7.1	465	1	492	2
13	-1.478	9.88	6.8	468	1	496	2
14	-1.364	10.63	6.5	470	2	499	2
15	-1.257	11.34	6.3	473	2	503	3
16	-1.155	12.00	6.2	475	2	506	3
17	-1.057	12.62	6.0	477	2	510	3
18	-0.963	13.19	5.9	479	2	515	3
19	-0.872	13.70	5.8	481	2	519	3
20	-0.783	14.17	5.7	483	2	525	3
21	-0.696	14.57	5.6	485	2	532	4
22	-0.611	14.92	5.5	486	2	541	4
23	-0.526	15.20	5.5	488	2	555	4
24	-0.443	15.41	5.4	490	2	560	4
25	-0.359	15.56	5.4	492	2	N/A	N/A
26	-0.276	15.63	5.4	494	2	N/A	N/A
27	-0.193	15.63	5.4	495	2	N/A	N/A
28	-0.109	15.56	5.4	497	2	N/A	N/A
29	-0.025	15.42	5.4	499	2	N/A	N/A
30	0.062	15.21	5.5	501	3	N/A	N/A
31	0.149	14.92	5.5	503	3	N/A	N/A
32	0.239	14.58	5.6	505	3	N/A	N/A
33	0.331	14.17	5.7	506	3	N/A	N/A
34	0.427	13.71	5.8	509	3	N/A	N/A
35	0.526	13.20	5.9	511	3	N/A	N/A
36	0.630	12.65	6.0	513	3	N/A	N/A
37	0.739	12.06	6.2	515	3	N/A	N/A

Table 2.2.8 (continued)
Raw Score to Scale Score Lookup Table
Mathematics Grade 3

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
38	0.855	11.43	6.3	518	3	N/A	N/A
39	0.979	10.73	6.5	520	3	N/A	N/A
40	1.112	9.94	6.8	523	3	N/A	N/A
41	1.259	9.03	7.1	526	3	N/A	N/A
42	1.424	7.95	7.6	529	3	N/A	N/A
43	1.615	6.71	8.2	534	4	N/A	N/A
44	1.845	5.35	9.2	539	4	N/A	N/A
45	2.139	3.92	10.0	545	4	N/A	N/A
46	2.554	2.47	10.0	554	4	N/A	N/A
47	2.837	1.78	10.0	560	4	N/A	N/A
48	2.837	1.78	10.0	560	4	N/A	N/A

Table 2.2.9
Raw Score to Scale Score Lookup Table
Mathematics Grade 4

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
0	-2.812	3.52	10.0	440	1	440	1
1	-2.808	3.53	10.0	440	1	442	1
2	-2.805	3.55	10.0	440	1	444	1
3	-2.802	3.56	10.0	440	1	446	1
4	-2.798	3.57	10.0	440	1	455	1
5	-2.795	3.58	10.0	440	1	461	1
6	-2.526	4.70	9.7	446	1	466	1
7	-2.309	5.76	8.7	451	1	470	2
8	-2.127	6.76	8.1	454	1	474	2
9	-1.967	7.72	7.5	458	1	477	2
10	-1.824	8.63	7.1	461	1	480	2
11	-1.693	9.51	6.8	463	1	484	2
12	-1.574	10.37	6.5	466	1	486	2
13	-1.462	11.21	6.3	468	1	489	2
14	-1.358	12.04	6.0	470	2	492	2
15	-1.260	12.86	5.8	472	2	495	2
16	-1.167	13.66	5.7	474	2	497	2
17	-1.078	14.46	5.5	476	2	500	3
18	-0.993	15.23	5.4	478	2	503	3
19	-0.911	15.99	5.2	480	2	506	3
20	-0.832	16.72	5.1	481	2	509	3
21	-0.755	17.41	5.0	483	2	513	3
22	-0.680	18.05	4.9	485	2	517	3
23	-0.608	18.64	4.8	486	2	522	3
24	-0.536	19.17	4.8	488	2	529	3
25	-0.466	19.62	4.7	489	2	537	4
26	-0.397	20.00	4.7	491	2	552	4
27	-0.328	20.30	4.6	492	2	560	4
28	-0.260	20.52	4.6	493	2	N/A	N/A
29	-0.192	20.66	4.6	495	2	N/A	N/A
30	-0.124	20.72	4.6	496	2	N/A	N/A
31	-0.056	20.70	4.6	498	2	N/A	N/A
32	0.013	20.60	4.6	499	2	N/A	N/A
33	0.082	20.42	4.6	501	3	N/A	N/A
34	0.152	20.17	4.7	502	3	N/A	N/A
35	0.224	19.85	4.7	504	3	N/A	N/A
36	0.297	19.45	4.7	505	3	N/A	N/A
37	0.371	18.99	4.8	507	3	N/A	N/A

Table 2.2.9 (continued)
Raw Score to Scale Score Lookup Table
Mathematics Grade 4

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
38	0.448	18.45	4.9	508	3	N/A	N/A
39	0.527	17.85	5.0	510	3	N/A	N/A
40	0.609	17.17	5.1	512	3	N/A	N/A
41	0.695	16.43	5.2	513	3	N/A	N/A
42	0.785	15.63	5.3	515	3	N/A	N/A
43	0.879	14.77	5.4	517	3	N/A	N/A
44	0.980	13.86	5.6	519	3	N/A	N/A
45	1.088	12.89	5.8	522	3	N/A	N/A
46	1.205	11.87	6.1	524	3	N/A	N/A
47	1.333	10.78	6.4	527	3	N/A	N/A
48	1.476	9.61	6.8	529	3	N/A	N/A
49	1.640	8.34	7.3	533	4	N/A	N/A
50	1.832	6.93	8.0	537	4	N/A	N/A
51	2.072	5.35	9.0	542	4	N/A	N/A
52	2.402	3.58	10.0	549	4	N/A	N/A
53	2.920	1.77	10.0	560	4	N/A	N/A
54	2.920	1.77	10.0	560	4	N/A	N/A

Table 2.2.10
Raw Score to Scale Score Lookup Table
Mathematics Grade 5

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
0	-3.126	2.23	10.0	440	1	440	1
1	-3.120	2.24	10.0	440	1	442	1
2	-3.114	2.26	10.0	440	1	444	1
3	-3.107	2.28	10.0	440	1	446	1
4	-3.101	2.29	10.0	440	1	457	1
5	-3.094	2.31	10.0	441	1	463	1
6	-2.702	3.50	10.0	448	1	468	1
7	-2.422	4.64	8.8	453	1	472	2
8	-2.201	5.74	7.9	458	1	475	2
9	-2.017	6.81	7.3	461	1	479	2
10	-1.858	7.87	6.8	464	1	482	2
11	-1.717	8.92	6.4	467	1	485	2
12	-1.590	9.97	6.0	469	1	487	2
13	-1.474	11.02	5.7	471	2	490	2
14	-1.367	12.07	5.5	474	2	493	2
15	-1.267	13.10	5.3	475	2	496	2
16	-1.173	14.11	5.1	477	2	498	2
17	-1.084	15.09	4.9	479	2	501	3
18	-0.999	16.03	4.8	481	2	504	3
19	-0.918	16.92	4.6	482	2	507	3
20	-0.840	17.75	4.5	484	2	510	3
21	-0.764	18.52	4.4	485	2	513	3
22	-0.690	19.22	4.3	486	2	516	3
23	-0.619	19.84	4.3	488	2	520	3
24	-0.548	20.37	4.2	489	2	524	3
25	-0.479	20.81	4.2	490	2	530	4
26	-0.410	21.16	4.1	492	2	540	4
27	-0.342	21.41	4.1	493	2	560	4
28	-0.274	21.56	4.1	494	2	N/A	N/A
29	-0.207	21.61	4.1	496	2	N/A	N/A
30	-0.139	21.58	4.1	497	2	N/A	N/A
31	-0.071	21.45	4.1	498	2	N/A	N/A
32	-0.002	21.24	4.1	499	2	N/A	N/A
33	0.068	20.96	4.2	501	3	N/A	N/A
34	0.139	20.62	4.2	502	3	N/A	N/A
35	0.211	20.21	4.2	504	3	N/A	N/A
36	0.284	19.77	4.3	505	3	N/A	N/A
37	0.359	19.28	4.3	506	3	N/A	N/A

Table 2.2.10 (continued)
Raw Score to Scale Score Lookup Table
Mathematics Grade 5

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
38	0.436	18.76	4.4	508	3	N/A	N/A
39	0.516	18.22	4.5	509	3	N/A	N/A
40	0.598	17.65	4.5	511	3	N/A	N/A
41	0.682	17.06	4.6	513	3	N/A	N/A
42	0.771	16.43	4.7	514	3	N/A	N/A
43	0.863	15.74	4.8	516	3	N/A	N/A
44	0.961	14.98	4.9	518	3	N/A	N/A
45	1.064	14.12	5.1	520	3	N/A	N/A
46	1.175	13.15	5.3	522	3	N/A	N/A
47	1.295	12.04	5.5	524	3	N/A	N/A
48	1.429	10.78	5.8	527	3	N/A	N/A
49	1.580	9.36	6.2	529	3	N/A	N/A
50	1.758	7.77	6.8	533	4	N/A	N/A
51	1.977	6.01	7.8	537	4	N/A	N/A
52	2.274	4.08	9.4	543	4	N/A	N/A
53	2.766	2.01	10.0	552	4	N/A	N/A
54	3.176	1.09	10.0	560	4	N/A	N/A

Table 2.2.11
Raw Score to Scale Score Lookup Table
Mathematics Grade 6

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
0	-3.028	2.54	10.0	440	1	440	1
1	-2.989	2.68	10.0	441	1	442	1
2	-2.950	2.83	10.0	442	1	443	1
3	-2.911	2.99	10.0	442	1	455	1
4	-2.872	3.15	10.0	443	1	463	1
5	-2.513	4.87	9.0	450	1	468	1
6	-2.256	6.31	7.9	455	1	473	2
7	-2.049	7.57	7.2	459	1	477	2
8	-1.874	8.72	6.7	463	1	481	2
9	-1.720	9.79	6.3	466	1	484	2
10	-1.582	10.80	6.0	469	1	487	2
11	-1.456	11.75	5.8	471	2	490	2
12	-1.340	12.63	5.6	474	2	493	2
13	-1.232	13.44	5.4	476	2	496	2
14	-1.130	14.18	5.3	478	2	498	2
15	-1.032	14.85	5.2	480	2	501	3
16	-0.940	15.46	5.1	481	2	504	3
17	-0.850	16.00	5.0	483	2	507	3
18	-0.764	16.48	4.9	485	2	510	3
19	-0.681	16.92	4.8	487	2	513	3
20	-0.600	17.32	4.8	488	2	516	3
21	-0.521	17.68	4.7	490	2	519	3
22	-0.443	18.01	4.7	491	2	523	3
23	-0.368	18.31	4.6	493	2	528	3
24	-0.293	18.59	4.6	494	2	533	4
25	-0.220	18.86	4.6	496	2	540	4
26	-0.148	19.10	4.5	497	2	553	4
27	-0.077	19.33	4.5	499	2	560	4
28	-0.007	19.54	4.5	500	3	N/A	N/A
29	0.063	19.73	4.5	501	3	N/A	N/A
30	0.132	19.90	4.5	503	3	N/A	N/A
31	0.201	20.04	4.4	504	3	N/A	N/A
32	0.269	20.15	4.4	506	3	N/A	N/A
33	0.338	20.22	4.4	507	3	N/A	N/A
34	0.407	20.26	4.4	508	3	N/A	N/A
35	0.477	20.25	4.4	510	3	N/A	N/A
36	0.547	20.19	4.4	511	3	N/A	N/A
37	0.618	20.06	4.4	512	3	N/A	N/A

Table 2.2.11 (continued)
Raw Score to Scale Score Lookup Table
Mathematics Grade 6

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
38	0.690	19.86	4.5	514	3	N/A	N/A
39	0.764	19.57	4.5	515	3	N/A	N/A
40	0.840	19.18	4.5	517	3	N/A	N/A
41	0.918	18.68	4.6	518	3	N/A	N/A
42	1.000	18.06	4.7	520	3	N/A	N/A
43	1.085	17.30	4.8	522	3	N/A	N/A
44	1.176	16.39	4.9	524	3	N/A	N/A
45	1.273	15.32	5.1	525	3	N/A	N/A
46	1.378	14.09	5.3	528	3	N/A	N/A
47	1.495	12.69	5.6	529	3	N/A	N/A
48	1.626	11.10	6.0	532	4	N/A	N/A
49	1.779	9.34	6.5	536	4	N/A	N/A
50	1.966	7.40	7.3	539	4	N/A	N/A
51	2.209	5.29	8.6	544	4	N/A	N/A
52	2.570	3.09	10.0	551	4	N/A	N/A
53	3.011	1.59	10.0	560	4	N/A	N/A
54	3.011	1.59	10.0	560	4	N/A	N/A

Table 2.2.12
Raw Score to Scale Score Lookup Table
Mathematics Grade 7

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
0	-2.859	1.41	10.0	440	1	440	1
1	-2.807	1.54	10.0	441	1	445	1
2	-2.755	1.69	10.0	442	1	451	1
3	-2.703	1.85	10.0	443	1	456	1
4	-2.651	2.02	10.0	444	1	465	1
5	-2.599	2.20	10.0	445	1	471	2
6	-2.164	4.31	10.0	454	1	476	2
7	-1.887	6.24	8.3	460	1	480	2
8	-1.677	7.96	7.4	465	1	483	2
9	-1.504	9.48	6.7	468	1	486	2
10	-1.355	10.78	6.3	471	2	489	2
11	-1.221	11.87	6.0	474	2	492	2
12	-1.100	12.75	5.8	477	2	495	2
13	-0.987	13.47	5.7	479	2	497	2
14	-0.881	14.06	5.5	481	2	499	2
15	-0.780	14.56	5.4	483	2	503	3
16	-0.683	15.00	5.4	485	2	505	3
17	-0.591	15.40	5.3	487	2	508	3
18	-0.502	15.78	5.2	489	2	511	3
19	-0.415	16.15	5.2	491	2	514	3
20	-0.332	16.51	5.1	492	2	517	3
21	-0.251	16.88	5.1	494	2	520	3
22	-0.172	17.26	5.0	496	2	524	3
23	-0.095	17.66	4.9	497	2	528	3
24	-0.020	18.09	4.9	499	2	534	4
25	0.053	18.54	4.8	500	3	541	4
26	0.125	19.04	4.8	502	3	552	4
27	0.195	19.57	4.7	503	3	560	4
28	0.264	20.14	4.6	505	3	N/A	N/A
29	0.332	20.73	4.6	506	3	N/A	N/A
30	0.398	21.34	4.5	508	3	N/A	N/A
31	0.464	21.96	4.4	509	3	N/A	N/A
32	0.529	22.56	4.4	510	3	N/A	N/A
33	0.593	23.14	4.3	512	3	N/A	N/A
34	0.657	23.66	4.3	513	3	N/A	N/A
35	0.721	24.12	4.2	514	3	N/A	N/A
36	0.785	24.48	4.2	516	3	N/A	N/A
37	0.849	24.72	4.2	517	3	N/A	N/A

Table 2.2.12 (continued)
Raw Score to Scale Score Lookup Table
Mathematics Grade 7

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
38	0.914	24.82	4.2	518	3	N/A	N/A
39	0.980	24.76	4.2	520	3	N/A	N/A
40	1.047	24.52	4.2	521	3	N/A	N/A
41	1.116	24.09	4.2	523	3	N/A	N/A
42	1.188	23.45	4.3	524	3	N/A	N/A
43	1.263	22.59	4.4	526	3	N/A	N/A
44	1.342	21.51	4.5	527	3	N/A	N/A
45	1.426	20.20	4.6	529	3	N/A	N/A
46	1.517	18.67	4.8	531	4	N/A	N/A
47	1.617	16.92	5.0	533	4	N/A	N/A
48	1.729	14.95	5.4	535	4	N/A	N/A
49	1.857	12.76	5.8	538	4	N/A	N/A
50	2.011	10.36	6.4	541	4	N/A	N/A
51	2.206	7.76	7.5	545	4	N/A	N/A
52	2.480	5.00	9.3	551	4	N/A	N/A
53	2.922	2.39	10.0	560	4	N/A	N/A
54	2.922	2.39	10.0	560	4	N/A	N/A

Table 2.2.13
Raw Score to Scale Score Lookup Table
Mathematics Grade 8

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
0	-2.983	1.94	10.0	440	1	440	1
1	-2.913	2.12	10.0	441	1	442	1
2	-2.843	2.32	10.0	443	1	445	1
3	-2.773	2.53	10.0	444	1	447	1
4	-2.704	2.75	10.0	446	1	460	1
5	-2.634	2.99	10.0	447	1	467	1
6	-2.564	3.25	10.0	448	1	473	2
7	-2.274	4.56	9.4	454	1	478	2
8	-2.051	5.86	8.3	459	1	482	2
9	-1.869	7.17	7.5	462	1	486	2
10	-1.713	8.50	6.9	466	1	489	2
11	-1.578	9.84	6.4	468	1	492	2
12	-1.457	11.17	6.0	471	2	495	2
13	-1.347	12.49	5.7	473	2	498	2
14	-1.246	13.77	5.4	475	2	500	3
15	-1.153	15.00	5.2	477	2	503	3
16	-1.065	16.15	5.0	479	2	505	3
17	-0.982	17.22	4.9	480	2	508	3
18	-0.903	18.17	4.7	482	2	510	3
19	-0.827	19.00	4.6	483	2	513	3
20	-0.754	19.71	4.5	485	2	516	3
21	-0.683	20.28	4.5	486	2	518	3
22	-0.614	20.73	4.4	488	2	522	3
23	-0.546	21.06	4.4	489	2	525	3
24	-0.479	21.28	4.4	491	2	529	3
25	-0.412	21.39	4.4	492	2	535	4
26	-0.347	21.42	4.4	493	2	544	4
27	-0.282	21.37	4.4	494	2	560	4
28	-0.217	21.26	4.4	496	2	N/A	N/A
29	-0.152	21.09	4.4	497	2	N/A	N/A
30	-0.087	20.89	4.4	498	2	N/A	N/A
31	-0.022	20.66	4.4	499	2	N/A	N/A
32	0.044	20.39	4.5	501	3	N/A	N/A
33	0.110	20.11	4.5	502	3	N/A	N/A
34	0.177	19.81	4.5	504	3	N/A	N/A
35	0.245	19.50	4.6	505	3	N/A	N/A
36	0.313	19.16	4.6	506	3	N/A	N/A
37	0.383	18.81	4.7	508	3	N/A	N/A

Table 2.2.13 (continued)
Raw Score to Scale Score Lookup Table
Mathematics Grade 8

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
38	0.455	18.44	4.7	509	3	N/A	N/A
39	0.528	18.03	4.7	511	3	N/A	N/A
40	0.603	17.60	4.8	512	3	N/A	N/A
41	0.680	17.12	4.9	514	3	N/A	N/A
42	0.761	16.59	5.0	516	3	N/A	N/A
43	0.845	15.99	5.0	517	3	N/A	N/A
44	0.933	15.32	5.2	519	3	N/A	N/A
45	1.027	14.54	5.3	521	3	N/A	N/A
46	1.127	13.65	5.5	523	3	N/A	N/A
47	1.237	12.62	5.7	525	3	N/A	N/A
48	1.358	11.42	6.0	528	3	N/A	N/A
49	1.496	10.03	6.4	530	4	N/A	N/A
50	1.659	8.42	7.0	534	4	N/A	N/A
51	1.862	6.56	7.9	538	4	N/A	N/A
52	2.142	4.43	9.6	543	4	N/A	N/A
53	2.620	2.11	10.0	553	4	N/A	N/A
54	2.966	1.22	10.0	560	4	N/A	N/A

Table 2.2.14
Raw Score to Scale Score Lookup Table
Mathematics Grade 10

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
0	-3.124	1.44	10.0	440	1	440	1
1	-3.074	1.57	10.0	441	1	441	1
2	-3.023	1.71	10.0	442	1	442	1
3	-2.972	1.85	10.0	443	1	443	1
4	-2.922	2.01	10.0	444	1	444	1
5	-2.871	2.19	10.0	445	1	445	1
6	-2.487	4.03	10.0	454	1	446	1
7	-2.233	5.89	8.8	459	1	447	1
8	-2.040	7.68	7.7	463	1	448	1
9	-1.883	9.38	7.0	467	1	455	1
10	-1.749	10.97	6.5	469	1	460	1
11	-1.630	12.43	6.1	472	2	464	1
12	-1.524	13.78	5.8	474	2	468	1
13	-1.426	15.02	5.5	476	2	471	2
14	-1.335	16.16	5.3	478	2	474	2
15	-1.251	17.20	5.2	480	2	476	2
16	-1.170	18.17	5.0	482	2	478	2
17	-1.094	19.05	4.9	483	2	481	2
18	-1.021	19.86	4.8	485	2	482	2
19	-0.950	20.60	4.7	486	2	484	2
20	-0.883	21.29	4.6	488	2	486	2
21	-0.817	21.91	4.6	489	2	488	2
22	-0.753	22.50	4.5	491	2	489	2
23	-0.691	23.04	4.5	492	2	491	2
24	-0.630	23.54	4.4	493	2	492	2
25	-0.570	24.02	4.4	495	2	494	2
26	-0.511	24.47	4.3	496	2	495	2
27	-0.454	24.89	4.3	497	2	496	2
28	-0.397	25.30	4.2	498	2	498	2
29	-0.340	25.68	4.2	499	2	499	2
30	-0.285	26.04	4.2	501	3	500	3
31	-0.230	26.37	4.2	502	3	501	3
32	-0.175	26.67	4.1	503	3	503	3
33	-0.120	26.92	4.1	504	3	504	3
34	-0.065	27.14	4.1	505	3	505	3
35	-0.011	27.30	4.1	507	3	506	3
36	0.044	27.39	4.1	508	3	507	3
37	0.099	27.42	4.1	509	3	508	3

Table 2.2.14 (continued)
Raw Score to Scale Score Lookup Table
Mathematics Grade 10

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
38	0.154	27.36	4.1	510	3	510	3
39	0.210	27.22	4.1	511	3	511	3
40	0.267	26.98	4.1	512	3	512	3
41	0.325	26.64	4.1	514	3	513	3
42	0.384	26.20	4.2	515	3	514	3
43	0.444	25.64	4.2	516	3	516	3
44	0.507	24.97	4.3	518	3	517	3
45	0.571	24.19	4.3	519	3	518	3
46	0.638	23.29	4.4	520	3	520	3
47	0.708	22.28	4.5	522	3	521	3
48	0.782	21.15	4.6	523	3	523	3
49	0.861	19.92	4.8	525	3	524	3
50	0.945	18.56	5.0	527	3	526	3
51	1.035	17.09	5.2	529	3	527	3
52	1.135	15.51	5.4	531	4	529	3
53	1.245	13.82	5.7	533	4	531	4
54	1.370	12.00	6.2	536	4	534	4
55	1.516	10.07	6.7	539	4	537	4
56	1.691	8.02	7.5	543	4	540	4
57	1.916	5.89	8.8	548	4	544	4
58	2.233	3.75	10.0	555	4	551	4
59	2.490	2.58	10.0	560	4	560	4
60	2.490	2.58	10.0	560	4	560	4

Table 2.2.15
Raw Score to Scale Score Lookup Table
Science Grade 5

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
0	-3.130	3.57	10.0	440	1	440	1
1	-3.110	3.62	10.0	440	1	441	1
2	-3.089	3.68	10.0	441	1	443	1
3	-3.069	3.73	10.0	441	1	444	1
4	-3.048	3.79	10.0	442	1	446	1
5	-3.027	3.85	10.0	442	1	447	1
6	-3.007	3.91	10.0	442	1	455	1
7	-2.986	3.96	10.0	443	1	461	1
8	-2.966	4.02	9.9	443	1	466	1
9	-2.945	4.08	9.8	444	1	471	2
10	-2.924	4.14	9.8	444	1	475	2
11	-2.730	4.73	9.1	448	1	479	2
12	-2.554	5.27	8.7	451	1	483	2
13	-2.393	5.78	8.3	455	1	487	2
14	-2.245	6.26	7.9	458	1	491	2
15	-2.105	6.69	7.7	460	1	494	2
16	-1.973	7.09	7.5	463	1	498	2
17	-1.846	7.45	7.3	466	1	502	3
18	-1.725	7.76	7.1	468	1	507	3
19	-1.608	8.03	7.0	470	2	511	3
20	-1.494	8.26	6.9	473	2	516	3
21	-1.383	8.46	6.8	475	2	521	3
22	-1.274	8.61	6.8	477	2	527	3
23	-1.167	8.74	6.7	479	2	533	4
24	-1.061	8.83	6.7	481	2	541	4
25	-0.955	8.89	6.7	483	2	551	4
26	-0.851	8.93	6.7	485	2	560	4
27	-0.746	8.95	6.6	487	2	560	4
28	-0.642	8.95	6.6	489	2	N/A	N/A
29	-0.538	8.94	6.6	492	2	N/A	N/A
30	-0.433	8.92	6.7	494	2	N/A	N/A
31	-0.327	8.89	6.7	496	2	N/A	N/A
32	-0.220	8.85	6.7	498	2	N/A	N/A
33	-0.113	8.79	6.7	499	2	N/A	N/A
34	-0.003	8.73	6.7	502	3	N/A	N/A
35	0.108	8.64	6.8	504	3	N/A	N/A
36	0.222	8.52	6.8	507	3	N/A	N/A
37	0.338	8.36	6.9	509	3	N/A	N/A

Table 2.2.15 (continued)
Raw Score to Scale Score Lookup Table
Science Grade 5

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
38	0.458	8.16	7.0	511	3	N/A	N/A
39	0.582	7.91	7.1	514	3	N/A	N/A
40	0.712	7.60	7.2	516	3	N/A	N/A
41	0.848	7.22	7.4	519	3	N/A	N/A
42	0.992	6.78	7.6	522	3	N/A	N/A
43	1.146	6.29	7.9	525	3	N/A	N/A
44	1.313	5.75	8.3	528	3	N/A	N/A
45	1.495	5.18	8.7	532	4	N/A	N/A
46	1.696	4.61	9.3	536	4	N/A	N/A
47	1.921	4.04	9.9	540	4	N/A	N/A
48	2.178	3.49	10.0	545	4	N/A	N/A
49	2.474	2.96	10.0	551	4	N/A	N/A
50	2.826	2.45	10.0	558	4	N/A	N/A
51	2.907	2.34	10.0	560	4	N/A	N/A
52	2.907	2.34	10.0	560	4	N/A	N/A
53	2.907	2.34	10.0	560	4	N/A	N/A
54	2.907	2.34	10.0	560	4	N/A	N/A

Table 2.2.16
Raw Score to Scale Score Lookup Table
Science Grade 8

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
0	-2.978	2.87	10.0	440	1	440	1
1	-2.941	2.97	10.0	441	1	441	1
2	-2.905	3.07	10.0	441	1	442	1
3	-2.869	3.17	10.0	442	1	443	1
4	-2.832	3.28	10.0	443	1	444	1
5	-2.796	3.39	10.0	444	1	453	1
6	-2.759	3.50	10.0	444	1	460	1
7	-2.723	3.61	10.0	445	1	465	1
8	-2.687	3.73	10.0	446	1	469	1
9	-2.449	4.57	9.5	451	1	474	2
10	-2.247	5.36	8.8	455	1	477	2
11	-2.072	6.12	8.2	458	1	481	2
12	-1.915	6.82	7.8	462	1	484	2
13	-1.772	7.49	7.4	464	1	488	2
14	-1.640	8.11	7.1	467	1	491	2
15	-1.516	8.69	6.9	469	1	495	2
16	-1.400	9.22	6.7	472	2	498	2
17	-1.289	9.72	6.5	474	2	503	3
18	-1.183	10.17	6.4	476	2	507	3
19	-1.080	10.57	6.2	478	2	512	3
20	-0.981	10.93	6.1	481	2	517	3
21	-0.884	11.24	6.1	482	2	523	3
22	-0.790	11.51	6.0	484	2	530	4
23	-0.697	11.74	5.9	486	2	539	4
24	-0.605	11.93	5.9	488	2	549	4
25	-0.514	12.08	5.8	490	2	560	4
26	-0.424	12.21	5.8	492	2	560	4
27	-0.334	12.32	5.8	494	2	560	4
28	-0.245	12.41	5.8	495	2	N/A	N/A
29	-0.156	12.48	5.7	497	2	N/A	N/A
30	-0.066	12.53	5.7	499	2	N/A	N/A
31	0.023	12.56	5.7	501	3	N/A	N/A
32	0.113	12.57	5.7	503	3	N/A	N/A
33	0.204	12.55	5.7	505	3	N/A	N/A
34	0.296	12.49	5.7	506	3	N/A	N/A
35	0.389	12.40	5.8	508	3	N/A	N/A
36	0.484	12.27	5.8	510	3	N/A	N/A
37	0.580	12.10	5.8	512	3	N/A	N/A

Table 2.2.16 (continued)
Raw Score to Scale Score Lookup Table
Science Grade 8

Raw Score	Theta	Information	SE (Scale Score)	2022		2021	
				Scale Score	Achievement Levels	Scale Score	Achievement Levels
38	0.679	11.90	5.9	514	3	N/A	N/A
39	0.780	11.66	5.9	516	3	N/A	N/A
40	0.885	11.38	6.0	518	3	N/A	N/A
41	0.993	11.06	6.1	521	3	N/A	N/A
42	1.105	10.71	6.2	523	3	N/A	N/A
43	1.223	10.30	6.3	525	3	N/A	N/A
44	1.346	9.84	6.5	528	3	N/A	N/A
45	1.478	9.31	6.6	530	4	N/A	N/A
46	1.619	8.68	6.9	533	4	N/A	N/A
47	1.774	7.93	7.2	536	4	N/A	N/A
48	1.947	7.01	7.7	540	4	N/A	N/A
49	2.146	5.92	8.3	544	4	N/A	N/A
50	2.387	4.67	9.4	549	4	N/A	N/A
51	2.696	3.34	10.0	555	4	N/A	N/A
52	2.937	2.54	10.0	560	4	N/A	N/A
53	2.937	2.54	10.0	560	4	N/A	N/A
54	2.937	2.54	10.0	560	4	N/A	N/A

Section 2.3

Cumulative Scale Score Distribution Tables

Table 2.3.1
Cumulative Scale Score Distribution
English Language Arts Grade 3

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
441	NM	3	0.00005	0.00005
442	NM	9	0.00015	0.00019
443	NM	33	0.00054	0.00073
444	NM	104	0.00169	0.00242
445	NM	196	0.00318	0.00560
446	NM	400	0.00649	0.01208
447	NM	627	0.01017	0.02226
452	NM	819	0.01329	0.03554
457	NM	996	0.01616	0.05170
460	NM	1101	0.01786	0.06956
463	NM	1181	0.01916	0.08871
466	NM	1270	0.02060	0.10931
469	NM	1173	0.01903	0.12834
471	PM	1317	0.02136	0.14970
474	PM	1267	0.02055	0.17026
476	PM	1380	0.02239	0.19264
478	PM	1387	0.02250	0.21514
480	PM	1425	0.02312	0.23826
482	PM	1496	0.02427	0.26252
484	PM	1637	0.02655	0.28908
486	PM	1811	0.02938	0.31845
488	PM	1864	0.03024	0.34869
490	PM	2051	0.03327	0.38196
492	PM	2246	0.03643	0.41839
494	PM	2379	0.03859	0.45698
497	PM	2596	0.04211	0.49909
499	PM	2640	0.04282	0.54192
502	ME	2866	0.04649	0.58841
504	ME	3055	0.04956	0.63796
507	ME	2965	0.04810	0.68606
510	ME	3052	0.04951	0.73556
513	ME	3101	0.05030	0.78586
516	ME	2845	0.04615	0.83201
520	ME	2494	0.04046	0.87247
524	ME	2108	0.03419	0.90666
528	ME	1652	0.02680	0.93346
533	EE	1315	0.02133	0.95479
538	EE	979	0.01588	0.97067
544	EE	713	0.01157	0.98224
551	EE	490	0.00795	0.99019

Table 2.3.1 (continued)
Cumulative Scale Score Distribution
English Language Arts Grade 3

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
559	EE	328	0.00532	0.99551
560	EE	277	0.00449	1.00000

Table 2.3.2
Cumulative Scale Score Distribution
English Language Arts Grade 4

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
441	NM	105	0.00169	0.00169
442	NM	934	0.01504	0.01673
449	NM	665	0.01071	0.02744
454	NM	816	0.01314	0.04058
458	NM	1016	0.01636	0.05694
461	NM	1130	0.01820	0.07514
464	NM	1204	0.01939	0.09452
467	NM	1299	0.02092	0.11544
469	NM	1301	0.02095	0.13639
471	PM	1417	0.02282	0.15921
474	PM	1525	0.02456	0.18377
476	PM	1651	0.02659	0.21035
478	PM	1710	0.02754	0.23789
480	PM	1768	0.02847	0.26636
482	PM	1887	0.03039	0.29675
484	PM	2059	0.03316	0.32990
486	PM	2155	0.03470	0.36461
488	PM	2174	0.03501	0.39961
490	PM	2246	0.03617	0.43578
492	PM	2436	0.03923	0.47501
494	PM	2494	0.04016	0.51517
496	PM	2530	0.04074	0.55591
498	PM	2648	0.04264	0.59855
501	ME	2605	0.04195	0.64050
503	ME	2669	0.04298	0.68348
505	ME	2604	0.04193	0.72541
508	ME	2588	0.04167	0.76709
510	ME	2506	0.04035	0.80744
513	ME	2429	0.03911	0.84655
516	ME	2019	0.03251	0.87907
520	ME	1901	0.03061	0.90968
523	ME	1624	0.02615	0.93583
527	ME	1359	0.02188	0.95771
532	EE	991	0.01596	0.97367
537	EE	758	0.01221	0.98588
543	EE	493	0.00794	0.99382
552	EE	278	0.00448	0.99829
560	EE	106	0.00171	1.00000

Table 2.3.3
Cumulative Scale Score Distribution
English Language Arts Grade 5

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
441	NM	2	0.00003	0.00003
442	NM	14	0.00022	0.00025
443	NM	46	0.00072	0.00097
444	NM	108	0.00170	0.00267
445	NM	208	0.00327	0.00594
446	NM	301	0.00473	0.01067
450	NM	490	0.00770	0.01837
454	NM	569	0.00894	0.02732
457	NM	667	0.01048	0.03780
459	NM	699	0.01099	0.04879
461	NM	738	0.01160	0.06039
464	NM	759	0.01193	0.07232
466	NM	784	0.01232	0.08464
467	NM	776	0.01220	0.09684
469	NM	890	0.01399	0.11083
471	PM	946	0.01487	0.12570
472	PM	1069	0.01680	0.14250
474	PM	1043	0.01639	0.15890
476	PM	1121	0.01762	0.17652
477	PM	1225	0.01925	0.19577
479	PM	1330	0.02091	0.21668
481	PM	1437	0.02259	0.23926
482	PM	1480	0.02326	0.26253
484	PM	1703	0.02677	0.28930
486	PM	1821	0.02862	0.31792
487	PM	1887	0.02966	0.34758
489	PM	2065	0.03246	0.38004
491	PM	2215	0.03482	0.41485
493	PM	2451	0.03853	0.45338
495	PM	2523	0.03966	0.49304
497	PM	2636	0.04143	0.53447
499	PM	2828	0.04445	0.57892
501	ME	2947	0.04632	0.62524
504	ME	2992	0.04703	0.67227
506	ME	2960	0.04653	0.71880
508	ME	2780	0.04370	0.76250
511	ME	2463	0.03871	0.80121
514	ME	2219	0.03488	0.83609
516	ME	2090	0.03285	0.86894
520	ME	1914	0.03008	0.89903

Table 2.3.3 (continued)
Cumulative Scale Score Distribution
English Language Arts Grade 5

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
523	ME	1653	0.02598	0.92501
527	ME	1536	0.02414	0.94915
531	EE	1306	0.02053	0.96968
536	EE	916	0.01440	0.98408
542	EE	589	0.00926	0.99334
550	EE	294	0.00462	0.99796
560	EE	130	0.00204	1.00000

Table 2.3.4
Cumulative Scale Score Distribution
English Language Arts Grade 6

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
440	NM	4	0.00006	0.00006
441	NM	168	0.00263	0.00269
442	NM	1082	0.01694	0.01963
443	NM	1496	0.02342	0.04304
447	NM	901	0.01410	0.05715
451	NM	993	0.01554	0.07269
454	NM	1007	0.01576	0.08845
457	NM	1069	0.01673	0.10519
460	NM	1113	0.01742	0.12261
462	NM	1114	0.01744	0.14004
465	NM	1230	0.01925	0.15930
467	NM	1303	0.02040	0.17969
469	NM	1330	0.02082	0.20051
472	PM	1366	0.02138	0.22189
474	PM	1483	0.02321	0.24510
476	PM	1525	0.02387	0.26897
479	PM	1545	0.02418	0.29316
481	PM	1617	0.02531	0.31847
483	PM	1741	0.02725	0.34572
485	PM	1803	0.02822	0.37394
488	PM	1898	0.02971	0.40365
490	PM	1948	0.03049	0.43414
492	PM	2021	0.03163	0.46578
494	PM	2170	0.03397	0.49974
497	PM	2270	0.03553	0.53527
499	PM	2294	0.03591	0.57118
501	ME	2345	0.03671	0.60789
504	ME	2405	0.03764	0.64553
506	ME	2455	0.03843	0.68396
509	ME	2391	0.03743	0.72138
512	ME	2275	0.03561	0.75699
514	ME	2396	0.03750	0.79450
517	ME	2233	0.03495	0.82945
520	ME	2042	0.03196	0.86141
524	ME	1862	0.02915	0.89056
527	ME	1693	0.02650	0.91706
531	EE	1470	0.02301	0.94007
535	EE	1185	0.01855	0.95861
540	EE	960	0.01503	0.97364
546	EE	679	0.01063	0.98427

Table 2.3.4 (continued)
Cumulative Scale Score Distribution
English Language Arts Grade 6

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
552	EE	494	0.00773	0.99200
560	EE	511	0.00800	1.00000

Table 2.3.5
Cumulative Scale Score Distribution
English Language Arts Grade 7

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
440	NM	3	0.00005	0.00005
441	NM	42	0.00064	0.00069
442	NM	613	0.00935	0.01003
443	NM	1193	0.01819	0.02822
448	NM	784	0.01195	0.04018
451	NM	894	0.01363	0.05381
455	NM	938	0.01430	0.06811
458	NM	942	0.01436	0.08247
460	NM	1052	0.01604	0.09851
463	NM	1106	0.01686	0.11538
465	NM	1145	0.01746	0.13284
467	NM	1211	0.01846	0.15130
469	NM	1395	0.02127	0.17257
472	PM	1478	0.02254	0.19511
474	PM	1459	0.02225	0.21735
476	PM	1611	0.02456	0.24192
478	PM	1712	0.02610	0.26802
480	PM	1775	0.02706	0.29509
482	PM	1836	0.02799	0.32308
484	PM	1825	0.02783	0.35091
486	PM	2010	0.03065	0.38156
488	PM	1996	0.03043	0.41199
490	PM	2061	0.03143	0.44342
492	PM	2151	0.03280	0.47621
494	PM	2144	0.03269	0.50890
496	PM	2159	0.03292	0.54182
498	PM	2211	0.03371	0.57554
500	ME	2247	0.03426	0.60980
502	ME	2240	0.03415	0.64395
504	ME	2278	0.03473	0.67869
507	ME	2226	0.03394	0.71263
509	ME	2256	0.03440	0.74703
511	ME	2147	0.03274	0.77976
514	ME	2148	0.03275	0.81252
516	ME	2033	0.03100	0.84351
519	ME	1926	0.02937	0.87288
522	ME	1746	0.02662	0.89950
525	ME	1573	0.02398	0.92349
528	ME	1373	0.02093	0.94442
532	EE	1157	0.01764	0.96206

Table 2.3.5 (continued)
Cumulative Scale Score Distribution
English Language Arts Grade 7

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
536	EE	959	0.01462	0.97669
542	EE	668	0.01019	0.98687
548	EE	473	0.00721	0.99408
555	EE	263	0.00401	0.99809
560	EE	125	0.00191	1.00000

Table 2.3.6
Cumulative Scale Score Distribution
English Language Arts Grade 8

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
440	NM	116	0.00171	0.00171
441	NM	2213	0.03258	0.03429
445	NM	621	0.00914	0.04343
448	NM	654	0.00963	0.05306
451	NM	630	0.00928	0.06234
454	NM	713	0.01050	0.07284
456	NM	712	0.01048	0.08332
458	NM	796	0.01172	0.09504
461	NM	850	0.01251	0.10755
463	NM	814	0.01198	0.11954
465	NM	936	0.01378	0.13332
467	NM	1015	0.01494	0.14826
469	NM	1045	0.01539	0.16365
471	PM	1165	0.01715	0.18080
473	PM	1300	0.01914	0.19994
475	PM	1300	0.01914	0.21908
477	PM	1482	0.02182	0.24090
479	PM	1634	0.02406	0.26496
481	PM	1680	0.02474	0.28970
483	PM	1856	0.02733	0.31702
485	PM	1993	0.02934	0.34637
487	PM	2151	0.03167	0.37804
489	PM	2401	0.03535	0.41339
492	PM	2453	0.03612	0.44951
494	PM	2556	0.03763	0.48714
497	PM	2642	0.03890	0.52604
499	PM	2843	0.04186	0.56790
502	ME	2901	0.04271	0.61061
504	ME	3021	0.04448	0.65509
507	ME	2981	0.04389	0.69898
510	ME	3006	0.04426	0.74324
513	ME	2849	0.04195	0.78519
516	ME	2776	0.04087	0.82606
520	ME	2587	0.03809	0.86415
524	ME	2454	0.03613	0.90028
528	ME	2179	0.03208	0.93236
533	EE	1757	0.02587	0.95823
539	EE	1325	0.01951	0.97774
545	EE	856	0.01260	0.99034
553	EE	445	0.00655	0.99689

Table 2.3.6 (continued)
Cumulative Scale Score Distribution
English Language Arts Grade 8

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
560	EE	211	0.00311	1.00000

Table 2.3.7
Cumulative Scale Score Distribution
English Language Arts Grade 10

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
441	NM	4	0.00006	0.00006
442	NM	52	0.00080	0.00086
443	NM	187	0.00287	0.00373
444	NM	427	0.00655	0.01028
445	NM	304	0.00466	0.01494
449	NM	290	0.00445	0.01939
452	NM	332	0.00509	0.02448
455	NM	333	0.00511	0.02959
458	NM	351	0.00538	0.03497
461	NM	393	0.00603	0.04100
463	NM	393	0.00603	0.04703
465	NM	401	0.00615	0.05318
467	NM	461	0.00707	0.06025
468	NM	473	0.00726	0.06751
470	PM	506	0.00776	0.07527
472	PM	498	0.00764	0.08291
473	PM	611	0.00937	0.09228
475	PM	645	0.00989	0.10217
477	PM	679	0.01042	0.11259
478	PM	777	0.01192	0.12451
480	PM	835	0.01281	0.13732
481	PM	933	0.01431	0.15163
483	PM	980	0.01503	0.16666
484	PM	1171	0.01796	0.18462
486	PM	1266	0.01942	0.20404
488	PM	1373	0.02106	0.22510
489	PM	1492	0.02289	0.24799
491	PM	1667	0.02557	0.27356
493	PM	1782	0.02733	0.30089
494	PM	2017	0.03094	0.33183
496	PM	2270	0.03482	0.36665
498	PM	2383	0.03655	0.40320
500	ME	2467	0.03784	0.44104
502	ME	2803	0.04300	0.48404
504	ME	2967	0.04551	0.52955
506	ME	3271	0.05017	0.57972
509	ME	3345	0.05131	0.63103
512	ME	3598	0.05519	0.68622
515	ME	3725	0.05714	0.74336
518	ME	3848	0.05902	0.80239

Table 2.3.7 (continued)
Cumulative Scale Score Distribution
English Language Arts Grade 10

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
522	ME	3621	0.05554	0.85793
528	ME	3374	0.05175	0.90968
535	EE	2832	0.04344	0.95312
542	EE	1920	0.02945	0.98257
549	EE	906	0.01390	0.99647
559	EE	209	0.00321	0.99968
560	EE	21	0.00032	1.00000

Table 2.3.8
Cumulative Scale Score Distribution
Mathematics Grade 3

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
440	NM	88	0.00165	0.00165
441	NM	1303	0.02439	0.02603
447	NM	612	0.01145	0.03749
452	NM	708	0.01325	0.05074
456	NM	752	0.01407	0.06481
459	NM	855	0.01600	0.08081
462	NM	879	0.01645	0.09726
465	NM	883	0.01653	0.11379
468	NM	971	0.01817	0.13196
470	PM	984	0.01842	0.15038
473	PM	1069	0.02001	0.17038
475	PM	1106	0.02070	0.19108
477	PM	1155	0.02162	0.21270
479	PM	1168	0.02186	0.23456
481	PM	1166	0.02182	0.25638
483	PM	1244	0.02328	0.27966
485	PM	1346	0.02519	0.30485
486	PM	1342	0.02512	0.32996
488	PM	1361	0.02547	0.35544
490	PM	1391	0.02603	0.38147
492	PM	1470	0.02751	0.40898
494	PM	1491	0.02790	0.43688
495	PM	1525	0.02854	0.46542
497	PM	1528	0.02860	0.49402
499	PM	1568	0.02935	0.52337
501	ME	1615	0.03022	0.55359
503	ME	1644	0.03077	0.58436
505	ME	1706	0.03193	0.61629
506	ME	1700	0.03182	0.64810
509	ME	1761	0.03296	0.68106
511	ME	1681	0.03146	0.71252
513	ME	1747	0.03270	0.74521
515	ME	1722	0.03223	0.77744
518	ME	1697	0.03176	0.80920
520	ME	1679	0.03142	0.84062
523	ME	1652	0.03092	0.87154
526	ME	1486	0.02781	0.89935
529	ME	1336	0.02500	0.92435
534	EE	1185	0.02218	0.94653

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
539	EE	1050	0.01965	0.96618

Table 2.3.8 (continued)
Cumulative Scale Score Distribution
Mathematics Grade 3

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
545	EE	811	0.01518	0.98136
554	EE	556	0.01041	0.99177
560	EE	440	0.00823	1.00000

Table 2.3.9
Cumulative Scale Score Distribution
Mathematics Grade 4

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
440	NM	941	0.01756	0.01756
446	NM	383	0.00715	0.02471
451	NM	399	0.00745	0.03216
454	NM	547	0.01021	0.04237
458	NM	558	0.01041	0.05278
461	NM	589	0.01099	0.06378
463	NM	626	0.01168	0.07546
466	NM	672	0.01254	0.08800
468	NM	784	0.01463	0.10264
470	PM	804	0.01501	0.11764
472	PM	827	0.01544	0.13308
474	PM	894	0.01669	0.14977
476	PM	884	0.01650	0.16627
478	PM	977	0.01824	0.18450
480	PM	1042	0.01945	0.20395
481	PM	1042	0.01945	0.22340
483	PM	1103	0.02059	0.24399
485	PM	1085	0.02025	0.26424
486	PM	1173	0.02189	0.28613
488	PM	1244	0.02322	0.30935
489	PM	1202	0.02244	0.33178
491	PM	1262	0.02355	0.35534
492	PM	1294	0.02415	0.37949
493	PM	1288	0.02404	0.40353
495	PM	1305	0.02436	0.42789
496	PM	1272	0.02374	0.45163
498	PM	1417	0.02645	0.47808
499	PM	1360	0.02538	0.50346
501	ME	1409	0.02630	0.52976
502	ME	1407	0.02626	0.55602
504	ME	1387	0.02589	0.58191
505	ME	1457	0.02719	0.60910
507	ME	1484	0.02770	0.63680
508	ME	1445	0.02697	0.66377
510	ME	1508	0.02815	0.69192
512	ME	1521	0.02839	0.72031
513	ME	1536	0.02867	0.74898
515	ME	1516	0.02830	0.77727
517	ME	1458	0.02721	0.80449
519	ME	1434	0.02677	0.83125

Table 2.3.9 (continued)
Cumulative Scale Score Distribution
Mathematics Grade 4

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
522	ME	1402	0.02617	0.85742
524	ME	1371	0.02559	0.88301
527	ME	1294	0.02415	0.90716
529	ME	1264	0.02359	0.93075
533	EE	1083	0.02021	0.95097
537	EE	876	0.01635	0.96732
542	EE	749	0.01398	0.98130
549	EE	530	0.00989	0.99119
560	EE	472	0.00881	1.00000

Table 2.3.10
Cumulative Scale Score Distribution
Mathematics Grade 5

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
440	NM	196	0.00352	0.00352
441	NM	204	0.00367	0.00719
448	NM	371	0.00667	0.01386
453	NM	522	0.00938	0.02324
458	NM	645	0.01159	0.03483
461	NM	746	0.01341	0.04824
464	NM	811	0.01458	0.06282
467	NM	1006	0.01808	0.08090
469	NM	978	0.01758	0.09848
471	PM	1121	0.02015	0.11863
474	PM	1130	0.02031	0.13894
475	PM	1208	0.02171	0.16065
477	PM	1260	0.02265	0.18330
479	PM	1217	0.02187	0.20518
481	PM	1243	0.02234	0.22752
482	PM	1255	0.02256	0.25008
484	PM	1331	0.02392	0.27400
485	PM	1337	0.02403	0.29803
486	PM	1339	0.02407	0.32210
488	PM	1362	0.02448	0.34658
489	PM	1415	0.02543	0.37201
490	PM	1366	0.02455	0.39657
492	PM	1438	0.02585	0.42241
493	PM	1495	0.02687	0.44929
494	PM	1440	0.02588	0.47517
496	PM	1391	0.02500	0.50017
497	PM	1410	0.02534	0.52551
498	PM	1411	0.02536	0.55088
499	PM	1461	0.02626	0.57714
501	ME	1448	0.02603	0.60316
502	ME	1357	0.02439	0.62755
504	ME	1443	0.02594	0.65349
505	ME	1453	0.02612	0.67961
506	ME	1395	0.02507	0.70468
508	ME	1330	0.02391	0.72859
509	ME	1304	0.02344	0.75203
511	ME	1333	0.02396	0.77599
513	ME	1240	0.02229	0.79827
514	ME	1290	0.02319	0.82146

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
516	ME	1214	0.02182	0.84328

Table 2.3.10 (continued)
Cumulative Scale Score Distribution
Mathematics Grade 5

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
518	ME	1110	0.01995	0.86323
520	ME	1028	0.01848	0.88171
522	ME	1067	0.01918	0.90089
524	ME	1072	0.01927	0.92016
527	ME	930	0.01672	0.93687
529	ME	865	0.01555	0.95242
533	EE	780	0.01402	0.96644
537	EE	707	0.01271	0.97915
543	EE	546	0.00981	0.98896
552	EE	377	0.00678	0.99574
560	EE	237	0.00426	1.00000

Table 2.3.11
Cumulative Scale Score Distribution
Mathematics Grade 6

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
440	NM	5	0.00009	0.00009
441	NM	12	0.00021	0.00030
442	NM	196	0.00344	0.00374
443	NM	259	0.00455	0.00829
450	NM	437	0.00767	0.01596
455	NM	620	0.01089	0.02685
459	NM	721	0.01266	0.03952
463	NM	896	0.01574	0.05525
466	NM	992	0.01742	0.07267
469	NM	1115	0.01958	0.09226
471	PM	1111	0.01951	0.11177
474	PM	1277	0.02243	0.13420
476	PM	1324	0.02325	0.15745
478	PM	1334	0.02343	0.18088
480	PM	1430	0.02511	0.20599
481	PM	1506	0.02645	0.23244
483	PM	1492	0.02620	0.25865
485	PM	1468	0.02578	0.28443
487	PM	1481	0.02601	0.31044
488	PM	1470	0.02582	0.33625
490	PM	1519	0.02668	0.36293
491	PM	1499	0.02633	0.38926
493	PM	1569	0.02756	0.41681
494	PM	1526	0.02680	0.44362
496	PM	1519	0.02668	0.47029
497	PM	1484	0.02606	0.49636
499	PM	1506	0.02645	0.52281
500	ME	1513	0.02657	0.54938
501	ME	1472	0.02585	0.57523
503	ME	1397	0.02454	0.59976
504	ME	1344	0.02360	0.62337
506	ME	1427	0.02506	0.64843
507	ME	1348	0.02367	0.67211
508	ME	1301	0.02285	0.69495
510	ME	1255	0.02204	0.71700
511	ME	1268	0.02227	0.73926
512	ME	1219	0.02141	0.76067
514	ME	1212	0.02129	0.78196
515	ME	1146	0.02013	0.80209
517	ME	1151	0.02021	0.82230

Table 2.3.11 (continued)
Cumulative Scale Score Distribution
Mathematics Grade 6

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
518	ME	1103	0.01937	0.84167
520	ME	1019	0.01790	0.85957
522	ME	1012	0.01777	0.87734
524	ME	962	0.01690	0.89424
525	ME	886	0.01556	0.90980
528	ME	919	0.01614	0.92594
529	ME	805	0.01414	0.94008
532	EE	787	0.01382	0.95390
536	EE	701	0.01231	0.96621
539	EE	609	0.01070	0.97691
544	EE	551	0.00968	0.98658
551	EE	429	0.00753	0.99412
560	EE	335	0.00588	1.00000

Table 2.3.12
Cumulative Scale Score Distribution
Mathematics Grade 7

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
440	NM	4	0.00007	0.00007
441	NM	38	0.00064	0.00071
442	NM	118	0.00199	0.00270
443	NM	312	0.00526	0.00796
444	NM	580	0.00978	0.01774
445	NM	932	0.01571	0.03345
454	NM	1177	0.01984	0.05330
460	NM	1439	0.02426	0.07756
465	NM	1549	0.02612	0.10367
468	NM	1627	0.02743	0.13111
471	PM	1791	0.03020	0.16130
474	PM	1865	0.03144	0.19275
477	PM	1824	0.03075	0.22350
479	PM	1915	0.03229	0.25579
481	PM	2001	0.03374	0.28952
483	PM	2005	0.03380	0.32333
485	PM	1941	0.03273	0.35606
487	PM	1893	0.03192	0.38797
489	PM	1836	0.03096	0.41893
491	PM	1745	0.02942	0.44835
492	PM	1708	0.02880	0.47715
494	PM	1661	0.02800	0.50515
496	PM	1625	0.02740	0.53255
497	PM	1476	0.02489	0.55743
499	PM	1423	0.02399	0.58143
500	ME	1368	0.02306	0.60449
502	ME	1268	0.02138	0.62587
503	ME	1276	0.02151	0.64738
505	ME	1168	0.01969	0.66708
506	ME	1133	0.01910	0.68618
508	ME	1140	0.01922	0.70540
509	ME	1100	0.01855	0.72395
510	ME	1016	0.01713	0.74108
512	ME	993	0.01674	0.75782
513	ME	994	0.01676	0.77458
514	ME	882	0.01487	0.78945
516	ME	907	0.01529	0.80474
517	ME	896	0.01511	0.81985
518	ME	802	0.01352	0.83337
520	ME	819	0.01381	0.84718

Table 2.3.12 (continued)
Cumulative Scale Score Distribution
Mathematics Grade 7

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
521	ME	810	0.01366	0.86084
523	ME	771	0.01300	0.87383
524	ME	775	0.01307	0.88690
526	ME	760	0.01281	0.89972
527	ME	734	0.01238	0.91209
529	ME	752	0.01268	0.92477
531	EE	695	0.01172	0.93649
533	EE	684	0.01153	0.94802
535	EE	627	0.01057	0.95859
538	EE	548	0.00924	0.96783
541	EE	593	0.01000	0.97783
545	EE	511	0.00862	0.98644
551	EE	390	0.00658	0.99302
560	EE	414	0.00698	1.00000

Table 2.3.13
Cumulative Scale Score Distribution
Mathematics Grade 8

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
441	NM	12	0.00019	0.00019
443	NM	36	0.00058	0.00077
444	NM	112	0.00180	0.00257
446	NM	253	0.00406	0.00663
447	NM	431	0.00692	0.01354
448	NM	651	0.01045	0.02399
454	NM	957	0.01536	0.03935
459	NM	1100	0.01765	0.05700
462	NM	1214	0.01948	0.07649
466	NM	1364	0.02189	0.09838
468	NM	1345	0.02159	0.11996
471	PM	1436	0.02305	0.14301
473	PM	1407	0.02258	0.16559
475	PM	1476	0.02369	0.18928
477	PM	1425	0.02287	0.21215
479	PM	1521	0.02441	0.23656
480	PM	1506	0.02417	0.26072
482	PM	1458	0.02340	0.28412
483	PM	1513	0.02428	0.30840
485	PM	1537	0.02467	0.33307
486	PM	1610	0.02584	0.35891
488	PM	1533	0.02460	0.38351
489	PM	1569	0.02518	0.40869
491	PM	1480	0.02375	0.43244
492	PM	1507	0.02419	0.45663
493	PM	1492	0.02394	0.48057
494	PM	1508	0.02420	0.50477
496	PM	1419	0.02277	0.52755
497	PM	1490	0.02391	0.55146
498	PM	1434	0.02301	0.57447
499	PM	1434	0.02301	0.59749
501	ME	1300	0.02086	0.61835
502	ME	1346	0.02160	0.63995
504	ME	1336	0.02144	0.66139
505	ME	1246	0.02000	0.68139
506	ME	1318	0.02115	0.70254
508	ME	1256	0.02016	0.72270
509	ME	1171	0.01879	0.74149
511	ME	1165	0.01870	0.76019
512	ME	1227	0.01969	0.77988

Table 2.3.13 (continued)
Cumulative Scale Score Distribution
Mathematics Grade 8

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
514	ME	1144	0.01836	0.79824
516	ME	1153	0.01850	0.81674
517	ME	1149	0.01844	0.83518
519	ME	1112	0.01785	0.85303
521	ME	1131	0.01815	0.87118
523	ME	1042	0.01672	0.88790
525	ME	1058	0.01698	0.90488
528	ME	1037	0.01664	0.92152
530	EE	1001	0.01606	0.93759
534	EE	1012	0.01624	0.95383
538	EE	884	0.01419	0.96802
543	EE	851	0.01366	0.98167
553	EE	724	0.01162	0.99329
560	EE	418	0.00671	1.00000

Table 2.3.14
Cumulative Scale Score Distribution
Mathematics Grade 10

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
440	NM	1	0.00002	0.00002
441	NM	5	0.00008	0.00010
442	NM	19	0.00031	0.00041
443	NM	57	0.00093	0.00134
444	NM	145	0.00237	0.00370
445	NM	267	0.00436	0.00806
454	NM	448	0.00731	0.01537
459	NM	626	0.01021	0.02558
463	NM	755	0.01232	0.03790
467	NM	952	0.01553	0.05343
469	NM	1043	0.01702	0.07045
472	PM	1119	0.01826	0.08870
474	PM	1177	0.01920	0.10790
476	PM	1236	0.02016	0.12807
478	PM	1251	0.02041	0.14848
480	PM	1194	0.01948	0.16796
482	PM	1335	0.02178	0.18974
483	PM	1236	0.02016	0.20990
485	PM	1265	0.02064	0.23054
486	PM	1256	0.02049	0.25103
488	PM	1330	0.02170	0.27273
489	PM	1339	0.02184	0.29457
491	PM	1330	0.02170	0.31627
492	PM	1269	0.02070	0.33697
493	PM	1357	0.02214	0.35911
495	PM	1269	0.02070	0.37981
496	PM	1269	0.02070	0.40052
497	PM	1302	0.02124	0.42176
498	PM	1263	0.02060	0.44236
499	PM	1274	0.02078	0.46315
501	ME	1261	0.02057	0.48372
502	ME	1215	0.01982	0.50354
503	ME	1237	0.02018	0.52372
504	ME	1237	0.02018	0.54390
505	ME	1200	0.01958	0.56348
507	ME	1182	0.01928	0.58276
508	ME	1181	0.01927	0.60203
509	ME	1197	0.01953	0.62156
510	ME	1198	0.01954	0.64110
511	ME	1174	0.01915	0.66026

Table 2.3.14 (continued)
Cumulative Scale Score Distribution
Mathematics Grade 10

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
512	ME	1230	0.02007	0.68032
514	ME	1153	0.01881	0.69913
515	ME	1125	0.01835	0.71749
516	ME	1129	0.01842	0.73590
518	ME	1106	0.01804	0.75395
519	ME	1082	0.01765	0.77160
520	ME	1069	0.01744	0.78904
522	ME	1123	0.01832	0.80736
523	ME	1104	0.01801	0.82537
525	ME	1048	0.01710	0.84247
527	ME	1083	0.01767	0.86014
529	ME	999	0.01630	0.87644
531	EE	962	0.01569	0.89213
533	EE	1011	0.01649	0.90862
536	EE	1030	0.01680	0.92543
539	EE	1023	0.01669	0.94212
543	EE	952	0.01553	0.95765
548	EE	814	0.01328	0.97093
555	EE	811	0.01323	0.98416
560	EE	971	0.01584	1.00000

Table 2.3.15
Cumulative Scale Score Distribution
Science Grade 5

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
440	NM	2	0.00004	0.00004
441	NM	13	0.00023	0.00026
442	NM	156	0.00274	0.00301
443	NM	395	0.00695	0.00996
444	NM	703	0.01237	0.02232
448	NM	365	0.00642	0.02874
449	NM	136	0.00239	0.03114
451	NM	409	0.00719	0.03833
453	NM	189	0.00332	0.04166
455	NM	498	0.00876	0.05042
457	NM	195	0.00343	0.05385
458	NM	523	0.00920	0.06305
460	NM	621	0.01092	0.07397
461	NM	187	0.00329	0.07726
463	NM	673	0.01184	0.08910
464	NM	186	0.00327	0.09237
466	NM	720	0.01267	0.10504
467	NM	188	0.00331	0.10835
468	NM	778	0.01369	0.12203
470	PM	996	0.01752	0.13955
473	PM	1096	0.01928	0.15883
475	PM	959	0.01687	0.17570
476	PM	199	0.00350	0.17920
477	PM	1057	0.01859	0.19780
479	PM	1325	0.02331	0.22111
481	PM	1192	0.02097	0.24208
482	PM	221	0.00389	0.24596
483	PM	1194	0.02100	0.26697
485	PM	1491	0.02623	0.29320
487	PM	1619	0.02848	0.32168
489	PM	1562	0.02748	0.34915
490	PM	252	0.00443	0.35359
492	PM	1616	0.02843	0.38201
493	PM	231	0.00406	0.38608
494	PM	1614	0.02839	0.41447
496	PM	1966	0.03458	0.44906
498	PM	2061	0.03626	0.48531
499	PM	1747	0.03073	0.51604
501	ME	244	0.00429	0.52034
502	ME	1955	0.03439	0.55473

Table 2.3.15 (continued)
Cumulative Scale Score Distribution
Science Grade 5

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
504	ME	2155	0.03791	0.59264
507	ME	2181	0.03837	0.63100
509	ME	2053	0.03612	0.66712
510	ME	241	0.00424	0.67136
511	ME	2050	0.03606	0.70742
514	ME	2312	0.04067	0.74809
516	ME	1924	0.03385	0.78194
517	ME	211	0.00371	0.78565
519	ME	1934	0.03402	0.81967
521	ME	227	0.00399	0.82366
522	ME	1836	0.03230	0.85596
525	ME	1825	0.03210	0.88807
528	ME	1432	0.02519	0.91326
529	ME	180	0.00317	0.91642
532	EE	1188	0.02090	0.93732
535	EE	143	0.00252	0.93984
536	EE	1063	0.01870	0.95854
540	EE	804	0.01414	0.97268
541	EE	105	0.00185	0.97453
545	EE	551	0.00969	0.98422
549	EE	79	0.00139	0.98561
551	EE	376	0.00661	0.99222
558	EE	225	0.00396	0.99618
559	EE	33	0.00058	0.99676
560	EE	184	0.00324	1.00000

Table 2.3.16
Cumulative Scale Score Distribution
Science Grade 8

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
440	NM	13	0.00021	0.00021
441	NM	360	0.00572	0.00593
442	NM	43	0.00068	0.00661
443	NM	117	0.00186	0.00847
444	NM	427	0.00679	0.01526
445	NM	372	0.00591	0.02117
446	NM	466	0.00741	0.02857
449	NM	147	0.00234	0.03091
451	NM	592	0.00941	0.04032
454	NM	164	0.00261	0.04292
455	NM	667	0.01060	0.05352
458	NM	656	0.01042	0.06395
459	NM	207	0.00329	0.06724
462	NM	820	0.01303	0.08027
463	NM	187	0.00297	0.08324
464	NM	823	0.01308	0.09632
467	NM	1155	0.01835	0.11467
469	NM	1010	0.01605	0.13072
470	PM	218	0.00346	0.13419
472	PM	1114	0.01770	0.15189
473	PM	223	0.00354	0.15544
474	PM	1191	0.01893	0.17436
476	PM	1446	0.02298	0.19734
478	PM	1272	0.02021	0.21756
479	PM	208	0.00331	0.22086
481	PM	1623	0.02579	0.24665
482	PM	1436	0.02282	0.26948
484	PM	1784	0.02835	0.29783
486	PM	1815	0.02884	0.32667
488	PM	1584	0.02517	0.35184
489	PM	262	0.00416	0.35601
490	PM	1693	0.02690	0.38291
491	PM	222	0.00353	0.38644
492	PM	1726	0.02743	0.41387
493	PM	241	0.00383	0.41770
494	PM	1832	0.02911	0.44681
495	PM	1918	0.03048	0.47729
496	PM	219	0.00348	0.48077
497	PM	1854	0.02946	0.51023
498	PM	250	0.00397	0.51421

Table 2.3.16 (continued)
Cumulative Scale Score Distribution
Science Grade 8

Scale Score	Achievement Levels	N	Proportion	Cumulative Proportion
499	PM	1810	0.02876	0.54297
501	ME	2065	0.03282	0.57579
503	ME	2139	0.03399	0.60978
505	ME	2112	0.03356	0.64334
506	ME	1886	0.02997	0.67331
508	ME	2069	0.03288	0.70619
510	ME	2015	0.03202	0.73822
512	ME	1751	0.02783	0.76604
513	ME	202	0.00321	0.76925
514	ME	1670	0.02654	0.79579
515	ME	151	0.00240	0.79819
516	ME	1615	0.02567	0.82386
518	ME	1719	0.02732	0.85117
521	ME	1593	0.02532	0.87649
523	ME	1319	0.02096	0.89745
524	ME	119	0.00189	0.89934
525	ME	1182	0.01878	0.91813
528	ME	1174	0.01866	0.93678
530	EE	906	0.01440	0.95118
531	EE	97	0.00154	0.95272
533	EE	773	0.01228	0.96501
535	EE	81	0.00129	0.96629
536	EE	631	0.01003	0.97632
540	EE	558	0.00887	0.98519
544	EE	381	0.00605	0.99124
546	EE	37	0.00059	0.99183
549	EE	234	0.00372	0.99555
555	EE	155	0.00246	0.99801
560	EE	125	0.00199	1.00000

Section 2.4

Rescore Analysis Results

This section shows the results of rescore analyses. Rescore analyses are conducted on human-scored items to ensure consistency in scoring across years. To detect rater drift, 200 student responses from a previous administration are *rescored* using raters during the current administration. Then, the resulting scores from the current year are compared to the previous scores (on the same set of 200 student responses). Effect sizes (i.e., Cohen's *d*) are calculated using the means and standard deviations of the two sets of scores. The threshold for flagging an item is 0.5.

Table 2.4.1
Rescore Analysis
English Language Arts Grade 3

Item Id	Max	Old Mean	New Mean	Old StDev	New StDev	Effect Size	Discard
IA00458A	3	0.57500	0.47500	0.72595	0.64922	-0.13775	False
IA00458D	5	0.52500	0.53500	0.76963	0.72899	0.01299	False

Table 2.4.2
Rescore Analysis
English Language Arts Grade 4

Item Id	Max	Old Mean	New Mean	Old StDev	New StDev	Effect Size	Discard
IA00421A	3	1.13000	1.19000	0.99400	0.83510	0.06036	False
IA00421D	5	1.05000	0.98000	1.07857	1.07488	-0.06490	False

Table 2.4.3
Rescore Analysis
English Language Arts Grade 5

Item Id	Max	Old Mean	New Mean	Old StDev	New StDev	Effect Size	Discard
IA00509A	3	1.03000	0.99000	0.85013	0.78931	-0.04705	False
IA00509D	5	1.09000	0.99500	0.85178	0.78617	-0.11153	False
IA01676A	3	1.60000	1.59000	0.99243	0.91985	-0.01008	False
IA01676D	5	1.49500	1.42000	1.38911	1.29304	-0.05399	False

Table 2.4.4
Rescore Analysis
English Language Arts Grade 6

Item Id	Max	Old Mean	New Mean	Old StDev	New StDev	Effect Size	Discard
IA00181A	3	1.25000	1.27000	1.01620	0.94422	0.01968	False
IA00181D	5	1.45500	1.54500	1.03116	0.99646	0.08728	False
IA00531A	3	1.37500	1.26000	1.08641	0.99869	-0.10585	False
IA00531D	5	1.53000	1.46000	1.14703	1.05068	-0.06103	False

Table 2.4.5
Rescore Analysis
English Language Arts Grade 7

Item Id	Max	Old Mean	New Mean	Old StDev	New StDev	Effect Size	Discard
IA00071A	3	1.24500	1.22000	0.97968	0.82766	-0.02552	False
IA00071D	5	1.43500	1.35500	1.01039	0.78872	-0.07918	False
IA00665A	3	1.43500	1.42500	1.03009	0.98958	-0.00971	False
IA00665D	5	1.58500	1.60000	1.24923	1.06096	0.01201	False

Table 2.4.6
Rescore Analysis
English Language Arts Grade 8

Item Id	Max	Old Mean	New Mean	Old StDev	New StDev	Effect Size	Discard
IA00064A	3	1.53500	1.73500	1.05086	1.04414	0.19032	False
IA00064D	5	1.69000	1.86500	1.17934	1.04028	0.14839	False
IA00376A	3	1.56500	1.69500	1.02520	0.94681	0.12680	False
IA00376D	5	1.78500	1.76500	1.08844	0.94032	-0.01837	False

Table 2.4.7
Rescore Analysis
Mathematics Grade 3

Item Id	Max	Old Mean	New Mean	Old StDev	New StDev	Effect Size	Discard
IA01080	3	1.19500	1.13500	0.98582	0.98571	-0.06086	False
IA01081	3	1.14500	1.13000	0.92099	0.91503	-0.01629	False

Table 2.4.8
Rescore Analysis
Mathematics Grade 4

Item Id	Max	Old Mean	New Mean	Old StDev	New StDev	Effect Size	Discard
IA00789	4	1.33500	1.57000	1.18312	1.33567	0.19863	False
IA01057	4	1.94000	2.00000	1.16326	1.20718	0.05158	False

Table 2.4.9
Rescore Analysis
Mathematics Grade 5

Item Id	Max	Old Mean	New Mean	Old StDev	New StDev	Effect Size	Discard
IA01032	4	1.49000	1.51000	1.22368	1.25209	0.01634	False
IA02736	4	1.87000	1.78000	1.41176	1.40050	-0.06375	False

Table 2.4.10
Rescore Analysis
Mathematics Grade 6

Item Id	Max	Old Mean	New Mean	Old StDev	New StDev	Effect Size	Discard
IA00881	4	2.19500	2.15000	1.59679	1.60009	-0.02818	False
IA00972	4	2.88000	2.85000	1.00531	1.02604	-0.02984	False

Table 2.4.11
Rescore Analysis
Mathematics Grade 7

Item Id	Max	Old Mean	New Mean	Old StDev	New StDev	Effect Size	Discard
IA01069	4	2.04000	2.05000	1.09287	1.12866	0.00915	False
IA02722	4	1.75500	1.81000	1.54171	1.55434	0.03567	False

Table 2.4.12
Rescore Analysis
Mathematics Grade 8

Item Id	Max	Old Mean	New Mean	Old StDev	New StDev	Effect Size	Discard
IA00864	4	2.85500	2.82500	1.41917	1.46804	-0.02114	False
IA01066	4	2.11000	2.05500	1.60336	1.63872	-0.03430	False

Section 2.5

Tabled Delta Analysis Results

Table 2.5.1
Delta Analysis
English Language Arts Grade 3

Item Id	Old P	New P	Old Delta	New Delta	Max	Discard	Std Dist
IA00279 (EL308822)	0.83000	0.78000	9.18334	9.91123	1	False	-0.68367
IA00280 (EL308824)	0.73000	0.66000	10.54875	11.35015	1	False	-0.56424
IA00281 (EL308826)	0.63000	0.59000	11.67259	12.08982	1	False	-0.29825
IA00282 (EL308827)	0.71000	0.65000	10.78646	11.45872	1	False	-1.01877
IA00283 (EL308835)	0.63000	0.57000	11.67259	12.29450	1	False	-0.98369
IA00284 (EL308837)	0.74000	0.66000	10.42662	11.35015	1	False	-0.14392
IA00285 (EL308838)	0.84000	0.77000	9.02217	10.04461	1	False	0.31769
IA00286 (EL308842)	0.47000	0.41000	13.30108	13.91018	1	False	-0.78960
IA00287 (EL308855)	0.50333	0.37333	12.96658	14.29215	3	False	0.96665
IA00288 (EL308857)	0.41667	0.32000	13.84171	14.87080	3	False	-0.10746
IA00443 (EL626042844)	0.65000	0.66000	11.45872	11.35015	1	False	1.44268
IA00444 (EL626043062)	0.73000	0.67000	10.54875	11.24035	1	False	-0.93193
IA00445 (EL626043435)	0.62500	0.51500	11.72544	12.84957	2	False	0.40726
IA00446 (EL626049849)	0.66000	0.53000	11.35015	12.69892	1	False	1.19438
IA00450 (EL626050679)	0.72000	0.67000	10.66863	11.24035	1	False	-0.90876
IA00451 (EL626050927)	0.47000	0.51000	13.30108	12.89972	1	False	2.59416
IA00452 (EL626051097)	0.57000	0.55000	12.29450	12.49735	2	False	0.47739
IA00453 (EL626051328)	0.65000	0.64000	11.45872	11.56616	1	False	0.71929
IA00458A (EL626052459#SCORE_TRAIT_Conv)	0.24333	0.18667	15.78248	16.56099	3	False	-1.12656
IA00458D (EL626052459#SCORE_TRAIT_Ideadev)	0.19750	0.13750	16.40234	17.36648	4	False	-0.56262

Table 2.5.2
Delta Analysis
English Language Arts Grade 4

Item Id	Old P	New P	Old Delta	New Delta	Max	Discard	Std Dist
IA00218 (EL307705)	0.86000	0.81000	8.67872	9.48841	1	False	-1.31264
IA00219 (EL307709)	0.81000	0.77000	9.48841	10.04461	1	False	-0.31752
IA00220 (EL307710)	0.46000	0.43000	13.40173	13.70550	1	False	0.43555
IA00221 (EL307713)	0.58000	0.52000	12.19243	12.79939	1	False	-0.73624
IA00222 (EL307714)	0.82000	0.76000	9.33854	10.17479	1	False	-1.47391
IA00223 (EL307719)	0.60000	0.56000	11.98661	12.39612	1	False	0.10291
IA00224 (EL307724)	0.78000	0.75000	9.91123	10.30204	1	False	0.33978
IA00225 (EL307728)	0.56000	0.45333	12.39612	13.46898	3	False	-0.28176
IA00226 (EL307729)	0.53000	0.41667	12.69892	13.84171	3	False	0.03309
IA00289 (EL309792)	0.67000	0.64000	11.24035	11.56616	1	False	0.50906
IA00407 (EL624647403)	0.48000	0.41000	13.20061	13.91018	1	False	-1.24131
IA00408 (EL624647580)	0.61000	0.58000	11.88272	12.19243	1	False	0.52708
IA00411 (EL624652450)	0.87000	0.78000	8.49444	9.91123	1	False	0.85379
IA00412 (EL624652621)	0.94000	0.90000	6.78091	7.87379	1	False	-0.62814
IA00414 (EL624652989)	0.43000	0.43000	13.70550	13.70550	1	False	1.67903
IA00415 (EL624653348)	0.76000	0.67000	10.17479	11.24035	1	False	-0.48226
IA00416 (EL624653492)	0.79000	0.72000	9.77432	10.66863	2	False	-1.22701
IA00419 (EL624654711)	0.87000	0.80000	8.49444	9.63352	2	False	-0.30432
IA00421A (EL624655949#SCORE_TRAIT_Conv)	0.52000	0.36667	12.79939	14.36278	3	False	1.79475
IA00421D (EL624655949#SCORE_TRAIT_Ideadev)	0.38750	0.25250	14.14336	15.66657	4	False	1.73008

Table 2.5.3
Delta Analysis
English Language Arts Grade 5

Item Id	Old P	New P	Old Delta	New Delta	Max	Discard	Std Dist
IA00495 (EL626304658)	0.79000	0.75000	9.77432	10.30204	1	False	-1.10693
IA00497 (EL626304969)	0.79000	0.73000	9.77432	10.54875	1	False	-0.48551
IA00500 (EL626332335)	0.70000	0.66000	10.90240	11.35015	1	False	-0.87347
IA00501 (EL626332592)	0.88000	0.84000	8.30005	9.02217	1	False	-0.69248
IA00502 (EL626333002)	0.87000	0.82000	8.49444	9.33854	1	False	-0.28943
IA00505 (EL626355215)	0.57000	0.60000	12.29450	11.98661	1	False	1.55953
IA00506 (EL626355557)	0.60000	0.64000	11.98661	11.56616	1	False	1.93456
IA00508 (EL626356291)	0.42500	0.36500	13.75647	14.38050	2	False	-0.87892
IA00509A (EL626356806#SCORE_TRAIT_Conv)	0.46000	0.40000	13.40173	14.01339	3	False	-0.92802
IA00509D (EL626356806#SCORE_TRAIT_Ideadev)	0.36250	0.31500	14.40714	14.92691	4	False	-1.19457
IA00638 (EL627351056)	0.63000	0.66000	11.67259	11.35015	1	False	1.62228
IA01669 (EL711809263)	0.82000	0.76000	9.33854	10.17479	1	False	-0.29437
IA01670 (EL711809592)	0.81000	0.76000	9.48841	10.17479	1	False	-0.78003
IA01671 (EL711827203)	0.94000	0.90000	6.78091	7.87379	1	False	0.48082
IA01672 (EL711827807)	0.74000	0.73000	10.42662	10.54875	1	False	0.20133
IA01676A (EL711854812#SCORE_TRAIT_Conv)	0.52000	0.39000	12.79939	14.11728	3	False	1.36304
IA01676D (EL711854812#SCORE_TRAIT_Ideadev)	0.36500	0.26500	14.38050	15.51202	4	False	0.79334
IA01679 (EL711868011)	0.60000	0.49500	11.98661	13.05013	2	False	0.51261
IA01680 (EL711900602)	0.72000	0.70000	10.66863	10.90240	1	False	-0.16908
IA01691 (EL712167015)	0.50000	0.46000	13.00000	13.40173	1	False	-0.77468

Table 2.5.4
Delta Analysis
English Language Arts Grade 6

Item Id	Old P	New P	Old Delta	New Delta	Max	Discard	Std Dist
IA00173 (EL303496)	0.86000	0.74000	8.67872	10.42662	1	False	0.47764
IA00174 (EL303500)	0.69000	0.64000	11.01660	11.56616	1	False	0.42822
IA00175 (EL303504)	0.70000	0.61000	10.90240	11.88272	1	False	-1.62367
IA00176 (EL303508)	0.78000	0.71000	9.91123	10.78646	1	False	-0.52864
IA00177 (EL303510)	0.92000	0.87000	7.37971	8.49444	1	False	-0.22976
IA00178 (EL303513)	0.78000	0.66000	9.91123	11.35015	1	False	-0.32297
IA00179 (EL303514)	0.64000	0.63000	11.56616	11.67259	1	False	2.28706
IA00180 (EL303518)	0.62000	0.57000	11.77808	12.29450	1	False	0.14701
IA00181A (EL303519#SCORE_TRAIT_Conv)	0.54333	0.43667	12.56466	13.63770	3	False	-0.57456
IA00181D (EL303519#SCORE_TRAIT_Ideadev)	0.35600	0.33000	14.47669	14.75965	5	False	-0.27900
IA00515 (EL626864414)	0.90000	0.83000	7.87379	9.18334	1	False	-1.47613
IA00517 (EL626864724)	0.82000	0.69000	9.33854	11.01660	1	False	0.51906
IA00518 (EL626865003)	0.74000	0.67000	10.42662	11.24035	1	False	-0.52680
IA00520 (EL626865416)	0.55000	0.41000	12.49735	13.91018	1	False	1.05725
IA00522 (EL626865773)	0.83000	0.72000	9.18334	10.66863	1	False	-0.51950
IA00523 (EL626865942)	0.67000	0.64000	11.24035	11.56616	1	False	1.39811
IA00528 (EL626867605)	0.88500	0.77000	8.19856	10.04461	2	False	0.68027
IA00530 (EL626868748)	0.79000	0.70500	9.77432	10.84466	2	False	-1.40833
IA00531A (EL626869132#SCORE_TRAIT_Conv)	0.61667	0.47000	11.81305	13.30108	3	False	1.02795
IA00531D (EL626869132#SCORE_TRAIT_Ideadev)	0.41800	0.33000	13.82805	14.75965	5	False	-0.53320

Table 2.5.5
Delta Analysis
English Language Arts Grade 7

Item Id	Old P	New P	Old Delta	New Delta	Max	Discard	Std Dist
IA00065 (EL292160)	0.83000	0.73000	9.18334	10.54875	1	False	0.74245
IA00066 (EL292163)	0.74000	0.65000	10.42662	11.45872	1	False	-0.59540
IA00067 (EL292168)	0.59000	0.50000	12.08982	13.00000	1	False	-0.79165
IA00068 (EL292170)	0.80000	0.71000	9.63352	10.78646	1	False	-0.19338
IA00069 (EL292172)	0.67000	0.62000	11.24035	11.77808	1	False	-0.06810
IA00070 (EL292176)	0.62000	0.62000	11.77808	11.77808	1	False	2.44635
IA00071A (EL292181#SCORE_TRAIT_Conv)	0.54667	0.48333	12.53102	13.16716	3	False	-0.86518
IA00071D (EL292181#SCORE_TRAIT_Ideadev)	0.35400	0.32600	14.49817	14.80394	5	False	0.28260
IA00081 (EL293802)	0.75000	0.68000	10.30204	11.12920	1	False	-1.26412
IA00082 (EL293804)	0.64000	0.54000	11.56616	12.59827	1	False	-0.31899
IA00257 (EL308358)	0.90000	0.85000	7.87379	8.85427	1	False	-1.42919
IA00258 (EL308360)	0.80500	0.75500	9.56153	10.23876	2	False	-0.34706
IA00262 (EL308382)	0.75000	0.65000	10.30204	11.45872	1	False	-0.01287
IA00265 (EL308389)	0.92000	0.90000	7.37971	7.87379	1	False	1.08304
IA00269 (EL308397)	0.90000	0.84000	7.87379	9.02217	1	False	-0.64271
IA00655 (EL628647210)	0.78000	0.72000	9.91123	10.66863	1	False	-0.82622
IA00657 (EL628647689)	0.86000	0.77000	8.67872	10.04461	1	False	0.62241
IA00658 (EL628653398)	0.77000	0.74000	10.04461	10.42662	2	False	0.98788
IA00665A (EL628749729#SCORE_TRAIT_Conv)	0.66667	0.52667	11.27709	12.73243	3	False	1.69263
IA00665D (EL628749729#SCORE_TRAIT_Ideadev)	0.44000	0.35400	13.60388	14.49817	5	False	-0.50251

Table 2.5.6
Delta Analysis
English Language Arts Grade 8

Item Id	Old P	New P	Old Delta	New Delta	Max	Discard	Std Dist
IA00056 (EL290795)	0.84000	0.77000	9.02217	10.04461	1	False	-0.23221
IA00057 (EL290798)	0.80000	0.78000	9.63352	9.91123	1	False	0.52755
IA00058 (EL290799)	0.80000	0.75000	9.63352	10.30204	1	False	-1.34346
IA00059 (EL290800)	0.70000	0.67000	10.90240	11.24035	1	False	0.01219
IA00060 (EL290801)	0.84000	0.77000	9.02217	10.04461	1	False	-0.23221
IA00061 (EL290805)	0.65000	0.56000	11.45872	12.39612	1	False	-0.20349
IA00062 (EL290808)	0.57000	0.54000	12.29450	12.59827	1	False	-0.07316
IA00063 (EL290814)	0.49000	0.44000	13.10028	13.60388	1	False	-1.17402
IA00064A (EL290818#SCORE_TRAIT_Conv)	0.68333	0.56667	11.09184	12.32842	3	False	1.16320
IA00064D (EL290818#SCORE_TRAIT_Ideadev)	0.43800	0.36600	13.62417	14.36987	5	False	-0.73393
IA00368 (EL623873883)	0.81000	0.72000	9.48841	10.66863	1	False	0.60654
IA00371 (EL623951471)	0.63000	0.60500	11.67259	11.93476	2	False	0.23720
IA00373 (EL623952377)	0.46500	0.42000	13.35138	13.80757	2	False	-0.99198
IA00374 (EL623952612)	0.72000	0.73000	10.66863	10.54875	1	False	2.24587
IA00376A (EL623953378#SCORE_TRAIT_Conv)	0.74667	0.63000	10.34385	11.67259	3	False	1.47057
IA00376D (EL623953378#SCORE_TRAIT_Ideadev)	0.49200	0.40200	13.08022	13.99269	5	False	-0.03278
IA00378 (EL623955555)	0.60000	0.51000	11.98661	12.89972	1	False	-0.22536
IA00379 (EL623955757)	0.54000	0.54000	12.59827	12.59827	1	False	1.32676
IA00383 (EL623959265)	0.71000	0.65000	10.78646	11.45872	1	False	-1.56756
IA00699 (EL632808123)	0.81000	0.77000	9.48841	10.04461	1	False	-0.77974

Table 2.5.7
Delta Analysis
English Language Arts Grade 10

Item Id	Old P	New P	Old Delta	New Delta	Max	Discard	Std Dist
IA04110 (EL807953958)	0.67000	0.54000	11.24035	12.59827	2	False	2.99218
IA04111 (EL807957225)	0.79000	0.79000	9.77432	9.77432	1	False	0.05772
IA04132 (EL808046697)	0.90000	0.88000	7.87379	8.30005	1	False	-0.75346
IA04260 (EL811034362)	0.79000	0.73000	9.77432	10.54875	1	False	0.76744
IA04297 (EL811428116)	0.64000	0.61000	11.56616	11.88272	1	False	-0.42370
IA04412 (EL813438114)	0.80000	0.74000	9.63352	10.42662	1	False	0.80324
IA04439 (EL816956706)	0.68000	0.67000	11.12920	11.24035	1	False	-0.56883
IA04440 (EL817235657)	0.64000	0.63500	11.56616	11.61950	2	False	-0.45817
IA06626A (EL811561885#SCORE_TRAIT_Conv)	0.71333	0.74667	10.74740	10.34385	3	False	1.22181
IA06626D (EL811561885#SCORE_TRAIT_Ideadev)	0.46600	0.50000	13.34132	13.00000	5	False	0.52499
IA06629 (EL811608986)	0.76500	0.75000	10.11008	10.30204	2	False	-0.64656
IA06631 (EL811610832)	0.60000	0.59000	11.98661	12.08982	2	False	-0.70397
IA06633 (EL811612272)	0.62000	0.60000	11.77808	11.98661	1	False	-0.74446
IA06635 (EL811612951)	0.82000	0.80000	9.33854	9.63352	1	False	-0.84511
IA06636 (EL811614524)	0.84000	0.82000	9.02217	9.33854	1	False	-0.85691
IA06638 (EL811616340)	0.60000	0.62000	11.98661	11.77808	1	False	0.33700
IA06641 (EL811617473)	0.80000	0.78000	9.63352	9.91123	1	False	-0.84307
IA06642 (EL811618006)	0.82000	0.82000	9.33854	9.33854	1	False	0.13987

Table 2.5.8
Delta Analysis
Mathematics Grade 3

Item Id	Old P	New P	Old Delta	New Delta	Max	Discard	Std Dist
IA00769 (MA203641)	0.90000	0.83000	7.87379	9.18334	1	False	0.24128
IA00799 (MA260559)	0.65000	0.49000	11.45872	13.10028	1	False	2.22356
IA00834 (MA293457)	0.85000	0.79000	8.85427	9.77432	1	False	-0.87612
IA00838 (MA293524)	0.81000	0.74000	9.48841	10.42662	1	False	-0.66566
IA00850 (MA297405)	0.77000	0.69000	10.04461	11.01660	1	False	-0.41937
IA00852 (MA297438)	0.70000	0.63000	10.90240	11.67259	1	False	-0.91681
IA00924 (MA306310)	0.55000	0.46000	12.49735	13.40173	1	False	-0.08160
IA00925 (MA306315)	0.82000	0.75000	9.33854	10.30204	1	False	-0.61317
IA00930 (MA306359)	0.62000	0.66000	11.77808	11.35015	1	False	2.36721
IA00932 (MA306375)	0.48000	0.48000	13.20061	13.20061	1	False	0.55725
IA00993 (MA310834)	0.66000	0.63000	11.35015	11.67259	1	False	-0.12579
IA01019 (MA311277)	0.78000	0.74000	9.91123	10.42662	1	False	-0.45729
IA01071 (MA623063509)	0.72000	0.73000	10.66863	10.54875	1	False	1.56130
IA01080 (MA623654449)	0.36000	0.31667	14.43384	14.90816	3	False	-1.11643
IA01081 (MA623656013)	0.36000	0.28667	14.43384	15.25260	3	False	0.07367
IA02323 (MA301611A)	0.88000	0.83000	8.30005	9.18334	1	False	-1.13224
IA04760 (MA713752330)	0.85000	0.77000	8.85427	10.04461	1	False	0.05782
IA04813 (MA735572247)	0.75000	0.72000	10.30204	10.66863	1	False	-0.03420
IA04828 (MA735653938)	0.59000	0.51000	12.08982	12.89972	1	False	-0.50297
IA04844 (MA735735757)	0.65000	0.62000	11.45872	11.77808	1	False	-0.14044

Table 2.5.9
Delta Analysis
Mathematics Grade 4

Item Id	Old P	New P	Old Delta	New Delta	Max	Discard	Std Dist
IA00789 (MA250543)	0.48000	0.41500	13.20061	13.85881	4	False	-0.60787
IA00828 (MA287237)	0.78000	0.76000	9.91123	10.17479	1	False	-0.75079
IA00841 (MA293718)	0.78000	0.71000	9.91123	10.78646	1	False	0.03016
IA00861 (MA297629)	0.87000	0.89000	8.49444	8.09389	1	False	0.39855
IA00869 (MA297988)	0.24000	0.18000	15.82521	16.66146	1	False	-0.45669
IA00906 (MA301811)	0.76000	0.73000	10.17479	10.54875	1	False	-0.93059
IA00958 (MA307055)	0.57000	0.46000	12.29450	13.40173	1	False	0.29962
IA00961 (MA307081)	0.54000	0.53000	12.59827	12.69892	1	False	-0.25665
IA00963 (MA307085)	0.76000	0.67000	10.17479	11.24035	1	False	0.36951
IA01048 (MA311534)	0.56000	0.54000	12.39612	12.59827	1	False	-0.46156
IA01049 (MA311537)	0.70000	0.66000	10.90240	11.35015	1	False	-0.84275
IA01055 (MA311572)	0.64000	0.52000	11.56616	12.79939	1	False	0.58739
IA01057 (MA311581)	0.55500	0.55250	12.44678	12.47208	4	False	-0.12558
IA01093 (MA623879088)	0.70500	0.73000	10.84466	10.54875	2	False	0.36620
IA02175 (MA286769)	0.78000	0.75000	9.91123	10.30204	1	False	-0.88047
IA02819 (MA713583365)	0.42000	0.61000	13.80757	11.88272	1	False	3.63555
IA02841 (MA713774890)	0.51000	0.44000	12.89972	13.60388	1	False	-0.50043
IA02902 (MA714251321)	0.46000	0.39000	13.40173	14.11728	1	False	-0.51413
IA04661 (MA307327)	0.83000	0.74000	9.18334	10.42662	1	False	0.77293
IA04965 (MA800867144)	0.66000	0.58000	11.35015	12.19243	1	False	-0.13241

Table 2.5.10
Delta Analysis
Mathematics Grade 5

Item Id	Old P	New P	Old Delta	New Delta	Max	Discard	Std Dist
IA00771 (MA204911)	0.81000	0.73000	9.48841	10.54875	1	False	-0.34652
IA00776 (MA221207)	0.70000	0.66000	10.90240	11.35015	1	False	-0.71992
IA00803 (MA262207)	0.76000	0.72000	10.17479	10.66863	1	False	-0.80669
IA00806 (MA272292)	0.52000	0.47000	12.79939	13.30108	1	False	-1.01264
IA00826 (MA287178)	0.90000	0.85000	7.87379	8.85427	1	False	-0.69683
IA00872 (MA298003)	0.64000	0.63000	11.56616	11.67259	1	False	0.25118
IA00880 (MA298106)	0.28000	0.21000	15.33137	16.22568	1	False	-0.43489
IA00885 (MA299556)	0.79000	0.68000	9.77432	11.12920	1	False	0.55125
IA00936 (MA306420)	0.76000	0.69000	10.17479	11.01660	1	False	-0.95005
IA00943 (MA306466)	0.76000	0.62000	10.17479	11.77808	1	False	1.31941
IA00989 (MA307638)	0.91000	0.86000	7.63698	8.67872	1	False	-0.53070
IA01020 (MA311280)	0.40000	0.43000	14.01339	13.70550	1	False	1.31576
IA01028 (MA311333)	0.28000	0.20000	15.33137	16.36648	1	False	-0.01526
IA01029 (MA311337)	0.82000	0.83000	9.33854	9.18334	1	False	1.18584
IA01032 (MA311366)	0.39500	0.38500	14.06524	14.16950	4	False	0.08381
IA01149 (MA624347774)	0.42000	0.41000	13.80757	13.91018	1	False	0.10665
IA01155 (MA624357395)	0.54000	0.35000	12.59827	14.54128	2	False	2.50048
IA02552 (MA311324)	0.43000	0.38000	13.70550	14.22192	1	False	-1.11957
IA02736 (MA704359678)	0.54500	0.48500	12.54785	13.15043	4	False	-1.29584
IA04970 (MA800974344)	0.70000	0.70000	10.90240	10.90240	1	False	0.61452

Table 2.5.11
Delta Analysis
Mathematics Grade 6

Item Id	Old P	New P	Old Delta	New Delta	Max	Discard	Std Dist
IA00777 (MA221667)	0.85000	0.85000	8.85427	8.85427	1	False	0.25134
IA00778 (MA221669)	0.84000	0.80000	9.02217	9.63352	1	False	-0.44461
IA00804 (MA264305)	0.77000	0.74000	10.04461	10.42662	1	False	-0.94060
IA00817 (MA280989)	0.52000	0.47000	12.79939	13.30108	1	False	-0.70511
IA00818 (MA282268)	0.45000	0.40000	13.50265	14.01339	1	False	-0.56076
IA00819 (MA282277)	0.54000	0.47000	12.59827	13.30108	1	False	-1.00062
IA00827 (MA287186)	0.70000	0.56000	10.90240	12.39612	1	False	2.53086
IA00845 (MA296349)	0.64000	0.56000	11.56616	12.39612	1	False	-0.23874
IA00881 (MA298139)	0.47250	0.45000	13.27595	13.50265	4	False	0.49386
IA00884 (MA298279)	0.20000	0.12000	16.36648	17.69995	1	False	0.50616
IA00899 (MA301508)	0.37000	0.33000	14.32741	14.75965	1	False	-0.04240
IA00972 (MA307339)	0.75500	0.74000	10.23876	10.42662	4	False	-0.13049
IA00992 (MA309941)	0.42000	0.41000	13.80757	13.91018	1	False	1.11583
IA01058 (MA311658)	0.53000	0.42000	12.69892	13.80757	1	False	0.56327
IA02037 (MA217493)	0.64000	0.66000	11.56616	11.35015	1	False	1.79079
IA02597 (MA311693)	0.84000	0.78000	9.02217	9.91123	1	False	0.64316
IA04745 (MA703231515)	0.56500	0.50000	12.34537	13.00000	2	False	-1.12468
IA04884 (MA736365836)	0.73000	0.68000	10.54875	11.12920	1	False	-0.95589
IA05126 (MA805103779)	0.61000	0.55000	11.88272	12.49735	1	False	-1.16309
IA05135 (MA805171807)	0.65000	0.58000	11.45872	12.19243	1	False	-0.58827

Table 2.5.12
Delta Analysis
Mathematics Grade 7

Item Id	Old P	New P	Old Delta	New Delta	Max	Discard	Std Dist
IA00796 (MA259267)	0.44000	0.44000	13.60388	13.60388	1	False	-1.08470
IA00831 (MA288414)	0.75000	0.72000	10.30204	10.66863	1	False	0.07198
IA00847 (MA296358)	0.46000	0.53000	13.40173	12.69892	1	False	1.57506
IA00909 (MA301846)	0.90000	0.87000	7.87379	8.49444	1	False	0.84097
IA00910 (MA301854)	0.28000	0.35000	15.33137	14.54128	1	False	1.58436
IA00945 (MA306538)	0.70000	0.69000	10.90240	11.01660	1	False	-1.11356
IA00948 (MA306600)	0.85000	0.84000	8.85427	9.02217	1	False	-1.30809
IA00949 (MA306605)	0.51000	0.49000	12.89972	13.10028	1	False	-0.19550
IA01004 (MA311073)	0.18000	0.17000	16.66146	16.81666	1	False	0.44153
IA01006 (MA311093)	0.83000	0.85000	9.18334	8.85427	1	False	0.59409
IA01011 (MA311109)	0.42000	0.39000	13.80757	14.11728	1	False	0.58881
IA01016 (MA311125)	0.58000	0.55000	12.19243	12.49735	1	False	0.18799
IA01017 (MA311135)	0.74000	0.75000	10.42662	10.30204	1	False	-0.76888
IA01018 (MA311140)	0.37000	0.37000	14.32741	14.32741	1	False	-0.91637
IA01069 (MA316886)	0.49750	0.50750	13.02507	12.92480	4	False	-1.50102
IA01097 (MA623950280)	0.35000	0.32000	14.54128	14.87080	1	False	0.86352
IA01108 (MA624149677)	0.32500	0.38500	14.81505	14.16950	2	False	0.94559
IA02722 (MA703943185)	0.44500	0.48750	13.55322	13.12535	4	False	0.09617
IA04486 (MA227988)	0.69000	0.69000	11.01660	11.01660	1	False	-1.56024
IA04538 (MA282218)	0.65000	0.69000	11.45872	11.01660	1	False	0.65829

Table 2.5.13
Delta Analysis
Mathematics Grade 8

Item Id	Old P	New P	Old Delta	New Delta	Max	Discard	Std Dist
IA00849 (MA296757)	0.70000	0.62000	10.90240	11.77808	1	False	-0.36874
IA00858 (MA297513)	0.84000	0.76000	9.02217	10.17479	1	False	0.21929
IA00864 (MA297652)	0.79000	0.70250	9.77432	10.87358	4	False	0.17242
IA00865 (MA297656)	0.54000	0.53000	12.59827	12.69892	1	False	0.44746
IA00903 (MA301674)	0.78000	0.73000	9.91123	10.54875	1	False	-0.85562
IA00905 (MA301702)	0.53000	0.44000	12.69892	13.60388	1	False	0.03330
IA00979 (MA307472)	0.59000	0.63000	12.08982	11.67259	1	False	2.23261
IA00985 (MA307570)	0.59000	0.51000	12.08982	12.89972	1	False	-0.38220
IA01033 (MA311384)	0.64000	0.59000	11.56616	12.08982	1	False	-0.76407
IA01037 (MA311414)	0.46000	0.39000	13.40173	14.11728	1	False	-0.46822
IA01042 (MA311448)	0.69000	0.52000	11.01660	12.79939	1	False	2.62580
IA01044 (MA311463)	0.69000	0.64000	11.01660	11.56616	1	False	-0.75543
IA01066 (MA314812)	0.61000	0.55500	11.88272	12.44678	4	False	-0.95050
IA01125 (MA624247061)	0.47000	0.42500	13.30108	13.75647	2	False	-0.83571
IA02495 (MA309741)	0.42000	0.44000	13.80757	13.60388	1	False	1.23967
IA04665 (MA307399)	0.55000	0.48000	12.49735	13.20061	1	False	-0.66255
IA04678 (MA309738)	0.43000	0.39000	13.70550	14.11728	1	False	-0.76155
IA05057 (MA803856437)	0.85000	0.83000	8.85427	9.18334	1	False	0.33605
IA05059 (MA803856627)	0.75000	0.71000	10.30204	10.78646	1	False	-0.42006
IA05070 (MA804042487)	0.36000	0.29000	14.43384	15.21354	1	False	-0.08197

Table 2.5.14
Delta Analysis
Mathematics Grade 10

Item Id	Old P	New P	Old Delta	New Delta	Max	Discard	Std Dist
IA04800 (MA717740737)	0.54000	0.40000	12.59827	14.01339	1	False	1.22183
IA04810 (MA735534256)	0.37500	0.33500	14.27456	14.70459	2	False	-0.83798
IA04819 (MA735579095)	0.63000	0.57000	11.67259	12.29450	1	False	-0.61066
IA04824 (MA735632759)	0.51000	0.46000	12.89972	13.40173	1	False	-0.62330
IA04842 (MA735734830)	0.46000	0.40000	13.40173	14.01339	1	False	-1.10099
IA04846 (MA735743236)	0.86000	0.76000	8.67872	10.17479	1	False	0.21026
IA04847 (MA735745569)	0.48000	0.43000	13.20061	13.70550	1	False	-0.73017
IA04871 (MA736059227)	0.57000	0.50000	12.29450	13.00000	1	False	-1.08122
IA04913 (MA800433428)	0.60000	0.56000	11.98661	12.39612	1	False	-0.02958
IA04991 (MA801426792)	0.36000	0.33000	14.43384	14.75965	1	False	-0.55456
IA04993 (MA801434971)	0.31000	0.22000	14.98340	16.08877	1	False	0.99978
IA04997 (MA801564574)	0.41000	0.39500	13.91018	14.06524	2	False	0.16442
IA05048 (MA803762212)	0.54000	0.47000	12.59827	13.30108	1	False	-1.06858
IA05096 (MA804566054)	0.67500	0.55500	11.18495	12.44678	2	False	0.27032
IA05117 (MA804678931)	0.48000	0.35000	13.20061	14.54128	1	False	1.17788
IA05144 (MA805372590)	0.50000	0.41000	13.00000	13.91018	1	False	-0.27144
IA05145 (MA805373539)	0.30000	0.23000	15.09760	15.95539	1	False	0.24073
IA05147 (MA805376549)	0.92000	0.87000	7.37971	8.49444	1	False	-0.80227
IA05155 (MA806051920)	0.32000	0.29000	14.87080	15.21354	1	False	-0.75077
IA05165 (MA806383722)	0.41000	0.46000	13.91018	13.40173	4	False	2.29791
IA05170 (MA806408603)	0.40500	0.44250	13.96170	13.57854	4	False	1.87837

Table 2.5.15
Delta Analysis
Science Grade 5

Item Id	Old P	New P	Old Delta	New Delta	Max	Discard	Std Dist
IA05192 (SC264893)	0.32000	0.31333	14.87080	14.94570	3	False	0.17882
IA05466 (SC628483066)	0.88000	0.90000	8.30005	7.87379	1	False	2.75843
IA05523 (SC718127878)	0.69000	0.67000	11.01660	11.24035	1	False	-0.69211
IA05526 (SC735264282)	0.89000	0.86000	8.09389	8.67872	1	False	0.36853
IA05530 (SC735267831)	0.80000	0.79000	9.63352	9.77432	1	False	-0.27049
IA05545 (SC735535118)	0.50000	0.47000	13.00000	13.30108	1	False	-1.07266
IA05560 (SC736074266)	0.79000	0.78000	9.77432	9.91123	1	False	-0.24701
IA05562 (SC736074942)	0.65000	0.63000	11.45872	11.67259	2	False	-0.63094
IA05628 (SC802729980)	0.64000	0.63000	11.56616	11.67259	1	False	-0.05052
IA05630 (SC802758131)	0.79000	0.72000	9.77432	10.66863	1	False	2.00443
IA05631 (SC802758561)	0.57000	0.56000	12.29450	12.39612	1	False	-0.01152
IA05634 (SC802761427)	0.35333	0.32000	14.50535	14.87080	3	False	-0.92832
IA05657 (SC803732869)	0.42500	0.39500	13.75647	14.06524	2	False	-1.10041
IA05661 (SC803837124)	0.70000	0.67000	10.90240	11.24035	1	False	-1.01135
IA05662 (SC803844809)	0.70500	0.65000	10.84466	11.45872	2	False	0.47625
IA05664 (SC803847645)	0.81000	0.76000	9.48841	10.17479	1	False	0.89005
IA05678 (SC804048131)	0.89000	0.88000	8.09389	8.30005	1	False	-0.65019
IA05681 (SC804060300)	0.43000	0.37000	13.70550	14.32741	1	False	0.46691
IA05688 (SC804141602)	0.87000	0.84000	8.49444	9.02217	1	False	0.05387
IA05702 (SC806382697)	0.50000	0.48000	13.00000	13.20061	1	False	-0.53177

Table 2.5.16
Delta Analysis
Science Grade 8

Item Id	Old P	New P	Old Delta	New Delta	Max	Discard	Std Dist
IA05243 (SC289702)	0.44000	0.32000	13.60388	14.87080	1	False	2.98700
IA05245 (SC290144)	0.51000	0.53000	12.89972	12.69892	1	False	1.32079
IA05499 (SC633066301)	0.93000	0.91000	7.09684	7.63698	1	False	-0.39853
IA05522 (SC717662167)	0.52000	0.50000	12.79939	13.00000	1	False	-0.66116
IA05550 (SC735560046)	0.34000	0.27000	14.64985	15.45125	1	False	0.66038
IA05551 (SC735569222)	0.60000	0.52000	11.98661	12.79939	1	False	0.79721
IA05555 (SC735663104)	0.35000	0.34000	14.54128	14.64985	1	False	-0.15459
IA05581 (SC800285340)	0.40000	0.41000	14.01339	13.91018	1	False	0.87343
IA05649 (SC803174786)	0.70000	0.69000	10.90240	11.01660	1	False	-0.29268
IA05665 (SC803856876)	0.82000	0.82000	9.33854	9.33854	1	False	0.22288
IA05675 (SC803981496)	0.75000	0.72000	10.30204	10.66863	1	False	-1.35129
IA05687 (SC804132888)	0.78500	0.74000	9.84323	10.42662	2	False	-0.26864
IA05690 (SC804367702)	0.49000	0.44000	13.10028	13.60388	1	False	-0.76072
IA05693 (SC804372985)	0.69500	0.67000	10.95971	11.24035	2	False	-1.11146
IA05718 (SC807245653)	0.78000	0.74000	9.91123	10.42662	1	False	-0.60590
IA05720 (SC807247887)	0.64000	0.57000	11.56616	12.29450	1	False	0.39371
IA05727 (SC809171062)	0.50000	0.48000	13.00000	13.20061	1	False	-0.65508
IA05729 (SC809178849)	0.38000	0.35667	14.22192	14.46953	3	False	-0.84970
IA05750 (SC814258458)	0.46667	0.46667	13.33461	13.33461	3	False	0.34406
IA05777 (SC816343670)	0.63500	0.62000	11.61950	11.77808	2	False	-0.48971

Section 2.6

Tabled B/B Analysis Results

Table 2.6.1
b/b Analysis
English Language Arts Grade 3

Item Id	Old b	New b	Std Dist	Flag
IA00279 (EL308822)	-0.92977	-0.92350	-0.34105	False
IA00280 (EL308824)	-0.56172	-0.25530	-0.12732	False
IA00281 (EL308826)	0.09026	0.23710	-0.58507	False
IA00282 (EL308827)	-0.60316	-0.38590	-0.66042	False
IA00283 (EL308835)	-0.28528	-0.05590	-0.78304	False
IA00284 (EL308837)	-0.46364	-0.23490	-0.67562	False
IA00285 (EL308838)	-0.74705	-0.57560	-0.85773	False
IA00286 (EL308842)	0.73610	0.74700	0.67070	False
IA00287 (EL308855)	0.31714	0.68873	-0.26780	False
IA00288 (EL308857)	0.86123	0.97347	0.11355	False
IA00443 (EL626042844)	-1.01130	-0.60060	0.80734	False
IA00444 (EL626043062)	-0.50278	-0.27470	-0.65530	False
IA00445 (EL626043435)	-0.18325	-0.09995	-0.35759	False
IA00446 (EL626049849)	-0.18033	0.21130	0.16862	False
IA00450 (EL626050679)	-0.20396	-0.15840	-0.13392	False
IA00451 (EL626050927)	0.79202	0.46340	2.83426	False
IA00452 (EL626051097)	-0.22588	-0.19100	-0.08065	False
IA00453 (EL626051328)	-0.40439	-0.19850	-0.85589	False
IA00458A (EL626052459#SCORE_TRAIT_Conv)	1.00727	1.86193	2.32964	False
IA00458D (EL626052459#SCORE_TRAIT_Ideadev)	1.57680	2.03008	-0.54269	False

Table 2.6.2

b/b Analysis

English Language Arts Grade 4

Item Id	Old b	New b	Std Dist	Flag
IA00218 (EL307705)	-1.47899	-1.27790	-0.39470	False
IA00219 (EL307709)	-1.32580	-0.98150	-0.65224	False
IA00220 (EL307710)	0.41841	0.63720	-0.47351	False
IA00221 (EL307713)	0.06591	0.35070	-1.23660	False
IA00222 (EL307714)	-1.17271	-1.05360	0.54483	False
IA00223 (EL307719)	0.07812	0.31840	-0.73622	False
IA00224 (EL307724)	-0.71688	-0.50980	-0.41379	False
IA00225 (EL307728)	-0.26222	0.27203	1.41270	False
IA00226 (EL307729)	0.03026	0.49690	0.63529	False
IA00289 (EL309792)	-0.35621	-0.42900	2.75039	False
IA00407 (EL624647403)	0.52679	0.96940	0.33420	False
IA00408 (EL624647580)	-0.39052	-0.30030	0.91852	False
IA00411 (EL624652450)	-1.29795	-0.89500	0.00431	False
IA00412 (EL624652621)	-2.02010	-1.58150	0.45008	False
IA00414 (EL624652989)	0.70188	0.94660	-0.74666	False
IA00415 (EL624653348)	-0.69205	-0.39650	-1.23947	False
IA00416 (EL624653492)	-1.27948	-0.95205	-0.84453	False
IA00419 (EL624654711)	-1.66447	-1.35000	-0.96568	False
IA00421A (EL624655949#SCORE_TRAIT_Conv)	0.12301	0.61067	0.86534	False
IA00421D (EL624655949#SCORE_TRAIT_Ideadev)	1.04752	1.24658	-0.21225	False

Table 2.6.3

b/b Analysis

English Language Arts Grade 5

Item Id	Old b	New b	Std Dist	Flag
IA00495 (EL626304658)	-1.56540	-0.98640	0.74680	False
IA00497 (EL626304969)	-0.34409	-0.23580	0.15270	False
IA00500 (EL626332335)	-1.01730	-0.46280	0.61783	False
IA00501 (EL626332592)	-1.82150	-1.67380	0.03257	False
IA00502 (EL626333002)	-1.51485	-1.19220	-1.43580	False
IA00505 (EL626355215)	0.12400	-0.04320	2.43760	False
IA00506 (EL626355557)	-0.29694	-0.21710	0.38883	False
IA00508 (EL626356291)	0.42877	0.66250	-1.03222	False
IA00509A (EL626356806#SCORE_TRAIT_Conv)	0.00829	0.51417	0.35277	False
IA00509D (EL626356806#SCORE_TRAIT_Ideadev)	0.70574	1.12650	-0.27215	False
IA00638 (EL627351056)	-0.66376	-0.05390	1.14259	False
IA01669 (EL711809263)	-1.32010	-0.83300	-0.00235	False
IA01670 (EL711809592)	-0.82560	-0.52710	-1.40169	False
IA01671 (EL711827203)	-2.05800	-1.61940	-0.52485	False
IA01672 (EL711827807)	-0.96500	-1.02120	1.64895	False
IA01676A (EL711854812#SCORE_TRAIT_Conv)	0.08973	0.53557	-0.14822	False
IA01676D (EL711854812#SCORE_TRAIT_Ideadev)	0.79127	1.15623	-0.73636	False
IA01679 (EL711868011)	-0.28870	0.03915	-1.21165	False
IA01680 (EL711900602)	-0.46560	-0.27760	-0.51046	False
IA01691 (EL712167015)	0.45030	0.59150	-0.24489	False

Table 2.6.4

b/b Analysis

English Language Arts Grade 6

Item Id	Old b	New b	Std Dist	Flag
IA00173 (EL303496)	-1.61264	-0.64540	1.43563	False
IA00174 (EL303500)	-0.89312	-0.50140	0.94104	False
IA00175 (EL303504)	-0.65354	0.27440	2.37836	False
IA00176 (EL303508)	-1.59790	-0.80450	-0.29863	False
IA00177 (EL303510)	-2.42062	-1.51570	-0.32187	False
IA00178 (EL303513)	-1.14059	-0.45790	-0.77754	False
IA00179 (EL303514)	-0.66142	0.08200	0.50470	False
IA00180 (EL303518)	0.08389	0.40380	0.30147	False
IA00181A (EL303519#SCORE_TRAIT_Conv)	-0.28780	0.25660	-0.98253	False
IA00181D (EL303519#SCORE_TRAIT_Ideadev)	0.76188	1.12986	-1.13064	False
IA00515 (EL626864414)	-2.11926	-1.36530	-1.00323	False
IA00517 (EL626864724)	-1.13436	-0.56750	-0.49001	False
IA00518 (EL626865003)	-1.04450	-0.54760	0.09071	False
IA00520 (EL626865416)	0.88895	1.30420	-0.64283	False
IA00522 (EL626865773)	-0.88194	-0.40820	0.09747	False
IA00523 (EL626865942)	-0.72268	-0.41160	1.51704	False
IA00528 (EL626867605)	-1.82572	-1.03515	-0.64537	False
IA00530 (EL626868748)	-1.32762	-0.87075	0.89019	False
IA00531A (EL626869132#SCORE_TRAIT_Conv)	-0.49144	0.10657	-0.72579	False
IA00531D (EL626869132#SCORE_TRAIT_Ideadev)	0.67275	1.06884	-1.13818	False

Table 2.6.5

b/b Analysis

English Language Arts Grade 7

Item Id	Old b	New b	Std Dist	Flag
IA00065 (EL292160)	-1.29375	-0.61620	-0.00475	False
IA00066 (EL292163)	-1.09050	-0.39290	0.29553	False
IA00067 (EL292168)	-0.07467	0.45040	-0.28198	False
IA00068 (EL292170)	-1.12877	-0.50800	-0.31769	False
IA00069 (EL292172)	-0.45904	-0.15010	0.64222	False
IA00070 (EL292176)	-0.13875	-0.26820	3.75031	False
IA00071A (EL292181#SCORE_TRAIT_Conv)	-0.44445	0.12917	-0.18040	False
IA00071D (EL292181#SCORE_TRAIT_Ideadev)	0.65225	1.02844	-0.67667	False
IA00081 (EL293802)	-1.02931	-0.43230	-0.42656	False
IA00082 (EL293804)	-0.39273	0.23150	0.24281	False
IA00257 (EL308358)	-1.78014	-1.19520	-0.50220	False
IA00258 (EL308360)	-1.79449	-1.16810	-0.75796	False
IA00262 (EL308382)	-0.77688	-0.31480	-0.29406	False
IA00265 (EL308389)	-2.68728	-1.98410	-0.74489	False
IA00269 (EL308397)	-2.33283	-1.64890	-0.71017	False
IA00655 (EL628647210)	-1.16859	-0.57980	-0.59027	False
IA00657 (EL628647689)	-1.48855	-0.86800	-0.58045	False
IA00658 (EL628653398)	-1.59407	-1.11555	0.17369	False
IA00665A (EL628749729#SCORE_TRAIT_Conv)	-0.84178	-0.08687	0.91275	False
IA00665D (EL628749729#SCORE_TRAIT_Ideadev)	0.22706	0.76706	0.05075	False

Table 2.6.6

b/b Analysis

English Language Arts Grade 8

Item Id	Old b	New b	Std Dist	Flag
IA00056 (EL290795)	-2.03056	-1.25700	-0.59458	False
IA00057 (EL290798)	-1.86465	-1.31680	-0.47090	False
IA00058 (EL290799)	-0.98095	-0.45110	-0.62529	False
IA00059 (EL290800)	-0.49291	-0.19290	-0.86810	False
IA00060 (EL290801)	-0.94041	-0.49320	-1.07967	False
IA00061 (EL290805)	-0.42532	0.18360	0.64623	False
IA00062 (EL290808)	0.03451	0.24860	-1.07883	False
IA00063 (EL290814)	0.63593	0.70890	-1.05210	False
IA00064A (EL290818#SCORE_TRAIT_Conv)	-0.97008	-0.23157	0.68139	False
IA00064D (EL290818#SCORE_TRAIT_Ideadev)	0.18878	0.77546	1.37308	False
IA00368 (EL623873883)	-1.17975	-0.54340	-0.24604	False
IA00371 (EL623951471)	-0.60996	-0.46645	0.26522	False
IA00373 (EL623952377)	0.33642	0.41550	-0.66828	False
IA00374 (EL623952612)	-0.58072	-0.70720	1.89497	False
IA00376A (EL623953378#SCORE_TRAIT_Conv)	-1.21775	-0.46990	0.39052	False
IA00376D (EL623953378#SCORE_TRAIT_Ideadev)	0.34044	0.61200	-0.36364	False
IA00378 (EL623955555)	-0.13654	0.19740	-0.64904	False
IA00379 (EL623955757)	0.74075	0.25570	2.25383	False
IA00383 (EL623959265)	-0.72677	-0.25830	-0.64735	False
IA00699 (EL632808123)	-0.99454	-0.85620	0.83860	False

Table 2.6.7

b/b Analysis

English Language Arts Grade 10

Item Id	Old b	New b	Std Dist	Flag
IA04110 (EL807953958)	-0.77245	-0.20070	2.40311	False
IA04111 (EL807957225)	-1.75420	-1.54010	-0.73558	False
IA04132 (EL808046697)	-1.79230	-1.41200	-0.11242	False
IA04260 (EL811034362)	-1.10620	-0.60300	1.52966	False
IA04297 (EL811428116)	-0.25870	-0.15030	-1.09786	False
IA04412 (EL813438114)	-0.83710	-0.69030	-0.95800	False
IA04439 (EL816956706)	-0.49140	-0.39620	-0.81841	False
IA04440 (EL817235657)	-0.70495	-0.60000	-0.71619	False
IA06626A (EL811561885#SCORE_TRAIT_Conv)	-0.88903	-0.97790	1.09442	False
IA06626D (EL811561885#SCORE_TRAIT_Ideadev)	0.21778	0.05846	0.73424	False
IA06629 (EL811608986)	-2.50665	-2.37690	0.63571	False
IA06631 (EL811610832)	-0.50095	-0.41815	-0.70451	False
IA06633 (EL811612272)	-0.28660	-0.26040	-0.40837	False
IA06635 (EL811612951)	-1.18760	-0.74840	0.91390	False
IA06636 (EL811614524)	-1.42440	-1.10280	-0.29323	False
IA06638 (EL811616340)	-0.05610	-0.08020	-0.17991	False
IA06641 (EL811617473)	-1.28980	-1.07810	-1.11255	False
IA06642 (EL811618006)	-1.16250	-1.07460	-0.17400	False

Table 2.6.8

b/b Analysis

Mathematics Grade 3

Item Id	Old b	New b	Std Dist	Flag
IA00769 (MA203641)	-2.14981	-1.67800	0.25312	False
IA00799 (MA260559)	0.28471	0.43560	-0.45991	False
IA00834 (MA293457)	-0.89072	-0.82230	0.30856	False
IA00838 (MA293524)	-1.13737	-0.76770	0.41236	False
IA00850 (MA297405)	-0.82994	-0.59440	-1.03978	False
IA00852 (MA297438)	-0.44454	-0.31580	-1.29437	False
IA00924 (MA306310)	0.90644	1.05870	0.57053	False
IA00925 (MA306315)	-0.77521	-0.76280	0.93586	False
IA00930 (MA306359)	-0.44719	-0.53630	1.88000	False
IA00932 (MA306375)	0.68670	0.62140	-0.30940	False
IA00993 (MA310834)	-0.08713	-0.18950	1.48774	False
IA01019 (MA311277)	-1.18441	-0.72040	1.70870	False
IA01071 (MA623063509)	-1.04802	-0.91020	-0.44565	False
IA01080 (MA623654449)	0.84082	0.91940	-0.60828	False
IA01081 (MA623656013)	0.73540	0.84740	-0.29331	False
IA02323 (MA301611A)	-1.66430	-1.41770	-1.02693	False
IA04760 (MA713752330)	-1.72290	-1.26350	0.76640	False
IA04813 (MA735572247)	-0.94020	-0.82820	-0.24517	False
IA04828 (MA735653938)	-0.11790	-0.02590	-1.29064	False
IA04844 (MA735735757)	-0.23920	-0.08820	-1.30983	False

Table 2.6.9

b/b Analysis

Mathematics Grade 4

Item Id	Old b	New b	Std Dist	Flag
IA00789 (MA250543)	0.47116	0.38843	-0.32199	False
IA00828 (MA287237)	-1.05009	-0.95670	-0.07633	False
IA00841 (MA293718)	-0.50085	-0.18780	0.41742	False
IA00861 (MA297629)	-0.94584	-1.89860	2.12640	False
IA00869 (MA297988)	1.20857	1.39620	-0.88983	False
IA00906 (MA301811)	-0.55570	-0.44220	-0.31968	False
IA00958 (MA307055)	0.28365	0.36460	-0.99108	False
IA00961 (MA307081)	0.35737	0.25580	-0.32299	False
IA00963 (MA307085)	-0.44995	-0.36100	-0.48345	False
IA01048 (MA311534)	0.30497	0.20400	-0.35936	False
IA01049 (MA311537)	-0.35950	-0.21230	-0.31665	False
IA01055 (MA311572)	-0.28409	-0.05210	-0.03731	False
IA01057 (MA311581)	-0.23292	-0.22305	-0.93069	False
IA01093 (MA623879088)	-0.57251	-0.85490	-0.22696	False
IA02175 (MA286769)	-0.94805	-0.65560	0.62821	False
IA02819 (MA713583365)	0.42930	-0.54360	3.09787	False
IA02841 (MA713774890)	0.04340	0.22380	-0.44987	False
IA02902 (MA714251321)	0.31890	0.52230	-0.53981	False
IA04661 (MA307327)	-0.88210	-0.63380	0.41439	False
IA04965 (MA800867144)	-0.42060	-0.30990	-0.41830	False

Table 2.6.10

b/b Analysis

Mathematics Grade 5

Item Id	Old b	New b	Std Dist	Flag
IA00771 (MA204911)	-1.37220	-1.01110	-0.32591	False
IA00776 (MA221207)	-0.64768	-0.60030	0.07183	False
IA00803 (MA262207)	-0.59114	-0.54670	0.06351	False
IA00806 (MA272292)	0.10558	0.33060	-0.63236	False
IA00826 (MA287178)	-1.62060	-1.26820	-0.55358	False
IA00872 (MA298003)	-0.16060	-0.42590	2.54101	False
IA00880 (MA298106)	0.99954	1.21590	-0.16643	False
IA00885 (MA299556)	-0.78241	-0.36070	0.56793	False
IA00936 (MA306420)	-0.90358	-0.66450	-1.12045	False
IA00943 (MA306466)	0.11250	0.26220	-1.29415	False
IA00989 (MA307638)	-1.58309	-1.35600	-0.94954	False
IA01020 (MA311280)	0.71162	0.71090	-0.32776	False
IA01028 (MA311333)	0.93415	1.08610	-0.77563	False
IA01029 (MA311337)	-2.02305	-1.47360	0.94454	False
IA01032 (MA311366)	0.58016	0.47655	0.66178	False
IA01149 (MA624347774)	0.19357	0.44160	-0.37550	False
IA01155 (MA624357395)	0.19679	0.61235	1.10778	False
IA02552 (MA311324)	0.90100	1.08340	-0.52651	False
IA02736 (MA704359678)	-0.19382	0.04045	-0.73226	False
IA04970 (MA800974344)	-0.56790	-0.72390	1.82173	False

Table 2.6.11

b/b Analysis

Mathematics Grade 6

Item Id	Old b	New b	Std Dist	Flag
IA00777 (MA221667)	-1.51838	-1.28460	-0.18602	False
IA00778 (MA221669)	-1.11977	-0.96840	-0.90327	False
IA00804 (MA264305)	-1.39315	-1.20900	-0.63730	False
IA00817 (MA280989)	0.41930	0.42150	0.20898	False
IA00818 (MA282268)	0.85530	0.96030	-0.84286	False
IA00819 (MA282277)	0.01849	0.15890	-0.81596	False
IA00827 (MA287186)	-0.43982	-0.05650	1.41886	False
IA00845 (MA296349)	-0.11171	0.28010	1.55491	False
IA00881 (MA298139)	0.02634	0.17313	-0.75396	False
IA00884 (MA298279)	1.39727	1.57090	-0.26765	False
IA00899 (MA301508)	0.68487	0.66870	0.33911	False
IA00972 (MA307339)	-1.05234	-1.02760	0.24220	False
IA00992 (MA309941)	1.73513	1.83420	-0.92042	False
IA01058 (MA311658)	0.47245	0.71460	0.22882	False
IA02037 (MA217493)	-0.12940	-0.41140	3.00633	False
IA02597 (MA311693)	-1.23640	-0.99070	-0.02509	False
IA04745 (MA703231515)	-0.12870	0.01605	-0.79943	False
IA04884 (MA736365836)	-0.94140	-0.76930	-0.67594	False
IA05126 (MA805103779)	-0.25800	-0.20000	-0.20809	False
IA05135 (MA805171807)	-0.35000	-0.31610	0.03678	False

Table 2.6.12

b/b Analysis

Mathematics Grade 7

Item Id	Old b	New b	Std Dist	Flag
IA00796 (MA259267)	0.13145	0.49590	0.25532	False
IA00831 (MA288414)	-0.76278	-0.37770	-0.17820	False
IA00847 (MA296358)	-0.33040	-0.09490	-1.17322	False
IA00909 (MA301846)	-1.67685	-1.42370	-0.39270	False
IA00910 (MA301854)	0.38259	0.48870	-0.44303	False
IA00945 (MA306538)	-1.08666	-0.73800	-0.75332	False
IA00948 (MA306600)	-1.25261	-1.08740	0.14609	False
IA00949 (MA306605)	-0.31555	0.01500	-0.38254	False
IA01004 (MA311073)	1.08389	1.20290	-1.06002	False
IA01006 (MA311093)	-2.12289	-1.42470	1.84613	False
IA01011 (MA311109)	0.25144	0.87520	2.80998	False
IA01016 (MA311125)	0.06674	0.38630	-0.21788	False
IA01017 (MA311135)	-0.90608	-0.58700	-0.90786	False
IA01018 (MA311140)	0.32590	0.42280	-0.31536	False
IA01069 (MA316886)	-0.05988	0.02845	0.03808	False
IA01097 (MA623950280)	0.46659	0.57040	-0.48030	False
IA01108 (MA624149677)	0.24764	0.42110	-0.98951	False
IA02722 (MA703943185)	0.01352	0.06313	0.35525	False
IA04486 (MA227988)	-0.47100	-0.43920	0.86623	False
IA04538 (MA282218)	-0.70640	-0.66880	0.97683	False

Table 2.6.13

b/b Analysis

Mathematics Grade 8

Item Id	Old b	New b	Std Dist	Flag
IA00849 (MA296757)	-0.72688	-0.50130	-0.55754	False
IA00858 (MA297513)	-1.10940	-0.74620	0.09037	False
IA00864 (MA297652)	-0.95344	-0.76243	-0.74091	False
IA00865 (MA297656)	0.37275	0.34310	0.10533	False
IA00903 (MA301674)	-0.71994	-0.67580	-0.18528	False
IA00905 (MA301702)	0.08071	0.50770	0.47818	False
IA00979 (MA307472)	0.55941	-0.12930	3.31342	False
IA00985 (MA307570)	0.21467	0.61750	0.36871	False
IA01033 (MA311384)	-0.00034	0.13000	-0.65248	False
IA01037 (MA311414)	0.18734	0.31560	-0.65433	False
IA01042 (MA311448)	-0.66870	0.05440	1.87697	False
IA01044 (MA311463)	-0.70369	-0.56180	-0.66391	False
IA01066 (MA314812)	-0.38827	-0.19448	-0.69117	False
IA01125 (MA624247061)	0.17761	0.34070	-0.80498	False
IA02495 (MA309741)	0.24613	0.18770	0.25404	False
IA04665 (MA307399)	0.29860	0.60770	-0.08386	False
IA04678 (MA309738)	0.83780	1.01550	-0.69136	False
IA05057 (MA803856437)	-1.15930	-1.07330	-0.36169	False
IA05059 (MA803856627)	-0.67840	-0.60300	-0.34067	False
IA05070 (MA804042487)	0.88020	1.18680	-0.05886	False

Table 2.6.14
b/b Analysis
Mathematics Grade 10

Item Id	Old b	New b	Std Dist	Flag
IA04800 (MA717740737)	-0.13540	0.46560	0.57018	False
IA04810 (MA735534256)	0.68370	0.97265	-0.96471	False
IA04819 (MA735579095)	-0.38460	-0.24440	-0.31419	False
IA04824 (MA735632759)	0.31220	0.44630	-0.27463	False
IA04842 (MA735734830)	0.78180	1.07610	-0.93997	False
IA04846 (MA735743236)	-1.59870	-1.13510	-0.08005	False
IA04847 (MA735745569)	0.78710	0.77990	0.42185	False
IA04871 (MA736059227)	0.19690	0.31930	-0.21913	False
IA04913 (MA800433428)	0.97160	1.19720	-0.71206	False
IA04991 (MA801426792)	0.95670	1.16800	-0.64246	False
IA04993 (MA801434971)	0.92740	1.47870	0.31263	False
IA04997 (MA801564574)	0.38330	0.35160	0.53579	False
IA05048 (MA803762212)	0.13870	0.37200	-0.76135	False
IA05096 (MA804566054)	-0.49005	-0.21055	-0.99437	False
IA05117 (MA804678931)	0.08760	0.89450	1.57223	False
IA05144 (MA805372590)	-0.00030	1.10120	3.01167	False
IA05145 (MA805373539)	0.68950	0.93500	-0.81317	False
IA05147 (MA805376549)	-2.01320	-1.74720	-0.95120	False
IA05155 (MA806051920)	0.88120	1.02310	-0.30472	False
IA05165 (MA806383722)	0.16730	0.14810	0.47173	False
IA05170 (MA806408603)	0.31372	0.17118	1.07594	False

Table 2.6.15
b/b Analysis
Science Grade 5

Item Id	Old b	New b	Std Dist	Flag
IA05192 (SC264893)	0.96646	0.88227	0.63107	False
IA05466 (SC628483066)	-1.78080	-1.78970	1.27703	False
IA05523 (SC718127878)	-0.59270	-0.17020	1.07712	False
IA05526 (SC735264282)	-1.93810	-1.67580	-0.99851	False
IA05530 (SC735267831)	-0.92610	-1.12560	2.56845	False
IA05545 (SC735535118)	0.32770	0.42270	-0.66214	False
IA05560 (SC736074266)	-0.98020	-0.87770	-0.10157	False
IA05562 (SC736074942)	-0.72520	-0.47465	-0.52147	False
IA05628 (SC802729980)	-0.60710	-0.47360	-0.55732	False
IA05630 (SC802758131)	-0.89430	-0.49240	0.74851	False
IA05631 (SC802758561)	-0.48110	-0.28790	-0.91632	False
IA05634 (SC802761427)	0.98793	1.00173	-0.25406	False
IA05657 (SC803732869)	0.56765	0.66905	-0.83440	False
IA05661 (SC803837124)	-0.94170	-0.71480	-0.83647	False
IA05662 (SC803844809)	-0.93950	-0.64495	-0.23150	False
IA05664 (SC803847645)	-1.40920	-0.89190	1.53166	False
IA05678 (SC804048131)	-2.33390	-2.04230	-0.92685	False
IA05681 (SC804060300)	0.96850	1.21040	0.21393	False
IA05688 (SC804141602)	-1.70450	-1.36770	-0.22137	False
IA05702 (SC806382697)	0.47190	0.60610	-0.98578	False

Table 2.6.16
b/b Analysis
Science Grade 8

Item Id	Old b	New b	Std Dist	Flag
IA05243 (SC289702)	1.02660	1.49390	1.28855	False
IA05245 (SC290144)	0.21380	0.59400	0.22291	False
IA05499 (SC633066301)	-1.72770	-1.51790	-0.33096	False
IA05522 (SC717662167)	-0.05890	0.02520	0.10468	False
IA05550 (SC735560046)	0.68700	0.89790	-1.05208	False
IA05551 (SC735569222)	-0.13680	0.14600	-0.75218	False
IA05555 (SC735663104)	1.41100	1.78480	0.63213	False
IA05581 (SC800285340)	0.91380	0.65710	2.66343	False
IA05649 (SC803174786)	-1.15920	-1.05240	0.33589	False
IA05665 (SC803856876)	-2.60860	-1.96040	1.43705	False
IA05675 (SC803981496)	-0.87610	-0.63670	-0.91628	False
IA05687 (SC804132888)	-1.37975	-1.12320	-0.86868	False
IA05690 (SC804367702)	0.19550	0.44610	-0.90070	False
IA05693 (SC804372985)	-1.36135	-0.96775	-0.27259	False
IA05718 (SC807245653)	-1.11330	-0.86110	-0.93455	False
IA05720 (SC807247887)	-0.71690	-0.25550	0.56147	False
IA05727 (SC809171062)	0.00710	0.18160	-0.69972	False
IA05729 (SC809178849)	0.61243	0.81260	-1.15566	False
IA05750 (SC814258458)	0.19206	0.21057	0.57244	False
IA05777 (SC816343670)	-0.68805	-0.57100	0.06484	False

Section 2.7

Tabled Beta Analysis Results

Table 2.7.1

Beta Analysis

English Language Arts Grade 3

Item Id	NumScoreCats	Old Mean	New Mean	Old Form	Form	Beta	Flag Beta
IA00279 (EL308822)	2	0.83000	0.78000	02E	HR03	0.04714	False
IA00280 (EL308824)	2	0.73000	0.66000	02E	HR03	0.02771	False
IA00281 (EL308826)	2	0.63000	0.59000	02E	HR03	0.04901	False
IA00282 (EL308827)	2	0.71000	0.65000	02E	HR03	0.03836	False
IA00283 (EL308835)	2	0.63000	0.57000	02E	HR03	0.01222	False
IA00284 (EL308837)	2	0.74000	0.66000	02E	HR03	0.03017	False
IA00285 (EL308838)	2	0.84000	0.77000	02E	HR03	0.03002	False
IA00286 (EL308842)	2	0.47000	0.41000	02E	HR03	0.03706	False
IA00287 (EL308855)	4	1.51000	1.12000	ON01	HR03	-0.04308	False
IA00288 (EL308857)	4	1.25000	0.96000	ON01	HR03	-0.01667	False
IA00443 (EL626042844)	2	0.65000	0.66000	09E	HR04	0.01341	False
IA00444 (EL626043062)	2	0.73000	0.67000	09E	HR04	0.01005	False
IA00445 (EL626043435)	3	1.25000	1.03000	10E	HR04	0.03220	False
IA00446 (EL626049849)	2	0.66000	0.53000	10E	HR04	-0.01465	False
IA00450 (EL626050679)	2	0.72000	0.67000	10E	HR04	0.05721	True
IA00451 (EL626050927)	2	0.47000	0.51000	09E	HR04	0.08199	True
IA00452 (EL626051097)	3	1.14000	1.10000	10E	HR04	0.05065	True
IA00453 (EL626051328)	2	0.65000	0.64000	09E	HR04	0.04510	False
IA00458A (EL626052459#SCORE_TRAIT_Conv)	4	0.73000	0.56000	09E	HR04	-0.10309	True
IA00458D (EL626052459#SCORE_TRAIT_Ideadev)	5	0.79000	0.55000	09E	HR04	-0.03858	False

Table 2.7.2
Beta Analysis
English Language Arts Grade 4

Item Id	NumScoreCats	Old Mean	New Mean	Old Form	Form	Beta	Flag Beta
IA00218 (EL307705)	2	0.86000	0.81000	02E	HR03	0.01250	False
IA00219 (EL307709)	2	0.81000	0.77000	02E	HR03	-0.00274	False
IA00220 (EL307710)	2	0.46000	0.43000	02E	HR03	0.02193	False
IA00221 (EL307713)	2	0.58000	0.52000	02E	HR03	0.00351	False
IA00222 (EL307714)	2	0.82000	0.76000	02E	HR03	0.02396	False
IA00223 (EL307719)	2	0.60000	0.56000	02E	HR03	0.03421	False
IA00224 (EL307724)	2	0.78000	0.75000	02E	HR03	0.04965	False
IA00225 (EL307728)	4	1.68000	1.36000	ON01	HR03	-0.03822	False
IA00226 (EL307729)	4	1.59000	1.25000	ON01	HR03	-0.04049	False
IA00289 (EL309792)	2	0.67000	0.64000	02E	HR03	0.09167	True
IA00407 (EL624647403)	2	0.48000	0.41000	04	HR04	0.00816	False
IA00408 (EL624647580)	2	0.61000	0.58000	04	HR04	0.03745	False
IA00411 (EL624652450)	2	0.87000	0.78000	04	HR04	0.02336	False
IA00412 (EL624652621)	2	0.94000	0.90000	04	HR04	0.01679	False
IA00414 (EL624652989)	2	0.43000	0.43000	04	HR04	0.03299	False
IA00415 (EL624653348)	2	0.76000	0.67000	04	HR04	0.02496	False
IA00416 (EL624653492)	3	1.58000	1.44000	04	HR04	0.02304	False
IA00419 (EL624654711)	3	1.74000	1.60000	04	HR04	0.01940	False
IA00421A (EL624655949#SCORE_TRAIT_Conv)	4	1.56000	1.10000	07E	HR04	-0.03688	False
IA00421D (EL624655949#SCORE_TRAIT_Ideadev)	5	1.55000	1.01000	07E	HR04	-0.02652	False

Table 2.7.3
Beta Analysis
English Language Arts Grade 5

Item Id	NumScoreCats	Old Mean	New Mean	Old Form	Form	Beta	Flag Beta
IA00495 (EL626304658)	2	0.79000	0.75000	08E	HR03	-0.02900	False
IA00497 (EL626304969)	2	0.79000	0.73000	07E	HR03	0.00057	False
IA00500 (EL626332335)	2	0.70000	0.66000	08E	HR03	-0.01013	False
IA00501 (EL626332592)	2	0.88000	0.84000	07E	HR03	-0.00347	False
IA00502 (EL626333002)	2	0.87000	0.82000	07E	HR03	0.00167	False
IA00505 (EL626355215)	2	0.57000	0.60000	08E	HR03	0.07314	True
IA00506 (EL626355557)	2	0.60000	0.64000	07E	HR03	0.08702	True
IA00508 (EL626356291)	3	0.85000	0.73000	08E	HR03	-0.00273	False
IA00509A (EL626356806#SCORE_TRAIT_Conv)	4	1.38000	1.20000	07E	HR03	-0.04622	False
IA00509D (EL626356806#SCORE_TRAIT_Ideadev)	5	1.45000	1.26000	07E	HR03	-0.02208	False
IA00638 (EL627351056)	2	0.63000	0.66000	08E	HR03	0.01651	False
IA01669 (EL711809263)	2	0.82000	0.76000	10	HR04	0.01826	False
IA01670 (EL711809592)	2	0.81000	0.76000	09	HR04	0.03438	False
IA01671 (EL711827203)	2	0.94000	0.90000	10	HR04	-0.00077	False
IA01672 (EL711827807)	2	0.74000	0.73000	09	HR04	0.05332	True
IA01676A (EL711854812#SCORE_TRAIT_Conv)	4	1.56000	1.17000	10	HR04	-0.04367	False
IA01676D (EL711854812#SCORE_TRAIT_Ideadev)	5	1.46000	1.06000	10	HR04	0.00312	False
IA01679 (EL711868011)	3	1.20000	0.99000	10	HR04	-0.00818	False
IA01680 (EL711900602)	2	0.72000	0.70000	10	HR04	0.03978	False
IA01691 (EL712167015)	2	0.50000	0.46000	10	HR04	0.03785	False

Table 2.7.4

Beta Analysis

English Language Arts Grade 6

Item Id	NumScoreCats	Old Mean	New Mean	Old Form	Form	Beta	Flag Beta
IA00173 (EL303496)	2	0.86000	0.74000	02E	HR04	-0.01933	False
IA00174 (EL303500)	2	0.69000	0.64000	02E	HR04	0.03332	False
IA00175 (EL303504)	2	0.70000	0.61000	02E	HR04	-0.00158	False
IA00176 (EL303508)	2	0.78000	0.71000	02E	HR04	0.02063	False
IA00177 (EL303510)	2	0.92000	0.87000	02E	HR04	0.01140	False
IA00178 (EL303513)	2	0.78000	0.66000	02E	HR04	-0.03535	False
IA00179 (EL303514)	2	0.64000	0.63000	02E	HR04	0.03921	False
IA00180 (EL303518)	2	0.62000	0.57000	02E	HR04	0.04581	False
IA00181A (EL303519#SCORE_TRAIT_Conv)	4	1.63000	1.31000	01	HR04	-0.03820	False
IA00181D (EL303519#SCORE_TRAIT_Ideadev)	6	1.78000	1.65000	01	HR04	0.00153	False
IA00515 (EL626864414)	2	0.90000	0.83000	07E	HR03	0.01535	False
IA00517 (EL626864724)	2	0.82000	0.69000	08E	HR03	-0.00960	False
IA00518 (EL626865003)	2	0.74000	0.67000	08E	HR03	0.04611	False
IA00520 (EL626865416)	2	0.55000	0.41000	07E	HR03	-0.06348	True
IA00522 (EL626865773)	2	0.83000	0.72000	07E	HR03	0.01301	False
IA00523 (EL626865942)	2	0.67000	0.64000	07E	HR03	0.03690	False
IA00528 (EL626867605)	3	1.77000	1.54000	08E	HR03	0.01237	False
IA00530 (EL626868748)	3	1.58000	1.41000	07E	HR03	0.05979	True
IA00531A (EL626869132#SCORE_TRAIT_Conv)	4	1.85000	1.41000	07E	HR03	-0.05043	True
IA00531D (EL626869132#SCORE_TRAIT_Ideadev)	6	2.09000	1.65000	07E	HR03	-0.00958	False

Table 2.7.5

Beta Analysis

English Language Arts Grade 7

Item Id	NumScoreCats	Old Mean	New Mean	Old Form	Form	Beta	Flag Beta
IA00065 (EL292160)	2	0.83000	0.73000	ON01	HR04	-0.00564	False
IA00066 (EL292163)	2	0.74000	0.65000	ON01	HR04	0.00176	False
IA00067 (EL292168)	2	0.59000	0.50000	ON01	HR04	-0.00143	False
IA00068 (EL292170)	2	0.80000	0.71000	ON01	HR04	0.00747	False
IA00069 (EL292172)	2	0.67000	0.62000	ON01	HR04	0.06759	True
IA00070 (EL292176)	2	0.62000	0.62000	ON01	HR04	0.08588	True
IA00071A (EL292181#SCORE_TRAIT_Conv)	4	1.64000	1.45000	01	HR04	-0.03531	False
IA00071D (EL292181#SCORE_TRAIT_Ideadev)	6	1.77000	1.63000	01	HR04	0.00219	False
IA00081 (EL293802)	2	0.75000	0.68000	ON01	HR04	0.02847	False
IA00082 (EL293804)	2	0.64000	0.54000	ON01	HR04	-0.03078	False
IA00257 (EL308358)	2	0.90000	0.85000	04E	HR03	0.01627	False
IA00258 (EL308360)	3	1.61000	1.51000	03E	HR03	0.03733	False
IA00262 (EL308382)	2	0.75000	0.65000	04E	HR03	0.02642	False
IA00265 (EL308389)	2	0.92000	0.90000	04E	HR03	0.02498	False
IA00269 (EL308397)	2	0.90000	0.84000	03E	HR03	-0.01207	False
IA00655 (EL628647210)	2	0.78000	0.72000	03E	HR03	0.02250	False
IA00657 (EL628647689)	2	0.86000	0.77000	03E	HR03	0.02731	False
IA00658 (EL628653398)	3	1.54000	1.48000	03E	HR03	0.06602	True
IA00665A (EL628749729#SCORE_TRAIT_Conv)	4	2.00000	1.58000	03E	HR03	-0.07421	True
IA00665D (EL628749729#SCORE_TRAIT_Ideadev)	6	2.20000	1.77000	03E	HR03	-0.03241	False

Table 2.7.6

Beta Analysis

English Language Arts Grade 8

Item Id	NumScoreCats	Old Mean	New Mean	Old Form	Form	Beta	Flag Beta
IA00056 (EL290795)	2	0.84000	0.77000	ON01	HR04	-0.01586	False
IA00057 (EL290798)	2	0.80000	0.78000	ON01	HR04	0.03434	False
IA00058 (EL290799)	2	0.80000	0.75000	ON01	HR04	0.01837	False
IA00059 (EL290800)	2	0.70000	0.67000	ON01	HR04	0.05855	True
IA00060 (EL290801)	2	0.84000	0.77000	ON01	HR04	0.01385	False
IA00061 (EL290805)	2	0.65000	0.56000	ON01	HR04	-0.02065	False
IA00062 (EL290808)	2	0.57000	0.54000	ON01	HR04	0.06249	True
IA00063 (EL290814)	2	0.49000	0.44000	ON01	HR04	0.02318	False
IA00064A (EL290818#SCORE_TRAIT_Conv)	4	2.05000	1.70000	01	HR04	-0.06391	True
IA00064D (EL290818#SCORE_TRAIT_Ideadev)	6	2.19000	1.83000	01	HR04	-0.05074	True
IA00368 (EL623873883)	2	0.81000	0.72000	ON02	HR03	-0.00028	False
IA00371 (EL623951471)	3	1.26000	1.21000	ON02	HR03	0.08324	True
IA00373 (EL623952377)	3	0.93000	0.84000	ON02	HR03	0.03511	False
IA00374 (EL623952612)	2	0.72000	0.73000	ON02	HR03	0.10241	True
IA00376A (EL623953378#SCORE_TRAIT_Conv)	4	2.24000	1.89000	06E	HR03	-0.03961	False
IA00376D (EL623953378#SCORE_TRAIT_Ideadev)	6	2.46000	2.01000	06E	HR03	-0.01432	False
IA00378 (EL623955555)	2	0.60000	0.51000	ON02	HR03	-0.02026	False
IA00379 (EL623955757)	2	0.54000	0.54000	ON02	HR03	0.06045	True
IA00383 (EL623959265)	2	0.71000	0.65000	ON02	HR03	0.03113	False
IA00699 (EL632808123)	2	0.81000	0.77000	ON02	HR03	0.04208	False

Table 2.7.7

Beta Analysis

English Language Arts Grade 10

Item Id	NumScoreCats	Old Mean	New Mean	Old Form	Form	Beta	Flag Beta
IA04110 (EL807953958)	3	1.34000	1.08000	ON06	HR03	-0.11039	True
IA04111 (EL807957225)	2	0.79000	0.79000	ON12	HR03	0.01329	False
IA04132 (EL808046697)	2	0.90000	0.88000	ON05	HR03	-0.00440	False
IA04260 (EL811034362)	2	0.79000	0.73000	ON13	HR04	-0.04995	False
IA04297 (EL811428116)	2	0.64000	0.61000	ON17	HR04	-0.01091	False
IA04412 (EL813438114)	2	0.80000	0.74000	ON05	HR03	-0.04841	False
IA04439 (EL816956706)	2	0.68000	0.67000	ON10	HR04	0.01379	False
IA04440 (EL817235657)	3	1.28000	1.27000	ON10	HR04	0.01451	False
IA06626A (EL811561885#SCORE_TRAIT_Conv)	4	2.14000	2.24000	ON14	HR03	0.05104	True
IA06626D (EL811561885#SCORE_TRAIT_Ideadev)	6	2.33000	2.50000	ON11	HR03	0.03842	False
IA06629 (EL811608986)	3	1.53000	1.50000	ON18	HR03	-0.01213	False
IA06631 (EL811610832)	3	1.20000	1.18000	ON19	HR03	-0.00351	False
IA06633 (EL811612272)	2	0.62000	0.60000	ON11	HR03	-0.00266	False
IA06635 (EL811612951)	2	0.82000	0.80000	ON12	HR03	-0.02610	False
IA06636 (EL811614524)	2	0.84000	0.82000	ON20	HR03	-0.00590	False
IA06638 (EL811616340)	2	0.60000	0.62000	ON15	HR03	0.01966	False
IA06641 (EL811617473)	2	0.80000	0.78000	ON16	HR03	-0.01874	False
IA06642 (EL811618006)	2	0.82000	0.82000	ON13	HR03	0.00373	False

Table 2.7.8
Beta Analysis
Mathematics Grade 3

Item Id	NumScoreCats	Old Mean	New Mean	Old Form	Form	Beta	Flag Beta
IA00769 (MA203641)	2	0.90000	0.83000	ON19	HR19	-0.02907	False
IA00799 (MA260559)	2	0.65000	0.49000	14E	HR05	-0.02685	False
IA00834 (MA293457)	2	0.85000	0.79000	ON03	HR03	0.01190	False
IA00838 (MA293524)	2	0.81000	0.74000	15E	HR07	-0.03397	False
IA00850 (MA297405)	2	0.77000	0.69000	ON09	HR09	-0.01813	False
IA00852 (MA297438)	2	0.70000	0.63000	ON06	HR06	-0.00634	False
IA00924 (MA306310)	2	0.55000	0.46000	16	HR14	-0.00547	False
IA00925 (MA306315)	2	0.82000	0.75000	02E	HR02	-0.01064	False
IA00930 (MA306359)	2	0.62000	0.66000	13E	HR04	0.07667	True
IA00932 (MA306375)	2	0.48000	0.48000	ON13	HR13	0.03525	False
IA00993 (MA310834)	2	0.66000	0.63000	05E	HR18	0.04290	False
IA01019 (MA311277)	2	0.78000	0.74000	11E	HR17	-0.02942	False
IA01071 (MA623063509)	2	0.72000	0.73000	11E	HR16	0.02319	False
IA01080 (MA623654449)	4	1.08000	0.95000	05E	HR21	-0.00814	False
IA01081 (MA623656013)	4	1.08000	0.86000	06E	HR08	-0.01456	False
IA02323 (MA301611A)	2	0.88000	0.83000	04	HR15	-0.00122	False
IA04760 (MA713752330)	2	0.85000	0.77000	ON13	HR11	-0.03802	False
IA04813 (MA735572247)	2	0.75000	0.72000	ON13	HR12	0.02894	False
IA04828 (MA735653938)	2	0.59000	0.51000	ON07	HR10	0.00742	False
IA04844 (MA735735757)	2	0.65000	0.62000	ON05	HR20	0.02165	False

Table 2.7.9
Beta Analysis
Mathematics Grade 4

Item Id	NumScoreCats	Old Mean	New Mean	Old Form	Form	Beta	Flag Beta
IA00789 (MA250543)	5	1.92000	1.66000	06E	HR20	0.01022	False
IA00828 (MA287237)	2	0.78000	0.76000	01B	HR06	-0.02341	False
IA00841 (MA293718)	2	0.78000	0.71000	ON07	HR08	-0.03713	False
IA00861 (MA297629)	2	0.87000	0.89000	ON25	HR21	0.05761	True
IA00869 (MA297988)	2	0.24000	0.18000	ON16	HR16	-0.03097	False
IA00906 (MA301811)	2	0.76000	0.73000	ON09	HR09	-0.00165	False
IA00958 (MA307055)	2	0.57000	0.46000	ON10	HR10	-0.06288	True
IA00961 (MA307081)	2	0.54000	0.53000	ON13	HR13	0.01496	False
IA00963 (MA307085)	2	0.76000	0.67000	ON01	HR15	-0.05160	True
IA01048 (MA311534)	2	0.56000	0.54000	ON12	HR12	0.03423	False
IA01049 (MA311537)	2	0.70000	0.66000	ON18	HR18	-0.00616	False
IA01055 (MA311572)	2	0.64000	0.52000	ON21	HR19	-0.06488	True
IA01057 (MA311581)	5	2.22000	2.21000	04E	HR11	-0.00004	False
IA01093 (MA623879088)	3	1.41000	1.46000	ON14	HR14	0.07731	True
IA02175 (MA286769)	2	0.78000	0.75000	01	HR03	-0.04876	False
IA02819 (MA713583365)	2	0.42000	0.61000	05	HR17	0.21001	True
IA02841 (MA713774890)	2	0.51000	0.44000	21	HR05	-0.05503	True
IA02902 (MA714251321)	2	0.46000	0.39000	14	HR04	-0.04540	False
IA04661 (MA307327)	2	0.83000	0.74000	ON20	HR07	-0.03381	False
IA04965 (MA800867144)	2	0.66000	0.58000	ON10	HR02	-0.02696	False

Table 2.7.10
Beta Analysis
Mathematics Grade 5

Item Id	NumScoreCats	Old Mean	New Mean	Old Form	Form	Beta	Flag Beta
IA00771 (MA204911)	2	0.81000	0.73000	ON08	HR08	-0.02345	False
IA00776 (MA221207)	2	0.70000	0.66000	ON20	HR20	0.02899	False
IA00803 (MA262207)	2	0.76000	0.72000	12E	HR05	0.03116	False
IA00806 (MA272292)	2	0.52000	0.47000	06E	HR23	-0.01825	False
IA00826 (MA287178)	2	0.90000	0.85000	04E	HR06	-0.00493	False
IA00872 (MA298003)	2	0.64000	0.63000	ON07	HR07	0.03025	False
IA00880 (MA298106)	2	0.28000	0.21000	14E	HR04	-0.01759	False
IA00885 (MA299556)	2	0.79000	0.68000	ON18	HR18	-0.03049	False
IA00936 (MA306420)	2	0.76000	0.69000	10E	HR09	-0.02079	False
IA00943 (MA306466)	2	0.76000	0.62000	03E	HR11	0.00688	False
IA00989 (MA307638)	2	0.91000	0.86000	11E	HR12	-0.00454	False
IA01020 (MA311280)	2	0.40000	0.43000	10E	HR13	0.04385	False
IA01028 (MA311333)	2	0.28000	0.20000	05E	HR15	-0.00485	False
IA01029 (MA311337)	2	0.82000	0.83000	13E	HR17	-0.04782	False
IA01032 (MA311366)	5	1.58000	1.54000	ON19	HR19	0.04739	False
IA01149 (MA624347774)	2	0.42000	0.41000	14E	HR16	-0.01730	False
IA01155 (MA624357395)	3	1.08000	0.70000	02E	HR03	-0.06072	True
IA02552 (MA311324)	2	0.43000	0.38000	14	HR14	-0.02583	False
IA02736 (MA704359678)	5	2.18000	1.94000	10	HR02	-0.01704	False
IA04970 (MA800974344)	2	0.70000	0.70000	ON26	HR10	0.07383	True

Table 2.7.11
Beta Analysis
Mathematics Grade 6

Item Id	NumScoreCats	Old Mean	New Mean	Old Form	Form	Beta	Flag Beta
IA00777 (MA221667)	2	0.85000	0.85000	ON10	HR10	0.04206	False
IA00778 (MA221669)	2	0.84000	0.80000	ON11	HR11	0.01113	False
IA00804 (MA264305)	2	0.77000	0.74000	ON17	HR17	0.02724	False
IA00817 (MA280989)	2	0.52000	0.47000	ON21	HR14	0.02774	False
IA00818 (MA282268)	2	0.45000	0.40000	ON05	HR05	0.01294	False
IA00819 (MA282277)	2	0.54000	0.47000	ON06	HR03	-0.00925	False
IA00827 (MA287186)	2	0.70000	0.56000	ON09	HR09	-0.07114	True
IA00845 (MA296349)	2	0.64000	0.56000	ON16	HR16	-0.02768	False
IA00881 (MA298139)	5	1.89000	1.80000	03E	HR03	-0.01475	False
IA00884 (MA298279)	2	0.20000	0.12000	ON15	HR15	-0.02915	False
IA00899 (MA301508)	2	0.37000	0.33000	ON01	HR06	0.02427	False
IA00972 (MA307339)	5	3.02000	2.96000	01E	HR02	0.01129	False
IA00992 (MA309941)	2	0.42000	0.41000	ON02	HR02	0.01412	False
IA01058 (MA311658)	2	0.53000	0.42000	ON13	HR13	-0.04421	False
IA02037 (MA217493)	2	0.64000	0.66000	19	HR03	0.05409	True
IA02597 (MA311693)	2	0.84000	0.78000	18	HR04	-0.02842	False
IA04745 (MA703231515)	3	1.13000	1.00000	ON01	HR03	-0.01071	False
IA04884 (MA736365836)	2	0.73000	0.68000	ON16	HR12	0.01201	False
IA05126 (MA805103779)	2	0.61000	0.55000	ON13	HR07	0.00572	False
IA05135 (MA805171807)	2	0.65000	0.58000	ON20	HR08	0.01415	False

Table 2.7.12
Beta Analysis
Mathematics Grade 7

Item Id	NumScoreCats	Old Mean	New Mean	Old Form	Form	Beta	Flag Beta
IA00796 (MA259267)	2	0.44000	0.44000	O081	HR08	-0.05211	True
IA00831 (MA288414)	2	0.75000	0.72000	O182	HR18	0.00395	False
IA00847 (MA296358)	2	0.46000	0.53000	O171	HR17	-0.01739	False
IA00909 (MA301846)	2	0.90000	0.87000	O131	HR13	-0.00663	False
IA00910 (MA301854)	2	0.28000	0.35000	O071	HR07	0.00177	False
IA00945 (MA306538)	2	0.70000	0.69000	O212	HR21	-0.02017	False
IA00948 (MA306600)	2	0.85000	0.84000	O111	HR11	0.00587	False
IA00949 (MA306605)	2	0.51000	0.49000	O051	HR05	-0.04176	False
IA01004 (MA311073)	2	0.18000	0.17000	O152	HR15	-0.01328	False
IA01006 (MA311093)	2	0.83000	0.85000	O201	HR20	-0.01111	False
IA01011 (MA311109)	2	0.42000	0.39000	O122	HR12	-0.10039	True
IA01016 (MA311125)	2	0.58000	0.55000	O192	HR19	-0.03189	False
IA01017 (MA311135)	2	0.74000	0.75000	O142	HR14	0.02140	False
IA01018 (MA311140)	2	0.37000	0.37000	O102	HR10	0.01138	False
IA01069 (MA316886)	5	1.99000	2.03000	O031	HR03	0.01135	False
IA01097 (MA623950280)	2	0.35000	0.32000	O061	HR06	0.00264	False
IA01108 (MA624149677)	3	0.65000	0.77000	O042	HR04	-0.00988	False
IA02722 (MA703943185)	5	1.78000	1.95000	O022	HR02	0.03399	False
IA04486 (MA227988)	2	0.69000	0.69000	O092	HR09	0.05289	True
IA04538 (MA282218)	2	0.65000	0.69000	O161	HR16	0.04994	False

Table 2.7.13
Beta Analysis
Mathematics Grade 8

Item Id	NumScoreCats	Old Mean	New Mean	Old Form	Form	Beta	Flag Beta
IA00849 (MA296757)	2	0.70000	0.62000	ON17	HR17	-0.00764	False
IA00858 (MA297513)	2	0.84000	0.76000	ON01	HR04	-0.02869	False
IA00864 (MA297652)	5	3.16000	2.81000	02E	HR03	-0.00611	False
IA00865 (MA297656)	2	0.54000	0.53000	ON11	HR11	0.04179	False
IA00903 (MA301674)	2	0.78000	0.73000	ON13	HR13	0.01350	False
IA00905 (MA301702)	2	0.53000	0.44000	ON12	HR07	-0.03148	False
IA00979 (MA307472)	2	0.59000	0.63000	ON20	HR13	0.08385	True
IA00985 (MA307570)	2	0.59000	0.51000	ON18	HR18	-0.02689	False
IA01033 (MA311384)	2	0.64000	0.59000	ON08	HR08	0.00569	False
IA01037 (MA311414)	2	0.46000	0.39000	ON10	HR10	0.00749	False
IA01042 (MA311448)	2	0.69000	0.52000	ON05	HR05	-0.11311	True
IA01044 (MA311463)	2	0.69000	0.64000	ON15	HR15	0.01583	False
IA01066 (MA314812)	5	2.44000	2.22000	01E	HR02	-0.00685	False
IA01125 (MA624247061)	3	0.94000	0.85000	ON14	HR14	0.00126	False
IA02495 (MA309741)	2	0.42000	0.44000	01	HR15	0.05584	True
IA04665 (MA307399)	2	0.55000	0.48000	ON04	HR16	0.00249	False
IA04678 (MA309738)	2	0.43000	0.39000	ON01	HR04	0.00567	False
IA05057 (MA803856437)	2	0.85000	0.83000	ON19	HR12	0.03265	False
IA05059 (MA803856627)	2	0.75000	0.71000	ON18	HR09	0.01726	False
IA05070 (MA804042487)	2	0.36000	0.29000	ON18	HR04	-0.02723	False

Table 2.7.14
Beta Analysis
Mathematics Grade 10

Item Id	NumScoreCats	Old Mean	New Mean	Old Form	Form	Beta	Flag Beta
IA04800 (MA717740737)	2	0.54000	0.40000	ON23	ON11	-0.09150	True
IA04810 (MA735534256)	3	0.75000	0.67000	ON09	ON02	-0.00427	False
IA04819 (MA735579095)	2	0.63000	0.57000	ON03	ON10	0.01611	False
IA04824 (MA735632759)	2	0.51000	0.46000	ON06	ON17	-0.00249	False
IA04842 (MA735734830)	2	0.46000	0.40000	ON09	ON09	-0.02328	False
IA04846 (MA735743236)	2	0.86000	0.76000	ON13	ON10	-0.06256	True
IA04847 (MA735745569)	2	0.48000	0.43000	ON15	ON06	-0.00151	False
IA04871 (MA736059227)	2	0.57000	0.50000	ON05	ON03	-0.00974	False
IA04913 (MA800433428)	2	0.60000	0.56000	ON18	ON11	-0.00701	False
IA04991 (MA801426792)	2	0.36000	0.33000	ON27	ON14	0.00190	False
IA04993 (MA801434971)	2	0.31000	0.22000	ON14	ON07	-0.05312	True
IA04997 (MA801564574)	3	0.82000	0.79000	ON09	ON08	0.04890	False
IA05048 (MA803762212)	2	0.54000	0.47000	ON20	ON16	-0.01434	False
IA05096 (MA804566054)	3	1.35000	1.11000	ON03	ON05	-0.03071	False
IA05117 (MA804678931)	2	0.48000	0.35000	ON11	ON19	-0.10801	True
IA05144 (MA805372590)	2	0.50000	0.41000	ON17	ON20	-0.07884	True
IA05145 (MA805373539)	2	0.30000	0.23000	ON12	ON13	-0.03192	False
IA05147 (MA805376549)	2	0.92000	0.87000	ON27	ON12	-0.03543	False
IA05155 (MA806051920)	2	0.32000	0.29000	ON23	ON18	0.02309	False
IA05165 (MA806383722)	5	1.64000	1.84000	ON01	ON04	0.03945	False
IA05170 (MA806408603)	5	1.62000	1.77000	ON02	ON07	0.06819	True

Table 2.7.15
Beta Analysis
Science Grade 5

Item Id	NumScoreCats	Old Mean	New Mean	Old Form	Form	Beta	Flag Beta
IA05192 (SC264893)	4	0.96000	0.94000	ON16	HR16	0.01587	False
IA05466 (SC628483066)	2	0.88000	0.90000	ON03	HR17	0.03531	False
IA05523 (SC718127878)	2	0.69000	0.67000	ON08	HR08	0.00380	False
IA05526 (SC735264282)	2	0.89000	0.86000	ON02	HR09	0.00379	False
IA05530 (SC735267831)	2	0.80000	0.79000	ON16	HR02	0.00885	False
IA05545 (SC735535118)	2	0.50000	0.47000	ON06	HR19	-0.00531	False
IA05560 (SC736074266)	2	0.79000	0.78000	ON11	HR15	0.02707	False
IA05562 (SC736074942)	3	1.30000	1.26000	ON17	HR06	0.00894	False
IA05628 (SC802729980)	2	0.64000	0.63000	ON06	HR02	0.01969	False
IA05630 (SC802758131)	2	0.79000	0.72000	ON06	HR02	-0.02681	False
IA05631 (SC802758561)	2	0.57000	0.56000	ON06	HR02	0.01096	False
IA05634 (SC802761427)	4	1.06000	0.96000	ON06	HR02	-0.01221	False
IA05657 (SC803732869)	3	0.85000	0.79000	ON10	HR12	-0.00842	False
IA05661 (SC803837124)	2	0.70000	0.67000	ON12	HR14	0.00507	False
IA05662 (SC803844809)	3	1.41000	1.30000	ON18	HR18	-0.01495	False
IA05664 (SC803847645)	2	0.81000	0.76000	ON18	HR06	-0.02747	False
IA05678 (SC804048131)	2	0.89000	0.88000	ON16	HR05	0.00895	False
IA05681 (SC804060300)	2	0.43000	0.37000	ON14	HR13	-0.04778	False
IA05688 (SC804141602)	2	0.87000	0.84000	ON16	HR18	-0.00217	False
IA05702 (SC806382697)	2	0.50000	0.48000	ON13	HR10	0.00691	False

Table 2.7.16
Beta Analysis
Science Grade 8

Item Id	NumScoreCats	Old Mean	New Mean	Old Form	Form	Beta	Flag Beta
IA05243 (SC289702)	2	0.44000	0.32000	0102	HR12	-0.08936	True
IA05245 (SC290144)	2	0.51000	0.53000	0102	HR04	0.05264	True
IA05499 (SC633066301)	2	0.93000	0.91000	ON01	HR05	0.00129	False
IA05522 (SC717662167)	2	0.52000	0.50000	ON14	HR18	0.03137	False
IA05550 (SC735560046)	2	0.34000	0.27000	ON10	HR17	-0.03010	False
IA05551 (SC735569222)	2	0.60000	0.52000	ON13	HR16	-0.04013	False
IA05555 (SC735663104)	2	0.35000	0.34000	ON08	HR03	0.00127	False
IA05581 (SC800285340)	2	0.40000	0.41000	ON11	HR11	0.03559	False
IA05649 (SC803174786)	2	0.70000	0.69000	ON16	HR14	0.00857	False
IA05665 (SC803856876)	2	0.82000	0.82000	ON16	HR13	0.02197	False
IA05675 (SC803981496)	2	0.75000	0.72000	ON08	HR06	-0.00448	False
IA05687 (SC804132888)	3	1.57000	1.48000	ON06	HR10	-0.00621	False
IA05690 (SC804367702)	2	0.49000	0.44000	ON09	HR15	-0.01515	False
IA05693 (SC804372985)	3	1.39000	1.34000	ON12	HR09	0.00174	False
IA05718 (SC807245653)	2	0.78000	0.74000	ON05	HR02	-0.01084	False
IA05720 (SC807247887)	2	0.64000	0.57000	ON06	HR02	-0.04679	False
IA05727 (SC809171062)	2	0.50000	0.48000	ON05	HR02	0.00362	False
IA05729 (SC809178849)	4	1.14000	1.07000	ON06	HR02	-0.00545	False
IA05750 (SC814258458)	4	1.40000	1.40000	ON11	HR07	0.03263	False
IA05777 (SC816343670)	3	1.27000	1.24000	ON15	HR08	0.00948	False

Section 2.8

Final Item Parameters

Table 2.9.1
IRT Parameters for Dichotomous Items
English Language Arts Grade 3

	Parameters and Measures of Standard Error					
Item ID	a	SE(a)	b	SE(b)	c	SE(c)
IA06369 (EL292647)	1.28842	0.00000	-0.64920	0.00000	0.18800	0.00000
IA06370 (EL292648)	1.18671	0.00000	-0.80420	0.00000	0.21620	0.00000
IA06372 (EL292654)	1.03563	0.00000	0.27210	0.00000	0.25560	0.00000
IA06374 (EL292657)	0.42934	0.00000	-0.68960	0.00000	0.08650	0.00000
IA06690 (EL835280082)	0.97748	0.00000	0.43130	0.00000	0.26700	0.00000
IA06692 (EL835281423)	0.33792	0.00000	-0.34300	0.00000	0.02120	0.00000
IA06693 (EL835281675)	0.84456	0.00000	-0.83520	0.00000	0.16040	0.00000
IA06694 (EL835338102)	0.76290	0.00000	-1.23570	0.00000	0.00630	0.00000
IA06695 (EL835338434)	0.85720	0.00000	-1.49850	0.00000	0.05070	0.00000
IA06696 (EL835338750)	0.34080	0.00000	-1.01710	0.00000	0.01790	0.00000
IA06697 (EL835338894)	0.92069	0.00000	-0.66400	0.00000	0.14700	0.00000
IA06698 (EL835339761)	1.30417	0.00000	-1.33490	0.00000	0.21100	0.00000
IA06702 (EL835340904)	0.92116	0.00000	-0.25670	0.00000	0.19310	0.00000
IA06703 (EL835341639)	0.80082	0.00000	0.48240	0.00000	0.21900	0.00000
IA06804 (EL905643350)	0.76055	0.00000	0.43820	0.00000	0.34660	0.00000
IA07224 (EL912460887)	0.92957	0.00000	-0.56090	0.00000	0.18390	0.00000
IA07226 (EL912462780)	0.64356	0.00000	-0.99400	0.00000	0.00680	0.00000
IA07227 (EL912463130)	0.90547	0.00000	-1.16420	0.00000	0.12990	0.00000
IA07228 (EL912463283)	0.83927	0.00000	-0.80270	0.00000	0.15500	0.00000
IA07229 (EL912463417)	1.02475	0.00000	-0.62790	0.00000	0.15220	0.00000
IA07251 (EL912651426)	1.20376	0.00000	-0.16840	0.00000	0.23660	0.00000
IA07352 (EL916150555)	0.85797	0.00000	0.64890	0.00000	0.21620	0.00000
IA07370 (EL916532720)	1.03739	0.00000	-1.54450	0.00000	0.02800	0.00000
IA07373 (EL916535053)	0.54333	0.00000	-1.86090	0.00000	0.04320	0.00000

Table 2.9.2
IRT Parameters for Polytomous Items
English Language Arts Grade 3

Item ID	Parameters and Measures of Standard Error									
	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)
IA06373 (EL292656)	1.35420	0.00000	-1.26400	0.00000	0.23550	0.00000	-0.23550	0.00000	0.00000	0.00000
IA06683 (EL835251909)	0.75632	0.00000	0.86217	0.00000	2.54487	0.00000	-0.36313	0.00000	-2.18173	0.00000
IA06687 (EL835276438)	0.52257	0.00000	0.75740	0.00000	2.20530	0.00000	-2.20530	0.00000	0.00000	0.00000
IA07207A (EL912362165#SCORE_TRAIT_Conv)	0.93280	0.00847	0.75540	0.01329	2.02080	0.01617	-0.46820	0.02502	-1.55260	0.03511
IA07207D (EL912362165#SCORE_TRAIT_Ideadev)	0.69306	0.00788	1.96473	0.01896	1.76433	0.02277	0.65323	0.03432	-0.67878	0.04846
IA07210 (EL912365258)	0.65685	0.00000	-1.06045	0.00000	0.57355	0.00000	-0.57355	0.00000	0.00000	0.00000
IA07215 (EL912440150)	0.55209	0.00000	-1.16310	0.00000	0.54090	0.00000	-0.54090	0.00000	0.00000	0.00000
IA07374 (EL916535595)	0.54527	0.00000	-1.04020	0.00000	1.90540	0.00000	-1.90540	0.00000	0.00000	0.00000

Item ID	Parameters and Measures of Standard Error					
	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA06683 (EL835251909)	0.00000	0.00000	n/a	n/a	n/a	n/a
IA07207A (EL912362165#SCORE_TRAIT_Conv)	0.00000	0.00000	n/a	n/a	n/a	n/a
IA07207D (EL912362165#SCORE_TRAIT_Ideadev)	-1.73878	0.05610	0.00000	0.00000	n/a	n/a

Table 2.9.3
IRT Parameters for Dichotomous Items
English Language Arts Grade 4

	Parameters and Measures of Standard Error					
Item ID	a	SE(a)	b	SE(b)	c	SE(c)
IA03812 (EL800937934)	1.54421	0.00000	-0.10870	0.00000	0.20220	0.00000
IA03813 (EL800938150)	0.56479	0.00000	0.15890	0.00000	0.12200	0.00000
IA03815 (EL800939230)	0.54721	0.00000	-1.05410	0.00000	0.03000	0.00000
IA03817 (EL800940688)	1.10841	0.00000	-1.31480	0.00000	0.07770	0.00000
IA03818 (EL800940863)	1.30547	0.00000	-1.19330	0.00000	0.15620	0.00000
IA03819 (EL800941423)	0.67431	0.00000	-1.32730	0.00000	0.08860	0.00000
IA03820 (EL800941788)	0.82275	0.00000	-0.68260	0.00000	0.24340	0.00000
IA03821 (EL800943061)	1.26531	0.00000	-1.35460	0.00000	0.11390	0.00000
IA03851 (EL804278958)	0.80200	0.00000	-0.58430	0.00000	0.08700	0.00000
IA06481 (EL307617)	1.03710	0.00000	-1.25970	0.00000	0.10530	0.00000
IA06484 (EL307622)	1.07860	0.00000	-0.12170	0.00000	0.24350	0.00000
IA06485 (EL307624)	0.77666	0.00000	-0.99930	0.00000	0.12070	0.00000
IA06818 (EL909145470)	1.19459	0.00000	-2.11950	0.00000	0.10750	0.00000
IA06820 (EL909147325)	0.72181	0.00000	0.45440	0.00000	0.24660	0.00000
IA06824 (EL909150609)	0.66867	0.00000	-1.17800	0.00000	0.18120	0.00000
IA06825 (EL909151025)	0.72816	0.00000	0.54560	0.00000	0.17030	0.00000
IA06832 (EL909155188)	0.23439	0.00000	-2.46600	0.00000	0.06590	0.00000
IA06834 (EL909156962)	0.84503	0.00000	-0.15680	0.00000	0.28310	0.00000
IA06835 (EL909157777)	0.65309	0.00000	0.29570	0.00000	0.23770	0.00000
IA07170 (EL911976285)	0.68977	0.00000	0.82520	0.00000	0.17650	0.00000
IA07293 (EL914243985)	0.61317	0.00000	-1.08110	0.00000	0.02540	0.00000
IA07295 (EL914273301)	1.20741	0.00000	-0.70270	0.00000	0.20160	0.00000
IA07300 (EL914444197)	1.03469	0.00000	-0.33700	0.00000	0.19420	0.00000
IA07301 (EL914444576)	0.65344	0.00000	0.83030	0.00000	0.22830	0.00000

Table 2.9.4
IRT Parameters for Polytomous Items
English Language Arts Grade 4

Item ID	Parameters and Measures of Standard Error									
	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)
IA03810 (EL800853520)	0.95608	0.00000	-1.30915	0.00000	0.37905	0.00000	-0.37905	0.00000	0.00000	0.00000
IA03811 (EL800937262)	0.31323	0.00000	-2.42025	0.00000	2.87685	0.00000	-2.87685	0.00000	0.00000	0.00000
IA03825 (EL800957624)	0.78289	0.00000	0.23893	0.00000	1.79953	0.00000	-0.06997	0.00000	-1.72957	0.00000
IA06815A (EL909132428#SCORE_TRAIT_Conv)	1.17925	0.01123	0.05967	0.00756	1.37937	0.01123	-0.17383	0.01401	-1.20553	0.01906
IA06815D (EL909132428#SCORE_TRAIT_Ideadev)	1.00470	0.01023	0.82495	0.00953	1.63415	0.01238	0.69745	0.01628	-0.42675	0.02189
IA06829 (EL909153399)	0.57343	0.00000	-0.70540	0.00000	0.48810	0.00000	-0.48810	0.00000	0.00000	0.00000
IA07263 (EL913040076)	0.59671	0.00000	-0.96545	0.00000	1.03375	0.00000	-1.03375	0.00000	0.00000	0.00000
IA07281 (EL913342853)	0.55996	0.00000	-0.34750	0.00000	1.37640	0.00000	-1.37640	0.00000	0.00000	0.00000

Item ID	Parameters and Measures of Standard Error					
	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA03825 (EL800957624)	0.00000	0.00000	n/a	n/a	n/a	n/a
IA06815A (EL909132428#SCORE_TRAIT_Conv)	0.00000	0.00000	n/a	n/a	n/a	n/a
IA06815D (EL909132428#SCORE_TRAIT_Ideadev)	-1.90485	0.03034	0.00000	0.00000	n/a	n/a

Table 2.9.5
IRT Parameters for Dichotomous Items
English Language Arts Grade 5

	Parameters and Measures of Standard Error					
Item ID	a	SE(a)	b	SE(b)	c	SE(c)
IA03926 (EL806707883)	0.69283	0.00000	-1.84870	0.00000	0.05720	0.00000
IA03927 (EL806708176)	0.61922	0.00000	1.04040	0.00000	0.20450	0.00000
IA03930 (EL806709102)	1.16149	0.00000	-0.01970	0.00000	0.08190	0.00000
IA03931 (EL806709302)	0.32246	0.00000	-1.07250	0.00000	0.00300	0.00000
IA03932 (EL806709547)	0.94315	0.00000	-2.38030	0.00000	0.03770	0.00000
IA03933 (EL806709790)	1.08724	0.00000	-1.41830	0.00000	0.16050	0.00000
IA03934 (EL806710293)	0.90647	0.00000	-0.33050	0.00000	0.16620	0.00000
IA03938 (EL806712207)	1.19624	0.00000	-1.74490	0.00000	0.21410	0.00000
IA04462 (EL827636609)	0.97078	0.00000	-0.55900	0.00000	0.27600	0.00000
IA06434 (EL302392)	1.22863	0.00000	-1.98830	0.00000	0.13670	0.00000
IA06435 (EL302393)	1.62169	0.00000	-1.80360	0.00000	0.12220	0.00000
IA06440 (EL302401)	0.86320	0.00000	-1.28290	0.00000	0.20450	0.00000
IA06441 (EL302402)	0.54885	0.00000	-1.45450	0.00000	0.00970	0.00000
IA06661 (EL834972269)	1.00841	0.00000	-0.61200	0.00000	0.15660	0.00000
IA06662 (EL834972500)	0.94674	0.00000	-1.57130	0.00000	0.02870	0.00000
IA06665 (EL834976700)	0.90018	0.00000	-1.18980	0.00000	0.17150	0.00000
IA06666 (EL834977047)	1.03804	0.00000	-1.51720	0.00000	0.11470	0.00000
IA06667 (EL834977330)	0.57266	0.00000	-1.11420	0.00000	0.00740	0.00000
IA06669 (EL834978026)	0.94250	0.00000	-1.00050	0.00000	0.14100	0.00000
IA06671 (EL834978663)	0.85103	0.00000	-1.04010	0.00000	0.13510	0.00000
IA06672 (EL834979059)	0.63310	0.00000	-1.81080	0.00000	0.03230	0.00000
IA06673 (EL834979779)	0.96673	0.00000	-1.15710	0.00000	0.14010	0.00000
IA07231 (EL912500446)	0.66226	0.00000	-0.49580	0.00000	0.14110	0.00000
IA07238 (EL912579695)	0.97978	0.00000	-1.33460	0.00000	0.06260	0.00000

Table 2.9.6
IRT Parameters for Polytomous Items
English Language Arts Grade 5

Item ID	Parameters and Measures of Standard Error									
	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)
IA03925 (EL806706594)	0.80065	0.00000	-1.44365	0.00000	0.27605	0.00000	-0.27605	0.00000	0.00000	0.00000
IA03947A (EL806746086#SCORE_TRAIT_Conv)	1.21111	0.01005	0.28040	0.00766	1.73400	0.01115	-0.19660	0.01252	-1.53740	0.02058
IA03947D (EL806746086#SCORE_TRAIT_Ideadev)	1.19289	0.00982	1.19028	0.01164	2.41958	0.01384	0.68818	0.01541	-0.65533	0.02279
IA03950 (EL806756112)	0.64280	0.00000	-0.31675	0.00000	1.22185	0.00000	-1.22185	0.00000	0.00000	0.00000
IA06654A (EL834856783#SCORE_TRAIT_Conv)	1.17343	0.01023	0.13213	0.00753	1.39743	0.01077	-0.30137	0.01599	-1.09607	0.01759
IA06654D (EL834856783#SCORE_TRAIT_Ideadev)	1.01646	0.01041	1.02170	0.00886	0.98260	0.01444	0.64050	0.01811	-0.15420	0.02015
IA06655 (EL834950831)	0.79259	0.00000	-1.91300	0.00000	0.96530	0.00000	-0.96530	0.00000	0.00000	0.00000
IA06657 (EL834952362)	0.59882	0.00000	-0.48295	0.00000	0.70025	0.00000	-0.70025	0.00000	0.00000	0.00000
IA07243 (EL912584876)	0.78865	0.00000	-1.14610	0.00000	0.19940	0.00000	-0.19940	0.00000	0.00000	0.00000

Item ID	Parameters and Measures of Standard Error					
	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA03947A (EL806746086#SCORE_TRAIT_Conv)	0.00000	0.00000	n/a	n/a	n/a	n/a
IA03947D (EL806746086#SCORE_TRAIT_Ideadev)	-2.45243	0.04195	0.00000	0.00000	n/a	n/a
IA06654A (EL834856783#SCORE_TRAIT_Conv)	0.00000	0.00000	n/a	n/a	n/a	n/a
IA06654D (EL834856783#SCORE_TRAIT_Ideadev)	-1.46890	0.02502	0.00000	0.00000	n/a	n/a

Table 2.9.7
IRT Parameters for Dichotomous Items
English Language Arts Grade 6

	Parameters and Measures of Standard Error					
Item ID	a	SE(a)	b	SE(b)	c	SE(c)
IA06503 (EL308506)	0.56402	0.00000	0.55000	0.00000	0.07870	0.00000
IA06505 (EL308510)	0.82481	0.00000	-0.22060	0.00000	0.16090	0.00000
IA06506 (EL308512)	0.62563	0.00000	-1.61270	0.00000	0.05230	0.00000
IA06507 (EL308513)	0.93233	0.00000	0.04470	0.00000	0.31040	0.00000
IA06510 (EL308518)	1.14638	0.00000	-1.62360	0.00000	0.25400	0.00000
IA06712 (EL835402993)	0.42698	0.00000	-0.03700	0.00000	0.21070	0.00000
IA06715 (EL835415824)	0.68765	0.00000	-1.11870	0.00000	0.17610	0.00000
IA06716 (EL835417652)	0.48995	0.00000	-1.70580	0.00000	0.01340	0.00000
IA06717 (EL835419727)	0.94474	0.00000	-0.71160	0.00000	0.24740	0.00000
IA06719 (EL835420555)	0.66590	0.00000	-1.36500	0.00000	0.14270	0.00000
IA06722 (EL835421418)	0.97978	0.00000	-1.31620	0.00000	0.33630	0.00000
IA06723 (EL835421936)	0.37166	0.00000	-0.95470	0.00000	0.03110	0.00000
IA06725 (EL835422818)	0.53416	0.00000	-1.30540	0.00000	0.14390	0.00000
IA06789 (EL903544223)	0.69442	0.00000	-1.95000	0.00000	0.10970	0.00000
IA07271 (EL913137826)	0.65844	0.00000	-0.43310	0.00000	0.18740	0.00000
IA07274 (EL913146798)	0.55338	0.00000	-0.29710	0.00000	0.06830	0.00000
IA07275 (EL913147467)	0.93880	0.00000	-0.69460	0.00000	0.32050	0.00000
IA07276 (EL913177923)	0.63063	0.00000	-2.33890	0.00000	0.00900	0.00000
IA07278 (EL913179570)	0.44680	0.00000	-1.52580	0.00000	0.04080	0.00000
IA07367 (EL916473284)	0.80917	0.00000	0.50200	0.00000	0.12380	0.00000
IA07403 (EL917825386)	1.02081	0.00000	-0.41990	0.00000	0.23070	0.00000
IA07409 (EL917861668)	0.48907	0.00000	-2.56720	0.00000	0.01490	0.00000
IA07415 (EL918180282)	0.49212	0.00000	-0.60810	0.00000	0.21360	0.00000
IA07441 (EL920039686)	1.00952	0.00000	-2.06870	0.00000	0.21690	0.00000

Table 2.9.8
IRT Parameters for Polytomous Items
English Language Arts Grade 6

Item ID	Parameters and Measures of Standard Error									
	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)
IA06711 (EL835401351)	0.49812	0.00000	-1.66635	0.00000	1.37265	0.00000	-1.37265	0.00000	0.00000	0.00000
IA06720 (EL835420875)	0.54062	0.00000	-0.79505	0.00000	1.14725	0.00000	-1.14725	0.00000	0.00000	0.00000
IA07087A (EL911525969#SCORE_TRAIT_Conv)	1.15032	0.00852	-0.10730	0.00566	1.51150	0.00963	-0.06410	0.01038	-1.44740	0.01354
IA07087D (EL911525969#SCORE_TRAIT_Ideadev)	1.07202	0.00782	0.95276	0.00854	3.27116	0.01346	1.26426	0.01248	-0.13964	0.01465
IA07267A (EL913132900#SCORE_TRAIT_Conv)	1.05603	0.01117	-0.18923	0.00943	1.64127	0.01550	-0.02613	0.01696	-1.61513	0.02320
IA07267D (EL913132900#SCORE_TRAIT_Ideadev)	1.05203	0.01076	1.11532	0.01059	3.25872	0.01747	1.27652	0.01763	-0.26668	0.02307
IA07268 (EL913133585)	0.55750	0.00000	-0.52555	0.00000	0.64155	0.00000	-0.64155	0.00000	0.00000	0.00000
IA07269 (EL913135249)	0.39906	0.00000	-1.80390	0.00000	0.45520	0.00000	-0.45520	0.00000	0.00000	0.00000
IA07365 (EL916444331)	0.59342	0.00000	-0.54095	0.00000	1.41425	0.00000	-1.41425	0.00000	0.00000	0.00000

Item ID	Parameters and Measures of Standard Error					
	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA07087A (EL911525969#SCORE_TRAIT_Conv)	0.00000	0.00000	n/a	n/a	n/a	n/a
IA07087D (EL911525969#SCORE_TRAIT_Ideadev)	-1.50604	0.01858	-2.88974	0.03593	0.00000	0.00000
IA07267A (EL913132900#SCORE_TRAIT_Conv)	0.00000	0.00000	n/a	n/a	n/a	n/a
IA07267D (EL913132900#SCORE_TRAIT_Ideadev)	-1.53988	0.02478	-2.72868	0.04003	0.00000	0.00000

Table 2.9.9
IRT Parameters for Dichotomous Items
English Language Arts Grade 7

	Parameters and Measures of Standard Error					
Item ID	a	SE(a)	b	SE(b)	c	SE(c)
IA04337 (EL811653297)	0.79759	0.00000	-1.76150	0.00000	0.07500	0.00000
IA04338 (EL811653729)	0.45056	0.00000	-1.26350	0.00000	0.04510	0.00000
IA04340 (EL811659059)	0.85979	0.00000	-0.60050	0.00000	0.18390	0.00000
IA04342 (EL811661018)	0.41470	0.00000	-1.74630	0.00000	0.01930	0.00000
IA04348 (EL811720784)	0.60388	0.00000	-0.15710	0.00000	0.10860	0.00000
IA04349 (EL811721117)	0.83721	0.00000	0.30480	0.00000	0.30510	0.00000
IA04353 (EL811723366)	0.39830	0.00000	-1.86950	0.00000	0.00250	0.00000
IA04356 (EL811734832)	0.67643	0.00000	-1.66310	0.00000	0.02540	0.00000
IA04358 (EL811735509)	0.74239	0.00000	0.11520	0.00000	0.17670	0.00000
IA06539 (EL314056)	0.66878	0.00000	-1.05080	0.00000	0.17880	0.00000
IA06541 (EL314058)	1.20335	0.00000	-0.13100	0.00000	0.25800	0.00000
IA06544 (EL314063)	1.23251	0.00000	-0.81260	0.00000	0.23910	0.00000
IA06873 (EL909281464)	1.03186	0.00000	-1.31380	0.00000	0.30280	0.00000
IA06883 (EL909375770)	0.70200	0.00000	-0.25850	0.00000	0.10450	0.00000
IA06898 (EL909470766)	0.78230	0.00000	-1.88140	0.00000	0.06970	0.00000
IA06899 (EL909471269)	0.52357	0.00000	-0.30740	0.00000	0.23150	0.00000
IA06900 (EL909471961)	0.44356	0.00000	-1.82150	0.00000	0.01880	0.00000
IA06921 (EL909747660)	0.90441	0.00000	-1.41260	0.00000	0.15910	0.00000
IA06922 (EL909748887)	0.81264	0.00000	0.41900	0.00000	0.26340	0.00000
IA06929 (EL909752861)	0.83369	0.00000	-1.83580	0.00000	0.07900	0.00000
IA06937 (EL909764274)	0.46696	0.00000	-0.41160	0.00000	0.22020	0.00000
IA07084 (EL911458693)	0.56796	0.00000	-0.44940	0.00000	0.09450	0.00000
IA07089 (EL911550107)	0.52052	0.00000	-0.20660	0.00000	0.21370	0.00000
IA07217 (EL912448606)	0.50200	0.00000	-0.49540	0.00000	0.16690	0.00000
IA07218 (EL912450318)	1.33439	0.00000	0.42200	0.00000	0.26810	0.00000
IA07342 (EL916135715)	0.44832	0.00000	-0.24550	0.00000	0.10940	0.00000

Table 2.9.10
IRT Parameters for Polytomous Items
English Language Arts Grade 7

Item ID	Parameters and Measures of Standard Error									
	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)
IA04341 (EL811660409)	0.61240	0.00000	-0.87865	0.00000	0.38885	0.00000	-0.38885	0.00000	0.00000	0.00000
IA04359 (EL811735935)	0.68730	0.00000	-0.71125	0.00000	1.64285	0.00000	-1.64285	0.00000	0.00000	0.00000
IA04362A (EL811753816#SCORE_TRAIT_Conv)	1.51311	0.01229	-0.33460	0.00490	1.28430	0.00871	-0.00240	0.00930	-1.28190	0.01123
IA04362D (EL811753816#SCORE_TRAIT_Ideadev)	1.46972	0.01141	0.67052	0.00546	2.50112	0.00969	1.00252	0.00977	-0.26708	0.01139
IA06924 (EL909749262)	0.56849	0.00000	-1.27275	0.00000	0.16035	0.00000	-0.16035	0.00000	0.00000	0.00000
IA06925A (EL909750218#SCORE_TRAIT_Conv)	1.35750	0.01088	-0.61847	0.00502	1.36943	0.01031	-0.07357	0.00987	-1.29587	0.00996
IA06925D (EL909750218#SCORE_TRAIT_Ideadev)	1.26725	0.00952	0.42786	0.00611	2.74536	0.01241	1.08046	0.01105	-0.07944	0.01063
IA07209 (EL912364723)	0.54145	0.00000	-0.38300	0.00000	1.07670	0.00000	-1.07670	0.00000	0.00000	0.00000

Item ID	Parameters and Measures of Standard Error					
	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA04362A (EL811753816#SCORE_TRAIT_Conv)	0.00000	0.00000	n/a	n/a	n/a	n/a
IA04362D (EL811753816#SCORE_TRAIT_Ideadev)	-1.19818	0.01273	-2.03838	0.02035	0.00000	0.00000
IA06925A (EL909750218#SCORE_TRAIT_Conv)	0.00000	0.00000	n/a	n/a	n/a	n/a
IA06925D (EL909750218#SCORE_TRAIT_Ideadev)	-1.21984	0.01232	-2.52654	0.02409	0.00000	0.00000

Table 2.9.11
IRT Parameters for Dichotomous Items
English Language Arts Grade 8

	Parameters and Measures of Standard Error					
Item ID	a	SE(a)	b	SE(b)	c	SE(c)
IA06511 (EL309393)	0.42916	0.00000	-0.11330	0.00000	0.05990	0.00000
IA06513 (EL309397)	0.47143	0.00000	-1.46000	0.00000	0.05610	0.00000
IA06514 (EL309401)	0.73157	0.00000	-0.57890	0.00000	0.17500	0.00000
IA06732 (EL836438880)	0.86508	0.00000	-1.43520	0.00000	0.24020	0.00000
IA06737 (EL836456432)	0.41752	0.00000	-1.79290	0.00000	0.04850	0.00000
IA06740 (EL836459385)	0.63539	0.00000	-1.96190	0.00000	0.03330	0.00000
IA06741 (EL836461762)	0.71276	0.00000	-1.27730	0.00000	0.12220	0.00000
IA06742 (EL836463708)	0.33880	0.00000	0.03010	0.00000	0.04440	0.00000
IA06743 (EL836464683)	0.83116	0.00000	-1.86780	0.00000	0.06000	0.00000
IA06753 (EL836547482)	0.76226	0.00000	-2.25930	0.00000	0.01780	0.00000
IA06768 (EL900353074)	0.87801	0.00000	-1.52930	0.00000	0.18250	0.00000
IA06801 (EL904652080)	0.28983	0.00000	-2.60500	0.00000	0.01900	0.00000
IA07092 (EL911558166)	0.43422	0.00000	-2.72540	0.00000	0.02270	0.00000
IA07124 (EL911657712)	0.38319	0.00000	-2.11950	0.00000	0.01380	0.00000
IA07134 (EL911763814)	0.82628	0.00000	-1.99110	0.00000	0.06200	0.00000
IA07135 (EL911764401)	0.81793	0.00000	-1.09580	0.00000	0.28020	0.00000
IA07140 (EL911862506)	0.80123	0.00000	-2.67850	0.00000	0.06910	0.00000
IA07167 (EL911946437)	0.80964	0.00000	-1.16370	0.00000	0.18250	0.00000
IA07284 (EL913447634)	0.42845	0.00000	-0.44740	0.00000	0.21880	0.00000
IA07288 (EL913755133)	0.69053	0.00000	-1.79360	0.00000	0.20990	0.00000
IA07296 (EL914324180)	0.31770	0.00000	0.42600	0.00000	0.27140	0.00000
IA07299 (EL914376798)	0.30864	0.00000	0.42260	0.00000	0.24990	0.00000
IA07393 (EL917559756)	0.79953	0.00000	-0.75140	0.00000	0.21790	0.00000
IA07429 (EL919039373)	0.54156	0.00000	-0.16030	0.00000	0.25700	0.00000

Table 2.9.12
IRT Parameters for Polytomous Items
English Language Arts Grade 8

Item ID	Parameters and Measures of Standard Error									
	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)
IA06728A (EL836248600#SCORE_TRAIT_Conv)	1.74633	0.01246	-0.66283	0.00347	1.01787	0.00737	0.06687	0.00650	-1.08473	0.00693
IA06728D (EL836248600#SCORE_TRAIT_Ideadev)	1.67378	0.01099	0.36480	0.00408	2.19020	0.00819	1.10050	0.00709	-0.01250	0.00726
IA06735 (EL836448634)	0.52728	0.00000	-1.19760	0.00000	0.94040	0.00000	-0.94040	0.00000	0.00000	0.00000
IA06736 (EL836455548)	0.63768	0.00000	-1.03750	0.00000	1.17080	0.00000	-1.17080	0.00000	0.00000	0.00000
IA07125 (EL911659849)	0.81258	0.00000	-2.45295	0.00000	0.21645	0.00000	-0.21645	0.00000	0.00000	0.00000
IA07136A (EL911774388#SCORE_TRAIT_Conv)	1.78789	0.01752	-0.57950	0.00579	1.09140	0.01112	-0.05460	0.01121	-1.03680	0.01234
IA07136D (EL911774388#SCORE_TRAIT_Ideadev)	1.70623	0.01587	0.38846	0.00493	2.16676	0.01151	0.94926	0.01115	-0.07774	0.01224
IA07285 (EL913448483)	0.72205	0.00000	-0.65775	0.00000	1.23045	0.00000	-1.23045	0.00000	0.00000	0.00000
IA07289 (EL913761016)	0.51981	0.00000	-1.65520	0.00000	1.49860	0.00000	-1.49860	0.00000	0.00000	0.00000

Item ID	Parameters and Measures of Standard Error					
	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA06728A (EL836248600#SCORE_TRAIT_Conv)	0.00000	0.00000	n/a	n/a	n/a	n/a
IA06728D (EL836248600#SCORE_TRAIT_Ideadev)	-1.07840	0.00836	-2.19980	0.01613	0.00000	0.00000
IA07136A (EL911774388#SCORE_TRAIT_Conv)	0.00000	0.00000	n/a	n/a	n/a	n/a
IA07136D (EL911774388#SCORE_TRAIT_Ideadev)	-1.08584	0.00957	-1.95244	0.01522	0.00000	0.00000

Table 2.9.13
IRT Parameters for Dichotomous Items
English Language Arts Grade 10

Item ID	Parameters and Measures of Standard Error					
	a	SE(a)	b	SE(b)	c	SE(c)
IA06309 (EL012153811)	0.61129	0.00000	-1.69420	0.00000	0.08260	0.00000
IA06310 (EL012157583)	0.60694	0.00000	-0.71210	0.00000	0.08790	0.00000
IA06314 (EL012733933)	0.85279	0.00000	-0.83640	0.00000	0.27760	0.00000
IA06320 (EL013253097)	0.54932	0.00000	-1.76810	0.00000	0.06190	0.00000
IA06321 (EL013255897)	1.06831	0.00000	0.10830	0.00000	0.36200	0.00000
IA06323 (EL013257840)	0.52493	0.00000	-3.17880	0.00000	0.03190	0.00000
IA06324 (EL013258596)	0.96379	0.00000	-0.36760	0.00000	0.27680	0.00000
IA06327 (EL013353391)	0.56138	0.00000	-0.10290	0.00000	0.31700	0.00000
IA06340 (EL015041902)	0.79735	0.00000	-1.76050	0.00000	0.20480	0.00000
IA06917 (EL909729691)	1.10735	0.00000	-1.23380	0.00000	0.17590	0.00000
IA06930 (EL909753277)	0.80265	0.00000	-0.86800	0.00000	0.16700	0.00000
IA06933 (EL909754342)	1.46531	0.00000	-1.37260	0.00000	0.22070	0.00000
IA06936 (EL909755882)	0.84109	0.00000	-1.33360	0.00000	0.10550	0.00000
IA06984 (EL910540421)	0.52163	0.00000	-1.49470	0.00000	0.17630	0.00000
IA06990 (EL910641090)	1.69559	0.00000	-1.21380	0.00000	0.23710	0.00000
IA07008 (EL910747872)	0.71652	0.00000	-1.26400	0.00000	0.01410	0.00000
IA07035 (EL910857457)	0.90970	0.00000	-2.01080	0.00000	0.07720	0.00000
IA07044 (EL910962538)	0.89277	0.00000	-2.19500	0.00000	0.02070	0.00000
IA07046 (EL911153175)	0.26531	0.00000	-0.14790	0.00000	0.02890	0.00000
IA07055 (EL911243156)	1.00088	0.00000	-1.84970	0.00000	0.13520	0.00000
IA07056 (EL911243823)	0.47460	0.00000	-2.30180	0.00000	0.01040	0.00000

Table 2.9.14
IRT Parameters for Polytomous Items
English Language Arts Grade 10

Item ID	Parameters and Measures of Standard Error									
	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)
IA06311 (EL012160579)	0.55791	0.00000	-0.82870	0.00000	1.09490	0.00000	-1.09490	0.00000	0.00000	0.00000
IA06315A (EL013138637#SCORE_TRAIT_Conv)	3.03804	0.02992	-0.99407	0.00414	0.74503	0.00822	-0.00647	0.00788	-0.73857	0.00874
IA06315D (EL013138637#SCORE_TRAIT_Ideadev)	2.58366	0.02222	-0.09594	0.00388	1.56756	0.00862	0.87676	0.00862	0.14506	0.00962
IA06338 (EL014953733)	0.58513	0.00000	-1.30090	0.00000	1.52610	0.00000	-1.52610	0.00000	0.00000	0.00000
IA06343 (EL019560241)	0.46132	0.00000	-0.66210	0.00000	0.90070	0.00000	-0.90070	0.00000	0.00000	0.00000
IA06913 (EL909560185)	0.77096	0.00000	-2.44225	0.00000	0.85685	0.00000	-0.85685	0.00000	0.00000	0.00000
IA06918 (EL909731553)	0.75450	0.00000	-0.89825	0.00000	0.38755	0.00000	-0.38755	0.00000	0.00000	0.00000
IA06983A (EL910467723#SCORE_TRAIT_Conv)	2.24915	0.02328	-1.23397	0.00712	0.80743	0.01482	-0.01197	0.01465	-0.79547	0.01319
IA06983D (EL910467723#SCORE_TRAIT_Ideadev)	1.97090	0.01799	-0.34194	0.00540	1.73976	0.01566	0.92046	0.01538	0.10036	0.01362
IA07039 (EL910860957)	0.84198	0.00000	-1.18835	0.00000	0.10755	0.00000	-0.10755	0.00000	0.00000	0.00000
IA07041 (EL910938823)	0.74139	0.00000	-2.19440	0.00000	1.11300	0.00000	-1.11300	0.00000	0.00000	0.00000

Item ID	Parameters and Measures of Standard Error					
	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA06315A (EL013138637#SCORE_TRAIT_Conv)	0.00000	0.00000	n/a	n/a	n/a	n/a
IA06315D (EL013138637#SCORE_TRAIT_Ideadev)	-0.55004	0.00543	-2.03934	0.01347	0.00000	0.00000
IA06983A (EL910467723#SCORE_TRAIT_Conv)	0.00000	0.00000	n/a	n/a	n/a	n/a
IA06983D (EL910467723#SCORE_TRAIT_Ideadev)	-0.70344	0.00703	-2.05714	0.01262	0.00000	0.00000

Table 2.8.15

IRT Parameters for Dichotomous Items—Mathematics Grade 3

	Parameters and Measures of Standard Error					
Item ID	a	SE(a)	b	SE(b)	c	SE(c)
IA00928 (MA306346)	1.24495	0.01662	-0.11415	0.00985	0.04240	0.00350
IA02348 (MA303411)	1.16326	0.02326	0.45257	0.01306	0.20110	0.00460
IA02506 (MA310835)	1.26178	0.01822	-0.51141	0.01273	0.09020	0.00590
IA04623 (MA303418)	0.93350	0.01492	-0.26878	0.01627	0.07170	0.00670
IA04682 (MA310877)	0.64882	0.02114	1.09335	0.02457	0.21820	0.00710
IA04818 (MA735579087)	1.12444	0.01896	0.32561	0.01162	0.10210	0.00420
IA04840 (MA735732140)	0.82409	0.01731	-1.40090	0.04516	0.14470	0.02180
IA07796 (MA900371208)	0.75674	0.01901	0.42911	0.02302	0.21200	0.00770
IA07803 (MA900374280)	1.17511	0.02310	-0.65486	0.02192	0.31480	0.00930
IA07804 (MA900374565)	0.71563	0.01482	-0.68386	0.03553	0.11260	0.01430
IA07812 (MA900379786)	1.54068	0.03973	1.13796	0.01195	0.17950	0.00280
IA07826 (MA900445883)	0.99293	0.01769	-0.00468	0.01638	0.17260	0.00640
IA07850 (MA900571833)	0.99824	0.02114	-0.68774	0.02756	0.29090	0.01120
IA07851 (MA900574704)	0.77830	0.01907	-1.31778	0.05656	0.28280	0.02250
IA08098 (MA902576979)	0.98316	0.02353	0.80058	0.01516	0.20340	0.00470
IA10310 (MA264568)	0.85441	0.01625	-1.01925	0.03520	0.22800	0.01500
IA00929 (MA306355)	0.82791	0.01020	-1.59848	0.01494	0.00000	0.00000
IA02686 (MA703080328)	0.68079	0.00760	0.84618	0.01284	0.00000	0.00000
IA04636 (MA306288)	1.20193	0.01179	-0.01830	0.00764	0.00000	0.00000
IA04638 (MA306339)	0.73544	0.00813	-0.47688	0.01029	0.00000	0.00000
IA04684 (MA310895)	0.51057	0.00653	0.18349	0.01240	0.00000	0.00000
IA04832 (MA735659609)	0.70299	0.00882	-1.60568	0.01638	0.00000	0.00000
IA04833 (MA735662802)	0.92165	0.01009	-1.17897	0.01140	0.00000	0.00000
IA04854 (MA735767424)	0.76917	0.00834	-0.58491	0.01018	0.00000	0.00000
IA04864 (MA736029388)	0.87210	0.00914	-0.68674	0.00963	0.00000	0.00000
IA07757 (MA834448527)	0.73050	0.01004	-2.33268	0.02358	0.00000	0.00000
IA07798 (MA900371363)	0.45469	0.00627	0.52441	0.01505	0.00000	0.00000
IA07809 (MA900376906)	0.90237	0.00940	-0.48230	0.00908	0.00000	0.00000
IA07818 (MA900430931)	0.66050	0.00797	0.82504	0.01306	0.00000	0.00000
IA07822 (MA900437563)	0.79594	0.00876	-0.12146	0.00930	0.00000	0.00000
IA07825 (MA900440136)	0.57627	0.00690	-0.14703	0.01107	0.00000	0.00000
IA07854 (MA900578884)	0.64133	0.00744	0.07656	0.01052	0.00000	0.00000
IA07998 (MA901139069)	0.84464	0.01041	-1.35829	0.01339	0.00000	0.00000
IA08064 (MA902238195)	0.38501	0.00611	-1.67984	0.02657	0.00000	0.00000
IA08224 (MA905135964)	0.28011	0.00563	1.56134	0.03664	0.00000	0.00000

Item ID	Parameters and Measures of Standard Error					
	a	SE(a)	b	SE(b)	c	SE(c)
IA10305 (MA260575)	0.72206	0.00818	-1.16115	0.01339	0.00000	0.00000

Table 2.8.16
IRT Parameters for Polytomous Items
Mathematics Grade 3

	Parameters and Measures of Standard Error									
Item ID	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)
IA02172 (MA286752A)	1.00536	0.00850	0.73472	0.00693	1.21624	0.01099	0.10028	0.01151	-1.31653	0.01799
IA04859 (MA735951978)	1.14010	0.00924	0.07870	0.00546	1.15573	0.01078	-0.05022	0.00957	-1.10552	0.01224
IA07567 (MA297478A)	0.83604	0.00791	-1.23063	0.00766	0.97000	0.01930	-0.08054	0.01383	-0.88946	0.01188
IA07572 (MA300753A)	1.08115	0.00882	-0.46009	0.00521	0.85813	0.01164	-0.03070	0.00961	-0.82743	0.00990

	Parameters and Measures of Standard Error					
Item ID	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA02172 (MA286752A)	0.00000	0.00000	n/a	n/a	n/a	n/a
IA04859 (MA735951978)	0.00000	0.00000	n/a	n/a	n/a	n/a
IA07567 (MA297478A)	0.00000	0.00000	n/a	n/a	n/a	n/a
IA07572 (MA300753A)	0.00000	0.00000	n/a	n/a	n/a	n/a

Table 2.8.17
IRT Parameters for Dichotomous Items
Mathematics Grade 4

	Parameters and Measures of Standard Error					
Item ID	a	SE(a)	b	SE(b)	c	SE(c)
IA00990 (MA307692)	0.37768	0.01319	-0.91396	0.13430	0.07260	0.03740
IA02070 (MA247687)	0.85464	0.02349	-1.80672	0.07853	0.32680	0.03650
IA02173 (MA286765)	1.10226	0.02173	-0.33405	0.02098	0.27100	0.00910
IA04660 (MA307310)	1.00808	0.01641	-0.28274	0.01703	0.11860	0.00780
IA07867 (MA900662785)	1.31818	0.02100	-0.22260	0.01278	0.13100	0.00610
IA07918 (MA900751683)	1.09581	0.02072	0.42544	0.01340	0.17400	0.00520
IA07920 (MA900754381)	1.11952	0.01664	0.29789	0.01080	0.06840	0.00400
IA07959 (MA900843428)	1.46093	0.01998	-0.42234	0.01101	0.09910	0.00540
IA07961 (MA900845776)	0.49530	0.01064	-1.83030	0.08922	0.04130	0.03600
IA10296 (MA227395)	0.74093	0.01970	0.54977	0.02410	0.19930	0.00850
IA10356 (MA307326)	0.93518	0.02456	-1.25112	0.05266	0.38750	0.02150
IA00783 (MA227864)	0.52048	0.00724	-1.49687	0.02109	0.00000	0.00000
IA00814 (MA279790)	0.74971	0.00911	-1.40859	0.01548	0.00000	0.00000
IA01084 (MA623833763)	0.97718	0.01013	-0.28575	0.00831	0.00000	0.00000
IA02739 (MA704650142)	0.75288	0.00838	-0.50990	0.01008	0.00000	0.00000
IA02741 (MA704652242)	0.34887	0.00594	-0.09432	0.01610	0.00000	0.00000
IA02900 (MA714230904)	0.69645	0.00849	0.83936	0.01236	0.00000	0.00000
IA04572 (MA294263)	0.84994	0.01036	1.06715	0.01205	0.00000	0.00000
IA04652 (MA307066)	0.65343	0.00775	-0.03127	0.01018	0.00000	0.00000
IA04926 (MA800607912)	1.03066	0.01109	-0.84426	0.00956	0.00000	0.00000
IA04929 (MA800633803)	0.69101	0.00792	-0.56174	0.01091	0.00000	0.00000
IA04956 (MA800767155)	1.04408	0.01075	-0.51302	0.00841	0.00000	0.00000
IA07901 (MA900740880)	0.87830	0.00911	-0.09682	0.00852	0.00000	0.00000
IA07910 (MA900749728)	0.64540	0.00764	1.10236	0.01433	0.00000	0.00000
IA07915 (MA900751271)	0.54012	0.00707	-1.08358	0.01652	0.00000	0.00000
IA07922 (MA900755205)	1.03513	0.01013	0.17771	0.00800	0.00000	0.00000
IA07944 (MA900775955)	0.79250	0.00866	-0.57815	0.01008	0.00000	0.00000
IA07958 (MA900842465)	1.01612	0.01047	-0.11468	0.00800	0.00000	0.00000
IA08109 (MA903134963)	1.06021	0.01070	-0.35462	0.00810	0.00000	0.00000
IA08132 (MA903537924)	0.83562	0.00940	-0.80957	0.01059	0.00000	0.00000
IA08161 (MA903673001)	1.10798	0.01098	0.17584	0.00779	0.00000	0.00000
IA08181 (MA903757124)	0.92352	0.00928	0.63848	0.00945	0.00000	0.00000
IA08187 (MA903869200)	0.69882	0.00792	0.16556	0.00987	0.00000	0.00000

Item ID	Parameters and Measures of Standard Error					
	a	SE(a)	b	SE(b)	c	SE(c)
IA08237 (MA907358909)	1.16344	0.01223	0.54957	0.00810	0.00000	0.00000

Table 2.8.18
IRT Parameters for Polytomous Items
Mathematics Grade 4

	Parameters and Measures of Standard Error									
Item ID	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)
IA05041 (MA803738583)	1.07787	0.00951	0.74697	0.00762	0.93249	0.01089	-0.93249	0.01514	0.00000	0.00000
IA07590 (MA302496A)	1.16412	0.00889	0.01581	0.00509	1.64595	0.01317	0.38798	0.00930	-0.44828	0.00930
IA07661 (MA311579A)	0.97831	0.00804	-0.81035	0.00552	1.15976	0.01633	0.29120	0.01186	-0.29317	0.01015
IA07912 (MA900750814)	0.94197	0.00764	-1.18604	0.00649	1.37601	0.01969	0.57165	0.01452	-0.35144	0.01121
IA08105 (MA903053494)	0.93512	0.00821	-0.62369	0.00846	1.18832	0.01655	-1.18832	0.01245	0.00000	0.00000
IA08147 (MA903574399)	1.30330	0.00985	0.03967	0.00423	1.11089	0.01007	0.44508	0.00850	-0.38183	0.00850

	Parameters and Measures of Standard Error					
Item ID	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA07590 (MA302496A)	-1.58565	0.01308	0.00000	0.00000	n/a	n/a
IA07661 (MA311579A)	-1.15778	0.00998	0.00000	0.00000	n/a	n/a
IA07912 (MA900750814)	-1.59622	0.01087	0.00000	0.00000	n/a	n/a
IA08147 (MA903574399)	-1.17414	0.01054	0.00000	0.00000	n/a	n/a

Table 2.8.19
IRT Parameters for Dichotomous Items
Mathematics Grade 5

	Parameters and Measures of Standard Error					
Item ID	a	SE(a)	b	SE(b)	c	SE(c)
IA00809 (MA272788)	0.58972	0.00955	-2.16726	0.05580	0.01760	0.02790
IA00815 (MA280507)	1.66649	0.04096	0.92199	0.01110	0.24880	0.00300
IA01023 (MA311301)	1.34297	0.04137	1.33652	0.01493	0.23370	0.00300
IA02549 (MA311287)	1.06757	0.02022	-0.66850	0.02341	0.22410	0.01130
IA04602 (MA301145)	1.24323	0.01882	-0.81410	0.01594	0.08320	0.00900
IA04613 (MA301831)	1.32392	0.02814	0.82593	0.01120	0.14630	0.00320
IA05000 (MA801650702)	1.30090	0.02185	-0.32884	0.01372	0.17710	0.00670
IA05004 (MA801654509)	0.91679	0.01625	-0.18192	0.01776	0.08160	0.00800
IA05009 (MA801668672)	1.28523	0.02540	-0.94649	0.02371	0.29090	0.01260
IA07868 (MA900664816)	0.87933	0.01620	-1.05840	0.03199	0.05470	0.01750
IA07969 (MA900941108)	1.29875	0.02977	0.49213	0.01382	0.32420	0.00460
IA07984 (MA901081374)	1.24148	0.02767	1.49242	0.01483	0.05280	0.00170
IA08193 (MA904134029)	1.48169	0.02866	0.24763	0.01191	0.29230	0.00450
IA10323 (MA282154)	1.46508	0.02243	-0.45124	0.01130	0.09360	0.00580
IA10340 (MA301593)	1.38020	0.02849	-0.05710	0.01443	0.32140	0.00590
IA10346 (MA303749)	1.27661	0.02395	0.49243	0.01100	0.15870	0.00390
IA10374 (MA311307)	1.35392	0.02645	-0.43803	0.01645	0.27810	0.00780
IA01146 (MA624345222)	0.93695	0.00938	-0.00826	0.00807	0.00000	0.00000
IA02917 (MA715102107)	0.61791	0.01136	-2.70247	0.03723	0.00000	0.00000
IA02925 (MA715102342)	1.30865	0.01270	-0.28051	0.00706	0.00000	0.00000
IA04630 (MA303755)	0.66277	0.00775	-0.08122	0.00989	0.00000	0.00000
IA04978 (MA801176573)	0.94505	0.00985	-0.41835	0.00817	0.00000	0.00000
IA05101 (MA804577344)	0.92850	0.00950	-0.58666	0.00858	0.00000	0.00000
IA05102 (MA804577928)	0.66219	0.00775	-0.15256	0.00989	0.00000	0.00000
IA05105 (MA804583343)	0.83150	0.00862	-0.22945	0.00848	0.00000	0.00000
IA07975 (MA900983475)	1.55877	0.01550	-0.10604	0.00666	0.00000	0.00000
IA08154 (MA903581246)	0.67320	0.00763	0.42200	0.01100	0.00000	0.00000
IA08176 (MA903733887)	1.04759	0.01055	-0.48878	0.00797	0.00000	0.00000
IA08209 (MA904333760)	1.08575	0.01124	0.51342	0.00858	0.00000	0.00000
IA08210 (MA904338797)	1.08825	0.01130	-0.63207	0.00817	0.00000	0.00000
IA08241 (MA908431377)	0.44371	0.00670	-0.99331	0.01655	0.00000	0.00000
IA10293 (MA207523)	1.05178	0.01055	-0.38051	0.00797	0.00000	0.00000
IA10325 (MA287421)	0.95565	0.01171	-1.37404	0.01282	0.00000	0.00000

Item ID	Parameters and Measures of Standard Error					
	a	SE(a)	b	SE(b)	c	SE(c)
IA10368 (MA310322)	0.77306	0.00880	-1.12671	0.01191	0.00000	0.00000

Table 2.8.20
IRT Parameters for Polytomous Items
Mathematics Grade 5

Item ID	Parameters and Measures of Standard Error									
	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)
IA00902 (MA301608)	0.92233	0.00705	0.22834	0.00575	1.94444	0.01432	0.23024	0.00975	-0.69204	0.01162
IA02251 (MA298005)	0.89028	0.00746	-0.55288	0.00614	1.55828	0.01662	1.01429	0.01349	-0.90193	0.01071
IA05025 (MA802310847)	0.99422	0.00827	-0.71153	0.00526	1.13374	0.01498	0.37068	0.01138	-0.26110	0.00963
IA05097 (MA804575779)	0.79048	0.00746	-0.47228	0.00810	0.91275	0.01525	-0.91275	0.01271	0.00000	0.00000
IA05104 (MA804580860)	0.89232	0.00769	0.51216	0.00826	1.06946	0.01191	-1.06946	0.01637	0.00000	0.00000
IA07982 (MA901073764)	1.20000	0.00903	0.00637	0.00425	1.12763	0.01003	0.41796	0.00842	-0.49172	0.00886

Item ID	Parameters and Measures of Standard Error					
	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA00902 (MA301608)	-1.48265	0.01507	0.00000	0.00000	n/a	n/a
IA02251 (MA298005)	-1.67063	0.01349	0.00000	0.00000	n/a	n/a
IA05025 (MA802310847)	-1.24332	0.01032	0.00000	0.00000	n/a	n/a
IA07982 (MA901073764)	-1.05387	0.01058	0.00000	0.00000	n/a	n/a

Table 2.8.21
IRT Parameters for Dichotomous Items
Mathematics Grade 6

	Parameters and Measures of Standard Error					
Item ID	a	SE(a)	b	SE(b)	c	SE(c)
IA00898 (MA301497)	1.14925	0.02596	0.20736	0.01707	0.34030	0.00620
IA02125 (MA272301)	1.36139	0.02799	0.79493	0.01141	0.22270	0.00350
IA02273 (MA298153)	0.84794	0.01542	-0.89101	0.03091	0.07720	0.01580
IA04511 (MA272299)	0.84625	0.01304	-1.32444	0.03172	0.01620	0.01840
IA04571 (MA293850)	0.90079	0.01758	-0.25637	0.02293	0.17710	0.00980
IA04590 (MA298171)	0.89258	0.01746	-0.27991	0.02313	0.15260	0.01020
IA04723 (MA311654)	0.69667	0.01845	-0.22163	0.04121	0.24580	0.01430
IA04894 (MA736452061)	1.07888	0.01944	0.74200	0.01121	0.08460	0.00350
IA05139 (MA805276878)	0.41183	0.02270	1.17624	0.06465	0.22290	0.01720
IA07769 (MA900281418)	0.81907	0.01339	-0.77071	0.02626	0.03900	0.01290
IA07831 (MA900470149)	0.63288	0.01781	-1.11576	0.07889	0.21700	0.03020
IA07833 (MA900540139)	1.37967	0.02782	0.85453	0.01040	0.12440	0.00300
IA07834 (MA900541677)	1.54100	0.03259	1.00695	0.01040	0.13270	0.00260
IA08238 (MA908142878)	1.31029	0.03137	0.99947	0.01273	0.25170	0.00350
IA10309 (MA264407)	0.71210	0.01216	-0.20304	0.02222	0.01220	0.00930
IA02690 (MA703149118)	1.20326	0.01147	-0.01092	0.00707	0.00000	0.00000
IA02695 (MA703177677)	0.94636	0.01030	-1.00657	0.01040	0.00000	0.00000
IA02696 (MA703178216)	0.48639	0.00658	0.48695	0.01364	0.00000	0.00000
IA02697 (MA703178717)	0.76657	0.00809	0.10544	0.00899	0.00000	0.00000
IA02822 (MA713648266)	0.93478	0.01001	0.59493	0.00929	0.00000	0.00000
IA02905 (MA714280042)	0.62759	0.00722	1.16159	0.01535	0.00000	0.00000
IA04628 (MA303713)	0.96911	0.01094	-1.21394	0.01101	0.00000	0.00000
IA04726 (MA311664)	1.23102	0.01251	0.51301	0.00778	0.00000	0.00000
IA04881 (MA736363428)	0.76698	0.00850	-0.87505	0.01101	0.00000	0.00000
IA04883 (MA736365457)	0.58661	0.00803	-1.41929	0.01737	0.00000	0.00000
IA05127 (MA805104699)	1.22363	0.01286	0.60736	0.00808	0.00000	0.00000
IA07693 (MA736481231)	1.14680	0.01117	-0.20860	0.00717	0.00000	0.00000
IA07695 (MA736510525)	0.95055	0.01007	0.37473	0.00838	0.00000	0.00000
IA07744 (MA805166085)	0.31231	0.00646	2.14431	0.04556	0.00000	0.00000
IA07821 (MA900437517)	0.64720	0.00745	0.43635	0.01081	0.00000	0.00000
IA07828 (MA900454764)	1.06753	0.01152	-0.91788	0.00899	0.00000	0.00000
IA07830 (MA900462230)	0.99996	0.01024	-0.75677	0.00879	0.00000	0.00000
IA07932 (MA900763184)	1.01783	0.01042	-0.62364	0.00828	0.00000	0.00000

Item ID	Parameters and Measures of Standard Error					
	a	SE(a)	b	SE(b)	c	SE(c)
IA10338 (MA301231)	0.94886	0.00960	-0.03102	0.00788	0.00000	0.00000

Table 2.8.22
IRT Parameters for Polytomous Items
Mathematics Grade 6

Item ID	Parameters and Measures of Standard Error									
	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)
IA02448 (MA307234)	1.14704	0.00867	-0.45688	0.00461	1.38938	0.01363	0.21899	0.00904	-0.57484	0.00853
IA02700 (MA703181586)	0.84893	0.00739	0.28281	0.00756	0.98433	0.01198	-0.98433	0.01411	0.00000	0.00000
IA02706 (MA703253363)	1.29161	0.00978	0.46655	0.00400	0.86201	0.00804	0.19666	0.00795	-0.22283	0.00875
IA07773 (MA900283851)	1.09186	0.00920	-0.72122	0.00710	0.97120	0.01396	-0.97120	0.01039	0.00000	0.00000
IA07780 (MA900337563)	1.21577	0.00890	0.31791	0.00459	1.43660	0.01010	0.20793	0.00835	-0.34682	0.00921
IA08063 (MA902139605)	1.27863	0.00925	-0.38001	0.00547	1.98978	0.01658	0.58777	0.00984	-0.76131	0.00902

Item ID	Parameters and Measures of Standard Error					
	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA02448 (MA307234)	-1.03353	0.00922	0.00000	0.00000	n/a	n/a
IA02706 (MA703253363)	-0.83585	0.01077	0.00000	0.00000	n/a	n/a
IA07780 (MA900337563)	-1.29772	0.01287	0.00000	0.00000	n/a	n/a
IA08063 (MA902139605)	-1.81625	0.01202	0.00000	0.00000	n/a	n/a

Table 2.8.23
IRT Parameters for Dichotomous Items
Mathematics Grade 7

	Parameters and Measures of Standard Error					
Item ID	a	SE(a)	b	SE(b)	c	SE(c)
IA02088 (MA259184)	1.36585	0.02681	-1.17005	0.02368	0.26850	0.01380
IA02278 (MA298208)	0.76839	0.01458	0.25586	0.01873	0.09170	0.00690
IA04540 (MA282220)	0.59636	0.01556	-0.42706	0.05167	0.17040	0.01770
IA04591 (MA298183)	0.59729	0.01928	0.60011	0.03649	0.27150	0.01030
IA04626 (MA303697)	1.59795	0.03173	0.88118	0.01033	0.19080	0.00270
IA04648 (MA306632)	0.83289	0.02015	0.88022	0.01722	0.18850	0.00520
IA04691 (MA311107)	1.71428	0.04609	1.07646	0.01227	0.33080	0.00280
IA05116 (MA804677297)	1.40736	0.03714	1.55312	0.01410	0.13830	0.00210
IA07720 (MA801363142)	0.81978	0.02015	0.94351	0.01733	0.18410	0.00510
IA07725 (MA801653090)	0.77806	0.02294	0.57805	0.02594	0.34020	0.00740
IA07840 (MA900554929)	1.02283	0.01698	-0.06450	0.01475	0.11760	0.00620
IA07841 (MA900556478)	1.78118	0.03588	0.79840	0.00969	0.19560	0.00260
IA07844 (MA900559852)	1.39277	0.03217	0.84103	0.01281	0.29910	0.00340
IA08110 (MA903153837)	1.62821	0.04320	1.12404	0.01195	0.27610	0.00280
IA08196 (MA904158907)	0.48332	0.01212	-0.65226	0.06674	0.03870	0.02290
IA10294 (MA208377)	1.12774	0.02015	-1.82326	0.03789	0.07170	0.02950
IA10295 (MA219513)	1.02715	0.01595	-1.42927	0.02885	0.05270	0.01880
IA10299 (MA250531)	1.41866	0.03282	0.58052	0.01313	0.32750	0.00390
IA10352 (MA306487)	0.87003	0.02081	0.55350	0.01927	0.25810	0.00610
IA00951 (MA306625)	1.11873	0.01207	1.30392	0.01163	0.00000	0.00000
IA01102 (MA624047703)	0.79526	0.00803	0.09729	0.00883	0.00000	0.00000
IA02707 (MA703857670)	1.12053	0.01174	-1.53519	0.01130	0.00000	0.00000
IA02708 (MA703872935)	0.84370	0.00879	-0.68284	0.00915	0.00000	0.00000
IA02877 (MA713848070)	0.98477	0.00972	0.42648	0.00861	0.00000	0.00000
IA04733 (MA314790)	1.15925	0.01256	0.98625	0.00980	0.00000	0.00000
IA05090 (MA804458974)	0.81989	0.00797	0.38073	0.00937	0.00000	0.00000
IA07838 (MA900553374)	1.18181	0.01174	0.74985	0.00872	0.00000	0.00000
IA07900 (MA900740124)	1.01316	0.00994	0.45630	0.00850	0.00000	0.00000
IA07903 (MA900741988)	1.02753	0.00923	0.65103	0.00937	0.00000	0.00000
IA07955 (MA900831542)	0.78423	0.00825	-0.65022	0.00926	0.00000	0.00000
IA08111 (MA903155316)	0.96576	0.00967	-0.66712	0.00840	0.00000	0.00000
IA08202 (MA904222253)	0.80198	0.00808	-0.07667	0.00872	0.00000	0.00000
IA10353 (MA306506)	0.58746	0.00792	1.46528	0.01938	0.00000	0.00000

	Parameters and Measures of Standard Error					
Item ID	a	SE(a)	b	SE(b)	c	SE(c)
IA10354 (MA306559)	1.28060	0.01322	1.14794	0.01012	0.00000	0.00000

Table 2.8.24
IRT Parameters for Polytomous Items
Mathematics Grade 7

	Parameters and Measures of Standard Error									
Item ID	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)
IA02888 (MA713849179)	0.83901	0.00721	0.65728	0.00793	0.89466	0.01155	-0.89466	0.01562	0.00000	0.00000
IA02958 (MA717236235)	1.37524	0.00978	0.09538	0.00404	1.13959	0.00893	0.37120	0.00789	-0.34025	0.00836
IA04642 (MA306566)	1.40768	0.01038	0.57966	0.00429	0.94547	0.00811	0.41778	0.00802	-0.24856	0.00914
IA05037 (MA802914027)	1.28901	0.00912	-0.07191	0.00417	1.10934	0.00986	0.59349	0.00852	-0.66373	0.00899
IA07907 (MA900745156)	1.12370	0.00901	0.39090	0.00611	0.65079	0.00954	-0.65079	0.01155	0.00000	0.00000
IA07967 (MA900936469)	1.56234	0.01120	0.04788	0.00369	1.01178	0.00839	0.26245	0.00753	-0.30443	0.00782

	Parameters and Measures of Standard Error					
Item ID	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA02958 (MA717236235)	-1.17054	0.01070	0.00000	0.00000	n/a	n/a
IA04642 (MA306566)	-1.11470	0.01239	0.00000	0.00000	n/a	n/a
IA05037 (MA802914027)	-1.03910	0.00986	0.00000	0.00000	n/a	n/a
IA07967 (MA900936469)	-0.96980	0.00917	0.00000	0.00000	n/a	n/a

Table 2.8.25
IRT Parameters for Dichotomous Items
Mathematics Grade 8

	Parameters and Measures of Standard Error					
Item ID	a	SE(a)	b	SE(b)	c	SE(c)
IA00982 (MA307538)	0.55483	0.01273	-0.25619	0.04205	0.05490	0.01520
IA02325 (MA301689)	1.14109	0.02437	0.67004	0.01270	0.21320	0.00400
IA02563 (MA311428)	0.91432	0.01511	-0.13755	0.01625	0.08220	0.00700
IA04502 (MA259251)	0.67452	0.01470	-0.03243	0.02753	0.07150	0.01080
IA04521 (MA275045)	1.05074	0.01910	-0.81636	0.02316	0.15830	0.01210
IA04708 (MA311392)	1.34083	0.03247	0.83033	0.01229	0.27600	0.00340
IA04917 (MA800475574)	0.60362	0.01065	-1.42559	0.05079	0.01680	0.02370
IA05092 (MA804466151)	0.49840	0.01551	-1.40507	0.11985	0.13930	0.04260
IA07986 (MA901135378)	1.60840	0.02848	-0.72068	0.01412	0.26250	0.00770
IA07988 (MA901135957)	1.12720	0.02188	0.60037	0.01219	0.18770	0.00390
IA07990 (MA901137084)	0.53770	0.01291	-0.17392	0.04317	0.04530	0.01530
IA07993 (MA901137701)	0.57393	0.01430	-1.35083	0.08197	0.09220	0.03440
IA07999 (MA901139314)	1.21853	0.02084	-0.25213	0.01381	0.18540	0.00630
IA08002 (MA901142533)	1.10694	0.02425	0.30337	0.01544	0.29410	0.00540
IA08006 (MA901143832)	1.51441	0.02385	-0.64460	0.01280	0.18250	0.00700
IA08067 (MA902262781)	0.91547	0.01945	0.61479	0.01473	0.16860	0.00500
IA08080 (MA902284919)	1.02614	0.01597	-0.52099	0.01534	0.04540	0.00760
IA08231 (MA905271170)	0.74270	0.01476	-0.62886	0.03423	0.13010	0.01460
IA08244 (MA908451759)	1.28665	0.03415	0.76644	0.01513	0.42130	0.00380
IA10311 (MA264730)	0.57908	0.00747	-1.34535	0.01950	0.00080	0.00620
IA10341 (MA301683)	0.92068	0.02471	0.51545	0.02011	0.34590	0.00600
IA01034 (MA311386)	0.79595	0.00793	-0.29062	0.00843	0.00000	0.00000
IA02934 (MA715919547)	0.89938	0.00862	0.16777	0.00823	0.00000	0.00000
IA04751 (MA704833889)	0.84220	0.00816	-0.09896	0.00823	0.00000	0.00000
IA04922 (MA800562180)	0.86003	0.00839	-0.67924	0.00863	0.00000	0.00000
IA05060 (MA803864446)	0.73790	0.00810	-1.29639	0.01239	0.00000	0.00000
IA07703 (MA800475031)	0.78096	0.00862	-1.05485	0.01036	0.00000	0.00000
IA08005 (MA901143488)	0.87195	0.00822	-0.04573	0.00823	0.00000	0.00000
IA08008 (MA901248805)	1.35941	0.01314	-1.03393	0.00833	0.00000	0.00000
IA08009 (MA901252301)	1.24776	0.01146	-0.41769	0.00691	0.00000	0.00000
IA08079 (MA902283272)	0.96513	0.00990	-1.10655	0.00965	0.00000	0.00000
IA08086 (MA902305954)	0.79098	0.00810	-0.05051	0.00904	0.00000	0.00000
IA08089 (MA902359126)	1.17529	0.01088	-0.24512	0.00701	0.00000	0.00000

	Parameters and Measures of Standard Error					
Item ID	a	SE(a)	b	SE(b)	c	SE(c)
IA08235 (MA905906652)	0.67655	0.00735	-0.25599	0.00924	0.00000	0.00000

Table 2.8.26
IRT Parameters for Polytomous Items
Mathematics Grade 8

Item ID	Parameters and Measures of Standard Error									
	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)
IA04781 (MA715920050)	1.05716	0.00770	-0.84508	0.00485	1.20284	0.01359	0.49763	0.01062	-0.27747	0.00886
IA07658 (MA311459)	1.37793	0.00990	0.45321	0.00404	1.20569	0.00818	0.21800	0.00791	-0.39103	0.00880
IA08071 (MA902268353)	0.82200	0.00689	0.66771	0.00804	0.89099	0.01150	-0.89099	0.01598	0.00000	0.00000
IA08077 (MA902281251)	0.99066	0.00845	-0.68340	0.00612	0.51649	0.01142	-0.51649	0.00969	0.00000	0.00000
IA08095 (MA902400539)	1.30731	0.00938	0.41170	0.00394	0.96945	0.00795	0.18420	0.00786	-0.25530	0.00867
IA10357 (MA307515)	1.52650	0.01140	0.29029	0.00351	0.66705	0.00730	0.24167	0.00721	-0.16828	0.00775

Item ID	Parameters and Measures of Standard Error					
	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA04781 (MA715920050)	-1.42300	0.00973	0.00000	0.00000	n/a	n/a
IA07658 (MA311459)	-1.03266	0.01093	0.00000	0.00000	n/a	n/a
IA08095 (MA902400539)	-0.89835	0.01052	0.00000	0.00000	n/a	n/a
IA10357 (MA307515)	-0.74043	0.00904	0.00000	0.00000	n/a	n/a

Table 2.8.27
IRT Parameters for Dichotomous Items
Mathematics Grade 10

Item ID	Parameters and Measures of Standard Error					
	a	SE(a)	b	SE(b)	c	SE(c)
IA04551 (MA287432)	1.61259	0.02782	-1.02085	0.01579	0.13960	0.01070
IA04558 (MA287734)	1.32137	0.02028	0.18893	0.01016	0.12620	0.00390
IA04676 (MA308751)	0.71116	0.02005	0.01323	0.03751	0.31070	0.01180
IA04737 (MA315444)	1.15512	0.02011	-0.45252	0.01760	0.20570	0.00850
IA07953 (MA900784138)	0.53100	0.01508	-1.02125	0.08911	0.11130	0.03310
IA08030 (MA901373728)	0.57467	0.01736	-0.15704	0.05602	0.22500	0.01750
IA08140 (MA903566809)	1.37848	0.01935	-1.45693	0.02021	0.02880	0.01640
IA08151 (MA903579407)	0.85771	0.01578	-1.06138	0.03510	0.07280	0.01940
IA08168 (MA903681943)	1.29436	0.03186	0.82203	0.01328	0.30220	0.00370
IA10301 (MA250982)	1.27279	0.02613	0.28276	0.01368	0.31640	0.00490
IA10317 (MA281578)	1.66573	0.03174	0.36613	0.00965	0.22370	0.00350
IA10322 (MA281661)	1.46908	0.03250	0.61384	0.01177	0.31430	0.00360
IA10331 (MA294292)	1.21691	0.01812	-0.48249	0.01358	0.09230	0.00710
IA10369 (MA311209)	1.51345	0.02321	0.28356	0.00875	0.11200	0.00310
IA10370 (MA311237)	0.87372	0.01847	-1.09688	0.04244	0.18710	0.02160
IA10371 (MA311240)	0.51236	0.01643	0.04732	0.05733	0.12490	0.01840
IA10382 (MA314948)	0.78487	0.01502	-0.76922	0.03460	0.10440	0.01640
IA10383 (MA315404)	0.99145	0.01420	-1.09829	0.02313	0.01710	0.01410
IA10384 (MA315448)	1.05604	0.01824	-1.23085	0.03017	0.12140	0.01900
IA10385 (MA315696)	0.94936	0.02210	-0.81669	0.03751	0.35600	0.01540
IA02769 (MA713335046)	1.26426	0.01175	-0.98907	0.00855	0.00000	0.00000
IA02863 (MA713829689)	1.14647	0.01081	-0.20542	0.00724	0.00000	0.00000
IA04793 (MA717348780)	0.70432	0.00731	0.22312	0.00955	0.00000	0.00000
IA07750 (MA805405196)	0.50797	0.00649	-0.18007	0.01136	0.00000	0.00000
IA07949 (MA900779724)	1.63434	0.01526	0.01001	0.00644	0.00000	0.00000
IA08028 (MA901372985)	0.41696	0.00590	-0.20119	0.01307	0.00000	0.00000
IA08048 (MA901700241)	0.65867	0.00737	-0.72487	0.01056	0.00000	0.00000
IA08057 (MA901762643)	0.91067	0.00883	0.12547	0.00825	0.00000	0.00000
IA08058 (MA901767462)	0.97660	0.00982	0.36503	0.00835	0.00000	0.00000
IA08130 (MA903470727)	1.15051	0.01029	-0.38685	0.00744	0.00000	0.00000
IA10315 (MA274106)	0.82480	0.00824	-0.11711	0.00835	0.00000	0.00000
IA10355 (MA307124)	0.89623	0.00894	0.49517	0.00925	0.00000	0.00000

Table 2.8.28
IRT Parameters for Polytomous Items
Mathematics Grade 10

Item ID	Parameters and Measures of Standard Error									
	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)
IA02774 (MA713346383)	1.61300	0.01456	0.50030	0.00510	0.21814	0.00837	-0.21814	0.00927	0.00000	0.00000
IA02862 (MA713808299)	1.20995	0.00859	-0.40636	0.00428	1.26228	0.01177	0.22699	0.00859	-0.37936	0.00824
IA07653 (MA311223)	1.54279	0.01175	-0.68047	0.00385	0.77365	0.01049	0.13995	0.00838	-0.21940	0.00776
IA08026 (MA901364620)	1.07340	0.00783	-0.73598	0.00510	1.38824	0.01469	0.53690	0.01083	-0.41340	0.00885
IA08031 (MA901375276)	0.95872	0.00807	1.16608	0.00829	0.62727	0.01205	-0.62727	0.01634	0.00000	0.00000
IA08033 (MA901378123)	1.41571	0.01146	0.02112	0.00491	0.30981	0.00826	-0.30981	0.00875	0.00000	0.00000
IA08125 (MA903452431)	0.74536	0.00707	0.52479	0.00775	0.72336	0.01162	-0.72336	0.01503	0.00000	0.00000
IA08126 (MA903457147)	1.11461	0.00900	0.36221	0.00595	0.59116	0.00937	-0.59116	0.01117	0.00000	0.00000
IA08158 (MA903658309)	0.98935	0.00848	-0.45312	0.00629	0.63451	0.01161	-0.63451	0.01013	0.00000	0.00000
IA10343 (MA302066)	1.47417	0.01052	0.10553	0.00381	0.80787	0.00818	0.42942	0.00765	-0.07988	0.00757

Item ID	Parameters and Measures of Standard Error					
	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA02862 (MA713808299)	-1.10991	0.00929	0.00000	0.00000	n/a	n/a
IA07653 (MA311223)	-0.69420	0.00750	0.00000	0.00000	n/a	n/a
IA08026 (MA901364620)	-1.51175	0.01039	0.00000	0.00000	n/a	n/a
IA10343 (MA302066)	-1.15741	0.01038	0.00000	0.00000	n/a	n/a

Table 2.8.29
IRT Parameters for Dichotomous Items
Science Grade 5

Item ID	Parameters and Measures of Standard Error					
	a	SE(a)	b	SE(b)	c	SE(c)
IA03049 (SC294474)	0.36202	0.00846	-1.42688	0.09203	0.01700	0.02600
IA03060 (SC299518)	0.55167	0.01520	-0.46593	0.05474	0.18210	0.01680
IA03094 (SC315783)	0.60800	0.01515	-0.61678	0.04794	0.16950	0.01610
IA03115 (SC315960)	0.60935	0.01240	-1.18401	0.04964	0.05590	0.01980
IA03160 (SC629544010)	1.13607	0.02314	0.49014	0.01292	0.19990	0.00420
IA03225 (SC632355523)	0.83946	0.01717	-0.21955	0.02267	0.18670	0.00830
IA05409 (SC315963)	0.55867	0.00934	-1.43923	0.04499	0.00950	0.01790
IA05564 (SC736168952)	0.68607	0.01214	-1.14434	0.03627	0.02560	0.01570
IA05754 (SC814661140)	0.76341	0.01634	-2.10835	0.06675	0.11540	0.03580
IA08420 (SC304689)	1.02527	0.01841	-1.45023	0.02958	0.14060	0.01570
IA08491 (SC630232218)	0.91416	0.01805	-0.85795	0.02867	0.23040	0.01170
IA08527 (SC804073428)	0.59021	0.01193	-2.27778	0.07899	0.04340	0.03800
IA08529 (SC804249221)	0.85450	0.02179	0.54012	0.01881	0.24510	0.00600
IA08571 (SC903846864)	0.63223	0.01312	-1.07918	0.04647	0.07290	0.01840
IA08578 (SC903852865)	0.58253	0.01395	-0.93184	0.05644	0.14580	0.01950
IA08594 (SC904133849)	0.29505	0.00991	-2.60067	0.24231	0.09380	0.05880
IA08628 (SC910555750)	0.83152	0.01369	-2.35927	0.04726	0.02820	0.02990
IA08647 (SC911434880)	0.77732	0.01862	0.76645	0.01677	0.13660	0.00530
IA08655 (SC911554259)	0.92899	0.01733	0.02525	0.01621	0.13840	0.00610
IA10615 (SC304477)	0.44191	0.01613	-0.54085	0.09667	0.15220	0.02660
IA10617 (SC304593)	0.65796	0.01494	-1.13380	0.05383	0.14230	0.02120
IA10630 (SC313116)	1.01764	0.02464	0.55055	0.01621	0.28280	0.00500
IA03140 (SC625636354)	0.24396	0.00503	0.01562	0.02187	0.00000	0.00000
IA03274 (SC710851159)	0.80284	0.00866	-0.63242	0.00986	0.00000	0.00000
IA03309 (SC718080983)	0.39491	0.00576	-0.87529	0.01677	0.00000	0.00000
IA03313 (SC718140870)	0.60997	0.00695	-1.16440	0.01360	0.00000	0.00000
IA08485 (SC625638794)	0.53969	0.00700	-0.92652	0.01439	0.00000	0.00000
IA08566 (SC903843564)	0.53170	0.00638	-0.12491	0.01156	0.00000	0.00000
IA08595 (SC904142336)	0.26128	0.00669	-4.75795	0.11095	0.00000	0.00000
IA08627 (SC910545826)	0.55115	0.00794	-2.19879	0.02425	0.00000	0.00000
IA08657 (SC911947283)	0.42603	0.00586	-0.69090	0.01462	0.00000	0.00000
IA08660 (SC911952526)	0.80242	0.00882	-1.32885	0.01213	0.00000	0.00000

Table 2.8.30
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)
IA03144 (SC626958463)	0.63690	0.00674	-1.21223	0.01443	1.67460	0.02999	-1.67460	0.01870	0.00000	0.00000
IA03157 (SC629273289)	0.54301	0.00628	1.67622	0.02331	2.29312	0.02633	-2.29312	0.05067	0.00000	0.00000
IA03177 (SC630161361)	0.37151	0.00493	-0.47970	0.02007	1.93940	0.03717	-1.93940	0.03219	0.00000	0.00000
IA03195 (SC630756792)	0.69152	0.00669	0.20080	0.00861	1.53441	0.01610	0.07718	0.01343	-1.61159	0.02121
IA08463 (SC313154)	0.68669	0.00674	0.61583	0.01040	2.06084	0.01776	-0.14541	0.01606	-1.91543	0.02691
IA08522 (SC803880630)	0.55722	0.00597	-1.10485	0.01212	1.17146	0.02461	-1.17146	0.01659	0.00000	0.00000
IA08530 (SC804250232)	0.70542	0.00674	-0.87478	0.00929	1.00883	0.01829	-1.00883	0.01355	0.00000	0.00000
IA08580 (SC903853405)	0.73105	0.00685	0.90649	0.01195	1.94158	0.01639	0.23864	0.01655	-2.18022	0.03423
IA08662 (SC911956141)	0.74650	0.00654	0.04422	0.00803	1.60086	0.01540	0.17378	0.01228	-1.77464	0.01962

	Parameters and Measures of Standard Error					
Item ID	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA03195 (SC630756792)	0.00000	0.00000	n/a	n/a	n/a	n/a
IA08463 (SC313154)	0.00000	0.00000	n/a	n/a	n/a	n/a
IA08580 (SC903853405)	0.00000	0.00000	n/a	n/a	n/a	n/a
IA08662 (SC911956141)	0.00000	0.00000	n/a	n/a	n/a	n/a

Table 2.8.31
IRT Parameters for Dichotomous Items
Science Grade 8

Item ID	Parameters and Measures of Standard Error					
	a	SE(a)	b	SE(b)	c	SE(c)
IA03079 (SC310231)	0.78469	0.02071	0.06767	0.02776	0.32020	0.00890
IA03091 (SC313192)	0.38070	0.01712	1.13171	0.04934	0.06330	0.01540
IA03222 (SC632267387)	1.47809	0.07234	1.71093	0.02284	0.31040	0.00260
IA03224 (SC632268044)	0.85366	0.01897	0.11271	0.02074	0.24690	0.00740
IA03239 (SC633058958)	0.59838	0.01504	-0.59431	0.04997	0.17880	0.01690
IA05494 (SC631649634)	0.84912	0.01981	0.69445	0.01540	0.15720	0.00530
IA05497 (SC632265448)	0.93453	0.02172	-0.28307	0.02514	0.33660	0.00890
IA05541 (SC735475827)	0.42784	0.01594	0.68041	0.04871	0.10200	0.01450
IA05667 (SC803873079)	1.18476	0.03395	1.31452	0.01519	0.18370	0.00300
IA05742 (SC814037351)	1.07993	0.01953	0.39630	0.01163	0.13480	0.00430
IA08565 (SC903843363)	1.02488	0.01678	-1.18600	0.02441	0.10520	0.01320
IA08570 (SC903846698)	1.38235	0.02469	-0.78026	0.01613	0.22090	0.00830
IA08572 (SC903847508)	0.87662	0.01852	0.26713	0.01718	0.19430	0.00630
IA08637 (SC910947265)	1.36411	0.02334	0.28819	0.01016	0.16750	0.00380
IA08640 (SC910959157)	0.68043	0.01122	-1.47597	0.04096	0.01610	0.01980
IA10584 (SC265230)	0.55270	0.04046	2.44624	0.07700	0.25340	0.00670
IA10599 (SC291845)	1.32314	0.02974	1.05335	0.01184	0.14890	0.00270
IA10605 (SC294244)	0.53503	0.02318	1.57296	0.02975	0.15540	0.00800
IA10616 (SC304491)	0.80781	0.01925	0.51227	0.01833	0.20930	0.00620
IA10633 (SC313185)	1.02875	0.01605	-1.01031	0.02022	0.06500	0.01050
IA03255 (SC633724344)	0.70871	0.00769	-0.43036	0.00943	0.00000	0.00000
IA03322 (SC718682565)	0.40730	0.00640	-1.39510	0.02137	0.00000	0.00000
IA03323 (SC718684123)	0.50444	0.00662	-0.79922	0.01362	0.00000	0.00000
IA05548 (SC735551980)	0.59586	0.00657	-0.90807	0.01184	0.00000	0.00000
IA05650 (SC803361743)	0.24288	0.00511	-1.28018	0.02996	0.00000	0.00000
IA05774 (SC815762323)	0.91562	0.00960	-1.20978	0.01016	0.00000	0.00000
IA08494 (SC630748134)	0.73357	0.00752	-0.27626	0.00870	0.00000	0.00000
IA08498 (SC632267532)	1.05002	0.00993	-0.04726	0.00733	0.00000	0.00000
IA08532 (SC807303457)	0.43070	0.00623	-0.76476	0.01498	0.00000	0.00000
IA08573 (SC903849539)	0.79373	0.00780	0.15755	0.00870	0.00000	0.00000
IA08611 (SC905147343)	0.66247	0.00774	-1.34177	0.01330	0.00000	0.00000
IA08638 (SC910949833)	0.36864	0.00584	-1.34785	0.02116	0.00000	0.00000

Table 2.8.32
IRT Parameters for Polytomous Items
Science Grade 8

Item ID	Parameters and Measures of Standard Error									
	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)
IA03214 (SC631744146)	0.95288	0.00791	0.25222	0.00661	1.44314	0.01195	0.02636	0.01051	-1.46950	0.01647
IA03238 (SC632843069)	0.57246	0.00578	-0.50689	0.01001	1.11386	0.01872	-1.11386	0.01582	0.00000	0.00000
IA05696 (SC804379456)	0.68043	0.00645	-1.11932	0.00996	1.03760	0.02031	-1.03760	0.01350	0.00000	0.00000
IA08533 (SC807345964)	0.86410	0.00718	-0.13473	0.00724	1.72927	0.01561	0.01467	0.01084	-1.74394	0.01635
IA08543 (SC810865313)	0.73671	0.00730	0.20034	0.00769	0.68057	0.01217	-0.68057	0.01438	0.00000	0.00000
IA08560 (SC816553266)	0.62953	0.00623	0.32276	0.01005	1.16860	0.01498	-1.16860	0.01955	0.00000	0.00000
IA08581 (SC903853728)	1.05541	0.00825	-0.25685	0.00508	0.97095	0.01034	0.16545	0.00884	-1.13640	0.01117
IA08614 (SC905636245)	0.75013	0.00668	-0.71431	0.00818	1.02660	0.01562	-1.02660	0.01256	0.00000	0.00000
IA08641 (SC911252123)	0.82010	0.00668	-0.36429	0.00743	1.65077	0.01597	0.29885	0.01128	-1.94962	0.01672

Item ID	Parameters and Measures of Standard Error					
	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA03214 (SC631744146)	0.00000	0.00000	n/a	n/a	n/a	n/a
IA08533 (SC807345964)	0.00000	0.00000	n/a	n/a	n/a	n/a
IA08581 (SC903853728)	0.00000	0.00000	n/a	n/a	n/a	n/a
IA08641 (SC911252123)	0.00000	0.00000	n/a	n/a	n/a	n/a

Section 2.9

Decision Accuracy and Consistency (DAC)

Table 2.9.1

DAC Results

English Language Arts Grade 3

N	Reliability	Kappa		Accuracy	Consistency	F Pos	F Neg
61648	0.90	0.59	Overall	0.81	0.73	0.10	0.09
			Cut 1	0.95	0.93	0.02	0.03
			Cut 2	0.90	0.86	0.06	0.04
			Cut 3	0.96	0.95	0.02	0.01
			Cut 4	1.00	1.00	0.00	0.00
			Perf 1	0.81	0.71		
			Perf 2	0.80	0.74		
			Perf 3	0.83	0.76		
			Perf 4	0.76	0.58		

Table 2.9.2

DAC Results

English Language Arts Grade 4

N	Reliability	Kappa		Accuracy	Consistency	F Pos	F Neg
62100	0.90	0.60	Overall	0.82	0.75	0.10	0.08
			Cut 1	0.95	0.92	0.03	0.03
			Cut 2	0.90	0.86	0.05	0.04
			Cut 3	0.97	0.96	0.02	0.01
			Cut 4	1.00	1.00	0.00	0.00
			Perf 1	0.81	0.72		
			Perf 2	0.83	0.78		
			Perf 3	0.82	0.75		
			Perf 4	0.74	0.50		

Table 2.9.3

DAC Results

English Language Arts Grade 5

N	Reliability	Kappa		Accuracy	Consistency	F Pos	F Neg
63620	0.92	0.64	Overall	0.84	0.78	0.09	0.07
			Cut 1	0.96	0.94	0.02	0.02
			Cut 2	0.91	0.88	0.05	0.04
			Cut 3	0.97	0.96	0.02	0.01
			Cut 4	1.00	1.00	0.00	0.00
			Perf 1	0.81	0.72		
			Perf 2	0.85	0.81		
			Perf 3	0.84	0.77		
			Perf 4	0.80	0.62		

Table 2.9.4

DAC Results

English Language Arts Grade 6

N	Reliability	Kappa		Accuracy	Consistency	F Pos	F Neg
63887	0.93	0.62	Overall	0.81	0.74	0.09	0.09
			Cut 1	0.94	0.92	0.03	0.03
			Cut 2	0.92	0.88	0.04	0.04
			Cut 3	0.95	0.93	0.03	0.02
			Cut 4	1.00	1.00	0.00	0.00
			Perf 1	0.87	0.79		
			Perf 2	0.81	0.74		
			Perf 3	0.80	0.74		
			Perf 4	0.74	0.59		

Table 2.9.5

DAC Results

English Language Arts Grade 7

N	Reliability	Kappa		Accuracy	Consistency	F Pos	F Neg
65584	0.93	0.65	Overall	0.84	0.77	0.08	0.08
			Cut 1	0.95	0.93	0.02	0.03
			Cut 2	0.92	0.89	0.04	0.04
			Cut 3	0.97	0.95	0.02	0.01
			Cut 4	1.00	1.00	0.00	0.00
			Perf 1	0.87	0.79		
			Perf 2	0.83	0.78		
			Perf 3	0.84	0.78		
			Perf 4	0.73	0.55		

Table 2.9.6

DAC Results

English Language Arts Grade 8

N	Reliability	Kappa		Accuracy	Consistency	F Pos	F Neg
67919	0.94	0.65	Overall	0.83	0.76	0.09	0.08
			Cut 1	0.95	0.93	0.02	0.02
			Cut 2	0.92	0.89	0.03	0.04
			Cut 3	0.96	0.94	0.03	0.02
			Cut 4	1.00	1.00	0.00	0.00
			Perf 1	0.86	0.78		
			Perf 2	0.85	0.80		
			Perf 3	0.82	0.76		
			Perf 4	0.70	0.54		

Table 2.9.7

DAC Results

English Language Arts Grade 10

N	Reliability	Kappa		Accuracy	Consistency	F Pos	F Neg
65193	0.93	0.65	Overall	0.85	0.78	0.09	0.07
			Cut 1	0.97	0.96	0.01	0.01
			Cut 2	0.92	0.89	0.04	0.03
			Cut 3	0.95	0.93	0.03	0.02
			Cut 4	1.00	1.00	0.00	0.00
			Perf 1	0.81	0.72		
			Perf 2	0.83	0.78		
			Perf 3	0.87	0.83		
			Perf 4	0.76	0.60		

Table 2.9.1

DAC Results

Mathematics Grade 3

N	Reliability	Kappa		Accuracy	Consistency	F Pos	F Neg
53433	0.93	0.63	Overall	0.83	0.75	0.09	0.09
			Cut 1	0.95	0.93	0.02	0.02
			Cut 2	0.91	0.88	0.04	0.04
			Cut 3	0.96	0.94	0.02	0.02
			Cut 4	1.00	1.00	0.00	0.00
			Perf 1	0.84	0.74		
			Perf 2	0.83	0.77		
			Perf 3	0.84	0.78		
			Perf 4	0.73	0.58		

Table 2.9.2

DAC Results

Mathematics Grade 4

N	Reliability	Kappa		Accuracy	Consistency	F Pos	F Neg
53577	0.94	0.66	Overall	0.85	0.78	0.08	0.08
			Cut 1	0.96	0.95	0.02	0.02
			Cut 2	0.92	0.89	0.04	0.04
			Cut 3	0.96	0.94	0.02	0.02
			Cut 4	1.00	1.00	0.00	0.00
			Perf 1	0.83	0.73		
			Perf 2	0.86	0.80		
			Perf 3	0.86	0.81		
			Perf 4	0.74	0.59		

Table 2.9.3

DAC Results

Mathematics Grade 5

N	Reliability	Kappa		Accuracy	Consistency	F Pos	F Neg
55635	0.94	0.68	Overall	0.86	0.80	0.07	0.07
			Cut 1	0.96	0.95	0.02	0.02
			Cut 2	0.92	0.89	0.04	0.04
			Cut 3	0.98	0.97	0.01	0.01
			Cut 4	1.00	1.00	0.00	0.00
			Perf 1	0.83	0.72		
			Perf 2	0.87	0.83		
			Perf 3	0.86	0.81		
			Perf 4	0.81	0.67		

Table 2.9.4

DAC Results

Mathematics Grade 6

N	Reliability	Kappa		Accuracy	Consistency	F Pos	F Neg
56939	0.94	0.69	Overall	0.86	0.80	0.07	0.07
			Cut 1	0.97	0.95	0.01	0.02
			Cut 2	0.92	0.89	0.04	0.04
			Cut 3	0.97	0.96	0.01	0.01
			Cut 4	1.00	1.00	0.00	0.00
			Perf 1	0.84	0.73		
			Perf 2	0.86	0.81		
			Perf 3	0.88	0.83		
			Perf 4	0.80	0.67		

Table 2.9.5
DAC Results
Mathematics Grade 7

N	Reliability	Kappa		Accuracy	Consistency	F Pos	F Neg
59311	0.94	0.68	Overall	0.85	0.79	0.08	0.07
			Cut 1	0.96	0.94	0.02	0.02
			Cut 2	0.92	0.89	0.04	0.04
			Cut 3	0.97	0.96	0.02	0.01
			Cut 4	1.00	1.00	0.00	0.00
			Perf 1	0.84	0.74		
			Perf 2	0.87	0.82		
			Perf 3	0.84	0.78		
			Perf 4	0.83	0.72		

Table 2.9.6
DAC Results
Mathematics Grade 8

N	Reliability	Kappa		Accuracy	Consistency	F Pos	F Neg
62311	0.94	0.67	Overall	0.85	0.79	0.09	0.07
			Cut 1	0.95	0.93	0.03	0.02
			Cut 2	0.93	0.89	0.04	0.03
			Cut 3	0.97	0.96	0.02	0.01
			Cut 4	1.00	1.00	0.00	0.00
			Perf 1	0.78	0.70		
			Perf 2	0.87	0.83		
			Perf 3	0.84	0.77		
			Perf 4	0.86	0.75		

Table 2.9.7
DAC Results
Mathematics Grade 10

N	Reliability	Kappa		Accuracy	Consistency	F Pos	F Neg
61296	0.95	0.69	Overall	0.86	0.80	0.07	0.07
			Cut 1	0.96	0.95	0.01	0.02
			Cut 2	0.93	0.90	0.04	0.03
			Cut 3	0.96	0.95	0.02	0.02
			Cut 4	1.00	1.00	0.00	0.00
			Perf 1	0.77	0.63		
			Perf 2	0.85	0.80		
			Perf 3	0.87	0.83		
			Perf 4	0.86	0.78		

Table 2.9.8
DAC Results
Science Grade 5

N	Reliability	Kappa		Accuracy	Consistency	F Pos	F Neg
56846	0.90	0.58	Overall	0.80	0.72	0.10	0.10
			Cut 1	0.95	0.93	0.02	0.03
			Cut 2	0.90	0.86	0.05	0.05
			Cut 3	0.95	0.93	0.03	0.02
			Cut 4	1.00	1.00	0.00	0.00
			Perf 1	0.82	0.70		
			Perf 2	0.81	0.74		
			Perf 3	0.80	0.74		
			Perf 4	0.72	0.55		

Table 2.9.9
DAC Results
Science Grade 8

N	Reliability	Kappa		Accuracy	Consistency	F Pos	F Neg
62926	0.92	0.62	Overall	0.82	0.75	0.09	0.08
			Cut 1	0.95	0.94	0.02	0.03
			Cut 2	0.91	0.88	0.04	0.05
			Cut 3	0.95	0.94	0.03	0.01
			Cut 4	1.00	1.00	0.00	0.00
			Perf 1	0.84	0.74		
			Perf 2	0.84	0.78		
			Perf 3	0.81	0.76		
			Perf 4	0.71	0.51		

Section 2.10

Fit Plots of Watchlist Items

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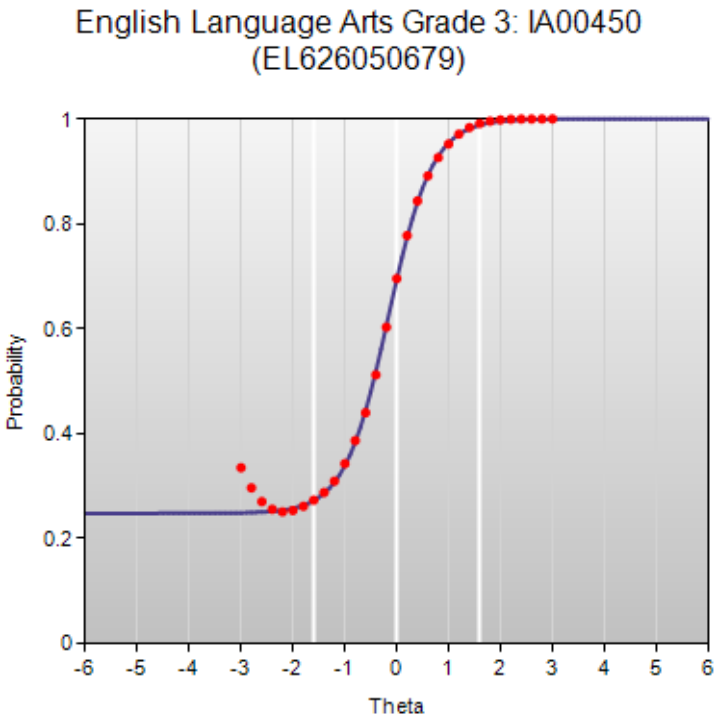

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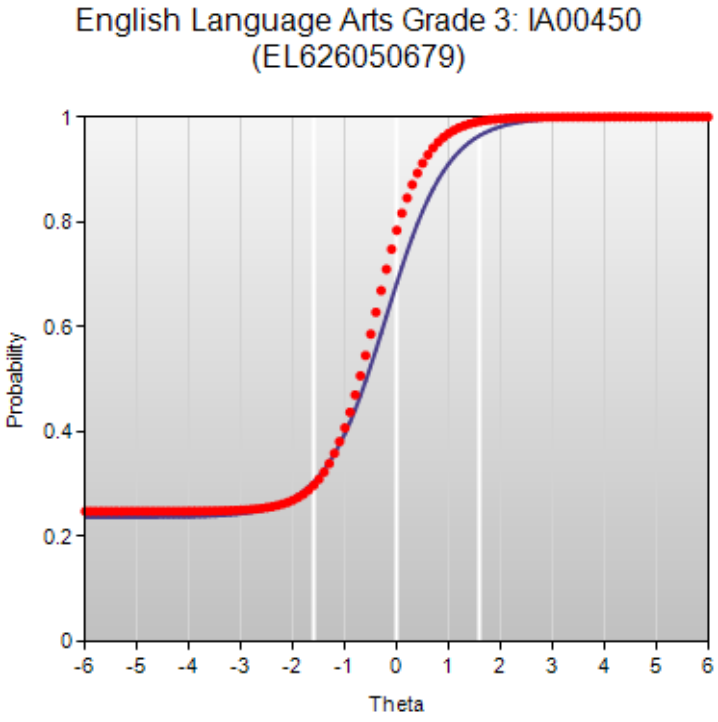

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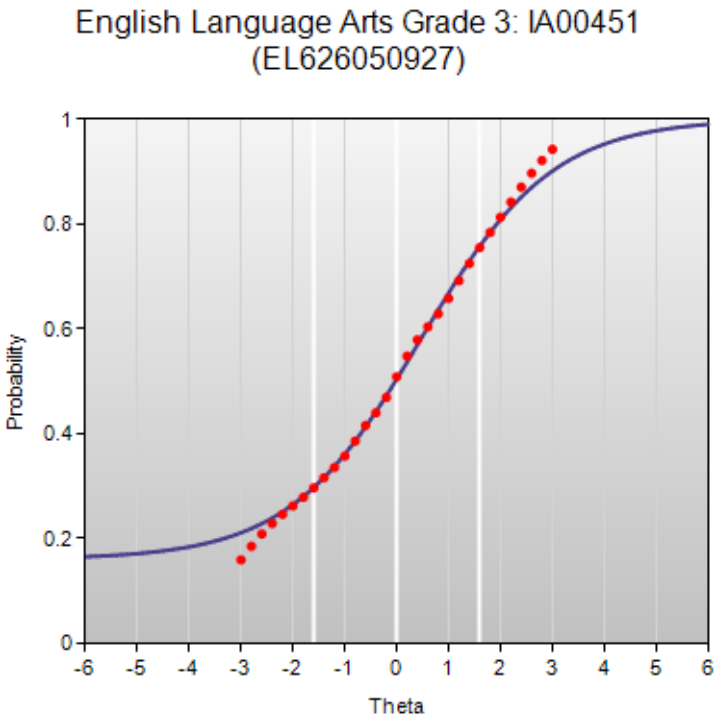

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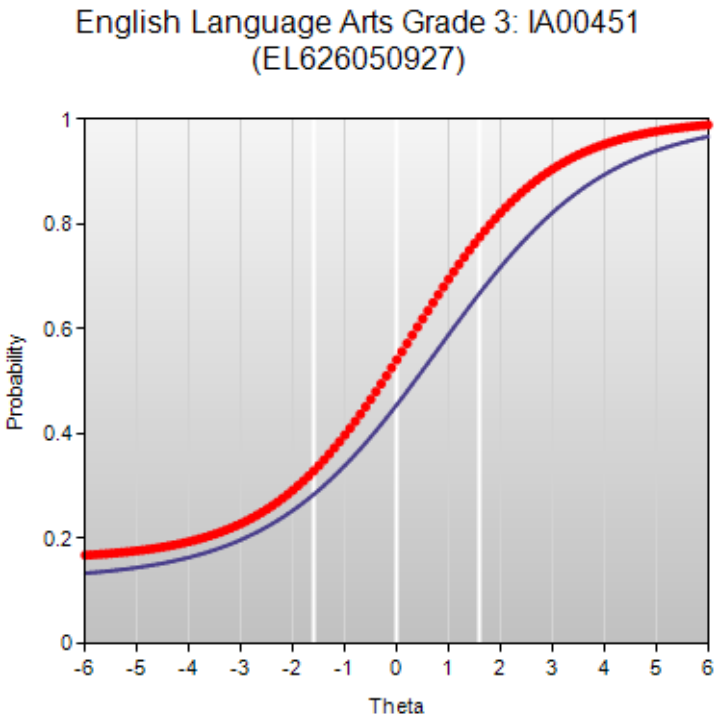

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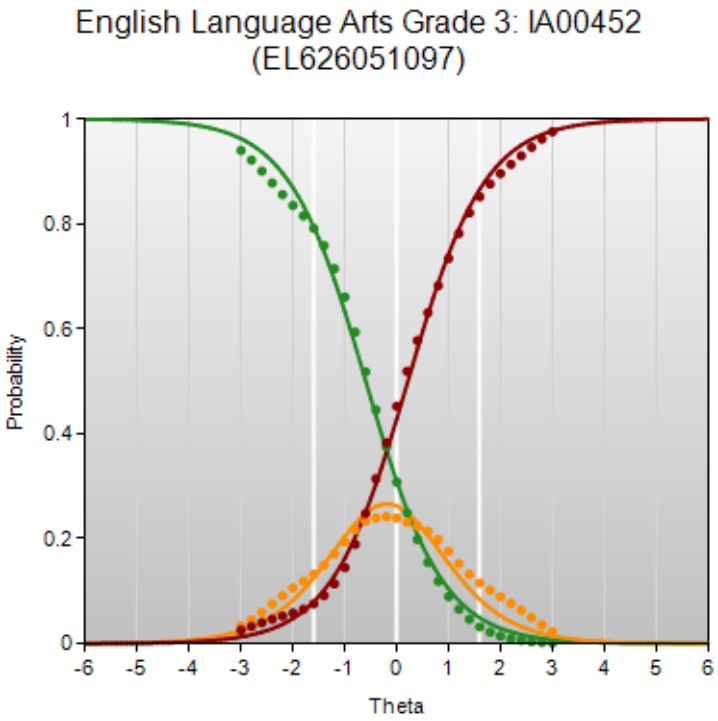

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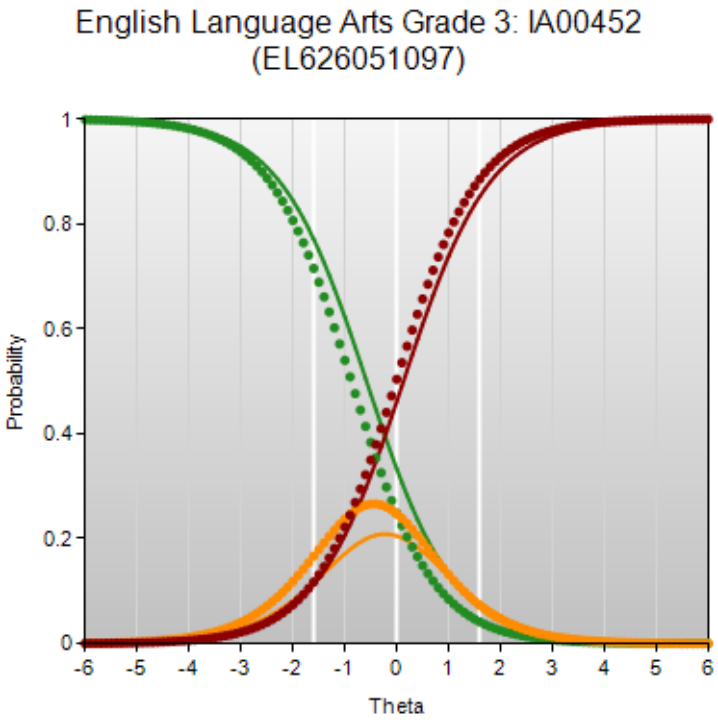

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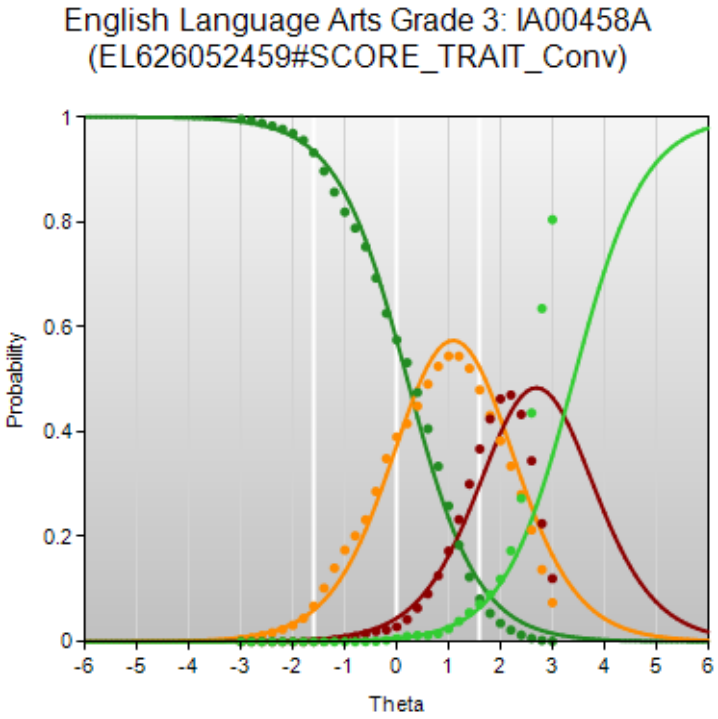

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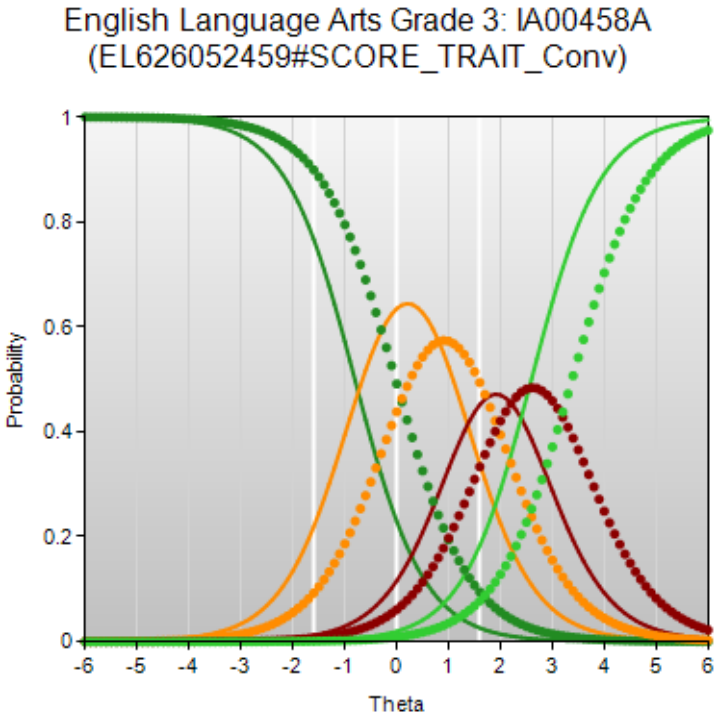

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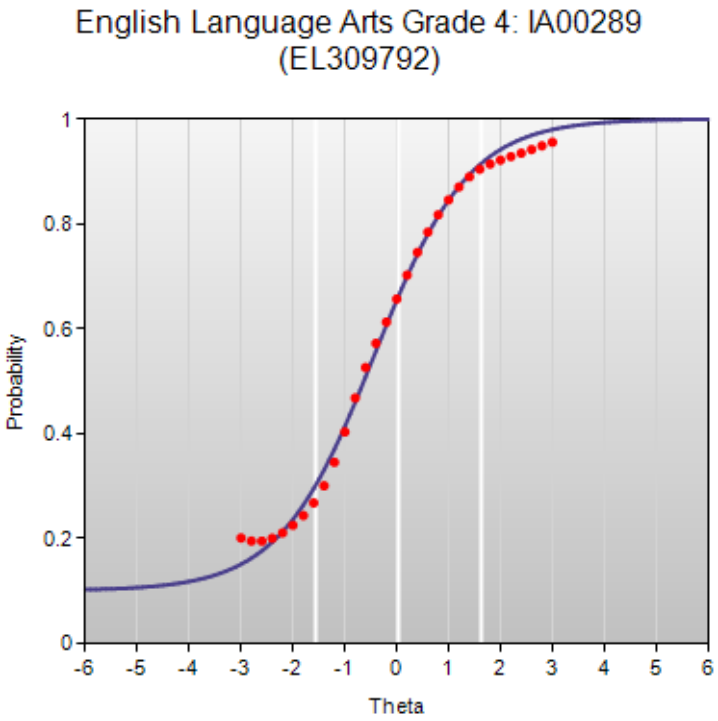

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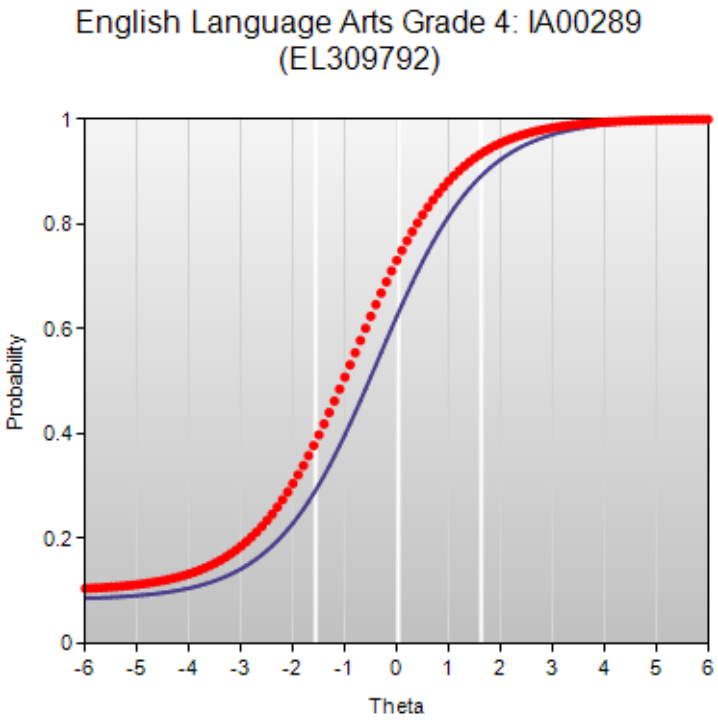

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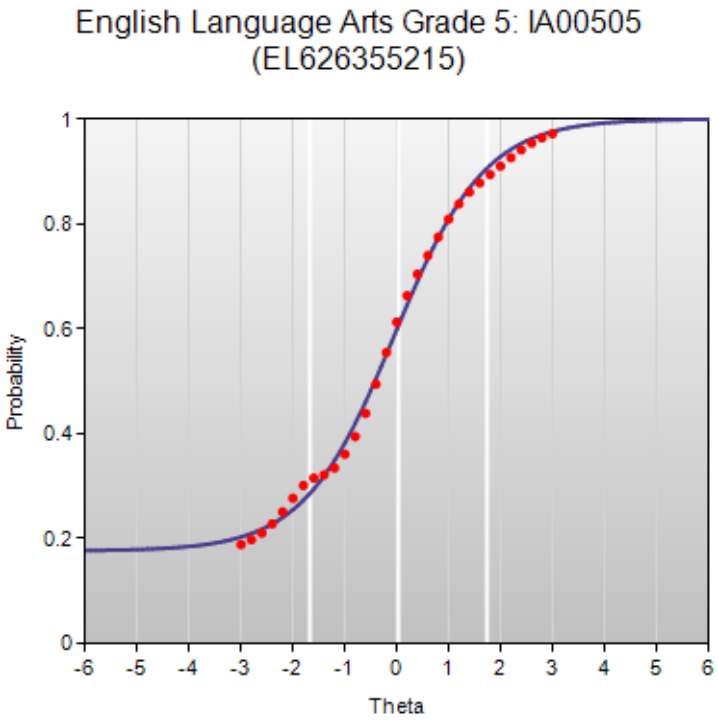

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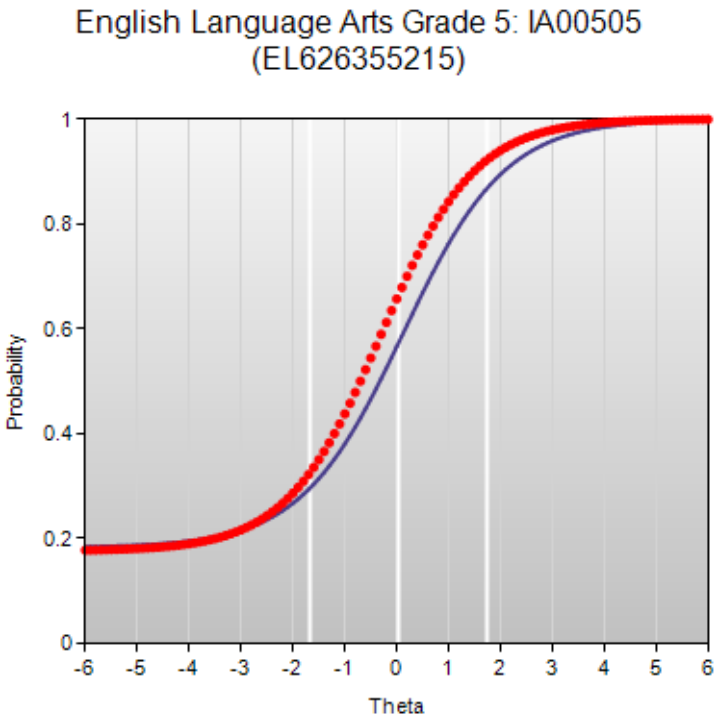

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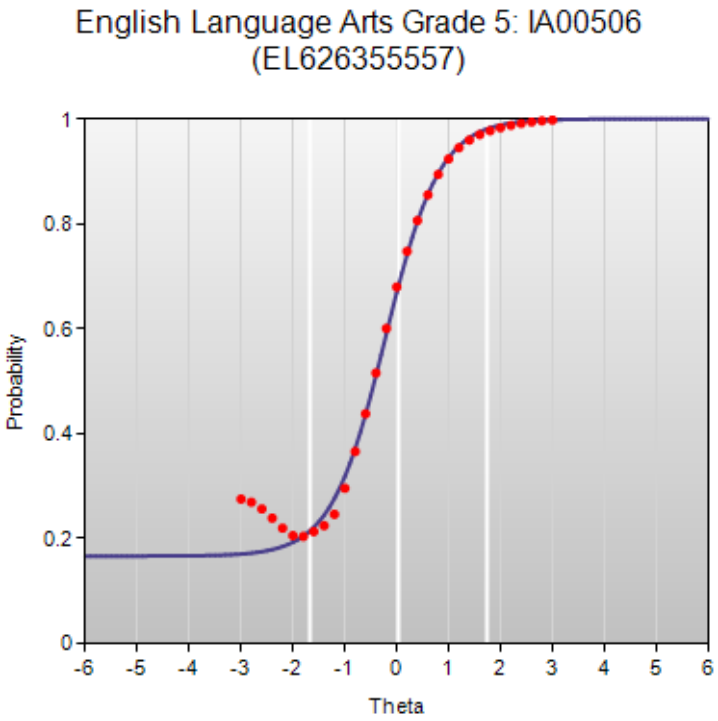

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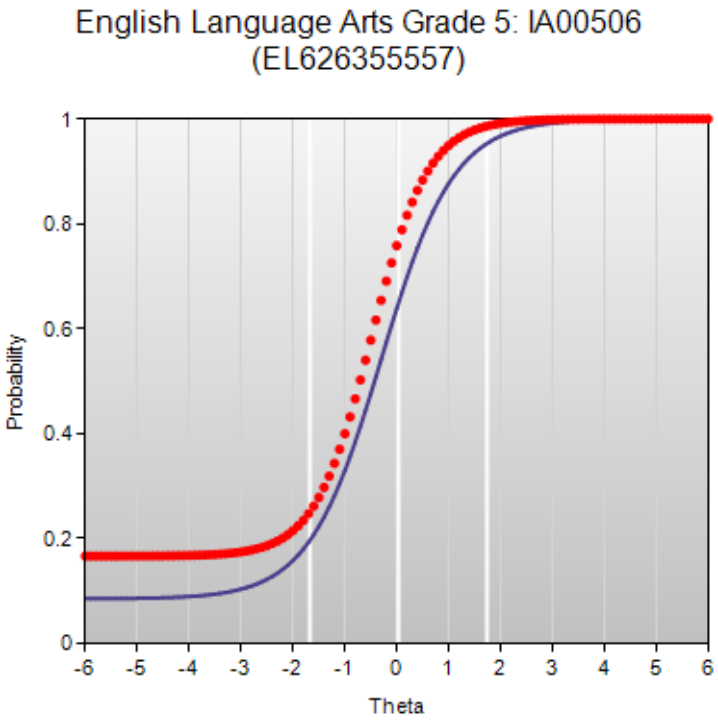

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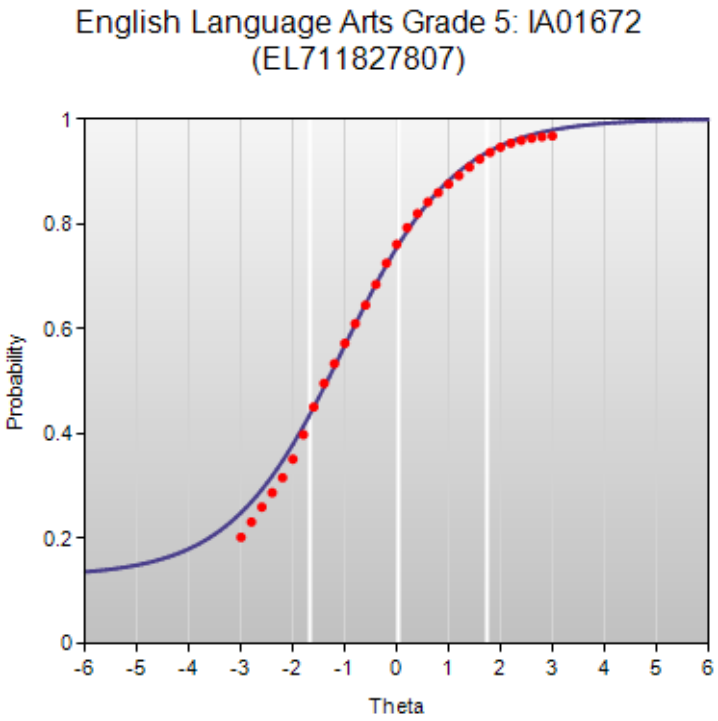

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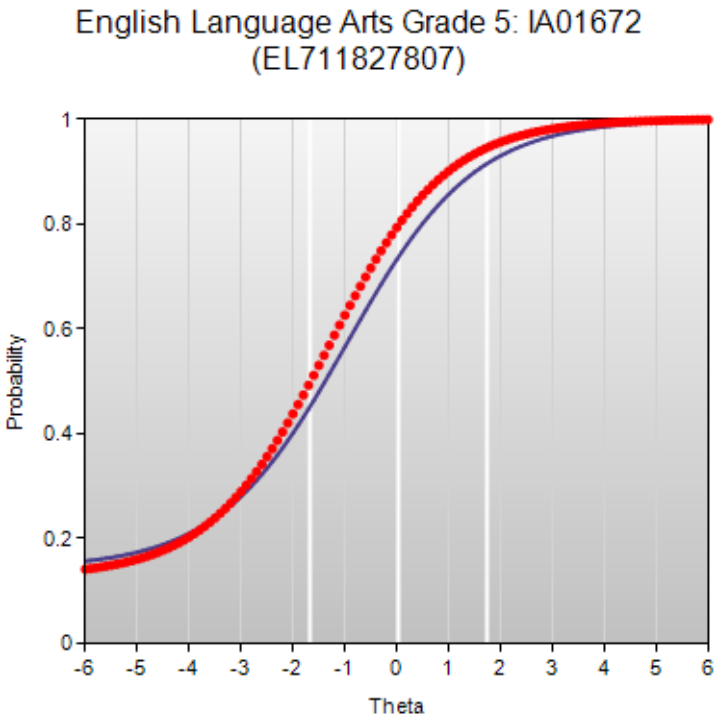

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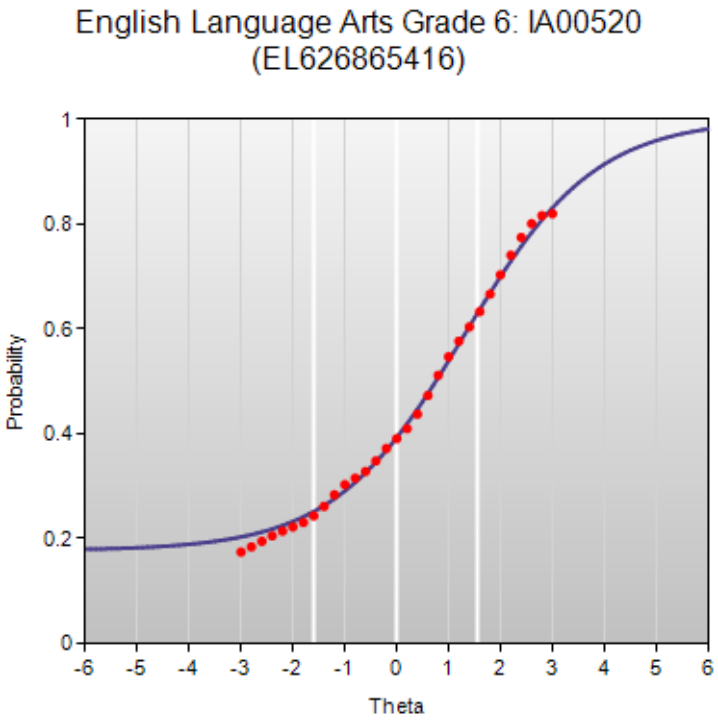

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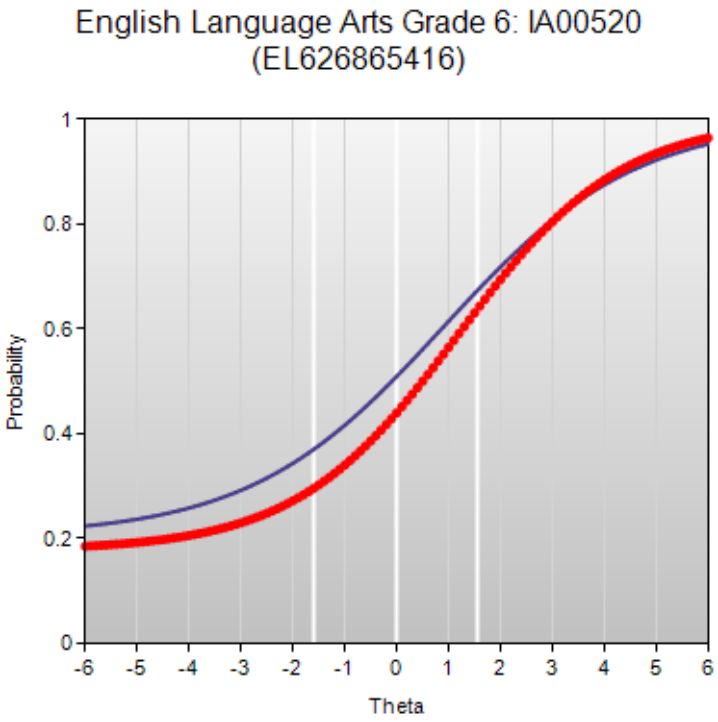

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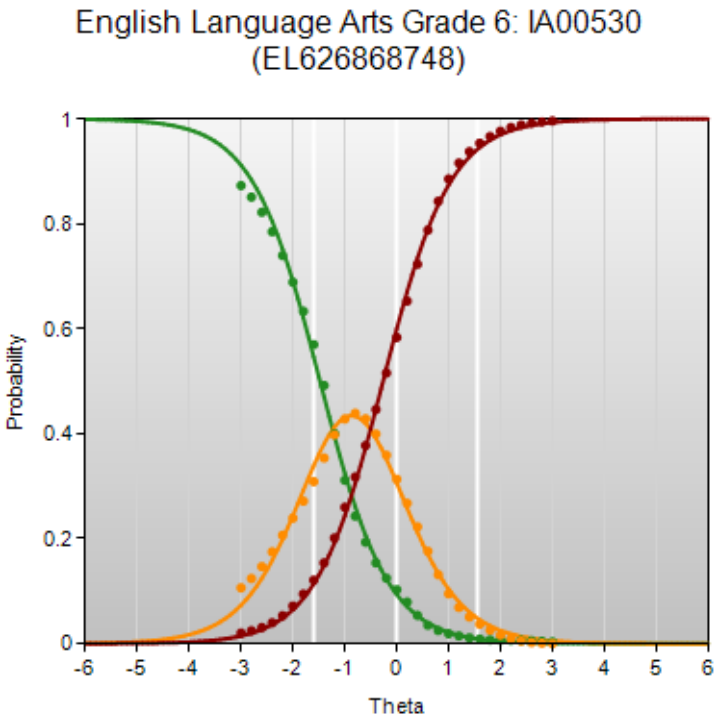

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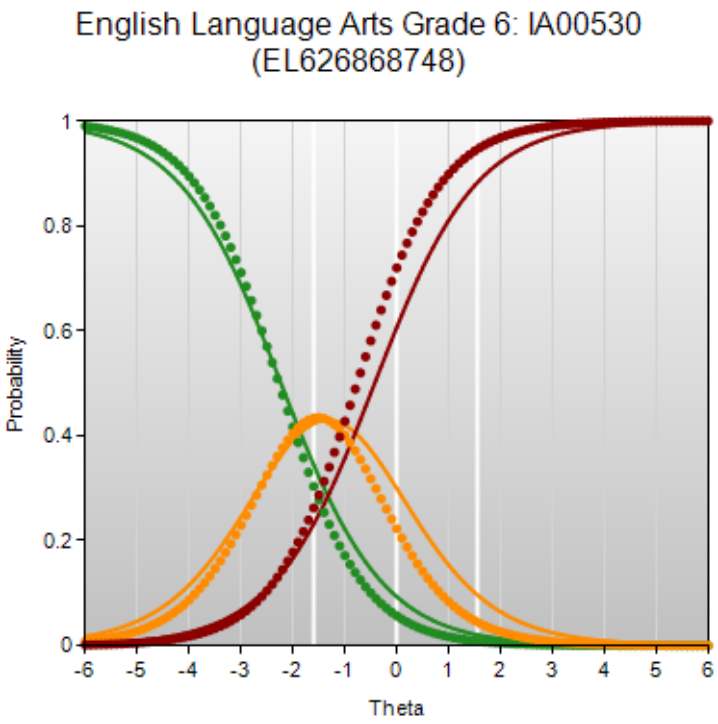

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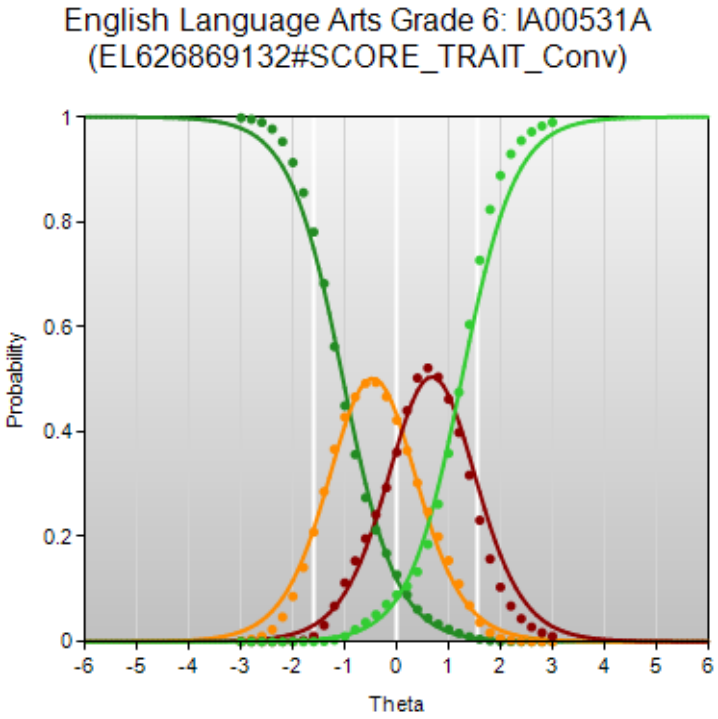

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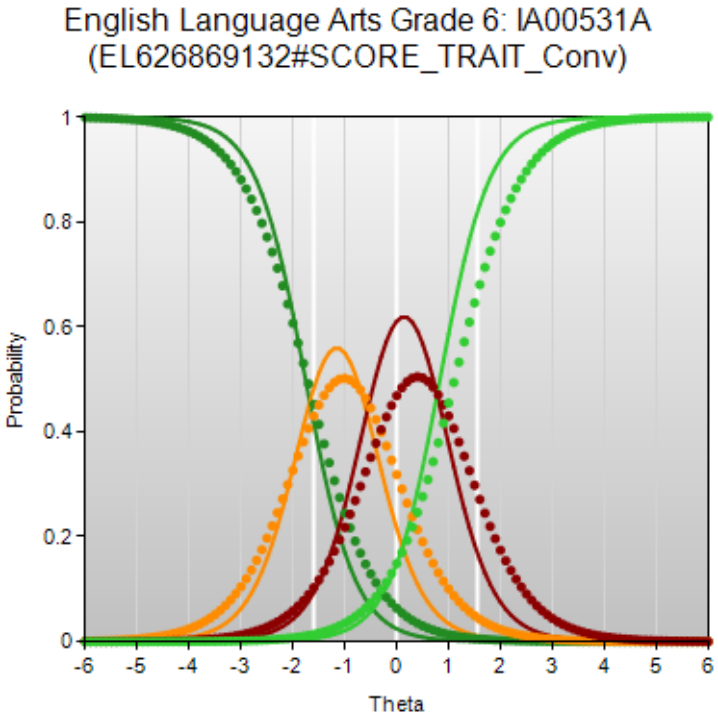

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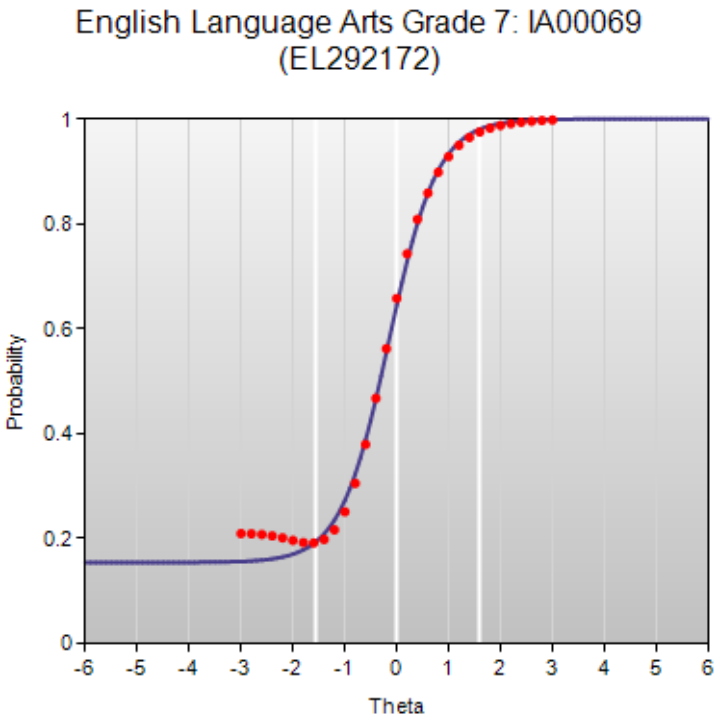

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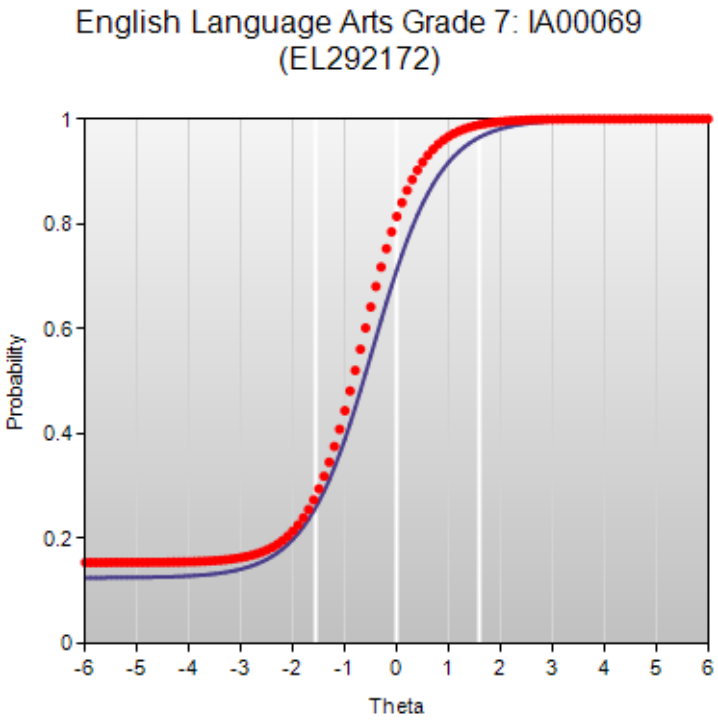

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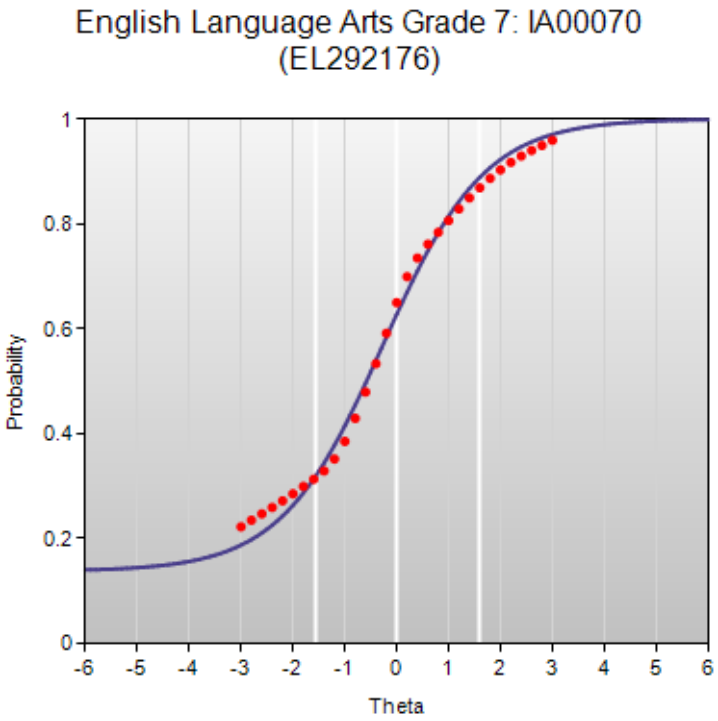

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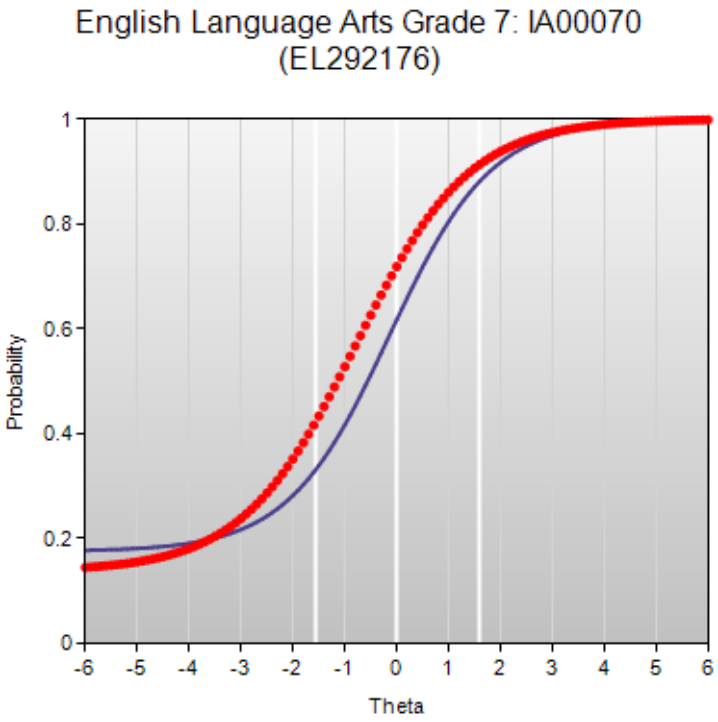

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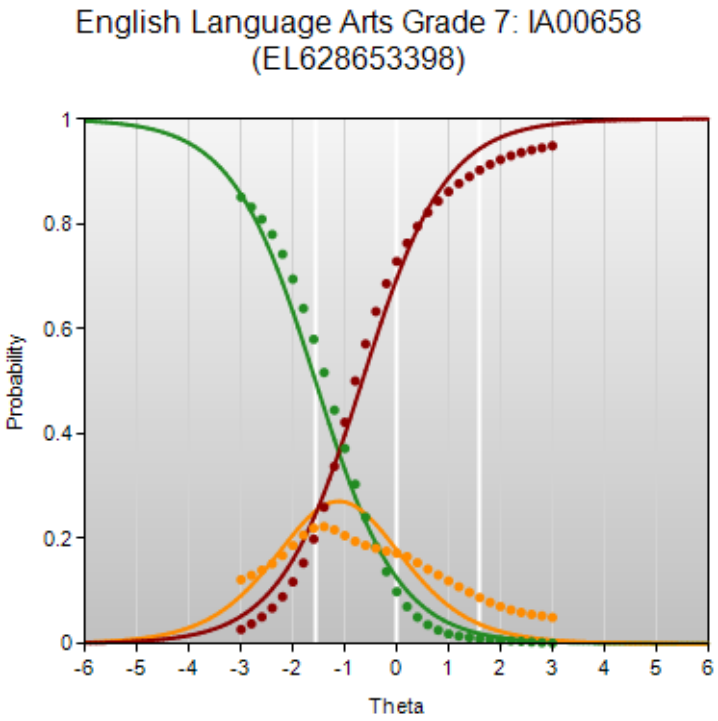

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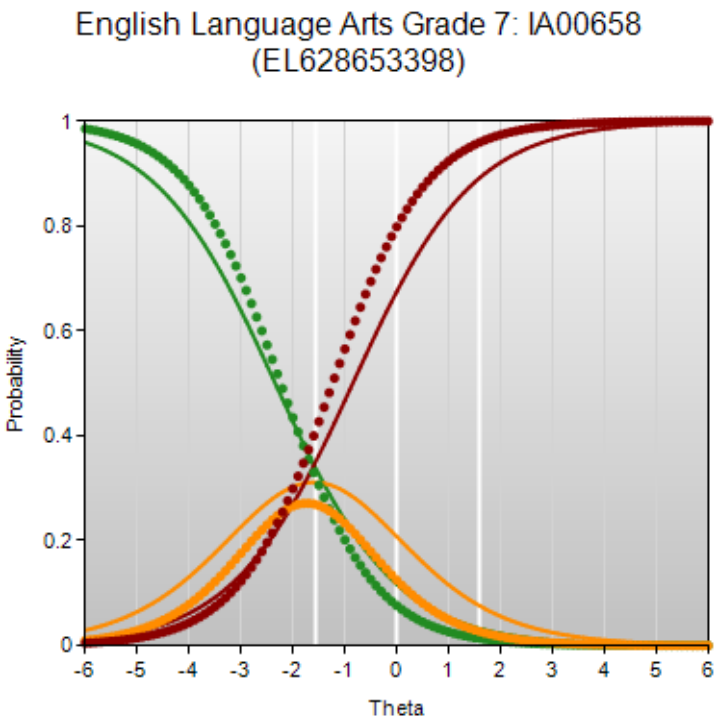

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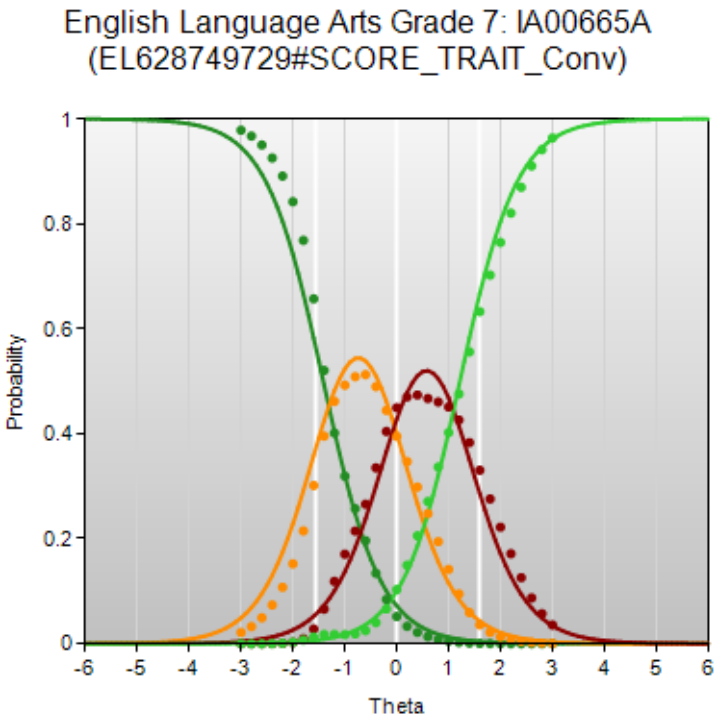

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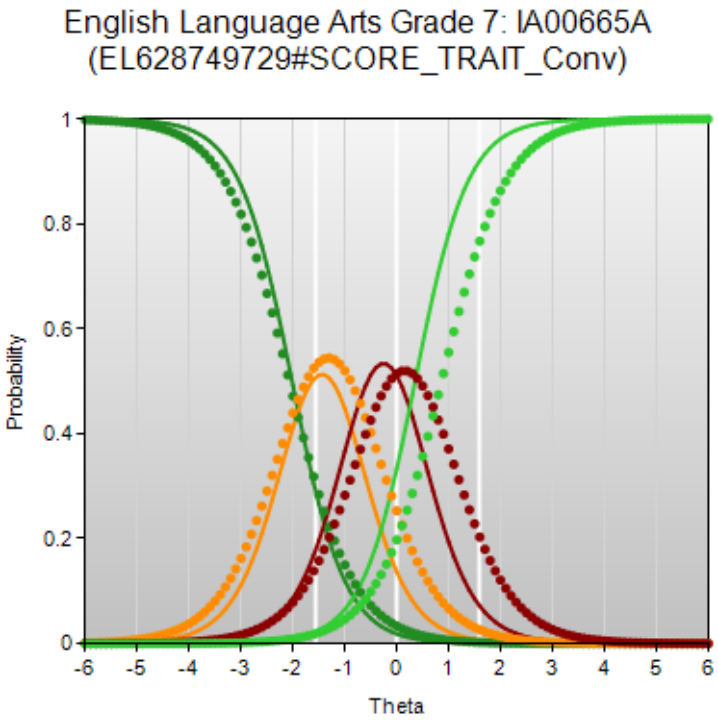

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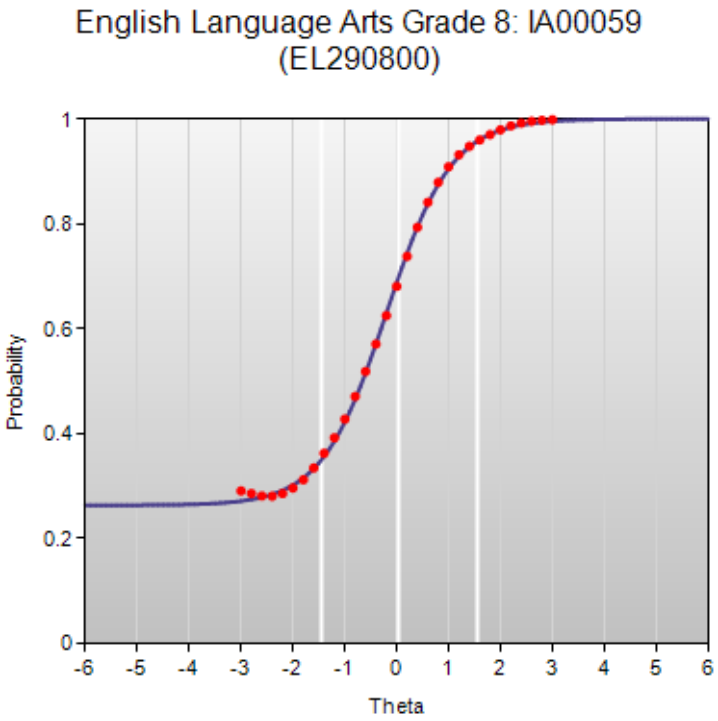

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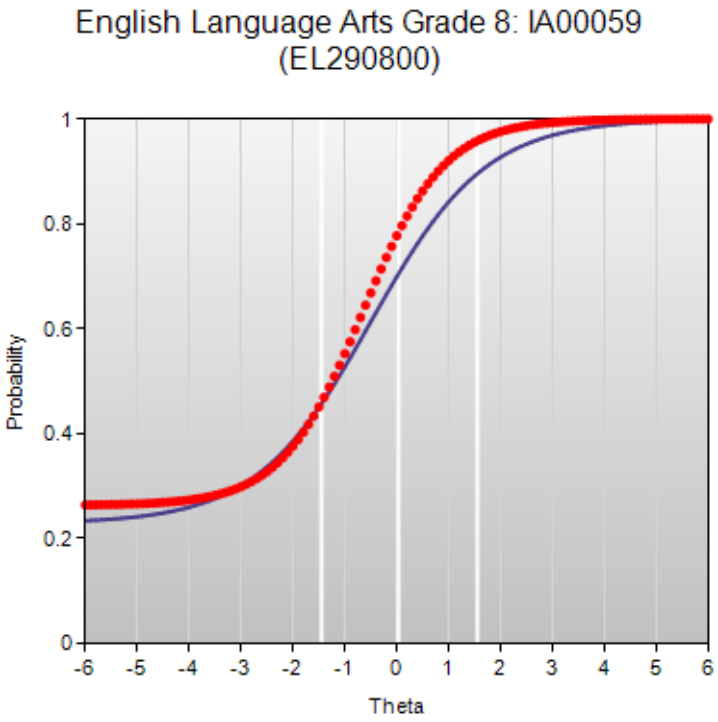

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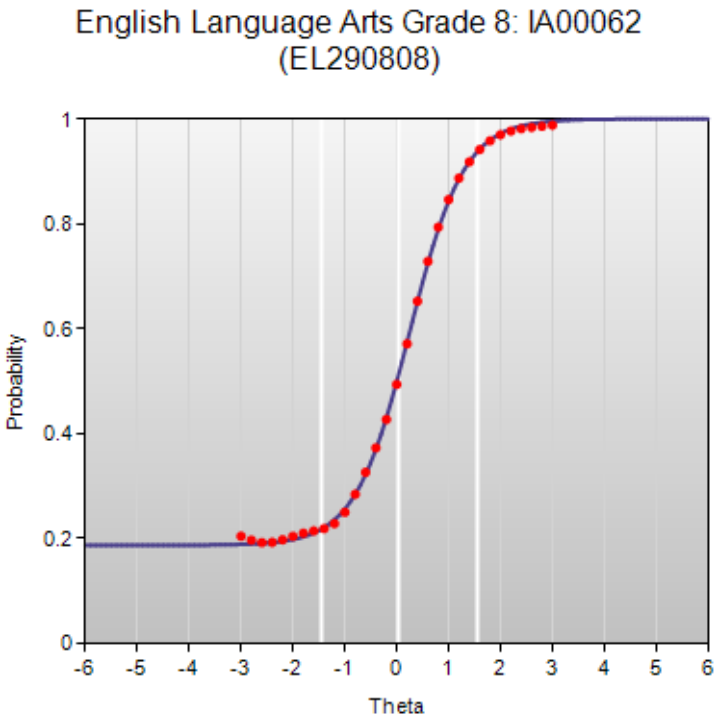

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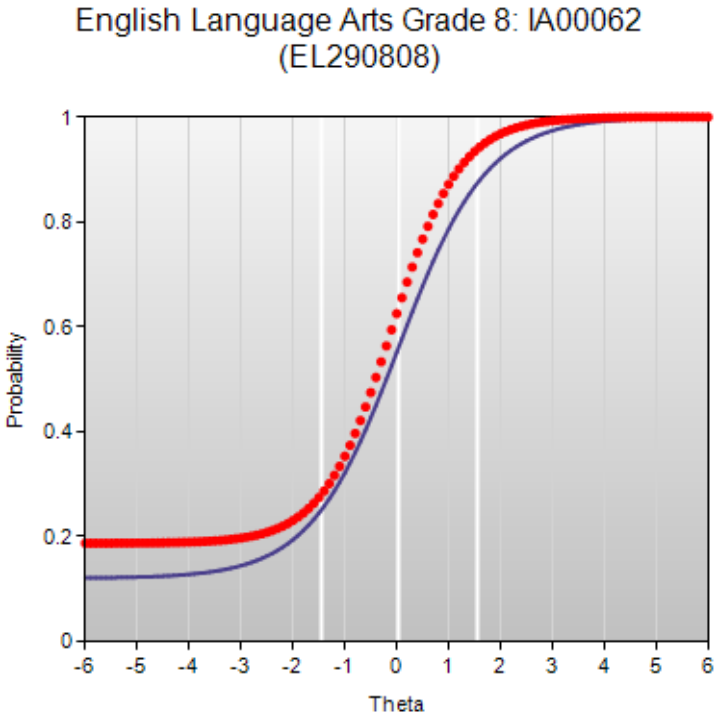

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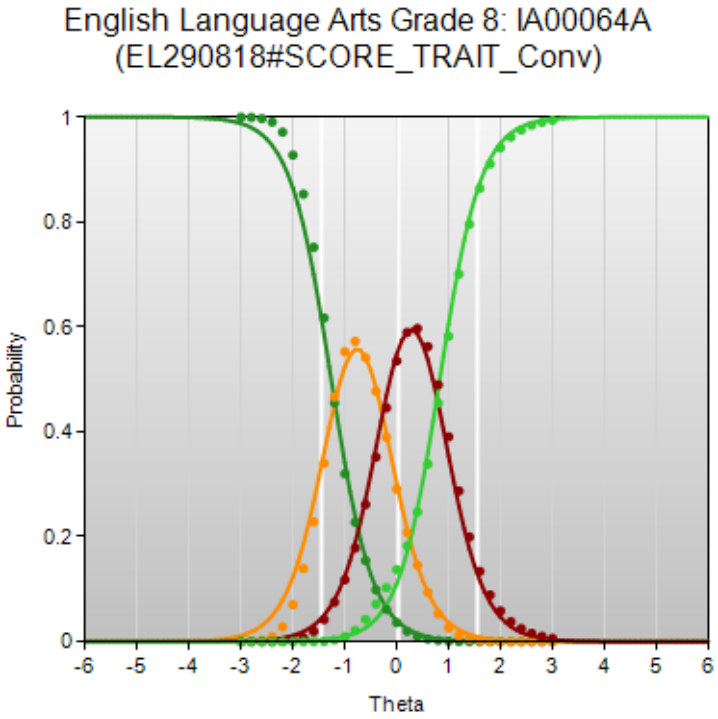

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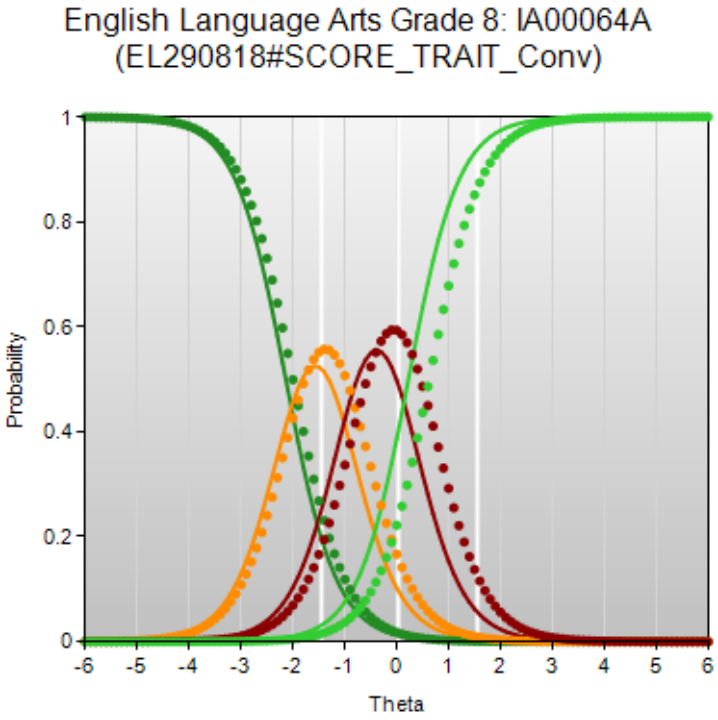

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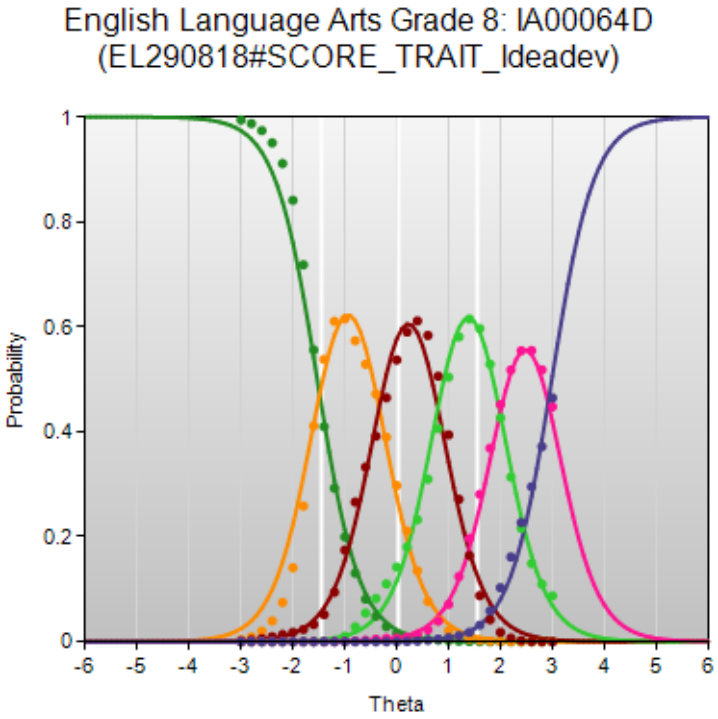

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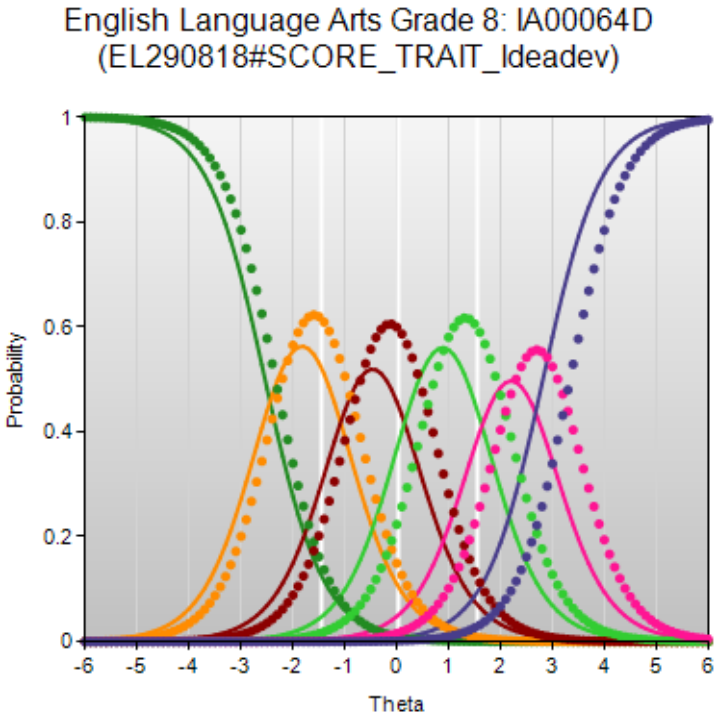

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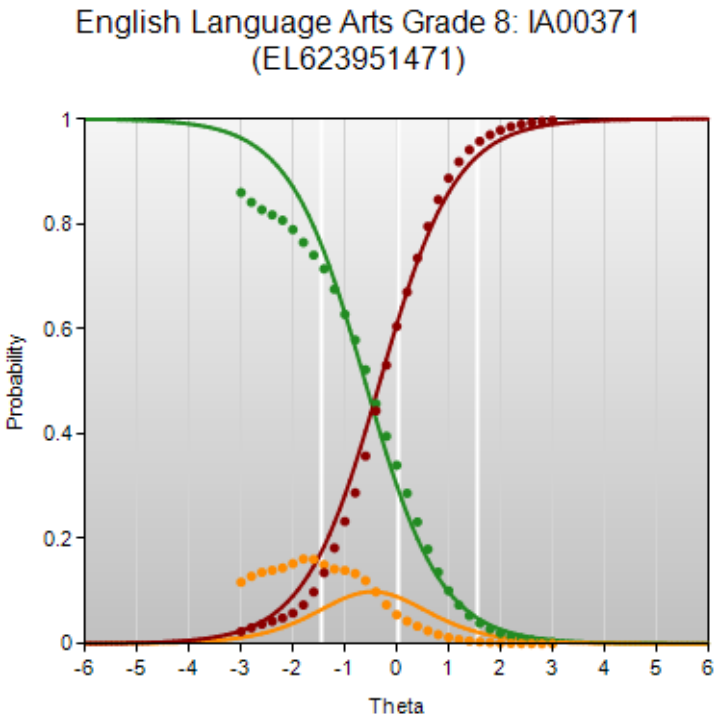

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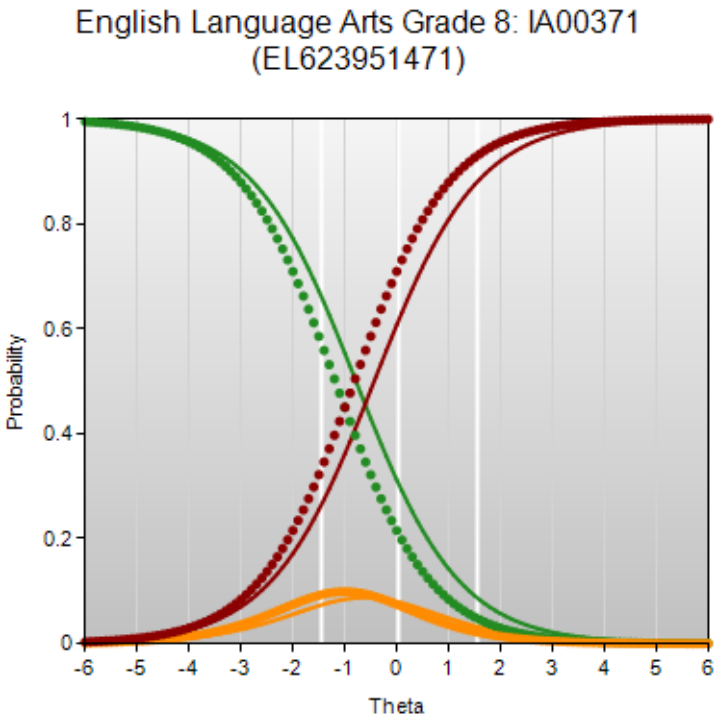

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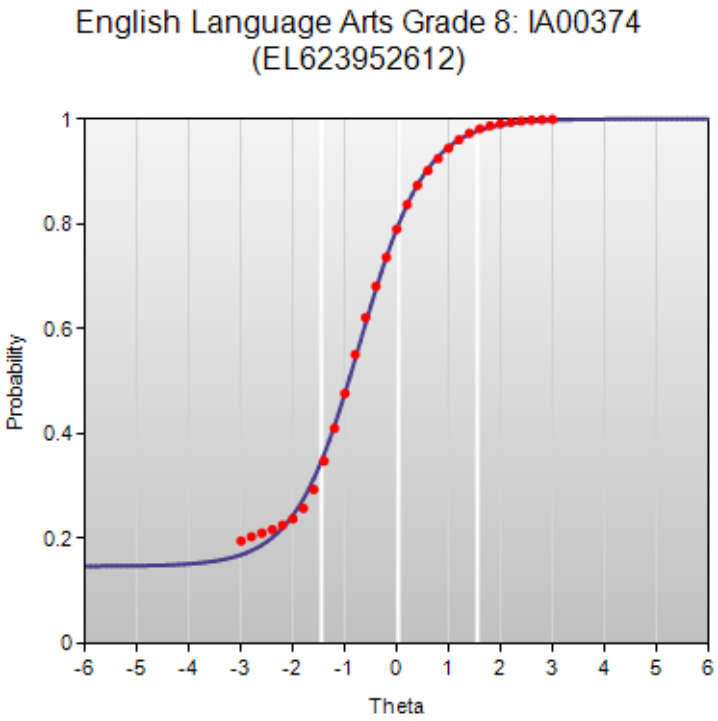

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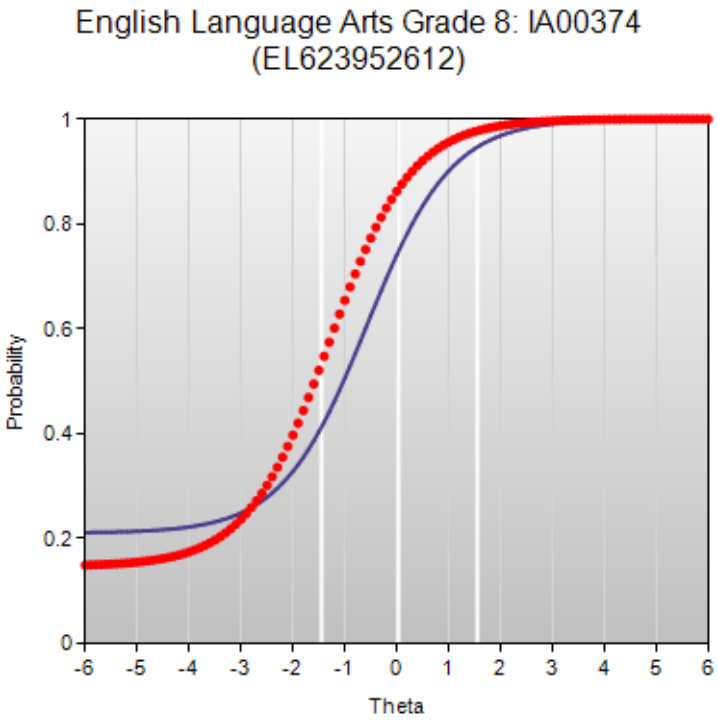

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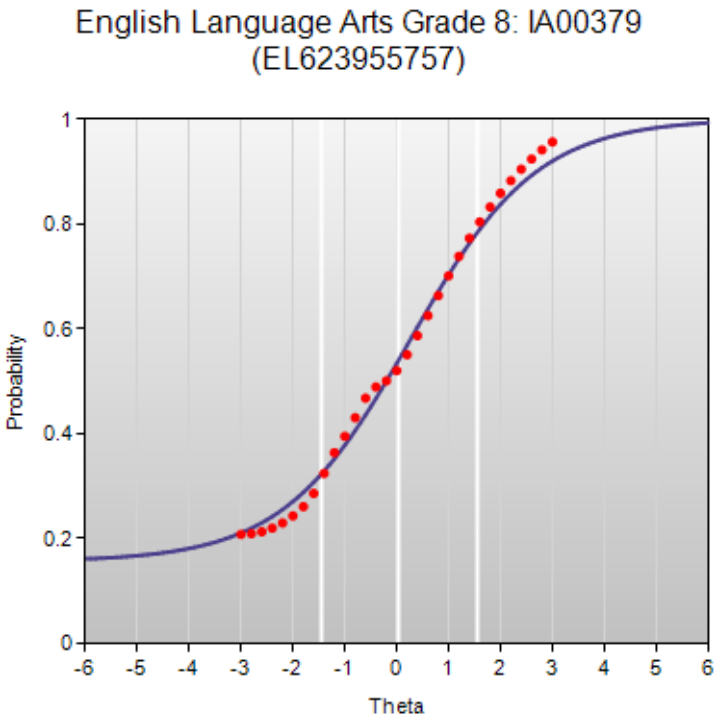

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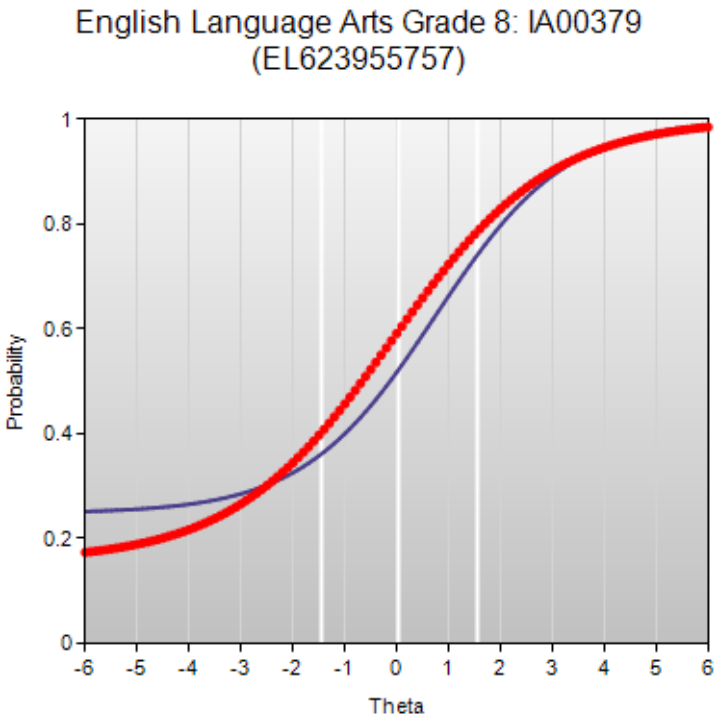

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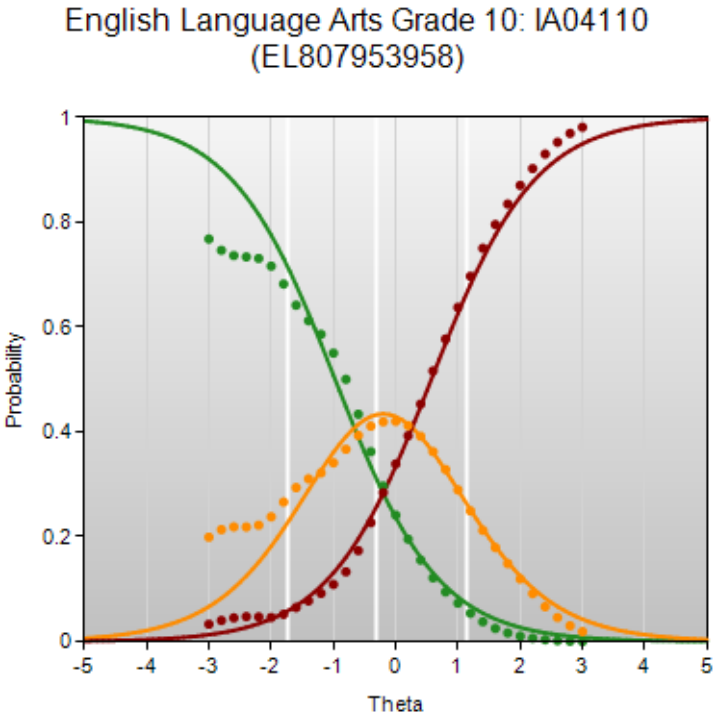

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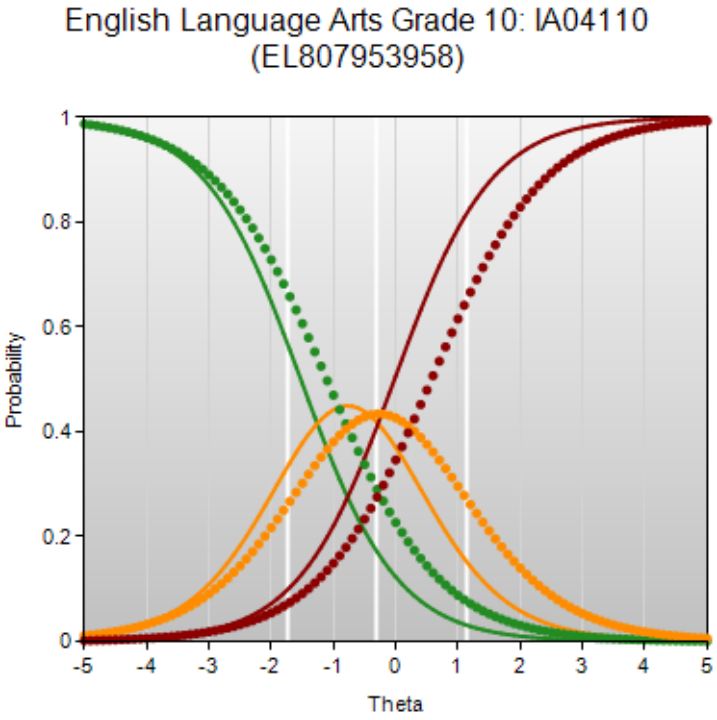

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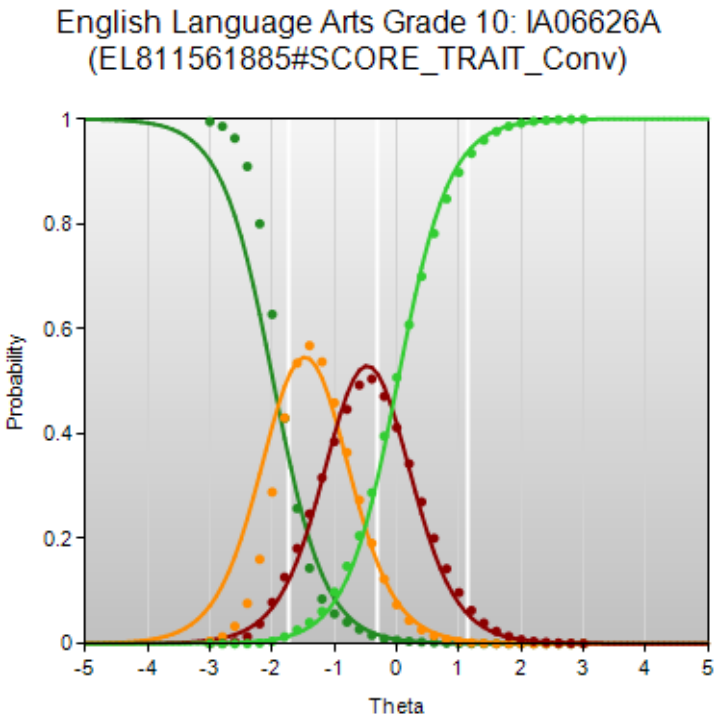

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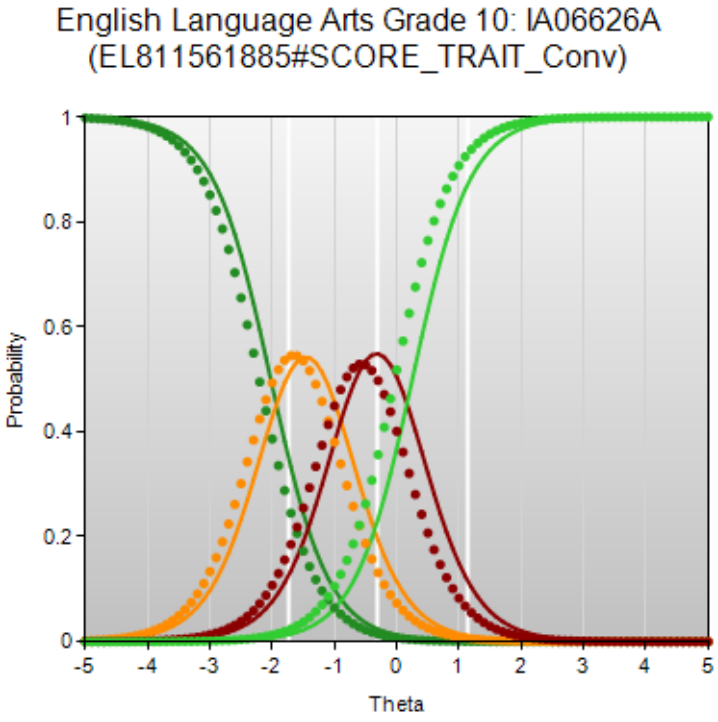

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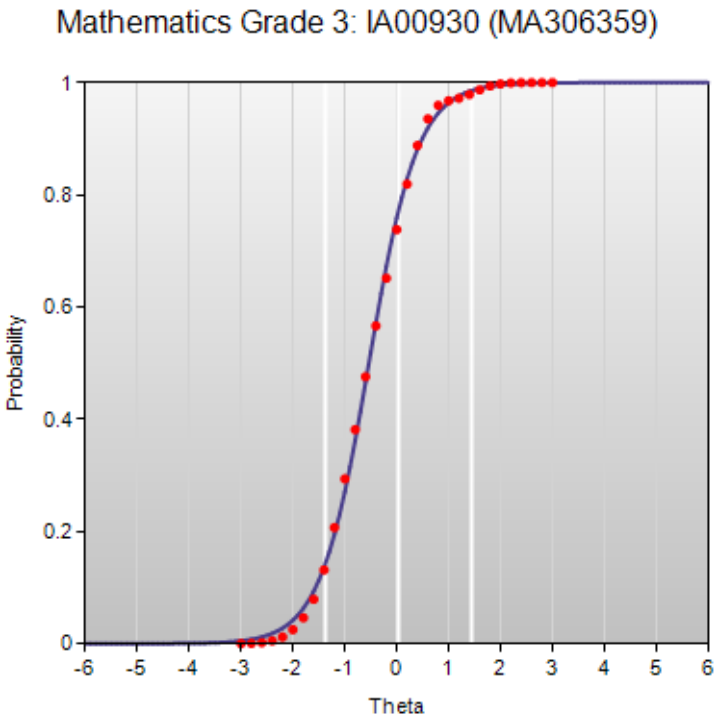

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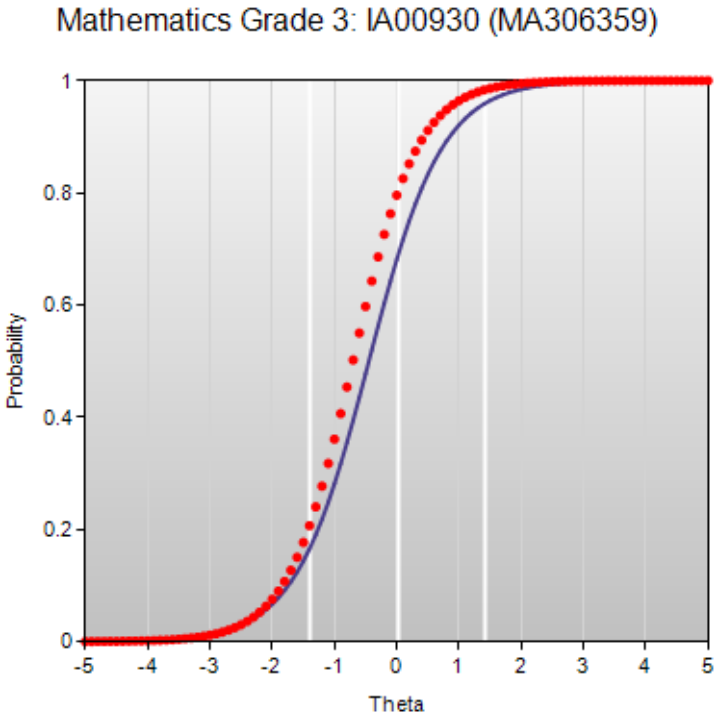

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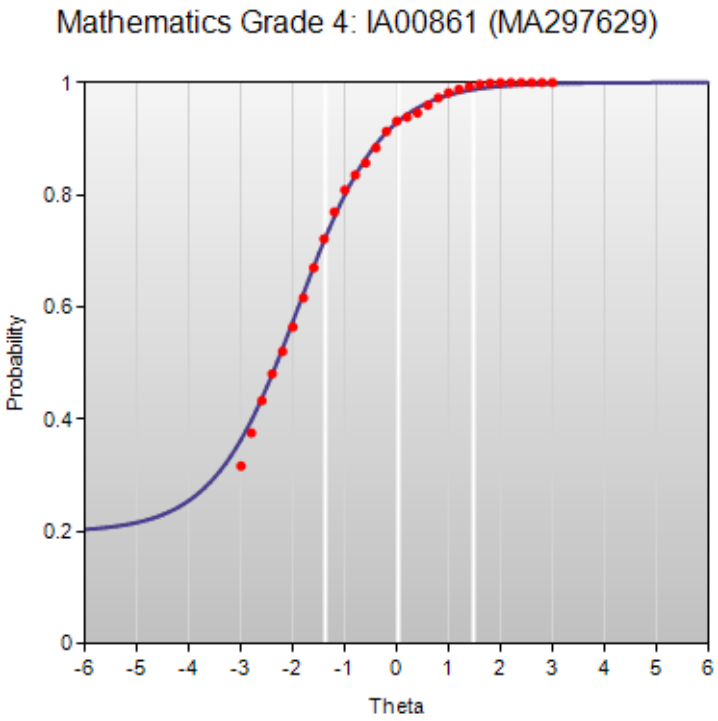

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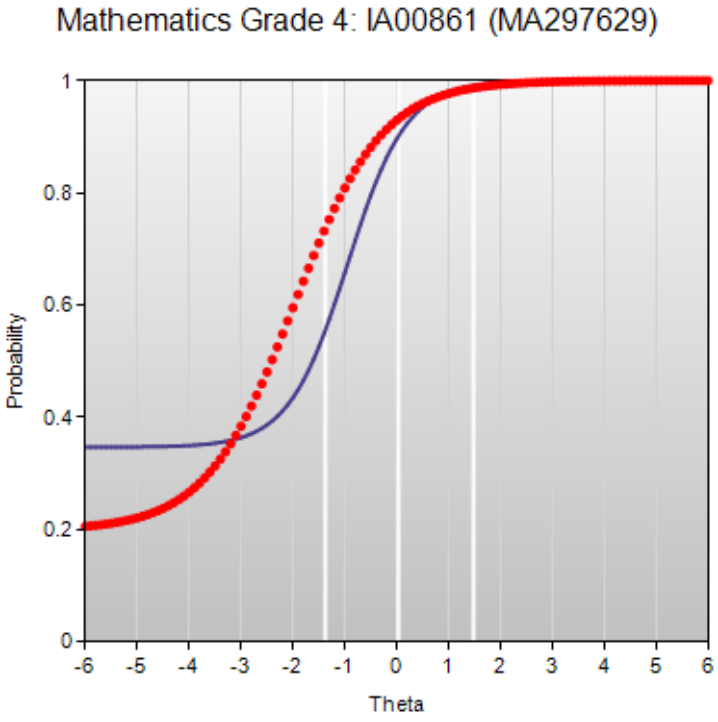

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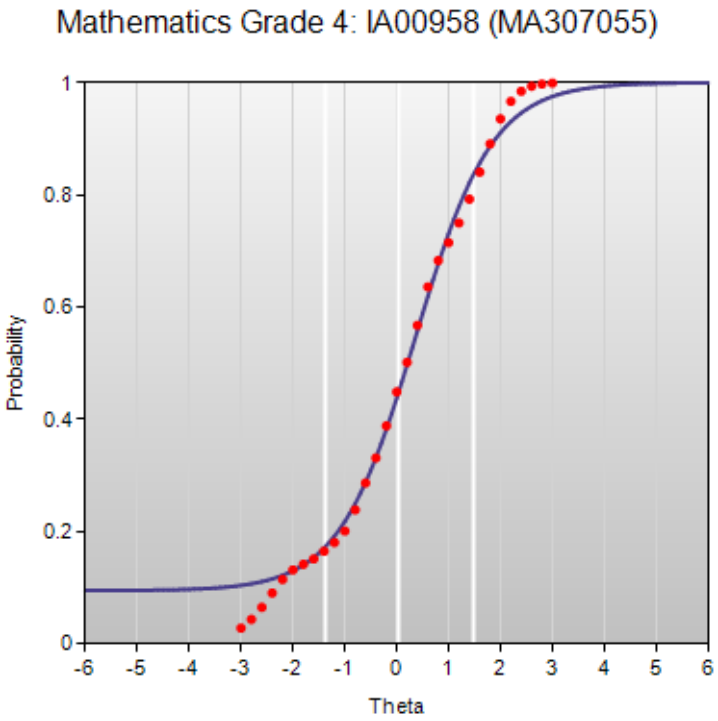

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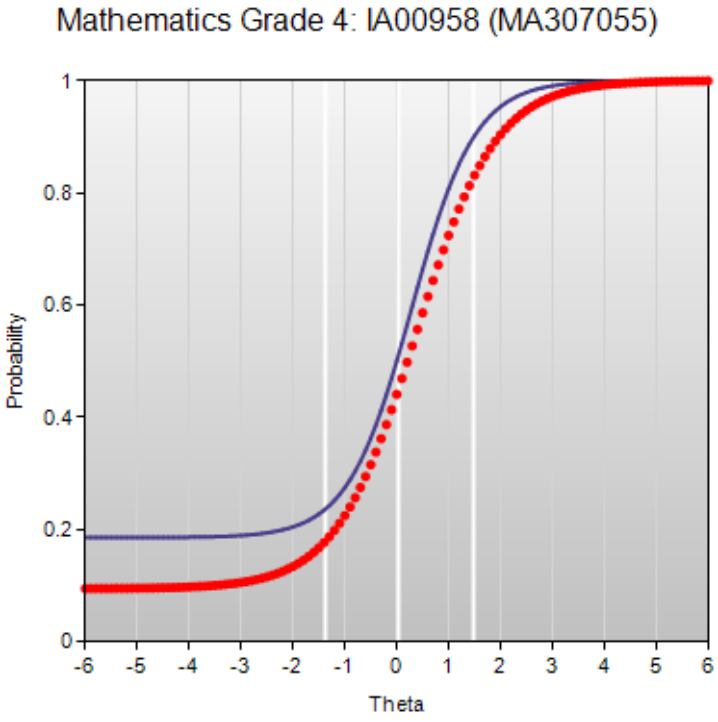

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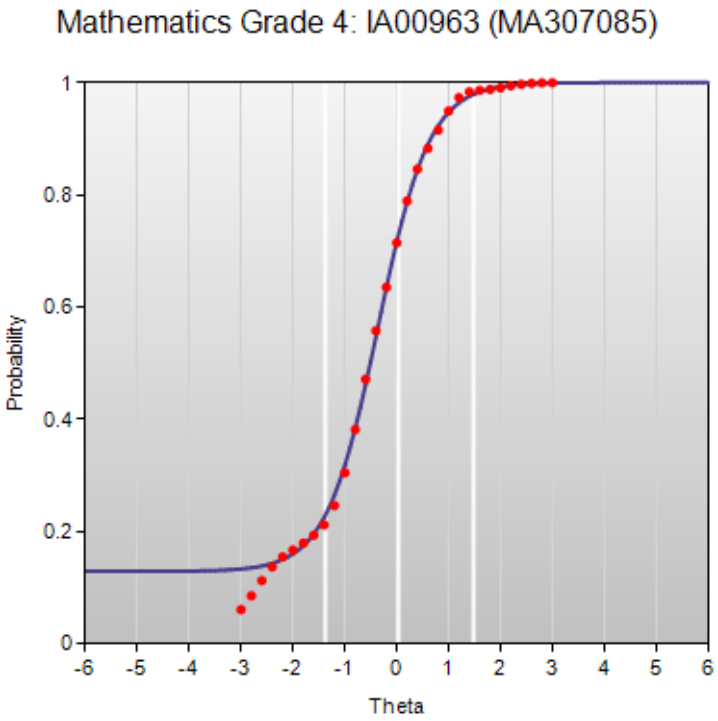

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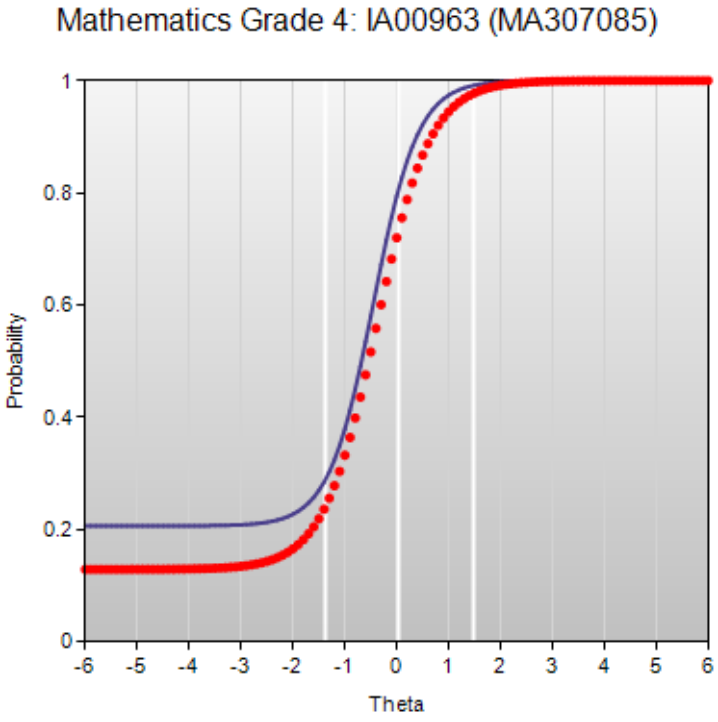

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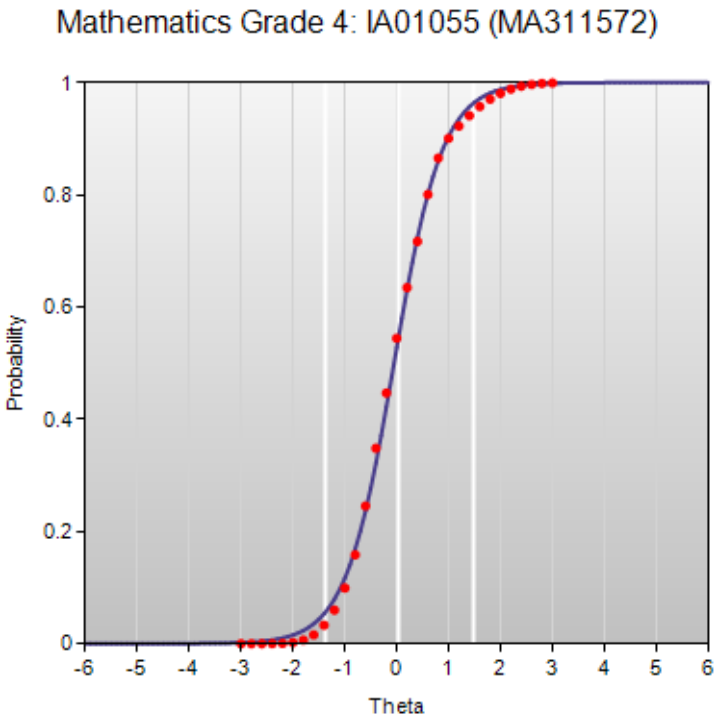

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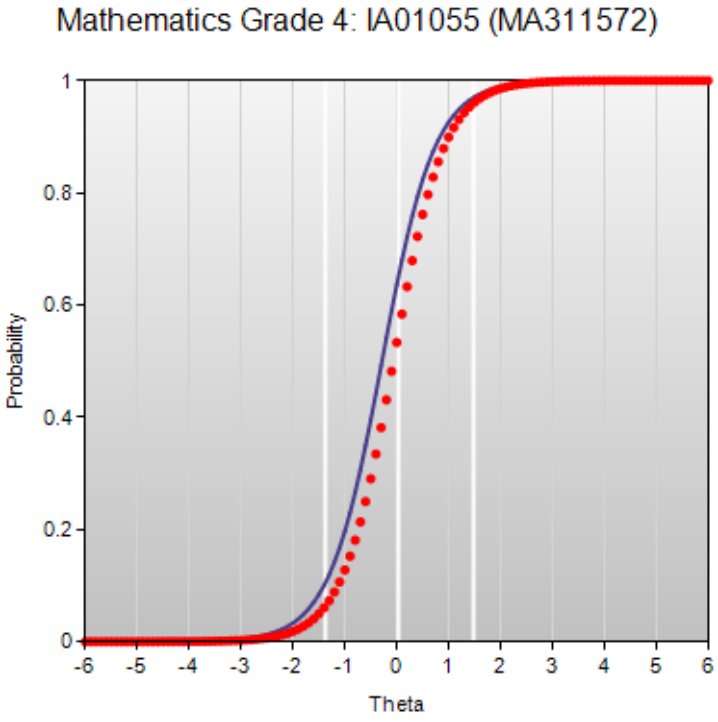

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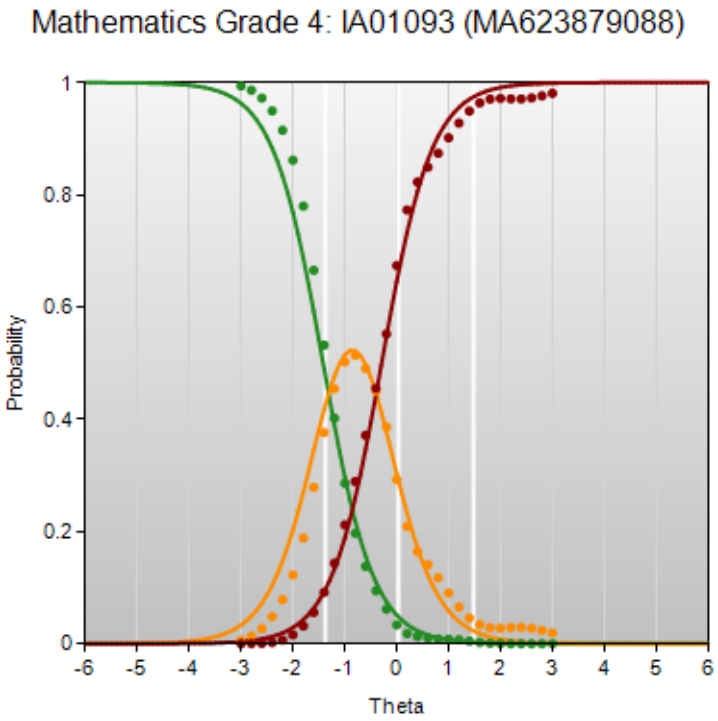

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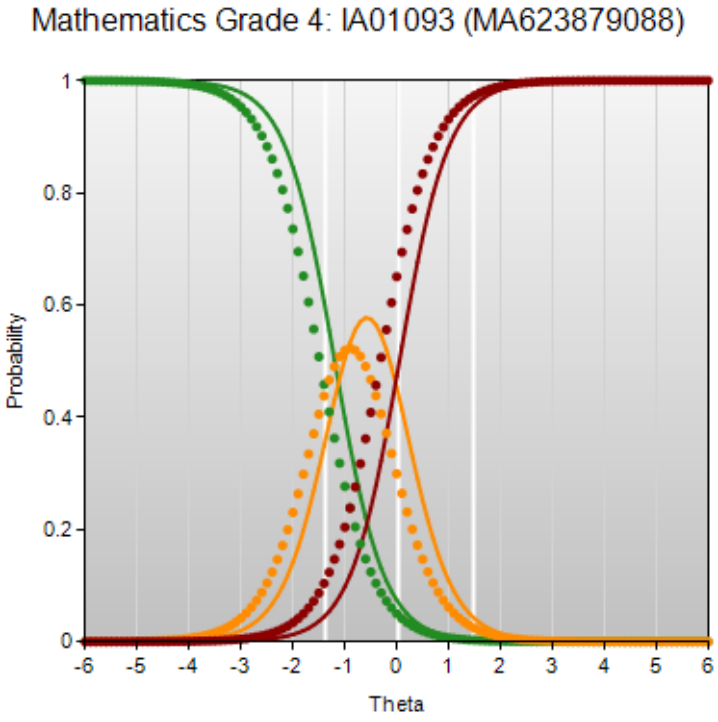

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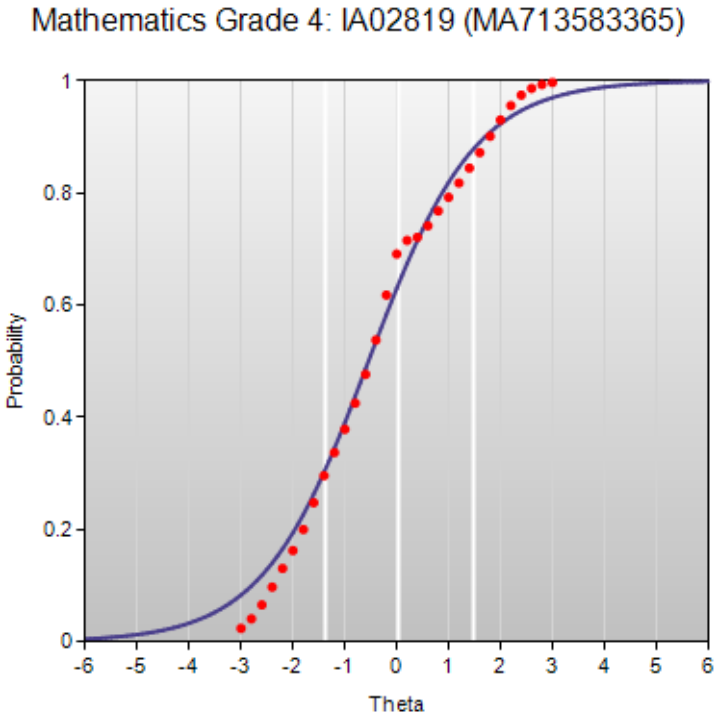

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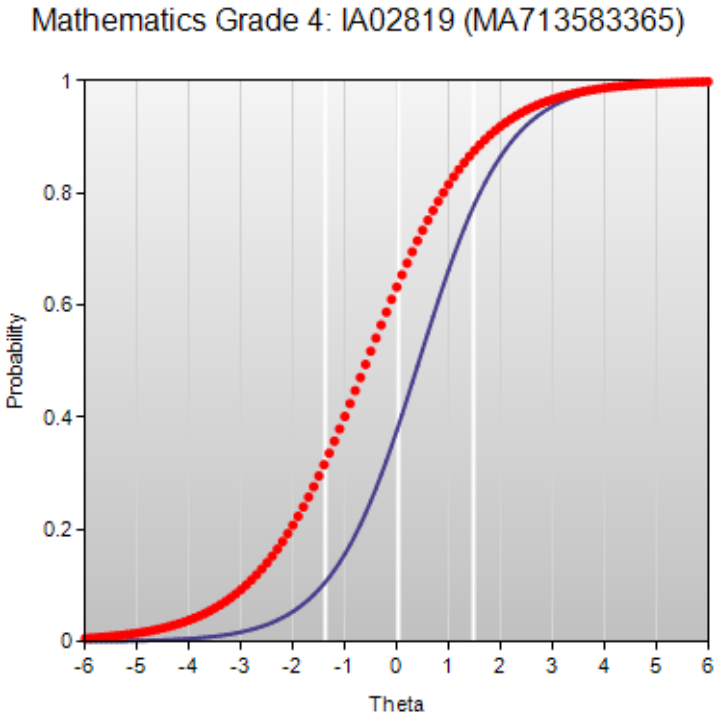

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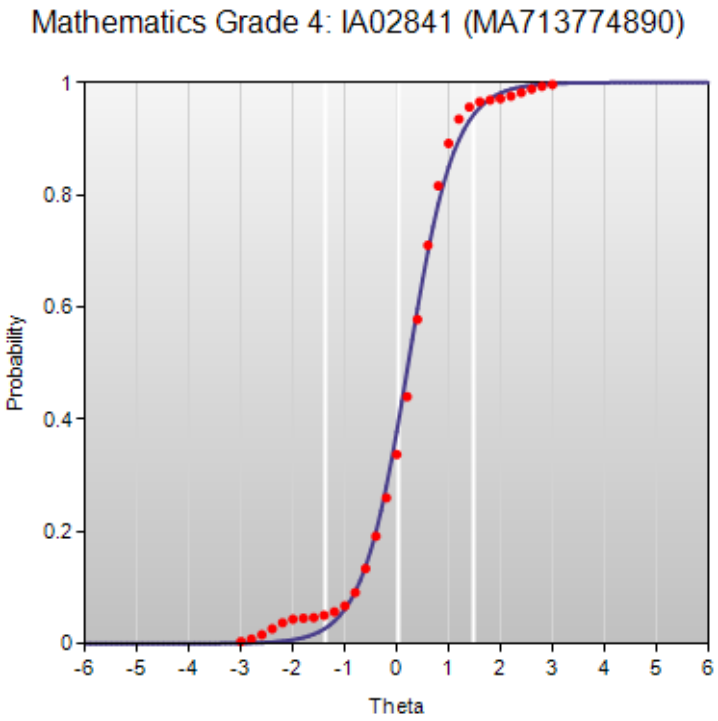

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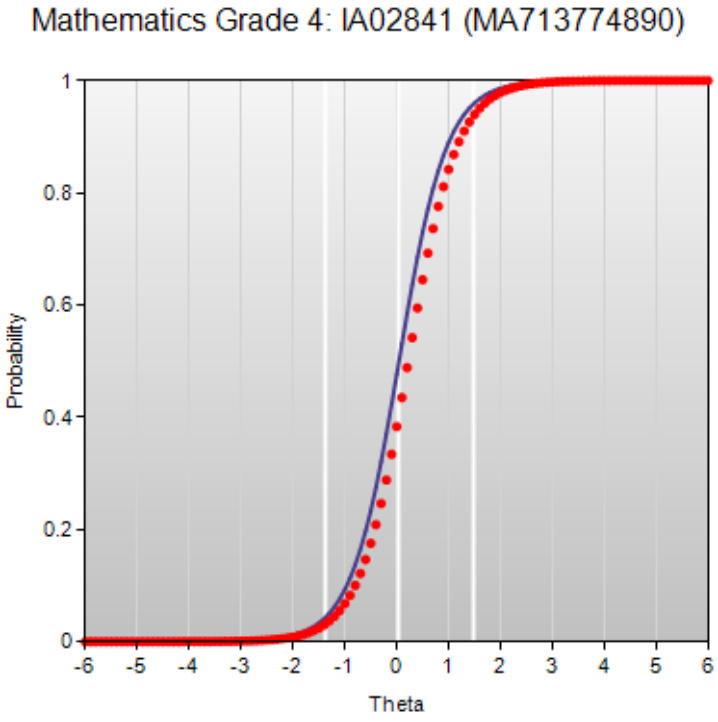

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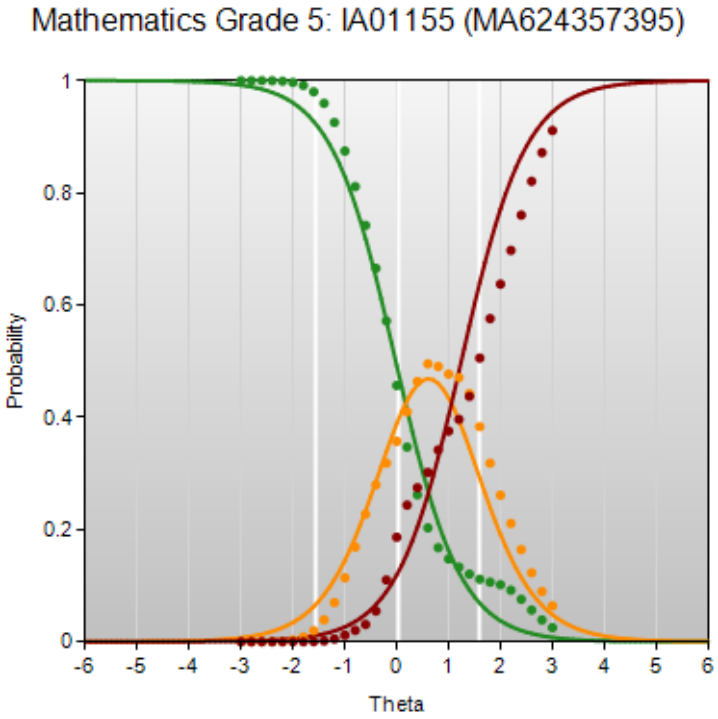

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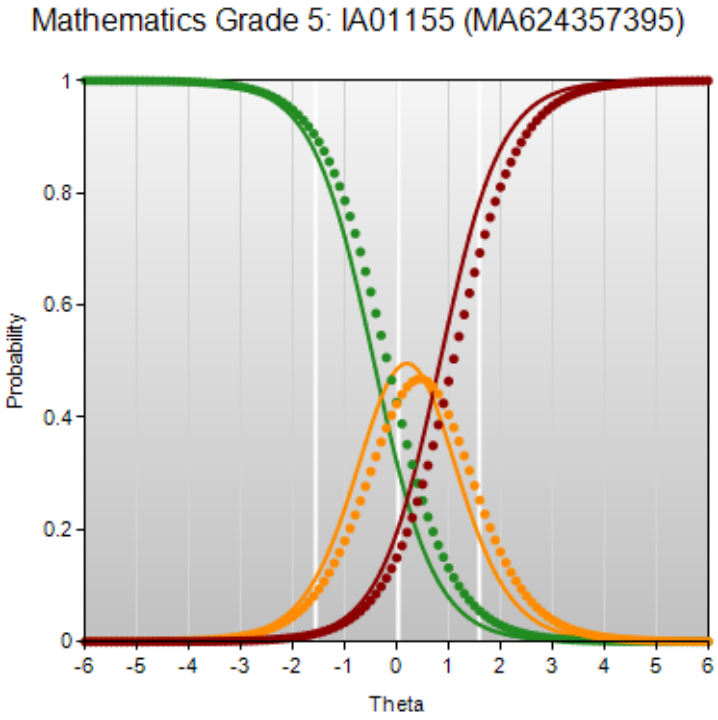

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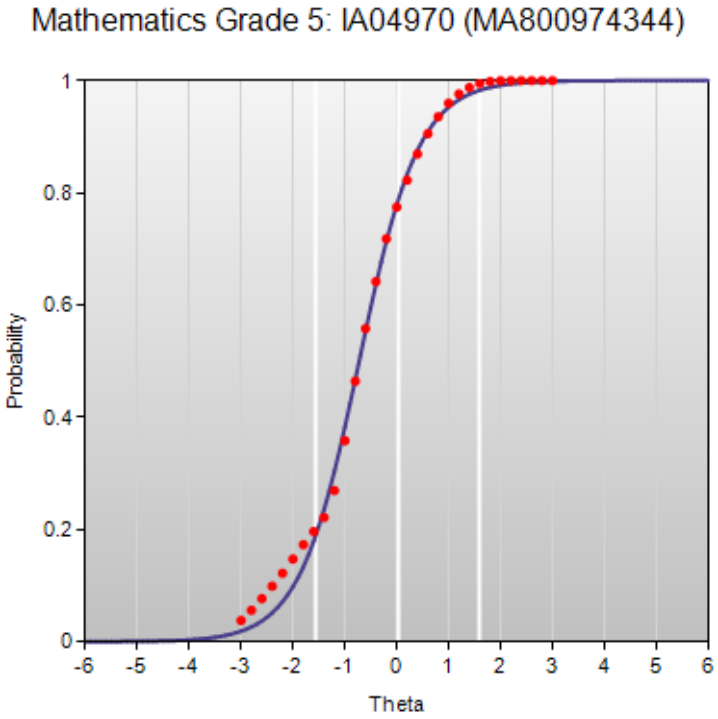

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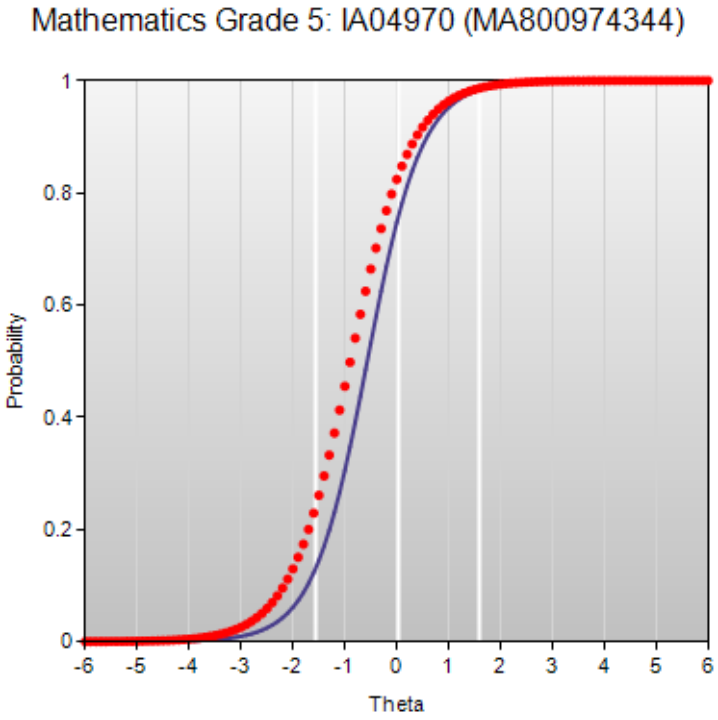

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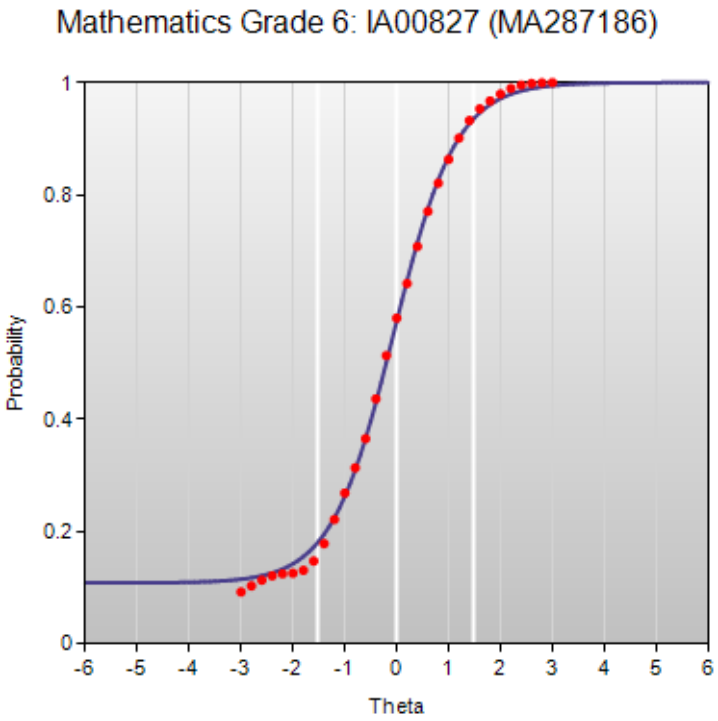

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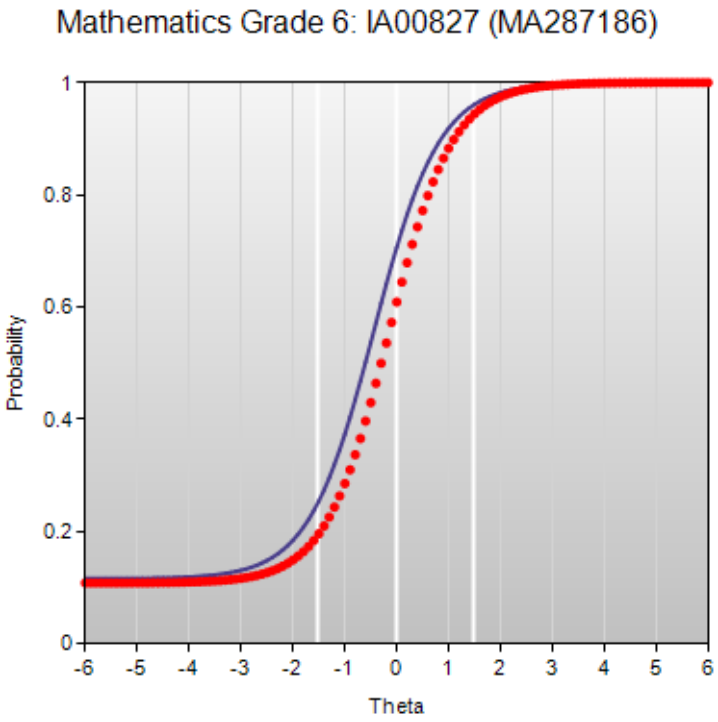

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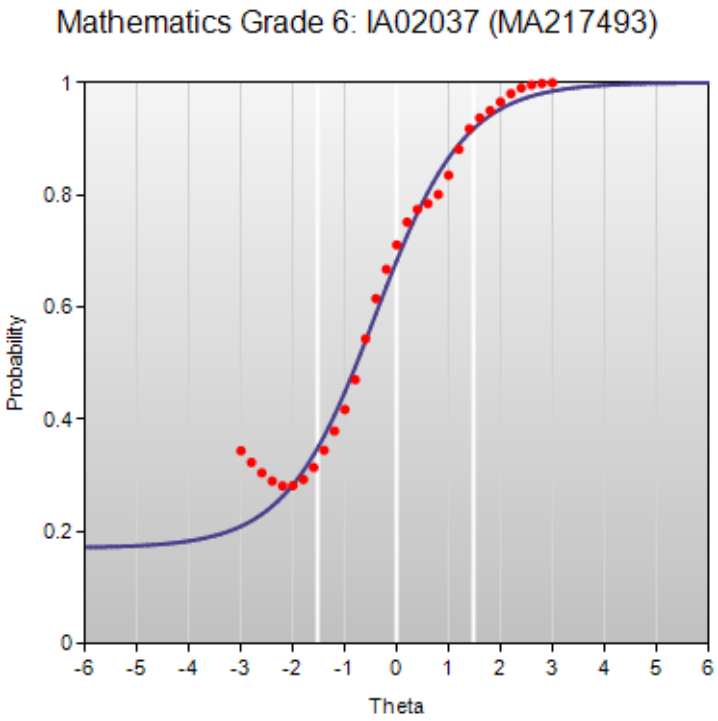

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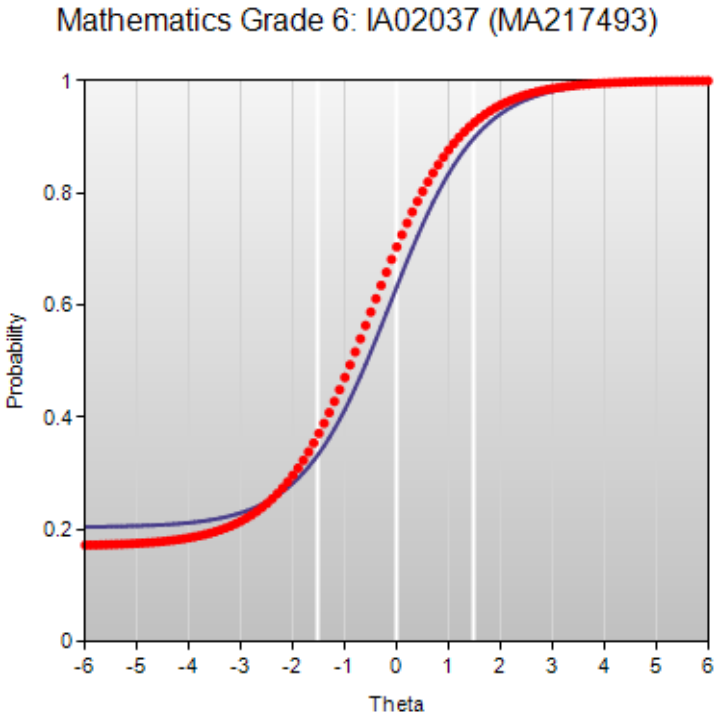

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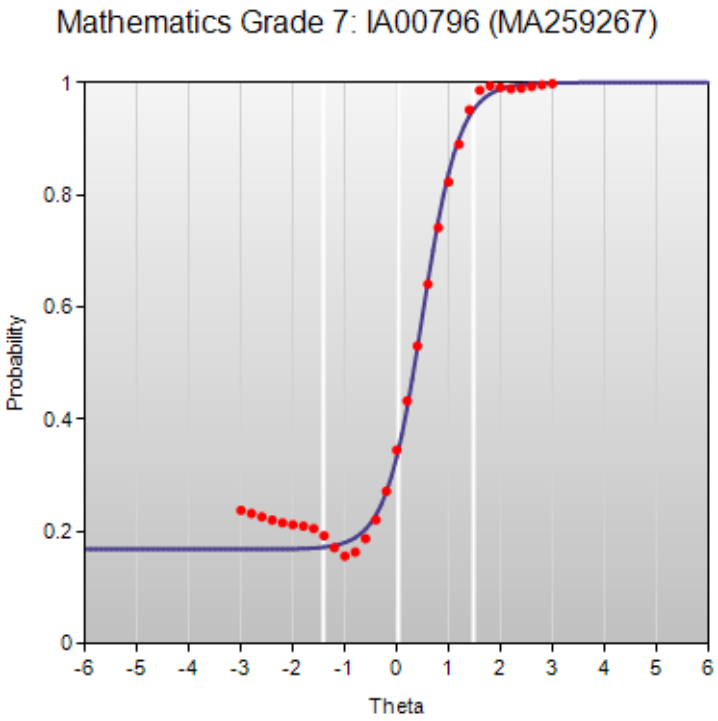

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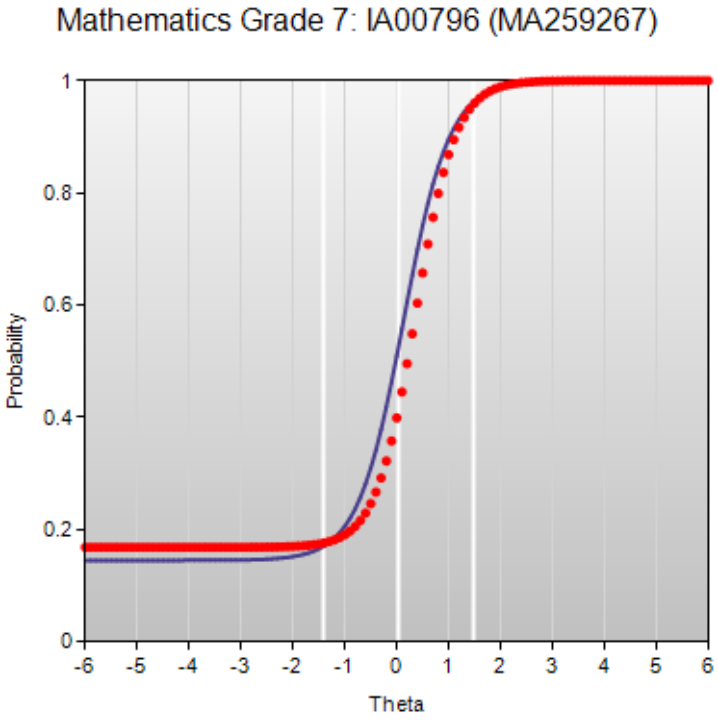

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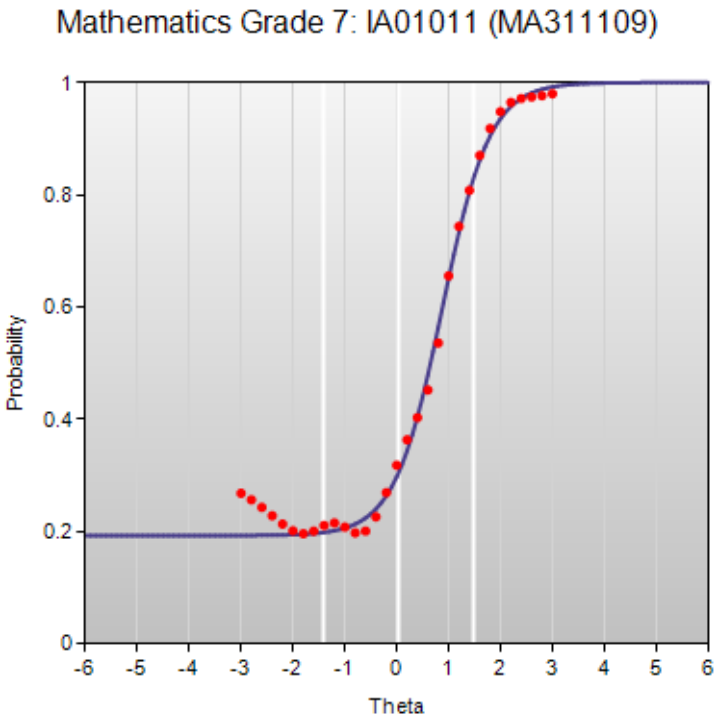

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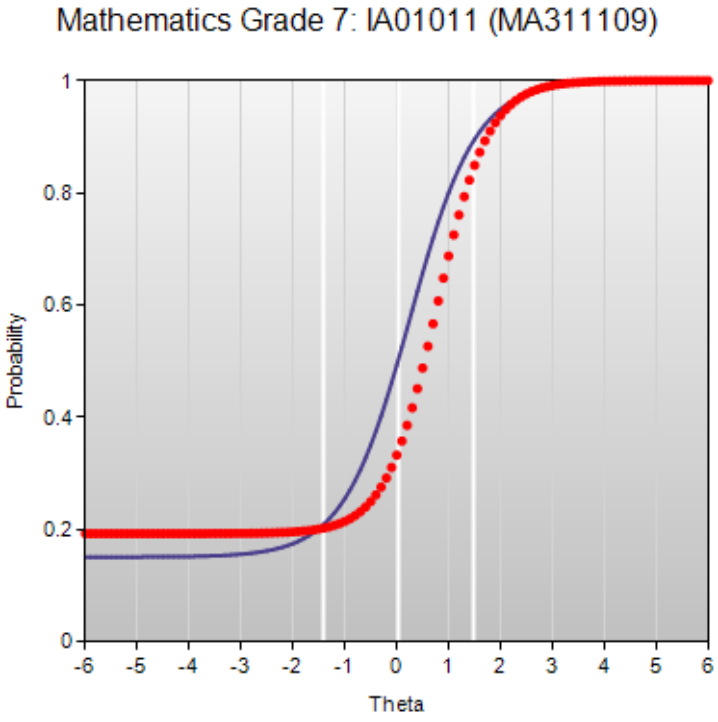

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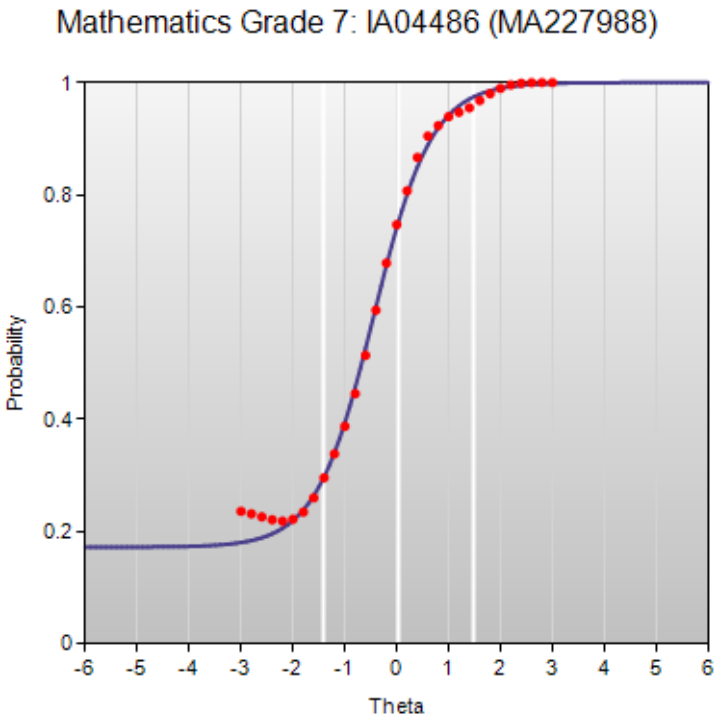

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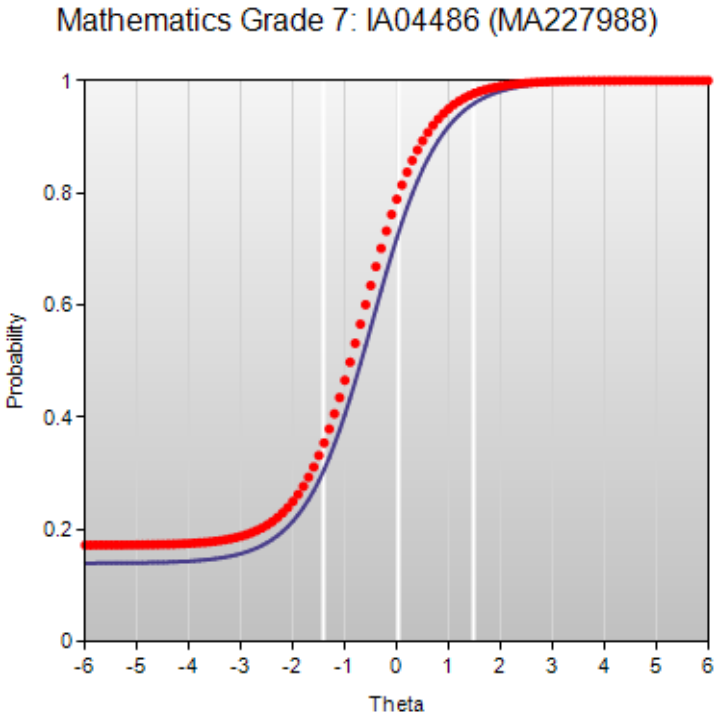

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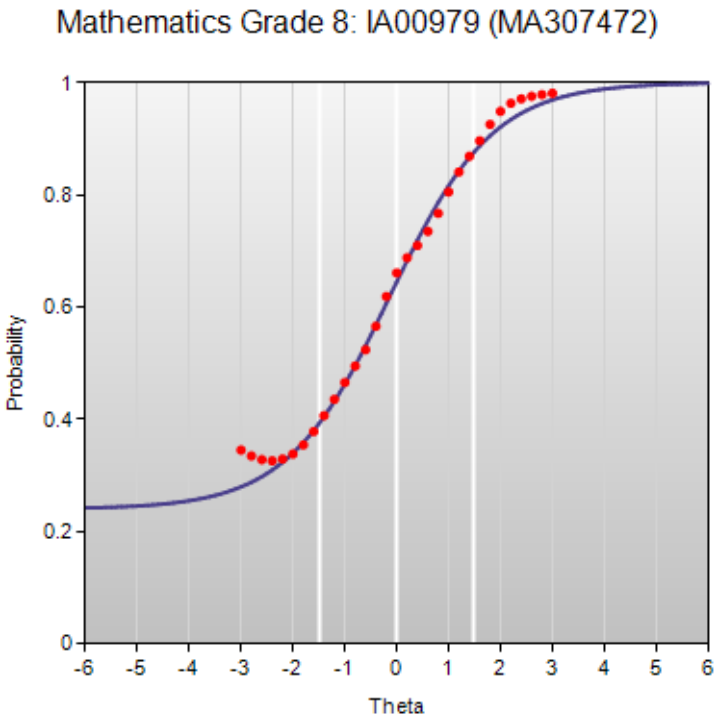

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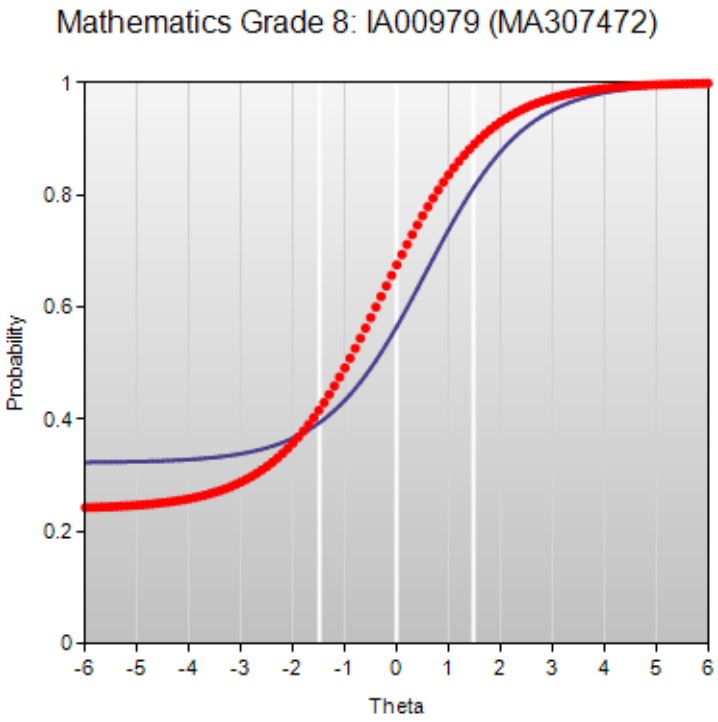

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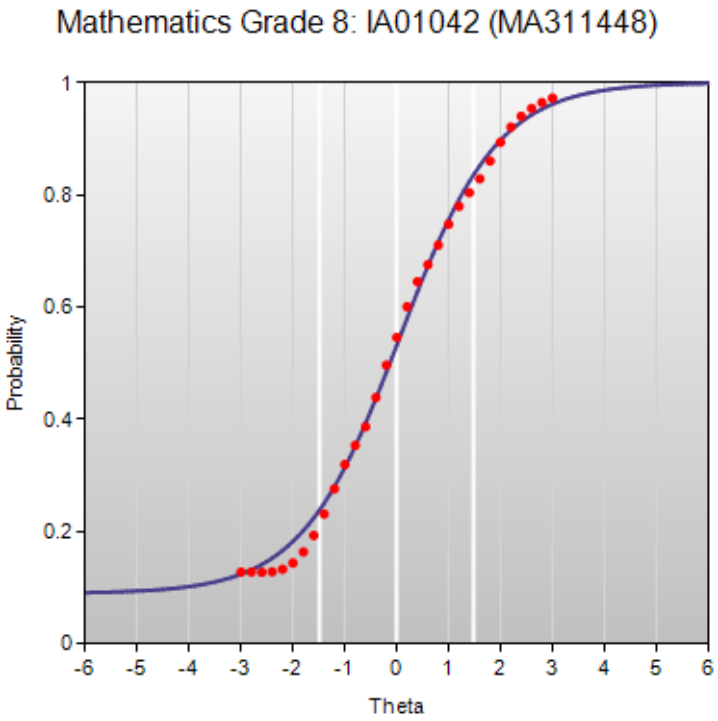

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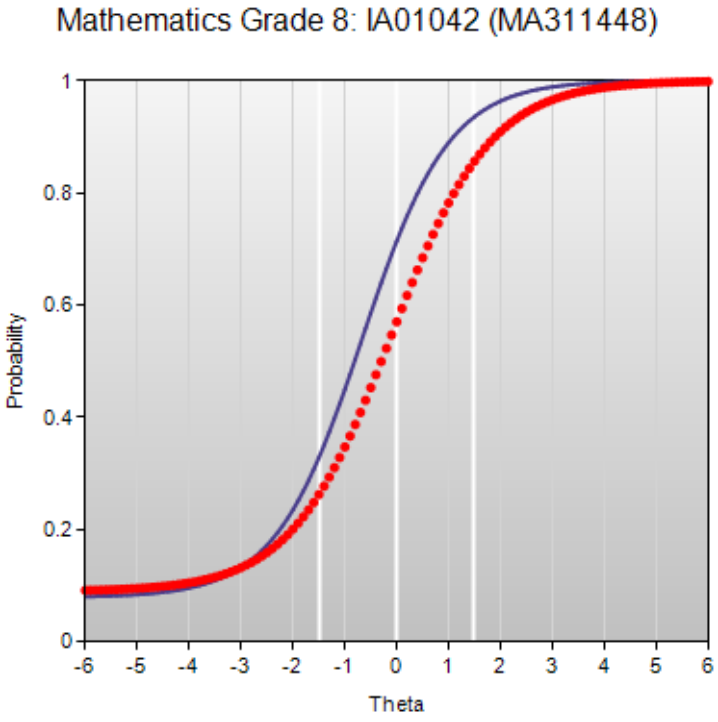

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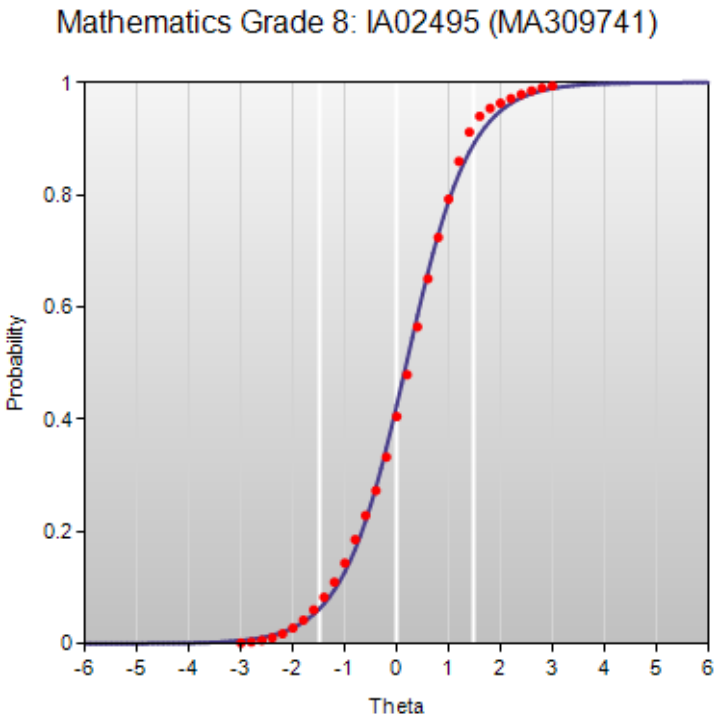

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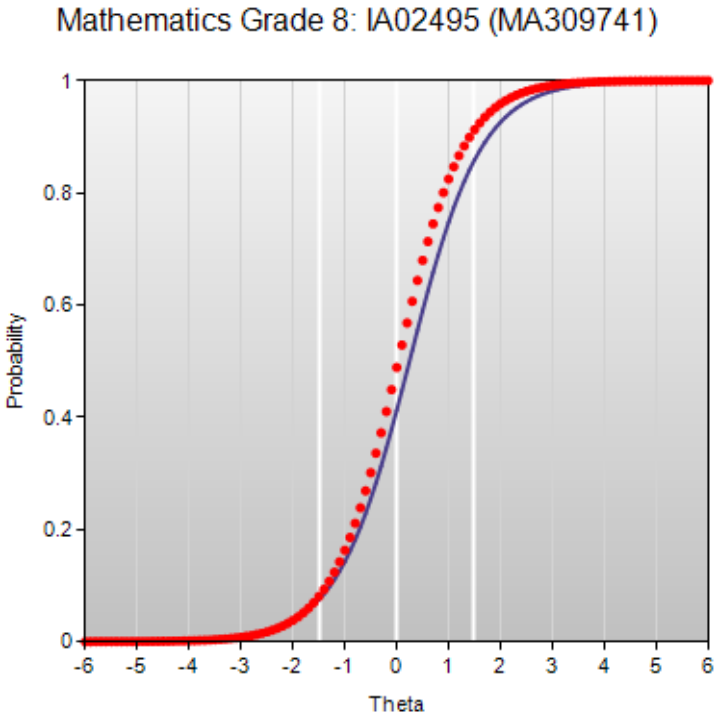

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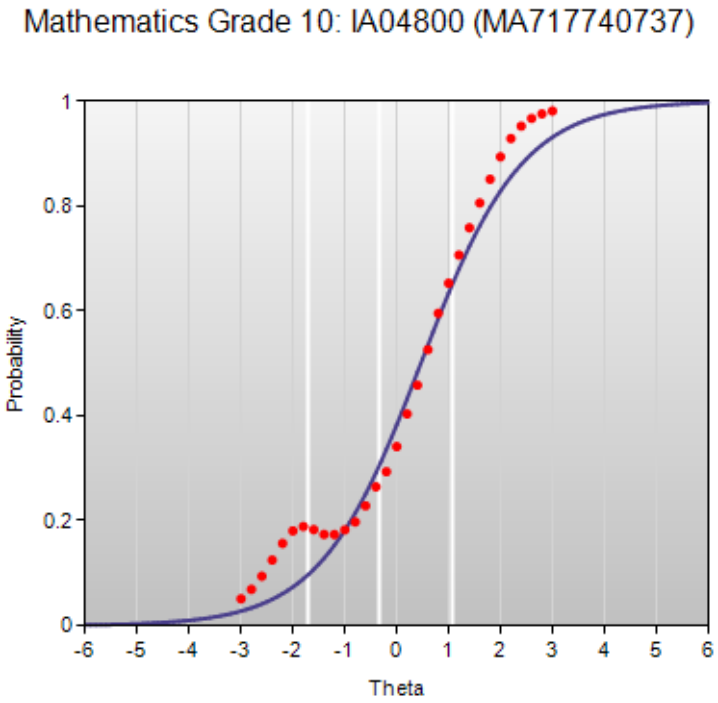

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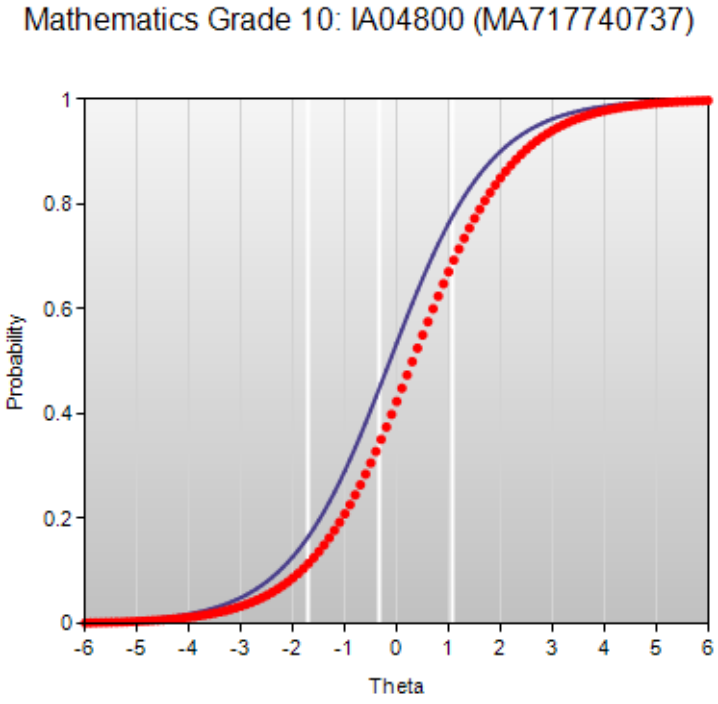

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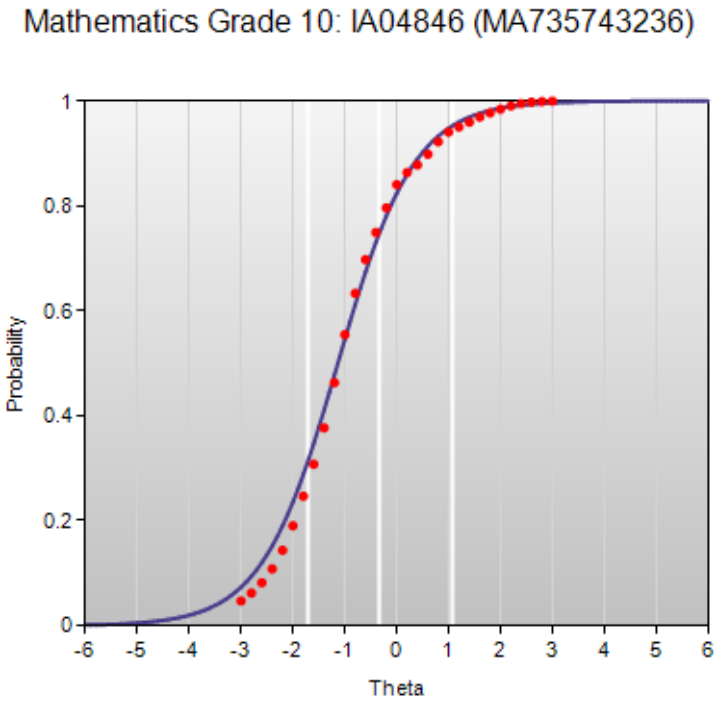

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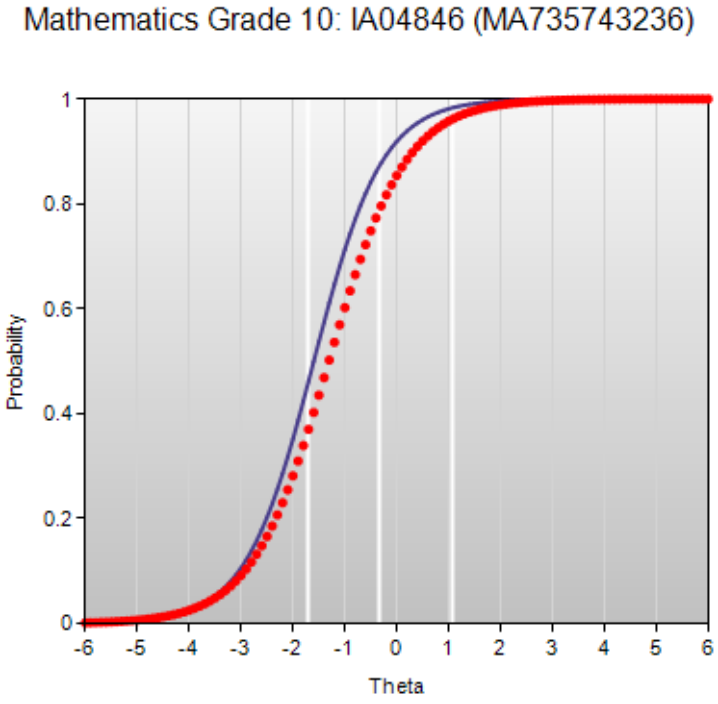

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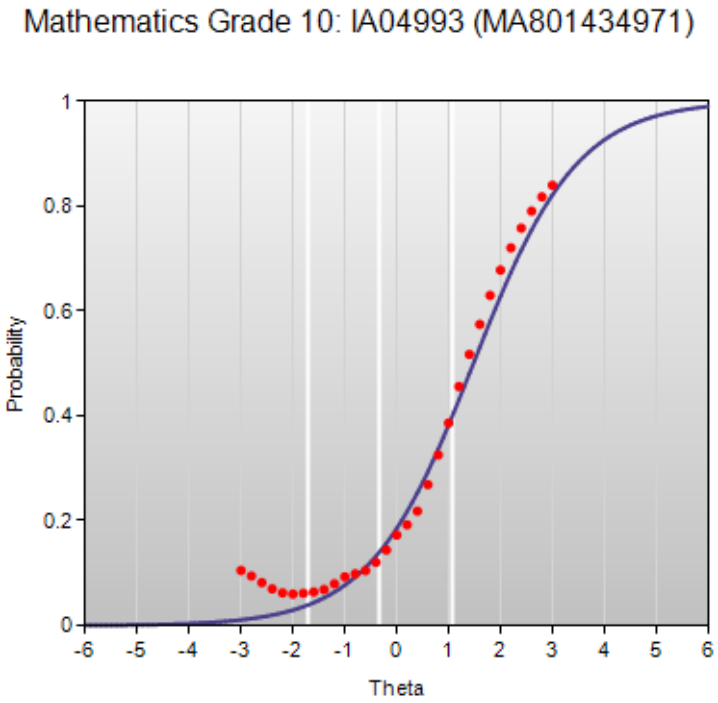

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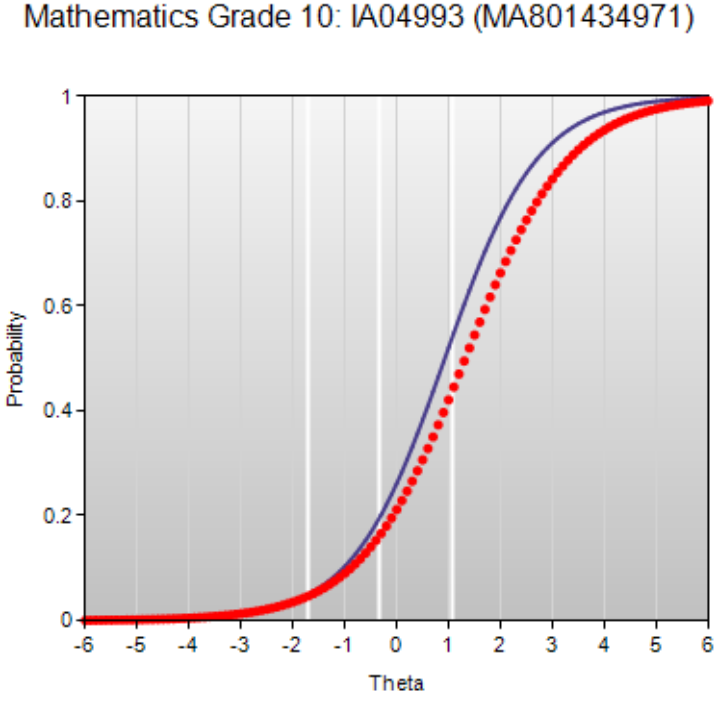

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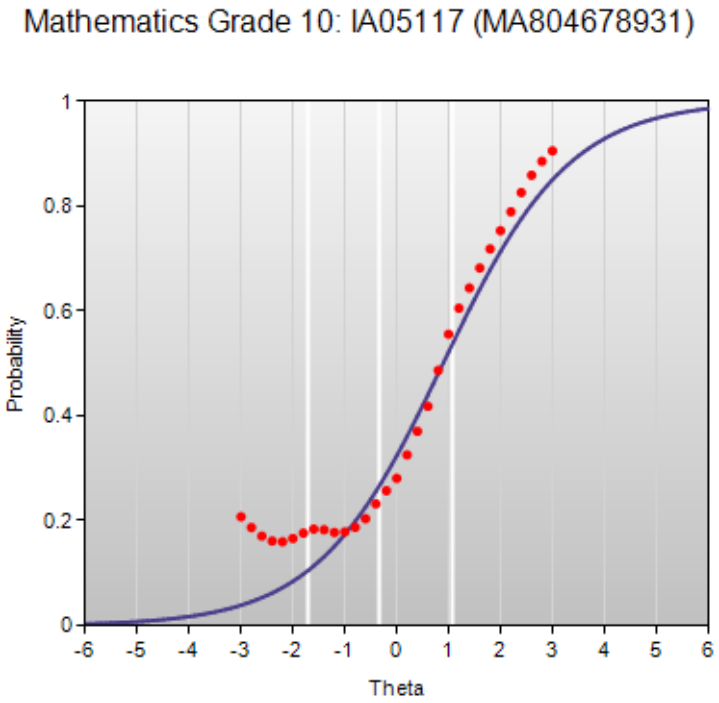

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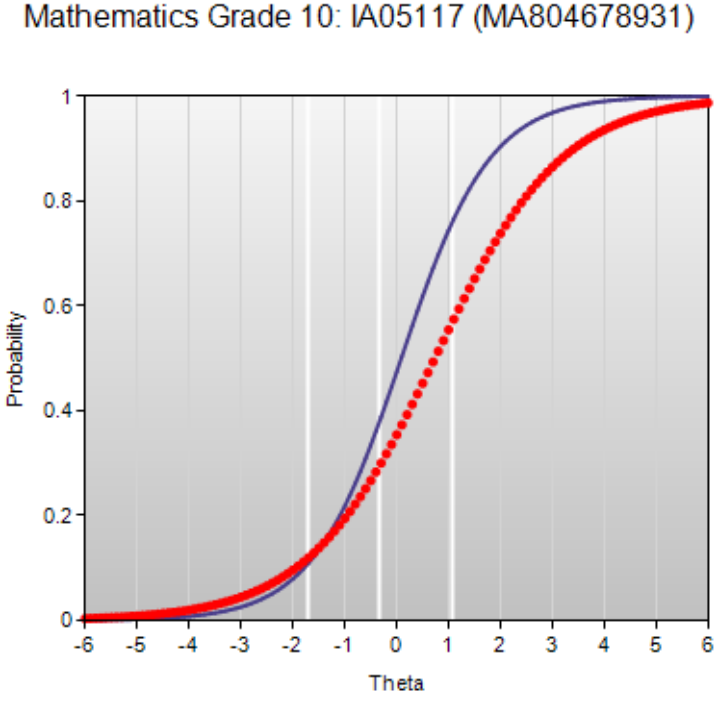

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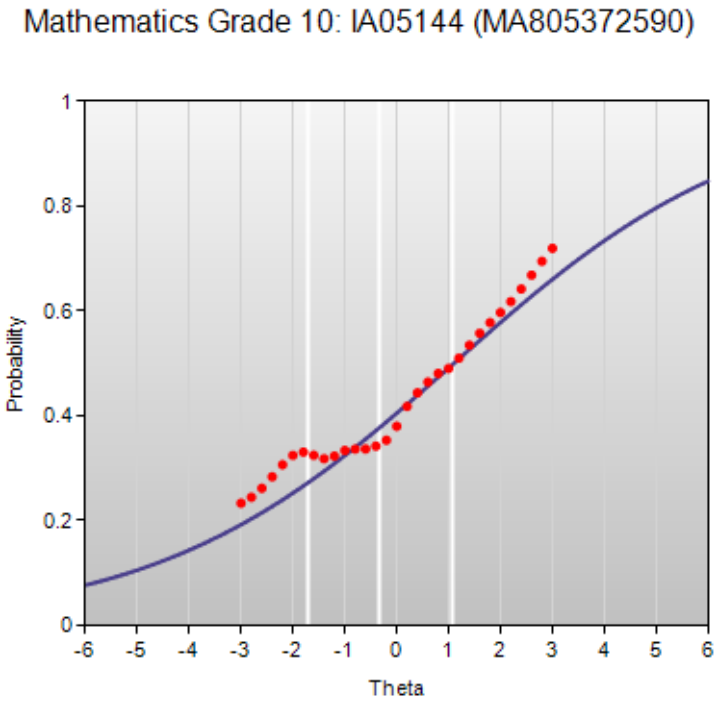

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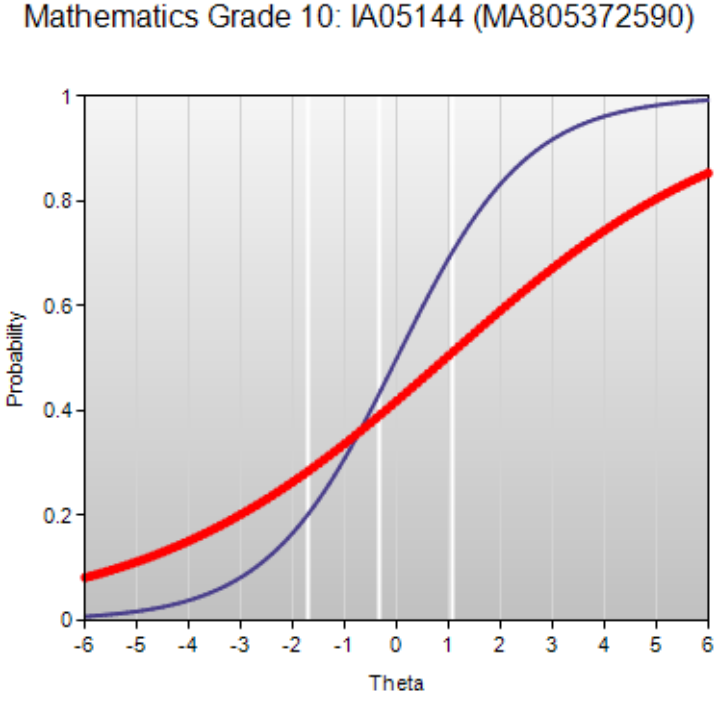

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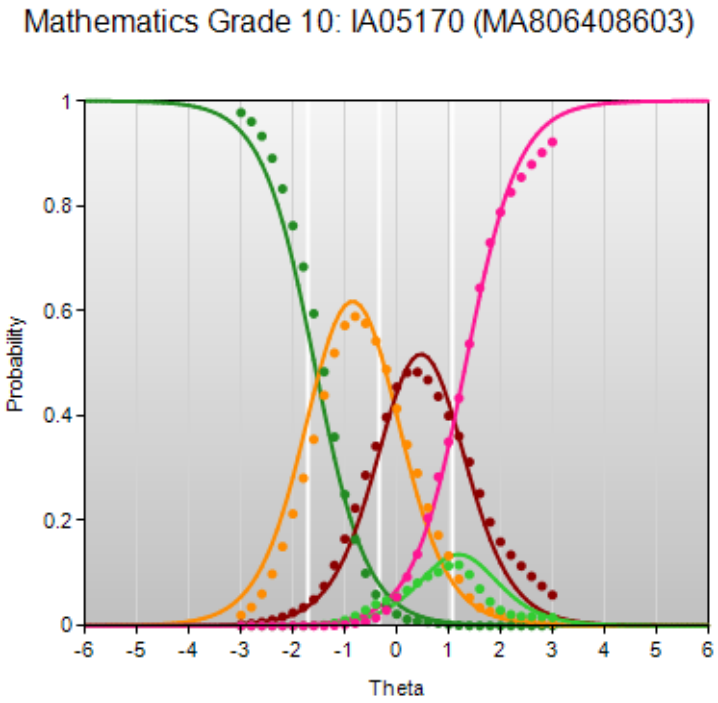

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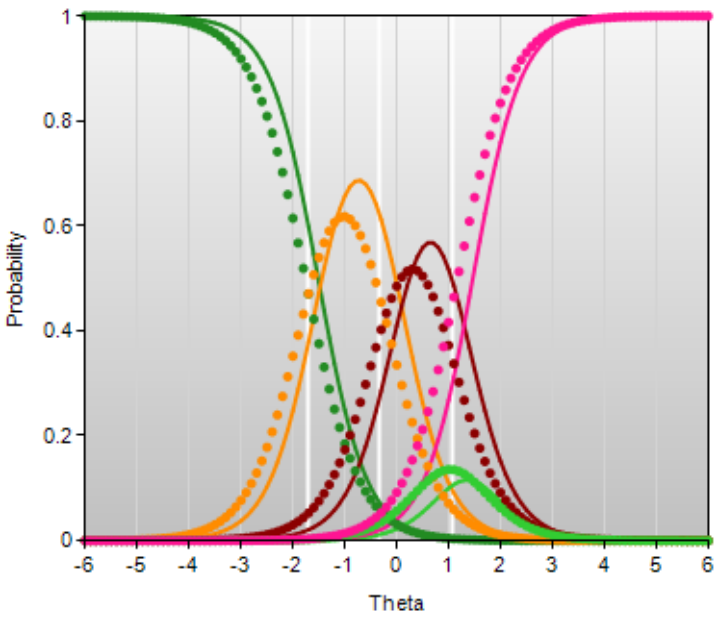

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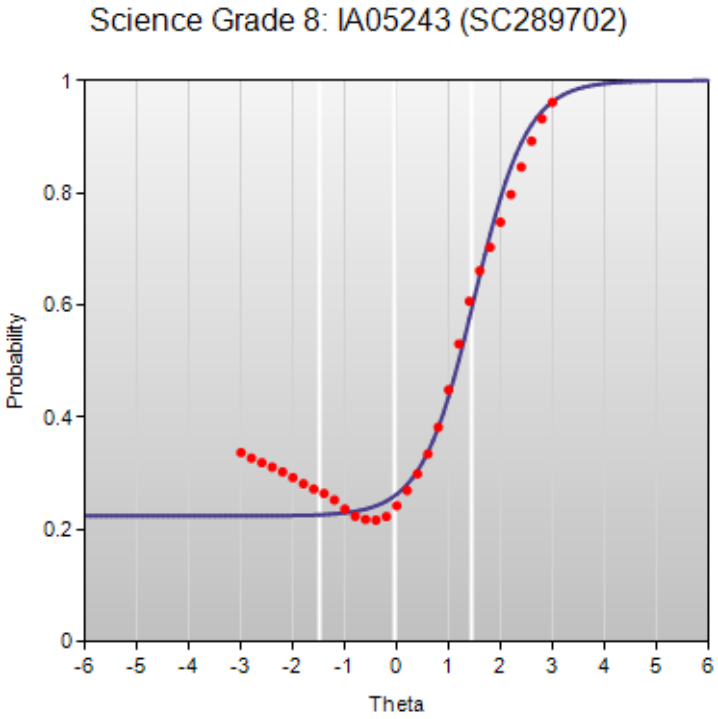

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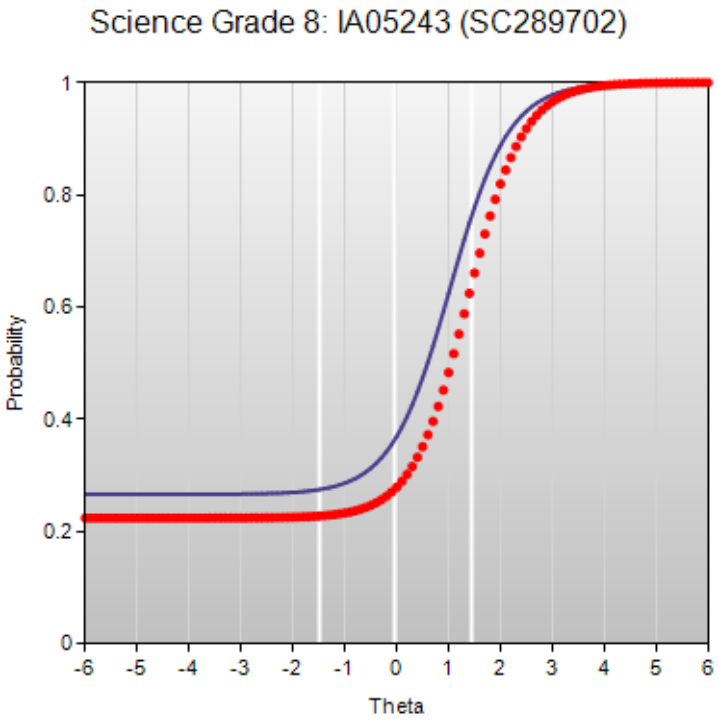

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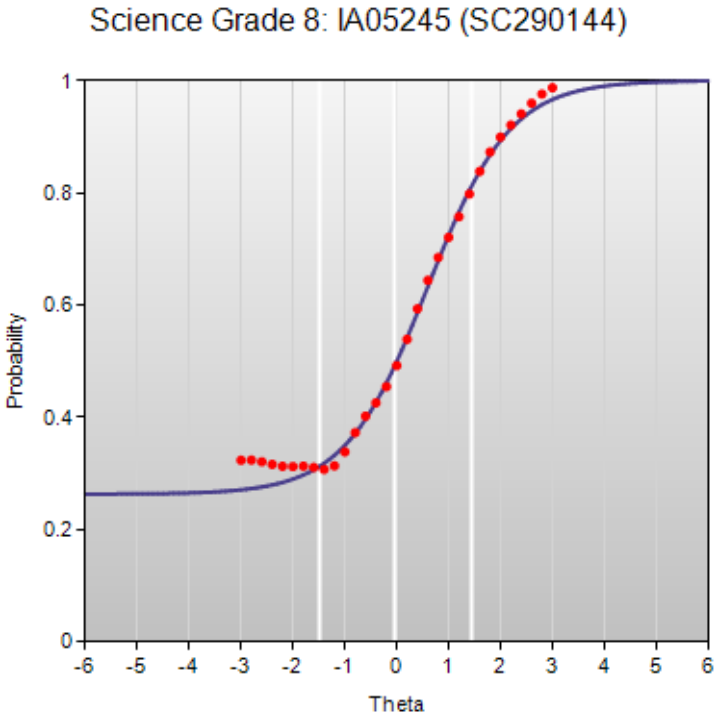

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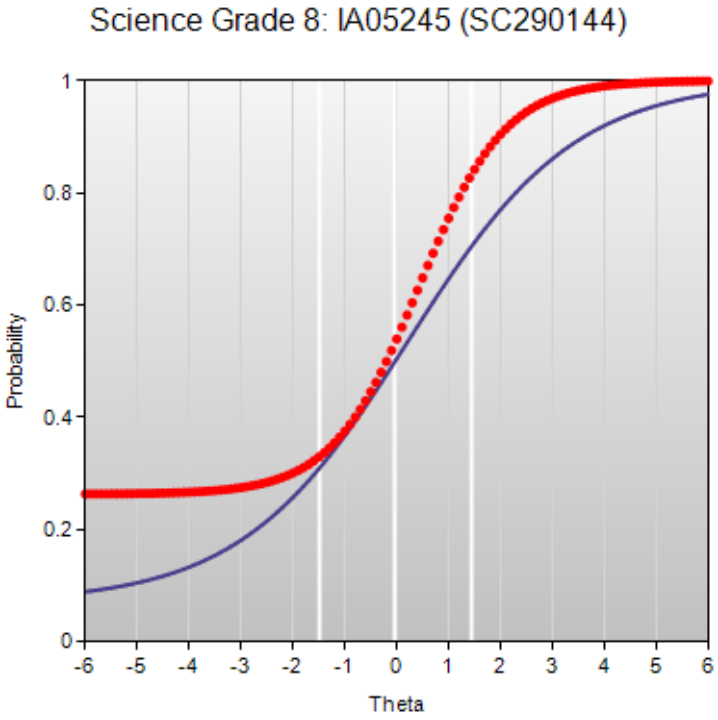

APPENDIX J

RELIABILITY

Table J-1: Subgroup Reliabilities—ELA

Grade	Subgroup	Number of Students	Raw Score			Alpha	SEM
			Maximum	Mean	Standard Deviation		
3	All Students	9,663	44	23.07	8.97	0.90	2.84
	ELL	1,409	44	16.46	8.03	0.87	2.86
	Economically Disadvantaged	4,407	44	19.12	8.35	0.88	2.88
	African American	813	44	20.25	8.48	0.89	2.85
	Asian	345	44	26.86	8.20	0.89	2.76
	Hispanic	2,847	44	18.99	8.40	0.88	2.88
	Native American/Alaska Native	73	44	16.81	8.42	0.88	2.94
	White	5,014	44	25.61	8.33	0.89	2.79
	Pacific Islander/Hawaiian	12	44	25.08	9.61	0.92	2.75
	Multiracial	559	44	23.57	9.11	0.90	2.86
	Male	4,836	44	22.24	8.96	0.90	2.81
	Female	4,826	44	23.89	8.90	0.90	2.86
	Special Education	1,602	44	15.51	7.80	0.87	2.83
4	All Students	9,739	44	22.65	8.87	0.89	2.95
	ELL	1,447	44	17.12	7.79	0.86	2.94
	Economically Disadvantaged	4,452	44	19.05	8.05	0.86	2.96
	African American	864	44	19.54	7.97	0.86	2.99
	Asian	328	44	25.59	8.27	0.87	2.98
	Hispanic	2,817	44	18.92	8.09	0.87	2.96
	Native American/Alaska Native	73	44	17.19	8.88	0.89	2.88
	White	5,144	44	25.19	8.52	0.88	2.92
	Pacific Islander/Hawaiian	10	44	20.90	11.14	0.93	2.86
	Multiracial	503	44	21.89	8.76	0.89	2.93
	Male	5,001	44	21.62	8.71	0.89	2.91
	Female	4,736	44	23.75	8.90	0.89	2.97
	Special Education	1,490	44	13.92	6.68	0.82	2.82
5	All Students	9,858	48	26.46	10.11	0.91	2.97
	ELL	1,521	48	19.82	9.67	0.91	2.96
	Economically Disadvantaged	4,460	48	22.24	9.66	0.91	2.94
	African American	964	48	22.81	10.13	0.92	2.94
	Asian	344	48	30.13	9.06	0.89	2.99
	Hispanic	2,726	48	22.51	9.89	0.91	2.96
	Native American/Alaska Native	77	48	21.03	9.04	0.89	2.93
	White	5,246	48	29.06	9.37	0.90	2.96
	Pacific Islander/Hawaiian	21	48	25.90	10.22	0.91	3.04
	Multiracial	480	48	26.08	9.84	0.91	2.95
	Male	5,064	48	25.62	10.04	0.91	2.93
	Female	4,787	48	27.35	10.10	0.91	3.00
	Special Education	1,555	48	15.95	8.04	0.87	2.86
6	All Students	9,842	50	24.72	10.78	0.92	3.04
	ELL	1,698	50	17.84	9.52	0.90	3.01
	Economically Disadvantaged	4,378	50	20.01	9.74	0.90	3.01
	African American	826	50	20.30	9.86	0.91	3.00
	Asian	328	50	29.11	10.40	0.91	3.05

continued

Grade	Subgroup	Number of Students	Raw Score		Standard Deviation	Alpha	SEM
			Maximum	Mean			
6	Hispanic	2,809	50	20.22	9.93	0.91	3.02
	Native American/Alaska Native	67	50	17.22	10.01	0.92	2.91
	White	5,297	50	27.69	10.23	0.91	3.03
	Pacific Islander/Hawaiian	16	50	24.25	13.22	0.95	2.94
	Multiracial	499	50	24.05	10.77	0.92	2.98
	Male	5,058	50	23.35	10.71	0.92	3.02
	Female	4,781	50	26.17	10.66	0.92	3.04
	Special Education	1,573	50	14.36	7.49	0.85	2.87
7	All Students	10,036	50	24.76	10.63	0.91	3.16
	ELL	1,690	50	18.51	9.46	0.89	3.11
	Economically Disadvantaged	4,337	50	20.43	9.52	0.89	3.10
	African American	907	50	20.68	10.09	0.91	3.08
	Asian	344	50	27.61	10.74	0.91	3.17
	Hispanic	2,834	50	20.75	9.90	0.90	3.12
	Native American/Alaska Native	73	50	18.66	9.87	0.91	3.02
	White	5,355	50	27.58	10.19	0.90	3.15
	Pacific Islander/Hawaiian	10	50	21.70	9.43	0.90	3.00
	Multiracial	513	50	23.70	10.06	0.91	3.09
	Male	5,176	50	23.04	10.36	0.91	3.14
	Female	4,852	50	26.59	10.61	0.91	3.15
	Special Education	1,564	50	15.05	7.37	0.84	2.96
8	All Students	10,276	50	28.30	10.59	0.91	3.14
	ELL	1,768	50	21.58	10.42	0.91	3.09
	Economically Disadvantaged	4,503	50	23.96	10.14	0.91	3.08
	African American	935	50	24.39	10.03	0.91	3.07
	Asian	356	50	32.66	9.84	0.90	3.10
	Hispanic	2,972	50	23.98	10.39	0.91	3.09
	Native American/Alaska Native	73	50	21.52	9.53	0.89	3.14
	White	5,440	50	31.22	9.72	0.90	3.09
	Pacific Islander/Hawaiian	12	50	25.50	8.64	0.88	2.98
	Multiracial	488	50	27.43	10.56	0.91	3.18
	Male	5,239	50	26.51	10.62	0.91	3.13
	Female	5,031	50	30.16	10.23	0.91	3.10
	Special Education	1,440	50	17.88	8.31	0.87	3.02

Table J-2. Subgroup Reliabilities—Mathematics

Grade	Subgroup	Number of Students	Raw Score			Alpha	SEM
			Maximum	Mean	Standard		
3	All Students	9,762	48	23.49	11.56	0.93	3.10
	ELL	1,492	48	17.19	10.43	0.91	3.04
	Economically Disadvantaged	4,467	48	18.37	10.29	0.91	3.07
	African American	824	48	19.80	10.90	0.92	3.07
	Asian	356	48	29.38	11.70	0.93	2.99
	Hispanic	2,893	48	18.53	10.35	0.91	3.08
	Native American/Alaska Native	73	48	17.25	11.05	0.92	3.09
	White	5,043	48	26.60	11.02	0.92	3.08
	Pacific Islander/Hawaiian	12	48	25.17	13.51	0.95	3.00
	Multiracial	561	48	23.54	11.79	0.93	3.10
	Male	4,898	48	23.86	11.87	0.93	3.09
	Female	4,863	48	23.12	11.22	0.92	3.10
	Special Education	1,616	48	15.21	10.16	0.92	2.95
4	All Students	9,834	54	24.72	13.14	0.93	3.42
	ELL	1,562	54	17.38	11.56	0.92	3.29
	Economically Disadvantaged	4,508	54	19.14	11.46	0.92	3.34
	African American	868	54	19.57	11.24	0.91	3.32
	Asian	343	54	30.09	13.96	0.94	3.38
	Hispanic	2,876	54	19.18	11.35	0.91	3.36
	Native American/Alaska Native	74	54	16.11	11.45	0.92	3.23
	White	5,155	54	28.63	12.83	0.93	3.39
	Pacific Islander/Hawaiian	11	54	18.82	13.98	0.94	3.46
	Multiracial	507	54	22.94	12.83	0.93	3.41
	Male	5,038	54	25.14	13.57	0.94	3.41
	Female	4,794	54	24.27	12.65	0.93	3.42
	Special Education	1,478	54	13.38	10.29	0.91	3.03
5	All Students	9,960	54	23.51	12.45	0.92	3.43
	ELL	1,643	54	16.33	9.92	0.89	3.26
	Economically Disadvantaged	4,502	54	18.02	10.27	0.90	3.31
	African American	983	54	18.32	10.58	0.90	3.30
	Asian	354	54	29.30	12.75	0.93	3.37
	Hispanic	2,784	54	18.10	10.28	0.90	3.33
	Native American/Alaska Native	76	54	16.12	9.21	0.88	3.21
	White	5,266	54	27.14	12.39	0.92	3.43
	Pacific Islander/Hawaiian	21	54	23.62	13.09	0.93	3.40
	Multiracial	476	54	22.70	12.18	0.92	3.42
	Male	5,118	54	23.76	12.87	0.93	3.41
	Female	4,835	54	23.26	11.99	0.92	3.44
	Special Education	1,545	54	13.36	8.13	0.86	3.07
6	All Students	9,880	54	20.56	11.77	0.92	3.28
	ELL	1,779	54	13.75	8.89	0.89	2.93
	Economically Disadvantaged	4,375	54	15.33	9.20	0.89	3.03
	African American	832	54	15.53	9.71	0.90	3.05
	Asian	340	54	26.01	13.29	0.93	3.43
	Hispanic	2,843	54	15.41	9.30	0.89	3.05

continued

Grade	Subgroup	Number of Students	Raw Score Maximum	Raw Score Mean	Raw Score Standard	Alpha	SEM
	Native American/Alaska Native	68	54	13.65	8.87	0.89	2.93
	White	5,287	54	23.90	11.78	0.92	3.36
	Pacific Islander/Hawaiian	17	54	17.82	13.47	0.95	3.12
6	Multiracial	493	54	20.12	12.14	0.93	3.27
	Male	5,087	54	20.54	12.07	0.93	3.28
	Female	4,790	54	20.57	11.43	0.92	3.28
	Special Education	1,560	54	10.66	6.87	0.84	2.71
	All Students	10,043	54	17.24	11.32	0.91	3.31
	ELL	1,770	54	11.50	8.39	0.88	2.89
	Economically Disadvantaged	4,319	54	12.43	8.08	0.87	2.95
	African American	894	54	11.96	8.21	0.87	2.92
	Asian	351	54	21.83	13.58	0.93	3.49
	Hispanic	2,867	54	12.61	8.43	0.87	2.99
7	Native American/Alaska Native	71	54	12.10	8.65	0.89	2.89
	White	5,341	54	20.50	11.79	0.92	3.43
	Pacific Islander/Hawaiian	10	54	14.60	10.30	0.92	2.91
	Multiracial	509	54	15.94	10.58	0.91	3.24
	Male	5,175	54	17.61	11.62	0.92	3.30
	Female	4,860	54	16.83	10.97	0.91	3.30
	Special Education	1,532	54	9.30	6.45	0.83	2.62
	All Students	10,276	54	20.85	12.26	0.92	3.46
	ELL	1,875	54	14.00	9.63	0.90	3.11
	Economically Disadvantaged	4,461	54	15.29	9.56	0.89	3.19
	African American	931	54	15.05	9.12	0.88	3.15
	Asian	360	54	27.18	13.34	0.93	3.62
	Hispanic	3,007	54	15.41	9.87	0.90	3.19
8	Native American/Alaska Native	71	54	14.00	9.31	0.89	3.09
	White	5,419	54	24.68	12.30	0.92	3.56
	Pacific Islander/Hawaiian	11	54	18.00	14.81	0.94	3.59
	Multiracial	477	54	19.31	11.59	0.91	3.39
	Male	5,255	54	20.79	12.63	0.92	3.48
	Female	5,015	54	20.92	11.86	0.92	3.44
	Special Education	1,420	54	11.50	7.06	0.83	2.89

Table J-3. Reliabilities by Reporting Categories, Grade, and Content Area—ELA

Grade	Item Reporting Category	Label	Number of Items	Raw Score		Standard Deviation	Alpha	SEM
				Maximum	Mean			
3	1	Reading	23	27	15.14	5.84	0.85	2.23
	2	Language	8	13	7.27	3.03	0.74	1.55
	3	Writing	1	4	0.65	0.91	--	--
4	1	Reading	22	28	15.75	5.85	0.83	2.40
	2	Language	9	12	6.04	2.82	0.72	1.48
	3	Writing	1	4	0.87	1.00	--	--
5	1	Reading	22	26	16.92	5.92	0.87	2.16
	2	Language	9	14	7.77	3.34	0.77	1.60
	3	Writing	2	8	1.77	1.74	0.62	1.08
6	1	Reading	24	27	15.60	6.41	0.88	2.25
	2	Language	7	13	6.55	3.35	0.76	1.64
	3	Writing	2	10	2.58	1.85	0.83	0.77
7	1	Reading	25	29	16.37	6.58	0.86	2.48
	2	Language	7	11	5.66	2.89	0.74	1.47
	3	Writing	2	10	2.73	1.99	0.84	0.80
8	1	Reading	24	28	18.41	6.05	0.86	2.23
	2	Language	7	12	6.86	3.12	0.72	1.64
	3	Writing	2	10	3.02	2.29	0.86	0.84

Table J-4. Reliabilities by Reporting Categories, Grade, and Content Area—Mathematics

Grade	Item Reporting Category	Label	Number of Items	Raw Score		Standard Deviation	Alpha	SEM
				Maximum	Mean			
3	1	Operations and Algebraic Thinking	12	14	6.32	3.94	0.85	1.55
	2	Number and Operations in Base Ten	5	7	3.32	2.26	0.75	1.13
	3	Number and Operations-Fractions	8	10	5.98	2.61	0.69	1.46
	4	Measurement and Data	10	12	5.98	3.06	0.70	1.67
	5	Geometry	5	5	1.90	1.27	0.47	0.93
4	1	Operations and Algebraic Thinking	7	11	5.23	3.00	0.67	1.72
	2	Number and Operations in Base Ten	7	10	5.92	2.89	0.71	1.55
	3	Number and Operations-Fractions	13	16	7.32	4.50	0.85	1.73
	4	Measurement and Data	7	11	3.92	2.88	0.73	1.51
	5	Geometry	6	6	2.33	1.56	0.63	0.95
5	1	Operations and Algebraic Thinking	4	8	3.59	2.03	0.55	1.37
	2	Number and Operations in Base Ten	13	16	7.38	4.29	0.82	1.82
	3	Number and Operations-Fractions	10	14	5.72	3.52	0.78	1.66
	4	Measurement and Data	9	9	3.55	2.21	0.69	1.22
	5	Geometry	4	7	3.28	2.18	0.55	1.47
6	1	Ratios and Proportional Relationships	10	11	5.47	2.85	0.76	1.39
	2	The Number System	8	11	3.77	2.71	0.72	1.44
	3	Expressions and Equations	12	16	6.48	4.08	0.78	1.89
	4	Geometry	5	8	2.16	2.09	0.58	1.36
	5	Statistics and Probability	5	8	2.66	1.58	0.41	1.22
7	1	Ratios and Proportional Relationships	7	11	4.82	2.82	0.70	1.56
	2	The Number System	10	10	3.56	2.39	0.69	1.34
	3	Expressions and Equations	10	14	3.81	3.42	0.77	1.64
	4	Geometry	5	8	1.66	1.76	0.47	1.28
	5	Statistics and Probability	8	11	3.39	2.55	0.62	1.56
8	1	Number System & Expressions/Equations	17	21	8.58	5.00	0.81	2.18
	2	Functions	8	11	4.10	2.93	0.68	1.65
	3	Geometry	12	16	6.50	3.98	0.79	1.84
	4	Statistics and Probability	3	6	1.67	1.56	0.49	1.11