

Colorado Measures of Academic Success (CMAS) Technical Report 2024–2025

Prepared by Pearson for the Colorado Department of Education (CDE)

Foreword

This technical report documents the evidence of reliability and validity to support test users in evaluating the intended purposes, uses, and interpretations of the test scores for the administration of the Colorado Measures of Academic Success (CMAS) assessments. The evidence includes descriptions of the test design, development, and administration procedures; the student test results; and psychometric analyses including calibration, equating, and scaling to ensure that the test results are comparable across different test forms and administrations. The report adheres to industry best practices and follows the guidelines of the *Standards for Educational and Psychological Testing* (AERA et al., 2014).

The Colorado Department of Education's vision is to create an equitable educational environment where all students and staff in Colorado thrive. Their role is to improve student outcomes and ensure that students and families across Colorado have access to high-quality schools by providing actionable support to local educational agencies, implementing policy and legislation in an effective way, and sharing the experiences of local educational agencies and students.

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Chapter 1: Introduction

This technical report documents evidence of reliability and validity for the spring 2025 administration of the Colorado Measures of Academic Success (CMAS) assessments in English language arts (ELA), mathematics, science, and social studies to support test users in evaluating the intended purposes, uses, and interpretations of the test scores. The evidence includes descriptions of the test design, development, and administration procedures; the student test results; and psychometric analyses including calibration, equating, and scaling to ensure that the results are comparable across different test forms and administrations. The report concludes with a synthesis of the evidence from throughout the report to construct the validity argument for the assessments.

Reliability and validity are essential to ensuring that assessment results are accurate, consistent, and meaningful. Reliability indicates the degree to which scores are consistent across administrations, forms, or scorers, while validity refers to the degree to which evidence and theory support the interpretations and uses of test scores for their intended purposes. Together, these qualities provide the foundation for fair and defensible decisions based on assessment results, as recommended by the *Standards for Educational and Psychological Testing* (AERA et al., 2014).

1.1. Assessment Overview

The CMAS assessments are Colorado's end-of-year summative assessments administered annually each spring, designed to measure students' achievement of the 2020 Colorado Academic Standards (CAS) in grades 3–8 in ELA and mathematics; grades 5, 8, and 11 in science; and grades 4 and 7 in social studies. The Colorado Spanish Language Arts (CSLA) forms of the ELA assessment are administered to students with Spanish as their home language in grades 3 and 4 who meet established eligibility criteria. The CSLA forms serve as accommodated versions of the CMAS ELA assessments and are parallel and comparable to ELA in test design, scoring, and reporting.

The assessments are administered online as fixed forms with a paper-based option available at the school and district level, along with a wide range of accessibility features for all students and accommodations for students with disabilities and multilingual students, including assistive technology forms, braille, large print, and text-to-speech (TTS). CSLA is administered on paper only. The CMAS tests are designed to be administered within a specified timeframe across one, two, or three units and contain selected-response (SR), technology-enhanced (TE), and constructed-response (CR) item types. ELA/CSLA include passage sets, and the science assessment includes phenomenon-based item sets.

Student results are reported as an overall scale score, with a separate Reading scale score for ELA and science reporting category scale scores for Physical Science, Life Science, Earth and Space Science, and the Science and Engineering Practices (SEPs); subscores are not reported for social studies. Students are classified into a performance level based on their overall scale score, as shown in Table 1.1. Students in the top performance levels met or exceeded the expectations of the CAS and are considered on track for the next grade level in the content area. (Results for social studies in 2025 were reported as percentile ranks only, with overall scale scores and performance levels reported beginning in 2026.)

Table 1.1. Performance Levels

Mathematics, ELA/CSLA	Science
1. *Did Not Yet Meet Expectations*	1. *Partially Met Expectations*
2. *Partially Met Expectations*	2. *Approached Expectations*
3. *Approached Expectations*	3. *Met Expectations*
4. *Met Expectations*	4. *Exceeded Expectations*
5. *Exceeded Expectations*	

1.2. Background

The CMAS Science and Social Studies assessments were first administered in 2014, the CMAS ELA and Mathematics assessments were first administered in 2015, and the CSLA assessments were first administered in 2016. Colorado developed the CMAS Mathematics and ELA assessments in collaboration with the Partnership for Assessment of Readiness for College and Careers (PARCC) consortium, with Pearson taking over as the testing contractor in 2018. Pearson has been the testing contractor for the science and social studies assessments and the CSLA assessments since their inception.

The 2020 administration was cancelled because of the COVID-19 pandemic. In 2021, Colorado received a partial waiver of the federal assessment requirements due to COVID-19 conditions in Colorado. The number of tests students were required to take was reduced, with alternating grades for mathematics and ELA and only students in grade 8 taking the science assessment.

In 2022, newly revised standards were implemented for ELA, mathematics, and science. Senate Bill 212 (also known as CAP4K), implemented by Colorado in 2008, required the State Board of Education to adopt content standards that prepare students for the 21st century workforce and for active citizenship upon receiving a high school diploma. It also required a revision to the CAS by July 1, 2018, and every six years thereafter. As such, the 2009/2010 CAS were reviewed and revised, resulting in the 2020 CAS. Minimal changes were made to the ELA and mathematics standards, and regular testing procedures resumed in 2022. However, the science standards underwent a substantial update with the shift to the Next Generation Science Standards (NGSS; NGSS Lead States, 2013), resulting in the development of a new CMAS Science assessment.

Full implementation of the three-dimensional science standards took place in the 2021–2022 school year. The new CMAS Science assessment was administered to all tested students for the first time in 2022, which made it possible to test enough new content to allow for a robust item bank and to obtain a sufficient sample of students to conduct field test analyses. The 2022 science assessment reported percentile ranks only. Standard setting was conducted in September 2022, and overall scale scores and performance levels were reported beginning in 2023.

The CMAS Social Studies high school assessment was deferred in 2015 and eliminated in 2020. The grades 4 and 7 assessments were also eliminated in 2020 per legislation. Thus, the social studies assessments have not been administered since 2014 for high school and 2019 for grades 4 and 7. New social studies standards were adopted in 2022, with full implementation in the classroom expected by Fall 2024. The first administration of the new CMAS Social Studies assessments in grades 4 and 7 occurred in spring 2025. High school was not included in this return. Standard setting was conducted in September 2025, with the new cut scores applied starting in spring 2026. The 2025 results were reported as percentile ranks only.

1.3. Purpose of CMAS

The CMAS assessments serve multiple purposes, including informing parents/guardians and educators about individual student achievement of the grade-level CAS and allowing comparisons to other students across the state. Results are intended to provide one measure of a student's academic progress relative to the CAS and should be considered alongside other achievement information available locally. State assessment data also help inform the state's school and district accountability system, including assigning performance ratings to schools and districts. State assessment results may also be a component of educator evaluation.

In general, CMAS is a source of data that (a) may be used as a prompt for further investigation at the student, classroom, school, and district levels; (b) supports districts/schools in reviewing and developing goals for the performance of their students, including subgroups; (c) may indicate that a review of programs, curricula, materials, and/or scope and sequence may be appropriate; and (d) may inform the evaluation of district/school approaches.

Assessment results also support a range of data-driven stakeholder conversations, activities, and decisions such as school selection, program evaluation, investigative research, and policy/legislation formation and review. For example, educators can use the test scores to plan for further instruction and curriculum development and to report progress to parents/guardians. The results can also be used as one factor in making administrative decisions about program effectiveness, teacher effectiveness, class grouping, and needs assessment or for research purposes and informing community and organization efforts.

1.4. Testing Requirements

Table 1.2 summarizes the student participation requirements for the CMAS assessments. All public schools in Colorado are required by state law to administer the standards-based summative assessments each year in the specified content areas and grade levels to comply with the federal accountability requirements as stated in the Every Student Succeeds Act of 2015 (ESSA).

As a requirement of Colorado School Law C.R.S. §22-7-1006.3 (4) (II)(b), students with Spanish as their home language in grades 3 and 4 who meet established eligibility criteria may take the CSLA forms of the ELA assessment. The CSLA eligibility requirements are as follows according to the *CMAS and CoAlt Procedures Manual*: Spanish-speaking students in grades 4 and 4 who are non-English or limited English proficient, have received Spanish language arts instruction within the current school year, and have been in an English Language Development for five years or less.

The social studies assessments are not included in the federal accountability system but are administered to measure students' knowledge and skills of the CAS for Social Studies and help support social studies instruction in Colorado. Beginning in 2016 based on Colorado Revised Statute 22-7-1006.3 (1)(a)(III), the social studies assessments are administered on a sampling basis, with schools participating once every three years. Social studies assessments are not planned to be included in the 2025 district/school performance frameworks or beyond.

Table 1.2. Student Participation Requirements

Assessment	Student Participation
CMAS Mathematics	Students in grades 3–8 take the grade-level mathematics assessment for their enrolled grade.
CMAS ELA	Students in grades 3–8 take the grade-level ELA assessment for their enrolled grade.
CSLA	Qualifying students in grades 3 and 4 take the accommodated version of the ELA assessment.
CMAS Science	Students in grades 5, 8, and 11 take the grade-level science assessment for their enrolled grade.
CMAS Social Studies	Students in grades 4 and 7 take the grade-level social studies assessment for their enrolled grade at selected schools only.

The CMAS assessments are intended to be taken by all students enrolled in public schools, except for some students with the most significant cognitive disabilities who take the Colorado Alternate (CoAlt) assessment as determined by the student's Individualized Education Plan (IEP) team. Exempt students include those that are excused as a result of Colorado legislation C.R.S. §22-7-1013 (8) (a-c) passed in 2015 that allows for parents/guardians to excuse their child(ren) from testing. However, every student, regardless of ability or language background, must be provided the opportunity to demonstrate their content knowledge through the state assessments.

Colorado legislation (C.R.S. §22-7-1006.3 (1) (d)) also requires that a paper-based version be available for all online assessments that may be used by local educational providers for their students. The comparable paper-based forms may also be administered to students with disabilities and multilingual learner (ML) students as appropriate. Multilingual learners for assessment purposes are students with a home language other than English who are designated as not English proficient or limited English proficient (NEP/LEP) by an English language proficiency assessment or screener.

ML students in their first year in the United States are exempt from the ELA assessment, but ML students in grades 3 and 4 designated as NEP whose native language is Spanish and who have received language arts instruction in Spanish during the current school year are required to take the CSLA assessment. Students with disabilities and ML students may take the CMAS assessments with or without accommodations that do not change the construct of the assessment. Accommodations are determined based on classroom experience and educational team decisions.

1.5. Assessment Development Partners

CMAS assessment activities were conducted collaboratively by CDE, the Colorado educator community, and Pearson, with input and advice from the Colorado Technical Advisory Committee (TAC), as shown in Table 1.3. Each contributor plays a vital role in ensuring that the assessments yield valid and reliable test results. Educator participation in the test development process is critical to ensuring that the assessments are aligned to the CAS, are appropriate for Colorado students at the assessed grade level, and are free from bias and sensitivity issues, and recommendations from the TAC have been reviewed, addressed, and incorporated into the assessments.

Table 1.3. Assessment Development Partners

Organization/Group	Roles and Responsibilities
Colorado Department of Education (CDE)	• Implements state and federal education laws as the administrative arm of the State Board of Education • Works closely with Colorado school districts, educators, community stakeholders, and other assessment development partners to develop and administer the state assessments, focusing on creating assessments that serve students, schools, districts, and the community while complying with state and federal legal requirements • Works with Pearson on each facet of the assessment, with CDE serving as the ultimate approver of services and products provided
Colorado Educator Community	• Create assessment items aligned to the CAS, with items that successfully move through the entire item development process eventually appearing on the operational assessments • Review items to ensure content alignment and identify potential bias and sensitivity concerns before items are field tested • Participate in rangefinding to review student responses to field tested CR items and define the score point ranges for the scoring rubrics used to score student responses • Participate in data review to review field tested items with statistical parameters outside of normal ranges to determine if the items are acceptable for inclusion in the operational item bank
Pearson	• Primary contractor responsible for the end-to-end assessment cycle services and products • Works closely with CDE throughout the CMAS and CoAlt Science assessment development and administration processes, including item and test development, forms creation, enrollment, packaging and distribution, test delivery, scoring, customer service, standard setting, scoring, score reporting, and psychometric services
Tri-Lin Integrated Services, Inc.	• Develops CSLA passages, items, and test forms as a subcontractor to Pearson
Technical Advisory Committee (TAC)	• A group of psychometric, assessment design, and special populations experts who provide consulting and expert advice for the assessment • Provides input on the blueprint design, equating and scaling, scoring, reporting, alignment studies, peer review, standard setting, and reliability and validity issues

Chapter 2: Test Design

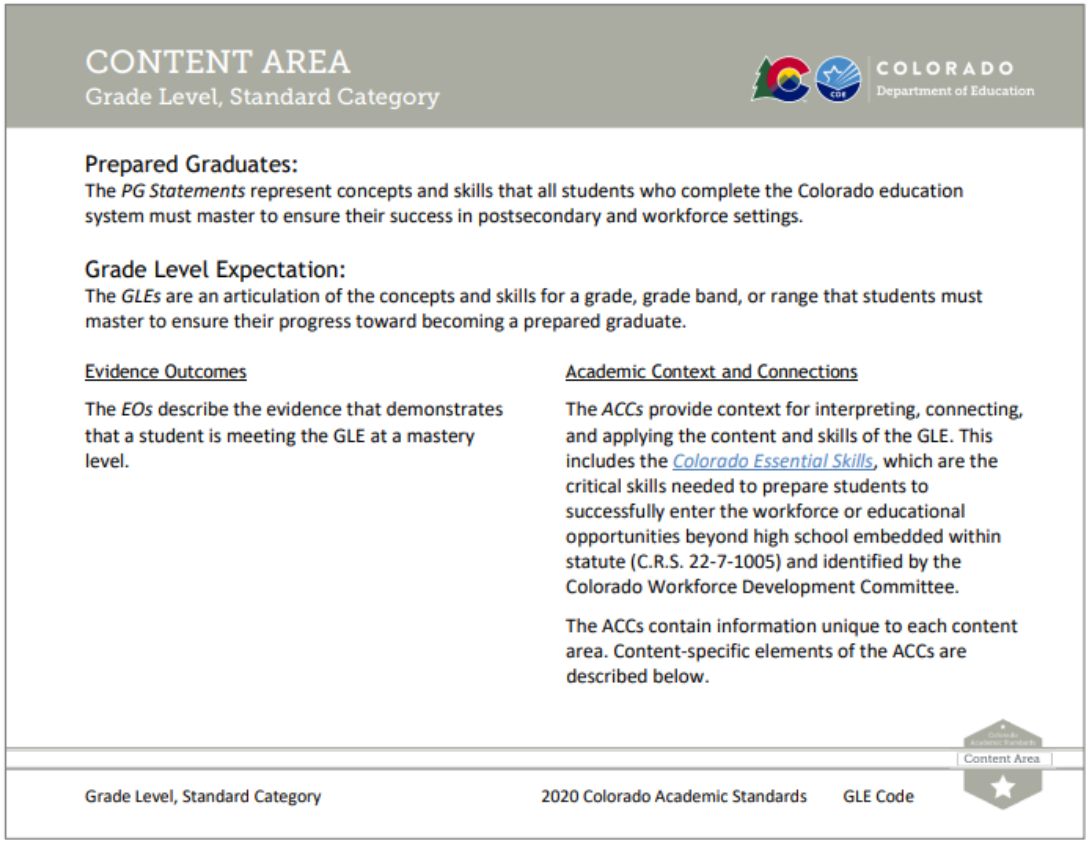
This section describes the assessment framework from which the CMAS assessments are developed, including the content standards that provide the basis for test development, the item types, the test blueprints that guide the construction of the test forms, and the overall structure of each assessment. This information is important for providing transparency into the intended construct and rationale behind the assessments to support the valid interpretations of the test scores. More details about the CMAS assessment test design are available online at https://www.cde.state.co.us/assessment/cmas.

2.1. Colorado Academic Standards

Standards are broad goals articulating what students should know, understand, and be able to do over a given timeframe and are the foundation of teaching and learning. The CMAS assessments are standards-based tests designed to measure what students should know and be able to demonstrate at the end of each grade or grade band based on the 2020 CAS located at the following links for each content area. Figure 2.1 explains how to read the CAS.

- 2020 Mathematics Standards: http://www.cde.state.co.us/comath/statestandards
- 2020 Reading, Writing, and Communicating Standards: http://www.cde.state.co.us/coreadingwriting/statestandards
- 2020 Science Standards: https://www.cde.state.co.us/coscience/statestandards
- 2022 Social Studies Standards: https://www.cde.state.co.us/cosocialstudies/statestandards

Figure 2.1. How to Read the Colorado Academic Standards



The 2020 CAS for mathematics and ELA had minimal changes compared to the previous 2009/2010 standards, while the 2020 CAS for Science underwent significant changes based on the NGSS that were guided by *A Framework for K–12 Science Education* (National Research Council, 2012) and designed to reflect more recent research and thinking in science education based on the three dimensions of Disciplinary Core Ideas (DCIs), Science and Engineering Practices (SEPs), and Crosscutting Concepts (CCCs). The 2020 CAS for Science represent what all Colorado students should know and be able to do in science based on their pre-k–grade 12 science education. The CAS for Social Studies were updated for 2018 although never fully implemented. The standards were further revised and approved by the State Board of Education in 2022, with seven new evidence outcomes being added, one in grade 4 and six in grade 7 The changes to the general 2022 CAS for social studies were minimal enough that links to the previous standards and item bank could still be made.

A summary of all the changes made to the standards are available at the following links for each content area:

- Mathematics: https://www.cde.state.co.us/comath/2020cas-ma-changes
- ELA: https://www.cde.state.co.us/coreadingwriting/2020cas-rw-changes
- Science https://www.cde.state.co.us/coscience/2020cas-sc-changes
- Social studies: https://www.cde.state.co.us/standardsandinstruction/ss2022stdssummary

2.2. Claims and Subclaims

The CMAS assessments are designed to measure student performance and report student results using both overall performance claims and subclaims (except for social studies that reports overall student percentile rank only). A student's overall performance for a content area is reported as a scale score and performance level, while the subclaims (also referred to as reporting categories or domains) provide more granular information about student demonstration of the knowledge and skills within the content area as reflected in the CAS, as outlined in Table 2.1. The Reading and Writing claims for ELA provide information on a student's achievement in reading and comprehending a range of sufficiently complex texts independently.

The mathematics score is a composite of the four subclaims (Major Content, Supporting Content, Mathematical Reasoning, and Modeling and Application) that provide information on a student's achievement on grade-level math skills and concepts, as well as reasoning and modeling based on both grade-level and securely held knowledge of the skills and concepts from the previous grade level. The Reading score is a composite of the three reading subclaims (Reading: Literary Text, Reading: Informational Text, and Reading: Vocabulary, and the Written Expression subclaim that measures reading), and the Writing claim is a composite of the two writing subclaims (Writing: Written Expression and Writing: Knowledge and Use of Language Conventions). The science score is a composite of the three standards (Physical, Life, and Earth and Space Science), as well as an SEP score.

The five standard areas of the social studies CAS are History, Geography, Economics, Civics, Personal Financial Literacy. While the assessments are designed to allocate a certain number of points per standard, the CMAS Social Studies assessments currently report student performance at the overall percentile rank level only (i.e., no subscores are reported). Beginning with the

2026 administration, Social Studies results will include both an overall score and introduce subscores for the above reporting categories, with subscores reported at the percent-correct level.

Table 2.1. Subclaims

Content Area	Subclaim	Description
Mathematics	Subclaim A: Major Content	Students solve problems involving the multiplication and division, area, measurement, and basic fraction understanding.
	Subclaim B: Additional & Supporting Content	Students solve problems involving perimeter, place values, geometric shapes, and representations of data.
	Subclaim C: Expressing Mathematical Reasoning	Students create and justify logical mathematical solutions and analyze and correct the reasoning of others.
	Subclaim D: Modeling & Application	Students solve real-word problems, represent and solve problems with symbols, reason quantitatively, and strategically use appropriate tools.
ELA	Reading: Literary Text	Students read and analyze fiction, drama, and poetry.
	Reading: Informational Text	Students read and analyze nonfiction, history, science, and the arts.
	Reading: Vocabulary	Students use context to determine what words and phrases mean.
	Writing: Written Expression	Students compose well-developed writing using details from what they have read.
	Writing: Language and Conventions	Students demonstrate knowledge of conventions and other important elements of language.
Science	Physical Science	Students know and understand common properties, forms, and changes in matter and energy.
	Life Science (Physical/Life Science in grade 5)	Students know and understand the characteristics of living things, processes of life, and how living things interact with each other and their environment.
	Earth and Space Science	Students know and understand the processes and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space.
	Science and Engineering Practices (SEPs)	Students know and understand how to make sense of the natural world through investigation and problem solving. The SEPs (a) describe how scientists investigate and build models and theories of the natural world or how engineers design and build systems and (b) reflect science and engineering as they are practiced and experienced.

2.3. Cognitive Complexity

All mathematics and ELA items are tagged with a cognitive complexity level of high, moderate/medium, or low, as described in Table 2.2.

Table 2.2. Mathematics and ELA Cognitive Complexity Levels

Content Area	High	Moderate/Medium	Low
Mathematics	• Significant shift from previous content • Open ended, sophisticated reasoning, critiquing, modeling • Single/multi-part that requires more evidence from the student	• Moderate shift into new content • Moderately scaffolded, some choice in approach • Single/multi-part, multi-step, moderate reading load	• Low shift from previous content • Very scaffolded, rote, recall, recognize • Single part, one step with low reading load

Content Area	High	Moderate/Medium	Low
ELA	Items require synthesis of ideas and details **across multiple texts or ideas** (can be single passage). For example, items may require students to construct the main idea or theme that is common across multiple texts, especially multiple texts that are not closely related in theme and/or genre.	Items require **analysis of ideas and details** across multiple sections **in a single text**. It requires more close analytic reading than low complexity items. For example, identifying the main idea or theme of a text may require inferring the main or theme or integrating ideas and details from several locations in the text.	Items require students to identify **a single idea or detail in a text** (e.g., identifying a term or phrase using context). It requires students to recall, observe, question, or represent facts or simple skills or abilities.

Science transitioned away from Depth of Knowledge (DOK) in 2021–2022 with the adoption of the new science standards. From Achieve:

> *As states and districts develop new assessment systems, they need support for developing assessments that balance the vision and integrity of multi-dimensional standards with ensuring that they are sensitive to varying levels of student performance. This... (requires a) ...new approach to capturing and communicating the complexity of summative assessment items and tasks designed for three dimensional standards that can be used to ensure that all learners can make their thinking and abilities visible without compromising the rigor and expectations of the standards* (Achieve, 2019, p. 1).

The CMAS Science assessment uses a cognitive complexity framework that examines items via three criteria, as summarized in Table 2.3 and presented in Appendix B. The phenomenon in the stimulus material is examined separately for its own cognitive complexity.

Table 2.3. Science Cognitive Complexity Criteria

Criterion	Description
Item Dimensionality	Item alignment to one, two, or three dimensions: • Content of EO (Disciplinary Core Idea DCI) • Science and Engineering Practice (SEP) of EO • Cross Cutting Concept (CCC) of EO Items aligned to a single dimension only are **not** acceptable for CMAS Science.
Scaffolding/Support	The more guidance and structure the item provides the student, the lower the cognitive load required. The matrix categorizes scaffolding/support into three levels: heavy, moderate, and minimal. Heavy refers to a specific, step-by-step process is given, and the student merely needs to follow that process to supply the answer. Moderate and minimal provide increasing degrees of freedom to make choices on the part of the student and require an increasing degree of initiative to make those choices.
Sensemaking	Fundamental to the approach of three-dimensional standards is student use of the dimensions to make sense of scientific phenomena. Some degree of sensemaking is required for all CMAS Science items. A sensemaking situation is one in which students (a) are provided material without obvious ties/connections to content (e.g., language of the standard) and (b) use their knowledge of the standard to explain what they see in the material.

Each standard area of the 2022 CAS for social studies were assessed with items representing DOK Levels 1–3:

- DOK 1 (Recall and Reproduction): Tasks that require recall of facts or simple procedures
- DOK 2 (Skills and Concepts): Tasks that involve some mental processing beyond recall, such as comparing or organizing data
- DOK 3 (Strategic Thinking): Tasks that require reasoning, planning, and using evidence

2.4. Testing Units and Time

Each assessment was composed of one, two, or three units to allow the assessments to be administered in a reasonable timeframe, as shown in Table 2.4. The grades 3–5 units for mathematics are all non-calculator. Unit 1 in grades 6–8 consists of a non-calculator section and a calculator section, while Units 2 and 3 are calculator units. The unit testing time must be available to all students for each test unit by content area. Unless students have an extended time accommodation (e.g., time-and-a-half or double time) documented on an IEP, 504, or ML plan, providing more than the unit testing time is a misadministration. Unit testing times do not include time for setup, reading directions, or distributing/collecting student testing materials.

If all students in a physical testing group complete the test unit before the maximum unit testing time is reached, the test administrator may end the test unit. Districts may determine whether students who finish testing should remain in the testing room and read quietly, be dismissed from the testing room, or continue testing in the next unit once all students in the test session complete the current unit.

Table 2.4. Testing Units and Time

Grades	Mathematics	ELA	Science	Social Studies
3–5	Units 1–3: 65 minutes Total time: 195 minutes	Units 1–3: 90 minutes Total time: 270 minutes	Units 1–3: 80 minutes Total time: 240 minutes	Unit 1: 65 minutes Total time: 65 minutes
6–8	Units 1–3: 65 minutes Total time: 195 minutes	Units 1–3: 110 minutes Total time: 330 minutes	Units 1–3: 80 minutes Total time: 240 minutes	Unit 1: 65 minutes Total time: 65 minutes
11	N/A	N/A	Units 1 and 2: 60 minutes Total time: 120 minutes	N/A

2.5. Item Types

Table 2.5 describes the item types included on the CMAS assessments. Sample item sets are available online at https://coassessments.com/practice-tests/.

Table 2.5. Item Types

Item Type	Description
Selected-response (SR): multiple-choice, multiple-response, and fill-in-the-blank (FIB)	For multiple-choice and multiple-response items, students select a correct answer out of provided choices. For FIB items, students type/write their answer in a blank box online or fill in bubbles in a grid on paper.
Technology-enhanced (TE): bar graph, drag and drop, inline choice, hot spot, and match table grid	Students show their answer using technology.

Item Type	Description
Bar Graph	Students create a bar graph using a template provided by the online testing system or on the paper-based test.
Drag and Drop	Students drag answer choices into correct answer bays (draw lines or write corresponding letters for paper-based testing).
Inline Choice	Students select their answer from a drop-down menu (circle answer from a list of choices for paper-based testing) to complete a sentence or sentences.
Hot Spot	Students select the correct response from its location in an image (write corresponding letters or circle answer for paper-based testing).
Match Table Grid	Students check checkboxes in cells to indicate a match between the column and row labels.
Constructed-response (CR)	Students construct an open-ended response.
Prose constructed-response (PCR)	Students receive a prompt, respond to reading items, and write an extended response.

The mathematics assessments contain selected-response (SR), technology-enhanced (TE), and constructed-response (CR) items. All mathematics items are aligned to both an ES and an EO. The ES are grouped into three types to ensure that the full range and depth of the standards are assessed:

- Type I items:
  - Assess a specific EO, a specific part of an EO, or multiple EOs
  - Subclaims A and B
  - 1- or 2-point items (grades 3–8) and 4-point items (grades 6–8)
  - SR, TE, and FIB items
  - Calculator (grades 6–8) and non-calculator (grades 3–8)

- Type II items (reasoning):
  - Assess a specific type of mathematical reasoning and a specific scope in the EOs to reason about
  - Subclaim C
  - 3- or 4-point items
  - SR, TE, FIB, and CR parts; all items have at least one CR part
  - Calculator (grades 6–8) and non-calculator (grades 3–5)

- Type III items (modeling):
  - Assess a specific type of mathematical modeling and a specific scope in the EOs to model about
  - Subclaim D
  - 3- or 6-point items
  - SR, TE, FIB, and CR parts; all items have at least one CR part
  - Calculator (grades 6–8), non-calculator (grades 3–5)

The ELA assessments are passage-based with a combination of literary and informational passages and contain SR, TE, and prose constructed-response (PCR) items that include three task types (literary analysis, research simulation, and narrative writing) and are scored on a multi-trait rubric, available online at https://www.cde.state.co.us/assessment/cmas_testdesign. Multiple passages may be used to respond to some items. Because it is administered on paper, CSLA forms contain SR, PCR, and paper-based TE items that have similar item formats and scoring rules to the online TE items developed for CMAS ELA.

The science assessments are divided into item cluster sets that present phenomenon-based scenarios as either interactive science simulations or static stimuli, followed by associated standalone items or clusters of items related to the simulation or scenario. A phenomenon is an observable event that students can use the three dimensions (DCI, SEP, and CCC) to explain or make sense of. A regular cluster is built around a science simulation, an interactive stimulus that involves student choices (except on paper and some accommodated forms with a fixed version). They generally have more items than mini clusters (5–9 points). Mini clusters are built around passage stimuli with no interactive element and have fewer items (5 or 6 points at most). Separate standalone items are also included that are not associated with a stimulus to target a small number of CAS not represented in the scenarios. The items are either 1-point SR, 1-point TE, or 2-point CR item types.

The social studies assessments contain 1-point SR and TE items only.

2.6. Test Frameworks and Blueprints

Concepts and skills identified in the CAS are the basis for the CMAS assessments. The CMAS frameworks list the number of score points for each subclaim and standard area that appear on the assessments and percent of the test represented by that subclaim or standard. The frameworks specify the Evidence Outcomes (EOs) from the CAS that are included on the assessments. The mathematics and ELA frameworks continue to use Evidence Statements (ES) developed in collaboration with PARCC that describe the knowledge and skills an assessment item/task elicits from students. Together, the CMAS frameworks and ES provide the foundation for ensuring that the full range and depth of the standards are assessed. CDE incorporated feedback from content experts and educators throughout the state to create the final versions of the frameworks. The frameworks and ES are both available on the CDE website at https://www.cde.state.co.us/assessment/cmas_testdesign.

The test blueprints take the frameworks a step further by specifying the number of test items by Prepared Graduate (PG) Statement, Grade-Level Expectation (GLE), EO, item type, and cognitive complexity. The specificity of the test blueprints ensures that the assessments cover the breadth of the content indicated by the CAS within the associated grade or grade band. Appendix A presents the high-level test blueprints that summarize the percentage of score points on each test for each claim and subclaim on each assessment as shown in the frameworks. The most recent versions of the blueprints were developed in 2017–2018 for ELA and mathematics, 2021–2022 for science, and 2023–2024 for social studies.

2.6.1. ELA and Mathematics

In 2017, the Colorado State Board of Education directed CDE to decrease testing time. CDE explored the use of abbreviated versions of the prior years' test blueprints with the goal of decreasing testing time while retaining comparability to the previous CMAS Mathematics and ELA/CSLA assessments to maintain longitudinal trend data. Therefore, with the intent to reduce testing time, the 2018 blueprints were a proportionate abbreviation of the 2017 forms. CDE and Pearson collaborated in designing the CMAS subject- and grade-specific blueprints for ELA and mathematics in 2017–2018. The blueprints were designed to measure the same constructs as, and provide content comparability to, the previous year's assessments. Eligible content continued to reflect the CAS and ES used in prior years. Test forms based on the abbreviated blueprints were administered beginning in 2018.[1] Table 2.6 and Table 2.7 summarize the test design details for the ELA and mathematics assessments.

Table 2.6. CMAS ELA Grades 3–8 Test Design

	Test Design
Sampling	No sampling – all students in CO are eligible
Test Structure	3 units with embedded field test items
Mode	Primarily online
Item Types	2-pt SR and TE, multi-point PCR
Test Length	21–25 items, 65–80 pts.
IRT Models	GPC
Scoring	Pattern scoring
Reporting Scale (test level)	Scale score range 650–850; scale set using two cut score points
Reporting Scale (subscores)	Reading subscore reported to students
Performance Levels	Five levels

Table 2.7. CMAS Mathematics Grades 3–8 Test Design

	Test Design
Sampling	No sampling – all students in CO are eligible
Test Structure	3 units with embedded field test items
Mode	Primarily online
Item Types	1-, 2-, 3-, 4-, and 6-point SR, TE, FIB, and CR
Test Length	29–33 items, 50–51 pts.
IRT Models	2PL and GPC
Scoring	Pattern scoring
Reporting Scale (test level)	Scale score range 650–850; scale set using two cut score points
Reporting Scale (subscores)	Subscores not reported to students
Performance Levels	Five levels

[1] For information on the background of the PARCC consortium and the development of the ELA and mathematics assessments, including the abbreviated blueprints, see prior years' technical reports at https://www.cde.state.co.us/assessment/cmas_coalt_techreport.

2.6.2. Science

Pearson worked with Achieve, a nonprofit education organization that leads the effort to help states make college and career readiness a priority for all students, during the initial development of the new science assessment. Achieve provided background on how other states were approaching the new three-dimensional science standards and assessments and advice on how to proceed with cognitive complexity, blueprints, and reporting. With guidance from Achieve, Pearson, CDE, and Colorado educators collaborated in designing the science blueprints in a workshop held from November 6–7, 2019, in Denver. An effort was made to involve educators who were from areas representative of the entire state of Colorado (in terms of geographic location, gender, and race) and familiar with the 2020 CAS, related three-dimensional science instruction, and the assessment interaction and demonstration of achievement of the CAS of different groups of students, including students with disabilities and ML students. The blueprints were reviewed on October 14, 2021, by the TAC.

Results from the 2022 test administration showed that items at the end of the test units were often left unanswered on the grade 11 CMAS Science assessment, indicating that high school students had difficulty finishing the test in the time given. Therefore, after review by CDE and Pearson psychometrics, a proportional reduction was made to the grade 11 blueprint to prevent speededness. The proposed blueprint reduction and test timing data was reviewed by the TAC on August 30, 2022. Grades 5 and 8 did not show a similar concern with speededness, so the length of these tests was not changed. Table 2.8 summarizes the test design details for the science assessments.

Table 2.8. CMAS Science Grades 5, 8, and 11 Test Design

	Test Design
Sampling	No sampling – all students in CO are eligible
Test Structure	2 (grade 11) or 3 (grades 5 and 8) units with embedded field test items
Mode	Primarily online
Item Types	1-point SR and TE, 2-point CR
Test Length	29–33 items, 50–51 pts.
IRT Models	2PL/3PL and GPC
Scoring	Pattern scoring
Reporting Scale (test level)	Scale score range 650–850; scale set using two cut score points
Reporting Scale (subscores)	Subscores are reported to students
Performance Levels	Four levels

2.6.3. Social Studies

The revised 2022 standards prompted an update to the CMAS Social Studies assessments. Before the new test designs were finalized, CDE gave the public an opportunity to weigh in by collecting their feedback on two different options. Option 1 proposed minimal adjustments to the previous blueprint, while Option 2 proposed a shortened test that minimizes testing time from three 80-minute sessions to one 65-minute session, eliminates CR items and subscale reporting, and retains the standards distributions from the original blueprint while proportionately reducing the number of points (i.e., provides a high-level indicator of student achievement of the CAS at reduced standards coverage). The public chose Option 2. Table 2.9 presents the updated test design based on Option 2.

Table 2.9. CMAS Social Studies Grades 4 and 7 Test Design

	Test Design
Sampling	One-third of schools sampled
Test Structure	1 unit with embedded field test items
Mode	Primarily online
Item Types	1-pt. SR and TE
Test Length	36 items, 36 pts.
IRT Models	2PL/3PL
Scoring	Pattern scoring
Reporting Scale (test level)	Scale score range 650–850; scale set using two cut score points (starting in 2026)
Reporting Scale (subscores)	Subscores not reported to students
Performance Levels	Three levels (starting in 2026)

Chapter 3: Test Development

This section describes the test development process for the spring 2025 CMAS assessments. The assessments were composed of refreshed operational items, newly administered operational items, and embedded field test items. The mathematics and ELA operational test forms in grades 3 and 5–7 and the social studies and science operational test forms were newly developed by Pearson. CSLA forms were newly constructed through an iterative process between Pearson and Tri-Lin. The ELA grades 4 and 8 test forms were reused 2024 forms. Table 3.1 presents the operational refresh rates allowed for the CMAS assessments by item type. An overall refresh rate of 50% was the goal for the 2025 form build.

Table 3.1. Refresh Rates

Content Area	Item Type	Minimum Targets	Maximums
Mathematics	Type I: 1-point	25%	50%
	Type I: 2- and 4-point	40%	60%
	Type II	33%	67%
	Type III	50%	50%
ELA	Selected Response	50%	–
	Short Constructed Response	50%	–
	Extended Constructed Response	50%	–
	Passage Sets	50%	–
Science	Regular Cluster	33%	–
	Mini Cluster	50%	–
	Overall Items	33%	66%

Table 3.2 presents the item development activities during the 2024–2025 development cycle for items eligible for field testing beginning in spring 2026. The CMAS item development process results in a diverse bank of items that align to the CAS. All items are developed with the intention of being administered on multiple testing platforms, including online, online-accommodated, and paper-based assessments. Each content area and grade-level assessment has its own item pool, or item bank, that houses all the stimuli and items and supports the development of the assessments.

Prior to the annual item development cycle, Pearson and CDE evaluate the strengths of the item pools and consider the needs for future tests to establish an item development plan (also referred to as an item bank gap analysis) for each content area and grade created at the beginning of each item development cycle to determine the number of items, passages, and science cluster stimuli needed to construct the assessments based on the blueprint requirements, with development targets that address any task model, passage type, ES, EO, item/task type, and cognitive complexity shortages. To accomplish this, the item bank is analyzed, and the ES, EO, task type, and cognitive complexity gaps are identified so a variety of item types aligning to the ES, EOs, and the corresponding CAS can be created.

New passages/stimuli and items are developed based on this plan, followed by internal and external reviews. The ELA passage review included five windows where educators reviewed batches of passages independently. Accepted items are added to the item pool as field test items. Test forms are then constructed for both the operational and field test items. Following the test administration, the field tested items are reviewed during data review where they are either accepted into the operational item pool, accepted with edits, or rejected from any further use.

Table 3.2. Item Development Activities for the 2024–2025 Cycle

Activity	Date(s)
ELA Passage Reviews	Jan. 8–14, 2025
	Jan. 15–22, 2025
	Feb. 14–20, 2025
	April 4–10, 2025
	April 29 – May 5, 2025
Sim Storyboard Review (Science)	Dec. 10–12, 2024
Item Writer Workshop Math)	Dec. 10–12, 2024
Item Writer Workshop (ELA)	Feb. 18–20, 2025
Item Writer Workshop (Science)	Feb. 18–19, 2025
Item Writer Workshop (Social Studies)	Feb. 18–19, 2025
Item Writer Workshop (CSLA)	Feb. 24, 2025
Content and Bias Review (CSLA)	June 24–26, 2025
Content and Bias Review (Social Studies)	June 25, 2025
Content and Bias Review (Math)	July 16–17, 2025
Content and Bias Review (Science)	July 17–18, 2025
Content and Bias Review (ELA)	Aug. 2–31, 2025
Data Review (Social Studies)	July 22, 2025
Data Review (CSLA)	July 31, 2025
Data Review (Science)	October 7–8, 2025
Data Review (ELA)	Aug. 12–13, 2025
Data Review (Math)	Sept. 10–11, 2025

3.1. Content Development and Management Tool

The test development process is managed within Pearson's Assessment Banking and Building solutions for Interoperable assessments tool (ABBI) that acts as a content development and management tool, item bank, and publication system supporting both online and paper publication. The item development workflow moves items and assets from inception through a series of reviews to final publication. The system captures the outcomes at each review and maintains previous versions of each item. As items travel through the review process, every version of each asset is archived, along with each comment received in any review. Reviewers have immediate access to all older versions, providing version control throughout development. Forms are also built in ABBI. After items are used, ABBI stores the resulting statistics, including exposure statistics and classical and item response theory (IRT) statistics.

ABBI allows remote internet access by item writers and reviewers while ensuring security with individualized passwords, limited access for external users, and strong encryption of all information. ABBI manages item content throughout the entire lifecycle of an item, as well as item content beyond the operational life of the item, including items identified for use in sample tests or other training materials. ABBI provides on-demand reports of the content and item bank status. Each item is directed through a sequence of reviews and approvals by Pearson and CDE before it is identified for operational or field test use.

3.2. Stimuli Development

3.2.1. ELA Passages

Item development for CMAS ELA begins with the selection of literary and informational texts, whereas CSLA passages are commissioned by Tri-Lin, either in-house or by professional passage writers, due to the availability of appropriate passages and challenges with acquiring permissions. The number and types of needed passages are determined by the test construction specifications, a gap analysis of the pool of available passages, and the item development plan. Contractor assessment specialists train passage searchers to find (or write for the CSLA items) relevant and rich texts that permit a range of content to be developed.

Passage searchers and writers submit the passages for the contractor assessment specialists to review and evaluate using approved criteria, including adherence to the cognitive demand, relevance, and purpose of the test and the appropriate use of graphics to improve text comprehension. Test passages are analyzed and rated for text complexity. The assessment specialists check the passages for clarity, correctness of language, appropriateness of language for the grade level, and adherence to the style guidelines. Accepted passages are presented to CDE for review. Once approved, the passages are reviewed for content and bias by committees of educators from throughout the state representing a variety of student populations, including students with disabilities and ML students. Passages accepted by both CDE and the educator committees are then used for item writing.

3.2.2. Science Stimuli

Item development for science begins with the composition of the interactive simulations (SIMs) and cluster stimuli. The number and types of needed simulations and cluster stimuli are determined by the test construction specifications, a gap analysis of the pool of available SIMs and stimuli, and the item development plan. The topics are researched for suitability of science content, alignment to the standards, and grade-level appropriateness. The SIMs and cluster stimuli follow slightly different paths through the development process, but both include multiple steps of review by assessment specialists for adherence to cognitive complexity requirements, relevance to standards, purpose of the test, and the appropriate use of graphics and or animations. Pearson checks all stimulus text for scientific accuracy, clarity, correctness of language, appropriateness of language and science concepts for the grade level, and adherence to the style guidelines.

Simulation ideas are presented to CDE in the form of storyboards illustrating the intended virtual interaction, along with suggested EOs that the simulations address. Once CDE provides feedback, revised storyboards are reviewed by committees of educators from throughout the state representing a variety of student populations, including students with disabilities and EL/ML students. The SIMs are then developed into animated interactions and reviewed by CDE, after which items are written to a variety of EOs, either internally or by educators.

Cluster stimuli are proposed as topics to CDE and then developed into drafts based on CDE feedback by teachers. Teacher-written drafts are refined by Pearson with CDE input. The educators who developed the drafts write items to them in the item writer workshop (IWW).

3.3. Item Writing

Item writer workshops (IWWs) are conducted with Colorado educators from across the state representing a variety of student populations, including students with disabilities and students with limited English proficiency. The educators are given item writing assignments and develop a variety of items across task types, ESs, and EOs. The item writers work with Pearson and/or Tri-Lin assessment specialists when clarification is needed for CSLA items. CDE content specialists are also present to assist as needed. Item writers use the ESs and EOs; the CAS; secure item specification documents, including item-writing guidelines (universal design guidelines, bias and sensitivity guidelines, and editorial guidelines); and an item writing checklist to guide them in completing their assignments.

All items are either authored in ABBI or loaded into ABBI after being submitted by the item writers. Pearson or Tri-Lin assessment specialists complete their review in ABBI, suggesting revisions to the items and metadata for the item authors, who then make the revisions and resubmit the items.

3.4. Item Review

3.4.1. Internal Review

Pearson and Tri-Lin assessment specialists evaluate each newly developed item for content correctness; grade appropriateness; and ES, EO, CAS, and cognitive complexity alignment, focusing on the quality of the items, adherence to the principles of universal design, cognitive demand, relevance to the purpose of the test, and appropriateness of graphics. Research librarians perform additional fact checking to ensure accuracy. Pearson and Tri-Lin copy editors check items for clarity, correctness of language, appropriateness of language for the grade level, adherence to style guidelines, and conformity with acceptable item-writing practices.

All human-scored CR items are reviewed for their scorability by a Scoring Services director, and items and/or scoring rubrics with score points deemed “difficult to score” are revised in collaboration with the assessment specialist(s). All fill-in-the blank equation editor (FIBEE) items and machine-scored CR mathematics items and their rubrics are reviewed for their scorability by the Math Reasoning Engine (MRE) team, and items and/or scoring rubrics are revised in collaboration with the assessment specialist(s) before the MRE automated scoring is applied to the items.

Pearson and Tri-Lin assessment specialists also perform a universal design review to assess item accessibility irrespective of diversity of background, cultural tradition, and viewpoints; to evaluate changing roles and attitudes toward various groups; to review the role of language in setting and changing attitudes toward various groups; to appraise contributions of diverse groups (including ethnic and minority groups, individuals with disabilities, and women) to the history and culture of the United States and the achievements of individuals within these groups; and to edit for inappropriate language usage or stereotyping with regard to sex, race, culture, ethnicity, class, disability, or geographic region. The universal design review also includes reviewing items for potential bias to ensure that all items are fair and all students would have an equal opportunity to demonstrate achievement regardless of their gender, ethnic background, religion, socioeconomic status, disability, or geographic region. Items are also reviewed for visual bias, accessibility for students with disabilities, and convertibility to braille and text-to-speech.

Once the internal reviews are complete, each item's status is updated in ABBI and a lead assessment specialist conducts a final content review. Item statuses are updated in ABBI upon approval, and items are presented to CDE for review. Adhering to these processes ensures that each Colorado item measures the ES or EO and standard, is content- and grade-appropriate, is factually accurate, has appropriate answers and distractors, is accessible to all populations required to take the assessments, is free from any bias, and follows the Colorado style guidelines.

3.4.2. CDE Review

CDE reviews items in ABBI to ensure that the content is correct, the alignment is sound, the cognitive complexity is appropriate, the language and content are grade-appropriate, the graphics are clear and relevant to the item, and the content is free of bias/sensitivity issues. Once complete, CDE alerts Pearson or Tri-Lin. CDE's comments and determinations regarding the status of the items are recorded in ABBI, as indicated below:

- Items marked "Accept" need no more revisions and are ready for external Colorado educator content and bias reviews.
- Items marked "Accept with Edits" are revised per CDE's feedback and re-reviewed by the internal review team if necessary. These items are then reviewed by CDE again, reconciled with the assessment specialists, and deemed either "Accept" or "Reject."
- Items marked "Reject" are rejected and given a status of "Do Not Use" in ABBI. These items are either rewritten or replaced with items written by an assessment specialist. In either case, the items go through the same rigorous review process as newly developed items.

3.4.3. External Content and Bias Review

All items that pass the internal and CDE reviews are brought to external content and bias committees comprised of Colorado educators from across the state with diverse backgrounds and experience working with diverse learners (e.g., based on gender, race/ethnicity, income, and geography), standards and content expertise, and special population expertise (i.e., students with disabilities and EL/ML students). For science, educators are also selected based on their experience in the domain they are reviewing. For the accommodated CSLA items, an effort is made to involve educators who teach ML students, are familiar with the instruction and needs of the students in an English language development program that uses native language instruction, and are proficient in written Spanish.

The purposes of these educator reviews are to (a) ensure that the items are properly aligned to the CAS, accurately measure the intended content, and are grade-appropriate; and (b) identify any potential bias or stereotypes in the items. Separate committees are convened for each content area, as well as for the accommodated CSLA items. The meetings are conducted either in person or virtually and include group training on the expectations and processes of each meeting, followed by breakout groups by content area and grade where additional training is provided. The committee members are trained and instructed to verify that each item and stimulus

- displays and functions correctly in the online testing platform;
- aligns to the ES and/or EO;
- uses clear, unambiguous, and grade-appropriate language;
- avoids construct-irrelevant complex sentence structure and uses everyday words to convey meaning when vocabulary is not part of the tested construct;
- has one correct answer (depending on the item type) and contains plausible distractors that represent feasible misunderstandings of the content (depending on the item type);
- represents the range of cognitive complexities and includes challenging items for students performing at all levels;
- is appropriate for students in the assigned grade in terms of reading level, vocabulary, interest, and experience;
- has scoring guidelines that capture exemplar responses at each score point for CR items;
- includes appropriate and clear graphics/art/photos that are relevant to the item and accessible to all testing populations;
- is free of ethnic, gender, political, and religious bias;
- avoids construct-irrelevant content that may unfairly advantage or disadvantage any student subgroup; and
- considers access issues at the time of item writing (e.g., determine how students with visual disabilities would access items with needed visuals/graphics/animation).

The committees make one of three recommendations on every item: "Accept," "Accept with Edits," or "Reject." Following the educator meetings, CDE, Pearson, and Tri-Lin review committee comments, reconcile proposed edits, and finalize item outcomes. ABBI is updated to reflect the edits and outcomes. The approved items, passages, and simulations/clusters are then made ready for inclusion on the spring operational forms as embedded field test items.

3.5. Form Construction

Table 3.3 presents the number of test forms constructed for the spring 2025 administration. The CMAS assessments are administered online as fixed forms, meaning all students receive the same set of operational items in a predetermined order but different embedded field test items depending on which test form they receive. A core form refers to the set of operational items that each student receives, while the field test forms refer to the various versions of a core form with different sets of field test items. Individual test scores are based on the operational items (i.e., the core form) only. The field test items do not count toward a student's score.

Table 3.3. Number of Test Forms Constructed in Spring 2025

Assessment	#Core Forms	#Accommodated Base Forms	#Field Test Forms
Mathematics 3	1	9	5
Mathematics 4	1	9	6
Mathematics 5	1	9	6
Mathematics 6	1	9	7
Mathematics 7	1	9	7
Mathematics 8	1	9	8
ELA 3	1	4	8
ELA 4	1	4	6
ELA 5	1	4	10
ELA 6	1	4	8
ELA 7	1	4	6
ELA 8	1	4	6
CSLA 3	1	1	4
CSLA 4	1	1	2
Science 5	1	9	10
Science 8	1	9	10
Science 11	1	9	13
Social Studies 4	1	9	8
Social Studies 7	1	9	6

Test form construction is the process of selecting and sequencing the operational and field test items for each test form, which is a complex, interactive task that requires both content and psychometric expertise. Once the test forms were constructed by Pearson/Tri-Lin, CDE reviewed the forms, provided feedback, and gave final approval. The following guidelines were used during the spring 2025 form construction:

- Adherence to the test blueprints and test construction specification targets
    - Exact match to blueprint for subclaims
    - Distribution of cognitive complexity that is within range
    - Percentage of TE items that is within range
- Review of the item statistics and adherence to the statistical criteria in the test construction specifications
    - Evaluation of item means, point biserial correlations, and score point distributions
    - Evaluation of item response theory (IRT) item parameter estimates
    - Evaluation of item fit statistics
    - Mirroring of 2018 test characteristic curves (TCCs) and conditional standard error of measurement (CSEM) curves (mathematics and ELA only), mirroring of the 2023 TCC and CSEM for science and CSLA
    - Minimization of CSEM curves around the cut scores
- Balance in the representation of gender, ethnicity, geographic regions, and relevant demographic factors
- Thorough review of individual items to establish that the content within items is up-to-date and relevant

- Selection of items with various stimulus types throughout the test form to enhance the test-taking experience by providing variation in the appearance of item types presented
- Efficient and deliberate use of varied content representative of the knowledge and skills in the ESs or EOs
- Review of the full form, including field test items, for clueing and/or content overlap

3.5.1. Operational Forms

Most students take the CMAS assessments online, which allows for the use of innovative item types and for accessibility features such as text-to-speech and color contrast to be available to all students in both English and Spanish for mathematics and science and in English for the online ELA forms. When building the test forms, assessment specialists select a set of operational items in accordance with the test blueprint and test construction specifications. Items selected for operational use must meet the blueprint requirements and should include a variety of topics and contexts with specified psychometric targets.

For ELA, CSLA, social studies, and science, the initial operational item pull is selected first. Starting in 2025 the refresh rates were increased to approximately 50% in order to completely refresh the test every other year. The assessment specialists verify that the test form meets the blueprint and test construction specifications (i.e., the required ES or EO coverage, claim and subclaim coverage, cognitive complexity allocation, and task type). The form is then presented to a Pearson psychometrician who verifies that the form falls within the established psychometric and blueprint parameters and identifies the anchor item set within each operational form. For mathematics, the initial operational item pull does not begin until after psychometrics has identified the anchor item set. (See Chapter 10 for details about the anchor sets.

Once the form is vetted internally, the form is presented to CDE for review. If needed, the assessment specialists, Pearson psychometricians, and CDE collaborate to finalize the form. This can be an iterative process, with the result being CDE's approval of the form.

3.5.2. Field Test Forms

After the operational form is approved, field test items are selected from the item bank. The purpose of field testing is to administer newly developed items to generate item statistics and assess their eligibility to become operational items. Items chosen for field testing are placed on a form in a designated section and sequence. Pearson and Tri-Lin assessment specialists assemble field test sets of items so that they comprise the appropriate distribution of standards, subclaims, task types, topic coverage, cognitive levels, and key distributions to meet the required item refresh rates in following years.

3.5.3. Accommodated Forms

Accommodated test forms are available for students who need them and include paper, large print, and braille forms, as well as auditory/signed presentation scripts and online forms designed to work with assistive technology such as screen readers. Auditory/signed presentation scripts are available for the paper forms in both English and Spanish for mathematics and science. English auditory/signed presentation scripts are available for both online and paper forms for local translation into languages other than Spanish including sign language. Due to the effort involved in creating an approved accommodated form, these forms are not refreshed at the same rate as the online forms.

Paper-based test forms are available as an accommodation or for schools that choose not to test online as allowed by state law. CSLA is the accommodated version of CMAS ELA for eligible Spanish-speaking students in grades 3 and 4 and is administered on paper. A Spanish transadaptation paper form is also available for mathematics, social studies, and science. The paper test form is parallel to the online form (i.e., it includes the same operational items). To support this, parallel paper-based items were developed for TE items in a way that was comparable in terms of student interaction. This was achieved with traditional SR items or required an item that had to be human-scored. For example, a drag-and-drop TE item may have been converted to an item in which the student had to draw lines from the draggers to the drop bays. During equating, the TE item statistics are compared to the paper-based version to confirm equivalence. CSLA also offers paper-based versions of TE items developed to be similar to the ELA paper-based TE items, although all CSLA paper-based TE items are machine scored.

After approval of the paper test materials, a braille version of the assessments is created according to the process outlined below:

1. Pearson Braille Services uses constructed test forms to review the items and clusters for identifying potential modifications related to spacing constraints, visual bias in response expectations, and illustration complexity. Recommendations are documented for modifications to text and images.
2. The modifications document is provided to Pearson assessment specialists to ensure compliance with item constructs and assessed standards.
3. Pearson assessment specialists and CDE review the recommendations and provide feedback regarding any modification concerns.
4. Pearson Braille Services translates the test form into braille and designs print images as tactile graphics.
5. The braille form is proofread by a two-person proof team consisting of a native braille reader, certified as a braille proofreader by the National Library Service, and a sighted copyholder.
6. Edits to text and graphics are made based on the proof team's feedback.
7. The braille form is reviewed by a committee of Pearson staff, CDE staff, and Colorado Teachers of the Visually Impaired (TVI).
8. The braille form is finalized, and hardcopy test books are produced.

Large print versions of the CMAS assessments are a 50% enlargement of the regular paper form and are printed on 14" × 18" paper. When needed, the large print version includes a visual description booklet that contains a description of artwork (maps, photographs) for which it may be difficult for a student with visual impairments to see the subtleties within the art. CDE reviews the paper form and identifies which pieces of art need to be described in the visual description test booklet.

3.6. Data Review

After item development is complete, selected items are placed on the operational assessments in embedded field test positions. The goal of field testing is to allow for the evaluation of the quality of the items through a review of item performance data to determine their inclusion in the operational item pool. To accomplish this, psychometricians perform statistical analyses on the field tested items following their administration in a field test environment to evaluate their quality.

Table 3.4 presents the statistical flags applied to the field tested items. Classical statistics include item means (*p*-values), item-total correlations/point biserials, and distribution of responses across answer options or score points, depending on the item type. Differential item functioning (DIF) analyses are conducted on various subgroups (gender, ethnicity, free and reduced lunch, IEP, and MLs) using Mantel–Haenszel Delta DIF statistics (Dorans & Holland, 1992). The same analysis methods are used for CSLA items, but the DIF analyses are conducted by gender only due to the population of students taking the form. Classification rules derived from National Assessment of Educational Progress (NAEP) guidelines (Allen et al., 1999) were used to classify items as having either negligible, moderate, or significant DIF. Items are then flagged based on the criteria in Table 3.4, and flagged items are taken to a data review meeting where a committee of educators reviews the flagged items and their statistics along with student performance data.

Table 3.4. Item Statistical Flagging Criteria

Statistic	Criterion	Possible Indication
P-value	< 0.1 or > 0.9	Very difficult or easy item
Item-total correlation	< 0.15	Poorly discriminating item
Distractor item-total correlation (SR only)	> 0.0	Possible miskey*
Score point percentage (multi-point items only)**	<1%, >50%, or >60%	Very few students or many students got a certain score
Differential item functioning (DIF)***	B, C	Item could be biased toward a certain student demographic group

*Possible miskey because the key should have a positive item-total correlation
**If a multi-point item has less than 1% for a score point or more than 50% 0s, the item is flagged. The rule is 50%+ 0s for mathematics, ELA, and CSLA and 60%+ for science.
***B DIF indicates moderate DIF, whereas C DIF indicates significant DIF.

Separate data review committees are convened for each content area, including the accommodated CSLA items. Participants are provided item images and metadata, along with the classical and DIF statistics. During the data review meetings, educators are trained to interpret the statistical information and judge the appropriateness of the flagged items. The committee members use the data as a tool to direct them toward potential flaws in an item and discuss whether there are construct-irrelevant reasons for a data flag. A data flag, by itself, is not the sole reason an item is rejected. Committee members are instructed that their final judgments about the appropriateness or fairness of an item for any individual and subgroup encompassed by the data flag should be based on their expertise with their content area and experience as Colorado educators.

Committee members review each item and recommend whether to accept or reject it. An accepted item indicates that the educators, through their varying expertise, determined that there is not a construct-irrelevant reason for the data flag within the item, whereas a rejected item indicates that the educators determined there is a construct-irrelevant reason for the data flag. Construct-irrelevant reasons for data flags could include issues such as language that is above grade-level or content that is biased against a particular group. In contrast, construct-relevant explanations could be difficult content that is part of the standards or distractors that reflect a very common misunderstanding of the concept covered by the item, which would not be a reason to reject the item.

Following the data review meetings, CDE reviews the committees' recommendations and makes final decisions. All accepted items are moved into "Ready for Operational" status. Table 3.5 presents the final results following the data review based on spring 2025 data (i.e., the number of field tested items that were either accepted, accepted for revision and re-field test, or rejected as a result of the data review).

Table 3.5. Data Review Results

Assessment	#Accepted	#Accepted for Revision and Re-Field Test	#Rejected
Mathematics 3	8	0	1
Mathematics 4	10	0	0
Mathematics 5	6	0	1
Mathematics 6	6	0	0
Mathematics 7	10	0	0
Mathematics 8	8	0	1
ELA 3	13	0	0
ELA 4	13	0	0
ELA 5	45	0	0
ELA 6	53	0	4
ELA 7	17	0	3
ELA 8	23	0	2
CSLA 3	0	0	4
CSLA 4	2	0	0
Science 5	19	0	7
Science 8	20	0	7
Science 11	43	0	6
Social Studies 4	17	0	3
Social Studies 7	13	0	4

Chapter 4: Test Administration

The CMAS assessments are administered in TestNav, Pearson's online testing platform. PearsonAccess^{next} is the student test management portal Assessment Coordinators and Test Administrators use to manage student tests and registrations and order materials if needed. Prior to the administration of the assessments, districts, schools, and teachers are to ensure that their students and systems are prepared for the assessments. Such information is communicated to the appropriate individuals via manuals, virtual trainings, and recorded modules. Table 4.1 presents the test administration window, including the release of the CMAS score reports. (See Chapter 6 for information on reporting).

Table 4.1. Test Administration Activities

Event	Date(s)
DAC Administration Training	October 24, 2024
Spring 2025 Administration Window	April 7–25, 2025
CMAS Student Data Files Available	June 18, 2025
CMAS Reports Available	June 30, 2025

4.1. Manuals

The following manuals were shipped to schools and emailed to DACs to support the CMAS administration:

- The *CMAS Test Administrator Manual* for both online and paper-based testing describes the procedures Test Administrators are to follow when administering the assessments. Test administration policies and procedures are to be followed as written so all testing conditions are uniform statewide. The guidelines and test administration scripts in these manuals are provided to ensure that every student in Colorado receives the same standard directions during the test administration by content area, grade level, and accommodation. Districts receive printed copies of the *CMAS Test Administrator Manual* with their shipment of other CMAS testing materials.
- The *CMAS and CoAlt Procedures Manual* provides instructions for coordination of the CMAS assessments. Instructions include the protocols all school staff are to follow related to test security, test administration, and providing accommodations to students with disabilities and ML students and accessibility features to all students. The manual also includes the tasks to be completed by District Assessment Coordinators (DACs), School Assessment Coordinators (SACs), and District Technology Coordinators (DTCs) before, during, and after the test administration.
- The *PearsonAccess^{next} Online User Guide* provides guidance for DACs, SACs, DTCs, Test Administrators, and student enrollment/sensitive data personnel who use PearsonAccess^{next}.

4.2. Administration Training

Administration training is intended to make sure all individuals involved in CMAS assessment activities at the school and district levels are prepared to follow administration processes and procedures with fidelity, as well as to support adherence to security procedures. Fidelity to standardized test administration processes and procedures helps ensure the comparability of resulting scores and accurate interpretation of results.

Live virtual trainings were conducted by CDE for groups of DACs, during which the DACs independently accessed CDE- and Pearson-developed lessons through an interactive training platform. The lessons contained information regarding proper procedures for administration, security requirements, receiving and returning materials to Pearson, and the use of PearsonAccess^{next} with TestNav. Upon completion of each training lesson, CDE provided additional details pertaining to the covered information and an opportunity for questions and answers. After CDE trained the DACs, the DACs trained the SACs, Test Administrators, and any other individuals within the district who planned to participate in the CMAS administration.

Pearson customer service center staff were also trained to answer questions about the administration and to escalate inquiries as necessary. A knowledge base of common questions was created by CDE and Pearson based on information covered in the training materials and manuals to ensure accurate and consistent responses to school and district personnel, with revisions and additions made as needed. CDE met with Pearson daily during the administration window to review questions from districts and ensure that appropriate answers were provided. Policy questions received by the Pearson customer service center were referred to CDE.

Live webinar accommodations and accessibility features training was also conducted by CDE for district-level personnel to ensure that all individuals providing these supports across the state follow the procedures associated with each accommodation and accessibility feature. Providing accessibility features and accommodations in a standardized manner helps to ensure the comparability of resulting scores and accurate interpretation of results.

Resources used during the live trainings were posted on the CDE Assessment Training website at https://www.cde.state.co.us/assessment/trainings throughout the administration year. Administration training materials such as slide decks, manuals, and how-to guides were also available on this website for training SACs and Test Administrators.

4.3. Practice Resources

Colorado Practice Resources (CPRs) are available online at https://coassessments.com/practice-resources/ to help students become familiar with the CMAS item types. The CPRs are updated as needed to reflect current accessibility features and any updates to TestNav that may impact student interactions with the assessment. Accommodated versions of the CPRs are also available so students can practice using accommodations and accessibility features such as English text-to-speech, color contrast, and Spanish text-to-speech. Paper sample items for students taking the paper versions of the assessments are available in PDF format for download. CPRs are accompanied by scoring guides that include performance metrics and alignment to the CAS.

4.4. Onsite Preparation

Districts were instructed in site readiness preparations, TestNav, proctor caching, and use of the SystemCheck tool to configure their testing technology environments and evaluate their configuration for district readiness. Districts were also provided tools and resources to test their environment readiness status and infrastructure systems.

4.5. Accessibility Features and Accommodations

Accessibility is considered from the beginning of the test development process and is inherent within the CMAS assessment and administration. For example, TestNav includes tools and accessibility features that are available to all students to increase the accessibility of the assessments (e.g., highlighter, online color contrast). Also included is the text-to-speech accessibility feature for mathematics and science that allows for text to be read to students by the embedded software audio feature. Although this feature is available to all students, it is assigned in advance of testing only to those who need it. Similarly, the CSLA assessments were developed as linguistically accommodated Spanish tests to ensure accessibility for eligible Spanish-speaking students.

Accommodations are also available to the population of students with IEP or 504 plans or ML students. For example, students may have extended time as required by their IEP or as allowed for students classified as ML. The test is also available with Spanish text-to-speech (mathematics and science only) and paper transadaptations or auditory presentation scripts that can be translated into other languages. Accommodations are intended to provide equitable access to the assessment without impacting the measured construct. Accommodations can be adjustments to the test presentation, materials, environment, or response mode of the student and are based on individual student need. They should not provide an unfair advantage to any student. Providing an accommodation for the sole purpose of increasing test scores is not ethical.

Accommodations must be documented and used regularly during classroom instruction and assessments prior to the testing window to ensure that the student can successfully use the accommodation. However, although accommodations are used for classroom instruction and assessments, some may not be appropriate for use on statewide assessments. As a result, it is important that educators become familiar with the state assessment policies about the appropriate use of accommodations and that districts have a plan in place to ensure and monitor the appropriate use of accommodations.

Certain accommodations are allowed only in special cases with CDE approval due to being an inherent violation of the intended construct. For example, the accommodations of calculator on non-calculator sections of mathematics and a scribe for CR items for ELA/CSLA require approval to preserve the intended constructs of mathematics and writing according to the CAS.

Some of the available accommodations for CMAS include CSLA in place of ELA (other linguistic accommodations do not apply as CSLA is the linguistic accommodation), English auditory/signed presentation scripts (mathematics and science), Spanish auditory/signed presentation scripts (mathematics and science), auditory/signed presentation scripts for signed presentation and local translation into languages other than English and Spanish, braille forms, large print forms, assistive technology forms for screen readers (mathematics and ELA only), and Spanish forms with and without text-to-speech for mathematics and science.

4.6. Test Security

Test security procedures are put in place to enhance the likelihood that security is maintained before, during, and after the assessment administration. For example, materials used during the paper administration of the assessment are to be kept in locked storage locations when not under the direct supervision of Pearson or approved testing coordinators and administrators. All district and school personnel involved in the CMAS test administration are required to participate in annual local training. DACs are responsible for overseeing training for the district, including verifying that the DTC and SACs are trained. SACs are responsible for ensuring that Test Administrators and all other individuals involved in test administration at the school level are trained and subsequently act in accordance with all security requirements.

A chain of custody plan for materials is required to be written and implemented to ensure that materials are securely distributed from DACs to SACs to Test Administrators and securely returned from Test Administrators to SACs and then to DACs. SACs are required to distribute materials to and collect materials from the Test Administrators each day of testing and to securely store and deliver materials to DACs after testing is completed in accordance with the instructions in the *CMAS and CoAlt Procedures Manual*.

All individuals involved in the test administration are required to sign a security agreement prior to handling test materials, which requires them to follow all procedures set forth in the aforementioned manuals and prevents them from divulging the contents of the assessment, copying any part of the assessment, reviewing test items with the students, allowing students to remove test materials from the testing room, or interfering with the independent work of any student taking the assessment. During online testing, all unnecessary computer functions are disabled, and access is restricted to disallow activities in all applications outside the testing program.

PearsonAccess^{next}, the assessment management system used during the administration, includes permissions-based user role access to all information within the system, including accessing student information, setting up and delivering test sessions (preparing, starting, and stopping sessions), administering tests (unlocking, resuming, and locking units), and accessing reports. Access to the online assessments through the student testing system, TestNav, is tightly controlled before, during, and after test administration, requiring a login ID and password to enter the system for each unit. Test content is locked and cannot be accessed by students or district/school-level users after the students submit their answers. Each unit of the paper test requires students to break the unit seal before accessing the test content. To enhance security during test administration, test forms are spiraled, decreasing the likelihood that a student would be working on the same items as their peers at the same time.

After all test sessions are completed at a school, used and unused materials are required to be securely stored and returned to the DAC by the district deadline for shipment to Pearson. DACs are required to report any missing test materials or test irregularities and to complete the appropriate documentation.

4.7. Assessment Administration Monitoring

Trained test monitors observed live administration of the CMAS assessments in several districts across the state (four to five districts in each of Colorado's eight regions). The monitoring activity is required by the US Department of Education to ensure standardized administration across districts and schools. Colorado statute also requires that CDE review and update administration and security policies as necessary to maintain the integrity of the assessments. CDE gathers information to meet both requirements through this monitoring activity.

Prior to the opening of the CMAS window, DACs were notified by CDE regarding their districts' selection for CMAS monitoring. Districts were selected based on test format (i.e., paper, online, or both), district size, student population, reports of CMAS misadministrations in previous years, and if or when they last had a CMAS test monitor.

Before visiting district schools, test monitors completed background checks, were trained on CMAS administration and the monitoring activity, and contacted DACs to schedule their visits. DACs determined whether they informed schools within their districts regarding the monitoring activity. Upon arrival at the district, test monitors had identification, a letter from CDE stating their purpose at the school, and materials necessary to complete the monitoring activity (e.g., a checklist form for their observations and CMAS directions from the *CMAS Test Administrator Manual* to follow along with administration).

Test monitors met with the DAC for each district, and in some cases the SAC for each school, to go through pre-observation questions about local policies and procedures, then entered the student testing space before the start of the testing session and remained in the space until the session ended. Test monitors completed observation checklists regarding test environment setup, accommodations, Test Administrator adherence to the directions in the Test Administrator Manual, Test Administrator interactions with students, technology interruptions (online testing only), and student testing times. Monitors did not interact with Test Administrators or students.

Observation checklists were submitted and any testing anomalies were reported to the vendor and CDE upon completion of the monitoring activity. CDE staff contacted DACs if issues were observed during test monitor visits to provide guidance and address practices for future administrations. Local feedback from assessment coordinators and any observations indicating the need for updates to policies and procedures were used to make adjustments for future CMAS administrations.

Chapter 5: Scoring

The 2025 CMAS assessments used a combination of machine, human, and automated scoring by the Math Reasoning Engine (MRE). All SR and online TE items were machine-scored, with point values varying by item type and assessment. Most mathematics and all science CR items were handscored, with a small number of CR mathematics items scored by MRE. The ELA PCR items were scored on two trait dimensions using human scoring, Written Expression (WE) and Knowledge and Use of Language Conventions (WKL). Pearson's Scoring Services team conducted the handscoring for the CR, PCR, and parallel paper-based versions of the TE items for CMAS. To maintain comparability, scoring rules for the machine-scored items and rubrics, anchor papers, rules and scoring methods for the handscored items were preserved from previous years.

5.1. Machine Scoring

Machine-scored items include key-based and rule-based items. Key-based items tend to be a version of multiple-choice and multiple-select (i.e., students select more than one correct answer) items. Rule-based items are machine-scored TE items. Initial scoring expectations are developed during item development and are included in the item review process. The scoring rules and correct responses are included in the items' XML coding. Prior to scoring, key checks and adjudication are completed for all machine-scored items to verify that the machine is correctly identifying correct and incorrect responses. If there is a discrepancy in the scoring, content experts review the item and adjustments are made as needed. During testing, actual distribution of scores is compared to expected distribution. Further evaluation is completed if a discrepancy is identified.

5.2. Handscoring

5.2.1. Operational Scoring

Human-scored operational items are scored using either a distributed or synchronous scoring model depending on the content area. Items on the CSLA form and paper-based TE items are scored synchronously, while scoring for all other human-scored items is completed through distributed scoring. At times, distributed scorers are leveraged to score paper-based TE items. Scoring includes several components that together provide a comprehensive performance scoring model. For example:

- All scorers are required to pass a background check and sign a nondisclosure agreement, agreeing to adhere to all security and confidentiality requirements.
- All scorers have a four-year degree at a minimum. Scorers are assigned to content areas based on their educational backgrounds, related fields of work, and their demonstrated knowledge in the content area.
- Scorers of CSLA items must be proficient in written Spanish and English languages.
- Scorers are trained using comprehensive training materials developed by scoring experts that rely on student responses scored at the rangefinding meetings. Prior to qualifying for an item, scorers review an online training module that includes an overview of scoring; information specific to the item such as the prompt and rubric; and anchor sets. Scorers then score multiple practice sets prior to attempting qualification. After successful qualification, scorers begin scoring the item.

- For CSLA items, training is led by a Pearson scoring director who presents item-specific materials, including the prompt and rubric. The scoring team then receives training on anchor sets prior to moving into the online portion of training where scorers apply scores on multiple practice sets within the electronic scoring system. After each practice set, the scoring director reviews the practice set results with the scorers prior to scorers taking the qualification sets. After successful qualification, scorers begin scoring the item.
- Scorers must pass a qualifying test for the item types that they score. Qualification sets are designed to test scorer accuracy across the range of score points for a given item.
- Student responses are converted to electronic images at Pearson facilities and are then transmitted for computer-based scoring.
- Distributed scorers are located across the United States and work from their homes. Their computers are set up for image-based scoring. A comprehensive set of scoring and monitoring tools are integrated into the scoring system, and content supervisory staff are available by phone to help answer any training or scoring questions. This distributed setup allows scorers to work seven days a week with extended evening hours.
- Synchronous scorers are located across the United States and also work from their homes; however, they are only permitted to score while attending daily Microsoft Teams meetings with content supervisory staff. As with distributed scoring, synchronous scoring uses a comprehensive set of scoring and monitoring tools integrated into the scoring system, with content supervisory staff available within the Microsoft Teams interface to help answer any training or scoring questions. Unlike distributed scoring, synchronous scoring is typically conducted Monday through Friday during normal business hours. Synchronous scorers are used for CSLA forms and paper-based TE items.
- Additional security procedures are in place for distributed scoring. Data are securely transmitted through HTTPS and SSL technology using secure protocols for system authentication. Student responses are randomly routed through the scoring platform to prevent scorer knowledge of student information, unless a student self-identified in the response. Scorers agree not to use shared, institutional, or public computers to score and not to save student responses or test materials. Scorer printing capabilities of materials, such as anchor papers, are only approved for printing after they have undergone and passed a personally identifiable information review by CDE. Scorers agree to securely destroy or return printed materials to Pearson at the conclusion of scoring.

Pearson's processes and tools provide a replicable quality system that strengthens consistency across projects and locations within Pearson's Scoring Services operations. Pearson's Scoring Services team uses a comprehensive system for continually monitoring and maintaining the accuracy of scoring at both the group and individual levels. This system includes daily analysis of a comprehensive set of statistical monitoring reports, as well as regular "backreading" of scorers. Reliability statistics are monitored during scoring, and interventions are applied if a scorer or item is not meeting the minimum requirements.

5.2.2. Field Test Scoring

Embedded field test scoring was completed using synchronous scoring that took place within daily Microsoft Teams meetings. All scorers are required to have a four-year college degree. Field test scorers receive stand-up training led by a Pearson scoring director who presents item-specific materials, including the prompt and rubric. Scorers then review the anchor sets in a group setting prior to scoring practice sets on paper.

5.2.3. Rangefinding

Scoring rubrics are generated for each unique item for mathematics and science, while ELA/CSLA use holistic rubrics for each item type, provided online at https://www.cde.state.co.us/assessment/cmas_testdesign. Rubrics are finalized during rangefinding and are maintained, along with the training materials for each item, by Pearson's Scoring Services group.

Rangefinding meetings take place following the administration in which an item was field tested. As such, rangefinding took place from June 3–6, 2025, following the spring 2025 administration. The purpose of rangefinding is to define the range of performance levels within the score points of the rubrics using student responses. Each rangefinding committee includes Pearson's Scoring Services and content staff, state content representatives, and educators with relevant grade-level and content expertise and experience with special populations. Participants create consensus scores for a sample set of student responses that are subsequently used to develop effective training materials for scoring of the CR items.

Pearson's scoring directors construct one rangefinding set per item, which includes approximately 30 responses. For multi-point items, pre-constructed sets with additional responses are brought to the meeting. Responses included in these sets represent the full spectrum of scores to the greatest extent possible. The responses for each item are randomly ordered to provide committee members an opportunity to determine the spectrum of scores without bias, although actual scores are not revealed to committee members. Each set includes responses clearly earning each available score point for each item type. The set also includes sample responses that may have been challenging to score (i.e., the score points earned were not necessarily clear).

Following an introductory session presented by a member of the Scoring Services group, the rangefinding committee is divided into several breakout groups based on educator expertise. Each group is assigned a range of field test items to be reviewed based on the following process:

1. The scoring director introduces each item. The committee reviews the item and corresponding rubric.
2. The committee reads student responses—individually or as a group—and then discusses and decides the most appropriate score for each response.
3. The scoring director records committee members' comments and the final consensus score for each student response. Consensus is reached when a majority of committee members agree on a particular score point for a response and all members agree to accept the score of the majority.
4. A designated committee member records consensus scores. After reviewing responses for each item, the committee member compares their notes with those kept by the scoring director and provides sign-off to indicate agreement with the recorded scores.

Following the rangefinding meetings, Scoring Services creates training materials with an anchor set that is used for initial training (up to 15 responses) and a full practice set (up to 10 responses). For ELA, two anchor sets are used per item, one for content and one for conventions. Each CR item is then scored with the associated training materials.

5.2.4. Backreading

Backreading is the method of immediately monitoring a scorer's performance and is an important tool for Pearson's scoring supervisors. Backreading is performed in conjunction with the statistics provided by reader performance reports and as indicated by scoring directors, allowing scoring supervisors to target particular readers and areas of concern. Scorers showing low inter-rater agreement or those showing anomalous frequency distributions are given immediate, constructive feedback and monitored closely until sufficient improvement is demonstrated. Scorers who demonstrate through their agreement rates and frequency distributions that they are scoring accurately continue to be spot-checked as an added confirmation of their accuracy. The agreement rate requirements are as follows. (Refer to Section 10.5 for the inter-rater reliability results.)

- 1-point item: 90% perfect and 95% perfect plus adjacent agreement
- 2-point item: 90% perfect and 95% perfect plus adjacent agreement
- 3-point item: 80% perfect and 95% perfect plus adjacent agreement
- 4-point item: 70% perfect and 95% perfect plus adjacent agreement
- 5+-point item: 65% perfect and 95% perfect plus adjacent agreement

5.2.5. Scoring Calibration Sets

Calibration sets are responses selected as examples that help clarify scoring issues, define more clearly the lines between certain score points, and reinforce the scoring guidelines as presented in the original training sets. They can be applied to groups, a subset of groups, or individual scorers as needed. These sets are used to proactively promote accuracy by exploring project-specific issues, score boundaries, or types of responses that are particularly challenging to score consistently. Scoring directors administer calibration sets as needed, particularly for more difficult items.

5.2.6. Validity Papers

As a quality monitoring tool used during scoring, validity papers are student responses chosen by Pearson scoring directors to measure the accuracy of a scorer when applying the scoring rubric. Validity papers are blind to scorers, which means a scorer is not aware when they are scoring a validity paper. Scoring directors may choose to include an annotation with a validity paper so that a scorer will receive immediate feedback if a validity paper is scored incorrectly. Validity statistics are monitored by scoring directors throughout the life of a scoring project.

5.3. MRE Scoring

The Math Reasoning Engine (MRE) evaluates responses based on rubric criteria specific to the expected item responses and does not require human scoring to train the engine. Because the engine can reason about the student's math, there is no need to enumerate all possible correct responses (as one would with other more traditional machine scoring). The MRE scoring criteria are defined in terms of the mathematical characteristics of a response the engine uses to evaluate the extent to which a student response satisfies a scoring rubric (e.g., equivalence, form, precision, and constraints).

Before a mathematics item is scored operationally, it goes through a rubric refinement and validation process. After field testing, online student responses are aggregated into a set of individual unique responses that are back-read by human scorers. When the human scorers disagree with the score assigned by the scoring engine, they flag the response for further review. The flagged responses are then reviewed by Pearson content experts to determine if scoring rules should be adjusted to better fit the rubric.

If scoring rule adjustments are made, MRE can rescore the entire item based on the new scoring rules configuration. During rescores, every changed response score is identified and reviewed by content experts to evaluate the impact of the rule change on all responses to ensure that the change had the intended effect and nothing more. The data provided to committee members is based on the final scoring rules reflecting how the responses are scored operationally and includes the most common field test item responses providing committee members with additional information to evaluate item quality.

Chapter 6: Reporting

6.1. Available Reports

Two types of score reports are provided: (a) the student-level Student Performance Report and (b) the aggregate reports at the school and district levels. Appendix C presents sample Student Performance Reports, and examples of each type of aggregate report are provided in the *CMAS and CoAlt Interpretive Guide to Assessment Reports*. For a detailed explanation of the information provided in all reports, refer to the *CMAS and CoAlt Interpretive Guide to Assessment Reports* available online at https://www.cde.state.co.us/assessment/training-cmas. CSLA assessments are parallel and comparable to the CMAS ELA assessments in scoring and reporting. Therefore, separate CSLA reports are not included (refer to the CMAS ELA examples).

The Student Performance Report provides information about the performance of a particular student. The student's scale score, performance level, percentile ranking, and percent of points possible scores are displayed on a two-page report, along with comparative information related to the student's school, district, and state performance. PLDs are also provided. In addition to the electronic versions made available to districts and schools, two copies of the Student Performance Report are printed and shipped to districts for distributing to parents/guardians and for maintaining locally.

The following aggregate reports are produced at the school and/or district levels and provide summary information for a given school or district. They are provided electronically through PearsonAccess^{Next}, with access limited to authorized users. The participation report provides a comparison of the demographic characteristics of the tested students compared to all students eligible for testing. This information can assist districts and schools in determining how to interpret their aggregated results.

- Performance Level Summaries
- Content Standards Rosters
- Evidence Statement Analysis Reports (mathematics and ELA only)
- Item Analysis Report (science only)
- District Summary of Schools (district level only)
- District and School Participation Reports

6.2. Interpretation of Test Scores

The CMAS reports provide information on student performance in terms of scale scores, performance levels, percentile ranks, and percent earned scores, as described below. Results for social studies in 2025 were reported as percentile ranks only, with overall scale scores and performance levels reported beginning in 2026.

6.2.1. Scale Scores

A scale score is a conversion of a student's response pattern to a common scale that allows for a numerical comparison between students. Scale scores are particularly useful for comparing test scores over time and creating comparable scores when a test has multiple forms. All CMAS assessments provide an overall scale score. ELA reports also include a scale score for the Reading claim, and the science reports provide separate scale scores for content standards and SEPs (referred to as reporting categories).

The overall scale for each content area assessment ranges from 650 to 850, and the ELA Reading scale ranges from 110 to 190. The science content standards scale score ranges from 400 to 600, although the graph displayed on the student reports ends at 550. Any student who earned a score greater than 550 still had their score written on the report but the diamond representing this performance would appear at the end of the graph at 550.

6.2.2. Performance Levels and PLDs

The performance levels are based on the overall scale score, and cut scores divide the score scale for a grade and content area into the performance levels. (Refer to Chapter 8 for information on the cut scores.) The CMAS Mathematics and ELA assessments have five performance levels (*Did Not Yet Meet Expectations*, *Partially Met Expectations*, *Approached Expectations*, *Met Expectations*, and *Exceeded Expectations*), whereas CMAS Science has four performance levels (*Partially Met Expectations*, *Approached Expectations*, *Met Expectations*, and *Exceeded Expectations*). Students in the top two performance levels met or exceeded the expectations of the CAS and are considered on track for the next grade level in that content area.

The performance levels are accompanied by performance level descriptors (PLDs) that articulate what a student should know and be able to do in a particular performance level (e.g., the set of statements describing what it means for a grade 8 student to reach *Met Expectations* in mathematics). The CMAS assessments use two types of PLDs: (a) policy PLDs (also known as policy claims) that provide a general idea of what is expected of a student at each level regardless of their grade level, as shown in Table 6.1 and Table 6.2, and (b) grade-level PLDs that provide detailed descriptions of performance levels by grade level and content area, available online at https://www.cde.state.co.us/assessment/cmas_plds and included on the Individual Student Performance Report and in the *CMAS and CoAlt Interpretive Guide to Assessment Reports*.

Table 6.1. Performance Levels and Policy Claims—Mathematics and ELA

Performance Level	*Did Not Yet Meet Expectations*	*Partially Met Expectations*	*Approached Expectations*	*Met Expectations*	*Exceeded Expectations*
Policy Claim	Students who do not yet meet academic expectations for the concepts, skills, and practices embodied by the Colorado Academic Standards assessed at their grade level. They will *need extensive academic support* to engage successfully in further studies in this content area.	Students who demonstrate a limited command of the concepts, skills, and practices embodied by the Colorado Academic Standards assessed at their grade level. They will *need additional academic support* to engage successfully in further studies in this content area.	Students who demonstrate a moderate command of the concepts, skills, and practices embodied by the Colorado Academic Standards assessed at their grade level. They will *likely need additional academic support* to engage successfully in further studies in this content area.	Students who demonstrate a strong command of the concepts, skills, and practices embodied by the Colorado Academic Standards assessed at their grade level. They are *academically prepared* to engage successfully in further studies in this content area.	Students who demonstrate a distinguished command of the concepts, skills, and practices embodied by the Colorado Academic Standards assessed at their grade level. They are *academically well prepared* to engage successfully in further studies in this content area.
Scale Score	650–699	700–724	725–749	750–varies*	varies*–850

*Varies by grade and content area

Table 6.2. Performance Levels and Policy Claims—Science

Performance Level	*Partially Met Expectations*	*Approached Expectations*	*Met Expectations*	*Exceeded Expectations*
Policy Claim	Students who demonstrate a limited command of the concepts, skills, and practices embodied by the Colorado Academic Standards assessed at their grade level. They will *need additional academic support* to engage successfully in further studies in this content area.	Students who demonstrate a moderate command of the concepts, skills, and practices embodied by the Colorado Academic Standards assessed at their grade level. They will *likely need additional academic support* to engage successfully in further studies in this content area.	Students who demonstrate a strong command of the concepts, skills, and practices embodied by the Colorado Academic Standards assessed at their grade level. They are *academically prepared* to engage successfully in further studies in this content area.	Students who demonstrate a distinguished command of the concepts, skills, and practices embodied by the Colorado Academic Standards assessed at their grade level. They are *academically well prepared* to engage successfully in further studies in this content area.
Scale Score	650–724	725–749	750–varies*	varies*–850

*Varies by grade

6.2.3. Percentile Ranking

Percentile rankings are provided on student performance reports to indicate how the student performed compared with other students in the state. For example, a student with a percentile ranking of 70 performed better than 70% of students in Colorado. The percentile rankings are based on the overall scale score.

6.2.4. Percent Earned

To prevent incorrect interpretations and provide a metric that is more generally understood, student performance for subclaims and the Writing claim (ELA/CSLA) are reported as the percentage of points earned (i.e., the number of points a student earned out of the total number of points possible within a claim or subclaim). The overall Writing claim is calculated as the sum of the individual trait scores, Written Expression (WE) and Knowledge of Language and Conventions (WKL), with WE scores multiplied by three to emphasize the additional importance of the content of the writing as reflected in the standards. The percent of points earned for WE is the sum of the unweighted WE trait scores on both PCRs, and WKL is the sum of the WKL trait scores on both PCRs.

Unlike scale scores, the percent of points possible scores cannot be compared across years because individual items change from year to year and are not constructed to be comparable in difficulty at the claim, subclaim, or subscale level. Performance on different subclaims or subscales also cannot be compared within an administration because the number of items and the difficulty of the items within each claim, subclaim or subscale may not be the same.

The percent of points possible can be compared to aggregated state, district, and school performance. The student performance reports also include an indicator of how students who scored just above the *Met Expectations* cut score on the overall assessment performed on each category. This indicator gives similar information to the *Met Expectations* cuts.

Chapter 7: Standard Setting

To support the interpretation of the overall student results, student performance on the CMAS assessments is described in terms of performance levels. Standard setting is the process of translating those policy-driven performance standards into scores on the assessment. The purpose of standard setting is to determine the boundaries—or cut scores—along the score scale that differentiate student performance among those levels (e.g., Cizek et al., 2004; Kane, 1994).

Table 7.1 presents the cut scores for each content area and grade. The mathematics and ELA cut scores were set in 2015 in collaboration with the PARCC consortium using the Evidence-Based Standard Setting (EBSS) method (Beimers et al., 2012), as detailed in the 2015 PARCC *Performance Level Setting Technical Report* (Davis & Moyer, 2015). CSLA cut scores were set in 2016 using the Modified Extended Angoff method, as detailed in the *CSLA Colorado Spanish Language Arts Standard Setting Report* (CDE, 2016).

Standard setting for the new science assessment took place from September 27–28, 2022, using a modified version of the Item Descriptor (ID) Matching method (Ferrara et al., 2008), as detailed in the *CMAS Science 2022 Standard Setting Report* (Pearson, 2024). Standard setting for the new social studies assessment took place in September 2025 using the modified ID Matching method, with the new cuts to be applied starting in 2026.

Table 7.1. Performance Level Cut Scores

Assessment	*Did Not Yet Meet Expectations*	*Partially Met Expectations*	*Approached Expectations*	*Met Expectations*	*Exceeded Expectations*
Mathematics 3	650–699	700–724	725–749	750–789	790–850
Mathematics 4	650–699	700–724	725–749	750–795	796–850
Mathematics 5	650–699	700–724	725–749	750–789	790–850
Mathematics 6	650–699	700–724	725–749	750–787	788–850
Mathematics 7	650–699	700–724	725–749	750–785	786–850
Mathematics 8	650–699	700–724	725–749	750–800	801–850
ELA 3	650–699	700–724	725–749	750–809	810–850
ELA 4	650–699	700–724	725–749	750–789	790–850
ELA 5	650–699	700–724	725–749	750–798	799–850
ELA 6	650–699	700–724	725–749	750–789	790–850
ELA 7	650–699	700–724	725–749	750–784	785–850
ELA 8	650–699	700–724	725–749	750–793	794–850
CSLA 3	650–699	700–724	725–749	750–778	779–850
CSLA 4	650–699	700–724	725–749	750–771	772–850
Science 5	–	650–724	725–749	750–788	789–850
Science 8	–	650–724	725–749	750–796	797–850
Science 11	–	650–724	725–749	750–786	787–850

The ELA assessment also includes a Reading score that has the same range and cut score for all grades. There is only one cut score that corresponds to the *Met Expectations* overall performance level, as shown in Table 7.2, that was determined using the cut information from setting the standards on the overall ELA test (i.e., it was not set separately at the standard setting meeting).

Table 7.2. ELA Reading *Met Expectations* Cut Score

Scale Range	Cut Score
110–190	150

Science also includes performance indicator cut scores that indicate average performance in each reporting category compared to the state, as shown in Table 7.3. These cuts are not used for accountability and change from year to year with shifts in the average performance. Students with scores below this range scored "lower than average" in the reporting category, and students above the range scored "higher than average."

Table 7.3. 2025 CMAS Science Performance Indicator Cut Scores

Assessment	Physical Science	Life Science	Earth and Space Science	SEPs
Science 5	450–523	444–525	448–523	451–521
Science 8	448–520	441–521	435–522	448–519
Science 11	441–512	443–512	433–514	446–510

Chapter 8: Test Results and Analysis

8.1. Student Participation

Table 8.1 presents the number of students who took the spring 2025 assessment online and those who took the accommodated forms, and Appendix D presents the n-counts by demographic subgroup. Most students took the assessments online.

Table 8.1. Student Participation by Form

Content Area	Form	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 11
Mathematics	Online	39,849	39,560	41,341	45,683	45,889	44,072	
	Spanish Online	1,762	1,459	1,030	646	558	624	
	Paper	3,293	2,750	2,565	2,247	2,096	2,036	
	Spanish Paper	135	85	33	11	6	17	
	Text-to-Speech	13,727	12,937	12,032	6,541	5,042	4,184	
	Assistive Technology	2	3	2	5	3	3	
	Total	58,768	56,794	57,003	55,133	53,594	50,936	
ELA	Online	53,107	52,254	53,966	52,416	51,256	48,452	
	Paper	3,490	2,818	2,629	2,188	1,901	1,848	
	Assistive Technology	6	4	3	9	3	4	
	Total	56,603	55,076	56,598	54,613	53,160	50,304	
CSLA	Paper	1,570	1,349					
Science	Online			41,826			43,675	32,466
	Spanish Online			383			425	229
	Paper			2,052			1,704	557
	Spanish Paper			1			18	0
	Text-to-Speech			11,679			4,123	1,160
	Spanish Text-to-Speech			595			171	35
	Assistive Technology			1			3	0
	Total			56,537			50,119	34,447
Social Studies	Online		18,711			17,249		
	Spanish Online		650			129		
	Paper		391			566		
	Spanish Paper		0			5		
	Assistive Technology		0			1		
	Total		19,752			17,950		

8.2. Performance Results

Table 8.2 presents summary statistics for the overall scale scores, including the mean, standard deviation (SD), and median, and

Table 8.3. Percentile Rank Performance Summary

Assessment	N	Mean	SD	Median
Social Studies 4	19,752	50	28.8	50
Social Studies 7	17,950	50	28.9	51

Table 8. presents the percentage of students classified into each performance level based on their overall scale scores. The previous year's results are also included for comparison. Appendix E presents the cumulative scale score distributions by grade, Appendix F displays the results in graphical form, and Appendix G presents the summary statistics for the overall scale scores by demographic subgroup. Social studies is not included given that results for social studies in 2025 were reported as percentile ranks only, with overall scale scores and performance levels reported beginning in 2026.

Table 8.2. Scale Score Performance Summary

Assessment	2025 N	2025 Mean	2025 SD	2025 Median	2024 N	2024 Mean	2024 SD	2024 Median
Mathematics 3	58,768	739	38.8	740	56,729	740	37.5	741
Mathematics 4	56,794	736	34.2	736	57,395	735	34.7	733
Mathematics 5	57,003	739	34.4	739	56,601	739	33.7	737
Mathematics 6	55,133	732	33.7	733	55,124	732	31.6	730
Mathematics 7	53,594	735	30.4	734	53,902	733	29.5	732
Mathematics 8	50,936	734	42.3	729	50,803	731	41.3	726
ELA 3	56,603	737	44.3	740	54,577	738	44.1	740
ELA 4	55,076	741	36.9	742	55,710	741	37.3	742
ELA 5	56,598	746	35.4	748	55,953	747	33.8	747
ELA 6	54,613	743	33.5	744	54,562	743	33.1	744
ELA 7	53,160	747	39.2	748	53,334	746	38.8	746
ELA 8	50,304	741	40.6	743	50,341	740	41.2	742
ELA Reading 3	56,603	145	17.8	146	54,577	145	17.8	146
ELA Reading 4	55,076	147	15.0	146	55,710	147	15.0	146
ELA Reading 5	56,598	149	14.2	149	55,953	149	13.6	149
ELA Reading 6	54,613	147	13.4	147	54,562	147	13.2	147
ELA Reading 7	53,160	149	15.7	149	53,334	149	15.5	148
ELA Reading 8	50,304	147	16.6	148	50,341	146	16.4	147
CSLA 3	1,570	723	26.9	725	1,560	723	26.6	723
CSLA 4	1,349	723	24.8	727	1,162	720	28.3	722
CSLA Reading 3	1,570	139	9.6	139	1,560	139	9.7	139
CSLA Reading 4	1,349	139	9.5	140	1,162	138	10.9	138
Science 5	56,537	737	34.1	740	56,085	736	33.2	740
Science 8	50,119	734	34.1	739	49,914	731	33.8	735
Science 11	34,447	729	29.6	732	34,108	730	29.0	732

Table 8.3. Percentile Rank Performance Summary

Assessment	N	Mean	SD	Median
Social Studies 4	19,752	50	28.8	50
Social Studies 7	17,950	50	28.9	51

Table 8.4. Performance Level Distribution

Assessment	2025 1	2025 2	2025 3	2025 4	2025 5	2024 1	2024 2	2024 3	2024 4	2024 5
Mathematics 3	22.36	15.73	19.93	37.7	9.90	15.17	19.31	23.80	32.16	9.56
Mathematics 4	13.98	18.68	25.32	32.36	3.94	17.34	23.89	24.70	29.72	4.36

Assessment	2025 1	2025 2	2025 3	2025 4	2025 5	2024 1	2024 2	2024 3	2024 4	2024 5
Mathematics 5	10.62	16.53	24.84	41.68	7.14	12.62	24.24	25.82	30.30	7.02
Mathematics 6	11.23	18.99	25.62	36.43	4.88	15.57	28.28	26.95	24.93	4.28
Mathematics 7	13.22	16.81	21.14	30.6	5.24	11.78	29.20	29.23	25.69	4.10
Mathematics 8	17.56	16.07	22.5	34.84	6.96	24.60	23.84	19.05	26.19	6.33
ELA 3	17.02	19.29	22.48	31.31	4.28	22.01	15.55	20.33	37.74	4.36
ELA 4	15.95	23.02	24.51	32.58	9.65	14.52	18.98	24.51	32.02	9.97
ELA 5	12.91	23.1	24.86	31.99	6.32	8.16	17.85	26.70	40.83	6.45
ELA 6	17.74	23.52	27.35	26.5	7.74	10.16	19.80	26.05	36.17	7.83
ELA 7	11.28	26.93	30.02	26.53	18.23	12.81	18.11	22.75	29.25	17.07
ELA 8	23.20	22.71	19.4	27.73	9.03	18.07	16.90	22.23	33.06	9.74
CSLA 3	20.57	27.52	35.41	15.41	1.08	17.05	33.33	32.37	15.77	1.47
CSLA 4	19.35	28.24	39.29	11.86	1.26	25.22	27.88	30.98	13.68	2.24
Science 5	–	32.62	28.37	34.55	4.46	–	33.11	28.96	34.16	3.76
Science 8	–	32.70	30.86	35.59	0.85	–	37.73	30.03	31.72	0.53
Science 11	–	38.35	36.63	24.10	0.91	–	37.79	37.41	23.70	1.10

Note. 1 = *Did Not Yet Meet Expectations*, 2 = *Partially Met Expectations*, 3 = *Approached Expectations*, 4 = *Met Expectations*, 5 = *Exceeded Expectations*. Percentages may not sum to 100 due to rounding.

8.3. Classical Item Analysis

Table 8. and Table 8. present the overall item difficulty and item discrimination results across all items for each assessment, and Appendix I presents the item-level classical statistics, including the omit rate, *p*-value, item-total correlation, and the percentage of students earning each score point for the CR items.

Item difficulty is measured by the *p*-value bounded by 0.0 and 1.0. The *p*-value for 1-point items is the proportion of students who answered an item correctly and is calculated by dividing the number of students who got the item correct by the total number of students who answered it. For multiple-point items, the *p*-value is the average item score (i.e., the sum of student scores on an item divided by the total number of students who responded to the item) that is then put on a 0 to 1 scale by dividing the average item score by the maximum number of points for the item. A high *p*-value indicates that an item is easy (high proportion of students answered it correctly), whereas a low *p*-value indicates that an item is difficult. Easy and hard items are both necessary to include on an assessment to balance the test difficulty.

Item discrimination is represented by the item-total correlation (also known as the point-biserial correlation) that is bounded by -1.0 and 1.0 and indicates how well an item discriminates, or distinguishes, between low-performing and high-performing students. The item-total correlation is based on the relationship between student performance on a specific item and performance on the entire test based on their test score. Students who do well on a test are expected to do well on a given item, and students who do not do well on a test are expected to not do well on a given item. This means that for a highly discriminating item, students who get the item correct will have a higher average test score than students who get the item incorrect. An item with a high positive item-total correlation discriminates between low-performing and high-performing students better than an item with an item-total correlation near zero. A negative item-total correlation indicates that low-performing students did better on that item than high-performing students.

Table 8.5. Summary of *P*-Values

Assessment	#OP Items	Mean	SD	Min.	Max.	Median
Mathematics 3	33	0.49	0.18	0.26	0.81	0.45
Mathematics 4	30	0.45	0.17	0.14	0.78	0.41
Mathematics 5	30	0.44	0.15	0.20	0.75	0.43
Mathematics 6	29	0.37	0.15	0.17	0.82	0.34
Mathematics 7	29	0.34	0.14	0.12	0.72	0.32
Mathematics 8	28	0.37	0.16	0.12	0.71	0.36
ELA 3	21	0.54	0.14	0.18	0.72	0.57
ELA 4	23	0.44	0.15	0.21	0.77	0.40
ELA 5	22	0.43	0.14	0.21	0.70	0.42
ELA 6	24	0.47	0.12	0.26	0.77	0.47
ELA 7	25	0.48	0.11	0.28	0.77	0.47
ELA 8	25	0.48	0.14	0.26	0.73	0.49
CSLA 3	21	0.31	0.12	0.12	0.61	0.28
CSLA 4	23	0.37	0.16	0.12	0.68	0.29
Science 5	45	0.45	0.21	0.07	0.86	0.44
Science 8	47	0.39	0.14	0.10	0.77	0.38
Science 11	40	0.35	0.15	0.04	0.64	0.35

Note. SD = standard deviation, Min. = minimum, Max. = maximum

Table 8.6. Summary of Item-Total Correlations

Assessment	#OP Items	Mean	SD	Min.	Max.	Median
Mathematics 3	33	0.58	0.11	0.33	0.79	0.58
Mathematics 4	30	0.60	0.11	0.41	0.82	0.61
Mathematics 5	30	0.60	0.12	0.40	0.81	0.60
Mathematics 6	29	0.57	0.14	0.32	0.83	0.56
Mathematics 7	29	0.54	0.15	0.27	0.82	0.52
Mathematics 8	28	0.55	0.14	0.29	0.79	0.53
ELA 3	21	0.60	0.10	0.34	0.77	0.61
ELA 4	23	0.50	0.13	0.34	0.77	0.49
ELA 5	22	0.49	0.14	0.26	0.81	0.49
ELA 6	24	0.55	0.11	0.39	0.83	0.53
ELA 7	25	0.53	0.13	0.34	0.85	0.53
ELA 8	25	0.53	0.13	0.27	0.85	0.55
CSLA 3	21	0.48	0.15	0.17	0.80	0.47
CSLA 4	23	0.45	0.16	0.20	0.80	0.50
Science 5	45	0.46	0.11	0.19	0.69	0.45
Science 8	47	0.46	0.15	0.22	0.73	0.45
Science 11	40	0.42	0.14	0.20	0.71	0.40

Note. SD = standard deviation, Min. = minimum, Max. = maximum

8.4. Subclaim Correlations

The ELA/CSLA tests include Reading and Writing claim scores and five subclaim scores: Reading: Literary Text (RL), Reading: Informational Text (RI), Reading: Vocabulary (RV), Writing: Written Expression (WE), and Writing: Knowledge and Use of Language Conventions (WKL). The Reading score is a composite of RL, RI, and RV, and the Writing score is a

composite of WE and WKL reported as a percentage of points earned. It comprises PCR items only. The operational test analyses were performed by evaluating the separate trait scores of WE and WKL. Some PCR items also include RL or RI points, but the reading points for those items were a duplicate of the WE score and were not included in calibrations.

The mathematics tests have four subclaim scores: Subclaim A: Major Content, Subclaim B: Additional & Supporting Content, Subclaim C: Expressing Mathematical Reasoning, and Subclaim D: Modeling & Application. The science test has four reporting categories: Physical Science, Life Science, Earth Systems Science, and Science and Engineering Practices (SEPs). The SEP score is based on a combination of items that are also included in the content standard scores so it is not included separately in the correlation analysis.

Table 8. – Table 8. present the correlations among subscores, which is one way to assess the internal structure of a test. The ELA/CSLA analyses were conducted between the Reading and Writing claim scores and the subclaims (RL, RI, RV, WE, and WKL), and the mathematics and science analyses were conducted between the subclaim or content standard scores. The intercorrelations for the mathematics and science subscores were higher overall than the ELA/CSLA intercorrelations. Correlations between subscores for mathematics and science ranged from 0.589 to 0.817, while for ELA/CSLA they ranged from 0.305 to 0.930. For ELA/CSLA, the two writing subclaims tended to have higher correlations with one another than they did with any of the reading subclaims. Correlations between the subclaims and the total test ranged from 0.644 to 0.967. There is evidence of unidimensionality if the components within a content area are strongly related to each other.

Table 8.7. Correlations Between Subclaims—Mathematics

Grade	Subclaim	Subclaim B	Subclaim C	Subclaim D	Total Test
3	A	0.833	0.814	0.744	0.960
	B	.	0.760	0.689	0.896
	C	.	.	0.757	0.909
	D	.	.	.	0.854
4	A	0.778	0.817	0.777	0.967
	B	.	0.718	0.685	0.849
	C	.	.	0.729	0.903
	D	.	.	.	0.864
5	A	0.766	0.790	0.782	0.963
	B	.	0.681	0.684	0.844
	C	.	.	0.752	0.888
	D	.	.	.	0.878
6	A	0.778	0.783	0.774	0.944
	B	.	0.753	0.729	0.884
	C	.	.	0.784	0.905
	D	.	.	.	0.891
7	A	0.684	0.780	0.755	0.950
	B	.	0.601	0.589	0.771
	C	.	.	0.739	0.898
	D	.	.	.	0.867
8	A	0.738	0.779	0.763	0.956
	B	.	0.696	0.691	0.837
	C	.	.	0.749	0.888

Grade	Subclaim	Subclaim B	Subclaim C	Subclaim D	Total Test
	D	.	.	.	0.876

Table 8.8. Correlations Between Subclaims—ELA

Grade	Subclaim	RI	RV	WE	WKL	Total Test
3	RL	0.756	0.754	0.654	0.541	0.926
	RI	.	0.689	0.560	0.512	0.871
	RV	.	.	0.539	0.483	0.852
	WE	.	.	.	0.583	0.791
	WKL	.	.	.	.	0.665
4	RL	0.653	0.660	0.677	0.594	0.890
	RI	.	0.618	0.518	0.503	0.826
	RV	.	.	0.543	0.506	0.783
	WE	.	.	.	0.783	0.846
	WKL	.	.	.	.	0.766
5	RL	0.645	0.626	0.593	0.566	0.832
	RI	.	0.598	0.666	0.617	0.861
	RV	.	.	0.579	0.534	0.779
	WE	.	.	.	0.826	0.883
	WKL	.	.	.	.	0.815
6	RL	0.754	0.673	0.623	0.592	0.855
	RI	.	0.724	0.725	0.683	0.920
	RV	.	.	0.591	0.560	0.802
	WE	.	.	.	0.866	0.887
	WKL	.	.	.	.	0.832
7	RL	0.758	0.646	0.730	0.696	0.899
	RI	.	0.655	0.645	0.634	0.887
	RV	.	.	0.517	0.512	0.755
	WE	.	.	.	0.903	0.884
	WKL	.	.	.	.	0.850
8	RL	0.759	0.688	0.645	0.638	0.862
	RI	.	0.702	0.748	0.725	0.917
	RV	.	.	0.566	0.560	0.786
	WE	.	.	.	0.930	0.901
	WKL	.	.	.	.	0.875

Note. RL = Reading: Literary Text, RI = Reading: Informational Text, RV = Reading: Vocabulary, WE = Writing: Written Expression, WKL = Writing: Knowledge and Use of Language Conventions.

Table 8.9. Correlations Between Subclaims—CSLA

Grade	Subclaim	RI	RV	WE	WKL	Total Test
3	RL	0.658	0.633	0.663	0.484	0.877
	RI	.	0.599	0.497	0.374	0.777
	RV	.	.	0.506	0.385	0.762
	WE	.	.	.	0.695	0.870
	WKL	.	.	.	1.000	0.691
4	RL	0.596	0.670	0.682	0.477	0.886
	RI	.	0.567	0.454	0.305	0.729
	RV	.	.	0.541	0.368	0.771
	WE	.	.	.	0.607	0.878

Grade	Subclaim	RI	RV	WE	WKL	Total Test
	WKL	.	.	.	1.000	0.644

Note. RL = Reading: Literary Text, RI = Reading: Informational Text, RV = Reading: Vocabulary, WE = Writing: Written Expression, WKL = Writing: Knowledge and Use of Language Conventions.

Table 8.10. Correlations between Claims—Reading vs. Writing

Content Area	Grade	Correlation
ELA	3	0.687
	4	0.682
	5	0.723
	6	0.736
	7	0.725
	8	0.744
CSLA	3	0.645
	4	0.661

Table 8.11. Correlations Between Content Standards—Science

Grade	Content Standard	Life Science	Earth and Space Science	Total Test
5	Physical Science	0.700	0.797	0.926
	Life Science*	.	0.698	0.840
	Earth and Space Science	.	.	0.942
8	Physical Science	0.813	0.796	0.931
	Life Science	.	0.807	0.943
	Earth and Space Science	.	.	0.924
11	Physical Science	0.709	0.702	0.903
	Life Science	.	0.701	0.896
	Earth and Space Science	.	.	0.889

*For grade 5, the content standard is Physical Science/Life Science.

Chapter 9: Calibration, Equating, and Scaling

Item response theory (IRT) was used to develop, calibrate, equate, and scale the CMAS assessments. All test analyses including calibration, scaling, and item model fit were accomplished within the IRT framework. The CMAS Mathematics and ELA scales were equated to the previous CMAS (i.e., PARCC) base scale. The calibration of the first operational administration determined the base scale for CSLA and CMAS Science.

Calibration is the process of estimating the parameters (such as item difficulty) for each item on an assessment so that all items are placed on a common scale. To maintain the same performance standards across different administrations of a particular test, it is necessary for each administration of the test to be of comparable difficulty. It is not fair to compare students to a common standard if the overall difficulty of the forms changes from year to year. Maintaining test form difficulty across administrations is achieved through equating. Equating adjusts for differences in overall test difficulty of test forms so that the scores resulting from two different administrations can be considered interchangeable. Equating and scaling typically occur in sequence. First, equating is used to adjust for differences in test difficulty so resulting estimates of student proficiency (i.e., equated raw scores, theta estimates) are on a common metric. The equated estimates of proficiency are then converted to scale scores for reporting purposes.

Table 9.1 summarizes the spring 2025 calibration, equating, and scaling processes for the operational and field test items. All assessments were post-equated except social studies and ELA grades 4 and 8. Because social studies was reintroduced in 2025, only the calibration process was followed. ELA grades 4 and 8 were pre-equated because the forms were reused. The entire process was completed for each grade-level assessment, and all steps were independently replicated by at least two members of the Pearson psychometrics team to ensure accuracy.

Table 9.1. Summary of Calibration, Equating, and Scaling Processes

Assessment	Operational Items	Embedded Field Test Items
CMAS	• Obtain the online operational item parameter estimates using IRTPRO control files and IDM. • Evaluate the scoring consistency and anchor item stability. • Scale the operational items to the operational scale using STUIRT. • Calculate item fit statistics and plot expected vs. observed IRFs for each operational item. • Estimate student abilities using IRT score estimation (ISE).	• Obtain item parameter estimates of the operational and field test items using IRTPRO control files and IDM. • Scale the field test items to the operational scale using STUIRT and the online operational items as the anchor set. • Calculate item fit statistics and plot expected vs. observed IRFs for each field test item.
CSLA	• Obtain the non-anchor operational item parameter estimates by fixing the anchor items' item parameter estimates using Winsteps control files and IDM. • Evaluate anchor item stability to obtain the final anchor set. • Scale the non-anchor items to the operational scale using the final anchor set in Winsteps • Obtain item difficulty values, step deviation values, and item fit values for all items. • Estimate student abilities using Winsteps.	• Scale the field test item parameter estimates to the operational scale by fixing the item parameter estimates of the operational items using Winsteps control files and IDM. • Obtain field test item difficulty values, step deviation values, and item fit values for each field test item.

Note. IRF = item response function, IDM = incomplete data matrix. Sources: IRTPRO (Vector Psychometric Group, 2022), STUIRT (Kim & Kolen, 2004), ISE (Chien & Shin, 2012), Winsteps (Linacre, 2011)

9.1. IRT Models

The two-parameter logistic (2PL; Birnbaum, 1968) and generalized partial credit (GPC; Muraki, 1992) models were applied to CMAS Mathematics and ELA; the 2PL, three-parameter logistic (3PL; Birnbaum, 1968), and GPC models were applied to CMAS Science; and the Rasch partial credit model (RPCM) was applied to CSLA. The 2PL model uses two item parameters to relate the probability of person *i* correctly answering a dichotomously scored item *j*:

$$P_{ij}(\theta) = \frac{1}{1 + \exp\left[-Da_j\left(\theta_i - b_j\right)\right]}$$

where *D* is set equal to 1 when defined on the logistic scale, as IRTPRO parameterizes all models. The item discrimination parameter is a_j, and the item difficulty parameter is b_j. The 3PL model adds an item parameter:

$$P_{ij}(\theta) = c_j + \frac{1 - c_j}{1 + \exp\left[-Da_j\left(\theta_i - b_j\right)\right]}$$

where c_j is the item pseudo-guessing parameter. The GPC model has three item parameters to relate the probability of person *i* responding in the *x*-th category to a polytomous scored item *j*:

$$P_{ij}(\theta) = \frac{\exp\left[\sum_{v=0}^{x} Da_j\left(\theta_i - b_j + d_{jv}\right)\right]}{\sum_{k=0}^{M_i} \exp\left[\sum_{v=0}^{k} Da_j\left(\theta_i - b_j + d_{jv}\right)\right]}, x = 0, 1, \ldots, M_j$$

where all parameters are as they were before, and d_{jv} is the category parameter for category *v* of item *j* and M_j is the maximum score on item *j.* To put the parameters on the normal ogive metric, the a_j is then divided by 1.7.

RPCM used for CSLA is an extension of the Rasch one-parameter IRT model attributed to Georg Rasch (1966), as extended by Wright and Stone (1979), Masters (1982), and Wright and Masters (1982). RPCM is a mathematical measurement model with a single item parameter relating a student's performance on a given item involving *m*+1 score categories. The probability of student *n* scoring *x* on *m* steps of item *i* is a function of the student's performance level, θ_n (also referred to as "ability"), and the step difficulties, δ_{ij} of the *m* steps in question *i* as follows:

$$P_{xni} = \frac{exp\sum_{j=0}^{x}\left(\theta_n - \delta_{ij}\right)}{\sum_{k=0}^{m_i} exp\sum_{j=0}^{k}\left(\theta_n - \delta_{ij}\right)}, x = 0, 1, \ldots m_i$$

9.2. Item Response and Characteristic Curves

The item response functions (IRFs) of the IRT models described above relate student ability to the probability of observing a particular item response given the item's characteristics, whereas the item characteristic function (ICF) relates student ability to the expected student score. The graphical representation of the IRF and ICF are the item response curves (IRCs) and item characteristic curves (ICCs), respectively. The IRF and ICF are the same for dichotomous items but differ for polytomous items.

Consider Figure 9.1 that depicts a 2PL item that falls at approximately 0.85 on the ability scale. When a student answers an item at the same level as their ability, they have a roughly 50% probability of answering the item correctly (i.e., in a group of 100 students who all have an ability of 0.85, about 50% of them would be expected to answer the item correctly). A student whose ability is above 0.85 would have a higher probability of getting the item right, while a student whose ability is below 0.85 would have a lower probability of getting the item right.

Figure 9.1. Example 2PL ICC

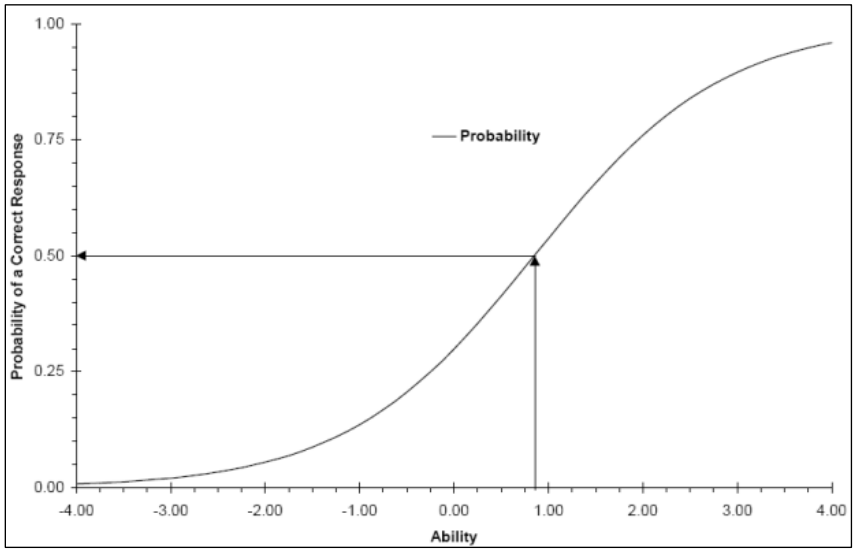


Figure 9.2 presents IRCs of obtaining a wrong answer or a right answer. The dotted line (j=0) shows the probability of getting a score of 0, while the solid line (j=1) shows the probability of getting a score of 1. The point at which the two curves cross indicates the transition point on the ability scale where the most likely response changes from a 0 to a 1. At this intersection, the probability of answering the item correctly is 50%.

Figure 9.2. Example 2PL IRC

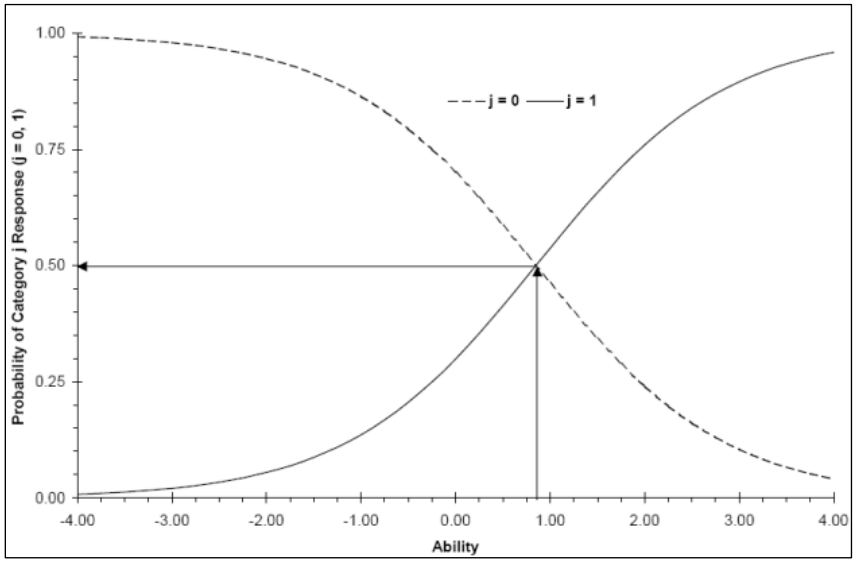
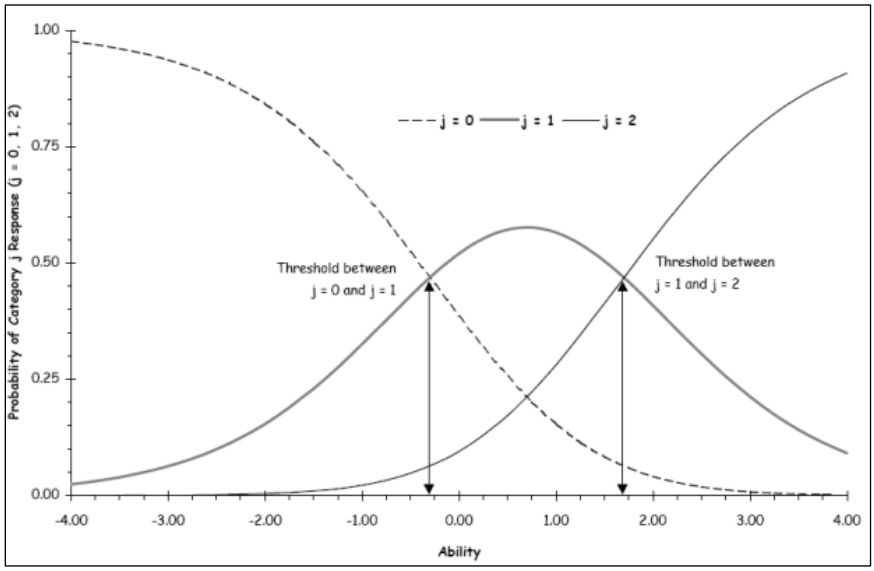


Figure 9.3 presents IRCs of obtaining each score category for a 2-point polytomously scored item. The dotted line (j=0) shows the probability of getting a score of 0. Students with very low ability (e.g., below -2) are likely to be in this category, which students receiving 1 point tend to fall in the middle range of abilities (the thick solid line curve, j=1). The thin solid line curve (j=2) represents the probability for those receiving scores of 2. Very high-ability students are more likely to be in this category, but some students of average and low ability can also get full credit for the item.

The points at which the lines cross have a similar interpretation for dichotomous items. For abilities to the left of (or less than) the point at which the j=0 line crosses the j=1 line, indicated by the left arrow, the probability is greatest for a 0 response. To the right of (or above) this point and up to the point at which the j=1 and j=2 lines cross (marked by the right arrow), the most likely response is a 1. For abilities to the right of this point, the most likely response is a 2. The probability of scoring a 1 response (j=1) declines in both directions as ability decreases to the low extreme and increases to the high extreme. These points may be thought of as the difficulties of crossing the *thresholds* between categories.

Figure 9.3. Example IRC for a 2-point Item



9.3. Data Preparation

Prior to any analyses, several steps were completed as preparation: (a) verify the data file containing student responses and apply the exclusion rules; (b) complete a traditional item analysis (TRIAN) and adjudication, where applicable, on all items; and (c) create incomplete data matrices (IDMs). A TRIAN of all SR items was conducted prior to calibration using classical statistics to identify potential test administration and score issues, as exemplified in the sample TRIAN report in Figure 9.4. Items with one or more of the following characteristics were flagged. A list of flagged items was communicated to the assessment specialists for review and confirmation that the correct key had been applied.

- *P*-value <0.15
- Item-total score correlation < 0.10
- Incorrect option selected by more high-performing students (top 33%) than the keyed response
- Distractor *p*-value ≥ 40%
- Distractor-total score correlation > 0
- One or more score points earned by less than 5% of students

Figure 9.4. Example TRIAN Report

Item	Form	Key	Corr.	*	PV<15	A%	*	B%	*	C%	*	D%	*	Omit%	Ncount
1	ALL	B	0.49			11		**46**		24		17		3	6,578
2	ALL	D	0.46			17		12		9		**59**		2	6,560
3	ALL	B	0.40			16		**50**		16		12		**6**	6,572
4	ALL	D	0.47			5		9		21		**63**		2	6,605
5	ALL	C	0.40			3		19		**51**		26		2	6,643
6	ALL	C	0.46			12		5		**78**		4		2	6,614
7	ALL	A	0.30			**33**		36		15		13		3	6,643
8	ALL	C	0.43			21		35		**35**		6		3	6,646

All TE items and ELA SR items were put through an adjudication process. For each item, the frequency distribution of responses scored correctly was created, along with the frequency distribution of responses scored as incorrect. Assessment specialists reviewed each response in the frequency reports and indicated whether the response should be scored as correct. The assessment specialists' indications were then cross-referenced with how the responses are scored to confirm that scoring is accurate. Figure 9.5 presents a sample adjudication spreadsheet.

Figure 9.5. Example Adjudication Spreadsheet

Item ID	Func.	Item Response	Scored Response	Freq. Count	% of Total Freq.	Date 1st Reviewer	1st Reviewer Initials	Issue? (Y/N)	Description of Issue	Date 2nd Reviewer	2nd Reviewer Initials	Issue? (Y/N)	Description of Issue
Item1		A_A1:B_B2	2	28339	59								
Item1		A_A1	1	35	0								
Item1		A_A1:A_A2	1	3782	8								
Item1		A_A1:C_C2	1	4803	10								
Item1		A_A1:D_D2	1	970	2								
Item1		A_A2	0	1	0								
Item1		B_B1	0	12	0								
Item1		B_B1:A_A2	0	464	1								
Item1		B_B2	0	4	0								
Item1		C_C1	0	10	0								
Item1		C_C1:A_A2	0	501	1								
Item1		C_C1:B_B2	0	841	2								
Item1		C_C1:C_C2	0	582	1								
Item1		C_C2	0	1	0								
Item1		D_D1	0	10	0								
Item1		D_D1:A_A2	0	652	1								

9.4. Checking Model Assumptions

It is important to evaluate how the IRT models applied for CMAS fit the data because reported scale scores are derived from theta estimated under the IRT models. Two major assumptions are investigated: unidimensionality and item fit. If the IRT models fit the data and the model assumptions are met, calibration of test items places both items and students on a scale that is independent of any sample of students up to a linear transformation. Equating is used to determine and apply a scale transformation that allows for meaningful comparisons of student performance across different forms or administrations of the test.

9.4.1. Unidimensionality

An assumption under the IRT models is unidimensionality, that there is exactly one latent variable (e.g., mathematics proficiency) that an instrument intends to measure. This is a more traditional and strict definition of the unidimensionality assumption. On the other hand, essential unidimensionality, in which there is one dominant latent variable with some minor latent variable(s), is a more practically applicable assumption (Stout, 1990). A factor analysis was performed on the item response data for the CMAS assessments to analyze the number of dimensions the assessments appear to be measuring. Given that unidimensional IRT models are used for calibration and scaling, it is important that there be evidence to support their use.

Appendix J presents the spring 2025 scree plots. For most of the assessments, one factor explained most of the variance, which supports the use of a unidimensional IRT model, although the ELA/CSLA scree plots do suggest that Reading and Writing are distinct subscores. The loadings for Factor 2 for ELA were all much higher for the PCR trait items than any other items. This may indicate the influence of a writing construct that is separate from what is measured by the reading items.

9.4.2. Item Fit

Appendix K presents the item fit results. Item fit refers to how well the data fit the IRT calibration model, and it is evaluated using Yen's (1981) Q_1 statistic that allows for the evaluation of an item's IRT model fit to observed student performance. In the calculations of Q_1, the observed and expected (based on the model) frequencies were compared at 10 intervals, or deciles, along the scale. Yen's Q_1 fit statistic was computed for each item using the following formula:

$$Q_{1_i} = \sum_{j=1}^{10} \frac{N_{ij}\left(O_{ij} - E_{ij}\right)^2}{E_{ij}\left(1 - E_{ij}\right)}$$

where N_{ij} is the number of students in interval j for item I, and O_{ij} and E_{ij} are the observed and expected proportions of students in interval j for item i. The Q_1 statistic was then transformed so that items with different degrees of freedom can have comparable fit statistics:

$$Z_{Q_{1_i}} = \frac{Q_{1_i} - df}{\sqrt{2df}}$$

where *df* is the degree of freedom for the statistic (*df* = 10–the number of parameters estimated; *df* = 7 for SR items in a 3PL model). If $Z_{Q_1 i}$ is greater than Z_{crit}, the item is flagged for poor model fit:

$$Z_{crit} = \frac{N_i * 4}{1500}$$

where N_i is the sample size.

9.5. Calibration

Calibration refers to the estimation of item parameters that places items and students on a common scale. The 2PL, 3PL and GPC models were applied to the CMAS items to obtain the item parameter estimates using IRTPRO, with all operational item parameters estimated in a single calibration (i.e., concurrent calibration) for each assessment. For CSLA, the RPCM was applied to all CSLA items to obtain item parameter estimates using Winsteps, with all operational items within a grade also calibrated concurrently.

PCR items were calibrated at the (unweighted) trait score level rather than as aggregated scores. To account for potential local dependence between the two trait scores, the item response matrix was modified before operational calibrations. For each PCR item, one of the two trait scores for each student was randomly selected, and the non-selected trait score was then removed from the dataset and treated as missing for calibration. The resulting item response dataset, known as a "Moulder" matrix, contained roughly half as many observations for each PCR trait score as for the non-PCR items. However, the datasets still contained an adequate number of student responses to conduct the calibrations. Due to the small population of students taking the CSLA assessment, trait scores were not removed from the data when conducting calibrations for CSLA.

9.6. Equating

Equating is used to place new test forms onto the operational base scale. Equating of the operational test forms involves adjusting for differences in the difficulty of forms, both within and across assessment administrations, to ensure that students taking one form of a test are neither advantaged nor disadvantaged when compared to students taking a different form. Each time a new form is constructed, equating is used to allow scores on the new form to be comparable to scores on the previous form.

9.6.1. Mathematics, ELA, and Science

The spring 2025 CMAS Mathematics, ELA (except grades 4 and 8 which were pre-equated), and Science assessments were calibrated and post-equated to the base scale following the procedures described below. All post-equating analyses were conducted using a representative sample of students that was evaluated based on the following demographics to ensure that the expected population demographic distributions were met: gender, ethnicity/race, economic disadvantage, language proficiency, students with disabilities, and district setting. A common items approach was used for equating the operational forms. Forms from adjacent administrations contain a set of items that are the same across the two administrations. This set of items represents the blueprint in terms of content and represents roughly 40% of a full form.

9.6.1.1. Consistency of Constructed-Response Scoring Check

Because the ELA assessments include a high percentage of CR items, the anchor sets include CR items to be more reflective of the construct being measured. For accurate equating, it is important that the items in the anchor sets be consistently scored across administrations. With SR items, scoring is the same each time the item is administered (e.g., 'A' is always scored as the correct answer) such that changes in item performance across administrations can be solely attributed to changes in student performance. With CR items, scoring is done by human raters, so it is important that scoring be monitored both within an administration and across administrations to maintain consistent scoring throughout. Such procedures were in place, including consistency in training and the use of validity papers throughout scoring.

As an additional check, the consistency of the CR scoring was examined prior to equating via the rescoring of a subset of the previous year's papers to remove any items that exhibited statistical drift in scoring characteristics so that the accuracy of the equating was not jeopardized. If a CR item appeared to lack consistency across the administrations, considerations were given to removing the item from the anchor set.

9.6.1.2. Stability Check

The item parameter stability check for the anchor items was conducted using classical item analyses, scatterplots of item parameter estimates, and ICC comparison. For the ICC comparison, old and new ICCs were compared using the *z*-score approach based on D^2 (Wells et al., 2014), as outlined below:

1. Obtain the theoretically weighted estimated posterior theta distribution using 31 quadrature points (-5 to 5).
2. Compute the slope and intercept constants using the Stocking and Lord (1993) method with all anchor items in the linking set.
3. Place the original anchor item parameter estimates onto the baseline scale by applying the constants obtained in Step 2.
4. For each anchor item, calculate D^2 between the ICCs based on old (x) and new (y) parameters at each point in this theta distribution:

$$D_i^2 = \sum_{.}^{k} \left[P_{ix}(\theta_k) - P_{iy}(\theta_k)\right]^2 * g(\theta_k)$$

   where i = item, x = old form, y = new form, k = theta quadrature point, and g = theoretically weighted posterior theta distribution.
5. Flag the items with a D^2 greater than 0.004.

9.6.1.3. Calibration and Anchor Set Evaluation

The initial calibration results were reviewed for problematic item parameter estimates, and fit plots were examined to detect items with poor model-data fit. Review of anchor item stability analyses resulted in dropping 1–4 items from the anchor set depending on the grade. The final ELA anchor sets represented between 34% and 47% of the unweighted total test points, the final mathematics anchor set represented between 29% and 35% of the total test points, and the final science anchor set represented between 40% and 46% of the total test points The online and paper versions were constructed to be parallel, and item parameter estimates were assumed to be the same. The information provided for the item statistics and IRT curves are based on the online estimates.

9.6.1.4. Final Anchor Sets

Items flagged from the stability check and consistency of CR scoring check were examined, and consideration was given to the impact of flagged item(s) on the content representativeness of the resulting anchor set. A flag alone was not the sole criteria for removing an item from the linking set; it was important to also make sure that the remaining anchor set continued to be representative of the overall content and structure of the test.

9.6.1.5. Equating Method

Using the item parameter estimates for the anchor set from the item bank and the current administration, the computer program STUIRT was used to obtain the transformation constants to place the current administration's items on the operational scale using the Stocking and Lord (1983) method. The scale transformation constants, Slope A and Intercept B, were applied to the item parameter estimates to place the new test items (new, *N*) on the operational scale (old, *O*) (Kolen & Brennan, 2004), as follows:

$$\alpha_{jO} = \alpha_{jN}/A$$

$$b_{jO} = A * b_{jN} + B$$

$$d_{jvO} = A * d_{jvN}$$

9.6.1.6. Paper Forms

Online and paper items were developed to be parallel to the online items. Operational paper items deemed identical to the operational online items were assumed to have the same item parameter estimates. Paper items were fixed to their online counterparts' item parameter estimates. This process produced item parameter estimates for all paper items.

9.6.2. CSLA

A common items approach was used to equate the CSLA operational forms. Forms from adjacent administrations contained a set of items that were the same across the two administrations (i.e., anchor items). Anchor items were operational items already equated to the base scale. The anchor items were placed in the same positions across all test forms within a grade and anchored the scale between the new test form and the base scale. This set of items represents the blueprint in terms of content and represents roughly 30% of a full form.

9.6.2.1. Stability Check

The stability check for the CSLA anchor items was conducted using classical item analysis, scatter plots of item difficulty, and displacement estimates from Winsteps. Items were flagged if the absolute value of the displacement estimate was greater than or equal to 0.30.

9.6.2.2. Final Anchor Sets

Items flagged from the stability check were examined, and consideration was given to the impact of flagged item(s) on the content representativeness of the resulting anchor set. A flag alone was not the sole criteria for removing an item from the linking set. It was important to also make sure that the remaining anchor set continues to be representative of the overall content and structure of the test. The final anchor sets for grades 3 and 4 represented 45% and 36%, respectively, of the unweighted total test points.

9.6.2.3. Equating Method

To obtain equated Rasch parameter estimates for the assessments, anchor item parameter estimates for each grade-level assessment were fixed to their previously equated item parameter estimates before calibrating the remaining non-anchor operational items on that assessment. This method placed the non-anchor operational items on the same scale as the anchor items.

9.7. Field Test Equating

The field test equating process is similar to operational equating, except the anchor items are the operational items. This process places the field test item parameter estimates onto the operational base scale. All field test items are calibrated concurrently, except for the ELA PCR items.

A minimum of 3,000 student responses for each field tested PCR item per trait is sampled for scoring and calibration. Due to possible dependency between the two trait scores for each PCR item, the field test items on each ELA assessment went through two calibrations. The first calibration included all field test items except the Writing Knowledge Language and Conventions (WKL) trait scores, and the second calibration included all field test items except the Writing Written Expression (WE) trait scores (with all operational items serving as anchor items in both cases).

The estimates from each calibration were then equated to the base scale separately following the same procedures as the operational equating. Finally, the two sets of equated field test parameters were combined by adding the equated field test WKL trait estimates to the equated estimates from the first calibration. This "double-calibration" method allowed for separate calibration of the field test trait scores while reducing the number of field test responses that needed to be scored per trait. Using a "Moulder" calibration method (as in the operational item calibration) would have meant using scoring resources to score traits that were never actually used for calibration or scoring.

9.8. Ability Estimates

For CMAS, student ability was estimated using IRT pattern scoring based on student responses and the operational item parameter estimates for all students who met the relevant attemptedness criterion. Student ability was estimated at the overall test level, as well as for Reading on the ELA assessment. Estimates were obtained via the maximum likelihood method (MLE) applied within the ISE software program. Pattern scores use the student's individual item response pattern (overall or Reading claim) to determine their ability estimate, which may lead to different ability estimates for the same raw score.

For CSLA, student abilities were estimated for each grade-level assessment by conducting an anchored calibration of the operational items' item parameter estimates after the item parameter estimates were obtained for the CSLA operational items. Student abilities were calculated for the overall test and for Reading. To obtain student ability estimates for the overall test, all the operational items were included in the anchored calibration. To obtain student ability estimates for Reading, only the operational items representing the specific claim were included in the anchored calibration. The calibrations included the weighting of the PCR WE trait score. Student ability estimates were obtained via the joint maximum likelihood method (JMLE) applied within Winsteps.

9.9. Overall and Subscale Scale Scores

For CMAS, student ability estimates for the overall test were transformed to scale scores ranging from 650 to 850 using the same scaling transformations as the prior year's administrations. The student ability estimates for the subscores for CMAS Science were transformed to scale scores ranging from 400 to 600. For ELA/CSLA, the student ability estimates for Reading were transformed to scale scores ranging from 110 to 190. The following linear transformation was used to convert examinee theta estimates into scale scores where A and B are unique scaling constants for each subject/grade:

$$SS = A * \theta + B$$

After the scale scores were calculated, the lowest obtainable scale score (LOSS) and highest obtainable scale score (HOSS) were applied. LOSS and HOSS were set to 650 and 850, respectively, for the overall test scale. For the Reading scale, LOSS and HOSS were set to 110 and 190. For the subscores of CMAS Science, LOSS and HOSS were set to 400 and 600.

9.10. Item-Level IRT Statistics

Appendix K presents the item parameter estimates for each grade. The item numbers are merely identifiers and do not reflect the sequence of items as they were presented to students. The "Item Type" uses the coding of SR for selected-response, XI for technology-enhanced, and CR for constructed-response items. The "Model" refers to the IRT model under which the item was estimated (2PL, 3PL, GPC, or RPCM). The "A" column shows the item parameter estimate for discrimination, "B" for difficulty, and "D1" through "D7" for GPC or RPCM category threshold estimates. Not all item parameters apply to each item. For example, there are no category threshold estimates for 2PL items.

The last column of the ELA, mathematics, and science tables reflects whether an item was flagged for misfit based on Q_1 for those calibrated assessments. Several items in each grade were flagged for misfit. Misfit plots for all items were reviewed, and misfit statistics were compared with data from the previous administration. Based on these reviews, no additional items were removed due to misfit flags. The last two columns for CSLA reflect the infit and outfit statistics generated from Winsteps. Fit values were reviewed, and no items were removed due to misfit.

9.11. IRT Curves

Appendix L presents the test characteristic curves (TCCs), test information curves (TICs), and CSEM curves for both the overall scale scores and the Reading scale scores. The 2025 CMAS TCCs matched those from 2018 (ELA and mathematics) and 2023 (science and CSLA) in terms of shape and position. The 2025 TCCs were reviewed across the distribution and at the cuts to ensure the match between years. Colorado's established maximum TCC difference of 0.05 was also maintained between the 2018 and 2025 forms. The TCCs are provided in terms of expected percent correct rather than expected raw score. Along with the curves, each cut score for a given grade is indicated with a red vertical line, as are the cut scores for Reading. On the overall scale score TCCs for science, mathematics, and ELA, the vertical line at a scale score of 750 corresponds to the cut for *Met Expectations* for each assessment.

9.12. Comparability of Online and Paper Forms

The scale score distributions for students taking the online and paper CMAS Mathematics, Science, and ELA assessments are examined using a matched samples approach to investigate the extent to which the online and paper forms produced comparable scores. Multiple variables are used for determining the matched groups to result in "equal" groups of online and paper students. The matching variables included sex, race/ethnicity, free and reduced lunch status, language proficiency, IEP, and district setting, plus the prior year's overall test score.

Because science is not assessed in consecutive grade levels, the prior year's score did not come from science. Rather, the grade 4 mathematics score is used for grade 5 science and the grade 7 mathematics score is used for the grade 8 science assessment.

Scale score distributions of CMAS scores between the matched samples are compared to estimate the mode effect. To quantify the differences between the two distributions, the effect size of the differences between the two distributions is calculated as Cohen's *d* (Cohen, 1977) using the mean scale score from each group and the pooled standard deviation:

$$d = \frac{M_{group1} - M_{group2}}{SD_{pooled}}$$

Suggested interpretations of Cohen's *d* are as follows:

- 0.2 = a small effect size
- 0.5 = a medium effect size
- 0.8 = a large effect size

In 2025, the average mode effect was calculated from 2023 (2022 for CMAS Math because the 2022 forms were reused) and 2024. This average mode effect was compared to a threshold of 0.1. If the average was greater than 0.1, then the mode effect adjustment was applied. The adjustment was a linear adjustment applied to the scale scores using the average slope and average intercept from 2023 and 2024.

Table 9.2 presents the average mode effect sizes of the spring 2023 (2022 for math) and 2024 administrations. Based on evaluation of the effect sizes, mode adjustments were made for ELA grades 3, 6–8, and mathematics grade 6. For assessments where an adjustment was deemed necessary, scores from the paper form were adjusted using a linear transformation to match the mean and standard deviation of the online form. The conversion was applied to the overall scores. For ELA, the conversion was also applied to the Reading score. For science, the conversion was also applied to the subscales. For the paper-based mathematics assessments from the prior administration, mode adjustments from that prior administration were applied to those forms.

Table 9.2. Online vs. Paper Comparability Mode Effect Sizes

Assessment	Effect Size
Mathematics 3	0.01
Mathematics 4	0.02
Mathematics 5	0.08

Assessment	Effect Size
Mathematics 6	-0.12
Mathematics 7	-0.09
Mathematics 8	-0.09
ELA 3	-0.10
ELA 4	-0.05
ELA 5	0.09
ELA 6	-0.18
ELA 7	-0.10
ELA 8	-0.11
Science 5	0.08
Science 8	-0.04
Science 11	N/A
Social Studies 4	N/A
Social Studies 7	N/A

Note. N/A = not applicable. Comparability analyses were not conducted for science grade 11 because the n-count was less than 1,000 in 2023 and 2024. Comparability analyses were not conducted for social studies because no scores were reported in 2025.

Chapter 10: Reliability

The *Standards for Educational and Psychological Testing* (AERA et al., 2014) refer to reliability as the "consistency of scores across replications of a testing procedure" (p. 33). A reliable test produces stable scores; very similar score distributions would result if the test were administered repeatedly under similar conditions to the same students without memory or fatigue affecting the scores. The level of reliability/precision of scores has implications for validity. In other words, scores must be consistent and precise enough to be useful for intended purposes. If scores are to be meaningful, tests should produce stable scores if the same group of students were to take the same test repeatedly without any fatigue or memory of the test. The range of certainty around the score should also be small enough to support educational decisions. Reliability for the CMAS assessments is evaluated with the following analyses:

- Internal consistency (coefficient alpha)
- Standard error of measurement (SEM)
- Conditional standard error of measurement (CSEM)
- Decision consistent and accuracy
- Inter-rater agreement

10.1. Internal Consistency (Coefficient Alpha)

Within the framework of classical test theory, an observed test score is defined as the sum of a student's true score and error ($X = T + E$, where X = the observed score, T = the true score, and E = error). A true score is considered the student's true standing on the measure, while the error score reflects a random error component. Thus, error is the discrepancy between a student's observed and true score. Internal consistency is typically measured via correlations among the items on an assessment and provides an indication of how much the items measure the same general construct. High reliability of test scores implies that the test items within a subclaim are measuring a single construct, which is a necessary condition for validity when the intention is to measure a single construct.

The reliability coefficient of a measure is the proportion of variance in observed scores accounted for by the variance in true scores. The coefficient can be interpreted as the degree to which scores remain consistent over parallel forms of an assessment (Ferguson & Takane, 1989; Crocker & Algina, 1986). In the internal consistency method used to estimate reliability for the CMAS assessments, a single form is administered to the same group of students to determine whether students respond consistently across the items within a test. A basic estimate of internal consistency reliability is Cronbach's coefficient alpha statistic (Cronbach, 1951). Coefficient alpha is equivalent to the average split-half correlation based on all possible divisions of a test into two halves. Coefficient alpha can be used on any combination of dichotomous and polytomous test items and is computed as follows:

$$\alpha = \frac{n}{n-1}\left(1 - \frac{\sum_{j=1}^{n} S_j^2}{S_X^2}\right)$$

where n is the number of items, S_j^2 is the variance of students' scores on item j, and S_X^2 is the variance of the total-test scores.

Coefficient alpha ranges from 0.0 to 1.0, where higher values indicate a greater proportion of observed score variance. Two factors affect estimates of internal consistency: test length and homogeneity of items. The longer the test, the more observed score variance is likely to be true score variance. The more similar the items, the more likely students will respond consistently across items within the test.

Table 10.1 – Table 10.4 present the coefficient alpha results overall and by subclaim for each content area. Appendix G presents the coefficient alpha estimates by demographic subgroup. The internal consistency values for the overall test ranged from 0.87 to 0.93. Given the differences in length, it is expected that the coefficient alpha for the overall test will be higher than that of the subscales.

The overall test reliability does not correspond directly with the overall student scale scores, as those are based on IRT pattern scoring. However, the overall estimates do provide evidence of unidimensionality of the assessments. Furthermore, the subgroup reliabilities were consistent for the various demographic subgroups, except for those based on language proficiency. The reliability of the tests tended to be lower for students identified as non-English proficient or limited English proficient.

Table 10.1. Coefficient Alpha by Subclaim—Mathematics

Grade	Overall	Subclaim A	Subclaim B	Subclaim C	Subclaim D
3	0.93	0.88	0.79	0.80	0.69
4	0.93	0.90	0.70	0.71	0.57
5	0.93	0.90	0.68	0.77	0.68
6	0.92	0.84	0.74	0.75	0.65
7	0.90	0.85	0.58	0.79	0.60
8	0.91	0.85	0.52	0.75	0.69

Table 10.2. Coefficient Alpha by Subclaim—ELA

Grade	Overall	Reading: Literary Text	Reading: Informational Text	Reading: Vocabulary	Writing: Written Expression	Writing: Knowledge and Use of Language Conventions	Reading	Writing
3	0.91	0.84	0.74	0.74	0.59	0.76	0.91	0.66
4	0.88	0.70	0.72	0.61	0.65	0.76	0.86	0.74
5	0.88	0.67	0.69	0.65	0.72	0.77	0.85	0.77
6	0.90	0.75	0.81	0.66	0.76	0.81	0.90	0.79
7	0.90	0.75	0.81	0.60	0.82	0.84	0.89	0.82
8	0.90	0.75	0.80	0.68	0.78	0.84	0.90	0.82

Table 10.3. Coefficient Alpha by Subclaim—CSLA

Grade	Overall	Reading: Literary Text	Reading: Informational Text	Reading: Vocabulary	Writing: Written Expression	Writing: Knowledge and Use of Language Conventions	Reading	Writing
3	0.87	0.70	0.63	0.60	0.73	0.77	0.84	0.83
4	0.87	0.73	0.61	0.65	0.63	0.73	0.85	0.78

Table 10.4. Coefficient Alpha by Content Standard—Science

Grade	Overall	Physical Science	Life Science	Earth and Space Science
5	0.91	0.78	0.62	0.82
8	0.93	0.79	0.84	0.78
11	0.87	0.70	0.69	0.70

Note. For grade 5, the content standard is Physical Science/Life Science.

Table 10.5. Coefficient Alpha by Content Standard—Social Studies

Assessment	Total Test	History	Geography	Civics	Economics & Personal Financial Literacy
Social Studies 4	0.87	0.59	0.71	0.62	0.67
Social Studies 7	0.89	0.71	0.63	0.72	0.64

10.2. Standard Error of Measurement (SEM)

The SEM is another measure of reliability. This statistic uses the standard deviation of test scores along with a reliability coefficient (e.g., coefficient alpha) to estimate the number of score points that a student's test score would be expected to vary if the student was tested multiple times with equivalent forms of the assessment. It is calculated as follows:

$$SEM = s_x\sqrt{1 - p_{XX}}$$

where S_x is the standard deviation of test scores, and p_{xx} is the reliability coefficient. There is an inverse relationship between the reliability coefficient and SEM: the higher the reliability, the lower the SEM.

Table 10. – Table 10. present the SEM results by subclaim for each content area. The classical SEM estimate is not reported for the overall test scale scores and the Reading subscore, as those scores are based on IRT pattern scoring rather than the sum of item scores.

Table 10.6. SEM by Subclaim—Mathematics

Grade	Subclaim A	Subclaim B	Subclaim C	Subclaim D
3	1.97	1.18	1.36	1.43
4	2.00	1.08	1.69	1.62
5	2.00	1.25	1.44	1.50
6	1.97	1.35	1.49	1.58
7	1.96	1.19	1.49	1.58
8	2.11	1.29	1.28	1.34

Table 10.7. SEM by Subclaim—ELA

Grade	Reading: Literary Text	Reading: Informational Text	Reading: Vocabulary	Writing: Written Expression	Writing: Knowledge and Use of Language Conventions	Writing
3	1.68	1.77	1.54	1.92	0.55	2.20
4	2.34	2.16	1.40	2.31	0.64	2.55
5	2.10	2.11	1.48	2.37	0.72	2.77

Grade	Reading: Literary Text	Reading: Informational Text	Reading: Vocabulary	Writing: Written Expression	Writing: Knowledge and Use of Language Conventions	Writing
6	2.01	2.16	1.47	2.49	0.71	3.00
7	2.00	2.33	1.81	2.26	0.69	2.95
8	2.14	2.21	1.62	2.66	0.71	3.12

Table 10.8. SEM by Subclaim—CSLA

Grade	Reading: Literary Text	Reading: Informational Text	Reading: Vocabulary	Writing: Written Expression	Writing: Knowledge and Use of Language Conventions	Writing
3	1.95	1.77	1.60	0.81	0.65	1.08
4	2.08	1.94	1.43	1.08	0.87	1.45

Table 10.9. SEM by Content Standard—Science

Grade	Physical Science	Life Science	Earth and Space Science
5	1.85	1.58	2.02
8	2.08	2.06	2.00
11	1.72	1.64	1.56

Note. For grade 5, the content standard is Physical Science/Life Science.

Table 10.10. SEM by Content Standard—Social Studies

Assessment	History	Geography	Civics	Economics & Personal Financial Literacy
Social Studies 4	1.31	1.20	1.27	0.94
Social Studies 7	1.36	1.08	1.18	1.10

10.3. Conditional Standard Error of Measurement (CSEM)

While the SEM provides an estimate of precision for an assessment, conditional standard error of measurement (CSEM) gives an indication of how measurement error varies across the score scale. While coefficient alpha is reported as a measure of internal consistency of the items that each scale comprises, IRT-based CSEM is a more appropriate measure of the measurement error associated with these scale scores because the reported scale scores for both the overall test and Reading are determined using IRT pattern scoring.

The CSEM is defined as the standard deviation of observed scores given a particular true score and is estimated within the IRT framework as the inverse of the test information function. Plots of test information curves (TICs) and CSEM across the score scale range are provided in Appendix L for both the overall scale scores and Reading scores.

Each scale score has a CSEM estimate that indicates what the most likely range of scores would be for students receiving that score if they tested multiple times. The CMAS assessments measure more accurately at a scale score near the middle of the scale than at the ends of the scale. During test construction, CSEMs are reviewed to ensure that they are minimized around the performance level cut scores.

10.4. Decision Consistency and Accuracy

The CMAS Mathematics and ELA/CSLA scales are divided into five performance levels that a student is placed in based on their scale score: *Did Not Yet Meet Expectations*, *Partially Met Expectations*, *Approached Expectations*, *Met Expectations*, and *Exceeded Expectations*. The science scale is divided into four performance levels: *Partially Met Expectations*, *Approached Expectations*, *Met Expectations*, and *Exceeded Expectations*. The consistency of a decision refers to the extent to which the same classification would result if a student were to take two parallel forms of the same assessment. However, since test-retest data are not available, psychometric models can be used to estimate the decision consistency based on test scores from a single administration. The accuracy of a decision refers to the agreement between a student's observed score classification and a student's true score classification if a student's true score could be known.

Procedures developed by Livingston and Lewis (1995) were used to estimate the consistency and accuracy of performance level classifications. For the overall test, consistency and accuracy estimates, along with PChance (i.e., the probability of a consistent classification due to chance) and Cohen's Kappa (κ) coefficient (Cohen, 1960), are calculated as follows:

$$K = \frac{P - P_c}{1 - P_c}$$

where P is the probability of consistent classification, and P_c is the probability of consistent classification by chance (Lee et al., 2000).

Table 10. presents the kappa interpretations. Table 10. presents the decision consistency and accuracy results, and Table 10. and Table 10. present the consistency and accuracy estimates at each cut score. Social studies is not included given that results for social studies in 2025 were reported as percentile ranks only, with overall scale scores and performance levels reported beginning in 2026.

Table 10.11. Kappa Values

Value of Kappa	Strength of Agreement
< 0.20	Poor
0.21 – 0.40	Fair
0.41 – 0.60	Moderate
0.61 – 0.80	Good
0.81 – 1.00	Very Good

Table 10.12. Decision Consistency and Accuracy Estimates

Assessment	Accuracy	Consistency	PChance	Kappa
Mathematics 3	0.75	0.66	0.22	0.56
Mathematics 4	0.77	0.69	0.25	0.59
Mathematics 5	0.77	0.69	0.24	0.57
Mathematics 6	0.75	0.65	0.23	0.55
Mathematics 7	0.73	0.63	0.25	0.51
Mathematics 8	0.71	0.62	0.22	0.51
ELA 3	0.73	0.64	0.26	0.52

Assessment	Accuracy	Consistency	PChance	Kappa
ELA 4	0.68	0.58	0.23	0.45
ELA 5	0.72	0.62	0.28	0.47
ELA 6	0.73	0.63	0.25	0.51
ELA 7	0.70	0.60	0.22	0.48
ELA 8	0.70	0.60	0.23	0.48
CSLA 3	0.72	0.61	0.27	0.47
CSLA 4	0.72	0.62	0.28	0.47
Science 5	0.78	0.71	0.32	0.57
Science 8	0.82	0.96	0.33	0.63
Science 11	0.74	0.66	0.34	0.49

Table 10.13. Accuracy of Cut Scores

Assessment	*Partially Met Expectations* Cut	*Approached Expectations* Cut	*Met Expectations* Cut	*Exceeded Expectations* Cut
Mathematics 3	0.95	0.92	0.92	0.88
Mathematics 4	0.95	0.92	0.92	0.95
Mathematics 5	0.95	0.92	0.92	0.92
Mathematics 6	0.94	0.91	0.92	0.94
Mathematics 7	0.94	0.90	0.91	0.94
Mathematics 8	0.92	0.90	0.92	0.92
ELA 3	0.94	0.92	0.91	0.95
ELA 4	0.94	0.90	0.89	0.88
ELA 5	0.95	0.91	0.89	0.92
ELA 6	0.95	0.92	0.90	0.91
ELA 7	0.95	0.92	0.90	0.79
ELA 8	0.94	0.91	0.90	0.89
CSLA 3	0.94	0.89	0.90	0.99
CSLA 4	0.94	0.89	0.90	0.99
Science 5	-	0.93	0.90	0.96
Science 8	-	0.94	0.89	0.99
Science 11	-	0.91	0.84	0.99

Table 10.14. Consistency of Cut Scores

Assessment	*Partially Met Expectations* Cut	*Approached Expectations* Cut	*Met Expectations* Cut	*Exceeded Expectations* Cut
Mathematics 3	0.93	0.89	0.89	0.87
Mathematics 4	0.93	0.89	0.89	0.94
Mathematics 5	0.93	0.89	0.89	0.90
Mathematics 6	0.92	0.88	0.88	0.93
Mathematics 7	0.93	0.86	0.87	0.93
Mathematics 8	0.88	0.87	0.88	0.91
ELA 3	0.91	0.88	0.87	0.93
ELA 4	0.92	0.86	0.85	0.86
ELA 5	0.93	0.88	0.85	0.90
ELA 6	0.94	0.88	0.86	0.89
ELA 7	0.93	0.88	0.86	0.77
ELA 8	0.92	0.88	0.86	0.86

Assessment	*Partially Met Expectations* Cut	*Approached Expectations* Cut	*Met Expectations* Cut	*Exceeded Expectations* Cut
CSLA 3	0.91	0.85	0.86	0.99
CSLA 4	0.92	0.85	0.86	0.98
Science 5	-	0.90	0.86	0.94
Science 8	-	0.92	0.85	0.99
Science 11	-	0.87	0.79	0.99

10.5. Inter-Rater Agreement

For CR items, inter-rater agreement examines the extent to which students would obtain the same score if scored by different scorers. For each operational item, 10% of the responses were scored by a second reader, which allowed for rater agreement statistics to be calculated. 0 presents the inter-rater agreement statistics for the CR operational items (i.e., the percentage of operational items with exact agreement, adjacent agreement, and non-adjacent agreement). The target exact plus adjacent agreement rate is 95% for all items. The following agreement rates were calculated for each CR item and presented in Appendix M:

- Exact agreement, which represents exact agreement between the two raters
- Adjacent agreement, which represents adjacent agreement between the two raters (i.e., a difference of 1 score points)
- Non-adjacent agreement, which represents a difference of more than 1 score point between the two raters

For the PCR items, the following additional analyses were also conducted:

- Quadratic kappa, which is a comparison between the mean square error of rating pairs that are supposed to agree (X_1, Y_1) and those that are unrelated (X_1, Y_2):

$$KAPPA = \frac{E([X_1 - Y_1]^2)}{E([X_1 - Y_2]^2)}$$

- Standardized mean differences:

$$\bar{Z} = \frac{\left|\bar{X}_{R_1} - \bar{X}_{R_2}\right|}{\sqrt{\frac{sd_{R_1}^2 + sd_{R_2}^2}{2}}}$$

- Correlations:

$$r = \frac{\sum(X_{i_{R_1}} - \bar{X}_{R_1})\,(X_{i_{R_2}} - \bar{X}_{R_2})}{\sqrt{\sum(X_{i_{R_1}} - \bar{X}_{R_1})^2 \sum\left(X_{i_{R_2}} - \bar{X}_{R_2}\right)^2}}$$

Chapter 11: Validity

As stated in the *Standards for Educational and Psychological Testing* (AERA et al., 2014), "Validity refers to the degree to which evidence and theory support the interpretations of test scores for proposed uses of tests. Validity is, therefore, the most fundamental consideration in developing tests and evaluating tests. The process of validation involves accumulating relevant evidence to provide a sound scientific basis for the proposed score interpretations" (p. 11). As described in Section 1.3, the purpose of the CMAS assessments is to provide information about a student's level of mastery of the Colorado Academic Standards (CAS). Mastery of the standards indicates that a student is on track to being college and career ready at each grade level. The purpose of test validation is not to validate the test itself but to validate interpretations of the test scores for particular uses.

Test validation is not a quantifiable property but an ongoing process, beginning at initial conceptualization and continuing throughout the lifetime of an assessment. Every aspect of an assessment provides evidence in support of its validity (or evidence of lack of validity), including design, content specifications, and psychometric characteristics. Different pieces of technical quality evidence have been provided throughout this document that provide relevant validity evidence and a rationale in support of the CMAS test score interpretations and intended uses. This section describes the five sources of validity evidence as outlined in the *Standards for Educational and Psychological Testing* (AERA et al., 2014), often referencing other sections of this report.

11.1. Evidence Based on Test Content

Evidence based on the content of the assessment is supported by the degree of correspondence between test items and content standards. The degree to which the test measures what it claims to measure is known as construct validity. The CMAS assessments adhere to the principles of evidence-centered design, in which the standards to be measured (i.e., the CAS) are identified, and the performance a student needs to achieve to meet those standards is delineated in the evidence statements (ESs) or evidence outcomes (EOs). Test items are reviewed for adherence to universal design principles to maximize the participation of the widest possible range of students.

11.1.1. Test Development Process

The item development process is driven by targets at the ES or EO level. Before developing items, Pearson uses target spreadsheets to create an internal item development plan (IDP) aligned with the expectations of test design and with consideration of attrition rates at committee review and data review. The validity of a state assessment relies on the methodology that frames the development and design of the assessment. In support of that claim, Pearson upholds these considerations as the cornerstones of the CMAS item and test development:

- The item development process ensures that the mathematics and ELA/CSLA items align to the ESs and EOs and that the science items align to the EOs.
- IDPs were designed to produce and maintain a robust item bank; items are written to address the scope of measured standards, grade-level difficulties, and cognitive complexity.
- The item and test development processes promote the equivalency of the online and paper-based assessments.

- Items were developed with the intention of being administered on multiple testing platforms.
- Item and test development processes are compliant with industry standards.

Content is also aligned through the articulation of performance in the performance level descriptors (PLDs). At the policy level, the PLDs include policy claims about the educational achievement of students who attain a particular performance level, and a broad description of the grade-level knowledge, skills, and practices that students performing at a particular performance level are able to demonstrate. Those policy-level descriptors are the foundation for the subject- and grade-specific PLDs, which, along with the ES or EO framework, guide the development of the items and tasks.

Gathering construct validity evidence for the CMAS assessments is embedded in the process by which the test content is developed and validated. At each step in the test development process, educators, assessment experts, and bias and sensitivity experts were involved in review of text, items, and tasks for accuracy, appropriateness, and freedom from bias, as described in Chapter 3. In the early stages of development, Pearson conducted research studies to validate the item and task development approach. One such study focused on student task interaction and was designed to collect data on students' experience with the assessment tasks and technological functionalities, as well as the amount of time needed to answer each task. Pearson also conducted a rubric choice study that compared the functioning of two rubrics developed to score the ELA PCR tasks. Quantitative and qualitative evidence was collected to support the use of a condensed or expanded trait scoring rubric.

An important consideration when constructing test forms is recognition of items that may introduce construct-irrelevant variance. Such items should not be included on test forms to help ensure fairness to all student subgroups. Data reviews and content and bias reviews are held with Colorado educators to identify any issues with items before they are included on an operational test form. Accommodations were also made available based on individual need documented in the student's approved IEP or 504 Plan, as described in Section 4.5.

The CMAS operational test forms were carefully constructed to align with the test blueprints and specifications based on the CAS. Chapter 4 provides details on the construction of the operational assessment forms, which demonstrates that all test forms adhered to the same test design used in previous years or were previously used operationally.

11.1.2. 2023 Alignment Study

An independent alignment study was conducted by the Human Resources Research Organization (HumRRO) in 2023 to provide further evidence to support the claim that the content of the CMAS Science test items matches the intended content as specified in the 2020 CAS (Revivo et al., 2023). For the study, three panels (one per grade) of Colorado educators were convened to review the alignment between the CMAS Science items and the CAS. Every effort was made to recruit panels consisting of teachers reflecting the various demographic subgroups and regions across Colorado. HumRRO applied alignment criteria they developed that was approved by CDE. This procedure required the panelists to (a) provide cognitive complexity ratings for each item, (b) indicate the CAS best aligned to each item, and (c) indicate if each item aligned to an SEP or CCC.

Overall, the results of the study provide validity evidence to support the claim that the content of the CMAS Science test items matches the intended content as specified in the CAS and test blueprint. Across all grades, items represented the intended content and reflected the multidimensional nature of the CAS, although only grade 5 items reflected appropriate levels of cognitive complexity whereas grades 8 and 11 items narrowly missed the cognitive complexity criterion requirements. The results of the alignment study have been considered during the item development process for subsequent administrations.

11.2. Evidence Based on Internal Structure

Analyses of the internal structure of a test typically involve studies of the relationships among test items and/or test components (i.e., subclaims) in the interest of establishing the degree to which the items or components appear to reflect the construct on which a test score interpretation is based (AERA et al., 2014, p. 16). The term *construct* refers to the characteristics that a test is intended to measure; in the case of the CMAS assessments, the characteristics of interest are the knowledge and skills defined by the CAS.

The CMAS assessments provide a full summative test score, a Reading score, and scores for the science reporting categories. Percent of points earned is reported for Writing and mathematics and ELA subclaims. The goal of reporting at this level is to provide criterion-referenced data to assess the strengths and weaknesses of a student's achievement in specific components of each content area compared with other students taking the same assessment (for overall and percent of points earned scores) and students who took the assessment in prior years (for overall scores). This information can then be used for a variety of purposes as indicated in Section 1.3. Evidence based on internal structure is provided in the following sections of this technical report:

- Subclaim correlations (Section 8.4)
- Internal consistency (Section 10.1)
- Factor analysis (Section 9.4.1)

11.3. Evidence Based on Relationships to Other Variables

Correlations were calculated between the mathematics, ELA, and science assessments, as shown in Table 11.1. (The samples include only students with valid scores on both assessments.) These scores may be expected to have lower correlations if the tests are measuring distinct constructs. The correlations between the scale scores of the CMAS assessments ranged from 0.76 to 0.81; these values are also very close to the 2018 values.

Table 11.1. Correlations between CMAS Scale Scores

Comparison	Grade	N	Correlation
ELA & Math	3	56,357	0.79
	4	54,823	0.77
	5	56,230	0.76
	6	54,363	0.81
	7	52,845	0.77
	8	49,919	0.77
ELA & Science	5	55,822	0.81
	8	49,078	0.81
Math & Science	5	56,279	0.80
	8	49,661	0.77

11.4. Evidence Based on Response Processes

As noted in the *Standards for Educational and Psychological Testing* (AERA et al., 2014), additional support for a particular score interpretation or use can be provided by theoretical and empirical evidence indicating that students are using the intended response processes when responding to the items in a test. This type of evidence may be gathered from interacting with students to understand what processes underlie their item responses. Evidence may also be derived from feedback provided by test proctors/teachers involved in the administration of the test and raters involved in the scoring of CR items. Evidence may also be gathered by evaluating the correct and incorrect responses to short CR items (e.g., items requiring a few words to respond) or by evaluating the response patterns to multi-part items.

Prior to the 2016 administration, the PARCC consortium undertook research investigating the quality of the items, tasks, and stimuli, focusing on whether students interact with the online items/tasks as intended through cognitive labs. In these studies, students were asked to narrate how they interact with an item and answer questions about their experience with the item and online platform.

Cognitive labs were conducted for CMAS Science in 2024 to understand students' engagement with phenomenon-based assessment materials, both in terms of degree of engagement and the methods and cognitive processes by which students approach that engagement (Hendriksen, 2024). Pearson content experts conducted the cognitive interviews using a sample of one simulation and one static cluster set in grades 5 and 8. A total of 28 students participated. All interviews were conducted virtually and recorded to enable analysis of students' actions on the items (e.g., where a student clicks, how they move through the items), their non-verbal behavior, and transcription of the interviews. Students were asked to verbalize their thoughts out loud while reading and responding to the items. After each interview, interviewers completed a debriefing form to record additional thoughts on the interviews and note any issues if relevant. Most students expressed a preference for directions and could process the assessment stimuli and formulate their answer quickly and effectively, albeit not always correctly. Students' preferences of animations vs. static images were split, although their navigation behavior suggested that they more easily navigated the static clusters. The study resulted in recommendations from Pearson to improve the presentation and clarity of the directions and items. Appendix O presents the study report.

As new items are developed, the field test responses are reviewed. Sample responses to the CR items are also reviewed by educator committees during rangefinding to ensure that the rubrics make sense and provide example scored responses. During the data review meeting, item statistics are reviewed to ensure that the students are responding to items in the expected way. Low item item-total correlations and aberrant response distributions can all indicate that there are unexpected issues with either the correct or incorrect responses. Items where the correct response is not accurate or there are distractor responses that are technically correct can be identified and rejected at this step. During the adjudication step, incorrect responses to fill-in-the-blank items are also reviewed to make sure that no technically correct responses are excluded. These include entry issues such as extra spaces or unexpected responses such as adding an unnecessary decimal (e.g., 3.0 rather than 3).

11.5. Evidence Based on the Consequences of Testing

Because state tests are administered "in the expectation that some benefit will be realized from the intended use of the scores" (AERA et al., 2014, p. 19), validity evidence supporting the use and interpretation of CMAS results may be investigated as a consequence of testing. One intended consequence of testing is that more students will demonstrate mastery over the CAS over time, as evidenced by more students achieving in the top performance levels, if the data are used appropriately to make improvements in programming at the school and district levels. After the disruptions in education caused by the COVID-19 pandemic, the CMAS results have also served the purpose of monitoring student progress back to pre-pandemic levels.

Table 11.2 presents the percentage of students who have reached proficiency on the CMAS assessments over the years. Mathematics and ELA have been administered since 2015, and CSLA has been administered since 2016. Prior to 2018, students in grades 7 and 8 who were in advanced courses could take high school course-specific assessments. Starting in 2018, this was no longer allowed, which impacted the overall performance on the grades 7 and 8 mathematics assessments so the performance can only be compared starting with 2018. While science has been administered since 2014, the change in standards and creation of a new assessment aligned to those standards means that performance cannot be compared before 2022. Social is not included in the table given that the results for social studies in 2025 were reported as percentile ranks only, with overall scale scores and performance levels reported beginning in 2026.

As shown in the table, student performance has improved since the first administration except for grade 6 mathematics and grades 3 and 4 CSLA. Comparing 2025 performance to 2019, students in grades 3–7 have met or passed their 2019 performance in mathematics, and all grades have nearly met or passed their 2019 performance in ELA.

Table 11.2. Student Performance Over Time

Assessment	1st Admin. *%Met or Exceeded*	2019 *%Met or Exceeded*	2022 *%Met or Exceeded*	2023 *%Met or Exceeded*	2024 *%Met or Exceeded*	2025 *%Met or Exceeded*	%Change, 1st Admin. to 2019	%Change, 1st Admin. to 2022	%Change, 1st Admin. to 2023	%Change, 1st Admin. to 2024	%Change, 1st Admin. to 2025
Mathematics 3	36.7	41.0	39.4	40.4	41.7	41.2	4.3	2.7	3.7	5.0	4.5
Mathematics 4	30.2	33.6	30.7	32.7	34.1	36.5	3.4	0.5	2.5	3.9	6.3
Mathematics 5	30.1	35.7	34.9	36.5	37.3	39.1	5.6	4.8	6.4	7.2	9.0
Mathematics 6	31.7	29.5	26.3	28.2	29.2	31.4	-2.2	-5.4	-3.5	-2.5	-0.3
Mathematics 7	28.8	31.6	25.1	26.3	29.8	31.8	2.8	-3.7	-2.5	1.0	3.0
Mathematics 8	28.2	36.9	32.4	32.7	32.5	34.7	8.7	4.2	4.5	4.3	6.5
ELA 3	38.2	41.3	40.7	39.9	42.1	42.0	3.1	2.5	1.7	3.9	3.8
ELA 4	41.7	48.0	44.1	43.8	42.0	42.0	6.3	2.4	2.1	0.3	0.3
ELA 5	40.5	48.4	45.4	47.8	47.3	48.0	7.9	4.9	7.3	6.8	7.5
ELA 6	39.1	43.6	43.0	43.4	44.0	44.2	4.5	3.9	4.3	4.9	5.1
ELA 7	41.0	46.5	41.8	45.0	46.3	48.8	5.5	0.8	4.0	5.3	7.8
ELA 8	40.9	46.9	43.9	42.4	42.8	43.9	5.9	3.0	1.5	1.9	3.0
CSLA 3	22.0	27.5	19.8	18.7	17.2	16.5	5.5	-2.2	-3.3	-4.8	-5.5
CSLA 4	13.9	19.1	13.7	14.2	15.9	13.1	5.2	-0.2	0.3	2.0	-0.8
Science 5	33.9	–	–	33.9	37.9	39.0	–	–	–	4.0	5.1
Science 8	31.3	–	–	31.3	32.3	36.4	–	–	–	1.0	5.1
Science 11	24.6	–	–	24.6	24.8	25.0	–	–	–	0.2	0.4

Note. The first administration for mathematics grades 3–6 and ELA was 2015, the first comparable administration for mathematics grades 7 and 8 was 2018, the first administration for which scale scores and performance levels were generated for science was 2023, and the first administration for CSLA was 2016. Performance results are not included for 2021 due to low participation.

11.6. Fairness

Fairness is an important aspect of validity, as it is critical that an assessment provide accurate measurements for all students. To that end, the following fairness considerations were woven into the development and administration of the CMAS assessments:

- Sample items that provide the opportunity for teachers and students to become familiar with the test design and scoring of the assessments before experiencing the items on an operational test (Section 4.3)
- Universal design principles that are adhered to during the test development process with the goal of avoiding construct-irrelevant aspects of the assessment that could impact student performance (Chapter 3)
- Items are reviewed by educators for potential issues which could impact the performance of student groups prior to field testing (Chapter 3).
- Differential item functioning (DIF) analyses to identify any items that appear to be unfairly favoring one subgroup over another. All items which show DIF are reviewed by educators for potential bias in the item. (Section 3.6)
- Accessibility tools and accommodations to allow students to fully demonstrate their content knowledge without being hindered by non-construct related elements (**Error! Reference source not found.** and Section 4.5)

Participation information must also be reviewed and taken into consideration thoughtfully when interpreting the district and school results. As participation rates vary across student, school, and district groups, challenges with interpreting results increase. Depending on the specific school or district, some student groups may have been overrepresented in the results and others may have been underrepresented. Students may have also experienced ongoing reduced, disrupted, and/or adjusted learning opportunities during the school year. Due to these factors and many more challenges experienced due to COVID-19, districts and schools should be cautious when interpreting results because the data may not support all cross-state comparisons and historical uses when participation rates are low and/or representativeness is limited.

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Appendix A: Test Blueprints

The following tables present the percentage targets for each content area and grade-level assessment.

Table Error! No text of specified style in document.**.1. Test Blueprint—Mathematics Grades 3–5**

Item Type/Subclaim/Calculator Use	Grade 3	Grade 4	Grade 5
Total #Points	50–51	50–51	50–51
Type I	61–62%	61–61%	61–62%
1.1	49–50%	37–38%	37–38%
1.2	12%	24%	24%
1.4	–	–	–
Subclaim A: Major Content	43–44%	47–48%	45–46%
Subclaim B: Supporting Content	18%	14%	16%
Type II	20–22%	20–22%	20–22%
2.3	6–12%	6–12%	6–12%
2.4	8–16%	8–16%	8–16%
Subclaim C: Expressing Mathematical Reasoning	20–22%	20–22%	20–22%
Type III	18%	18%	18%
3.3	6%	6%	6%
3.6	12%	12%	12%
Subclaim D: Modeling and Application	18%	18%	18%
Calculator	–	–	–
Non-Calculator	100%	100%	100%

Table Error! No text of specified style in document.**.2. Test Blueprint—Mathematics Grades 6–8**

Item Type/Subclaim/Calculator Use	Grade 6	Grade 7	Grade 8
Total #Points	50–51	50–51	50–51
Type I	61–62%	61–62%	61–62%
1.1	37–38%	37–38%	33–34%
1.2	16%	16%	12–20%
1.4	8%	8%	8–16%
Subclaim A: Major Content	39–40%	45–46%	41–42%
Subclaim B: Supporting Content	22%	16%	20%
Type II	20–22%	20–22%	20–22%
2.3	6–12%	6–12%	6–12%
2.4	8–16%	8–16%	8–16%
Subclaim C: Expressing Mathematical Reasoning	20–22%	20–22%	20–22%
Type III	18%	18%	18%
3.3	6%	6%	6%
3.6	12%	12%	12%
Subclaim D: Modeling and Application	18%	18%	18%
Calculator	72–73%	76%	72–73%
Non-Calculator	27–28%	24%	27–28%

Table Error! No text of specified style in document.**.3. Test Blueprint—ELA Grades 3–5**

Subclaim	Grade 3 (includes CSLA)	Grade 4 (includes CSLA)	Grade 5
Total #Points	53 (65)	59 (73)	57 (71)
Reading	77% (63%)	78% (63%)	77% (62%)
Literary Text	32% (26%)	31–34% (25–27%)	32% (25%)
Informational Text	26% (22%)	31% (25%)	32% (25%)
Vocabulary	19% (15%)	14–17% (11–14%)	14% (11%)
Writing	23% (37%)	22% (37%)	23% (38%)
Written Expression	11% (28%)	12% (29%)	12% (30%)
Knowledge and Use of Language Conventions	11% (9%)	10% (8%)	10% (8%)

Note. The numbers in parantheses bare based on weighted Written Expression scores. Scores may not add up as expected due to rounding.

Table Error! No text of specified style in document.**.4. Test Blueprint—ELA Grades 6–8**

Subclaim	Grade 6	Grade 7	Grade 8
Total #Points	62 (78)	64 (80)	64 (80)
Reading	77% (62%)	78% (63%)	78% (63%)
Literary Text	26–29% (21–23%)	28% (23%)	28% (23%)
Informational Text	35% (28%)	34% (28%)	34% (28%)
Vocabulary	13–16% (10–13%)	16% (13%)	16% (13%)
Writing	23% (38%)	22% (38%)	22% (38%)
Written Expression	13% (31%)	13% (30%)	13% (30%)
Knowledge and Use of Language Conventions	10% (8%)	9% (8%)	9% (8%)

Note. The numbers in parantheses bare based on weighted Written Expression scores. Scores may not add up as expected due to rounding.

Table Error! No text of specified style in document.**.5. Test Blueprint—Science Grade 5**

Standard/Item Type	%Total Test Score Points	#Points: Cluster	#Points: Mini Cluster	#Points: Standalone
Physical	35%	7–9	0–6	3–7
Physical/Life	24%	7–9	0–6	0–7
Earth and Space	41%	7–9	0–6	4–10
Science and Engineering Practices	65%–75%	–	–	–
SR and TE	53%	–	–	–
CR	47%	–	–	–
Total	100%	24–26	10–12	15

Table Error! No text of specified style in document.**.6. Test Blueprint—Science Grade 8 (Middle School)**

Standard/Item Type	%Total Test Score Points	#Points: Cluster	#Points: Mini Cluster	#Points: Standalone
Physical	34%	7	6–12	0–6
Life	36%	7	6–12	1–7
Earth and Space	30%	7	6	3
Science and Engineering Practices	65%–74%	–	–	–
SR and TE	53%	–	–	–
CR	47%	–	–	–
Total	100%	21	24	16

Table Error! No text of specified style in document.**.7. Test Blueprint—Science Grade 11 (High School)**

Standard/Item Type	%Total Test Score Points	#Points: Cluster	#Points: Mini Cluster	#Points: Standalone
Physical	46%	6	5–9	4–7
Life	32%	6	4–8	2–6
Earth and Space	31%	9	5–8	2–5
Science and Engineering Practices	65%–74%	–	–	–
SR and TE	53%	–	–	–
CR	47%	–	–	–
Total	100%	18	19	13

Table Error! No text of specified style in document.**.8. Test Blueprint—Social Studies Grade 4**

Standard/Item Type	%Total Test Score Points	#Points: Standalone
History	25%	9
Geography	27%	10
Economics	11%	4
Civics	25%	9
Personal Financial Literacy	11%	4
SR and TE	100%	36
Total	100%	36

Table Error! No text of specified style in document.**.9. Test Blueprint—Social Studies Grade 7**

Standard/Item Type	%Total Test Score Points	#Points: Standalone
History	28%	10
Geography	25%	9
Economics	11%	4
Civics	25%	9
Personal Financial Literacy	11%	4
SR and TE	100%	36
Total	100%	36

Appendix B: Science Cognitive Complexity Framework

Colorado Measures of Academic Success (CMAS) Science

Final Cognitive Complexity Framework, January 2023

COLORADO
Department of Education

Item Cognitive Complexity

Note: Examples provided are not intended to be comprehensive of all items meeting that descriptor.

Item Cognitive Complexity			
	Low - Single Dimension	**Medium - Two Dimensions**	**High - All Three Dimensions**
Item Dimensionality[1]	Item requires demonstration of only one dimension.	Item requires integration of two dimensions, described in the CAS Learning Progressions documents.	Item requires integration of three dimensions, described in the CAS Learning Progressions documents.
	Low - Heavy	**Medium - Moderate**	**High - Minimal**
Scaffolding/Support	The task prescribes a *fully specified* approach for responding. - All components are provided and commonplace; student does not need to infer or select from them: o formulas o Punnett squares o components of energy in a system o unbalanced chemical equations o labels to be applied to familiar models - Problem-solving steps are provided in the stimulus; student only executes them.	The task focuses student to *apply* an approach that is only partially specified. - Student is provided either a partial set of components for a routine task or an excess of components for a more complex task; student must either infer what is missing or discard what is irrelevant: o suggest original components to incorporate into an incomplete model o apply the correct formula(s) out of several available options o explain an observed instance using a specified concept o describe the missing steps from an incomplete investigational procedure - There is some uncertainty associated with the outcome of the scenario. - Some portion of the task is accomplished by way of provided problem-solving steps, but the student must choose or devise some portion of the process.	The task frames a situation that the student must *interpret to select or develop multiple steps* of an approach. - Student is presented with multiple informational inputs between which the relationship is not immediately obvious. - A high degree of uncertainty is associated with the outcome of the scenario. - Student selects or develops multiple problem-solving steps to complete a specific, structured, defined task or goal: o design an investigation o use listed materials to develop an original model o explain an observed instance using one or more unspecified concepts o determine and apply a sequence of formulas to solve a problem

Final CMAS Cognitive Complexity Framework 2023
Adapted from Achieve Cognitive Complexity in Science Assessments and Task Analysis Guide for Science

	Low - Minimal	Medium - Surface	High - Intensive
Sensemaking Sensemaking situation: students are provided material without obvious ties/connections to content (e.g., language of the standard); they must use their knowledge of the standard to explain what they see in the material.	- Task is answerable via rote knowledge connected to the phenomenon solely by context. - Item requires no engagement with the stimulus. - The student can correctly answer without addressing the central concept [mystery/puzzle] of the phenomenon. - Focused on identifying an answer, not on explaining phenomena. o identify the components of a familiar system without explaining their importance to the system. o identify the trend in a graph without using it to explain or predict anything.	- Making sense of a phenomenon or addressing a problem is necessary to accomplish at least a portion of the item, or answering the item is a strategic step toward a sensemaking goal. - Answer requires: o use of information, data, or a model to develop an explanation or argument o connection of multiple pieces of information. - Task asks for standards-based explanation of observations, but not the detailed relationships behind those observations: o determine which of several data sets correlates with the trend under observation o determine which portion of a system is most directly connected to the phenomenon o given data and a proposed cause for a phenomenon, provide support for that cause from the data	- Making sense of a phenomenon or addressing a problem is the fundamental source of challenge in the item. - Meaningful (valid, accurate, causal, etc.) information must be distinguished from other information through reasoning: o speculate a cause for an unusual observation and provide support for that cause from given data o determine corresponding trends between multiple data sets and evaluate for causation o notice patterns within data and connect them to the phenomenon under consideration o predict how a change to one part of a system will impact another part - Task requires use of pertinent standard knowledge to explain both observations and the detailed relationships behind those observations.

[1] - Disciplinary Core Ideas (DCI), Science and Engineering Practices (SEP), Crosscutting Concepts (CCC)

Overall Item Cognitive Complexity Rating

The overall cognitive complexity rating for the item follows a majority rules approach when comparing the ratings for dimensionality, scaffolding/support, and sensemaking.

- Item complexity is **High** if at least two of the three categories are rated at the highest level
- Item complexity is **Low** if two are rated at the lowest level.
- Item complexity is **Medium** in all other cases.

Final CMAS Cognitive Complexity Framework 2023
Adapted from Achieve Cognitive Complexity in Science Assessments and Task Analysis Guide for Science

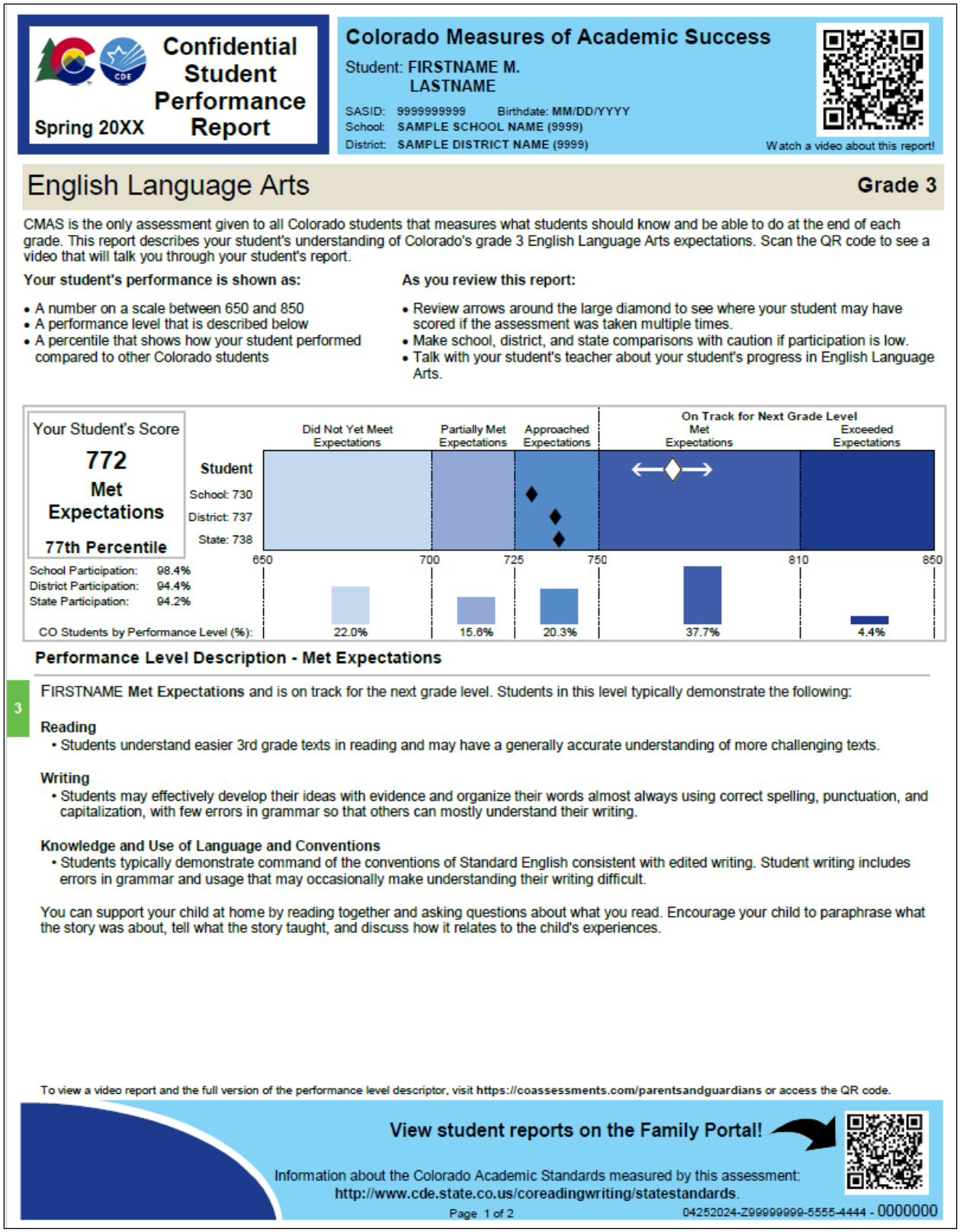
Cluster Stimulus Cognitive Complexity

Note: Use the following **only for** the purpose of rating cluster and simulation stimuli.

Cluster Stimulus Complexity			
	1 - Low	**2 - Medium**	**3 - High**
Phenomenon/ Stimulus Material	- The task provides a problem or a phenomenon that students are already familiar with how to explain or solve. - Student is presented a simple, probably familiar situation/scenario and selects the appropriate, direct scientific explanation for the phenomenon. - Context is rudimentary or taken directly from the EO, Clarification Statement, or DCI. - Information is limited to that specifically needed to address the task.	- The scenario presents a relatively new phenomenon that students might have some familiarity with, which contains some specific uncertainty for tasks to focus on. - The scenario has multiple facets of information for students to interpret at a grade-appropriate level of sophistication. - Within the scenario there are explicit cues and/or scaffolding to focus students toward related tasks. - The provided components are sufficient for students to arrive at the appropriate scientific explanation for the phenomenon. - Context is substantial and goes beyond examples listed in the standards text.	- The scenario presents a new phenomenon or problem that o is at a level that "figuring out" would be real and authentic for students o is not immediately explainable by the student o likely involves multiple appropriate ways to engage and pursue the task - Connection of context to the standards is indirect or unobvious.

Final CMAS Cognitive Complexity Framework 2023
Adapted from Achieve Cognitive Complexity in Science Assessments and Task Analysis Guide for Science

Appendix C: Sample Student Performance Reports



Confidential Student Performance Report
Spring 20XX

Colorado Measures of Academic Success
Student: FIRSTNAME M. LASTNAME
SASID: 9999999999 Birthdate: MM/DD/YYYY
School: SAMPLE SCHOOL NAME (9999)
District: SAMPLE DISTRICT NAME (9999)
Watch a video about this report!

English Language Arts — Grade 3

CMAS is the only assessment given to all Colorado students that measures what students should know and be able to do at the end of each grade. This report describes your student's understanding of Colorado's grade 3 English Language Arts expectations. Scan the QR code to see a video that will talk you through your student's report.

Your student's performance is shown as:

- A number on a scale between 650 and 850
- A performance level that is described below
- A percentile that shows how your student performed compared to other Colorado students

As you review this report:

- Review arrows around the large diamond to see where your student may have scored if the assessment was taken multiple times.
- Make school, district, and state comparisons with caution if participation is low.
- Talk with your student's teacher about your student's progress in English Language Arts.

Your Student's Score
772
Met Expectations
77th Percentile

School Participation: 98.4%
District Participation: 94.4%
State Participation: 94.2%

Did Not Yet Meet Expectations | Partially Met Expectations | Approached Expectations | On Track for Next Grade Level: Met Expectations | Exceeded Expectations

Student
School: 730
District: 737
State: 738

650 700 725 750 810 850

CO Students by Performance Level (%): 22.0% | 15.6% | 20.3% | 37.7% | 4.4%

Performance Level Description - Met Expectations

3

FIRSTNAME **Met Expectations** and is on track for the next grade level. Students in this level typically demonstrate the following:

Reading
- Students understand easier 3rd grade texts in reading and may have a generally accurate understanding of more challenging texts.

Writing
- Students may effectively develop their ideas with evidence and organize their words almost always using correct spelling, punctuation, and capitalization, with few errors in grammar so that others can mostly understand their writing.

Knowledge and Use of Language and Conventions
- Students typically demonstrate command of the conventions of Standard English consistent with edited writing. Student writing includes errors in grammar and usage that may occasionally make understanding their writing difficult.

You can support your child at home by reading together and asking questions about what you read. Encourage your child to paraphrase what the story was about, tell what the story taught, and discuss how it relates to the child's experiences.

To view a video report and the full version of the performance level descriptor, visit **https://coassessments.com/parentsandguardians** or access the QR code.

View student reports on the Family Portal!

Information about the Colorado Academic Standards measured by this assessment:
http://www.cde.state.co.us/coreadingwriting/statestandards.

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FIRSTNAME M. LASTNAME

English Language Arts

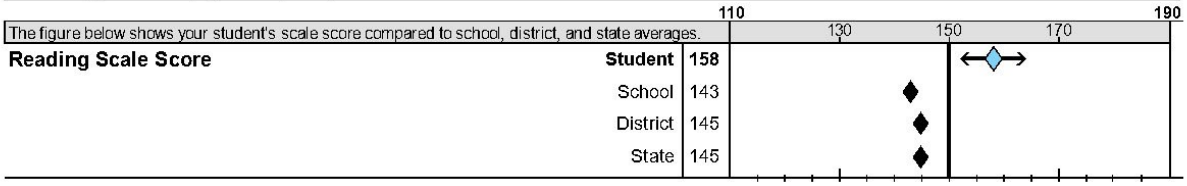
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Subclaim Performance

The top diamond in the figure below shows your student's performance in Reading.
The top bar in each of the other graphs shows the percent of points your student earned for writing and specific areas of reading and writing.
District Averages are provided for comparison.
State Averages are provided for comparison.
Average of students at the Met Expectations performance level starting point.

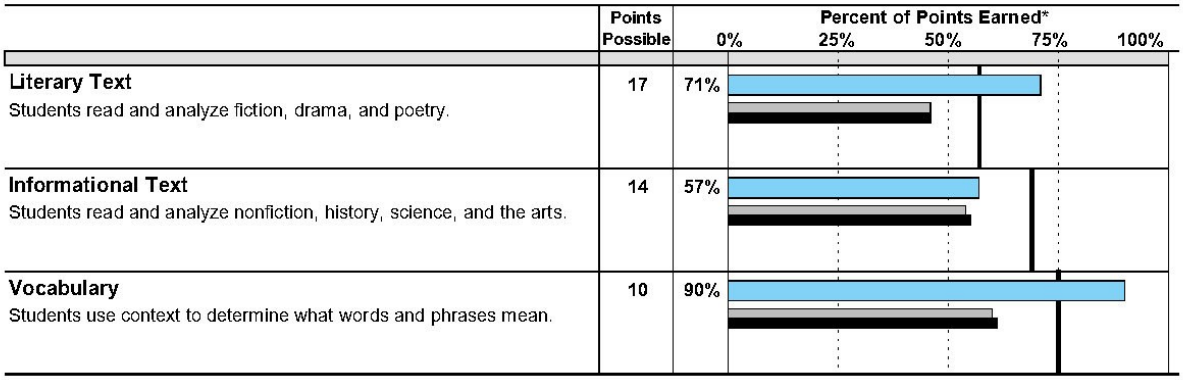
Reading - Refer to page 1 for participation rates.

The figure below shows your student's scale score compared to school, district, and state averages.

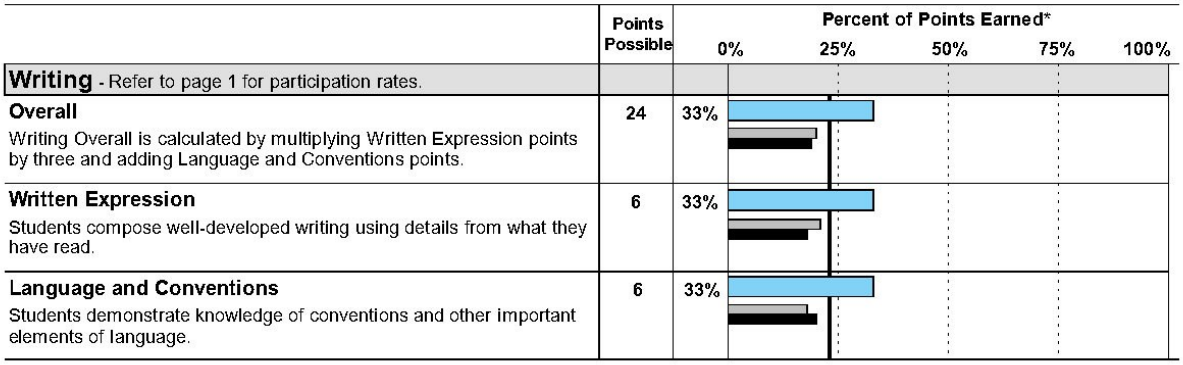


Reading Scale Score	
Student	158
School	143
District	145
State	145

	Points Possible	Percent of Points Earned*
Literary Text Students read and analyze fiction, drama, and poetry.	17	71%
Informational Text Students read and analyze nonfiction, history, science, and the arts.	14	57%
Vocabulary Students use context to determine what words and phrases mean.	10	90%



	Points Possible	Percent of Points Earned*
Writing - Refer to page 1 for participation rates.		
Overall Writing Overall is calculated by multiplying Written Expression points by three and adding Language and Conventions points.	24	33%
Written Expression Students compose well-developed writing using details from what they have read.	6	33%
Language and Conventions Students demonstrate knowledge of conventions and other important elements of language.	6	33%



*Percent of points earned cannot be compared across years because individual test questions change from year to year. They also cannot be compared across specific areas of reading and writing because the number and difficulty of questions may not be the same.

For information about the CMAS assessment program, visit
http://www.cde.state.co.us/assessment/cmas.

Page 2 of 2

Confidential Student Performance Report
Spring 20XX

Colorado Measures of Academic Success

Student: FIRSTNAME M. LASTNAME
SASID: 9999999999 Birthdate: MM/DD/YYYY
School: SAMPLE SCHOOL NAME (9999)
District: SAMPLE DISTRICT NAME (9999)

Watch a video about this report!

Mathematics — Grade 3

CMAS is the only assessment given to all Colorado students that measures what students should know and be able to do at the end of each grade. This report describes your student's understanding of Colorado's grade 3 Mathematics expectations. Scan the QR code to see a video that will talk you through your student's report.

Your student's performance is shown as:

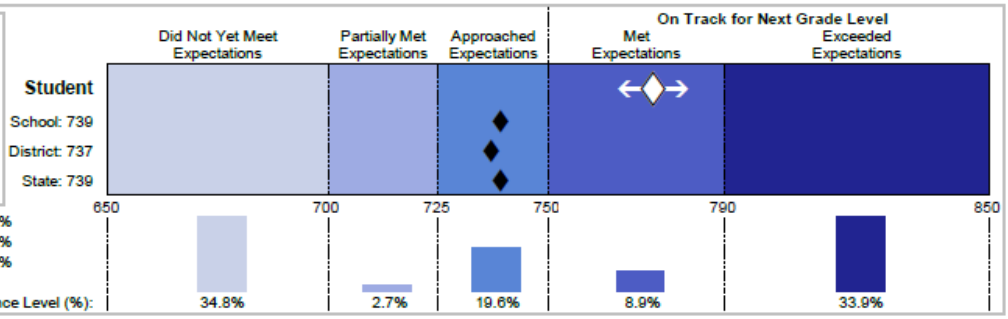
- A number on a scale between 650 and 850
- A performance level that is described below
- A percentile that shows how your student performed compared to other Colorado students

As you review this report:

- Review arrows around the large diamond to see where your student may have scored if the assessment was taken multiple times.
- Make school, district, and state comparisons with caution if participation is low.
- Talk with your student's teacher about your student's progress in Mathematics.

Your Student's Score
774
Met Expectations
58th Percentile

School Participation: 64.2%
District Participation: 64.8%
State Participation: 73.7%



Performance Level Description* - Met Expectations

3

FIRSTNAME034 **Met Expectations** and is on track for the next grade level. Students in this level typically demonstrate the following:

Major, Additional & Supporting Content:
- Find the missing numbers in problems where 1 factor is 5 or more.
- Show fractions with denominators 2, 4, and 8 on a number line, and use a picture to explain the relationship between fractions with the same denominator but different numerator, such as 2/4 and 3/4.
- Add and subtract to explain elapsed time. Measure and estimate liquid volume and mass. Show information on a picture graph, bar graph, or line plot with the correct units.
- Explain that the area inside a 2D shape is in square units. Solve problems to find unknown side lengths, and then find the perimeter of the shape. Explain the different types of four-sided shapes, such as squares, trapezoids, and rectangles, and what makes them different.

Expressing Mathematical Reasoning:
- Explain the correct way to solve a problem, without mistakes in calculation. Explain why the answer to a problem is correct or incorrect.

Modeling and Application:
- Estimate amounts in a real-world situation. Use the relationships between numbers to explain an answer. Make a model of a math problem, such as an expression.

To further support your student, you can work with your student on the following skills:
- Using mental math strategies to explain the relationship between multiplication and division in fact families
- Plotting and explaining values on a number line
- Providing an incorrect explanation of a math problem and asking your student to correct you and explain the student's thinking

Performance level descriptors (PLDs) are organized in a manner that assumes students demonstrating higher levels of command have mastered the concepts and skills within lower levels. To view a video report and the full version of the performance level descriptor, visit **https://coassessments.com/parentsandguardians** or access the QR code.

*Adapted from ilClassroom in Action's Performance Level Summaries

View student reports on the Family Portal!

Information about the Colorado Academic Standards measured by this assessment:
http://www.cde.state.co.us/comath/statestandards.

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FIRSTNAME M. LASTNAME

Mathematics

Confidential

Subclaim Performance

The top bar in each of the other graphs shows the percent of points your student earned for each of the four mathematics assessment subclaims.

District Averages are provided for comparison.

State Averages are provided for comparison.

Average of students at the Met Expectations performance level starting point.

	Points Possible	Percent of Points Earned* 0% 25% 50% 75% 100%
Mathematics - Refer to page 1 for participation rates.		
Major Content Students solve problems involving multiplication and division, area, measurement, and basic fraction understanding.	22	73%
Additional & Supporting Content Students solve problems involving perimeter, place value, geometric shapes, and representations of data.	9	67%
Expressing Mathematical Reasoning Students create and justify logical mathematical solutions and analyze and correct the reasoning of others.	11	64%
Modeling & Application Students solve real-world problems, represent and solve problems with symbols, reason quantitatively, and strategically use appropriate tools.	9	67%

*Percent of points earned cannot be compared across years because individual test questions change from year to year. They also cannot be compared across specific areas of math because the number and difficulty of questions may not be the same.

For information about the CMAS assessment program, visit **http://www.cde.state.co.us/assessment/cmas**.

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Confidential Student Performance Report
Spring 20XX

Colorado Measures of Academic Success

Student: **FIRSTNAME LASTNAME**
SASID: 9999999999 Birthdate: **MM/DD/YYYY**
School: **ELEMENTARY SCHOOL (9999)**
District: **DISTRICT NAME (9999)**

Watch a video about this report!

Science — Grade 5

CMAS is the only assessment given to all Colorado students that measures what students should know and be able to do at the end of each grade. This report describes your student's understanding of Colorado's grade 5 science expectations. Scan the QR code [at the top of the page] to see a video that will talk you through your student's report.

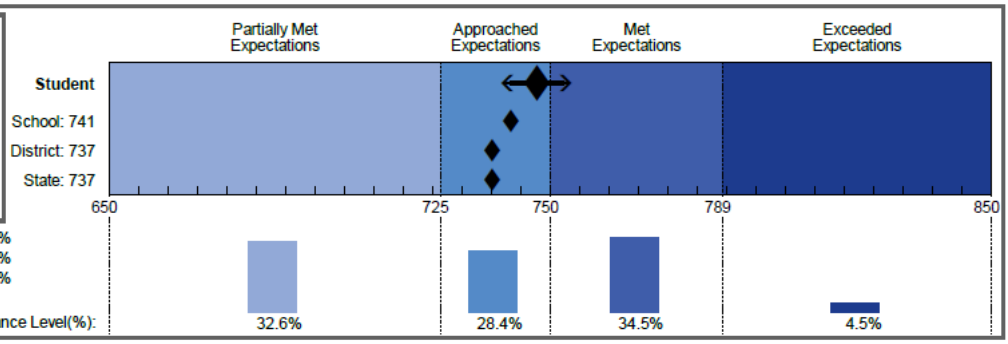
Your student's performance is shown as:

- A number on a scale between 650 and 850
- A performance level that is described below
- A percentile that shows how your student performed compared to other Colorado students

As you review this report:

- Review arrows around the large diamond to see where your student may have scored if the assessment was taken multiple times.
- Make school, district, and state comparisons with caution if participation is low.
- Talk with your student's teacher about your student's progress in science.

Your Student's Score
747
Approached Expectations
58th Percentile



School Participation: 97.6%
District Participation: 96.0%
State Participation: 91.6%

CO Students by Performance Level(%):

Performance Level Description - Approached Expectations

FIRSTNAME showed a moderate understanding of the Colorado Academic Standards' grade 5 science expectations and will likely need additional academic support in the next grade level. Students in the Approached Expectations level typically:

- Describe matter (particles too small to be seen) as always conserved, and mixing can result in new substances.
- Observe the properties of an object to identify it.
- Describe evidence that demonstrates Earth's gravity as the cause of objects being pulled toward its center.
- Show the transfer of energy from the Sun to things animals use as food.
- Describe matter and energy cycles in an ecosystem and explain that plants get materials to grow from air and water.
- Relate the distance between a star and Earth to the star's apparent brightness.
- Demonstrate Earth's patterns using shadows, day and night, and the seasonal appearance of some stars.
- Describe Earth's major systems and how they interact.
- Identify the proportions of salt water and fresh water in different reservoirs on Earth.
- Summarize ways that communities protect Earth's environment and resources.

5

To view a video report and the full version of the performance level descriptor, visit **https://coassessments.com/parentsandguardians** or access the QR code [at the top].

View student reports on the Family Portal!

Information about the Colorado Academic Standards measured by this assessment:
http://www.cde.state.co.us/coscience/statestandards.

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FIRSTNAME LASTNAME

Science

Confidential

Subscale Performance

- The shaded areas below represent about 70% of student scores across the state.
- Diamonds outside of the shaded area indicate a potential weakness or strength compared to the state.

Reporting Category Description	Subscale Score		Lower than Average / Average / Higher than Average (400 – 450 – 523 – 550)
Physical Science			
Common properties, forms, and changes in matter and energy	**496**	**Student**	
	498	School	
	488	District	
	486	State	
Physical/Life Science			444 – 525
Characteristics of living things, processes of life, and how living things interact with each other and their environment	**474**	**Student**	
	478	School	
	483	District	
	485	State	
Earth and Space Science			448 – 523
Processes and interactions of Earth's systems, and the structure and dynamics of Earth and other objects in space	**504**	**Student**	
	487	School	
	485	District	
	486	State	
Science and Engineering Practices			451 – 521
Making sense of the natural world through investigation and problem solving	**499**	**Student**	
	488	School	
	486	District	
	486	State	

Performance by Prepared Graduate Statements (PGs) and Grade Level Expectations (GLEs)

- PGs and GLEs identify what students need to master to be ready for the next grade level.
- The figure below shows the percent of points your student earned for each grade 5 science GLE.

Student's performance
District average
State average

Standard, PG and GLE	Points Possible	Percent of Points Earned* (0% 25% 50% 75% 100%)
Physical Science		
PG 1: **Structure, properties, and interactions of matter**		
GLE 1: Matter exists as particles too small to be seen; Properties can be used to identify materials	6	67%
GLE 2: Chemical reactions and the Law of Conservation of Mass	6	33%
GLE 3: Gravity	6	50%
Physical/Life Science		
PG 1: **Structure, properties, and interactions of matter**		
GLE 4: Energy from food was once energy from the sun	6	17%
PG 6: **How living systems interact with the environment**		
GLE 2: Plants get most of their material for growth from air and water		
PG 6: **How living systems interact with the environment**		
GLE 1: Matter cycles between air and soil; Organisms live and die	6	50%
Earth and Space Science		
PG 9: **The universe and Earth's place in it**		
GLE 1: Earth's major systems interact in multiple ways	7	71%
GLE 2: Interactions between Earth's orbit and the moon's orbit		
PG 10: **How and why Earth is constantly changing**		
GLE 3: Earth's major systems interact in multiple ways	8	50%
GLE 4: Earth's major water is in the ocean and much of Earth's freshwater is in glaciers or underground		
GLE 5: Societal activities have major effects on land, ocean, atmosphere and even outer space	6	17%

*Percent of points earned cannot be compared across years because individual test questions change from year to year. They also cannot be compared across PGs or GLEs because the number and difficulty of questions may not be the same.

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Appendix D: Student Participation by Demographic Group

Table Error! No text of specified style in document.**.1. Student Participation by Demographics—Mathematics**

Subgroup	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
No IEP	51,116	49,384	49,493	48,158	47,519	45,504
IEP	7,652	7,410	7,510	6,975	6,075	5,432
No Accommodation	54,603	52,350	52,277	50,531	49,322	46,824
Accommodation	4,165	4,444	4,726	4,602	4,272	4,112
Am. Indian/Alaska Native	309	335	344	350	310	293
Asian	2,082	2,064	2,078	2,153	1,972	1,914
Black	2,573	2,634	2,644	2,525	2,391	2,232
Hispanic	21,415	20,388	20,035	19,922	19,454	19,009
White	28,745	28,053	28,460	27,025	26,499	24,681
Hawaiian/Pacific Islander	226	183	210	200	205	197
Two or More Races	3,412	3,135	3,229	2,954	2,759	2,609
Missing	*	*	*	*	*	*
No Economic Disadvantage	35,706	34,946	35,361	34,332	33,831	32,334
Economic Disadvantage	23,062	21,848	21,642	20,801	19,763	18,602
Female	29,022	28,113	28,020	26,820	25,669	24,371
Male	29,738	28,669	28,964	28,299	27,905	26,540
Nonbinary	*	*	19	*	20	25
Language Proficiency NA	46,947	45,108	45,738	43,997	43,047	41,511
Language Proficiency NEP	4,029	3,407	2,407	2,301	2,297	2,279
Language Proficiency LEP	6,349	5,631	4,801	3,819	3,934	3,551
Language Proficiency FEP	1,443	2,648	4,057	5,016	4,316	3,595
Not Migrant	58,529	56,612	56,830	54,957	53,404	50,762
Migrant	239	182	173	176	190	174

*n-count less than 16

Table Error! No text of specified style in document.**.2. Student Participation by Demographics—ELA**

Subgroup	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
No IEP	49,168	47,839	49,113	47,667	47,074	44,871
IEP	7,435	7,237	7,485	6,946	6,086	5,433
No Accommodation	52,848	50,937	51,827	50,199	49,000	46,357
Accommodation	3,755	4,139	4,771	4,414	4,160	3,947
Am. Indian/Alaska Native	305	334	343	347	308	291
Asian	2,030	2,022	2,049	2,122	1,942	1,867
Black	2,553	2,628	2,636	2,514	2,381	2,213
Hispanic	19,427	18,817	19,714	19,523	19,121	18,561
White	28,659	27,958	28,408	26,947	26,443	24,574
Hawaiian/Pacific Islander	225	183	211	201	202	194
Two or More Races	3,398	3,132	3,234	2,955	2,759	2,603
Missing	*	*	*	*	*	*
No Economic Disadvantage	34,832	34,172	35,114	34,027	33,578	31,968
Economic Disadvantage	21,771	20,904	21,484	20,586	19,582	18,336
Female	27,969	27,312	27,856	26,580	25,455	24,050
Male	28,626	27,753	28,723	28,019	27,685	26,229
Nonbinary	*	*	19	*	20	25
Language Proficiency NA	46,892	45,068	45,775	43,946	43,042	41,355
Language Proficiency NEP	2,595	2,195	1,964	1,840	1,883	1,836
Language Proficiency LEP	5,671	5,161	4,793	3,810	3,919	3,532
Language Proficiency FEP	1,445	2,652	4,066	5,017	4,316	3,581
Not Migrant	56,392	54,911	56,433	54,450	52,987	50,143
Migrant	211	165	165	163	173	161

*n-count less than 16

Table Error! No text of specified style in document.**.3. Student Participation by Demographics—CSLA**

Subgroup	Grade 3	Grade 4
No IEP	1,430	1,225
IEP	140	124
No Accommodation	1,302	1,124
Accommodation	268	225
Am. Indian/Alaska Native	*	*
Asian	*	*
Black	*	*
Hispanic	1,560	1,344
White	*	*
Hawaiian/Pacific Islander	*	*
Two or More Races	*	*
Missing	*	*
No Economic Disadvantage	594	563
Economic Disadvantage	976	786
Female	788	629
Male	782	720
Nonbinary	*	*
Language Proficiency NA	*	*
Language Proficiency NEP	976	890
Language Proficiency LEP	594	459
Language Proficiency FEP	*	*
Not Migrant	1,558	1,338
Migrant	*	*

*n-count less than 16

Table Error! No text of specified style in document.**.4. Student Participation by Demographics—Science**

Subgroup	Grade 5	Grade 8	Grade 11
No IEP	49,096	44,761	31,248
IEP	7,441	5,358	3,199
No Accommodation	52,278	46,328	31,817
Accommodation	4,259	3,791	2,630
Am. Indian/Alaska Native	337	286	194
Asian	2,073	1,898	991
Black	2,632	2,196	1,655
Hispanic	19,835	18,714	14,803
White	28,253	24,258	15,199
Hawaiian/Pacific Islander	205	194	126
Two or More Races	3,199	2,572	1,479
Missing	*	*	*
No Economic Disadvantage	35,095	31,823	21,136
Economic Disadvantage	21,442	18,296	13,311
Female	27,831	23,946	16,094
Male	28,687	26,148	18,320
Nonbinary	19	25	33
Language Proficiency NA	45,392	40,822	29,460
Language Proficiency NEP	2,362	2,230	1,173
Language Proficiency LEP	4,747	3,509	2,273
Language Proficiency FEP	4,036	3,558	1,541
Not Migrant	56,366	49,945	34,320
Migrant	171	174	127

*n-count less than 16

Table Error! No text of specified style in document.**.5. Student Participation by Demographics—Social Studies**

Subgroup	Grade 4	Grade 7
No IEP	17,231	15,919
IEP	2,521	2,031
No Accommodation	18,459	16,654
Accommodation	1,293	1,296
Am. Indian/Alaska Native	93	101
Asian	715	641
Black	937	923
Hispanic	7,269	6,909
White	9,608	8,427
Hawaiian/Pacific Islander	67	90
Two or More Races	1,062	857
Missing	*	*
No Economic Disadvantage	12,131	10,848
Economic Disadvantage	7,621	7,102
Female	9,831	8,584
Male	9,918	9,363
Nonbinary	*	*
Language Proficiency NA	15,625	14,128
Language Proficiency NEP	1,279	877
Language Proficiency LEP	1,901	1,388
Language Proficiency FEP	947	1,557
Not Migrant	19,692	17,886
Migrant	60	64

*n-count less than 16

Appendix E: Scale Score Distributions

Table Error! No text of specified style in document.**.1. Scale Score Distribution—Mathematics Grade 3**

SS	Freq.	%	Cum. Freq.	Cum. %
650	426	0.72	426	0.72
651	61	0.10	487	0.83
652	32	0.05	519	0.88
653	28	0.05	547	0.93
654	22	0.04	569	0.97
655	50	0.09	619	1.05
656	30	0.05	649	1.10
657	56	0.10	705	1.20
658	64	0.11	769	1.31
659	48	0.08	817	1.39
660	47	0.08	864	1.47
661	100	0.17	964	1.64
662	58	0.10	1022	1.74
663	92	0.16	1114	1.90
664	78	0.13	1192	2.03
665	85	0.14	1277	2.17
666	127	0.22	1404	2.39
667	96	0.16	1500	2.55
668	117	0.20	1617	2.75
669	94	0.16	1711	2.91
670	154	0.26	1865	3.17
671	170	0.29	2035	3.46
672	158	0.27	2193	3.73
673	178	0.30	2371	4.03
674	194	0.33	2565	4.36
675	153	0.26	2718	4.62
676	178	0.30	2896	4.93
677	229	0.39	3125	5.32
678	218	0.37	3343	5.69
679	224	0.38	3567	6.07
680	213	0.36	3780	6.43
681	291	0.50	4071	6.93
682	266	0.45	4337	7.38
683	277	0.47	4614	7.85
684	259	0.44	4873	8.29
685	302	0.51	5175	8.81
686	321	0.55	5496	9.35
687	313	0.53	5809	9.88
688	294	0.50	6103	10.38
689	343	0.58	6446	10.97
690	332	0.56	6778	11.53
691	321	0.55	7099	12.08
692	324	0.55	7423	12.63
693	374	0.64	7797	13.27
694	370	0.63	8167	13.90
695	353	0.60	8520	14.50
696	327	0.56	8847	15.05
697	411	0.70	9258	15.75
698	360	0.61	9618	16.37
699	384	0.65	10002	17.02
700	382	0.65	10384	17.67
701	399	0.68	10783	18.35
702	446	0.76	11229	19.11
703	405	0.69	11634	19.80
704	408	0.69	12042	20.49
705	450	0.77	12492	21.26
706	416	0.71	12908	21.96
707	452	0.77	13360	22.73
708	475	0.81	13835	23.54
709	409	0.70	14244	24.24
710	463	0.79	14707	25.03
711	443	0.75	15150	25.78
712	464	0.79	15614	26.57
713	449	0.76	16063	27.33
714	487	0.83	16550	28.16
715	439	0.75	16989	28.91
716	468	0.80	17457	29.70
717	483	0.82	17940	30.53
718	482	0.82	18422	31.35
719	473	0.80	18895	32.15
720	483	0.82	19378	32.97
721	462	0.79	19840	33.76
722	504	0.86	20344	34.62
723	467	0.79	20811	35.41
724	529	0.90	21340	36.31
725	515	0.88	21855	37.19
726	491	0.84	22346	38.02
727	508	0.86	22854	38.89
728	495	0.84	23349	39.73
729	496	0.84	23845	40.57
730	530	0.90	24375	41.48
731	540	0.92	24915	42.40
732	540	0.92	25455	43.31
733	522	0.89	25977	44.20
734	498	0.85	26475	45.05
735	536	0.91	27011	45.96
736	530	0.90	27541	46.86
737	566	0.96	28107	47.83
738	535	0.91	28642	48.74
739	519	0.88	29161	49.62
740	528	0.90	29689	50.52
741	544	0.93	30233	51.44
742	552	0.94	30785	52.38
743	528	0.90	31313	53.28

SS	Freq.	%	Cum. Freq.	Cum. %
744	611	1.04	31924	54.32
745	518	0.88	32442	55.20
746	521	0.89	32963	56.09
747	512	0.87	33475	56.96
748	535	0.91	34010	57.87
749	542	0.92	34552	58.79
750	540	0.92	35092	59.71
751	514	0.87	35606	60.59
752	547	0.93	36153	61.52
753	517	0.88	36670	62.40
754	488	0.83	37158	63.23
755	546	0.93	37704	64.16
756	538	0.92	38242	65.07
757	542	0.92	38784	66.00
758	544	0.93	39328	66.92
759	565	0.96	39893	67.88
760	512	0.87	40405	68.75
761	512	0.87	40917	69.62
762	538	0.92	41455	70.54
763	510	0.87	41965	71.41
764	505	0.86	42470	72.27
765	484	0.82	42954	73.09
766	514	0.87	43468	73.97
767	517	0.88	43985	74.85
768	518	0.88	44503	75.73
769	503	0.86	45006	76.58
770	472	0.80	45478	77.39
771	494	0.84	45972	78.23
772	455	0.77	46427	79.00
773	488	0.83	46915	79.83
774	441	0.75	47356	80.58
775	433	0.74	47789	81.32
776	425	0.72	48214	82.04
777	466	0.79	48680	82.83
778	374	0.64	49054	83.47
779	383	0.65	49437	84.12
780	409	0.70	49846	84.82
781	427	0.73	50273	85.54
782	383	0.65	50656	86.20
783	367	0.62	51023	86.82
784	343	0.58	51366	87.40
785	348	0.59	51714	88.00
786	328	0.56	52042	88.55
787	335	0.57	52377	89.13
788	296	0.50	52673	89.63
789	277	0.47	52950	90.10
790	287	0.49	53237	90.59
791	250	0.43	53487	91.01
792	278	0.47	53765	91.49
793	256	0.44	54021	91.92
794	248	0.42	54269	92.34
795	266	0.45	54535	92.80
796	231	0.39	54766	93.19
797	211	0.36	54977	93.55
798	203	0.35	55180	93.89
799	201	0.34	55381	94.24
800	187	0.32	55568	94.55
801	190	0.32	55758	94.88
802	161	0.27	55919	95.15
803	139	0.24	56058	95.39
804	163	0.28	56221	95.67
805	154	0.26	56375	95.93
806	140	0.24	56515	96.17
807	129	0.22	56644	96.39
808	130	0.22	56774	96.61
809	157	0.27	56931	96.87
810	127	0.22	57058	97.09
811	108	0.18	57166	97.27
812	96	0.16	57262	97.44
813	106	0.18	57368	97.62
814	78	0.13	57446	97.75
815	92	0.16	57538	97.91
816	82	0.14	57620	98.05
817	111	0.19	57731	98.24
818	48	0.08	57779	98.32
819	49	0.08	57828	98.40
820	45	0.08	57873	98.48
821	35	0.06	57908	98.54
822	64	0.11	57972	98.65
823	47	0.08	58019	98.73
824	98	0.17	58117	98.89
825	58	0.10	58175	98.99
826	24	0.04	58199	99.03
827	21	0.04	58220	99.07
828	39	0.07	58259	99.13
829	24	0.04	58283	99.17
830	10	0.02	58293	99.19
831	15	0.03	58308	99.22
832	36	0.06	58344	99.28
833	14	0.02	58358	99.30
834	32	0.05	58390	99.36
835	82	0.14	58472	99.50
836	36	0.06	58508	99.56
837	5	0.01	58513	99.57
838	5	0.01	58518	99.57
839	10	0.02	58528	99.59
840	16	0.03	58544	99.62
841	13	0.02	58557	99.64
842	9	0.02	58566	99.66
843	1	0.00	58567	99.66
845	3	0.01	58570	99.66
846	4	0.01	58574	99.67
847	19	0.03	58593	99.70
848	3	0.01	58596	99.71
849	1	0.00	58597	99.71
850	171	0.29	58768	100.00

Table Error! No text of specified style in document.**.2. Scale Score Distribution—Mathematics Grade 4**

SS	Freq.	%	Cum. Freq.	Cum. %
650	191	0.34	191	0.34
651	1	0.00	192	0.34
652	10	0.02	202	0.36
653	4	0.01	206	0.36
654	21	0.04	227	0.40
655	20	0.04	247	0.43
656	4	0.01	251	0.44
657	19	0.03	270	0.48
658	10	0.02	280	0.49
659	39	0.07	319	0.56
660	8	0.01	327	0.58
661	49	0.09	376	0.66
662	48	0.08	424	0.75
663	35	0.06	459	0.81
664	60	0.11	519	0.91
665	28	0.05	547	0.96
666	57	0.10	604	1.06
667	68	0.12	672	1.18
668	43	0.08	715	1.26
669	56	0.10	771	1.36
670	89	0.16	860	1.51
671	65	0.11	925	1.63
672	125	0.22	1050	1.85
673	88	0.15	1138	2.00
674	118	0.21	1256	2.21
675	109	0.19	1365	2.40
676	139	0.24	1504	2.65
677	144	0.25	1648	2.90
678	146	0.26	1794	3.16
679	186	0.33	1980	3.49
680	153	0.27	2133	3.76
681	196	0.35	2329	4.10
682	195	0.34	2524	4.44
683	292	0.51	2816	4.96
684	265	0.47	3081	5.42
685	277	0.49	3358	5.91
686	292	0.51	3650	6.43
687	307	0.54	3957	6.97
688	313	0.55	4270	7.52
689	336	0.59	4606	8.11
690	425	0.75	5031	8.86
691	415	0.73	5446	9.59
692	396	0.70	5842	10.29
693	406	0.71	6248	11.00
694	466	0.82	6714	11.82
695	451	0.79	7165	12.62
696	450	0.79	7615	13.41
697	484	0.85	8099	14.26
698	462	0.81	8561	15.07
699	495	0.87	9056	15.95
700	478	0.84	9534	16.79
701	508	0.89	10042	17.68
702	473	0.83	10515	18.51
703	512	0.90	11027	19.42
704	526	0.93	11553	20.34
705	515	0.91	12068	21.25
706	482	0.85	12550	22.10
707	498	0.88	13048	22.97
708	602	1.06	13650	24.03
709	558	0.98	14208	25.02
710	552	0.97	14760	25.99
711	474	0.83	15234	26.82
712	521	0.92	15755	27.74
713	549	0.97	16304	28.71
714	490	0.86	16794	29.57
715	522	0.92	17316	30.49
716	568	1.00	17884	31.49
717	507	0.89	18391	32.38
718	485	0.85	18876	33.24
719	519	0.91	19395	34.15
720	523	0.92	19918	35.07
721	556	0.98	20474	36.05
722	537	0.95	21011	37.00
723	540	0.95	21551	37.95
724	581	1.02	22132	38.97
725	541	0.95	22673	39.92
726	560	0.99	23233	40.91
727	575	1.01	23808	41.92
728	514	0.91	24322	42.82
729	568	1.00	24890	43.83
730	557	0.98	25447	44.81
731	524	0.92	25971	45.73
732	532	0.94	26503	46.67
733	538	0.95	27041	47.61
734	551	0.97	27592	48.58
735	534	0.94	28126	49.52
736	564	0.99	28690	50.52
737	537	0.95	29227	51.46
738	602	1.06	29829	52.52
739	528	0.93	30357	53.45
740	573	1.01	30930	54.46
741	605	1.07	31535	55.53
742	581	1.02	32116	56.55
743	550	0.97	32666	57.52
744	565	0.99	33231	58.51
745	613	1.08	33844	59.59
746	546	0.96	34390	60.55
747	568	1.00	34958	61.55

SS	Freq.	%	Cum. Freq.	Cum. %
748	519	0.91	35477	62.47
749	575	1.01	36052	63.48
750	562	0.99	36614	64.47
751	502	0.88	37116	65.35
752	550	0.97	37666	66.32
753	536	0.94	38202	67.26
754	533	0.94	38735	68.20
755	557	0.98	39292	69.18
756	556	0.98	39848	70.16
757	541	0.95	40389	71.11
758	512	0.90	40901	72.02
759	497	0.88	41398	72.89
760	539	0.95	41937	73.84
761	473	0.83	42410	74.67
762	472	0.83	42882	75.50
763	491	0.86	43373	76.37
764	503	0.89	43876	77.25
765	488	0.86	44364	78.11
766	448	0.79	44812	78.90
767	441	0.78	45253	79.68
768	466	0.82	45719	80.50
769	491	0.86	46210	81.36
770	429	0.76	46639	82.12
771	414	0.73	47053	82.85
772	438	0.77	47491	83.62
773	447	0.79	47938	84.41
774	422	0.74	48360	85.15
775	420	0.74	48780	85.89
776	390	0.69	49170	86.58
777	392	0.69	49562	87.27
778	353	0.62	49915	87.89
779	352	0.62	50267	88.51
780	353	0.62	50620	89.13
781	357	0.63	50977	89.76
782	327	0.58	51304	90.33
783	325	0.57	51629	90.91
784	330	0.58	51959	91.49
785	281	0.49	52240	91.98
786	306	0.54	52546	92.52
787	269	0.47	52815	92.99
788	266	0.47	53081	93.46
789	236	0.42	53317	93.88
790	240	0.42	53557	94.30
791	230	0.40	53787	94.71
792	203	0.36	53990	95.06
793	189	0.33	54179	95.40
794	194	0.34	54373	95.74
795	181	0.32	54554	96.06
796	180	0.32	54734	96.37
797	150	0.26	54884	96.64
798	141	0.25	55025	96.89
799	150	0.26	55175	97.15
800	137	0.24	55312	97.39
801	132	0.23	55444	97.62
802	105	0.18	55549	97.81
803	104	0.18	55653	97.99
804	85	0.15	55738	98.14
805	87	0.15	55825	98.29
806	79	0.14	55904	98.43
807	74	0.13	55978	98.56
808	81	0.14	56059	98.71
809	76	0.13	56135	98.84
810	73	0.13	56208	98.97
811	40	0.07	56248	99.04
812	41	0.07	56289	99.11
813	42	0.07	56331	99.18
814	46	0.08	56377	99.27
815	46	0.08	56423	99.35
816	36	0.06	56459	99.41
817	35	0.06	56494	99.47
818	16	0.03	56510	99.50
819	31	0.05	56541	99.55
820	15	0.03	56556	99.58
821	17	0.03	56573	99.61
822	19	0.03	56592	99.64
823	16	0.03	56608	99.67
824	31	0.05	56639	99.73
825	9	0.02	56648	99.74
826	15	0.03	56663	99.77
827	14	0.02	56677	99.79
828	1	0.00	56678	99.80
829	14	0.02	56692	99.82
830	9	0.02	56701	99.84
831	14	0.02	56715	99.86
832	6	0.01	56721	99.87
833	2	0.00	56723	99.87
834	2	0.00	56725	99.88
835	1	0.00	56726	99.88
836	3	0.01	56729	99.89
837	2	0.00	56731	99.89
840	2	0.00	56733	99.89
841	20	0.04	56753	99.93
843	8	0.01	56761	99.94
844	4	0.01	56765	99.95
847	3	0.01	56768	99.95
848	1	0.00	56769	99.96
850	25	0.04	56794	100.00

Table Error! No text of specified style in document.**.3. Scale Score Distribution—Mathematics Grade 5**

SS	Freq.	%	Cum. Freq.	Cum. %
650	241	0.42	241	0.42
652	28	0.05	269	0.47
653	5	0.01	274	0.48
654	3	0.01	277	0.49
656	3	0.01	280	0.49
659	15	0.03	295	0.52
660	6	0.01	301	0.53
661	48	0.08	349	0.61
662	79	0.14	428	0.75
663	106	0.19	534	0.94
664	25	0.04	559	0.98
665	33	0.06	592	1.04
666	28	0.05	620	1.09
667	74	0.13	694	1.22
668	83	0.15	777	1.36
669	45	0.08	822	1.44
670	32	0.06	854	1.50
671	25	0.04	879	1.54
672	49	0.09	928	1.63
673	74	0.13	1002	1.76
674	103	0.18	1105	1.94
675	142	0.25	1247	2.19
676	101	0.18	1348	2.36
677	112	0.20	1460	2.56
678	165	0.29	1625	2.85
679	168	0.29	1793	3.15
680	73	0.13	1866	3.27
681	133	0.23	1999	3.51
682	143	0.25	2142	3.76
683	150	0.26	2292	4.02
684	193	0.34	2485	4.36
685	238	0.42	2723	4.78
686	304	0.53	3027	5.31
687	183	0.32	3210	5.63
688	250	0.44	3460	6.07
689	287	0.50	3747	6.57
690	243	0.43	3990	7.00
691	335	0.59	4325	7.59
692	362	0.64	4687	8.22
693	324	0.57	5011	8.79
694	347	0.61	5358	9.40
695	323	0.57	5681	9.97
696	401	0.70	6082	10.67
697	395	0.69	6477	11.36
698	445	0.78	6922	12.14
699	437	0.77	7359	12.91
700	422	0.74	7781	13.65
701	447	0.78	8228	14.43
702	450	0.79	8678	15.22
703	512	0.90	9190	16.12
704	462	0.81	9652	16.93
705	494	0.87	10146	17.80
706	498	0.87	10644	18.67
707	505	0.89	11149	19.56
708	527	0.92	11676	20.48
709	479	0.84	12155	21.32
710	570	1.00	12725	22.32
711	545	0.96	13270	23.28
712	516	0.91	13786	24.18
713	523	0.92	14309	25.10
714	507	0.89	14816	25.99
715	592	1.04	15408	27.03
716	529	0.93	15937	27.96
717	597	1.05	16534	29.01
718	571	1.00	17105	30.01
719	585	1.03	17690	31.03
720	579	1.02	18269	32.05
721	581	1.02	18850	33.07
722	565	0.99	19415	34.06
723	525	0.92	19940	34.98
724	585	1.03	20525	36.01
725	527	0.92	21052	36.93
726	537	0.94	21589	37.87
727	542	0.95	22131	38.82
728	545	0.96	22676	39.78
729	577	1.01	23253	40.79
730	578	1.01	23831	41.81
731	577	1.01	24408	42.82
732	585	1.03	24993	43.85
733	543	0.95	25536	44.80
734	535	0.94	26071	45.74
735	513	0.90	26584	46.64
736	615	1.08	27199	47.72
737	598	1.05	27797	48.76
738	552	0.97	28349	49.73
739	552	0.97	28901	50.70
740	557	0.98	29458	51.68
741	567	0.99	30025	52.67
742	579	1.02	30604	53.69
743	557	0.98	31161	54.67
744	598	1.05	31759	55.71
745	594	1.04	32353	56.76
746	602	1.06	32955	57.81
747	580	1.02	33535	58.83
748	558	0.98	34093	59.81
749	603	1.06	34696	60.87
750	553	0.97	35249	61.84
751	556	0.98	35805	62.81

SS	Freq.	%	Cum. Freq.	Cum. %
752	576	1.01	36381	63.82
753	599	1.05	36980	64.87
754	590	1.04	37570	65.91
755	594	1.04	38164	66.95
756	528	0.93	38692	67.88
757	538	0.94	39230	68.82
758	572	1.00	39802	69.82
759	568	1.00	40370	70.82
760	549	0.96	40919	71.78
761	569	1.00	41488	72.78
762	541	0.95	42029	73.73
763	510	0.89	42539	74.63
764	552	0.97	43091	75.59
765	531	0.93	43622	76.53
766	532	0.93	44154	77.46
767	518	0.91	44672	78.37
768	493	0.86	45165	79.23
769	539	0.95	45704	80.18
770	464	0.81	46168	80.99
771	470	0.82	46638	81.82
772	476	0.84	47114	82.65
773	414	0.73	47528	83.38
774	413	0.72	47941	84.10
775	440	0.77	48381	84.87
776	402	0.71	48783	85.58
777	402	0.71	49185	86.28
778	367	0.64	49552	86.93
779	405	0.71	49957	87.64
780	359	0.63	50316	88.27
781	334	0.59	50650	88.85
782	332	0.58	50982	89.44
783	329	0.58	51311	90.01
784	279	0.49	51590	90.50
785	291	0.51	51881	91.01
786	285	0.50	52166	91.51
787	287	0.50	52453	92.02
788	254	0.45	52707	92.46
789	226	0.40	52933	92.86
790	228	0.40	53161	93.26
791	242	0.42	53403	93.68
792	174	0.31	53577	93.99
793	185	0.32	53762	94.31
794	194	0.34	53956	94.65
795	207	0.36	54163	95.02
796	178	0.31	54341	95.33
797	161	0.28	54502	95.61
798	152	0.27	54654	95.88
799	158	0.28	54812	96.16
800	143	0.25	54955	96.41
801	128	0.22	55083	96.63
802	128	0.22	55211	96.86
803	117	0.21	55328	97.06
804	92	0.16	55420	97.22
805	92	0.16	55512	97.38
806	111	0.19	55623	97.58
807	81	0.14	55704	97.72
808	77	0.14	55781	97.86
809	88	0.15	55869	98.01
810	70	0.12	55939	98.13
811	70	0.12	56009	98.26
812	58	0.10	56067	98.36
813	62	0.11	56129	98.47
814	65	0.11	56194	98.58
815	44	0.08	56238	98.66
816	57	0.10	56295	98.76
817	40	0.07	56335	98.83
818	33	0.06	56368	98.89
819	37	0.06	56405	98.95
820	39	0.07	56444	99.02
821	26	0.05	56470	99.06
822	38	0.07	56508	99.13
823	39	0.07	56547	99.20
824	18	0.03	56565	99.23
825	22	0.04	56587	99.27
826	20	0.04	56607	99.31
827	30	0.05	56637	99.36
828	23	0.04	56660	99.40
829	3	0.01	56663	99.40
830	22	0.04	56685	99.44
831	26	0.05	56711	99.49
832	29	0.05	56740	99.54
833	14	0.02	56754	99.56
834	6	0.01	56760	99.57
835	1	0.00	56761	99.58
836	18	0.03	56779	99.61
837	11	0.02	56790	99.63
838	13	0.02	56803	99.65
839	5	0.01	56808	99.66
842	4	0.01	56812	99.66
843	3	0.01	56815	99.67
844	1	0.00	56816	99.67
845	38	0.07	56854	99.74
846	13	0.02	56867	99.76
848	8	0.01	56875	99.78
849	5	0.01	56880	99.78
850	123	0.22	57003	100.00

Table Error! No text of specified style in document.**.4. Scale Score Distribution—Mathematics Grade 6**

SS	Freq.	%	Cum. Freq.	Cum. %
650	428	0.78	428	0.78
651	40	0.07	468	0.85
652	26	0.05	494	0.90
653	15	0.03	509	0.92
654	26	0.05	535	0.97
655	44	0.08	579	1.05
656	70	0.13	649	1.18
657	23	0.04	672	1.22
658	82	0.15	754	1.37
659	25	0.05	779	1.41
660	18	0.03	797	1.45
661	54	0.10	851	1.54
662	44	0.08	895	1.62
663	62	0.11	957	1.74
664	61	0.11	1018	1.85
665	104	0.19	1122	2.04
666	70	0.13	1192	2.16
667	98	0.18	1290	2.34
668	83	0.15	1373	2.49
669	92	0.17	1465	2.66
670	110	0.20	1575	2.86
671	180	0.33	1755	3.18
672	108	0.20	1863	3.38
673	170	0.31	2033	3.69
674	114	0.21	2147	3.89
675	130	0.24	2277	4.13
676	211	0.38	2488	4.51
677	158	0.29	2646	4.80
678	195	0.35	2841	5.15
679	194	0.35	3035	5.50
680	207	0.38	3242	5.88
681	254	0.46	3496	6.34
682	240	0.44	3736	6.78
683	223	0.40	3959	7.18
684	292	0.53	4251	7.71
685	257	0.47	4508	8.18
686	317	0.57	4825	8.75
687	263	0.48	5088	9.23
688	339	0.61	5427	9.84
689	323	0.59	5750	10.43
690	383	0.69	6133	11.12
691	359	0.65	6492	11.78
692	359	0.65	6851	12.43
693	389	0.71	7240	13.13
694	347	0.63	7587	13.76
695	420	0.76	8007	14.52
696	427	0.77	8434	15.30
697	447	0.81	8881	16.11
698	447	0.81	9328	16.92
699	455	0.83	9783	17.74
700	436	0.79	10219	18.54
701	466	0.85	10685	19.38
702	511	0.93	11196	20.31
703	460	0.83	11656	21.14
704	447	0.81	12103	21.95
705	511	0.93	12614	22.88
706	497	0.90	13111	23.78
707	496	0.90	13607	24.68
708	482	0.87	14089	25.55
709	525	0.95	14614	26.51
710	485	0.88	15099	27.39
711	536	0.97	15635	28.36
712	547	0.99	16182	29.35
713	532	0.96	16714	30.32
714	510	0.93	17224	31.24
715	528	0.96	17752	32.20
716	514	0.93	18266	33.13
717	527	0.96	18793	34.09
718	553	1.00	19346	35.09
719	561	1.02	19907	36.11
720	531	0.96	20438	37.07
721	539	0.98	20977	38.05
722	589	1.07	21566	39.12
723	590	1.07	22156	40.19
724	595	1.08	22751	41.27
725	581	1.05	23332	42.32
726	570	1.03	23902	43.35
727	571	1.04	24473	44.39
728	649	1.18	25122	45.57
729	637	1.16	25759	46.72
730	584	1.06	26343	47.78
731	607	1.10	26950	48.88
732	588	1.07	27538	49.95
733	606	1.10	28144	51.05
734	632	1.15	28776	52.19
735	634	1.15	29410	53.34
736	584	1.06	29994	54.40
737	598	1.08	30592	55.49
738	607	1.10	31199	56.59
739	637	1.16	31836	57.74
740	601	1.09	32437	58.83
741	591	1.07	33028	59.91
742	569	1.03	33597	60.94
743	606	1.10	34203	62.04
744	611	1.11	34814	63.15
745	611	1.11	35425	64.25
746	563	1.02	35988	65.27
747	617	1.12	36605	66.39

SS	Freq.	%	Cum. Freq.	Cum. %
748	643	1.17	37248	67.56
749	584	1.06	37832	68.62
750	580	1.05	38412	69.67
751	606	1.10	39018	70.77
752	566	1.03	39584	71.80
753	595	1.08	40179	72.88
754	558	1.01	40737	73.89
755	523	0.95	41260	74.84
756	545	0.99	41805	75.83
757	518	0.94	42323	76.77
758	473	0.86	42796	77.62
759	492	0.89	43288	78.52
760	481	0.87	43769	79.39
761	445	0.81	44214	80.20
762	466	0.85	44680	81.04
763	435	0.79	45115	81.83
764	437	0.79	45552	82.62
765	436	0.79	45988	83.41
766	413	0.75	46401	84.16
767	406	0.74	46807	84.90
768	411	0.75	47218	85.64
769	389	0.71	47607	86.35
770	384	0.70	47991	87.05
771	389	0.71	48380	87.75
772	321	0.58	48701	88.33
773	325	0.59	49026	88.92
774	328	0.59	49354	89.52
775	313	0.57	49667	90.09
776	291	0.53	49958	90.61
777	273	0.50	50231	91.11
778	277	0.50	50508	91.61
779	259	0.47	50767	92.08
780	274	0.50	51041	92.58
781	235	0.43	51276	93.00
782	236	0.43	51512	93.43
783	194	0.35	51706	93.78
784	189	0.34	51895	94.13
785	209	0.38	52104	94.51
786	179	0.32	52283	94.83
787	162	0.29	52445	95.12
788	176	0.32	52621	95.44
789	154	0.28	52775	95.72
790	142	0.26	52917	95.98
791	155	0.28	53072	96.26
792	121	0.22	53193	96.48
793	119	0.22	53312	96.70
794	120	0.22	53432	96.91
795	108	0.20	53540	97.11
796	114	0.21	53654	97.32
797	103	0.19	53757	97.50
798	84	0.15	53841	97.66
799	86	0.16	53927	97.81
800	99	0.18	54026	97.99
801	74	0.13	54100	98.13
802	67	0.12	54167	98.25
803	56	0.10	54223	98.35
804	72	0.13	54295	98.48
805	60	0.11	54355	98.59
806	48	0.09	54403	98.68
807	45	0.08	54448	98.76
808	52	0.09	54500	98.85
809	54	0.10	54554	98.95
810	42	0.08	54596	99.03
811	35	0.06	54631	99.09
812	47	0.09	54678	99.17
813	30	0.05	54708	99.23
814	29	0.05	54737	99.28
815	29	0.05	54766	99.33
816	27	0.05	54793	99.38
817	32	0.06	54825	99.44
818	25	0.05	54850	99.49
819	21	0.04	54871	99.52
820	13	0.02	54884	99.55
821	18	0.03	54902	99.58
822	14	0.03	54916	99.61
823	18	0.03	54934	99.64
824	10	0.02	54944	99.66
825	16	0.03	54960	99.69
826	12	0.02	54972	99.71
827	14	0.03	54986	99.73
828	12	0.02	54998	99.76
829	9	0.02	55007	99.77
830	7	0.01	55014	99.78
831	11	0.02	55025	99.80
832	8	0.01	55033	99.82
833	13	0.02	55046	99.84
834	7	0.01	55053	99.85
835	2	0.00	55055	99.86
836	7	0.01	55062	99.87
837	4	0.01	55066	99.88
838	2	0.00	55068	99.88
839	5	0.01	55073	99.89
840	4	0.01	55077	99.90
841	2	0.00	55079	99.90
842	2	0.00	55081	99.91
843	5	0.01	55086	99.91
845	4	0.01	55090	99.92
848	1	0.00	55091	99.92
849	4	0.01	55095	99.93
850	38	0.07	55133	100.00

Table Error! No text of specified style in document.**.5. Scale Score Distribution—Mathematics Grade 7**

SS	Freq.	%	Cum. Freq.	Cum. %
650	165	0.31	165	0.31
651	27	0.05	192	0.36
652	30	0.06	222	0.41
653	29	0.05	251	0.47
654	71	0.13	322	0.60
655	5	0.01	327	0.61
657	1	0.00	328	0.61
658	6	0.01	334	0.62
659	19	0.04	353	0.66
661	2	0.00	355	0.66
662	65	0.12	420	0.78
663	14	0.03	434	0.81
664	17	0.03	451	0.84
665	21	0.04	472	0.88
666	28	0.05	500	0.93
667	48	0.09	548	1.02
668	32	0.06	580	1.08
669	28	0.05	608	1.13
670	15	0.03	623	1.16
671	57	0.11	680	1.27
672	61	0.11	741	1.38
673	106	0.20	847	1.58
674	88	0.16	935	1.74
675	119	0.22	1054	1.97
676	23	0.04	1077	2.01
677	100	0.19	1177	2.20
678	51	0.10	1228	2.29
679	121	0.23	1349	2.52
680	77	0.14	1426	2.66
681	122	0.23	1548	2.89
682	99	0.18	1647	3.07
683	98	0.18	1745	3.26
684	136	0.25	1881	3.51
685	221	0.41	2102	3.92
686	177	0.33	2279	4.25
687	200	0.37	2479	4.63
688	231	0.43	2710	5.06
689	242	0.45	2952	5.51
690	200	0.37	3152	5.88
691	218	0.41	3370	6.29
692	219	0.41	3589	6.70
693	301	0.56	3890	7.26
694	312	0.58	4202	7.84
695	349	0.65	4551	8.49
696	362	0.68	4913	9.17
697	377	0.70	5290	9.87
698	340	0.63	5630	10.50
699	415	0.77	6045	11.28
700	431	0.80	6476	12.08
701	457	0.85	6933	12.94
702	529	0.99	7462	13.92
703	463	0.86	7925	14.79
704	490	0.91	8415	15.70
705	536	1.00	8951	16.70
706	537	1.00	9488	17.70
707	559	1.04	10047	18.75
708	581	1.08	10628	19.83
709	559	1.04	11187	20.87
710	577	1.08	11764	21.95
711	610	1.14	12374	23.09
712	579	1.08	12953	24.17
713	602	1.12	13555	25.29
714	572	1.07	14127	26.36
715	655	1.22	14782	27.58
716	599	1.12	15381	28.70
717	612	1.14	15993	29.84
718	647	1.21	16640	31.05
719	665	1.24	17305	32.29
720	621	1.16	17926	33.45
721	671	1.25	18597	34.70
722	628	1.17	19225	35.87
723	602	1.12	19827	36.99
724	651	1.21	20478	38.21
725	640	1.19	21118	39.40
726	609	1.14	21727	40.54
727	616	1.15	22343	41.69
728	620	1.16	22963	42.85
729	672	1.25	23635	44.10
730	647	1.21	24282	45.31
731	639	1.19	24921	46.50
732	653	1.22	25574	47.72
733	638	1.19	26212	48.91
734	609	1.14	26821	50.04
735	662	1.24	27483	51.28
736	688	1.28	28171	52.56
737	675	1.26	28846	53.82
738	659	1.23	29505	55.05
739	664	1.24	30169	56.29
740	686	1.28	30855	57.57
741	659	1.23	31514	58.80
742	643	1.20	32157	60.00
743	648	1.21	32805	61.21
744	656	1.22	33461	62.43
745	680	1.27	34141	63.70
746	598	1.12	34739	64.82
747	581	1.08	35320	65.90
748	619	1.15	35939	67.06
749	627	1.17	36566	68.23

SS	Freq.	%	Cum. Freq.	Cum. %
750	618	1.15	37184	69.38
751	620	1.16	37804	70.54
752	587	1.10	38391	71.63
753	583	1.09	38974	72.72
754	601	1.12	39575	73.84
755	547	1.02	40122	74.86
756	557	1.04	40679	75.90
757	536	1.00	41215	76.90
758	478	0.89	41693	77.79
759	526	0.98	42219	78.78
760	487	0.91	42706	79.68
761	476	0.89	43182	80.57
762	453	0.85	43635	81.42
763	458	0.85	44093	82.27
764	445	0.83	44538	83.10
765	425	0.79	44963	83.90
766	411	0.77	45374	84.66
767	392	0.73	45766	85.39
768	377	0.70	46143	86.10
769	378	0.71	46521	86.80
770	331	0.62	46852	87.42
771	385	0.72	47237	88.14
772	320	0.60	47557	88.74
773	321	0.60	47878	89.33
774	319	0.60	48197	89.93
775	298	0.56	48495	90.49
776	287	0.54	48782	91.02
777	254	0.47	49036	91.50
778	275	0.51	49311	92.01
779	239	0.45	49550	92.45
780	254	0.47	49804	92.93
781	222	0.41	50026	93.34
782	190	0.35	50216	93.70
783	206	0.38	50422	94.08
784	178	0.33	50600	94.41
785	186	0.35	50786	94.76
786	173	0.32	50959	95.08
787	167	0.31	51126	95.40
788	155	0.29	51281	95.68
789	147	0.27	51428	95.96
790	119	0.22	51547	96.18
791	131	0.24	51678	96.42
792	129	0.24	51807	96.67
793	135	0.25	51942	96.92
794	109	0.20	52051	97.12
795	93	0.17	52144	97.29
796	101	0.19	52245	97.48
797	96	0.18	52341	97.66
798	77	0.14	52418	97.81
799	60	0.11	52478	97.92
800	83	0.15	52561	98.07
801	93	0.17	52654	98.25
802	82	0.15	52736	98.40
803	58	0.11	52794	98.51
804	53	0.10	52847	98.61
805	69	0.13	52916	98.73
806	40	0.07	52956	98.81
807	37	0.07	52993	98.88
808	43	0.08	53036	98.96
809	46	0.09	53082	99.04
810	44	0.08	53126	99.13
811	26	0.05	53152	99.18
812	32	0.06	53184	99.23
813	25	0.05	53209	99.28
814	24	0.04	53233	99.33
815	25	0.05	53258	99.37
816	22	0.04	53280	99.41
817	20	0.04	53300	99.45
818	13	0.02	53313	99.48
819	12	0.02	53325	99.50
820	18	0.03	53343	99.53
821	17	0.03	53360	99.56
822	12	0.02	53372	99.59
823	9	0.02	53381	99.60
824	14	0.03	53395	99.63
825	9	0.02	53404	99.65
826	8	0.01	53412	99.66
827	13	0.02	53425	99.68
828	16	0.03	53441	99.71
829	14	0.03	53455	99.74
830	5	0.01	53460	99.75
831	11	0.02	53471	99.77
832	12	0.02	53483	99.79
833	12	0.02	53495	99.82
834	5	0.01	53500	99.82
835	2	0.00	53502	99.83
836	4	0.01	53506	99.84
837	3	0.01	53509	99.84
838	6	0.01	53515	99.85
839	4	0.01	53519	99.86
840	8	0.01	53527	99.87
841	1	0.00	53528	99.88
842	6	0.01	53534	99.89
843	2	0.00	53536	99.89
844	4	0.01	53540	99.90
845	5	0.01	53545	99.91
846	5	0.01	53550	99.92
847	3	0.01	53553	99.92
848	8	0.01	53561	99.94
850	33	0.06	53594	100.00

Table Error! No text of specified style in document.**.6. Scale Score Distribution—Mathematics Grade 8**

SS	Freq.	%	Cum. Freq.	Cum. %
650	647	1.27	647	1.27
651	59	0.12	706	1.39
652	26	0.05	732	1.44
653	70	0.14	802	1.57
654	74	0.15	876	1.72
655	40	0.08	916	1.80
656	70	0.14	986	1.94
657	53	0.10	1039	2.04
658	47	0.09	1086	2.13
659	82	0.16	1168	2.29
660	70	0.14	1238	2.43
661	101	0.20	1339	2.63
662	93	0.18	1432	2.81
663	112	0.22	1544	3.03
664	109	0.21	1653	3.25
665	110	0.22	1763	3.46
666	128	0.25	1891	3.71
667	116	0.23	2007	3.94
668	147	0.29	2154	4.23
669	126	0.25	2280	4.48
670	157	0.31	2437	4.78
671	147	0.29	2584	5.07
672	171	0.34	2755	5.41
673	186	0.37	2941	5.77
674	163	0.32	3104	6.09
675	234	0.46	3338	6.55
676	217	0.43	3555	6.98
677	236	0.46	3791	7.44
678	228	0.45	4019	7.89
679	237	0.47	4256	8.36
680	275	0.54	4531	8.90
681	297	0.58	4828	9.48
682	284	0.56	5112	10.04
683	298	0.59	5410	10.62
684	317	0.62	5727	11.24
685	318	0.62	6045	11.87
686	325	0.64	6370	12.51
687	366	0.72	6736	13.22
688	343	0.67	7079	13.90
689	368	0.72	7447	14.62
690	385	0.76	7832	15.38
691	401	0.79	8233	16.16
692	439	0.86	8672	17.03
693	431	0.85	9103	17.87
694	430	0.84	9533	18.72
695	447	0.88	9980	19.59
696	488	0.96	10468	20.55
697	463	0.91	10931	21.46
698	452	0.89	11383	22.35
699	434	0.85	11817	23.20
700	456	0.90	12273	24.09
701	485	0.95	12758	25.05
702	485	0.95	13243	26.00
703	460	0.90	13703	26.90
704	503	0.99	14206	27.89
705	469	0.92	14675	28.81
706	449	0.88	15124	29.69
707	446	0.88	15570	30.57
708	507	1.00	16077	31.56
709	459	0.90	16536	32.46
710	492	0.97	17028	33.43
711	460	0.90	17488	34.33
712	470	0.92	17958	35.26
713	447	0.88	18405	36.13
714	433	0.85	18838	36.98
715	505	0.99	19343	37.98
716	490	0.96	19833	38.94
717	456	0.90	20289	39.83
718	437	0.86	20726	40.69
719	445	0.87	21171	41.56
720	452	0.89	21623	42.45
721	487	0.96	22110	43.41
722	407	0.80	22517	44.21
723	430	0.84	22947	45.05
724	438	0.86	23385	45.91
725	415	0.81	23800	46.73
726	441	0.87	24241	47.59
727	431	0.85	24672	48.44
728	389	0.76	25061	49.20
729	418	0.82	25479	50.02
730	430	0.84	25909	50.87
731	409	0.80	26318	51.67
732	408	0.80	26726	52.47
733	436	0.86	27162	53.33
734	429	0.84	27591	54.17
735	393	0.77	27984	54.94
736	370	0.73	28354	55.67
737	380	0.75	28734	56.41
738	363	0.71	29097	57.12
739	369	0.72	29466	57.85
740	356	0.70	29822	58.55
741	378	0.74	30200	59.29
742	374	0.73	30574	60.02
743	411	0.81	30985	60.83
744	371	0.73	31356	61.56
745	396	0.78	31752	62.34
746	390	0.77	32142	63.10
747	352	0.69	32494	63.79

SS	Freq.	%	Cum. Freq.	Cum. %
748	427	0.84	32921	64.63
749	345	0.68	33266	65.31
750	383	0.75	33649	66.06
751	359	0.70	34008	66.77
752	360	0.71	34368	67.47
753	338	0.66	34706	68.14
754	334	0.66	35040	68.79
755	342	0.67	35382	69.46
756	375	0.74	35757	70.20
757	315	0.62	36072	70.82
758	364	0.71	36436	71.53
759	347	0.68	36783	72.21
760	292	0.57	37075	72.79
761	337	0.66	37412	73.45
762	319	0.63	37731	74.08
763	345	0.68	38076	74.75
764	333	0.65	38409	75.41
765	327	0.64	38736	76.05
766	309	0.61	39045	76.66
767	323	0.63	39368	77.29
768	323	0.63	39691	77.92
769	285	0.56	39976	78.48
770	310	0.61	40286	79.09
771	306	0.60	40592	79.69
772	296	0.58	40888	80.27
773	340	0.67	41228	80.94
774	288	0.57	41516	81.51
775	284	0.56	41800	82.06
776	276	0.54	42076	82.61
777	259	0.51	42335	83.11
778	246	0.48	42581	83.60
779	250	0.49	42831	84.09
780	280	0.55	43111	84.64
781	272	0.53	43383	85.17
782	297	0.58	43680	85.75
783	233	0.46	43913	86.21
784	231	0.45	44144	86.67
785	245	0.48	44389	87.15
786	234	0.46	44623	87.61
787	251	0.49	44874	88.10
788	243	0.48	45117	88.58
789	207	0.41	45324	88.98
790	226	0.44	45550	89.43
791	211	0.41	45761	89.84
792	189	0.37	45950	90.21
793	195	0.38	46145	90.59
794	184	0.36	46329	90.96
795	178	0.35	46507	91.30
796	192	0.38	46699	91.68
797	184	0.36	46883	92.04
798	170	0.33	47053	92.38
799	161	0.32	47214	92.69
800	178	0.35	47392	93.04
801	169	0.33	47561	93.37
802	128	0.25	47689	93.63
803	123	0.24	47812	93.87
804	157	0.31	47969	94.18
805	146	0.29	48115	94.46
806	137	0.27	48252	94.73
807	130	0.26	48382	94.99
808	122	0.24	48504	95.23
809	112	0.22	48616	95.45
810	91	0.18	48707	95.62
811	108	0.21	48815	95.84
812	88	0.17	48903	96.01
813	100	0.20	49003	96.21
814	90	0.18	49093	96.38
815	80	0.16	49173	96.54
816	93	0.18	49266	96.72
817	91	0.18	49357	96.90
818	69	0.14	49426	97.04
819	69	0.14	49495	97.17
820	71	0.14	49566	97.31
821	63	0.12	49629	97.43
822	64	0.13	49693	97.56
823	58	0.11	49751	97.67
824	68	0.13	49819	97.81
825	52	0.10	49871	97.91
826	51	0.10	49922	98.01
827	49	0.10	49971	98.11
828	44	0.09	50015	98.19
829	55	0.11	50070	98.30
830	44	0.09	50114	98.39
831	48	0.09	50162	98.48
832	43	0.08	50205	98.56
833	46	0.09	50251	98.66
834	37	0.07	50288	98.73
835	21	0.04	50309	98.77
836	27	0.05	50336	98.82
837	26	0.05	50362	98.87
838	25	0.05	50387	98.92
839	26	0.05	50413	98.97
840	24	0.05	50437	99.02
841	26	0.05	50463	99.07
842	29	0.06	50492	99.13
843	23	0.05	50515	99.17
844	21	0.04	50536	99.21
845	20	0.04	50556	99.25
846	16	0.03	50572	99.29
847	24	0.05	50596	99.33
848	17	0.03	50613	99.37
849	14	0.03	50627	99.39

SS	Freq.	%	Cum. Freq.	Cum. %
850	309	0.61	50936	100.00

Table Error! No text of specified style in document.**.7. Scale Score Distribution—ELA Grade 3**

SS	Freq.	%	Cum. Freq.	Cum. %
650	1569	2.77	1569	2.77
651	83	0.15	1652	2.92
652	109	0.19	1761	3.11
653	99	0.17	1860	3.29
654	117	0.21	1977	3.49
655	113	0.20	2090	3.69
656	135	0.24	2225	3.93
657	138	0.24	2363	4.17
658	138	0.24	2501	4.42
659	138	0.24	2639	4.66
660	167	0.30	2806	4.96
661	168	0.30	2974	5.25
662	177	0.31	3151	5.57
663	162	0.29	3313	5.85
664	198	0.35	3511	6.20
665	208	0.37	3719	6.57
666	210	0.37	3929	6.94
667	234	0.41	4163	7.35
668	216	0.38	4379	7.74
669	210	0.37	4589	8.11
670	234	0.41	4823	8.52
671	222	0.39	5045	8.91
672	233	0.41	5278	9.32
673	232	0.41	5510	9.73
674	264	0.47	5774	10.20
675	241	0.43	6015	10.63
676	260	0.46	6275	11.09
677	241	0.43	6516	11.51
678	241	0.43	6757	11.94
679	258	0.46	7015	12.39
680	271	0.48	7286	12.87
681	270	0.48	7556	13.35
682	290	0.51	7846	13.86
683	265	0.47	8111	14.33
684	261	0.46	8372	14.79
685	284	0.50	8656	15.29
686	246	0.43	8902	15.73
687	256	0.45	9158	16.18
688	286	0.51	9444	16.68
689	285	0.50	9729	17.19
690	289	0.51	10018	17.70
691	276	0.49	10294	18.19
692	291	0.51	10585	18.70
693	277	0.49	10862	19.19
694	312	0.55	11174	19.74
695	305	0.54	11479	20.28
696	284	0.50	11763	20.78
697	293	0.52	12056	21.30
698	296	0.52	12352	21.82
699	305	0.54	12657	22.36
700	299	0.53	12956	22.89
701	339	0.60	13295	23.49
702	313	0.55	13608	24.04
703	349	0.62	13957	24.66
704	301	0.53	14258	25.19
705	299	0.53	14557	25.72
706	348	0.61	14905	26.33
707	346	0.61	15251	26.94
708	358	0.63	15609	27.58
709	351	0.62	15960	28.20
710	352	0.62	16312	28.82
711	328	0.58	16640	29.40
712	370	0.65	17010	30.05
713	346	0.61	17356	30.66
714	388	0.69	17744	31.35
715	341	0.60	18085	31.95
716	373	0.66	18458	32.61
717	354	0.63	18812	33.23
718	370	0.65	19182	33.89
719	387	0.68	19569	34.57
720	412	0.73	19981	35.30
721	402	0.71	20383	36.01
722	394	0.70	20777	36.71
723	390	0.69	21167	37.40
724	392	0.69	21559	38.09
725	376	0.66	21935	38.75
726	371	0.66	22306	39.41
727	403	0.71	22709	40.12
728	398	0.70	23107	40.82
729	406	0.72	23513	41.54
730	443	0.78	23956	42.32
731	421	0.74	24377	43.07
732	444	0.78	24821	43.85
733	452	0.80	25273	44.65
734	387	0.68	25660	45.33
735	460	0.81	26120	46.15
736	461	0.81	26581	46.96
737	440	0.78	27021	47.74
738	466	0.82	27487	48.56
739	457	0.81	27944	49.37
740	469	0.83	28413	50.20
741	469	0.83	28882	51.03
742	466	0.82	29348	51.85
743	525	0.93	29873	52.78
744	442	0.78	30315	53.56
745	516	0.91	30831	54.47
746	529	0.93	31360	55.40
747	522	0.92	31882	56.33
748	496	0.88	32378	57.20
749	462	0.82	32840	58.02

SS	Freq.	%	Cum. Freq.	Cum. %
750	479	0.85	33319	58.86
751	504	0.89	33823	59.75
752	481	0.85	34304	60.60
753	520	0.92	34824	61.52
754	464	0.82	35288	62.34
755	494	0.87	35782	63.22
756	500	0.88	36282	64.10
757	516	0.91	36798	65.01
758	491	0.87	37289	65.88
759	500	0.88	37789	66.76
760	499	0.88	38288	67.64
761	480	0.85	38768	68.49
762	499	0.88	39267	69.37
763	468	0.83	39735	70.20
764	498	0.88	40233	71.08
765	468	0.83	40701	71.91
766	466	0.82	41167	72.73
767	458	0.81	41625	73.54
768	418	0.74	42043	74.28
769	475	0.84	42518	75.12
770	435	0.77	42953	75.88
771	491	0.87	43444	76.75
772	413	0.73	43857	77.48
773	461	0.81	44318	78.30
774	409	0.72	44727	79.02
775	403	0.71	45130	79.73
776	429	0.76	45559	80.49
777	409	0.72	45968	81.21
778	395	0.70	46363	81.91
779	372	0.66	46735	82.57
780	373	0.66	47108	83.23
781	349	0.62	47457	83.84
782	356	0.63	47813	84.47
783	388	0.69	48201	85.16
784	316	0.56	48517	85.71
785	323	0.57	48840	86.29
786	336	0.59	49176	86.88
787	281	0.50	49457	87.38
788	335	0.59	49792	87.97
789	316	0.56	50108	88.53
790	311	0.55	50419	89.07
791	274	0.48	50693	89.56
792	263	0.46	50956	90.02
793	223	0.39	51179	90.42
794	205	0.36	51384	90.78
795	240	0.42	51624	91.20
796	233	0.41	51857	91.62
797	241	0.43	52098	92.04
798	172	0.30	52270	92.34
799	256	0.45	52526	92.80
800	195	0.34	52721	93.14
801	164	0.29	52885	93.43
802	154	0.27	53039	93.70
803	153	0.27	53192	93.97
804	217	0.38	53409	94.36
805	166	0.29	53575	94.65
806	185	0.33	53760	94.98
807	174	0.31	53934	95.28
808	100	0.18	54034	95.46
809	145	0.26	54179	95.72
810	116	0.20	54295	95.92
811	93	0.16	54388	96.09
812	116	0.20	54504	96.29
813	92	0.16	54596	96.45
814	154	0.27	54750	96.73
815	110	0.19	54860	96.92
816	95	0.17	54955	97.09
817	90	0.16	55045	97.25
818	88	0.16	55133	97.40
819	51	0.09	55184	97.49
820	76	0.13	55260	97.63
821	53	0.09	55313	97.72
822	62	0.11	55375	97.83
823	78	0.14	55453	97.97
824	87	0.15	55540	98.12
825	58	0.10	55598	98.22
826	84	0.15	55682	98.37
827	58	0.10	55740	98.48
828	35	0.06	55775	98.54
829	52	0.09	55827	98.63
830	42	0.07	55869	98.70
831	46	0.08	55915	98.78
832	35	0.06	55950	98.85
833	43	0.08	55993	98.92
834	25	0.04	56018	98.97
835	40	0.07	56058	99.04
836	46	0.08	56104	99.12
837	25	0.04	56129	99.16
838	26	0.05	56155	99.21
839	23	0.04	56178	99.25
840	10	0.02	56188	99.27
841	23	0.04	56211	99.31
842	22	0.04	56233	99.35
843	22	0.04	56255	99.39
844	21	0.04	56276	99.42
845	27	0.05	56303	99.47
846	26	0.05	56329	99.52
847	17	0.03	56346	99.55
848	32	0.06	56378	99.60
849	11	0.02	56389	99.62
850	214	0.38	56603	100.00

Table Error! No text of specified style in document.**.8. Scale Score Distribution—ELA Grade 4**

SS	Freq.	%	Cum. Freq.	Cum. %
650	319	0.58	319	0.58
651	21	0.04	340	0.62
652	27	0.05	367	0.67
653	32	0.06	399	0.72
654	18	0.03	417	0.76
655	25	0.05	442	0.80
656	30	0.05	472	0.86
657	36	0.07	508	0.92
658	34	0.06	542	0.98
659	33	0.06	575	1.04
660	36	0.07	611	1.11
661	49	0.09	660	1.20
662	49	0.09	709	1.29
663	44	0.08	753	1.37
664	53	0.10	806	1.46
665	67	0.12	873	1.59
666	58	0.11	931	1.69
667	74	0.13	1005	1.82
668	101	0.18	1106	2.01
669	103	0.19	1209	2.20
670	96	0.17	1305	2.37
671	93	0.17	1398	2.54
672	101	0.18	1499	2.72
673	124	0.23	1623	2.95
674	141	0.26	1764	3.20
675	129	0.23	1893	3.44
676	159	0.29	2052	3.73
677	146	0.27	2198	3.99
678	131	0.24	2329	4.23
679	147	0.27	2476	4.50
680	165	0.30	2641	4.80
681	205	0.37	2846	5.17
682	173	0.31	3019	5.48
683	219	0.40	3238	5.88
684	224	0.41	3462	6.29
685	212	0.38	3674	6.67
686	211	0.38	3885	7.05
687	233	0.42	4118	7.48
688	251	0.46	4369	7.93
689	250	0.45	4619	8.39
690	284	0.52	4903	8.90
691	266	0.48	5169	9.39
692	290	0.53	5459	9.91
693	277	0.50	5736	10.41
694	319	0.58	6055	10.99
695	298	0.54	6353	11.53
696	322	0.58	6675	12.12
697	332	0.60	7007	12.72
698	332	0.60	7339	13.33
699	362	0.66	7701	13.98
700	316	0.57	8017	14.56
701	369	0.67	8386	15.23
702	397	0.72	8783	15.95
703	363	0.66	9146	16.61
704	393	0.71	9539	17.32
705	375	0.68	9914	18.00
706	332	0.60	10246	18.60
707	380	0.69	10626	19.29
708	375	0.68	11001	19.97
709	396	0.72	11397	20.69
710	425	0.77	11822	21.46
711	448	0.81	12270	22.28
712	430	0.78	12700	23.06
713	413	0.75	13113	23.81
714	392	0.71	13505	24.52
715	396	0.72	13901	25.24
716	464	0.84	14365	26.08
717	467	0.85	14832	26.93
718	429	0.78	15261	27.71
719	443	0.80	15704	28.51
720	452	0.82	16156	29.33
721	435	0.79	16591	30.12
722	470	0.85	17061	30.98
723	457	0.83	17518	31.81
724	473	0.86	17991	32.67
725	494	0.90	18485	33.56
726	536	0.97	19021	34.54
727	477	0.87	19498	35.40
728	515	0.94	20013	36.34
729	554	1.01	20567	37.34
730	546	0.99	21113	38.33
731	564	1.02	21677	39.36
732	549	1.00	22226	40.36
733	566	1.03	22792	41.38
734	552	1.00	23344	42.39
735	575	1.04	23919	43.43
736	557	1.01	24476	44.44
737	586	1.06	25062	45.50
738	579	1.05	25641	46.56
739	572	1.04	26213	47.59
740	607	1.10	26820	48.70
741	624	1.13	27444	49.83
742	545	0.99	27989	50.82
743	573	1.04	28562	51.86
744	567	1.03	29129	52.89
745	552	1.00	29681	53.89
746	574	1.04	30255	54.93
747	543	0.99	30798	55.92
748	624	1.13	31422	57.05
749	516	0.94	31938	57.99

SS	Freq.	%	Cum. Freq.	Cum. %
750	555	1.01	32493	59.00
751	569	1.03	33062	60.03
752	605	1.10	33667	61.13
753	580	1.05	34247	62.18
754	579	1.05	34826	63.23
755	554	1.01	35380	64.24
756	574	1.04	35954	65.28
757	547	0.99	36501	66.27
758	510	0.93	37011	67.20
759	488	0.89	37499	68.09
760	538	0.98	38037	69.06
761	505	0.92	38542	69.98
762	508	0.92	39050	70.90
763	523	0.95	39573	71.85
764	445	0.81	40018	72.66
765	473	0.86	40491	73.52
766	476	0.86	40967	74.38
767	448	0.81	41415	75.20
768	459	0.83	41874	76.03
769	479	0.87	42353	76.90
770	454	0.82	42807	77.72
771	435	0.79	43242	78.51
772	408	0.74	43650	79.25
773	424	0.77	44074	80.02
774	435	0.79	44509	80.81
775	396	0.72	44905	81.53
776	414	0.75	45319	82.28
777	402	0.73	45721	83.01
778	385	0.70	46106	83.71
779	401	0.73	46507	84.44
780	359	0.65	46866	85.09
781	362	0.66	47228	85.75
782	330	0.60	47558	86.35
783	343	0.62	47901	86.97
784	347	0.63	48248	87.60
785	322	0.58	48570	88.19
786	300	0.54	48870	88.73
787	306	0.56	49176	89.29
788	303	0.55	49479	89.84
789	281	0.51	49760	90.35
790	265	0.48	50025	90.83
791	264	0.48	50289	91.31
792	265	0.48	50554	91.79
793	240	0.44	50794	92.23
794	229	0.42	51023	92.64
795	198	0.36	51221	93.00
796	204	0.37	51425	93.37
797	178	0.32	51603	93.69
798	173	0.31	51776	94.01
799	189	0.34	51965	94.35
800	182	0.33	52147	94.68
801	155	0.28	52302	94.96
802	136	0.25	52438	95.21
803	125	0.23	52563	95.44
804	143	0.26	52706	95.70
805	123	0.22	52829	95.92
806	138	0.25	52967	96.17
807	125	0.23	53092	96.40
808	118	0.21	53210	96.61
809	105	0.19	53315	96.80
810	107	0.19	53422	97.00
811	101	0.18	53523	97.18
812	73	0.13	53596	97.31
813	104	0.19	53700	97.50
814	88	0.16	53788	97.66
815	79	0.14	53867	97.80
816	89	0.16	53956	97.97
817	80	0.15	54036	98.11
818	63	0.11	54099	98.23
819	62	0.11	54161	98.34
820	50	0.09	54211	98.43
821	58	0.11	54269	98.53
822	54	0.10	54323	98.63
823	55	0.10	54378	98.73
824	43	0.08	54421	98.81
825	33	0.06	54454	98.87
826	52	0.09	54506	98.97
827	45	0.08	54551	99.05
828	29	0.05	54580	99.10
829	28	0.05	54608	99.15
830	33	0.06	54641	99.21
831	38	0.07	54679	99.28
832	22	0.04	54701	99.32
833	29	0.05	54730	99.37
834	27	0.05	54757	99.42
835	25	0.05	54782	99.47
836	26	0.05	54808	99.51
837	18	0.03	54826	99.55
838	16	0.03	54842	99.58
839	18	0.03	54860	99.61
840	10	0.02	54870	99.63
841	14	0.03	54884	99.65
842	9	0.02	54893	99.67
843	14	0.03	54907	99.69
844	8	0.01	54915	99.71
845	14	0.03	54929	99.73
846	11	0.02	54940	99.75
847	10	0.02	54950	99.77
848	12	0.02	54962	99.79
849	12	0.02	54974	99.81
850	102	0.19	55076	100.00

Table Error! No text of specified style in document.**.9. Scale Score Distribution—ELA Grade 5**

SS	Freq.	%	Cum. Freq.	Cum. %
650	218	0.39	218	0.39
651	13	0.02	231	0.41
652	10	0.02	241	0.43
653	19	0.03	260	0.46
654	13	0.02	273	0.48
655	23	0.04	296	0.52
656	33	0.06	329	0.58
657	26	0.05	355	0.63
658	20	0.04	375	0.66
659	41	0.07	416	0.74
660	24	0.04	440	0.78
661	31	0.05	471	0.83
662	44	0.08	515	0.91
663	31	0.05	546	0.96
664	45	0.08	591	1.04
665	57	0.10	648	1.14
666	44	0.08	692	1.22
667	47	0.08	739	1.31
668	68	0.12	807	1.43
669	37	0.07	844	1.49
670	56	0.10	900	1.59
671	75	0.13	975	1.72
672	85	0.15	1060	1.87
673	79	0.14	1139	2.01
674	63	0.11	1202	2.12
675	87	0.15	1289	2.28
676	88	0.16	1377	2.43
677	123	0.22	1500	2.65
678	131	0.23	1631	2.88
679	118	0.21	1749	3.09
680	120	0.21	1869	3.30
681	137	0.24	2006	3.54
682	139	0.25	2145	3.79
683	168	0.30	2313	4.09
684	165	0.29	2478	4.38
685	175	0.31	2653	4.69
686	198	0.35	2851	5.04
687	165	0.29	3016	5.33
688	183	0.32	3199	5.65
689	199	0.35	3398	6.00
690	227	0.40	3625	6.40
691	217	0.38	3842	6.79
692	251	0.44	4093	7.23
693	270	0.48	4363	7.71
694	239	0.42	4602	8.13
695	290	0.51	4892	8.64
696	285	0.50	5177	9.15
697	279	0.49	5456	9.64
698	256	0.45	5712	10.09
699	300	0.53	6012	10.62
700	305	0.54	6317	11.16
701	304	0.54	6621	11.70
702	309	0.55	6930	12.24
703	316	0.56	7246	12.80
704	306	0.54	7552	13.34
705	346	0.61	7898	13.95
706	327	0.58	8225	14.53
707	342	0.60	8567	15.14
708	323	0.57	8890	15.71
709	372	0.66	9262	16.36
710	347	0.61	9609	16.98
711	347	0.61	9956	17.59
712	364	0.64	10320	18.23
713	395	0.70	10715	18.93
714	404	0.71	11119	19.65
715	379	0.67	11498	20.32
716	399	0.70	11897	21.02
717	433	0.77	12330	21.79
718	413	0.73	12743	22.51
719	408	0.72	13151	23.24
720	464	0.82	13615	24.06
721	421	0.74	14036	24.80
722	450	0.80	14486	25.59
723	451	0.80	14937	26.39
724	431	0.76	15368	27.15
725	484	0.86	15852	28.01
726	497	0.88	16349	28.89
727	507	0.90	16856	29.78
728	481	0.85	17337	30.63
729	489	0.86	17826	31.50
730	544	0.96	18370	32.46
731	522	0.92	18892	33.38
732	562	0.99	19454	34.37
733	532	0.94	19986	35.31
734	534	0.94	20520	36.26
735	545	0.96	21065	37.22
736	544	0.96	21609	38.18
737	530	0.94	22139	39.12
738	579	1.02	22718	40.14
739	605	1.07	23323	41.21
740	574	1.01	23897	42.22
741	588	1.04	24485	43.26
742	592	1.05	25077	44.31
743	635	1.12	25712	45.43
744	574	1.01	26286	46.44
745	617	1.09	26903	47.53
746	607	1.07	27510	48.61
747	600	1.06	28110	49.67
748	629	1.11	28739	50.78
749	690	1.22	29429	52.00

SS	Freq.	%	Cum. Freq.	Cum. %
750	593	1.05	30022	53.04
751	635	1.12	30657	54.17
752	589	1.04	31246	55.21
753	604	1.07	31850	56.27
754	609	1.08	32459	57.35
755	648	1.14	33107	58.49
756	597	1.05	33704	59.55
757	650	1.15	34354	60.70
758	600	1.06	34954	61.76
759	647	1.14	35601	62.90
760	608	1.07	36209	63.98
761	606	1.07	36815	65.05
762	576	1.02	37391	66.06
763	590	1.04	37981	67.11
764	605	1.07	38586	68.18
765	643	1.14	39229	69.31
766	590	1.04	39819	70.35
767	526	0.93	40345	71.28
768	557	0.98	40902	72.27
769	564	1.00	41466	73.26
770	534	0.94	42000	74.21
771	513	0.91	42513	75.11
772	560	0.99	43073	76.10
773	550	0.97	43623	77.08
774	488	0.86	44111	77.94
775	523	0.92	44634	78.86
776	486	0.86	45120	79.72
777	470	0.83	45590	80.55
778	477	0.84	46067	81.39
779	478	0.84	46545	82.24
780	413	0.73	46958	82.97
781	402	0.71	47360	83.68
782	424	0.75	47784	84.43
783	418	0.74	48202	85.17
784	379	0.67	48581	85.84
785	398	0.70	48979	86.54
786	363	0.64	49342	87.18
787	357	0.63	49699	87.81
788	359	0.63	50058	88.44
789	348	0.61	50406	89.06
790	370	0.65	50776	89.71
791	294	0.52	51070	90.23
792	321	0.57	51391	90.80
793	264	0.47	51655	91.27
794	271	0.48	51926	91.75
795	294	0.52	52220	92.26
796	290	0.51	52510	92.78
797	256	0.45	52766	93.23
798	255	0.45	53021	93.68
799	229	0.40	53250	94.08
800	192	0.34	53442	94.42
801	216	0.38	53658	94.81
802	193	0.34	53851	95.15
803	185	0.33	54036	95.47
804	186	0.33	54222	95.80
805	170	0.30	54392	96.10
806	165	0.29	54557	96.39
807	139	0.25	54696	96.64
808	114	0.20	54810	96.84
809	112	0.20	54922	97.04
810	119	0.21	55041	97.25
811	110	0.19	55151	97.44
812	94	0.17	55245	97.61
813	103	0.18	55348	97.79
814	93	0.16	55441	97.96
815	87	0.15	55528	98.11
816	84	0.15	55612	98.26
817	81	0.14	55693	98.40
818	72	0.13	55765	98.53
819	57	0.10	55822	98.63
820	63	0.11	55885	98.74
821	51	0.09	55936	98.83
822	52	0.09	55988	98.92
823	56	0.10	56044	99.02
824	44	0.08	56088	99.10
825	40	0.07	56128	99.17
826	38	0.07	56166	99.24
827	27	0.05	56193	99.28
828	43	0.08	56236	99.36
829	31	0.05	56267	99.42
830	30	0.05	56297	99.47
831	32	0.06	56329	99.52
832	19	0.03	56348	99.56
833	19	0.03	56367	99.59
834	25	0.04	56392	99.64
835	23	0.04	56415	99.68
836	18	0.03	56433	99.71
837	13	0.02	56446	99.73
838	17	0.03	56463	99.76
839	11	0.02	56474	99.78
840	4	0.01	56478	99.79
841	11	0.02	56489	99.81
842	6	0.01	56495	99.82
843	14	0.02	56509	99.84
844	9	0.02	56518	99.86
845	5	0.01	56523	99.87
846	9	0.02	56532	99.88
847	5	0.01	56537	99.89
848	5	0.01	56542	99.90
849	7	0.01	56549	99.91
850	49	0.09	56598	100.00

Table Error! No text of specified style in document.**.10. Scale Score Distribution—ELA Grade 6**

SS	Freq.	%	Cum. Freq.	Cum. %
650	107	0.20	107	0.20
651	8	0.01	115	0.21
652	7	0.01	122	0.22
653	8	0.01	130	0.24
654	13	0.02	143	0.26
655	8	0.01	151	0.28
656	6	0.01	157	0.29
657	24	0.04	181	0.33
658	27	0.05	208	0.38
659	16	0.03	224	0.41
660	24	0.04	248	0.45
661	24	0.04	272	0.50
662	17	0.03	289	0.53
663	27	0.05	316	0.58
664	33	0.06	349	0.64
665	52	0.10	401	0.73
666	36	0.07	437	0.80
667	39	0.07	476	0.87
668	47	0.09	523	0.96
669	59	0.11	582	1.07
670	48	0.09	630	1.15
671	49	0.09	679	1.24
672	61	0.11	740	1.35
673	65	0.12	805	1.47
674	84	0.15	889	1.63
675	92	0.17	981	1.80
676	92	0.17	1073	1.96
677	101	0.18	1174	2.15
678	134	0.25	1308	2.40
679	112	0.21	1420	2.60
680	116	0.21	1536	2.81
681	124	0.23	1660	3.04
682	162	0.30	1822	3.34
683	185	0.34	2007	3.67
684	164	0.30	2171	3.98
685	187	0.34	2358	4.32
686	207	0.38	2565	4.70
687	242	0.44	2807	5.14
688	214	0.39	3021	5.53
689	218	0.40	3239	5.93
690	265	0.49	3504	6.42
691	263	0.48	3767	6.90
692	225	0.41	3992	7.31
693	314	0.57	4306	7.88
694	272	0.50	4578	8.38
695	295	0.54	4873	8.92
696	291	0.53	5164	9.46
697	309	0.57	5473	10.02
698	331	0.61	5804	10.63
699	330	0.60	6134	11.23
700	352	0.64	6486	11.88
701	332	0.61	6818	12.48
702	339	0.62	7157	13.10
703	385	0.70	7542	13.81
704	365	0.67	7907	14.48
705	379	0.69	8286	15.17
706	351	0.64	8637	15.81
707	345	0.63	8982	16.45
708	408	0.75	9390	17.19
709	377	0.69	9767	17.88
710	391	0.72	10158	18.60
711	404	0.74	10562	19.34
712	405	0.74	10967	20.08
713	425	0.78	11392	20.86
714	430	0.79	11822	21.65
715	433	0.79	12255	22.44
716	424	0.78	12679	23.22
717	445	0.81	13124	24.03
718	466	0.85	13590	24.88
719	494	0.90	14084	25.79
720	443	0.81	14527	26.60
721	455	0.83	14982	27.43
722	493	0.90	15475	28.34
723	495	0.91	15970	29.24
724	534	0.98	16504	30.22
725	487	0.89	16991	31.11
726	489	0.90	17480	32.01
727	500	0.92	17980	32.92
728	504	0.92	18484	33.85
729	496	0.91	18980	34.75
730	545	1.00	19525	35.75
731	540	0.99	20065	36.74
732	561	1.03	20626	37.77
733	565	1.03	21191	38.80
734	546	1.00	21737	39.80
735	550	1.01	22287	40.81
736	538	0.99	22825	41.79
737	604	1.11	23429	42.90
738	554	1.01	23983	43.91
739	606	1.11	24589	45.02
740	578	1.06	25167	46.08
741	573	1.05	25740	47.13
742	562	1.03	26302	48.16
743	568	1.04	26870	49.20
744	611	1.12	27481	50.32
745	593	1.09	28074	51.41
746	567	1.04	28641	52.44
747	610	1.12	29251	53.56
748	629	1.15	29880	54.71
749	614	1.12	30494	55.84

SS	Freq.	%	Cum. Freq.	Cum. %
750	618	1.13	31112	56.97
751	625	1.14	31737	58.11
752	624	1.14	32361	59.26
753	646	1.18	33007	60.44
754	573	1.05	33580	61.49
755	621	1.14	34201	62.62
756	617	1.13	34818	63.75
757	623	1.14	35441	64.89
758	614	1.12	36055	66.02
759	611	1.12	36666	67.14
760	572	1.05	37238	68.19
761	560	1.03	37798	69.21
762	601	1.10	38399	70.31
763	583	1.07	38982	71.38
764	569	1.04	39551	72.42
765	563	1.03	40114	73.45
766	572	1.05	40686	74.50
767	571	1.05	41257	75.54
768	556	1.02	41813	76.56
769	520	0.95	42333	77.51
770	531	0.97	42864	78.49
771	533	0.98	43397	79.46
772	483	0.88	43880	80.35
773	444	0.81	44324	81.16
774	486	0.89	44810	82.05
775	457	0.84	45267	82.89
776	433	0.79	45700	83.68
777	450	0.82	46150	84.50
778	385	0.70	46535	85.21
779	411	0.75	46946	85.96
780	386	0.71	47332	86.67
781	418	0.77	47750	87.43
782	367	0.67	48117	88.11
783	359	0.66	48476	88.76
784	321	0.59	48797	89.35
785	343	0.63	49140	89.98
786	317	0.58	49457	90.56
787	363	0.66	49820	91.22
788	278	0.51	50098	91.73
789	290	0.53	50388	92.26
790	268	0.49	50656	92.75
791	272	0.50	50928	93.25
792	221	0.40	51149	93.66
793	230	0.42	51379	94.08
794	194	0.36	51573	94.43
795	197	0.36	51770	94.79
796	210	0.38	51980	95.18
797	177	0.32	52157	95.50
798	185	0.34	52342	95.84
799	167	0.31	52509	96.15
800	145	0.27	52654	96.41
801	157	0.29	52811	96.70
802	134	0.25	52945	96.95
803	116	0.21	53061	97.16
804	107	0.20	53168	97.35
805	109	0.20	53277	97.55
806	103	0.19	53380	97.74
807	93	0.17	53473	97.91
808	88	0.16	53561	98.07
809	62	0.11	53623	98.19
810	85	0.16	53708	98.34
811	77	0.14	53785	98.48
812	73	0.13	53858	98.62
813	58	0.11	53916	98.72
814	47	0.09	53963	98.81
815	59	0.11	54022	98.92
816	52	0.10	54074	99.01
817	41	0.08	54115	99.09
818	43	0.08	54158	99.17
819	34	0.06	54192	99.23
820	31	0.06	54223	99.29
821	37	0.07	54260	99.35
822	35	0.06	54295	99.42
823	26	0.05	54321	99.47
824	28	0.05	54349	99.52
825	31	0.06	54380	99.57
826	20	0.04	54400	99.61
827	13	0.02	54413	99.63
828	11	0.02	54424	99.65
829	18	0.03	54442	99.69
830	12	0.02	54454	99.71
831	11	0.02	54465	99.73
832	18	0.03	54483	99.76
833	9	0.02	54492	99.78
834	14	0.03	54506	99.80
835	8	0.01	54514	99.82
836	11	0.02	54525	99.84
837	5	0.01	54530	99.85
838	10	0.02	54540	99.87
839	9	0.02	54549	99.88
840	6	0.01	54555	99.89
841	3	0.01	54558	99.90
842	5	0.01	54563	99.91
843	5	0.01	54568	99.92
844	6	0.01	54574	99.93
845	1	0.00	54575	99.93
846	2	0.00	54577	99.93
847	7	0.01	54584	99.95
848	4	0.01	54588	99.95
849	1	0.00	54589	99.96
850	24	0.04	54613	100.00

Table Error! No text of specified style in document.**.11. Scale Score Distribution—ELA Grade 7**

SS	Freq.	%	Cum. Freq.	Cum. %
650	195	0.37	195	0.37
651	16	0.03	211	0.40
652	12	0.02	223	0.42
653	20	0.04	243	0.46
654	22	0.04	265	0.50
655	18	0.03	283	0.53
656	23	0.04	306	0.58
657	22	0.04	328	0.62
658	34	0.06	362	0.68
659	41	0.08	403	0.76
660	39	0.07	442	0.83
661	42	0.08	484	0.91
662	41	0.08	525	0.99
663	38	0.07	563	1.06
664	46	0.09	609	1.15
665	50	0.09	659	1.24
666	42	0.08	701	1.32
667	63	0.12	764	1.44
668	61	0.11	825	1.55
669	74	0.14	899	1.69
670	104	0.20	1003	1.89
671	85	0.16	1088	2.05
672	87	0.16	1175	2.21
673	114	0.21	1289	2.42
674	105	0.20	1394	2.62
675	115	0.22	1509	2.84
676	98	0.18	1607	3.02
677	131	0.25	1738	3.27
678	146	0.27	1884	3.54
679	177	0.33	2061	3.88
680	131	0.25	2192	4.12
681	177	0.33	2369	4.46
682	191	0.36	2560	4.82
683	193	0.36	2753	5.18
684	193	0.36	2946	5.54
685	186	0.35	3132	5.89
686	226	0.43	3358	6.32
687	228	0.43	3586	6.75
688	224	0.42	3810	7.17
689	272	0.51	4082	7.68
690	244	0.46	4326	8.14
691	260	0.49	4586	8.63
692	282	0.53	4868	9.16
693	275	0.52	5143	9.67
694	315	0.59	5458	10.27
695	306	0.58	5764	10.84
696	293	0.55	6057	11.39
697	319	0.60	6376	11.99
698	299	0.56	6675	12.56
699	353	0.66	7028	13.22
700	303	0.57	7331	13.79
701	322	0.61	7653	14.40
702	311	0.59	7964	14.98
703	299	0.56	8263	15.54
704	315	0.59	8578	16.14
705	373	0.70	8951	16.84
706	346	0.65	9297	17.49
707	340	0.64	9637	18.13
708	322	0.61	9959	18.73
709	360	0.68	10319	19.41
710	386	0.73	10705	20.14
711	342	0.64	11047	20.78
712	357	0.67	11404	21.45
713	398	0.75	11802	22.20
714	360	0.68	12162	22.88
715	347	0.65	12509	23.53
716	335	0.63	12844	24.16
717	391	0.74	13235	24.90
718	375	0.71	13610	25.60
719	388	0.73	13998	26.33
720	400	0.75	14398	27.08
721	394	0.74	14792	27.83
722	414	0.78	15206	28.60
723	363	0.68	15569	29.29
724	394	0.74	15963	30.03
725	405	0.76	16368	30.79
726	413	0.78	16781	31.57
727	429	0.81	17210	32.37
728	429	0.81	17639	33.18
729	434	0.82	18073	34.00
730	416	0.78	18489	34.78
731	447	0.84	18936	35.62
732	418	0.79	19354	36.41
733	443	0.83	19797	37.24
734	453	0.85	20250	38.09
735	444	0.84	20694	38.93
736	466	0.88	21160	39.80
737	452	0.85	21612	40.65
738	476	0.90	22088	41.55
739	452	0.85	22540	42.40
740	442	0.83	22982	43.23
741	427	0.80	23409	44.03
742	473	0.89	23882	44.92
743	483	0.91	24365	45.83
744	466	0.88	24831	46.71
745	446	0.84	25277	47.55
746	476	0.90	25753	48.44
747	461	0.87	26214	49.31
748	515	0.97	26729	50.28
749	470	0.88	27199	51.16

SS	Freq.	%	Cum. Freq.	Cum. %
750	497	0.93	27696	52.10
751	511	0.96	28207	53.06
752	489	0.92	28696	53.98
753	518	0.97	29214	54.95
754	465	0.87	29679	55.83
755	488	0.92	30167	56.75
756	495	0.93	30662	57.68
757	496	0.93	31158	58.61
758	505	0.95	31663	59.56
759	488	0.92	32151	60.48
760	499	0.94	32650	61.42
761	527	0.99	33177	62.41
762	466	0.88	33643	63.29
763	443	0.83	34086	64.12
764	500	0.94	34586	65.06
765	458	0.86	35044	65.92
766	466	0.88	35510	66.80
767	487	0.92	35997	67.71
768	469	0.88	36466	68.60
769	448	0.84	36914	69.44
770	476	0.90	37390	70.33
771	461	0.87	37851	71.20
772	458	0.86	38309	72.06
773	425	0.80	38734	72.86
774	438	0.82	39172	73.69
775	402	0.76	39574	74.44
776	485	0.91	40059	75.36
777	436	0.82	40495	76.18
778	449	0.84	40944	77.02
779	397	0.75	41341	77.77
780	444	0.84	41785	78.60
781	436	0.82	42221	79.42
782	454	0.85	42675	80.28
783	419	0.79	43094	81.06
784	373	0.70	43467	81.77
785	386	0.73	43853	82.49
786	378	0.71	44231	83.20
787	379	0.71	44610	83.92
788	373	0.70	44983	84.62
789	353	0.66	45336	85.28
790	358	0.67	45694	85.96
791	317	0.60	46011	86.55
792	321	0.60	46332	87.16
793	355	0.67	46687	87.82
794	315	0.59	47002	88.42
795	305	0.57	47307	88.99
796	291	0.55	47598	89.54
797	264	0.50	47862	90.03
798	269	0.51	48131	90.54
799	266	0.50	48397	91.04
800	232	0.44	48629	91.48
801	241	0.45	48870	91.93
802	244	0.46	49114	92.39
803	220	0.41	49334	92.80
804	203	0.38	49537	93.18
805	217	0.41	49754	93.59
806	202	0.38	49956	93.97
807	164	0.31	50120	94.28
808	168	0.32	50288	94.60
809	173	0.33	50461	94.92
810	160	0.30	50621	95.22
811	158	0.30	50779	95.52
812	114	0.21	50893	95.74
813	158	0.30	51051	96.03
814	136	0.26	51187	96.29
815	121	0.23	51308	96.52
816	114	0.21	51422	96.73
817	109	0.21	51531	96.94
818	120	0.23	51651	97.16
819	106	0.20	51757	97.36
820	99	0.19	51856	97.55
821	84	0.16	51940	97.71
822	77	0.14	52017	97.85
823	75	0.14	52092	97.99
824	86	0.16	52178	98.15
825	76	0.14	52254	98.30
826	56	0.11	52310	98.40
827	61	0.11	52371	98.52
828	69	0.13	52440	98.65
829	47	0.09	52487	98.73
830	56	0.11	52543	98.84
831	47	0.09	52590	98.93
832	48	0.09	52638	99.02
833	43	0.08	52681	99.10
834	39	0.07	52720	99.17
835	30	0.06	52750	99.23
836	26	0.05	52776	99.28
837	25	0.05	52801	99.32
838	26	0.05	52827	99.37
839	25	0.05	52852	99.42
840	29	0.05	52881	99.48
841	15	0.03	52896	99.50
842	17	0.03	52913	99.54
843	15	0.03	52928	99.56
844	18	0.03	52946	99.60
845	17	0.03	52963	99.63
846	17	0.03	52980	99.66
847	22	0.04	53002	99.70
848	8	0.02	53010	99.72
849	16	0.03	53026	99.75
850	134	0.25	53160	100.00

Table Error! No text of specified style in document.**.12. Scale Score Distribution—ELA Grade 8**

SS	Freq.	%	Cum. Freq.	Cum. %
650	615	1.22	615	1.22
651	43	0.09	658	1.31
652	59	0.12	717	1.43
653	58	0.12	775	1.54
654	59	0.12	834	1.66
655	61	0.12	895	1.78
656	72	0.14	967	1.92
657	60	0.12	1027	2.04
658	72	0.14	1099	2.18
659	86	0.17	1185	2.36
660	100	0.20	1285	2.55
661	101	0.20	1386	2.76
662	111	0.22	1497	2.98
663	113	0.22	1610	3.20
664	123	0.24	1733	3.45
665	110	0.22	1843	3.66
666	120	0.24	1963	3.90
667	146	0.29	2109	4.19
668	151	0.30	2260	4.49
669	146	0.29	2406	4.78
670	124	0.25	2530	5.03
671	152	0.30	2682	5.33
672	172	0.34	2854	5.67
673	171	0.34	3025	6.01
674	163	0.32	3188	6.34
675	180	0.36	3368	6.70
676	176	0.35	3544	7.05
677	209	0.42	3753	7.46
678	179	0.36	3932	7.82
679	161	0.32	4093	8.14
680	209	0.42	4302	8.55
681	220	0.44	4522	8.99
682	228	0.45	4750	9.44
683	218	0.43	4968	9.88
684	228	0.45	5196	10.33
685	225	0.45	5421	10.78
686	245	0.49	5666	11.26
687	218	0.43	5884	11.70
688	258	0.51	6142	12.21
689	240	0.48	6382	12.69
690	240	0.48	6622	13.16
691	213	0.42	6835	13.59
692	244	0.49	7079	14.07
693	239	0.48	7318	14.55
694	244	0.49	7562	15.03
695	227	0.45	7789	15.48
696	242	0.48	8031	15.96
697	243	0.48	8274	16.45
698	277	0.55	8551	17.00
699	280	0.56	8831	17.56
700	266	0.53	9097	18.08
701	248	0.49	9345	18.58
702	278	0.55	9623	19.13
703	280	0.56	9903	19.69
704	283	0.56	10186	20.25
705	254	0.50	10440	20.75
706	305	0.61	10745	21.36
707	300	0.60	11045	21.96
708	294	0.58	11339	22.54
709	314	0.62	11653	23.17
710	327	0.65	11980	23.82
711	305	0.61	12285	24.42
712	321	0.64	12606	25.06
713	319	0.63	12925	25.69
714	290	0.58	13215	26.27
715	340	0.68	13555	26.95
716	338	0.67	13893	27.62
717	370	0.74	14263	28.35
718	341	0.68	14604	29.03
719	334	0.66	14938	29.70
720	385	0.77	15323	30.46
721	364	0.72	15687	31.18
722	422	0.84	16109	32.02
723	397	0.79	16506	32.81
724	411	0.82	16917	33.63
725	387	0.77	17304	34.40
726	389	0.77	17693	35.17
727	423	0.84	18116	36.01
728	438	0.87	18554	36.88
729	422	0.84	18976	37.72
730	460	0.91	19436	38.64
731	405	0.81	19841	39.44
732	425	0.84	20266	40.29
733	438	0.87	20704	41.16
734	445	0.88	21149	42.04
735	457	0.91	21606	42.95
736	457	0.91	22063	43.86
737	443	0.88	22506	44.74
738	460	0.91	22966	45.65
739	478	0.95	23444	46.60
740	462	0.92	23906	47.52
741	459	0.91	24365	48.44
742	522	1.04	24887	49.47
743	491	0.98	25378	50.45
744	480	0.95	25858	51.40
745	459	0.91	26317	52.32
746	495	0.98	26812	53.30
747	483	0.96	27295	54.26
748	477	0.95	27772	55.21
749	464	0.92	28236	56.13

SS	Freq.	%	Cum. Freq.	Cum. %
750	512	1.02	28748	57.15
751	482	0.96	29230	58.11
752	503	1.00	29733	59.11
753	458	0.91	30191	60.02
754	510	1.01	30701	61.03
755	493	0.98	31194	62.01
756	461	0.92	31655	62.93
757	475	0.94	32130	63.87
758	474	0.94	32604	64.81
759	472	0.94	33076	65.75
760	441	0.88	33517	66.63
761	478	0.95	33995	67.58
762	479	0.95	34474	68.53
763	481	0.96	34955	69.49
764	450	0.89	35405	70.38
765	466	0.93	35871	71.31
766	473	0.94	36344	72.25
767	451	0.90	36795	73.15
768	417	0.83	37212	73.97
769	399	0.79	37611	74.77
770	438	0.87	38049	75.64
771	426	0.85	38475	76.48
772	443	0.88	38918	77.37
773	421	0.84	39339	78.20
774	382	0.76	39721	78.96
775	395	0.79	40116	79.75
776	370	0.74	40486	80.48
777	355	0.71	40841	81.19
778	365	0.73	41206	81.91
779	336	0.67	41542	82.58
780	388	0.77	41930	83.35
781	336	0.67	42266	84.02
782	348	0.69	42614	84.71
783	320	0.64	42934	85.35
784	317	0.63	43251	85.98
785	332	0.66	43583	86.64
786	304	0.60	43887	87.24
787	304	0.60	44191	87.85
788	293	0.58	44484	88.43
789	287	0.57	44771	89.00
790	257	0.51	45028	89.51
791	269	0.53	45297	90.05
792	233	0.46	45530	90.51
793	234	0.47	45764	90.97
794	222	0.44	45986	91.42
795	199	0.40	46185	91.81
796	198	0.39	46383	92.21
797	191	0.38	46574	92.59
798	195	0.39	46769	92.97
799	192	0.38	46961	93.35
800	197	0.39	47158	93.75
801	163	0.32	47321	94.07
802	178	0.35	47499	94.42
803	163	0.32	47662	94.75
804	155	0.31	47817	95.06
805	124	0.25	47941	95.30
806	128	0.25	48069	95.56
807	129	0.26	48198	95.81
808	125	0.25	48323	96.06
809	111	0.22	48434	96.28
810	110	0.22	48544	96.50
811	109	0.22	48653	96.72
812	95	0.19	48748	96.91
813	91	0.18	48839	97.09
814	92	0.18	48931	97.27
815	79	0.16	49010	97.43
816	81	0.16	49091	97.59
817	73	0.15	49164	97.73
818	64	0.13	49228	97.86
819	60	0.12	49288	97.98
820	65	0.13	49353	98.11
821	66	0.13	49419	98.24
822	56	0.11	49475	98.35
823	58	0.12	49533	98.47
824	47	0.09	49580	98.56
825	46	0.09	49626	98.65
826	42	0.08	49668	98.74
827	38	0.08	49706	98.81
828	46	0.09	49752	98.90
829	33	0.07	49785	98.97
830	37	0.07	49822	99.04
831	34	0.07	49856	99.11
832	43	0.09	49899	99.19
833	29	0.06	49928	99.25
834	20	0.04	49948	99.29
835	23	0.05	49971	99.34
836	27	0.05	49998	99.39
837	22	0.04	50020	99.44
838	18	0.04	50038	99.47
839	21	0.04	50059	99.51
840	22	0.04	50081	99.56
841	16	0.03	50097	99.59
842	14	0.03	50111	99.62
843	20	0.04	50131	99.66
844	9	0.02	50140	99.67
845	14	0.03	50154	99.70
846	13	0.03	50167	99.73
847	13	0.03	50180	99.75
848	7	0.01	50187	99.77
849	12	0.02	50199	99.79
850	105	0.21	50304	100.00

Table Error! No text of specified style in document.**.13. Scale Score Distribution—CSLA Grade 3**

SS	Freq.	%	Cum. Freq.	Cum. %
650	19	1.21	19	1.21
664	29	1.85	48	3.06
675	50	3.18	98	6.24
683	50	3.18	148	9.43
689	50	3.18	198	12.61
694	71	4.52	269	17.13
699	54	3.44	323	20.57
700	55	3.50	378	24.08
706	54	3.44	432	27.52
709	49	3.12	481	30.64
712	38	2.42	519	33.06
714	51	3.25	570	36.31
717	45	2.87	615	39.17
719	52	3.31	667	42.48
721	46	2.93	713	45.41
723	42	2.68	755	48.09
725	58	3.69	813	51.78
727	42	2.68	855	54.46
729	30	1.91	885	56.37
731	33	2.10	918	58.47
732	42	2.68	960	61.15
734	32	2.04	992	63.18
735	37	2.36	1029	65.54
737	32	2.04	1061	67.58
739	41	2.61	1102	70.19
740	29	1.85	1131	72.04
742	27	1.72	1158	73.76
743	40	2.55	1198	76.31
744	28	1.78	1226	78.09
746	29	1.85	1255	79.94
747	28	1.78	1283	81.72
749	28	1.78	1311	83.50
750	20	1.27	1331	84.78
752	22	1.40	1353	86.18
753	35	2.23	1388	88.41
754	23	1.46	1411	89.87
756	13	0.83	1424	90.70
757	12	0.76	1436	91.46
759	16	1.02	1452	92.48
760	12	0.76	1464	93.25
762	9	0.57	1473	93.82
763	12	0.76	1485	94.59
765	12	0.76	1497	95.35
766	9	0.57	1506	95.92
768	15	0.96	1521	96.88
769	6	0.38	1527	97.26
771	11	0.70	1538	97.96
773	7	0.45	1545	98.41
775	5	0.32	1550	98.73
777	3	0.19	1553	98.92
779	5	0.32	1558	99.24
781	1	0.06	1559	99.30
783	1	0.06	1560	99.36
786	4	0.25	1564	99.62
788	3	0.19	1567	99.81
791	2	0.13	1569	99.94
794	1	0.06	1570	100.00

Table Error! No text of specified style in document.**.14. Scale Score Distribution—CSLA Grade 4**

SS	Freq.	%	Cum. Freq.	Cum. %
650	3	0.22	3	0.22
652	7	0.52	10	0.74
663	12	0.89	22	1.63
671	21	1.56	43	3.19
677	28	2.08	71	5.26
682	37	2.74	108	8.01
686	35	2.59	143	10.60
690	33	2.45	176	13.05
693	20	1.48	196	14.53
696	37	2.74	233	17.27
699	28	2.08	261	19.35
700	27	2.00	288	21.35
704	33	2.45	321	23.80
706	28	2.08	349	25.87
708	24	1.78	373	27.65
710	26	1.93	399	29.58
712	25	1.85	424	31.43
714	41	3.04	465	34.47
715	31	2.30	496	36.77
717	34	2.52	530	39.29
719	26	1.93	556	41.22
721	30	2.22	586	43.44
722	26	1.93	612	45.37
724	30	2.22	642	47.59
725	26	1.93	668	49.52
727	33	2.45	701	51.96
728	28	2.08	729	54.04
730	44	3.26	773	57.30
731	39	2.89	812	60.19
733	32	2.37	844	62.56
734	38	2.82	882	65.38
736	39	2.89	921	68.27
737	30	2.22	951	70.50
738	47	3.48	998	73.98
740	30	2.22	1028	76.20
741	22	1.63	1050	77.84
743	26	1.93	1076	79.76
744	26	1.93	1102	81.69
746	22	1.63	1124	83.32
747	23	1.70	1147	85.03
748	25	1.85	1172	86.88
750	23	1.70	1195	88.58
751	16	1.19	1211	89.77
753	20	1.48	1231	91.25
754	18	1.33	1249	92.59
756	16	1.19	1265	93.77
758	7	0.52	1272	94.29
759	8	0.59	1280	94.89
761	15	1.11	1295	96.00
762	13	0.96	1308	96.96
764	8	0.59	1316	97.55
766	6	0.44	1322	98.00
768	5	0.37	1327	98.37
770	5	0.37	1332	98.74
772	4	0.30	1336	99.04
774	3	0.22	1339	99.26
776	5	0.37	1344	99.63
781	1	0.07	1345	99.70
783	2	0.15	1347	99.85
793	2	0.15	1349	100.00

Table Error! No text of specified style in document.**.15. Scale Score Distribution—Science Grade 5**

SS	Freq.	%	Cum. Freq.	Cum. %
650	1187	2.10	1187	2.10
651	39	0.07	1226	2.17
652	46	0.08	1272	2.25
653	47	0.08	1319	2.33
654	48	0.08	1367	2.42
655	34	0.06	1401	2.48
656	47	0.08	1448	2.56
657	42	0.07	1490	2.64
658	59	0.10	1549	2.74
659	56	0.10	1605	2.84
660	56	0.10	1661	2.94
661	61	0.11	1722	3.05
662	55	0.10	1777	3.14
663	76	0.13	1853	3.28
664	78	0.14	1931	3.42
665	77	0.14	2008	3.55
666	73	0.13	2081	3.68
667	88	0.16	2169	3.84
668	95	0.17	2264	4.00
669	111	0.20	2375	4.20
670	102	0.18	2477	4.38
671	118	0.21	2595	4.59
672	112	0.20	2707	4.79
673	116	0.21	2823	4.99
674	118	0.21	2941	5.20
675	108	0.19	3049	5.39
676	144	0.25	3193	5.65
677	134	0.24	3327	5.88
678	138	0.24	3465	6.13
679	140	0.25	3605	6.38
680	154	0.27	3759	6.65
681	142	0.25	3901	6.90
682	157	0.28	4058	7.18
683	169	0.30	4227	7.48
684	168	0.30	4395	7.77
685	194	0.34	4589	8.12
686	174	0.31	4763	8.42
687	166	0.29	4929	8.72
688	201	0.36	5130	9.07
689	214	0.38	5344	9.45
690	206	0.36	5550	9.82
691	216	0.38	5766	10.20
692	235	0.42	6001	10.61
693	277	0.49	6278	11.10
694	275	0.49	6553	11.59
695	283	0.50	6836	12.09
696	265	0.47	7101	12.56
697	290	0.51	7391	13.07
698	263	0.47	7654	13.54
699	299	0.53	7953	14.07
700	331	0.59	8284	14.65
701	329	0.58	8613	15.23
702	326	0.58	8939	15.81
703	314	0.56	9253	16.37
704	350	0.62	9603	16.99
705	354	0.63	9957	17.61
706	357	0.63	10314	18.24
707	348	0.62	10662	18.86
708	387	0.68	11049	19.54
709	408	0.72	11457	20.26
710	385	0.68	11842	20.95
711	385	0.68	12227	21.63
712	410	0.73	12637	22.35
713	475	0.84	13112	23.19
714	443	0.78	13555	23.98
715	451	0.80	14006	24.77
716	434	0.77	14440	25.54
717	461	0.82	14901	26.36
718	491	0.87	15392	27.22
719	469	0.83	15861	28.05
720	511	0.90	16372	28.96
721	512	0.91	16884	29.86
722	473	0.84	17357	30.70
723	559	0.99	17916	31.69
724	525	0.93	18441	32.62
725	609	1.08	19050	33.69
726	537	0.95	19587	34.64
727	585	1.03	20172	35.68
728	584	1.03	20756	36.71
729	572	1.01	21328	37.72
730	582	1.03	21910	38.75
731	635	1.12	22545	39.88
732	583	1.03	23128	40.91
733	648	1.15	23776	42.05
734	611	1.08	24387	43.13
735	615	1.09	25002	44.22
736	646	1.14	25648	45.36
737	660	1.17	26308	46.53
738	665	1.18	26973	47.71
739	702	1.24	27675	48.95
740	640	1.13	28315	50.08
741	715	1.26	29030	51.35
742	675	1.19	29705	52.54
743	723	1.28	30428	53.82
744	673	1.19	31101	55.01
745	643	1.14	31744	56.15
746	690	1.22	32434	57.37
747	643	1.14	33077	58.51
748	726	1.28	33803	59.79
749	679	1.20	34482	60.99

SS	Freq.	%	Cum. Freq.	Cum. %
750	665	1.18	35147	62.17
751	675	1.19	35822	63.36
752	694	1.23	36516	64.59
753	654	1.16	37170	65.74
754	645	1.14	37815	66.89
755	649	1.15	38464	68.03
756	669	1.18	39133	69.22
757	650	1.15	39783	70.37
758	635	1.12	40418	71.49
759	627	1.11	41045	72.60
760	638	1.13	41683	73.73
761	603	1.07	42286	74.79
762	560	0.99	42846	75.78
763	588	1.04	43434	76.82
764	563	1.00	43997	77.82
765	603	1.07	44600	78.89
766	563	1.00	45163	79.88
767	548	0.97	45711	80.85
768	555	0.98	46266	81.83
769	599	1.06	46865	82.89
770	510	0.90	47375	83.79
771	540	0.96	47915	84.75
772	453	0.80	48368	85.55
773	479	0.85	48847	86.40
774	476	0.84	49323	87.24
775	405	0.72	49728	87.96
776	458	0.81	50186	88.77
777	404	0.71	50590	89.48
778	395	0.70	50985	90.18
779	408	0.72	51393	90.90
780	335	0.59	51728	91.49
781	367	0.65	52095	92.14
782	318	0.56	52413	92.71
783	302	0.53	52715	93.24
784	309	0.55	53024	93.79
785	270	0.48	53294	94.26
786	242	0.43	53536	94.69
787	220	0.39	53756	95.08
788	258	0.46	54014	95.54
789	216	0.38	54230	95.92
790	185	0.33	54415	96.25
791	186	0.33	54601	96.58
792	167	0.30	54768	96.87
793	160	0.28	54928	97.15
794	156	0.28	55084	97.43
795	117	0.21	55201	97.64
796	147	0.26	55348	97.90
797	118	0.21	55466	98.11
798	106	0.19	55572	98.29
799	92	0.16	55664	98.46
800	87	0.15	55751	98.61
801	89	0.16	55840	98.77
802	71	0.13	55911	98.89
803	58	0.10	55969	99.00
804	61	0.11	56030	99.10
805	55	0.10	56085	99.20
806	35	0.06	56120	99.26
807	26	0.05	56146	99.31
808	43	0.08	56189	99.38
809	48	0.08	56237	99.47
810	29	0.05	56266	99.52
811	29	0.05	56295	99.57
812	23	0.04	56318	99.61
813	21	0.04	56339	99.65
814	21	0.04	56360	99.69
815	21	0.04	56381	99.72
816	16	0.03	56397	99.75
817	16	0.03	56413	99.78
818	11	0.02	56424	99.80
819	13	0.02	56437	99.82
820	9	0.02	56446	99.84
821	11	0.02	56457	99.86
822	6	0.01	56463	99.87
823	9	0.02	56472	99.89
824	6	0.01	56478	99.90
825	9	0.02	56487	99.91
826	2	0.00	56489	99.92
827	4	0.01	56493	99.92
828	5	0.01	56498	99.93
829	4	0.01	56502	99.94
830	5	0.01	56507	99.95
831	6	0.01	56513	99.96
832	4	0.01	56517	99.96
833	3	0.01	56520	99.97
834	1	0.00	56521	99.97
835	2	0.00	56523	99.98
836	3	0.01	56526	99.98
837	1	0.00	56527	99.98
840	3	0.01	56530	99.99
842	1	0.00	56531	99.99
843	1	0.00	56532	99.99
844	2	0.00	56534	99.99
845	1	0.00	56535	100.00
847	1	0.00	56536	100.00
850	1	0.00	56537	100.00

Table Error! No text of specified style in document.**.16. Scale Score Distribution—Science Grade 8**

SS	Freq.	%	Cum. Freq.	Cum. %
650	2394	4.78	2394	4.78
651	50	0.10	2444	4.88
652	49	0.10	2493	4.97
653	56	0.11	2549	5.09
654	33	0.07	2582	5.15
655	19	0.04	2601	5.19
656	19	0.04	2620	5.23
657	29	0.06	2649	5.29
658	28	0.06	2677	5.34
659	37	0.07	2714	5.42
660	33	0.07	2747	5.48
661	34	0.07	2781	5.55
662	25	0.05	2806	5.60
663	27	0.05	2833	5.65
664	46	0.09	2879	5.74
665	45	0.09	2924	5.83
666	74	0.15	2998	5.98
667	64	0.13	3062	6.11
668	55	0.11	3117	6.22
669	72	0.14	3189	6.36
670	92	0.18	3281	6.55
671	79	0.16	3360	6.70
672	98	0.20	3458	6.90
673	86	0.17	3544	7.07
674	109	0.22	3653	7.29
675	89	0.18	3742	7.47
676	92	0.18	3834	7.65
677	111	0.22	3945	7.87
678	125	0.25	4070	8.12
679	116	0.23	4186	8.35
680	114	0.23	4300	8.58
681	124	0.25	4424	8.83
682	137	0.27	4561	9.10
683	136	0.27	4697	9.37
684	135	0.27	4832	9.64
685	148	0.30	4980	9.94
686	128	0.26	5108	10.19
687	159	0.32	5267	10.51
688	176	0.35	5443	10.86
689	170	0.34	5613	11.20
690	168	0.34	5781	11.53
691	183	0.37	5964	11.90
692	164	0.33	6128	12.23
693	189	0.38	6317	12.60
694	214	0.43	6531	13.03
695	197	0.39	6728	13.42
696	179	0.36	6907	13.78
697	222	0.44	7129	14.22
698	225	0.45	7354	14.67
699	243	0.48	7597	15.16
700	241	0.48	7838	15.64
701	197	0.39	8035	16.03
702	231	0.46	8266	16.49
703	270	0.54	8536	17.03
704	280	0.56	8816	17.59
705	271	0.54	9087	18.13
706	298	0.59	9385	18.73
707	275	0.55	9660	19.27
708	312	0.62	9972	19.90
709	328	0.65	10300	20.55
710	312	0.62	10612	21.17
711	365	0.73	10977	21.90
712	345	0.69	11322	22.59
713	353	0.70	11675	23.29
714	344	0.69	12019	23.98
715	371	0.74	12390	24.72
716	389	0.78	12779	25.50
717	401	0.80	13180	26.30
718	439	0.88	13619	27.17
719	424	0.85	14043	28.02
720	457	0.91	14500	28.93
721	431	0.86	14931	29.79
722	467	0.93	15398	30.72
723	489	0.98	15887	31.70
724	501	1.00	16388	32.70
725	477	0.95	16865	33.65
726	516	1.03	17381	34.68
727	529	1.06	17910	35.73
728	535	1.07	18445	36.80
729	555	1.11	19000	37.91
730	589	1.18	19589	39.08
731	536	1.07	20125	40.15
732	601	1.20	20726	41.35
733	591	1.18	21317	42.53
734	650	1.30	21967	43.83
735	591	1.18	22558	45.01
736	606	1.21	23164	46.22
737	690	1.38	23854	47.59
738	604	1.21	24458	48.80
739	620	1.24	25078	50.04
740	662	1.32	25740	51.36
741	682	1.36	26422	52.72
742	680	1.36	27102	54.08
743	680	1.36	27782	55.43
744	729	1.45	28511	56.89
745	653	1.30	29164	58.19
746	662	1.32	29826	59.51
747	679	1.35	30505	60.87
748	672	1.34	31177	62.21
749	677	1.35	31854	63.56

SS	Freq.	%	Cum. Freq.	Cum. %
750	686	1.37	32540	64.93
751	703	1.40	33243	66.33
752	629	1.26	33872	67.58
753	676	1.35	34548	68.93
754	627	1.25	35175	70.18
755	643	1.28	35818	71.47
756	614	1.23	36432	72.69
757	617	1.23	37049	73.92
758	613	1.22	37662	75.15
759	613	1.22	38275	76.37
760	589	1.18	38864	77.54
761	600	1.20	39464	78.74
762	610	1.22	40074	79.96
763	556	1.11	40630	81.07
764	555	1.11	41185	82.17
765	525	1.05	41710	83.22
766	564	1.13	42274	84.35
767	465	0.93	42739	85.28
768	480	0.96	43219	86.23
769	457	0.91	43676	87.14
770	451	0.90	44127	88.04
771	412	0.82	44539	88.87
772	415	0.83	44954	89.69
773	402	0.80	45356	90.50
774	375	0.75	45731	91.24
775	356	0.71	46087	91.96
776	320	0.64	46407	92.59
777	342	0.68	46749	93.28
778	308	0.61	47057	93.89
779	259	0.52	47316	94.41
780	239	0.48	47555	94.88
781	255	0.51	47810	95.39
782	222	0.44	48032	95.84
783	199	0.40	48231	96.23
784	201	0.40	48432	96.63
785	173	0.35	48605	96.98
786	154	0.31	48759	97.29
787	141	0.28	48900	97.57
788	127	0.25	49027	97.82
789	111	0.22	49138	98.04
790	115	0.23	49253	98.27
791	103	0.21	49356	98.48
792	77	0.15	49433	98.63
793	74	0.15	49507	98.78
794	72	0.14	49579	98.92
795	62	0.12	49641	99.05
796	50	0.10	49691	99.15
797	62	0.12	49753	99.27
798	40	0.08	49793	99.35
799	40	0.08	49833	99.43
800	29	0.06	49862	99.49
801	34	0.07	49896	99.56
802	36	0.07	49932	99.63
803	31	0.06	49963	99.69
804	21	0.04	49984	99.73
805	10	0.02	49994	99.75
806	20	0.04	50014	99.79
807	10	0.02	50024	99.81
808	14	0.03	50038	99.84
809	13	0.03	50051	99.86
810	14	0.03	50065	99.89
811	10	0.02	50075	99.91
812	5	0.01	50080	99.92
813	3	0.01	50083	99.93
814	4	0.01	50087	99.94
815	3	0.01	50090	99.94
816	3	0.01	50093	99.95
817	4	0.01	50097	99.96
818	1	0.00	50098	99.96
819	1	0.00	50099	99.96
820	2	0.00	50101	99.96
821	3	0.01	50104	99.97
822	2	0.00	50106	99.97
823	1	0.00	50107	99.98
824	3	0.01	50110	99.98
825	2	0.00	50112	99.99
827	2	0.00	50114	99.99
828	1	0.00	50115	99.99
836	1	0.00	50116	99.99
838	1	0.00	50117	100.00
844	1	0.00	50118	100.00
850	1	0.00	50119	100.00

Table Error! No text of specified style in document.**.17. Scale Score Distribution—Science Grade 11**

SS	Freq.	%	Cum. Freq.	Cum. %
650	1127	3.27	1127	3.27
651	11	0.03	1138	3.30
652	14	0.04	1152	3.34
653	10	0.03	1162	3.37
654	13	0.04	1175	3.41
655	12	0.03	1187	3.45
656	11	0.03	1198	3.48
657	21	0.06	1219	3.54
658	16	0.05	1235	3.59
659	33	0.10	1268	3.68
660	53	0.15	1321	3.83
661	23	0.07	1344	3.90
662	39	0.11	1383	4.01
663	43	0.12	1426	4.14
664	24	0.07	1450	4.21
665	15	0.04	1465	4.25
666	29	0.08	1494	4.34
667	26	0.08	1520	4.41
668	35	0.10	1555	4.51
669	48	0.14	1603	4.65
670	53	0.15	1656	4.81
671	79	0.23	1735	5.04
672	65	0.19	1800	5.23
673	66	0.19	1866	5.42
674	52	0.15	1918	5.57
675	60	0.17	1978	5.74
676	75	0.22	2053	5.96
677	80	0.23	2133	6.19
678	82	0.24	2215	6.43
679	92	0.27	2307	6.70
680	75	0.22	2382	6.91
681	108	0.31	2490	7.23
682	90	0.26	2580	7.49
683	96	0.28	2676	7.77
684	89	0.26	2765	8.03
685	113	0.33	2878	8.35
686	117	0.34	2995	8.69
687	114	0.33	3109	9.03
688	125	0.36	3234	9.39
689	133	0.39	3367	9.77
690	124	0.36	3491	10.13
691	137	0.40	3628	10.53
692	144	0.42	3772	10.95
693	143	0.42	3915	11.37
694	161	0.47	4076	11.83
695	133	0.39	4209	12.22
696	167	0.48	4376	12.70
697	198	0.57	4574	13.28
698	193	0.56	4767	13.84
699	206	0.60	4973	14.44
700	199	0.58	5172	15.01
701	218	0.63	5390	15.65
702	210	0.61	5600	16.26
703	216	0.63	5816	16.88
704	238	0.69	6054	17.57
705	263	0.76	6317	18.34
706	254	0.74	6571	19.08
707	272	0.79	6843	19.87
708	294	0.85	7137	20.72
709	274	0.80	7411	21.51
710	305	0.89	7716	22.40
711	311	0.90	8027	23.30
712	340	0.99	8367	24.29
713	330	0.96	8697	25.25
714	361	1.05	9058	26.30
715	359	1.04	9417	27.34
716	370	1.07	9787	28.41
717	390	1.13	10177	29.54
718	408	1.18	10585	30.73
719	402	1.17	10987	31.90
720	416	1.21	11403	33.10
721	429	1.25	11832	34.35
722	440	1.28	12272	35.63
723	478	1.39	12750	37.01
724	462	1.34	13212	38.35
725	480	1.39	13692	39.75
726	477	1.38	14169	41.13
727	519	1.51	14688	42.64
728	466	1.35	15154	43.99
729	520	1.51	15674	45.50
730	504	1.46	16178	46.96
731	531	1.54	16709	48.51
732	518	1.50	17227	50.01
733	517	1.50	17744	51.51
734	551	1.60	18295	53.11
735	547	1.59	18842	54.70
736	557	1.62	19399	56.32
737	498	1.45	19897	57.76
738	516	1.50	20413	59.26
739	546	1.59	20959	60.84
740	512	1.49	21471	62.33
741	524	1.52	21995	63.85
742	528	1.53	22523	65.38
743	480	1.39	23003	66.78
744	506	1.47	23509	68.25
745	469	1.36	23978	69.61
746	477	1.38	24455	70.99
747	488	1.42	24943	72.41
748	451	1.31	25394	73.72
749	436	1.27	25830	74.98

SS	Freq.	%	Cum. Freq.	Cum. %
750	418	1.21	26248	76.20
751	428	1.24	26676	77.44
752	392	1.14	27068	78.58
753	389	1.13	27457	79.71
754	389	1.13	27846	80.84
755	382	1.11	28228	81.95
756	339	0.98	28567	82.93
757	331	0.96	28898	83.89
758	349	1.01	29247	84.90
759	344	1.00	29591	85.90
760	311	0.90	29902	86.81
761	311	0.90	30213	87.71
762	285	0.83	30498	88.54
763	291	0.84	30789	89.38
764	259	0.75	31048	90.13
765	275	0.80	31323	90.93
766	237	0.69	31560	91.62
767	250	0.73	31810	92.34
768	196	0.57	32006	92.91
769	195	0.57	32201	93.48
770	188	0.55	32389	94.03
771	170	0.49	32559	94.52
772	191	0.55	32750	95.07
773	167	0.48	32917	95.56
774	143	0.42	33060	95.97
775	150	0.44	33210	96.41
776	130	0.38	33340	96.79
777	111	0.32	33451	97.11
778	125	0.36	33576	97.47
779	92	0.27	33668	97.74
780	90	0.26	33758	98.00
781	82	0.24	33840	98.24
782	72	0.21	33912	98.45
783	60	0.17	33972	98.62
784	55	0.16	34027	98.78
785	61	0.18	34088	98.96
786	44	0.13	34132	99.09
787	44	0.13	34176	99.21
788	44	0.13	34220	99.34
789	26	0.08	34246	99.42
790	23	0.07	34269	99.48
791	28	0.08	34297	99.56
792	20	0.06	34317	99.62
793	18	0.05	34335	99.67
794	19	0.06	34354	99.73
795	12	0.03	34366	99.76
796	14	0.04	34380	99.81
797	6	0.02	34386	99.82
798	5	0.01	34391	99.84
799	2	0.01	34393	99.84
800	8	0.02	34401	99.87
801	1	0.00	34402	99.87
802	8	0.02	34410	99.89
803	2	0.01	34412	99.90
804	4	0.01	34416	99.91
805	3	0.01	34419	99.92
806	3	0.01	34422	99.93
807	3	0.01	34425	99.94
808	4	0.01	34429	99.95
809	2	0.01	34431	99.95
810	4	0.01	34435	99.97
812	3	0.01	34438	99.97
813	1	0.00	34439	99.98
814	1	0.00	34440	99.98
816	2	0.01	34442	99.99
819	1	0.00	34443	99.99
820	1	0.00	34444	99.99
821	1	0.00	34445	99.99
823	1	0.00	34446	100.00
836	1	0.00	34447	100.00

Appendix F: Scale Score Distribution Graphs

Figure Error! No text of specified style in document.**.1. Scale Score Distribution—Mathematics Grade 3**

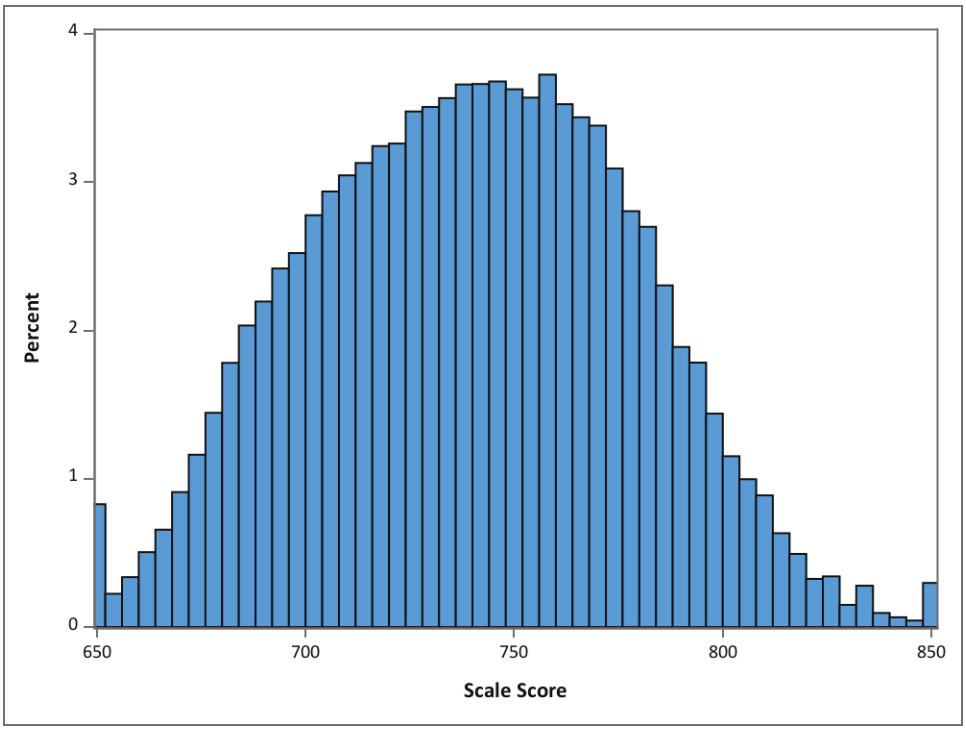


Figure Error! No text of specified style in document.**.2. Scale Score Distribution—Mathematics Grade 4**

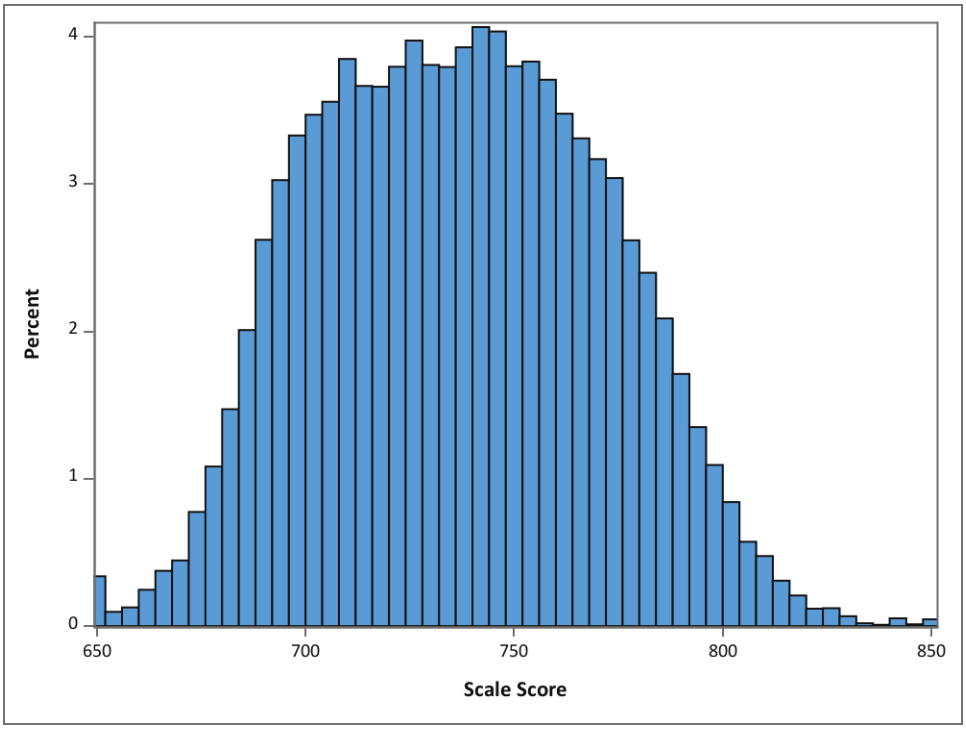


Figure Error! No text of specified style in document.**.3. Scale Score Distribution—Mathematics Grade 5**

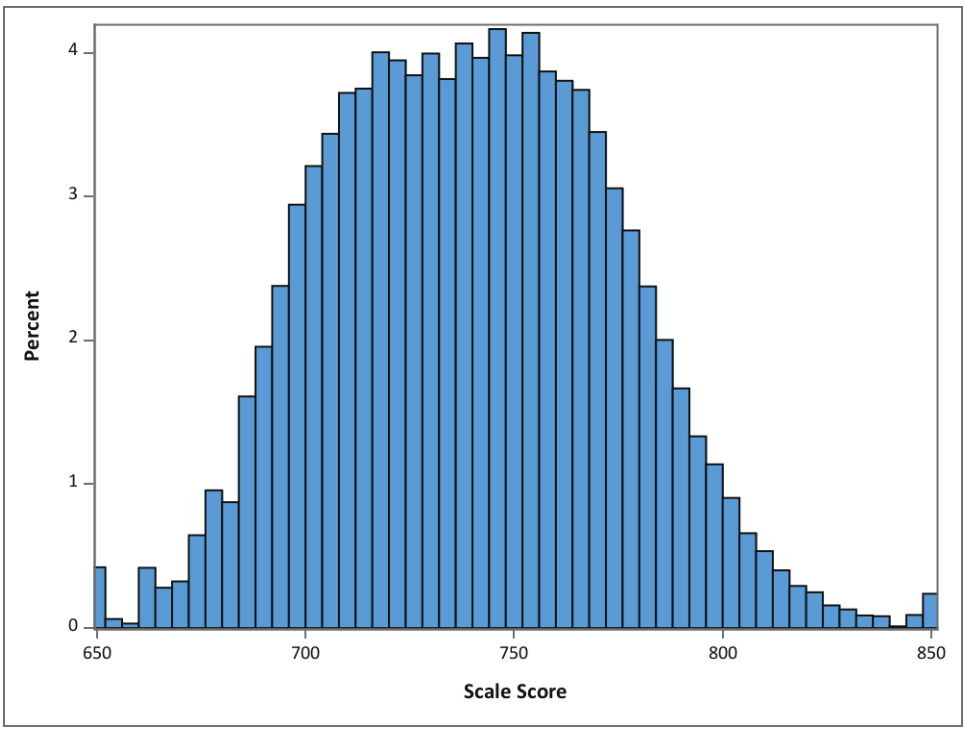


Figure Error! No text of specified style in document.**.4. Scale Score Distribution—Mathematics Grade 6**

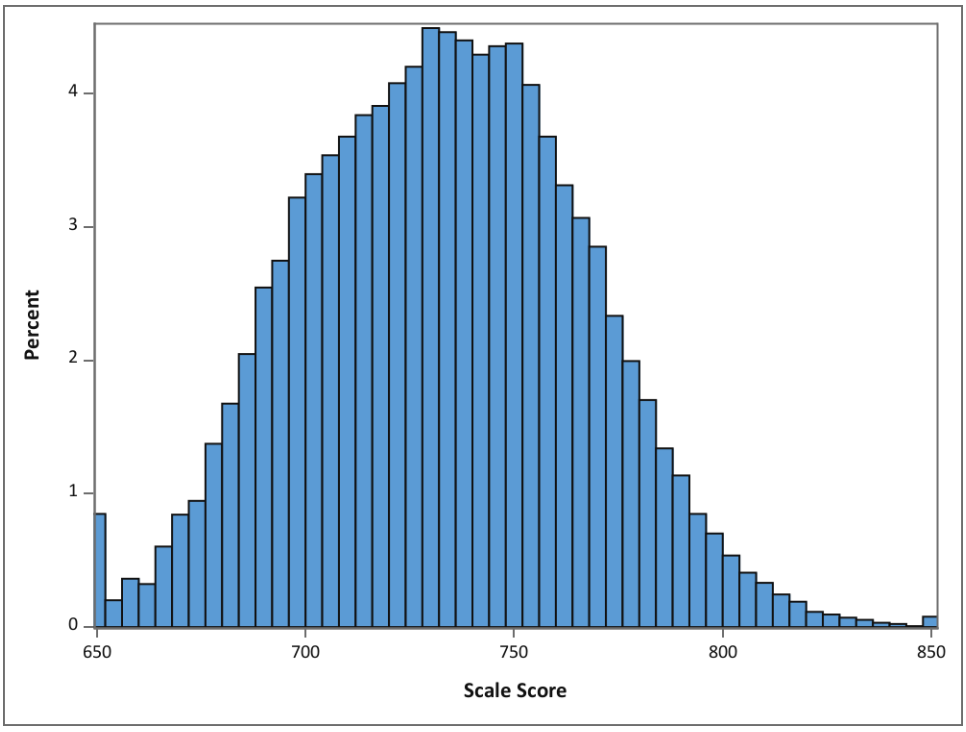


Figure Error! No text of specified style in document.**.5. Scale Score Distribution—Mathematics Grade 7**

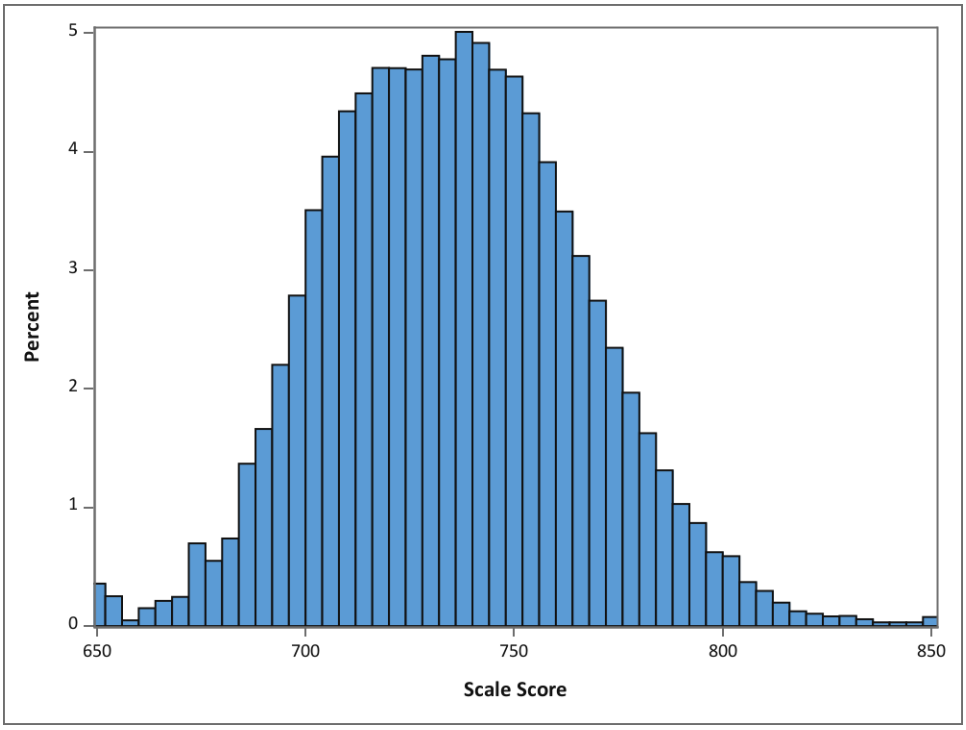


Figure Error! No text of specified style in document.**.6. Scale Score Distribution—Mathematics Grade 8**

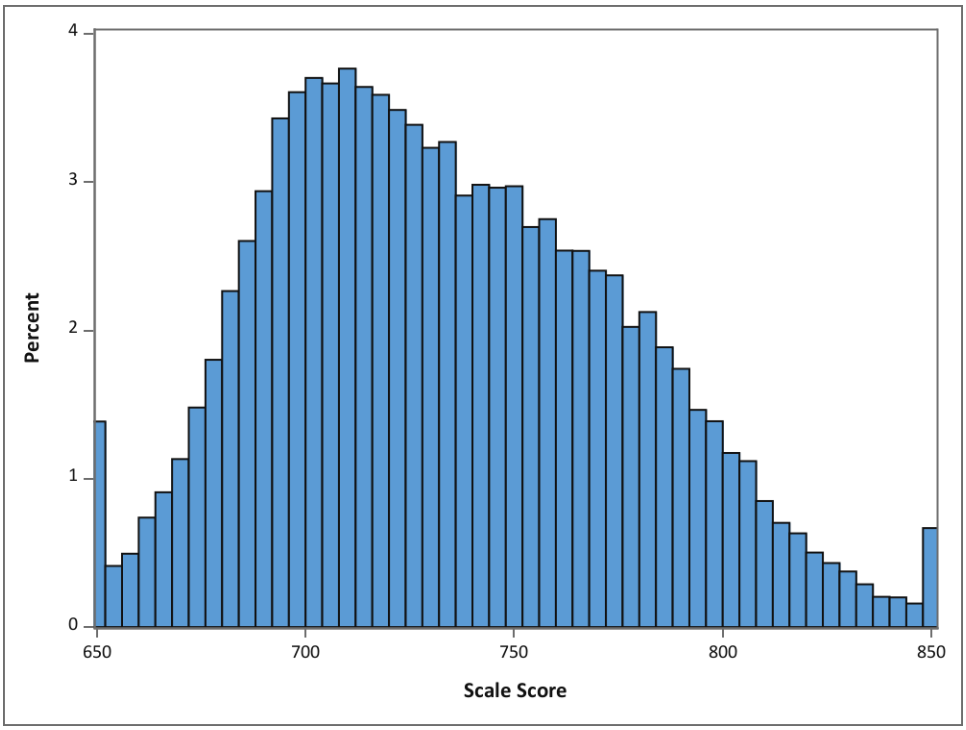


Figure Error! No text of specified style in document.**.7. Scale Score Distribution—ELA Grade 3**

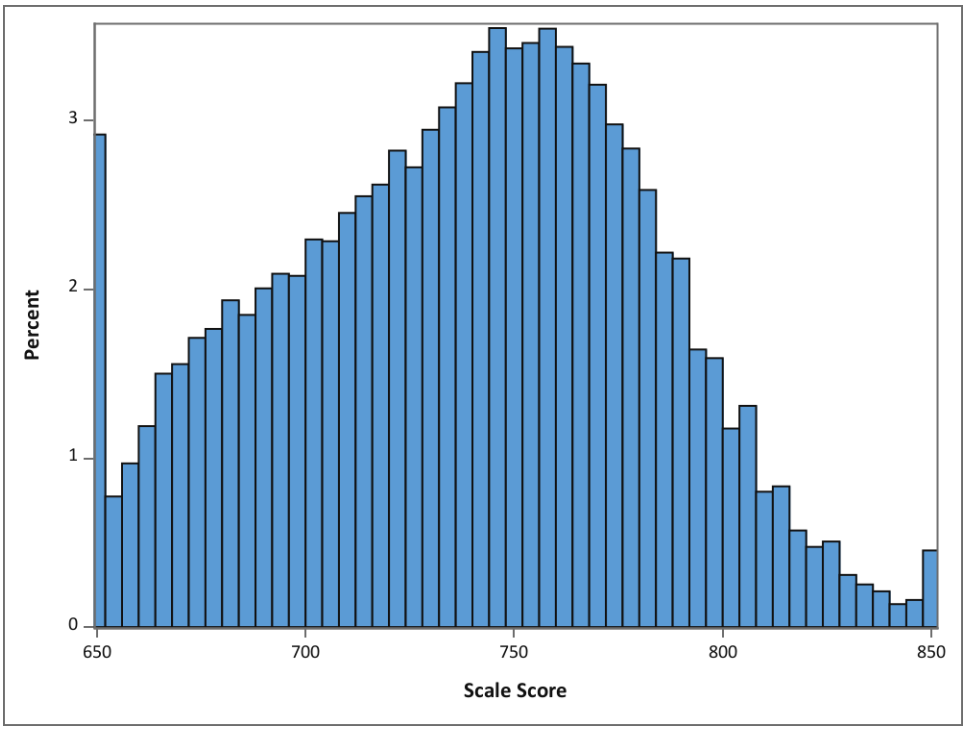


Figure Error! No text of specified style in document.**.8. Scale Score Distribution—ELA Grade 4**

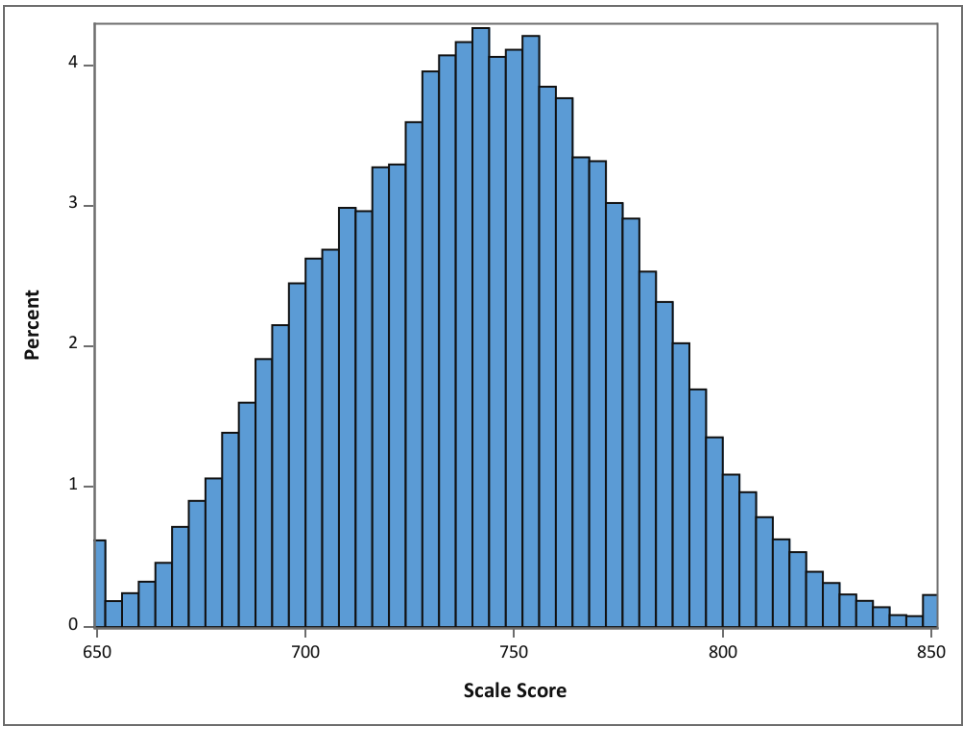


Figure Error! No text of specified style in document.**.9. Scale Score Distribution—ELA Grade 5**

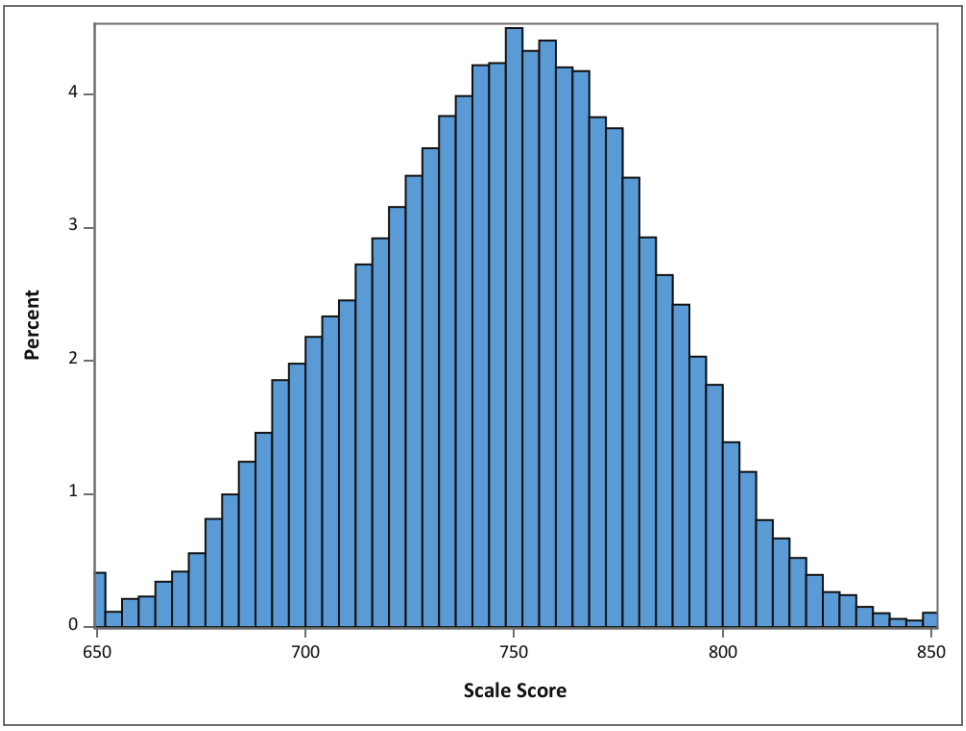


Figure Error! No text of specified style in document.**.10. Scale Score Distribution—ELA Grade 6**

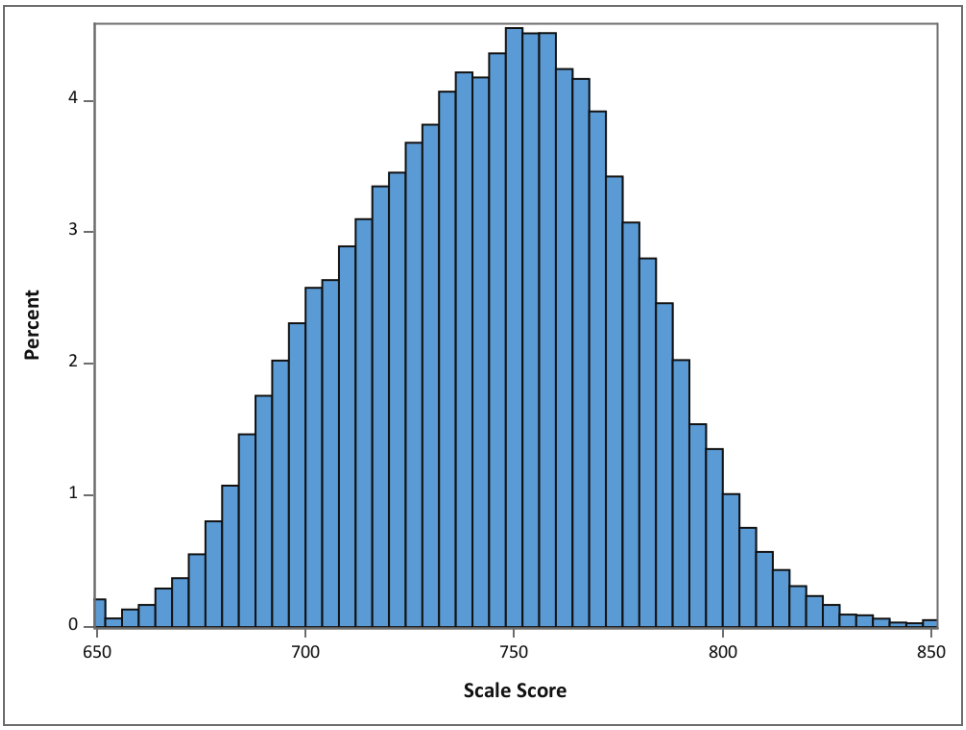


Figure Error! No text of specified style in document.**.11. Scale Score Distribution—ELA Grade 7**

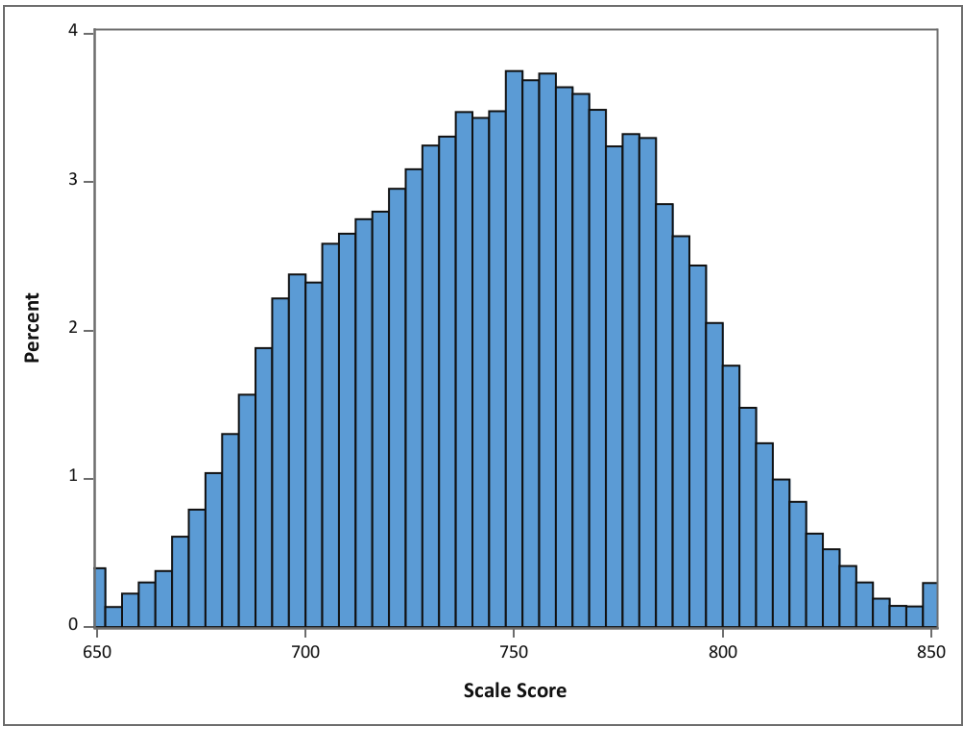


Figure Error! No text of specified style in document.**.12. Scale Score Distribution—ELA Grade 8**

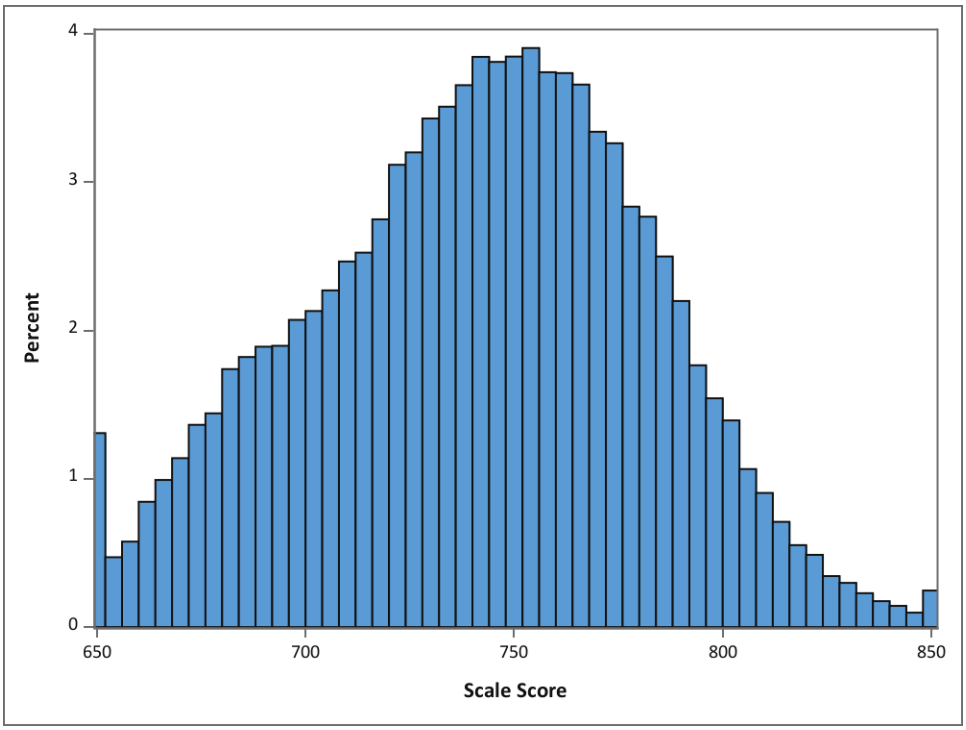


Figure Error! No text of specified style in document.**.13. Scale Score Distribution—CSLA Grade 3**

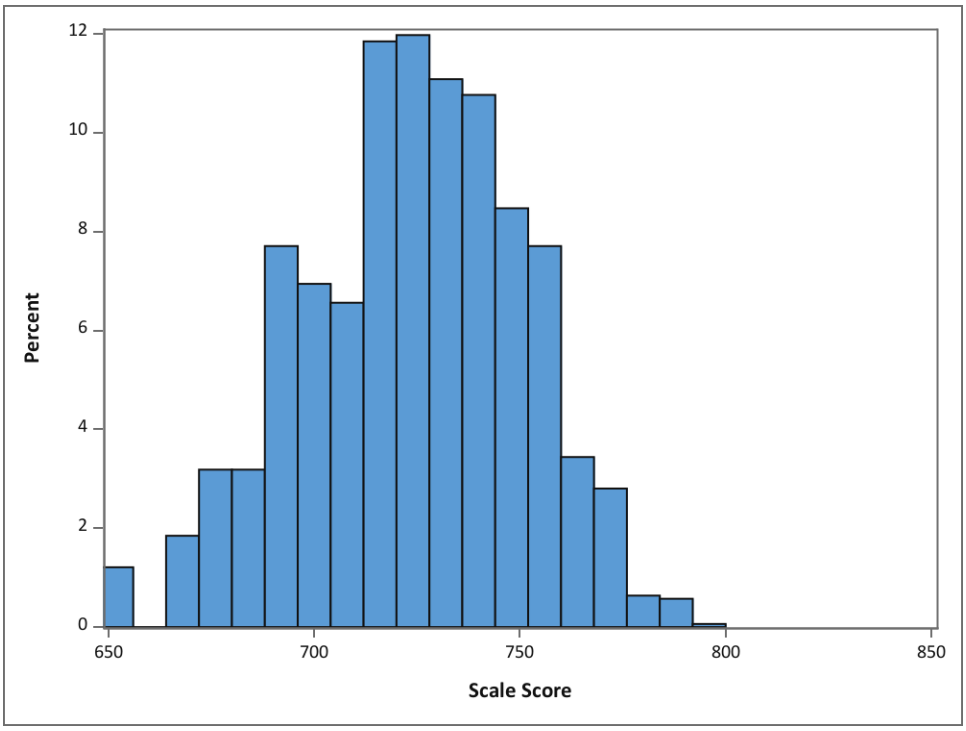


Figure Error! No text of specified style in document.**.14. Scale Score Distribution—CSLA Grade 4**

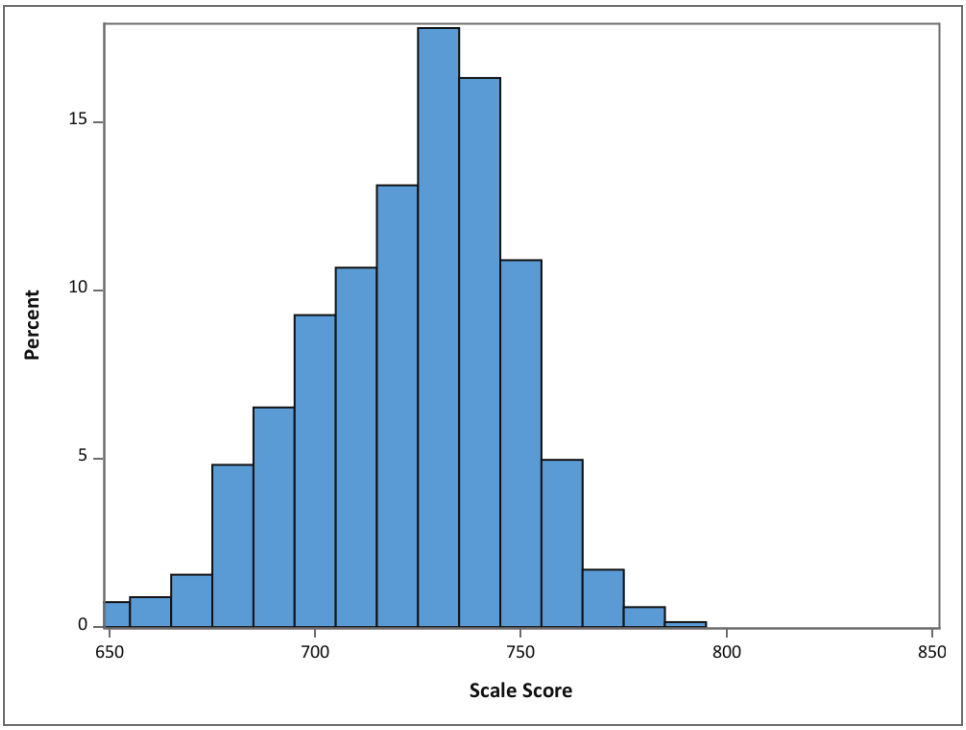


Figure Error! No text of specified style in document.**.15. Scale Score Distribution—Science Grade 5**

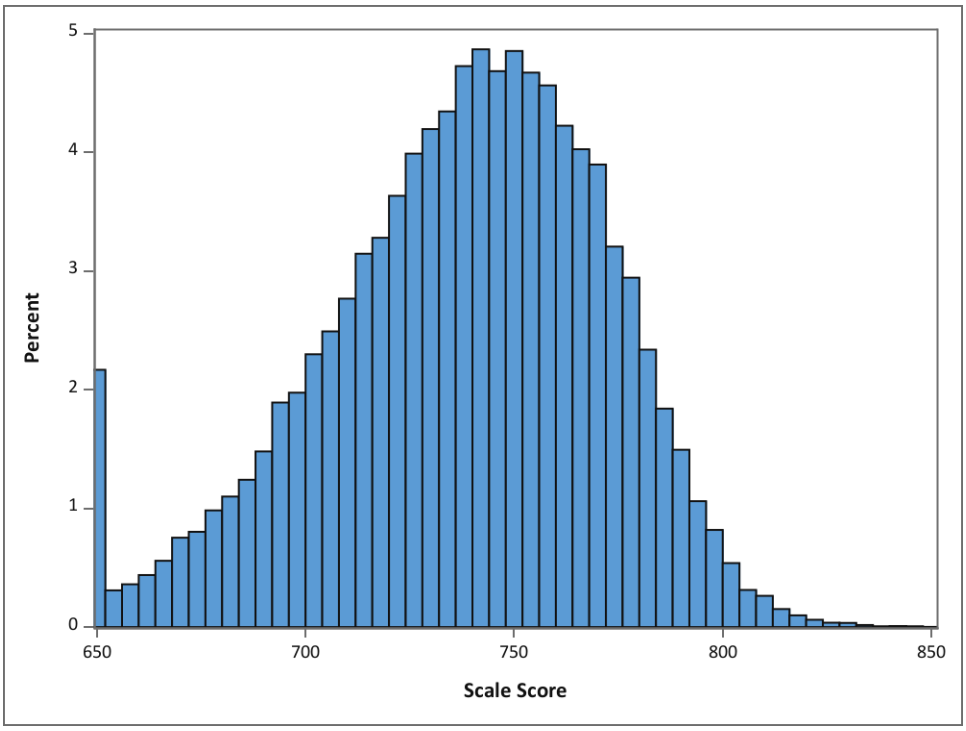


Figure Error! No text of specified style in document.**.16. Scale Score Distribution—Science Grade 8**

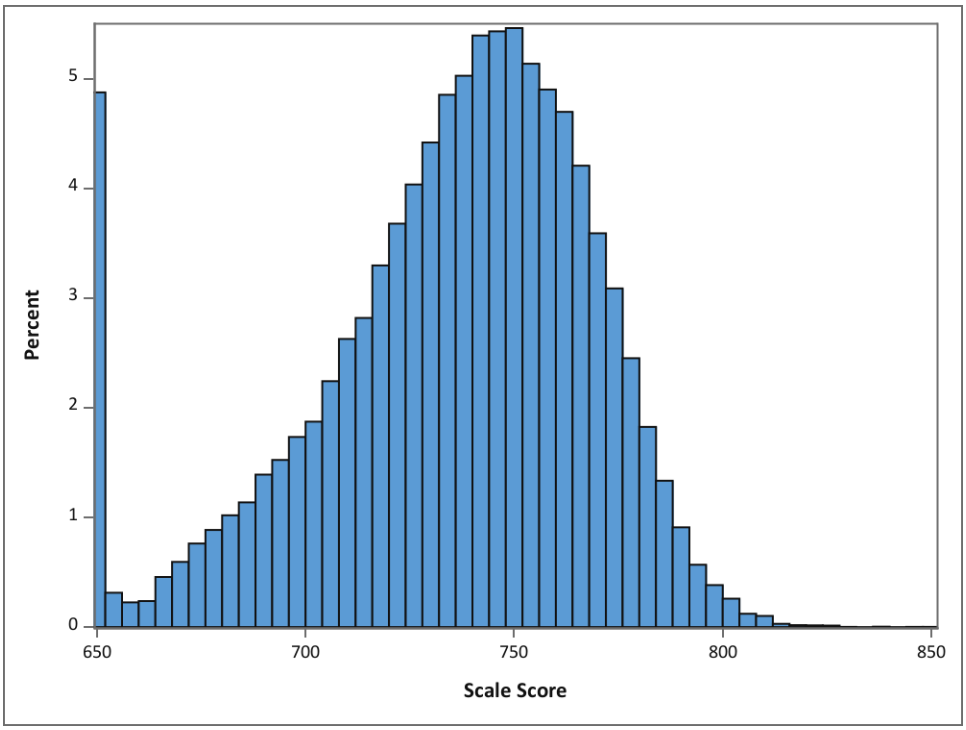
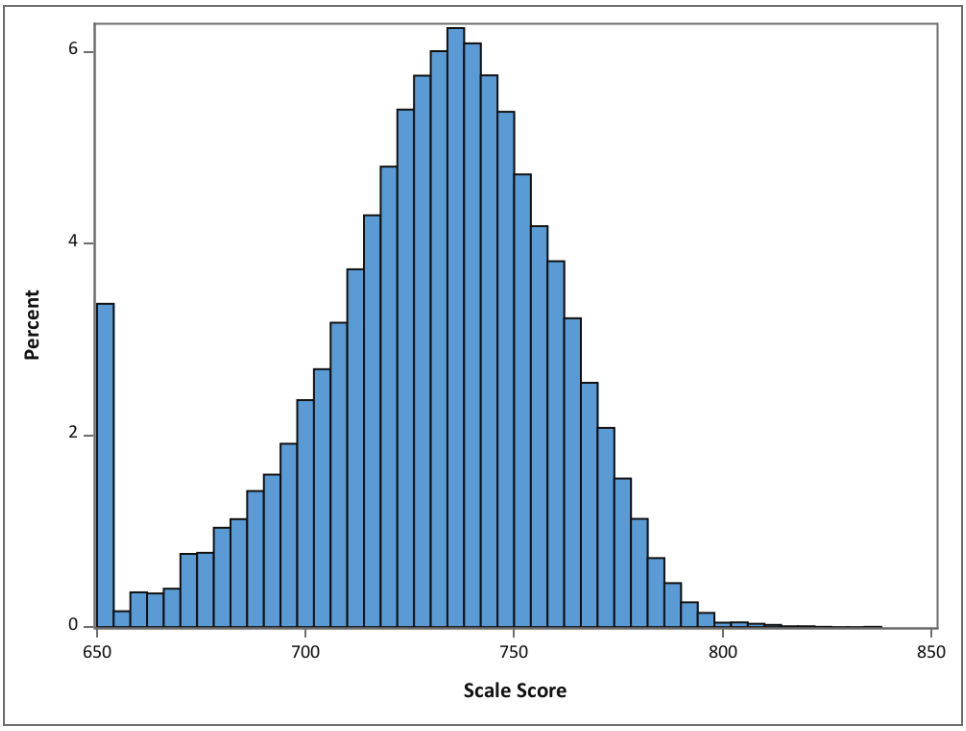


Figure Error! No text of specified style in document.**.17. Scale Score Distribution—Science Grade 11**



Appendix G: Scale Score Summary Statistics by Demographic Group

Table Error! No text of specified style in document.**.1. Performance by Subgroup—Mathematics Grade 3**

Subgroup	N	Mean	SD	Min.	Max.	Alpha
No IEP	51,116	743.49	37.44	650	850	0.93
IEP	7,652	712.08	36.41	650	850	0.93
No Accommodation	54,603	741.47	38.31	650	850	0.93
Accommodation	4,165	712.36	34.49	650	850	0.92
Am. Indian/Alaska Native	309	715.43	33.67	650	818	0.92
Asian	2,082	758.02	39.01	650	850	0.93
Black	2,573	723.90	35.84	650	841	0.93
Hispanic	21,415	722.55	35.24	650	850	0.92
White	28,745	751.58	36.05	650	850	0.92
Hawaiian/Pacific Islander	226	717.89	32.66	650	828	0.91
Two or More Races	3,412	746.56	39.06	650	850	0.93
Missing	*	*	*	*	*	*
No Economic Disadvantage	35,706	750.26	37.33	650	850	0.92
Economic Disadvantage	23,062	722.59	34.77	650	850	0.92
Female	29,022	735.93	37.40	650	850	0.93
Male	29,738	742.79	39.79	650	850	0.93
Nonbinary	*	*	*	*	*	*
Language Proficiency NA	46,947	744.75	37.76	650	850	0.93
Language Proficiency NEP	4,029	698.95	28.82	650	817	0.89
Language Proficiency LEP	6,349	720.93	30.48	650	850	0.90
Language Proficiency FEP	1,443	759.59	32.17	650	850	0.90
Not Migrant	58,529	739.52	38.75	650	850	0.93
Migrant	239	711.96	34.84	650	809	0.93

*n-count less than 16

Table Error! No text of specified style in document.**.2. Performance by Subgroup—Mathematics Grade 4**

Subgroup	N	Mean	SD	Min.	Max.	Alpha
No IEP	49,384	740.35	33.07	650	850	0.92
IEP	7,410	709.74	29.72	650	850	0.92
No Accommodation	52,350	738.27	33.90	650	850	0.93
Accommodation	4,444	713.78	30.00	650	820	0.91
Am. Indian/Alaska Native	335	722.12	32.18	650	811	0.92
Asian	2,064	751.19	35.51	650	850	0.93
Black	2,634	722.34	30.92	650	822	0.92
Hispanic	20,388	720.94	30.49	650	850	0.91
White	28,053	747.47	32.01	650	850	0.92
Hawaiian/Pacific Islander	183	716.33	30.61	650	798	0.91
Two or More Races	3,135	741.87	34.66	650	847	0.93
Missing	*	*	*	*	*	*
No Economic Disadvantage	34,946	745.87	33.13	650	850	0.92

Subgroup	N	Mean	SD	Min.	Max.	Alpha
Economic Disadvantage	21,848	721.14	30.27	650	850	0.91
Female	28,113	734.02	33.25	650	850	0.92
Male	28,669	738.65	35.04	650	850	0.93
Nonbinary	*	*	*	*	*	*
Language Proficiency NA	45,108	741.43	33.38	650	850	0.92
Language Proficiency NEP	3,407	698.79	22.21	650	809	0.84
Language Proficiency LEP	5,631	714.02	25.28	650	808	0.88
Language Proficiency FEP	2,648	745.84	27.86	666	850	0.90
Not Migrant	56,612	736.44	34.24	650	850	0.93
Migrant	182	709.19	25.21	650	788	0.88

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Table Error! No text of specified style in document.**.3. Performance by Subgroup—Mathematics Grade 5**

Subgroup	N	Mean	SD	Min.	Max.	Alpha
No IEP	49,493	743.40	33.24	650	850	0.93
IEP	7,510	711.67	28.73	650	850	0.91
No Accommodation	52,277	741.11	34.03	650	850	0.93
Accommodation	4,726	718.33	31.31	650	850	0.92
Am. Indian/Alaska Native	344	719.85	31.02	650	845	0.91
Asian	2,078	755.26	36.37	650	850	0.93
Black	2,644	724.34	30.67	650	850	0.92
Hispanic	20,035	723.37	30.02	650	850	0.92
White	28,460	750.19	32.37	650	850	0.92
Hawaiian/Pacific Islander	210	724.40	30.15	650	818	0.91
Two or More Races	3,229	745.78	34.82	650	850	0.93
Missing	*	*	*	*	*	*
No Economic Disadvantage	35,361	748.64	33.42	650	850	0.93
Economic Disadvantage	21,642	723.83	30.15	650	850	0.92
Female	28,020	736.95	33.20	650	850	0.93
Male	28,964	741.41	35.37	650	850	0.93
Nonbinary	19	759.11	35.65	685	825	0.93
Language Proficiency NA	45,738	743.89	33.79	650	850	0.93
Language Proficiency NEP	2,407	701.76	22.54	650	817	0.83
Language Proficiency LEP	4,801	711.78	23.12	650	813	0.85
Language Proficiency FEP	4,057	741.34	29.08	650	850	0.91
Not Migrant	56,830	739.30	34.39	650	850	0.93
Migrant	173	712.42	25.61	650	817	0.90

*n-count less than 16

Table Error! No text of specified style in document.**.4. Performance by Subgroup—Mathematics Grade 6**

Subgroup	N	Mean	SD	Min.	Max.	Alpha
No IEP	48,158	736.49	32.31	650	850	0.91
IEP	6,975	703.13	27.80	650	850	0.88
No Accommodation	50,531	734.25	33.15	650	850	0.91
Accommodation	4,602	710.57	31.37	650	850	0.91
Am. Indian/Alaska Native	350	712.43	29.37	650	784	0.89
Asian	2,153	751.59	35.98	650	850	0.93
Black	2,525	717.44	30.74	650	835	0.90
Hispanic	19,922	716.62	30.04	650	850	0.89
White	27,025	743.30	30.75	650	850	0.91
Hawaiian/Pacific Islander	200	717.32	30.19	650	786	0.89
Two or More Races	2,954	738.95	33.97	650	850	0.92
Missing	*	*	*	*	*	*
No Economic Disadvantage	34,332	741.82	32.39	650	850	0.91
Economic Disadvantage	20,801	716.52	29.51	650	850	0.89
Female	26,820	731.00	32.73	650	850	0.91
Male	28,299	733.47	34.46	650	850	0.92
Nonbinary	*	*	*	*	*	*
Language Proficiency NA	43,997	737.42	32.53	650	850	0.91
Language Proficiency NEP	2,301	691.92	22.87	650	776	0.80
Language Proficiency LEP	3,819	701.57	23.56	650	804	0.82
Language Proficiency FEP	5,016	728.99	28.12	650	850	0.89
Not Migrant	54,957	732.37	33.62	650	850	0.92
Migrant	176	701.88	27.45	650	774	0.88

Table Error! No text of specified style in document.**.5. Performance by Subgroup—Mathematics Grade 7**

Subgroup	N	Mean	SD	Min.	Max.	Alpha
No IEP	47,519	738.41	29.70	650	850	0.90
IEP	6,075	710.09	23.82	650	842	0.85
No Accommodation	49,322	736.87	30.13	650	850	0.90
Accommodation	4,272	715.92	27.33	650	830	0.88
Am. Indian/Alaska Native	310	720.54	26.80	650	808	0.88
Asian	1,972	752.21	34.59	650	850	0.92
Black	2,391	723.13	27.37	650	819	0.88
Hispanic	19,454	721.44	26.43	650	850	0.87
White	26,499	744.86	28.69	650	850	0.90
Hawaiian/Pacific Islander	205	719.61	28.12	650	796	0.89
Two or More Races	2,759	740.54	29.95	650	850	0.91
Missing	*	*	*	*	*	*
No Economic Disadvantage	33,831	743.10	29.91	650	850	0.90
Economic Disadvantage	19,763	721.67	26.32	650	850	0.87
Female	25,669	734.01	29.96	650	850	0.90
Male	27,905	736.28	30.85	650	850	0.91

Subgroup	N	Mean	SD	Min.	Max.	Alpha
Nonbinary	20	747.90	29.94	695	799	0.92
Language Proficiency NA	43,047	739.70	29.74	650	850	0.90
Language Proficiency NEP	2,297	701.52	20.50	650	811	0.71
Language Proficiency LEP	3,934	710.28	21.25	650	800	0.78
Language Proficiency FEP	4,316	730.92	25.76	650	850	0.88
Not Migrant	53,404	735.28	30.43	650	850	0.90
Migrant	190	711.08	24.46	650	796	0.82

Table Error! No text of specified style in document.**.6. Performance by Subgroup—Mathematics Grade 8**

Subgroup	N	Mean	SD	Min.	Max.	Alpha
No IEP	45,504	737.80	41.79	650	850	0.91
IEP	5,432	700.32	30.25	650	850	0.85
No Accommodation	46,824	735.94	42.10	650	850	0.91
Accommodation	4,112	709.45	36.95	650	850	0.90
Am. Indian/Alaska Native	293	714.17	35.89	650	850	0.87
Asian	1,914	758.30	47.00	650	850	0.92
Black	2,232	718.04	37.50	650	850	0.89
Hispanic	19,009	714.87	35.47	650	850	0.88
White	24,681	747.30	40.86	650	850	0.91
Hawaiian/Pacific Islander	197	717.18	36.97	650	828	0.89
Two or More Races	2,609	742.96	42.52	650	850	0.91
Missing	*	*	*	*	*	*
No Economic Disadvantage	32,334	744.58	42.28	650	850	0.91
Economic Disadvantage	18,602	715.06	35.28	650	850	0.88
Female	24,371	732.99	40.33	650	850	0.91
Male	26,540	734.52	44.05	650	850	0.92
Nonbinary	25	758.20	43.71	683	841	0.92
Language Proficiency NA	41,511	740.23	41.84	650	850	0.91
Language Proficiency NEP	2,279	688.68	22.25	650	801	0.57
Language Proficiency LEP	3,551	699.90	26.35	650	825	0.75
Language Proficiency FEP	3,595	721.69	33.37	650	850	0.86
Not Migrant	50,762	733.92	42.31	650	850	0.91
Migrant	174	699.24	31.81	650	801	0.76

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Table Error! No text of specified style in document.**.7. Performance by Subgroup—ELA Grade 3**

Subgroup	N	Mean	SD	Min.	Max.	Alpha
No IEP	49,168	742.72	42.10	650	850	0.91
IEP	7,435	699.64	40.39	650	850	0.92
No Accommodation	52,848	739.63	43.51	650	850	0.91
Accommodation	3,755	700.94	39.98	650	850	0.92
Am. Indian/Alaska Native	305	713.05	39.28	650	814	0.91
Asian	2,030	749.37	43.54	650	850	0.91
Black	2,553	720.44	42.14	650	850	0.92
Hispanic	19,427	718.44	41.68	650	850	0.92
White	28,659	749.71	41.28	650	850	0.90
Hawaiian/Pacific Islander	225	714.25	38.13	650	823	0.90
Two or More Races	3,398	745.74	44.20	650	850	0.91
Missing	*	*	*	*	*	*
No Economic Disadvantage	34,832	748.99	41.80	650	850	0.90
Economic Disadvantage	21,771	717.99	41.53	650	850	0.91
Female	27,969	738.96	44.14	650	850	0.91
Male	28,626	735.21	44.46	650	850	0.92
Nonbinary	*	*	*	*	*	*
Language Proficiency NA	46,892	743.00	42.76	650	850	0.91
Language Proficiency NEP	2,595	675.78	23.76	650	833	0.82
Language Proficiency LEP	5,671	710.43	33.83	650	840	0.88
Language Proficiency FEP	1,445	758.90	31.92	650	850	0.84
Not Migrant	56,392	737.21	44.30	650	850	0.92
Migrant	211	699.01	37.40	650	814	0.90

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Table Error! No text of specified style in document.**.8. Performance by Subgroup—ELA Grade 4**

Subgroup	N	Mean	SD	Min.	Max.	Alpha
No IEP	47,839	746.47	34.97	650	850	0.88
IEP	7,237	708.22	32.14	650	849	0.88
No Accommodation	50,937	743.65	36.30	650	850	0.89
Accommodation	4,139	714.32	33.88	650	850	0.89
Am. Indian/Alaska Native	334	725.48	34.04	650	820	0.89
Asian	2,022	749.61	37.72	650	850	0.89
Black	2,628	725.37	33.06	650	850	0.88
Hispanic	18,817	725.11	33.59	650	850	0.88
White	27,958	753.05	34.63	650	850	0.88
Hawaiian/Pacific Islander	183	720.91	33.47	650	837	0.87
Two or More Races	3,132	747.12	36.65	650	850	0.89
Missing	*	*	*	*	*	*
No Economic Disadvantage	34,172	751.83	35.38	650	850	0.88
Economic Disadvantage	20,904	724.47	32.94	650	850	0.88
Female	27,312	744.05	37.10	650	850	0.89
Male	27,753	738.87	36.60	650	850	0.89
Nonbinary	*	*	*	*	*	*

Subgroup	N	Mean	SD	Min.	Max.	Alpha
Language Proficiency NA	45,068	746.86	35.74	650	850	0.89
Language Proficiency NEP	2,195	688.58	19.80	650	771	0.74
Language Proficiency LEP	5,161	713.01	24.65	650	829	0.82
Language Proficiency FEP	2,652	748.44	26.30	650	850	0.83
Not Migrant	54,911	741.55	36.92	650	850	0.89
Migrant	165	705.70	24.68	656	771	0.85

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Table Error! No text of specified style in document.**.9. Performance by Subgroup—ELA Grade 5**

Subgroup	N	Mean	SD	Min.	Max.	Alpha
No IEP	49,113	751.42	33.20	650	850	0.88
IEP	7,485	712.23	29.97	650	846	0.87
No Accommodation	51,827	748.59	34.61	650	850	0.89
Accommodation	4,771	720.72	33.49	650	836	0.89
Am. Indian/Alaska Native	343	730.08	33.27	650	821	0.88
Asian	2,049	757.42	35.64	650	850	0.89
Black	2,636	732.00	32.72	650	833	0.88
Hispanic	19,714	730.98	33.20	650	850	0.88
White	28,408	756.79	32.72	650	850	0.88
Hawaiian/Pacific Islander	211	734.19	34.72	650	849	0.88
Two or More Races	3,234	753.54	34.17	650	850	0.88
Missing	*	*	*	*	*	*
No Economic Disadvantage	35,114	755.49	33.76	650	850	0.88
Economic Disadvantage	21,484	731.11	32.63	650	850	0.88
Female	27,856	750.34	35.56	650	850	0.89
Male	28,723	742.24	34.73	650	850	0.89
Nonbinary	19	771.37	41.08	670	834	0.90
Language Proficiency NA	45,775	751.46	33.80	650	850	0.88
Language Proficiency NEP	1,964	692.35	21.82	650	824	0.78
Language Proficiency LEP	4,793	714.57	24.50	650	810	0.80
Language Proficiency FEP	4,066	750.81	26.53	652	850	0.84
Not Migrant	56,433	746.34	35.33	650	850	0.89
Migrant	165	711.00	34.58	650	813	0.88

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Table Error! No text of specified style in document.**.10. Performance by Subgroup—ELA Grade 6**

Subgroup	N	Mean	SD	Min.	Max.	Alpha
No IEP	47,667	747.56	31.75	650	850	0.90
IEP	6,946	710.50	27.06	650	830	0.89
No Accommodation	50,199	745.01	32.87	650	850	0.90
Accommodation	4,414	718.24	31.26	650	844	0.91
Am. Indian/Alaska Native	347	726.25	28.11	650	797	0.89
Asian	2,122	754.98	33.31	650	850	0.90
Black	2,514	730.71	31.36	650	850	0.90
Hispanic	19,523	727.83	31.10	650	850	0.90
White	26,947	753.50	30.88	650	850	0.89
Hawaiian/Pacific Islander	201	728.41	28.39	672	796	0.89
Two or More Races	2,955	749.44	32.88	650	850	0.90
Missing	*	*	*	*	*	*
No Economic Disadvantage	34,027	752.05	31.95	650	850	0.90
Economic Disadvantage	20,586	727.63	30.44	650	843	0.90
Female	26,580	746.73	33.34	650	850	0.90
Male	28,019	739.15	33.32	650	850	0.91
Nonbinary	*	*	*	*	*	*
Language Proficiency NA	43,946	748.21	32.17	650	850	0.90
Language Proficiency NEP	1,840	693.06	18.60	650	808	0.80
Language Proficiency LEP	3,810	709.23	21.65	650	799	0.83
Language Proficiency FEP	5,017	739.66	25.93	650	850	0.87
Not Migrant	54,450	742.94	33.52	650	850	0.91
Migrant	163	711.98	26.38	651	807	0.89

Table Error! No text of specified style in document.**.11. Performance by Subgroup—ELA Grade 7**

Subgroup	N	Mean	SD	Min.	Max.	Alpha
No IEP	47,074	751.66	37.77	650	850	0.90
IEP	6,086	711.01	30.84	650	850	0.89
No Accommodation	49,000	749.29	38.65	650	850	0.90
Accommodation	4,160	720.01	35.96	650	850	0.90
Am. Indian/Alaska Native	308	729.81	34.94	660	822	0.89
Asian	1,942	762.72	38.90	650	850	0.90
Black	2,381	734.57	37.23	650	849	0.90
Hispanic	19,121	730.06	36.37	650	850	0.90
White	26,443	758.87	36.65	650	850	0.90
Hawaiian/Pacific Islander	202	731.02	35.42	650	824	0.89
Two or More Races	2,759	753.47	37.45	650	850	0.90
Missing	*	*	*	*	*	*
No Economic Disadvantage	33,578	756.91	37.79	650	850	0.90
Economic Disadvantage	19,582	730.01	35.70	650	850	0.90
Female	25,455	753.11	38.85	650	850	0.90
Male	27,685	741.36	38.75	650	850	0.91
Nonbinary	20	772.50	35.22	707	825	0.90

Subgroup	N	Mean	SD	Min.	Max.	Alpha
Language Proficiency NA	43,042	753.10	37.89	650	850	0.90
Language Proficiency NEP	1,883	690.54	20.26	650	810	0.81
Language Proficiency LEP	3,919	711.72	25.07	650	819	0.84
Language Proficiency FEP	4,316	742.91	31.55	650	850	0.87
Not Migrant	52,987	747.13	39.20	650	850	0.90
Migrant	173	708.66	32.80	650	825	0.89

Table Error! No text of specified style in document.**.12. Performance by Subgroup—ELA Grade 8**

Subgroup	N	Mean	SD	Min.	Max.	Alpha
No IEP	44,871	745.46	38.94	650	850	0.90
IEP	5,433	701.66	31.92	650	832	0.89
No Accommodation	46,357	743.13	39.82	650	850	0.90
Accommodation	3,947	712.55	38.88	650	850	0.91
Am. Indian/Alaska Native	291	725.85	37.97	650	842	0.90
Asian	1,867	758.11	41.48	650	850	0.90
Black	2,213	728.46	39.16	650	848	0.90
Hispanic	18,561	723.98	38.41	650	850	0.90
White	24,574	752.46	37.38	650	850	0.89
Hawaiian/Pacific Islander	194	726.80	38.36	650	814	0.89
Two or More Races	2,603	750.02	39.40	650	850	0.90
Missing	*	*	*	*	*	*
No Economic Disadvantage	31,968	750.46	38.92	650	850	0.90
Economic Disadvantage	18,336	723.75	37.75	650	850	0.90
Female	24,050	747.69	39.99	650	850	0.90
Male	26,229	734.32	40.07	650	850	0.91
Nonbinary	25	767.72	37.34	661	831	0.89
Language Proficiency NA	41,355	747.34	38.67	650	850	0.90
Language Proficiency NEP	1,836	677.79	20.03	650	789	0.78
Language Proficiency LEP	3,532	704.14	27.47	650	793	0.85
Language Proficiency FEP	3,581	732.73	31.75	650	845	0.87
Not Migrant	50,143	740.85	40.54	650	850	0.90
Migrant	161	700.65	35.32	650	795	0.89

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Table Error! No text of specified style in document.**.13. Performance by Subgroup—CSLA Grade 3**

Subgroup	N	Mean	SD	Min.	Max.	Alpha
No IEP	1,430	725.40	26.27	650	794	0.85
IEP	140	701.54	23.89	650	771	0.80
No Accommodation	1,302	724.31	26.82	650	794	0.86
Accommodation	268	718.19	26.95	650	777	0.85
Am. Indian/Alaska Native	*	*	*	*	*	*
Asian	*	*	*	*	*	*
Black	*	*	*	*	*	*
Hispanic	1,560	723.25	26.94	650	794	0.86
White	*	*	*	*	*	*
Hawaiian/Pacific Islander	*	*	*	*	*	*
Two or More Races	*	*	*	*	*	*
Missing	*	*	*	*	*	*
No Economic Disadvantage	594	723.26	28.01	650	794	0.86
Economic Disadvantage	976	723.27	26.27	650	791	0.85
Female	788	726.24	26.88	650	794	0.85
Male	782	720.27	26.67	650	791	0.86
Nonbinary	*	*	*	*	*	*
Language Proficiency NA	*	*	*	*	*	*
Language Proficiency NEP	976	717.44	27.46	650	794	0.86
Language Proficiency LEP	594	732.84	23.07	650	791	0.84
Language Proficiency FEP	*	*	*	*	*	*
Not Migrant	1,558	723.37	26.97	650	794	0.86
Migrant	*	*	*	*	*	*

*n-count less than 16

Table Error! No text of specified style in document.**.14. Performance by Subgroup—CSLA Grade 4**

Subgroup	N	Mean	SD	Min.	Max.	Alpha
No IEP	1,225	725.50	23.44	650	793	0.84
IEP	124	695.46	20.64	650	744	0.82
No Accommodation	1,124	723.79	24.59	650	793	0.85
Accommodation	225	717.48	25.02	650	776	0.86
Am. Indian/Alaska Native	*	*	*	*	*	*
Asian	*	*	*	*	*	*
Black	*	*	*	*	*	*
Hispanic	1,344	722.67	24.75	650	793	0.85
White	*	*	*	*	*	*
Hawaiian/Pacific Islander	*	*	*	*	*	*
Two or More Races	*	*	*	*	*	*
Missing	*	*	*	*	*	*
No Economic Disadvantage	563	720.93	23.87	650	783	0.84
Economic Disadvantage	786	724.03	25.32	650	793	0.86
Female	629	725.72	24.60	650	793	0.84
Male	720	720.13	24.63	650	793	0.85
Nonbinary	*	*	*	*	*	*

Subgroup	N	Mean	SD	Min.	Max.	Alpha
Language Proficiency NA	*	*	*	*	*	*
Language Proficiency NEP	890	718.16	25.16	650	793	0.85
Language Proficiency LEP	459	731.61	21.37	663	783	0.83
Language Proficiency FEP	*	*	*	*	*	*
Not Migrant	1,338	722.75	24.77	650	793	0.85
Migrant	*	*	*	*	*	*

*n-count less than 16

Table Error! No text of specified style in document.**.15. Performance by Subgroup—Science Grade 5**

Subgroup	N	Mean	SD	Min.	Max.	Alpha
No IEP	49,096	741.60	31.82	650	850	0.90
IEP	7,441	707.61	33.63	650	833	0.88
No Accommodation	52,278	738.85	33.40	650	850	0.90
Accommodation	4,259	715.96	35.04	650	840	0.90
Am. Indian/Alaska Native	337	719.99	32.77	650	808	0.88
Asian	2,073	745.52	34.80	650	840	0.91
Black	2,632	722.35	32.99	650	819	0.89
Hispanic	19,835	721.09	32.78	650	840	0.89
White	28,253	748.58	29.83	650	847	0.89
Hawaiian/Pacific Islander	205	722.42	34.53	650	814	0.89
Two or More Races	3,199	744.86	32.12	650	850	0.90
Missing	*	*	*	*	*	*
No Economic Disadvantage	35,095	746.34	31.54	650	850	0.90
Economic Disadvantage	21,442	722.05	32.64	650	832	0.88
Female	27,831	736.10	33.23	650	850	0.90
Male	28,687	738.11	34.83	650	847	0.91
Nonbinary	19	757.37	32.45	667	801	0.91
Language Proficiency NA	45,392	742.61	31.92	650	850	0.90
Language Proficiency NEP	2,362	688.73	28.04	650	820	0.79
Language Proficiency LEP	4,747	706.62	26.51	650	790	0.78
Language Proficiency FEP	4,036	739.64	26.52	650	830	0.86
Not Migrant	56,366	737.23	34.02	650	850	0.91
Migrant	171	704.01	32.52	650	793	0.88

*n-count less than 16

Table Error! No text of specified style in document.**.16. Performance by Subgroup—Science Grade 8**

Subgroup	N	Mean	SD	Min.	Max.	Alpha
No IEP	44,761	737.62	32.41	650	850	0.92
IEP	5,358	704.67	33.87	650	801	0.89
No Accommodation	46,328	735.88	33.29	650	850	0.92
Accommodation	3,791	712.32	36.59	650	811	0.92
Am. Indian/Alaska Native	286	721.21	33.58	650	784	0.91
Asian	1,898	745.77	33.36	650	827	0.93
Black	2,196	719.44	34.06	650	821	0.91
Hispanic	18,714	718.92	33.73	650	812	0.91
White	24,258	745.65	29.29	650	850	0.92
Hawaiian/Pacific Islander	194	720.01	35.42	650	789	0.92
Two or More Races	2,572	741.90	31.18	650	838	0.92
Missing	*	*	*	*	*	*
No Economic Disadvantage	31,823	742.72	31.38	650	850	0.92
Economic Disadvantage	18,296	719.08	33.50	650	808	0.91
Female	23,946	734.53	32.43	650	850	0.92
Male	26,148	733.67	35.60	650	844	0.93
Nonbinary	25	755.68	29.12	655	792	0.93
Language Proficiency NA	40,822	740.21	31.29	650	850	0.92
Language Proficiency NEP	2,230	680.81	28.35	650	786	0.75
Language Proficiency LEP	3,509	704.42	28.15	650	787	0.79
Language Proficiency FEP	3,558	726.59	27.39	650	809	0.87
Not Migrant	49,945	734.22	34.05	650	850	0.93
Migrant	174	698.30	34.90	650	776	0.88

*n-count less than 16

Table Error! No text of specified style in document.**.17. Performance by Subgroup—Science Grade 11**

Subgroup	N	Mean	SD	Min.	Max.	Alpha
No IEP	31,248	731.66	28.73	650	836	0.87
IEP	3,199	706.49	28.49	650	790	0.79
No Accommodation	31,817	730.49	29.19	650	836	0.87
Accommodation	2,630	715.19	31.14	650	812	0.87
Am. Indian/Alaska Native	194	722.58	24.89	650	779	0.81
Asian	991	734.76	30.72	650	806	0.89
Black	1,655	715.39	30.17	650	806	0.84
Hispanic	14,803	719.15	28.18	650	804	0.83
White	15,199	739.93	26.90	650	836	0.87
Hawaiian/Pacific Islander	126	718.23	27.68	650	783	0.85
Two or More Races	1,479	735.93	27.72	650	823	0.87
Missing	0	-	-	-	-	-
No Economic Disadvantage	21,136	735.52	28.66	650	836	0.88
Economic Disadvantage	13,311	719.49	28.44	650	804	0.84
Female	16,094	729.24	27.52	650	823	0.86
Male	18,320	729.37	31.34	650	836	0.89
Nonbinary	33	743.73	30.42	650	784	0.89

Subgroup	N	Mean	SD	Min.	Max.	Alpha
Language Proficiency NA	29,460	733.75	27.57	650	836	0.87
Language Proficiency NEP	1,173	685.67	26.35	650	767	0.65
Language Proficiency LEP	2,273	700.36	24.71	650	770	0.61
Language Proficiency FEP	1,541	720.62	22.68	650	780	0.73
Not Migrant	34,320	729.41	29.58	650	836	0.88
Migrant	127	704.55	31.13	650	771	0.83

Appendix H: Summary Statistics for Points Earned by Subclaim

Table Error! No text of specified style in document.**.1. Points Earned Summary by Subclaim—Mathematics**

Subclaim	Grade	Mean	SD	Min.	Max.	Average % Correct
Subclaim A	3	10.7	5.7	0	22	48.70%
	4	11.9	6.3	0	24	49.64%
	5	10.1	6.3	0	23	43.71%
	6	7.5	4.9	0	20	37.37%
	7	7.6	5.1	0	23	32.91%
	8	10.0	5.4	0	24	41.94%
Subclaim B	3	4.8	2.6	0	9	53.30%
	4	2.6	2.0	0	7	36.90%
	5	4.0	2.2	0	8	50.76%
	6	4.1	2.6	0	11	36.95%
	7	2.6	1.8	0	8	32.86%
	8	2.1	1.9	0	7	30.09%
Subclaim C	3	3.2	3.0	0	11	29.44%
	4	3.4	3.1	0	11	31.07%
	5	2.5	3.0	0	11	22.60%
	6	3.7	3.0	0	11	33.64%
	7	3.8	3.3	0	11	34.58%
	8	2.0	2.5	0	11	18.53%
Subclaim D	3	2.6	2.5	0	9	28.54%
	4	3.1	2.5	0	9	34.77%
	5	3.1	2.6	0	9	34.63%
	6	2.7	2.7	0	9	30.31%
	7	2.3	2.5	0	9	25.39%
	8	1.7	2.4	0	9	18.64%

Table Error! No text of specified style in document.**.2. Points Earned Summary by Subclaim—ELA**

Subclaim	Grade	Mean	SD	Min.	Max.	Average % Correct
RL	3	8.8	4.2	0	17	51.50%
	4	8.5	4.1	0	20	42.28%
	5	7.5	3.6	0	18	41.57%
	6	7.7	4.0	0	16	48.45%
	7	8.2	4.0	0	18	45.60%
	8	8.5	4.3	0	18	47.20%
RI	3	7.3	3.5	0	14	51.97%
	4	6.5	4.1	0	18	36.10%
	5	6.1	3.8	0	18	33.71%
	6	9.5	4.9	0	22	43.05%
	7	10.4	5.3	0	22	47.35%
	8	9.3	4.9	0	22	42.30%
RV	3	6.5	3.0	0	10	64.70%
	4	5.0	2.2	0	8	62.10%
	5	4.9	2.5	0	8	60.94%
	6	5.3	2.5	0	10	53.41%
	7	5.7	2.9	0	10	56.65%
	8	6.2	2.9	0	10	61.90%
WE (unweighted)	3	1.1	1.0	0	6	18.76%
	4	1.8	1.3	0	7	26.47%
	5	2.2	1.5	0	7	31.17%
	6	2.3	1.7	0	8	28.36%
	7	2.4	1.8	0	8	29.76%
	8	2.4	1.9	0	8	30.22%
WKL	3	1.2	1.1	0	6	19.91%
	4	1.4	1.4	0	6	23.52%
	5	1.7	1.5	0	6	27.63%
	6	1.8	1.6	0	6	29.93%
	7	2.0	1.7	0	6	34.10%
	8	2.2	1.8	0	6	36.96%

Note. RL = Reading: Literary Text, RI = Reading: Informational Text, RV = Reading: Vocabulary, WE = Writing: Written Expression, WKL = Writing: Knowledge and Use of Language Conventions. Results for WE are unweighted.

Table Error! No text of specified style in document.**.3. Points Earned Summary by Subclaim—CSLA**

Subclaim	Grade	Mean	SD	Min.	Max.	Average % Correct
RL	3	4.6	3.6	0	16	27.20%
	4	7.5	4.0	0	18	37.56%
RI	3	3.9	2.9	0	14	28.09%
	4	4.7	3.1	0	16	25.97%
RV	3	4.2	2.5	0	10	41.73%
	4	4.3	2.4	0	8	53.92%
WE (unweighted)	3	1.7	1.5	0	6	27.85%
	4	2.4	1.8	0	7	34.57%
WKL	3	1.5	1.6	0	6	25.52%
	4	1.7	1.7	0	6	28.70%

Note. RL = Reading: Literary Text, RI = Reading: Informational Text, RV = Reading: Vocabulary, WE = Writing: Written Expression, WKL = Writing: Knowledge and Use of Language Conventions. Results for WE are unweighted.

Table Error! No text of specified style in document.**.4. Points Earned Summary by Content Standard—Science**

Content Standard	Grade	Mean	SD	Min.	Max.	Average % Correct
Physical Science	5	7.6	3.9	0	18	41.97%
	8	8.6	4.5	0	21	41.05%
	11	5.2	3.1	0	15	34.48%
Life Science	5	5.2	2.6	0	12	43.70%
	8	7.7	5.1	0	22	35.25%
	11	5.5	3.0	0	14	39.04%
Earth and Space Science	5	8.9	4.8	0	21	42.31%
	8	6.6	4.3	0	18	36.78%
	11	4.4	2.9	0	13	34.02%

Appendix I: Classical Item-Level Statistics

Table Error! No text of specified style in document.**.1. SR Item Classical Statistics—Mathematics Grade 3**

Item	Omit %	*P*-value	Item–Total Correlation
1	1.71%	0.28	0.58
2	4.16%	0.46	0.57
3	2.10%	0.63	0.63
4	1.20%	0.31	0.55
5	0.75%	0.66	0.59
6	1.16%	0.29	0.65
7	0.19%	0.46	0.52
8	0.18%	0.66	0.58
9	0.09%	0.81	0.43
10	2.07%	0.45	0.62
11	0.29%	0.26	0.59
12	1.37%	0.62	0.54
13	0.61%	0.32	0.57
14	0.47%	0.77	0.33
15	0.43%	0.45	0.42
16	2.05%	0.61	0.50
17	0.53%	0.65	0.53
18	2.74%	0.30	0.60
19	0.32%	0.32	0.62
20	0.18%	0.61	0.58
21	0.80%	0.60	0.47
22	0.04%	0.75	0.47
23	0.16%	0.77	0.54
24	2.04%	0.66	0.39
25	2.06%	0.65	0.55
26	3.01%	0.45	0.62
27	1.78%	0.28	0.66
28	0.44%	0.43	0.69
29	2.54%	0.32	0.79
30	0.35%	0.26	0.78
31	0.63%	0.29	0.76

Table Error! No text of specified style in document.**.2. CR Item Classical Statistics—Mathematics Grade 3**

Item	Max. Points	Omit %	0%	1%	2%	3%	4%	5%	6%	*P*-value	Item-Total Correlation
1	3	1.87	53.47	14.36	15.21	15.08	.	.	.	0.30	0.77
2	3	3.68	45.94	19.02	17.77	13.60	.	.	.	0.32	0.75
3	4	2.54	34.58	22.58	20.69	13.31	6.30	.	.	0.32	0.79
4	4	0.35	46.75	22.98	14.03	10.17	5.71	.	.	0.26	0.78
5	6	0.63	22.37	39.49	12.83	6.03	9.21	2.46	6.98	0.29	0.76

Table Error! No text of specified style in document.**.3. SR Item Classical Statistics—Mathematics Grade 4**

Item	Omit %	*P*-value	Item–Total Correlation
1	1.09%	0.34	0.62
2	2.50%	0.23	0.58
3	1.92%	0.33	0.60
4	3.84%	0.39	0.63
5	0.18%	0.42	0.64
6	1.12%	0.34	0.54
7	1.61%	0.18	0.45
8	0.73%	0.28	0.66
9	0.05%	0.73	0.49
10	0.09%	0.41	0.55
11	0.50%	0.59	0.45
12	0.06%	0.76	0.45
13	0.07%	0.39	0.41
14	0.07%	0.78	0.49
15	1.05%	0.66	0.56
16	0.31%	0.74	0.54
17	1.23%	0.53	0.68
18	2.69%	0.44	0.51
19	1.63%	0.51	0.48
20	3.35%	0.70	0.57
21	0.82%	0.52	0.64
22	0.63%	0.40	0.63
23	1.36%	0.25	0.70
24	0.06%	0.48	0.71
25	0.50%	0.46	0.75
26	2.16%	0.39	0.77
27	0.93%	0.37	0.81
28	0.61%	0.37	0.82

Table Error! No text of specified style in document.**.4. CR Item Classical Statistics—Mathematics Grade 4**

Item	Max. Points	Omit %	0%	1%	2%	3%	4%	5%	6%	*P*-value	Item-Total Correlation
1	3	5.18	62.16	25.26	5.71	1.69	.	.	.	0.14	0.63
2	3	1.03	29.20	52.68	4.92	12.17	.	.	.	0.33	0.65
3	4	2.16	44.32	7.53	13.56	6.92	25.51	.	.	0.39	0.77
4	4	0.93	33.12	20.79	18.28	16.15	10.73	.	.	0.37	0.81
5	6	0.61	23.21	20.93	11.81	20.28	7.92	7.60	7.65	0.37	0.82

Table Error! No text of specified style in document.**.5. SR Item Classical Statistics—Mathematics Grade 5**

Item	Omit %	*P*-value	Item–Total Correlation
1	0.23%	0.41	0.63
2	1.23%	0.57	0.53
3	0.88%	0.45	0.50
4	3.94%	0.35	0.66
5	0.50%	0.33	0.71
6	0.28%	0.69	0.54
7	0.09%	0.37	0.69
8	0.10%	0.57	0.53
9	0.05%	0.75	0.42
10	0.10%	0.52	0.44
11	0.06%	0.30	0.56
12	1.83%	0.36	0.55
13	0.34%	0.47	0.42
14	0.67%	0.45	0.46
15	0.41%	0.61	0.51
16	0.43%	0.62	0.42
17	0.57%	0.41	0.68
18	0.02%	0.67	0.40
19	0.18%	0.51	0.60
20	0.81%	0.21	0.60
21	0.12%	0.47	0.56
22	0.04%	0.56	0.72
23	0.27%	0.46	0.62
24	3.48%	0.31	0.74
25	0.73%	0.41	0.67
26	0.35%	0.38	0.81

Table Error! No text of specified style in document.**.6. CR Item Classical Statistics—Mathematics Grade 5**

Item	Max. Points	Omit %	0%	1%	2%	3%	4%	5%	6%	*P*-value	Item-Total Correlation
1	3	3.11	55.98	9.07	18.24	13.60	.	.	.	0.29	0.75
2	3	4.75	46.24	20.14	18.34	10.53	.	.	.	0.29	0.75
3	4	2.37	62.82	4.24	18.47	4.58	7.52	.	.	0.21	0.77
4	4	1.63	62.99	10.57	10.57	7.63	6.61	.	.	0.20	0.69
5	6	0.35	15.94	28.17	13.70	16.00	10.19	8.61	7.03	0.38	0.81

Table Error! No text of specified style in document.**.7. SR Item Classical Statistics—Mathematics Grade 6**

Item	Omit %	*P*-value	Item–Total Correlation
1	0.80%	0.47	0.58
2	1.01%	0.17	0.51
3	0.98%	0.30	0.38
4	0.66%	0.19	0.57
5	2.21%	0.25	0.60
6	0.12%	0.23	0.45
7	0.28%	0.27	0.62
8	0.10%	0.82	0.42
9	0.10%	0.53	0.32
10	0.34%	0.26	0.52
11	0.06%	0.36	0.50
12	0.26%	0.55	0.54
13	0.26%	0.54	0.51
14	0.24%	0.55	0.51
15	1.66%	0.44	0.66
16	0.74%	0.51	0.56
17	1.52%	0.23	0.46
18	0.35%	0.24	0.38
19	0.23%	0.49	0.36
20	0.10%	0.24	0.57
21	0.10%	0.32	0.68
22	0.06%	0.42	0.65
23	0.26%	0.19	0.49
24	0.36%	0.47	0.76
25	0.16%	0.41	0.71
26	0.89%	0.34	0.83

Table Error! No text of specified style in document.**.8. CR Item Classical Statistics—Mathematics Grade 6**

Item	Max. Points	Omit %	0%	1%	2%	3%	4%	5%	6%	*P*-value	Item-Total Correlation
1	3	1.92	56.64	18.90	14.00	8.54	.	.	.	0.24	0.76
2	3	0.16	15.25	56.16	18.47	9.96	.	.	.	0.41	0.71
3	4	2.08	43.33	25.45	16.17	8.84	4.13	.	.	0.25	0.77
4	4	1.74	41.59	13.90	8.89	18.65	15.23	.	.	0.37	0.79
5	6	0.89	33.15	15.76	11.88	11.61	10.66	11.18	4.88	0.34	0.83

Table Error! No text of specified style in document.**.9. SR Item Classical Statistics—Mathematics Grade 7**

Item	Omit %	*P*-value	Item–Total Correlation
1	0.25%	0.30	0.63
2	0.83%	0.30	0.66
3	0.47%	0.48	0.42
4	0.24%	0.45	0.62
5	0.11%	0.20	0.66
6	1.06%	0.12	0.61
7	0.30%	0.12	0.44
8	0.36%	0.34	0.49
9	0.32%	0.17	0.56
10	0.49%	0.50	0.33
11	0.12%	0.35	0.30
12	0.16%	0.27	0.27
13	0.09%	0.32	0.48
14	0.59%	0.19	0.36
15	0.47%	0.37	0.43
16	0.56%	0.43	0.43
17	2.20%	0.60	0.41
18	0.28%	0.72	0.41
19	0.02%	0.42	0.54
20	1.83%	0.41	0.68
21	0.05%	0.31	0.52
22	0.02%	0.37	0.52
23	0.68%	0.26	0.49
24	0.36%	0.22	0.67
25	1.20%	0.27	0.82

Table Error! No text of specified style in document.**.10. CR Item Classical Statistics—Mathematics Grade 7**

Item	Max. Points	Omit %	0%	1%	2%	3%	4%	5%	6%	*P*-value	Item-Total Correlation
1	3	3.59	29.84	19.14	23.80	23.63	.	.	.	0.46	0.74
2	3	3.13	57.14	20.64	12.41	6.67	.	.	.	0.22	0.67
3	4	2.56	55.66	11.69	23.76	2.05	4.27	.	.	0.21	0.73
4	4	2.49	35.96	14.00	15.53	12.80	19.22	.	.	0.40	0.80
5	6	1.20	43.72	11.34	13.02	11.14	8.29	7.49	3.79	0.27	0.82

Table Error! No text of specified style in document.**.11. SR Item Classical Statistics—Mathematics Grade 8**

Item	Omit %	*P*-value	Item–Total Correlation
1	0.46%	0.15	0.56
2	0.13%	0.26	0.49
3	0.18%	0.34	0.58
4	1.56%	0.21	0.61
5	0.52%	0.62	0.45
6	0.31%	0.36	0.44
7	0.34%	0.36	0.60
8	0.04%	0.36	0.50
9	0.66%	0.18	0.50
10	0.09%	0.47	0.52
11	0.04%	0.61	0.42
12	0.10%	0.43	0.30
13	0.08%	0.46	0.44
14	0.68%	0.55	0.49
15	0.20%	0.41	0.53
16	0.18%	0.71	0.40
17	0.06%	0.48	0.29
18	0.13%	0.65	0.58
19	0.62%	0.43	0.45
20	0.07%	0.41	0.52
21	0.26%	0.26	0.68
22	0.14%	0.39	0.62
23	0.37%	0.25	0.75
24	2.01%	0.12	0.68
25	2.10%	0.17	0.79

Table Error! No text of specified style in document.**.12. CR Item Classical Statistics—Mathematics Grade 8**

Item	Max. Points	Omit %	0%	1%	2%	3%	4%	5%	6%	*P*-value	Item-Total Correlation
1	3	2.90	58.52	17.44	11.34	9.80	.	.	.	0.23	0.78
2	3	2.01	78.27	9.86	4.66	5.20	.	.	.	0.12	0.68
3	4	4.58	68.46	9.96	8.60	4.96	3.44	.	.	0.14	0.75
4	4	2.66	39.81	21.89	17.24	14.16	4.24	.	.	0.29	0.76
5	6	2.10	64.25	7.98	6.27	6.59	6.87	3.73	2.20	0.17	0.79

Table Error! No text of specified style in document.**.13. SR Item Classical Statistics—ELA Grade 3**

Item	Omit %	*P*-value	Item–Total Correlation
1	0.02%	0.64	0.57
2	0.10%	0.44	0.54
3	0.09%	0.55	0.55
4	0.07%	0.62	0.45
5	0.11%	0.36	0.34
6	0.88%	0.56	0.52
7	0.56%	0.62	0.61
8	0.69%	0.53	0.68
9	0.67%	0.57	0.53
10	0.08%	0.72	0.63
11	0.11%	0.62	0.62
12	0.15%	0.56	0.71
13	0.07%	0.61	0.64
14	0.10%	0.68	0.54
15	0.13%	0.50	0.51
16	0.35%	0.63	0.72
17	0.41%	0.64	0.71
18	0.56%	0.61	0.66
19	0.46%	0.50	0.59

Table Error! No text of specified style in document.**.14. CR Item Classical Statistics—ELA Grade 3**

Item	Max. Points	Omit %	0%	1%	2%	3%	*P*-value	Item-Total Correlation
PCR_1_WE	3	0.98	46.49	45.20	7.23	0.09	0.20	0.61
PCR_1_WKL	3	0.98	48.28	44.44	6.09	0.20	0.19	0.59
PCR_2_WE	3	1.05	50.24	45.35	3.30	0.06	0.17	0.73
PCR_2_WKL	3	1.05	46.43	44.78	7.55	0.18	0.20	0.61

Table Error! No text of specified style in document.**.15. SR Item Classical Statistics—ELA Grade 4**

Item	Omit %	*P*-value	Item–Total Correlation
1	0.29%	0.64	0.55
2	0.49%	0.25	0.47
3	0.36%	0.38	0.44
4	0.43%	0.25	0.35
5	0.10%	0.35	0.34
6	0.04%	0.42	0.40
7	0.06%	0.65	0.62
8	0.09%	0.53	0.49
9	0.42%	0.39	0.52
10	1.50%	0.40	0.47
11	0.61%	0.30	0.53
12	0.90%	0.40	0.36
13	1.13%	0.43	0.67
14	0.70%	0.45	0.38
15	1.34%	0.38	0.47
16	0.03%	0.77	0.55
17	0.01%	0.68	0.52
18	0.06%	0.39	0.37
19	0.06%	0.68	0.63
20	0.09%	0.29	0.37
21	0.04%	0.49	0.51

Table Error! No text of specified style in document.**.16. CR Item Classical Statistics—ELA Grade 4**

Item	Max. Points	Omit %	0%	1%	2%	3%	4%	*P*-value	Item-Total Correlation
PCR_1_WE	3	0.89	28.98	45.64	20.88	3.60	.	0.33	0.74
PCR_1_WKL	3	0.89	43.91	39.33	13.04	2.83	.	0.25	0.70
PCR_2_WE	4	0.57	30.87	54.42	12.07	1.75	0.32	0.21	0.75
PCR_2_WKL	3	0.57	47.22	40.53	10.02	1.66	.	0.22	0.68

Table Error! No text of specified style in document.**.17. SR Item Classical Statistics—ELA Grade 5**

Item	Omit %	*P*-value	Item–Total Correlation
1	0.01%	0.29	0.41
2	0.09%	0.22	0.29
3	0.07%	0.47	0.54
4	0.04%	0.59	0.50
5	0.13%	0.67	0.58
6	0.17%	0.49	0.46
7	0.29%	0.38	0.50
8	0.35%	0.49	0.43
9	0.26%	0.56	0.45
10	0.50%	0.37	0.36
11	0.44%	0.39	0.49
12	0.12%	0.43	0.49
13	0.11%	0.38	0.43
14	0.22%	0.52	0.53
15	0.16%	0.57	0.55
16	0.41%	0.33	0.55
17	0.24%	0.30	0.26
18	0.37%	0.70	0.59
19	0.68%	0.43	0.48
20	0.95%	0.24	0.31

Table Error! No text of specified style in document.**.18. CR Item Classical Statistics—ELA Grade 5**

Item	Max. Points	Omit %	0%	1%	2%	3%	4%	*P*-value	Item-Total Correlation
PCR_1_WE	3	0.58	17.72	37.10	36.13	8.47	.	0.45	0.78
PCR_1_WKL	3	0.58	37.87	35.63	20.78	5.14	.	0.31	0.74
PCR_2_WE	4	1.94	37.67	40.76	16.84	2.50	0.29	0.21	0.79
PCR_2_WKL	3	1.94	42.68	40.31	13.03	2.04	.	0.24	0.74

Table Error! No text of specified style in document.**.19. SR Item Classical Statistics—ELA Grade 6**

Item	Omit %	*P*-value	Item–Total Correlation
1	0.35%	0.43	0.53
2	0.46%	0.45	0.50
3	0.52%	0.47	0.46
4	0.63%	0.47	0.51
5	0.03%	0.51	0.56
6	0.01%	0.77	0.56
7	0.03%	0.47	0.51
8	0.04%	0.42	0.47
9	0.06%	0.40	0.55
10	0.06%	0.46	0.50
11	0.01%	0.51	0.52
12	0.03%	0.50	0.52
13	0.02%	0.61	0.65
14	0.06%	0.49	0.50
15	0.07%	0.27	0.39
16	0.08%	0.38	0.53
17	0.10%	0.51	0.62
18	0.02%	0.37	0.40
19	0.01%	0.50	0.55
20	0.03%	0.51	0.48
21	0.05%	0.68	0.66
22	0.03%	0.56	0.64

Table Error! No text of specified style in document.**.20. CR Item Classical Statistics—ELA Grade 6**

Item	Max. Points	Omit %	0%	1%	2%	3%	4%	*P*-value	Item-Total Correlation
PCR_1_WE	4	1.15	29.59	42.92	22.58	3.57	0.19	0.25	0.81
PCR_1_WKL	3	1.15	38.67	35.95	21.03	3.20	.	0.29	0.77
PCR_2_WE	4	0.88	27.01	35.25	24.73	9.56	2.57	0.31	0.79
PCR_2_WKL	3	0.88	42.63	30.29	19.72	6.48	.	0.30	0.76

Table Error! No text of specified style in document.**.21. SR Item Classical Statistics—ELA Grade 7**

Item	Omit %	*P*-value	Item–Total Correlation
1	0.19%	0.66	0.61
2	0.32%	0.41	0.45
3	0.28%	0.61	0.62
4	0.26%	0.46	0.53
5	0.09%	0.47	0.53
6	0.10%	0.47	0.47
7	0.16%	0.58	0.60
8	0.12%	0.54	0.58
9	0.15%	0.45	0.43
10	0.19%	0.53	0.55
11	0.07%	0.53	0.55
12	0.09%	0.46	0.58
13	0.06%	0.35	0.39
14	0.06%	0.44	0.64
15	0.02%	0.58	0.43
16	0.04%	0.48	0.40
17	0.17%	0.39	0.54
18	0.01%	0.52	0.44
19	0.04%	0.58	0.34
20	0.04%	0.41	0.53
21	0.04%	0.46	0.39
22	0.03%	0.77	0.53
23	0.04%	0.32	0.35

Table Error! No text of specified style in document.**.22. CR Item Classical Statistics—ELA Grade 7**

Item	Max. Points	Omit %	0%	1%	2%	3%	4%	*P*-value	Item-Total Correlation
PCR_1_WE	4	1.62	30.55	37.39	23.52	6.21	0.71	0.26	0.79
PCR_1_WKL	3	1.62	35.39	35.20	21.43	6.36	.	0.32	0.78
PCR_2_WE	4	1.17	24.33	31.47	32.43	8.96	1.65	0.32	0.84
PCR_2_WKL	3	1.17	33.78	31.08	26.73	7.24	.	0.35	0.80

Table Error! No text of specified style in document.**.23. SR Item Classical Statistics—ELA Grade 8**

Item	Omit %	*P*-value	Item–Total Correlation
1	0.17%	0.64	0.60
2	0.24%	0.50	0.55
3	0.09%	0.27	0.27
4	0.11%	0.61	0.61
5	0.02%	0.73	0.45
6	0.08%	0.56	0.52
7	0.22%	0.28	0.38
8	0.09%	0.46	0.55
9	0.16%	0.31	0.41
10	0.12%	0.42	0.58
11	0.12%	0.45	0.56
12	0.05%	0.73	0.41
13	0.01%	0.59	0.58
14	0.06%	0.37	0.48
15	0.07%	0.53	0.56
16	0.03%	0.41	0.35
17	0.07%	0.61	0.55
18	0.03%	0.57	0.60
19	0.10%	0.49	0.52
20	0.13%	0.45	0.49
21	0.23%	0.61	0.59
22	0.27%	0.49	0.45
23	0.28%	0.26	0.46

Table Error! No text of specified style in document.**.24. CR Item Classical Statistics—ELA Grade 8**

Item	Max. Points	Omit %	0%	1%	2%	3%	4%	*P*-value	Item-Total Correlation
PCR_1_WE	4	2.30	30.88	29.82	24.67	10.14	2.20	0.30	0.84
PCR_1_WKL	3	2.30	32.77	30.55	23.61	10.76	.	0.37	0.82
PCR_2_WE	4	2.11	28.33	30.83	28.09	8.69	1.94	0.30	0.82
PCR_2_WKL	3	2.11	31.89	30.87	26.06	9.07	.	0.37	0.81

Table Error! No text of specified style in document.**.25. SR Item Classical Statistics—CSLA Grade 3**

Item	Omit %	*P*-value	Item–Total Correlation
1	0.51%	0.61	0.57
2	0.57%	0.28	0.47
3	0.95%	0.26	0.27
4	2.10%	0.27	0.52
5	2.41%	0.27	0.54
6	1.78%	0.25	0.36
7	1.97%	0.40	0.61
8	1.84%	0.28	0.37
9	2.03%	0.20	0.17
10	2.16%	0.28	0.39
11	1.65%	0.50	0.59
12	2.86%	0.26	0.48
13	3.49%	0.34	0.48
14	4.32%	0.20	0.39
15	0.89%	0.43	0.46
16	1.72%	0.49	0.56
17	2.16%	0.21	0.46
18	0.83%	0.30	0.36
19	2.10%	0.12	0.42

Table Error! No text of specified style in document.**.26. CR Item Classical Statistics—CSLA Grade 3**

Item	Max. Points	Omit %	0%	1%	2%	3%	*P*-value	Item-Total Correlation
PCR_1_WE	3	4.57	39.83	30.94	18.93	5.72	0.29	0.78
PCR_1_WKL	3	4.57	44.73	31.39	14.04	5.27	0.25	0.65
PCR_2_WE	3	4.26	36.98	41.23	12.77	4.76	0.27	0.74
PCR_2_WKL	3	4.26	43.65	32.40	13.41	6.29	0.26	0.59

Table Error! No text of specified style in document.**.27. SR Item Classical Statistics—CSLA Grade 4**

Item	Omit %	*P*-value	Item–Total Correlation
1	0.30%	0.68	0.56
2	1.04%	0.18	0.40
3	1.11%	0.53	0.57
4	1.33%	0.29	0.50
5	1.33%	0.61	0.56
6	1.04%	0.55	0.56
7	3.77%	0.48	0.53
8	5.10%	0.12	0.20
9	8.73%	0.19	0.55
10	4.29%	0.25	0.33
11	2.37%	0.44	0.51
12	4.73%	0.40	0.54
13	3.55%	0.37	0.40
14	4.07%	0.25	0.25
15	4.66%	0.24	0.22
16	5.03%	0.27	0.42
17	7.77%	0.23	0.22
18	0.67%	0.54	0.43
19	0.74%	0.62	0.51
20	0.52%	0.24	0.28
21	0.81%	0.23	0.35

Table Error! No text of specified style in document.**.28. CR Item Classical Statistics—CSLA Grade 4**

Item	Max. Points	Omit %	0%	1%	2%	3%	4%	*P*-value	Item-Total Correlation
PCR_1_WE	4	2.74	32.03	37.72	19.75	6.73	1.04	0.25	0.78
PCR_1_WKL	3	2.74	44.23	34.91	11.46	6.66	.	0.26	0.57
PCR_2_WE	3	2.51	28.99	15.61	34.02	18.86	.	0.47	0.73
PCR_2_WKL	3	2.51	38.17	34.84	14.05	10.43	.	0.31	0.58

Table Error! No text of specified style in document.**.29. SR Item Classical Statistics—Science Grade 5**

Item	Omit %	*P*-value	Item–Total Correlation
1	0.57%	0.62	0.42
2	0.51%	0.52	0.48
3	0.41%	0.36	0.60
4	0.70%	0.23	0.25
5	0.21%	0.55	0.35
6	0.15%	0.71	0.44
7	0.13%	0.86	0.39
8	0.23%	0.36	0.31
9	0.14%	0.75	0.54
10	1.23%	0.26	0.32
11	0.02%	0.62	0.54
12	0.04%	0.73	0.50
13	0.29%	0.30	0.19
14	0.18%	0.17	0.36
15	0.04%	0.77	0.45
16	0.10%	0.40	0.44
17	0.41%	0.33	0.54
18	0.17%	0.24	0.43
19	0.20%	0.76	0.40
20	1.13%	0.55	0.41
21	0.35%	0.53	0.35
22	0.14%	0.73	0.27
23	0.16%	0.73	0.32
24	1.00%	0.50	0.39
25	0.69%	0.58	0.56
26	0.02%	0.57	0.49
27	0.04%	0.51	0.36
28	0.06%	0.33	0.37
29	0.10%	0.58	0.41
30	0.10%	0.66	0.42
31	0.03%	0.60	0.45

Table Error! No text of specified style in document.**.30. CR Item Classical Statistics—Science Grade 5**

Item	Max. Points	Omit %	0%	1%	2%	*P*-value	Item-Total Correlation
1	2	3.58	83.03	10.84	2.55	0.08	0.40
2	2	3.60	85.63	8.50	2.27	0.07	0.45
3	2	1.13	46.39	28.22	24.25	0.38	0.62
4	2	3.32	68.88	16.36	11.43	0.20	0.61
5	2	2.50	65.04	22.42	10.04	0.21	0.47
6	2	2.58	67.03	18.97	11.43	0.21	0.51
7	2	0.95	41.63	36.39	21.03	0.39	0.64
8	2	1.84	39.97	39.17	19.01	0.39	0.64
9	2	3.79	48.19	35.87	12.15	0.30	0.51
10	2	1.25	38.17	30.57	30.01	0.45	0.59

Item	Max. Points	Omit %	0%	1%	2%	*P*-value	Item-Total Correlation
11	2	2.20	60.04	33.05	4.71	0.21	0.55
12	2	0.90	47.76	14.24	37.11	0.44	0.69
13	2	2.25	70.41	23.51	3.83	0.16	0.56
14	2	1.61	51.75	7.93	38.71	0.43	0.49

Table Error! No text of specified style in document.**.31. SR Item Classical Statistics—Science Grade 8**

Item	Omit %	*P*-value	Item–Total Correlation
1	0.47%	0.10	0.31
2	0.04%	0.40	0.49
3	0.01%	0.55	0.34
4	0.12%	0.15	0.30
5	1.32%	0.51	0.61
6	0.38%	0.38	0.44
7	0.12%	0.36	0.34
8	0.36%	0.37	0.29
9	0.14%	0.22	0.22
10	0.55%	0.42	0.46
11	0.07%	0.46	0.35
12	0.05%	0.40	0.42
13	1.45%	0.57	0.45
14	0.04%	0.34	0.31
15	0.10%	0.36	0.53
16	0.06%	0.34	0.62
17	0.13%	0.30	0.26
18	0.04%	0.49	0.31
19	0.11%	0.41	0.26
20	0.17%	0.25	0.25
21	0.09%	0.18	0.30
22	0.29%	0.36	0.55
23	0.18%	0.39	0.32
24	0.16%	0.77	0.44
25	0.31%	0.50	0.50
26	0.40%	0.48	0.57
27	0.08%	0.38	0.26
28	0.01%	0.59	0.35
29	0.10%	0.18	0.29
30	0.06%	0.68	0.49
31	0.54%	0.30	0.26
32	0.18%	0.55	0.39
33	0.22%	0.38	0.42

Table Error! No text of specified style in document.**.32. CR Item Classical Statistics—Science Grade 8**

Item	Max. Points	Omit %	0%	1%	2%	*P*-value	Item-Total Correlation
1	2	3.32	59.00	29.64	8.05	0.23	0.56
2	2	2.21	52.99	29.83	14.97	0.30	0.60
3	2	2.40	35.78	20.24	41.58	0.52	0.70
4	2	2.13	45.07	19.85	32.95	0.43	0.70
5	2	3.37	48.64	33.17	14.82	0.31	0.61
6	2	1.96	43.81	26.72	27.51	0.41	0.62
7	2	2.98	52.53	15.10	29.40	0.37	0.66
8	2	2.38	45.16	15.63	36.84	0.45	0.71
9	2	2.06	42.56	24.01	31.37	0.43	0.73
10	2	3.35	66.03	25.25	5.37	0.18	0.55
11	2	3.20	63.68	21.37	11.75	0.22	0.62
12	2	3.79	71.86	19.64	4.70	0.15	0.56
13	2	1.39	27.72	34.36	36.54	0.54	0.66
14	2	2.84	37.53	26.30	33.33	0.46	0.71

Table Error! No text of specified style in document.**.33. SR Item Classical Statistics—Science Grade 11**

Item	Omit %	*P*-value	Item–Total Correlation
1	0.17%	0.21	0.25
2	0.26%	0.21	0.28
3	0.17%	0.41	0.40
4	0.17%	0.11	0.20
5	0.26%	0.40	0.54
6	0.60%	0.21	0.21
7	0.24%	0.32	0.37
8	0.33%	0.16	0.38
9	0.29%	0.54	0.36
10	0.01%	0.41	0.34
11	0.10%	0.48	0.48
12	0.39%	0.42	0.43
13	0.59%	0.16	0.37
14	0.31%	0.30	0.32
15	0.22%	0.64	0.52
16	0.07%	0.47	0.49
17	0.28%	0.32	0.33
18	0.06%	0.45	0.23
19	0.37%	0.28	0.40
20	0.08%	0.43	0.28
21	0.18%	0.34	0.20
22	0.21%	0.57	0.41
23	0.30%	0.50	0.37
24	0.03%	0.31	0.37
25	0.04%	0.62	0.35
26	0.05%	0.48	0.44
27	0.07%	0.40	0.34

Item	Omit %	*P*-value	Item–Total Correlation
28	0.03%	0.59	0.37

Table Error! No text of specified style in document.**.34. CR Item Classical Statistics—Science Grade 11**

Item	Max. Points	Omit %	0%	1%	2%	*P*-value	Item-Total Correlation
1	2	4.55	87.90	6.27	1.29	0.04	0.45
2	2	5.15	65.58	19.06	10.21	0.20	0.54
3	2	5.03	47.79	20.40	26.79	0.37	0.69
4	2	4.88	41.59	23.28	30.26	0.42	0.65
5	2	4.87	54.44	27.16	13.53	0.27	0.67
6	2	2.61	52.50	40.37	4.52	0.25	0.53
7	2	6.05	34.38	42.85	16.71	0.38	0.59
8	2	3.30	54.33	36.14	6.23	0.24	0.71
9	2	3.59	77.46	14.16	4.79	0.12	0.48
10	2	4.66	59.93	19.82	15.60	0.26	0.53
11	2	4.09	23.92	57.44	14.56	0.43	0.59
12	2	7.11	59.00	28.27	5.62	0.20	0.53

Appendix J: Scree Plots

Figure Error! No text of specified style in document.**.1. Scree Plot—Mathematics Grade 3**

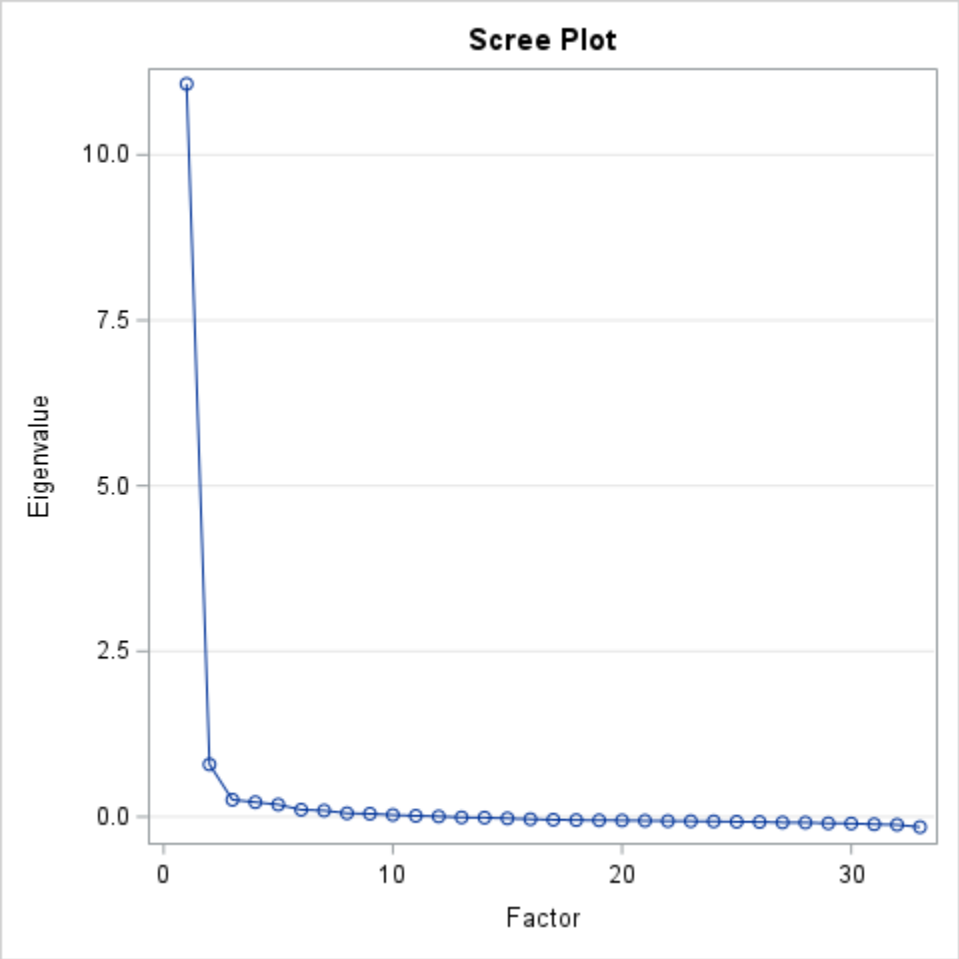


Figure Error! No text of specified style in document.**.2. Scree Plot—Mathematics Grade 4**

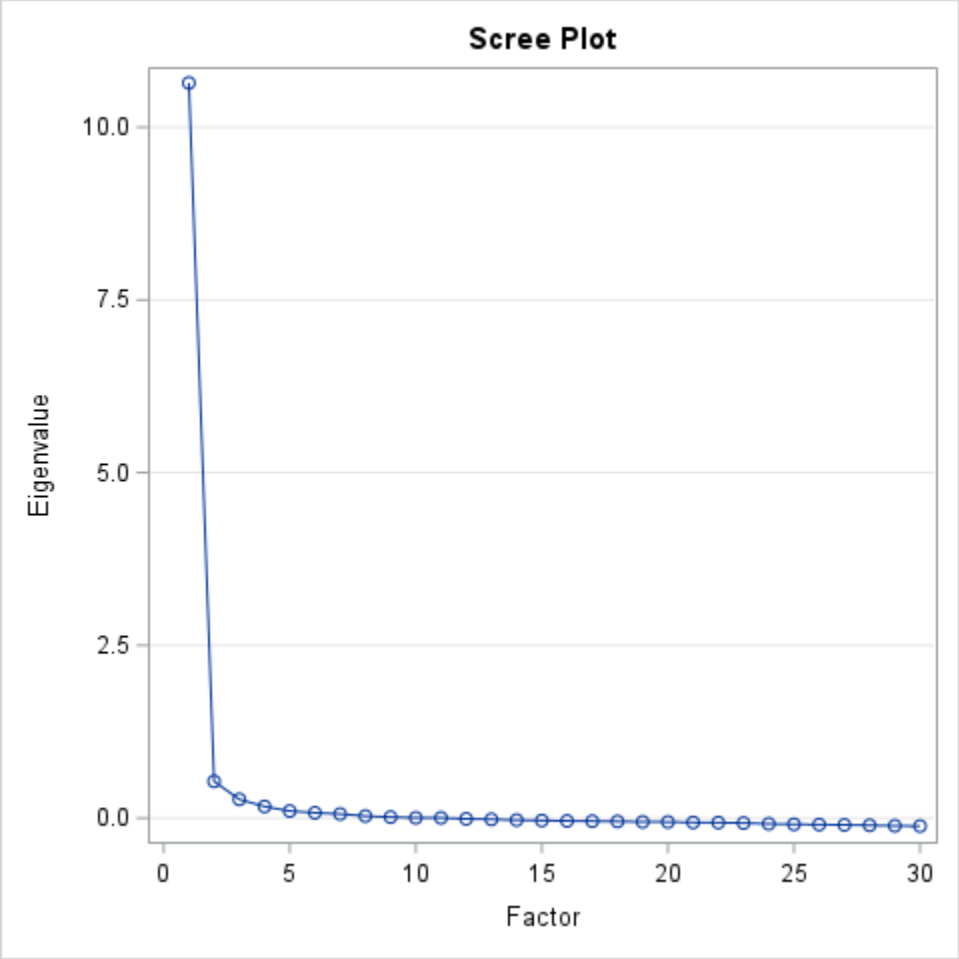


Figure Error! No text of specified style in document.**.3. Scree Plot—Mathematics Grade 5**

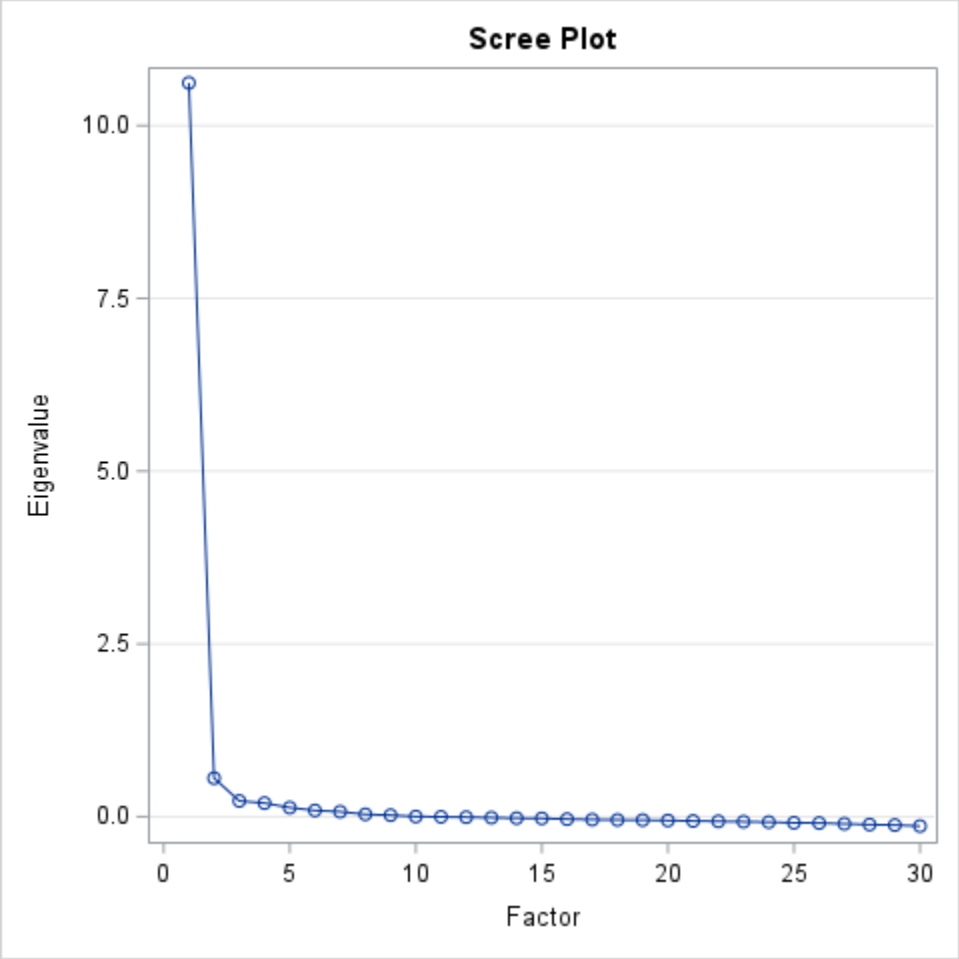


Figure Error! No text of specified style in document.**.4. Scree Plot—Mathematics Grade 6**

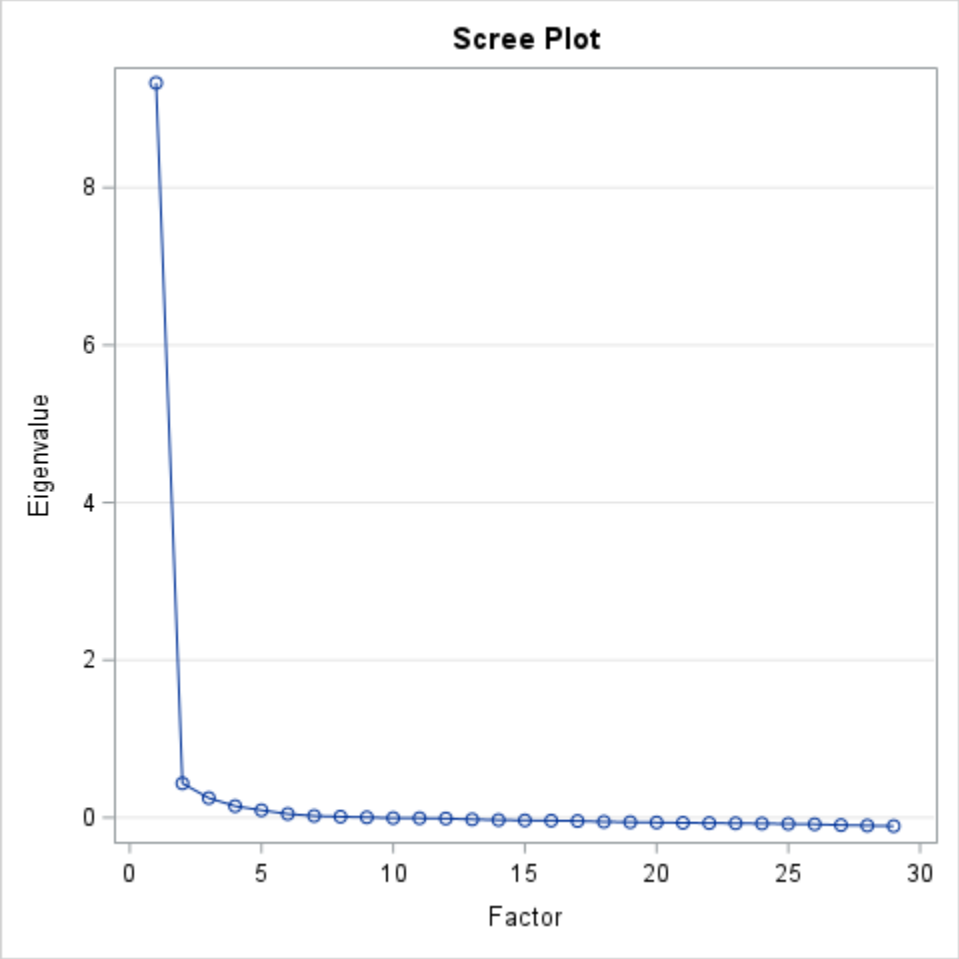


Figure Error! No text of specified style in document.**.5. Scree Plot—Mathematics Grade 7**

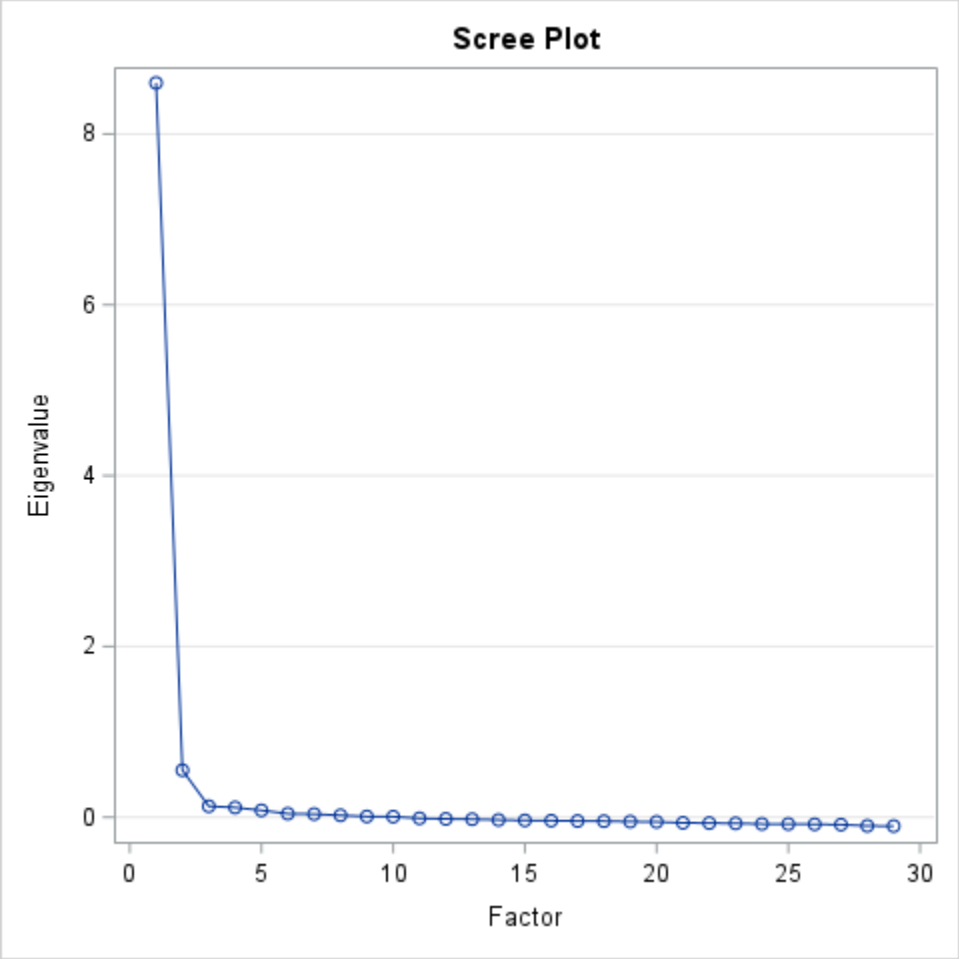


Figure Error! No text of specified style in document.**.6. Scree Plot—Mathematics Grade 8**

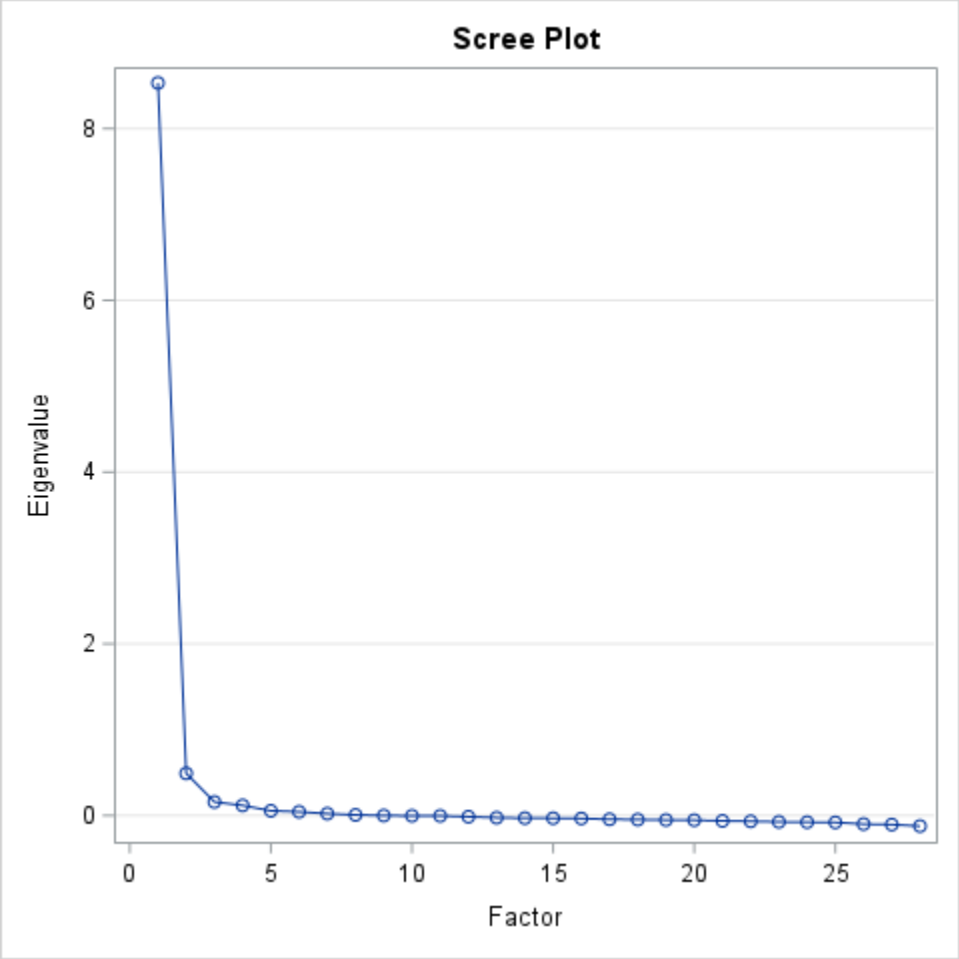


Figure Error! No text of specified style in document.**.7. Scree Plot—ELA Grade 3**

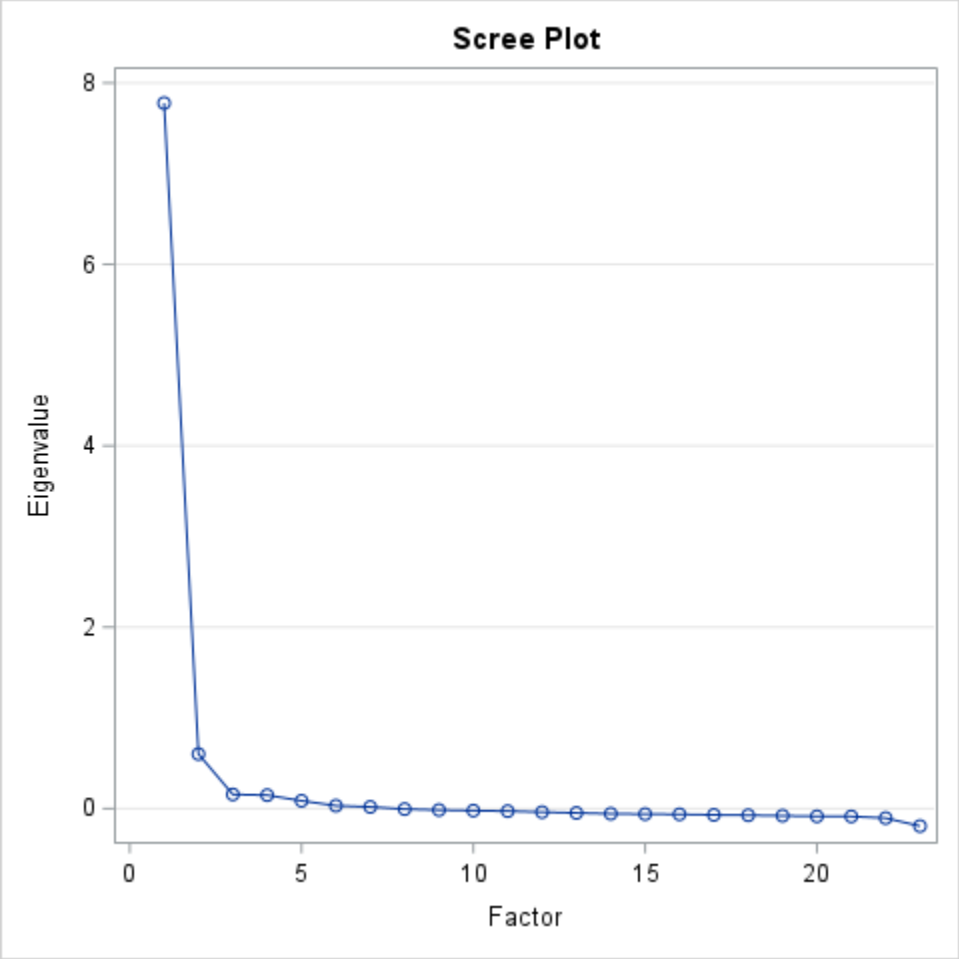


Figure Error! No text of specified style in document.**.8. Scree Plot—ELA Grade 4**

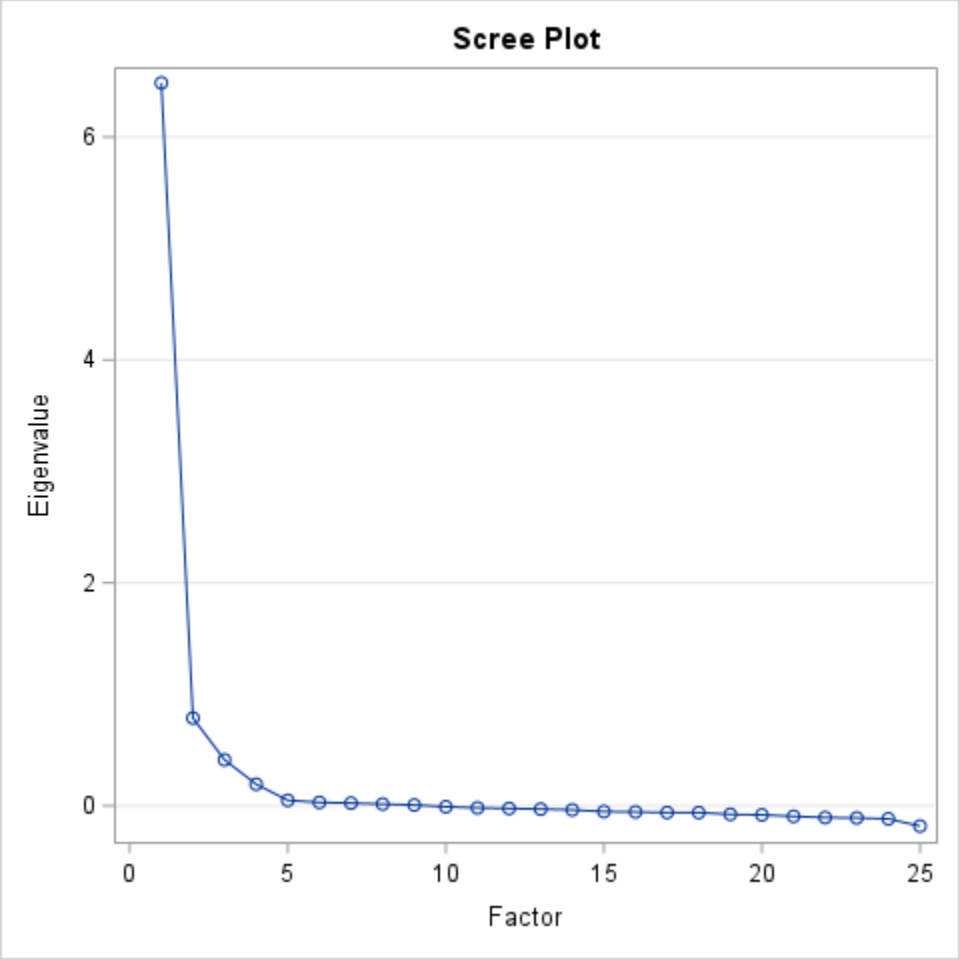


Figure Error! No text of specified style in document.**.9. Scree Plot—ELA Grade 5**

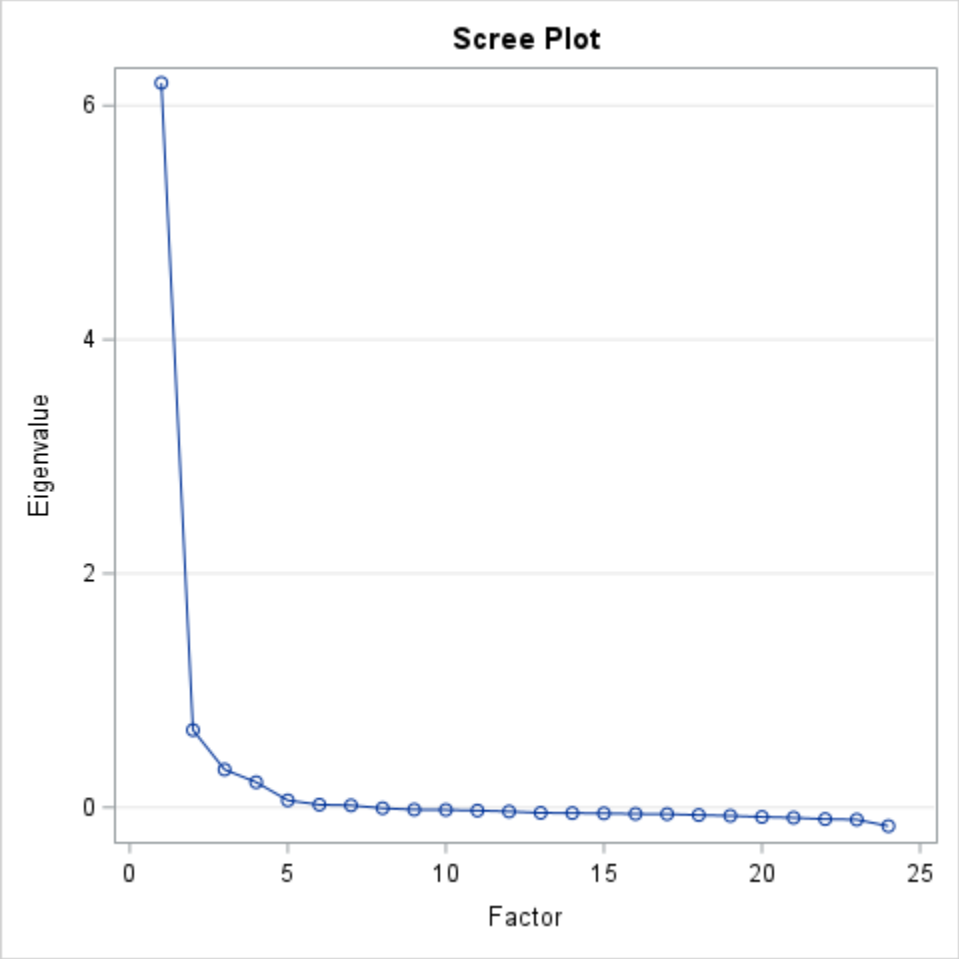


Figure Error! No text of specified style in document.**.10. Scree Plot—ELA Grade 6**

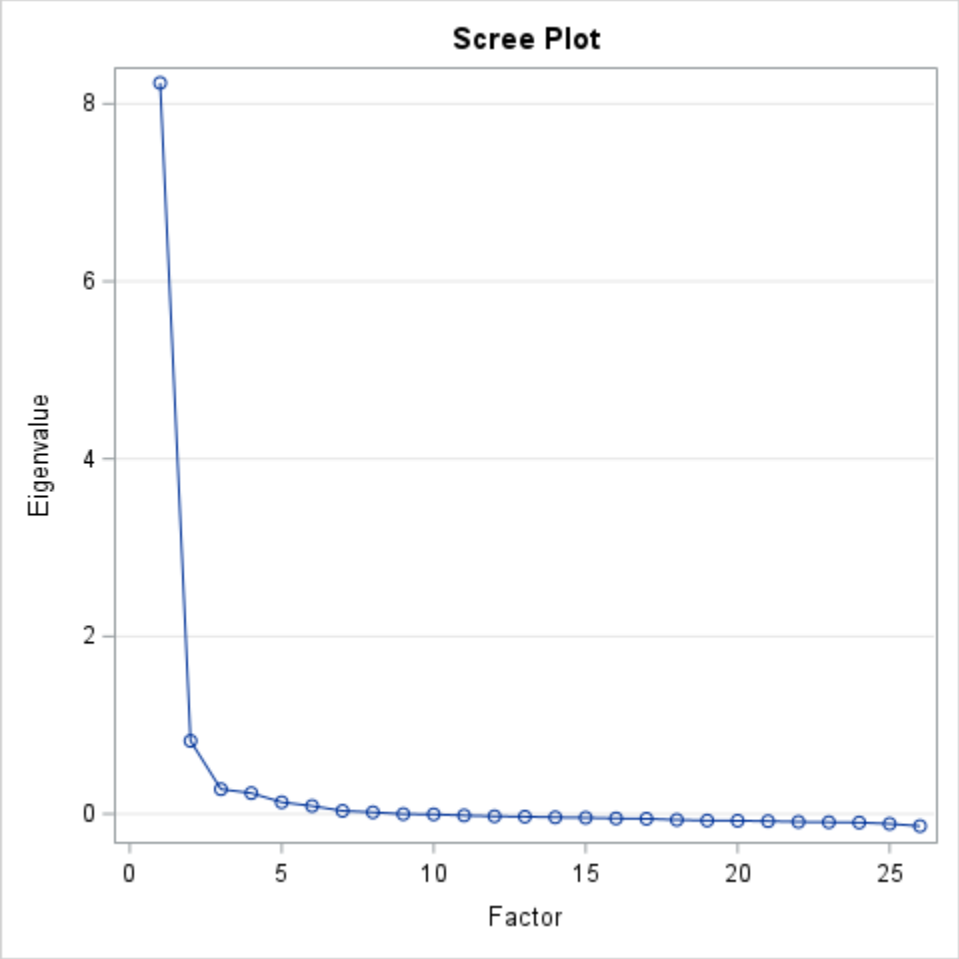


Figure Error! No text of specified style in document.**.11. Scree Plot—ELA Grade 7**

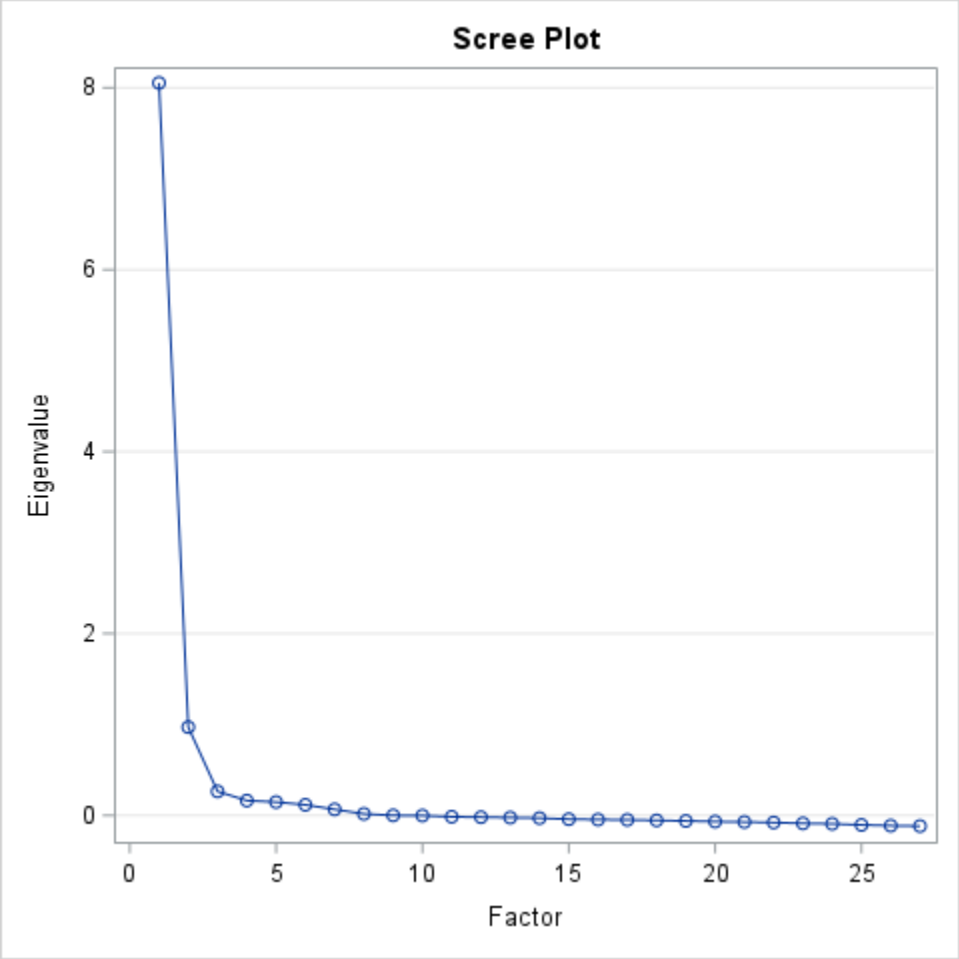


Figure Error! No text of specified style in document.**.12. Scree Plot—ELA Grade 8**

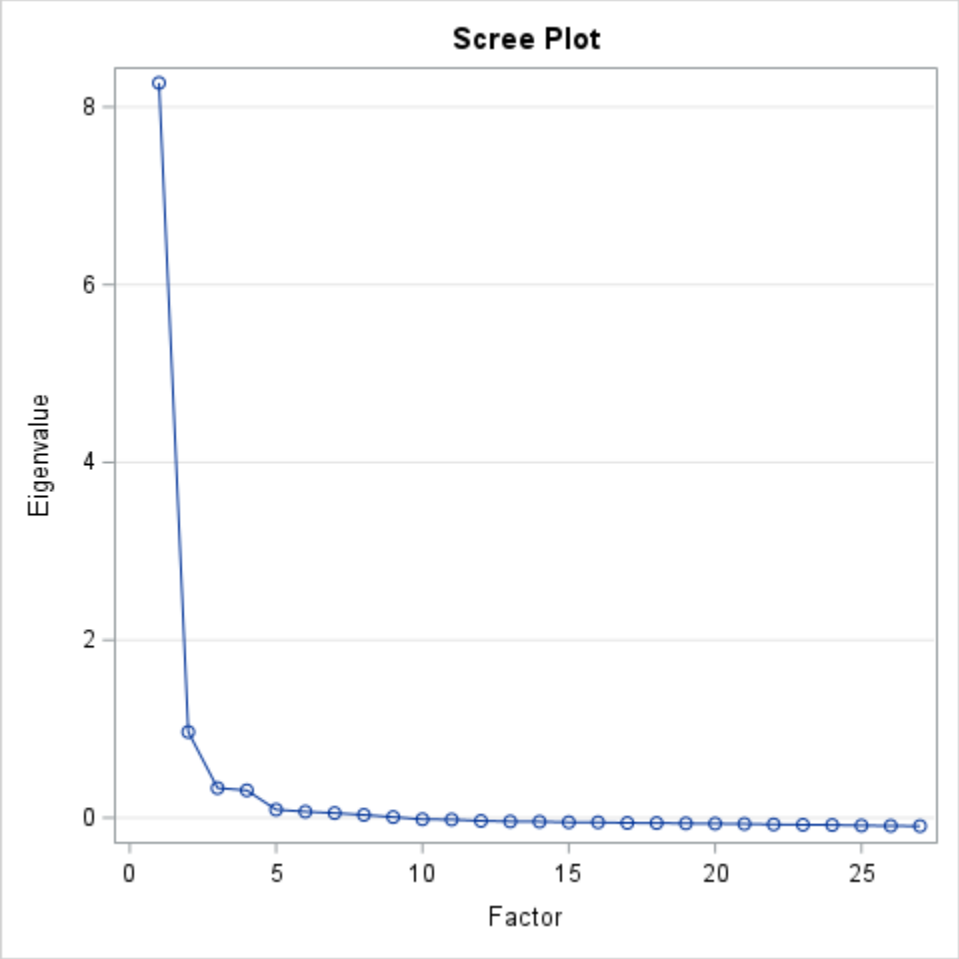


Figure Error! No text of specified style in document.**.13. Scree Plot—CSLA Grade 3**

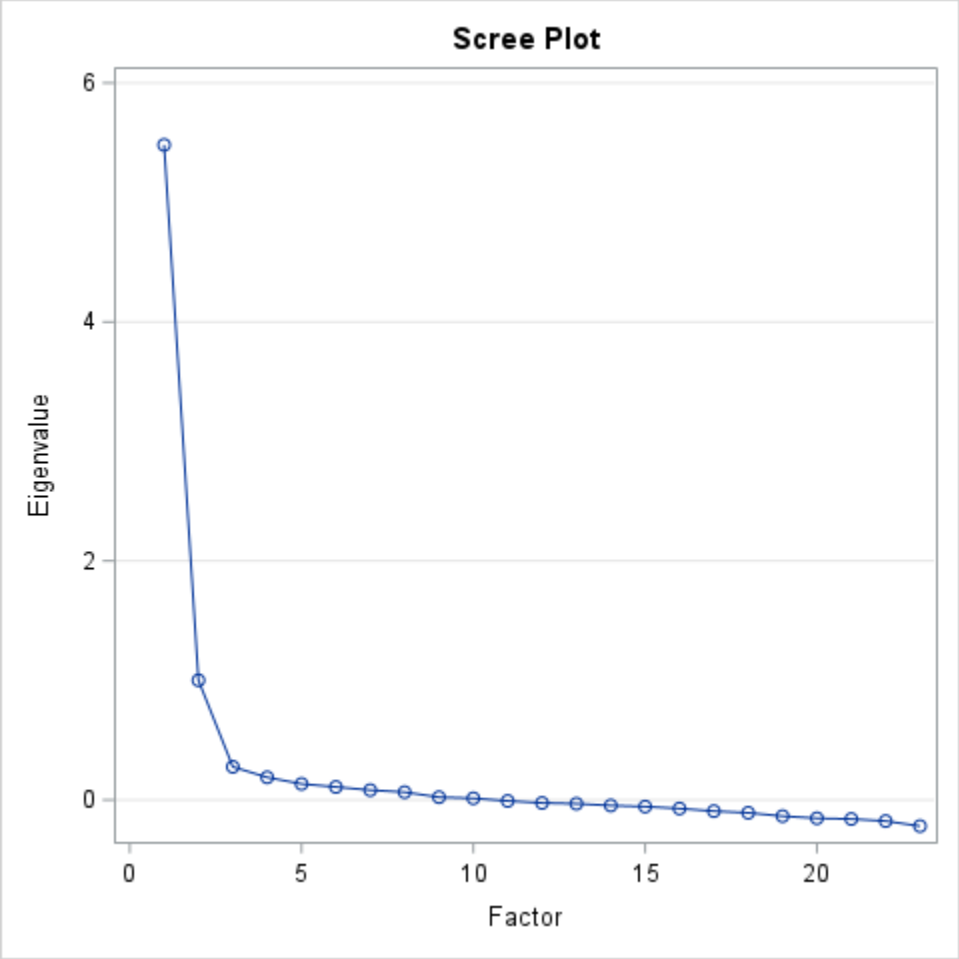


Figure Error! No text of specified style in document.**.14. Scree Plot—CSLA Grade 4**

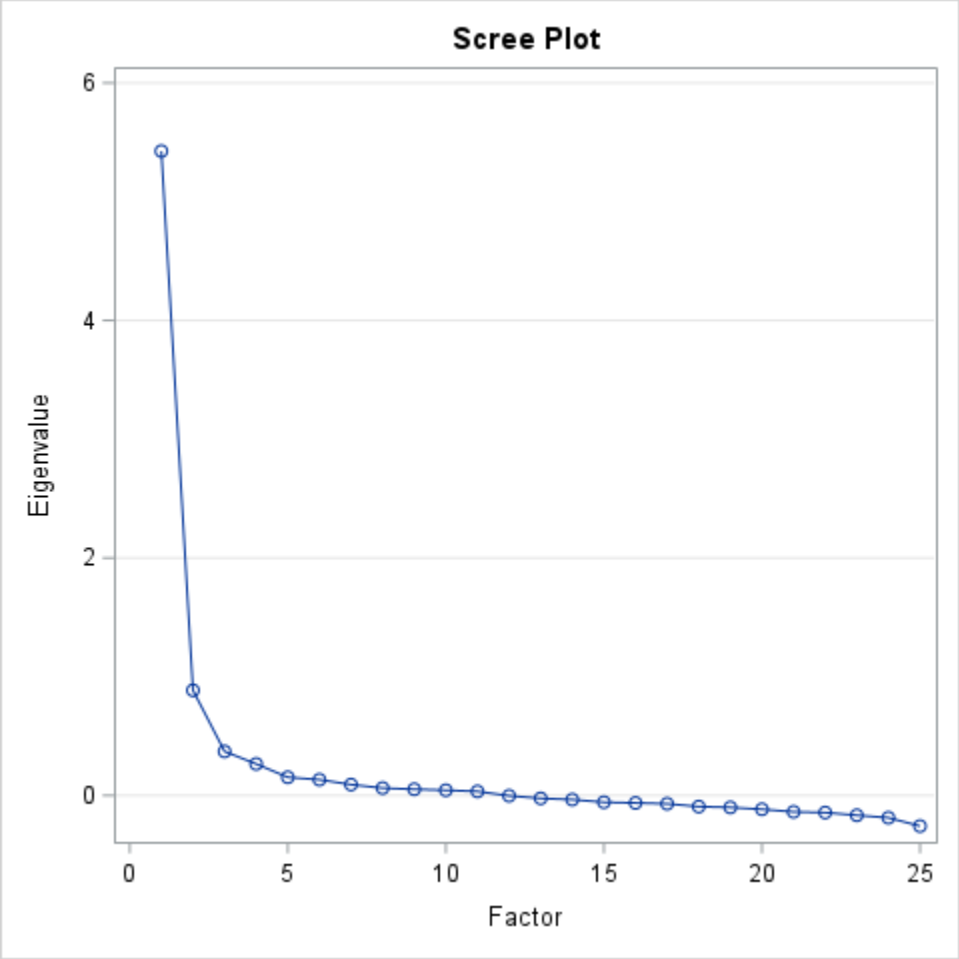


Figure Error! No text of specified style in document.**.15. Scree Plot—Science Grade 5**

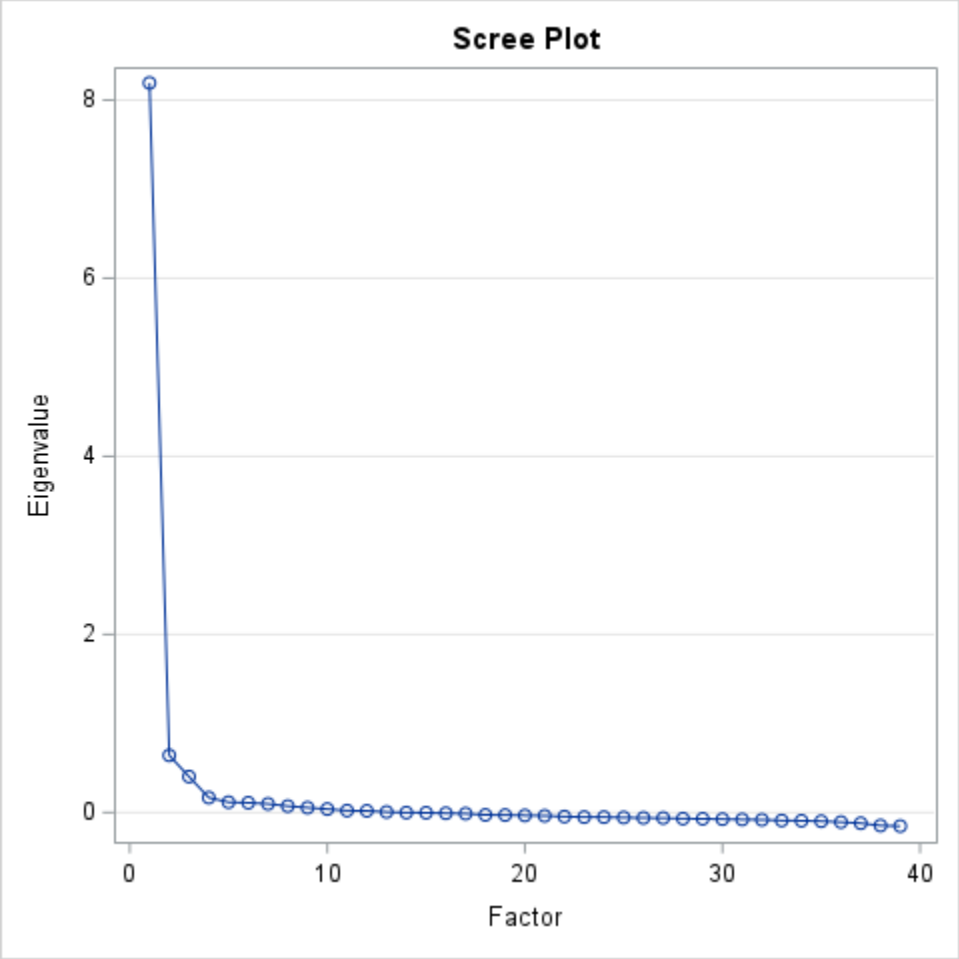


Figure Error! No text of specified style in document.**.16. Scree Plot—Science Grade 8**

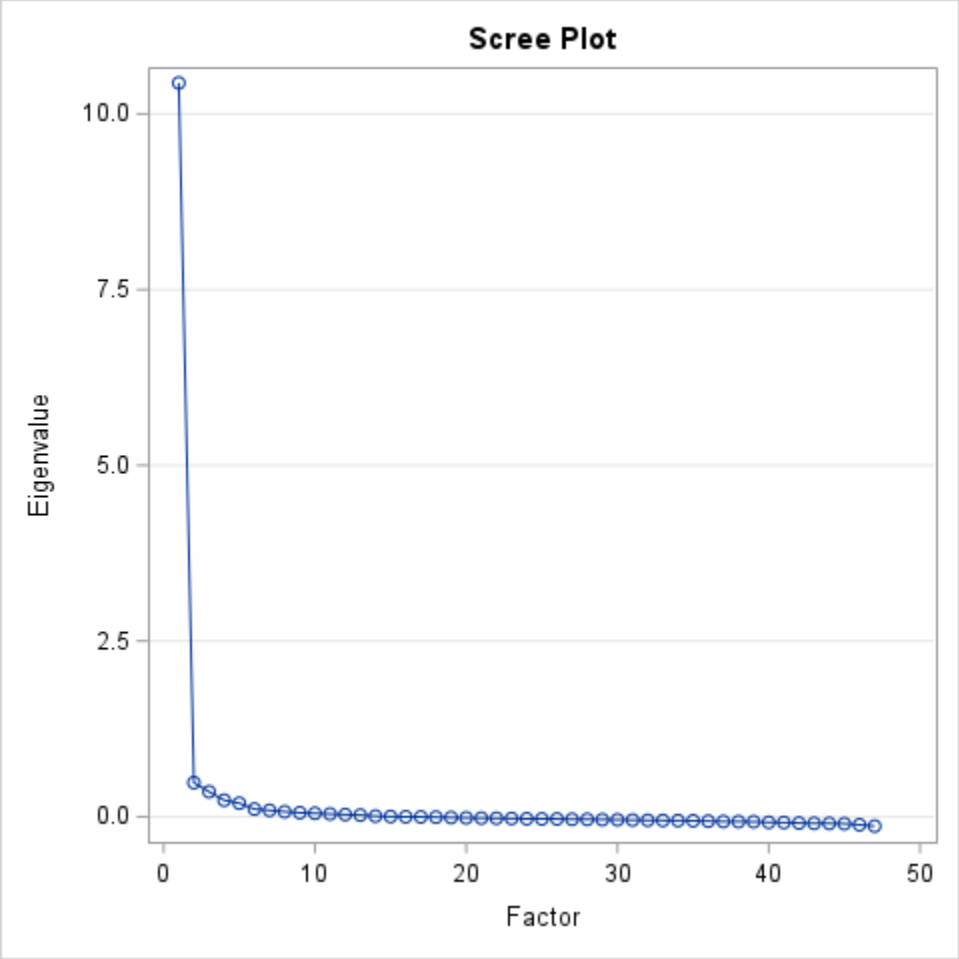


Figure Error! No text of specified style in document.**.17. Scree Plot—Science Grade 11**

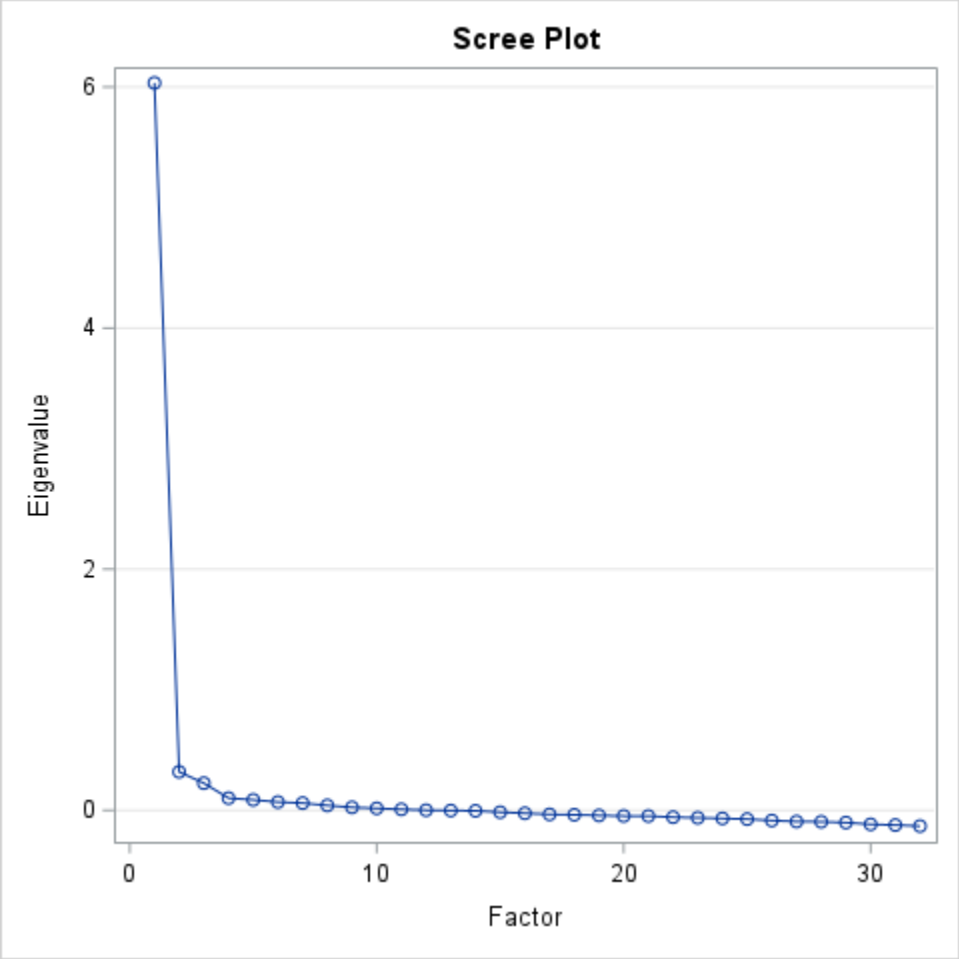


Figure Error! No text of specified style in document.**.18. Scree Plot—Social Studies Grade 4**

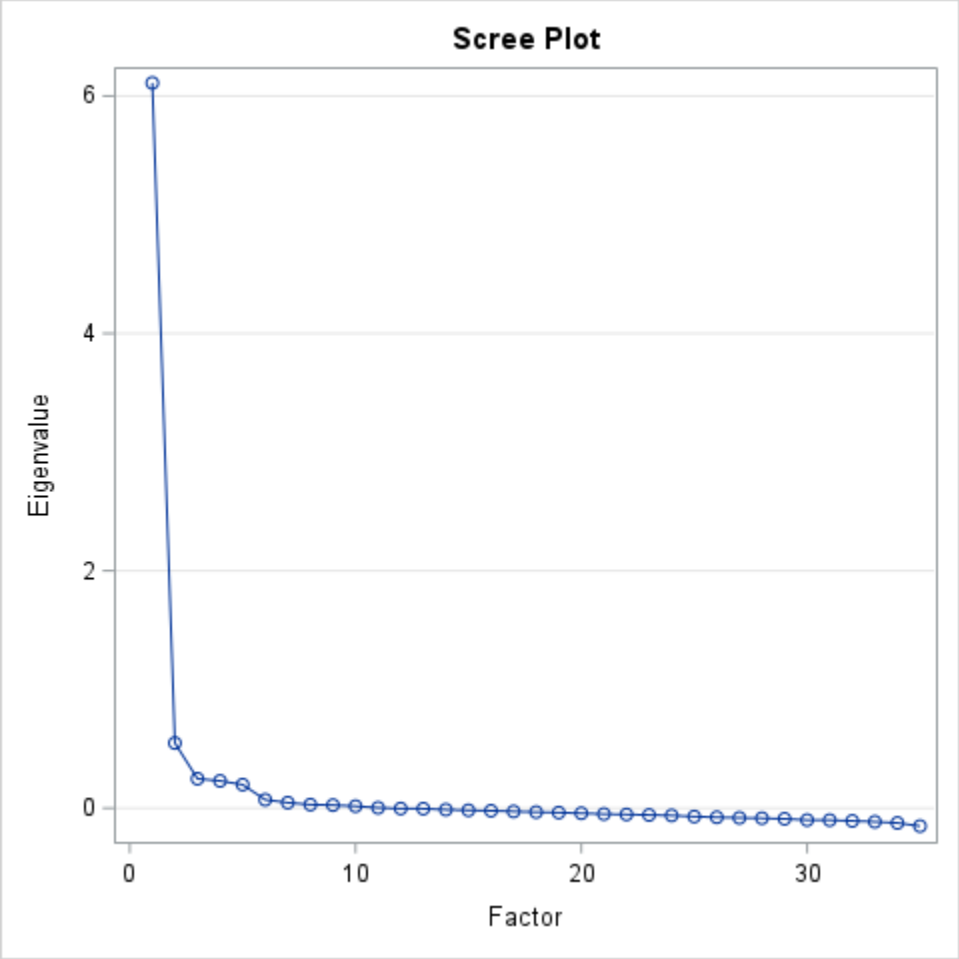
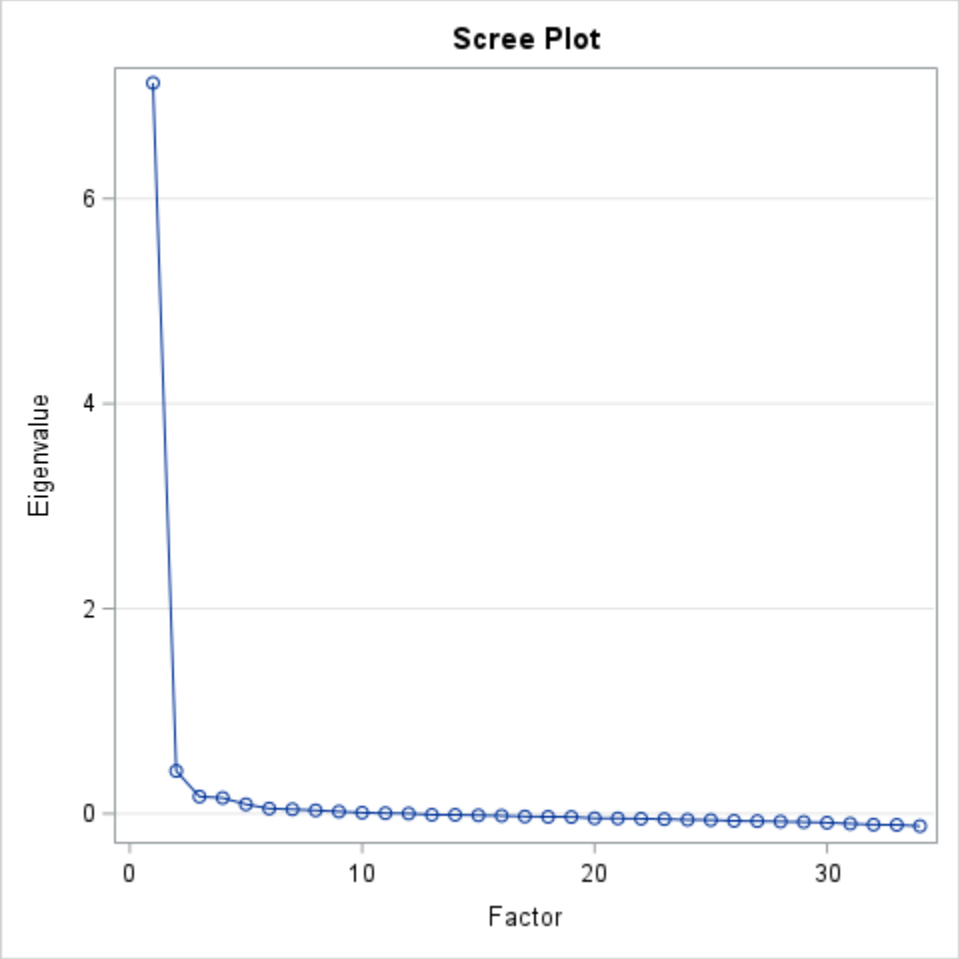


Figure Error! No text of specified style in document.**.19. Scree Plot—Social Studies Grade 7**



Appendix K: IRT Item-Level Statistics

Table Error! No text of specified style in document.**.1. Operational Item Parameter Estimates—Mathematics Grade 3**

Item	Item Type	Model	A	B	D1	D2	D3	D4	D5	D6	D7	Misfit Flag
1	MX	GPC	0.555	0.063	0	0.709	-0.709	.	.	.	.	Yes
2	MX	GPC	0.741	0.914	0	0.637	-0.637	.	.	.	.	No
3	MX	GPC	0.754	0.206	0	0.605	-0.605	.	.	.	.	No
4	MX	2PL	0.991	0.890	.	.	.	.	.	.	.	No
5	CR	GPC	0.790	0.676	0	0.058	0.302	-0.360	.	.	.	No
6	CR	GPC	0.739	0.697	0	1.040	0.543	-0.382	-1.201	.	.	No
7	CR	GPC	0.475	0.717	0	2.185	-0.529	-0.594	0.451	-2.056	0.542	No
8	CR	GPC	0.680	0.644	0	0.325	0.247	-0.572	.	.	.	No
9	CR	GPC	0.755	0.955	0	0.860	0.251	-0.199	-0.912	.	.	No
10	XI	2PL	0.917	0.803	.	.	.	.	.	.	.	No
11	XI	2PL	0.786	-0.028	.	.	.	.	.	.	.	No
12	XI	2PL	1.155	-0.679	.	.	.	.	.	.	.	No
13	XI	2PL	0.789	0.717	.	.	.	.	.	.	.	No
14	XI	2PL	1.000	-0.808	.	.	.	.	.	.	.	No
15	XI	2PL	1.166	0.675	.	.	.	.	.	.	.	No
16	XI	2PL	0.671	0.048	.	.	.	.	.	.	.	No
17	XI	2PL	0.993	-0.796	.	.	.	.	.	.	.	Yes
18	XI	2PL	0.783	-1.657	.	.	.	.	.	.	.	No
19	XI	2PL	0.924	0.054	.	.	.	.	.	.	.	No
20	SR	2PL	0.740	-0.725	.	.	.	.	.	.	.	No
21	SR	2PL	0.830	0.641	.	.	.	.	.	.	.	No
22	SR	2PL	0.427	-2.087	.	.	.	.	.	.	.	No
23	SR	2PL	0.462	0.153	.	.	.	.	.	.	.	No
24	SR	2PL	0.649	-0.725	.	.	.	.	.	.	.	No
25	SR	2PL	0.750	-0.839	.	.	.	.	.	.	.	No
26	SR	2PL	0.936	0.710	.	.	.	.	.	.	.	No
27	SR	2PL	1.030	0.601	.	.	.	.	.	.	.	No
28	SR	2PL	0.895	-0.591	.	.	.	.	.	.	.	No
29	SR	2PL	0.584	-0.670	.	.	.	.	.	.	.	No
30	SR	2PL	0.755	-1.317	.	.	.	.	.	.	.	No
31	SR	2PL	1.122	-1.236	.	.	.	.	.	.	.	No
32	SR	2PL	0.464	-1.248	.	.	.	.	.	.	.	No
33	SR	2PL	0.822	-0.868	.	.	.	.	.	.	.	No

Table Error! No text of specified style in document.**.2. Operational Item Parameter Estimates—Mathematics Grade 4**

Item	Item Type	Model	A	B	D1	D2	D3	D4	D5	D6	D7	Misfit Flag
1	MX	GPC	0.661	-1.175	0	0.427	-0.427	.	.	.	.	Yes
2	MX	GPC	0.814	-0.254	0	1.225	-1.225	.	.	.	.	Yes
3	MX	GPC	0.642	0.357	0	0.719	-0.719	.	.	.	.	Yes
4	MX	GPC	0.973	0.900	0	0.291	-0.291	.	.	.	.	Yes
5	MX	GPC	0.844	-0.025	0	0.672	-0.672	.	.	.	.	Yes
6	MX	GPC	1.010	0.014	0	0.500	-0.500	.	.	.	.	No
7	MX	2PL	0.830	-1.160	.	.	.	.	.	.	.	No
8	CR	GPC	0.852	1.705	0	1.054	-0.304	-0.749	.	.	.	No
9	CR	GPC	0.446	0.272	0	-1.447	1.178	-0.954	1.224	.	.	No
10	CR	GPC	0.739	0.428	0	0.790	0.395	-0.209	-0.976	.	.	No
11	CR	GPC	0.543	0.439	0	1.244	0.241	0.955	-1.095	-0.518	-0.828	Yes
12	CR	GPC	0.637	0.552	0	1.601	-1.973	0.371	.	.	.	Yes
13	XI	2PL	1.039	0.513	.	.	.	.	.	.	.	No
14	XI	2PL	1.056	0.980	.	.	.	.	.	.	.	No
15	XI	2PL	0.990	0.563	.	.	.	.	.	.	.	No
16	XI	2PL	1.014	0.273	.	.	.	.	.	.	.	No
17	XI	2PL	1.017	0.193	.	.	.	.	.	.	.	No
18	XI	2PL	0.775	0.600	.	.	.	.	.	.	.	No
19	XI	2PL	0.757	1.494	.	.	.	.	.	.	.	No
20	XI	2PL	1.315	0.688	.	.	.	.	.	.	.	No
21	SR	2PL	0.771	0.263	.	.	.	.	.	.	.	No
22	SR	2PL	0.543	-0.615	.	.	.	.	.	.	.	No
23	SR	2PL	0.768	-1.350	.	.	.	.	.	.	.	No
24	SR	2PL	0.480	0.541	.	.	.	.	.	.	.	No
25	SR	2PL	0.997	-1.330	.	.	.	.	.	.	.	No
26	SR	2PL	0.944	-0.801	.	.	.	.	.	.	.	No
27	SR	2PL	1.039	-1.103	.	.	.	.	.	.	.	No
28	SR	2PL	1.269	-0.253	.	.	.	.	.	.	.	No
29	SR	2PL	0.664	0.112	.	.	.	.	.	.	.	No
30	SR	2PL	0.568	-0.195	.	.	.	.	.	.	.	Yes

Table Error! No text of specified style in document.**.3. Operational Item Parameter Estimates—Mathematics Grade 5**

Item	Item Type	Model	A	B	D1	D2	D3	D4	D5	D6	D7	Misfit Flag
1	MX	GPC	0.648	1.301	0	0.016	-0.016	.	.	.	.	No
2	MX	GPC	0.504	0.111	0	0.915	-0.915	.	.	.	.	No
3	MX	GPC	0.927	-0.324	0	0.308	-0.308	.	.	.	.	No
4	MX	GPC	0.555	0.137	0	0.539	-0.539	.	.	.	.	Yes
5	MX	GPC	0.967	0.668	0	0.290	-0.290	.	.	.	.	No
6	MX	GPC	0.733	0.358	0	0.811	-0.811	.	.	.	.	No
7	MX	2PL	0.680	-1.305	.	.	.	.	.	.	.	No
8	CR	GPC	0.722	1.129	0	-0.873	1.829	-1.019	0.063	.	.	No
9	CR	GPC	0.660	0.824	0	-0.521	1.007	-0.486	.	.	.	No
10	CR	GPC	0.477	1.329	0	-0.679	0.902	-0.007	-0.216	.	.	No
11	CR	GPC	0.744	0.812	0	0.486	0.274	-0.759	.	.	.	Yes
12	CR	GPC	0.523	0.426	0	1.995	0.030	0.510	-0.632	-0.729	-1.174	No
13	XI	2PL	0.992	0.286	.	.	.	.	.	.	.	No
14	XI	2PL	0.781	-0.401	.	.	.	.	.	.	.	Yes
15	XI	2PL	0.607	0.166	.	.	.	.	.	.	.	Yes
16	XI	2PL	1.153	0.481	.	.	.	.	.	.	.	No
17	XI	2PL	1.513	0.518	.	.	.	.	.	.	.	No
18	XI	2PL	0.991	-0.853	.	.	.	.	.	.	.	Yes
19	XI	2PL	1.313	0.417	.	.	.	.	.	.	.	No
20	XI	2PL	0.756	-0.397	.	.	.	.	.	.	.	No
21	SR	2PL	0.543	-0.199	.	.	.	.	.	.	.	No
22	SR	2PL	0.835	0.815	.	.	.	.	.	.	.	No
23	SR	2PL	0.753	0.550	.	.	.	.	.	.	.	No
24	SR	2PL	0.471	0.081	.	.	.	.	.	.	.	No
25	SR	2PL	0.542	0.207	.	.	.	.	.	.	.	No
26	SR	2PL	0.721	-0.563	.	.	.	.	.	.	.	No
27	SR	2PL	0.536	-0.711	.	.	.	.	.	.	.	No
28	SR	2PL	1.165	0.252	.	.	.	.	.	.	.	Yes
29	SR	2PL	0.518	-1.054	.	.	.	.	.	.	.	No
30	SR	2PL	0.933	-0.117	.	.	.	.	.	.	.	No

Table Error! No text of specified style in document.**.4. Operational Item Parameter Estimates—Mathematics Grade 6**

Item	Item Type	Model	A	B	D1	D2	D3	D4	D5	D6	D7	Misfit Flag
1	MX	GPC	0.579	1.304	0	0.866	-0.866	.	.	.	.	Yes
2	MX	GPC	0.624	-0.053	0	1.237	0.254	-0.356	-1.135	.	.	No
3	MX	GPC	0.740	0.623	0	0.447	-0.447	.	.	.	.	Yes
4	MX	GPC	0.700	0.203	0	0.782	-0.782	.	.	.	.	No
5	MX	GPC	0.476	1.753	0	0.666	-0.666	.	.	.	.	No
6	CR	GPC	0.862	0.883	0	0.444	0.173	-0.617	.	.	.	No
7	CR	GPC	0.847	0.155	0	1.968	-0.717	-1.251	.	.	.	Yes
8	CR	GPC	0.739	0.961	0	1.067	0.370	-0.372	-1.065	.	.	No
9	CR	GPC	0.574	0.347	0	-0.066	0.038	0.748	-0.721	.	.	Yes
10	CR	GPC	0.566	0.582	0	0.678	0.654	0.480	0.015	-0.243	-1.583	Yes
11	XI	2PL	0.872	-0.075	.	.	.	.	.	.	.	No
12	XI	2PL	0.894	1.342	.	.	.	.	.	.	.	No
13	XI	2PL	0.468	1.027	.	.	.	.	.	.	.	No
14	XI	2PL	1.079	1.101	.	.	.	.	.	.	.	No
15	XI	2PL	1.072	0.817	.	.	.	.	.	.	.	No
16	XI	2PL	0.637	1.257	.	.	.	.	.	.	.	No
17	XI	2PL	1.103	0.727	.	.	.	.	.	.	.	No
18	XI	2PL	0.928	-1.651	.	.	.	.	.	.	.	Yes
19	SR	2PL	0.341	-0.393	.	.	.	.	.	.	.	No
20	SR	2PL	0.761	0.896	.	.	.	.	.	.	.	No
21	SR	2PL	0.633	0.469	.	.	.	.	.	.	.	No
22	SR	2PL	0.777	-0.441	.	.	.	.	.	.	.	No
23	SR	2PL	0.705	-0.385	.	.	.	.	.	.	.	No
24	SR	2PL	0.666	-0.434	.	.	.	.	.	.	.	No
25	SR	2PL	1.128	0.003	.	.	.	.	.	.	.	No
26	SR	2PL	0.804	-0.232	.	.	.	.	.	.	.	No
27	SR	2PL	0.643	1.230	.	.	.	.	.	.	.	No
28	SR	2PL	0.465	1.460	.	.	.	.	.	.	.	Yes
29	SR	2PL	0.407	-0.154	.	.	.	.	.	.	.	Yes

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Item	Item Type	Model	A	B	D1	D2	D3	D4	D5	D6	D7	Misfit Flag
1	MX	GPC	0.492	1.671	0	1.601	-0.088	0.012	-1.525	.	.	Yes
2	MX	GPC	0.436	1.209	0	0.793	-0.793	.	.	.	.	No
3	MX	GPC	0.455	0.782	0	0.915	-0.915	.	.	.	.	No
4	MX	GPC	0.437	1.726	0	1.211	-1.211	.	.	.	.	Yes
5	CR	GPC	0.547	1.065	0	0.122	1.224	0.459	-0.108	-0.313	-1.384	Yes
6	CR	GPC	0.617	1.409	0	0.130	1.578	-2.073	0.366	.	.	No
7	CR	GPC	0.692	0.121	0	0.371	0.273	-0.643	.	.	.	Yes
8	CR	GPC	0.638	0.344	0	0.084	0.507	-0.291	-0.300	.	.	Yes
9	CR	GPC	0.573	1.365	0	0.430	0.191	-0.621	.	.	.	Yes
10	XI	GPC	0.980	0.388	0	1.057	-1.057	.	.	.	.	Yes
11	XI	2PL	1.055	0.779	.	.	.	.	.	.	.	No
12	XI	2PL	1.239	0.739	.	.	.	.	.	.	.	No
13	XI	2PL	0.513	0.120	.	.	.	.	.	.	.	No
14	XI	2PL	1.035	0.180	.	.	.	.	.	.	.	No
15	XI	2PL	1.374	1.124	.	.	.	.	.	.	.	No
16	XI	2PL	1.664	1.555	.	.	.	.	.	.	.	No
17	XI	2PL	0.772	2.034	.	.	.	.	.	.	.	No
18	SR	2PL	0.636	0.785	.	.	.	.	.	.	.	No
19	SR	2PL	1.013	1.474	.	.	.	.	.	.	.	No
20	SR	2PL	0.363	-0.020	.	.	.	.	.	.	.	No
21	SR	2PL	0.292	1.358	.	.	.	.	.	.	.	Yes
22	SR	2PL	0.271	2.261	.	.	.	.	.	.	.	Yes
23	SR	2PL	0.571	0.928	.	.	.	.	.	.	.	Yes
24	SR	2PL	0.475	2.108	.	.	.	.	.	.	.	No
25	SR	2PL	0.475	0.752	.	.	.	.	.	.	.	Yes
26	SR	2PL	0.493	0.368	.	.	.	.	.	.	.	No
27	SR	2PL	0.497	-0.641	.	.	.	.	.	.	.	No
28	SR	2PL	0.631	-1.141	.	.	.	.	.	.	.	No
29	SR	2PL	0.720	0.323	.	.	.	.	.	.	.	No

Table Error! No text of specified style in document.**.6. Operational Item Parameter Estimates—Mathematics Grade 8**

Item	Item Type	Model	A	B	D1	D2	D3	D4	D5	D6	D7	Misfit Flag
1	MX	GPC	0.670	-0.579	0	0.453	-0.453	.	.	.	.	Yes
2	MX	GPC	0.330	0.793	0	1.535	-1.535	.	.	.	.	No
3	MX	GPC	0.490	1.504	0	1.187	-0.326	-0.171	-0.690	.	.	No
4	MX	GPC	0.411	0.779	0	1.114	-1.114	.	.	.	.	No
5	MX	GPC	0.652	1.424	0	0.520	-0.520	.	.	.	.	Yes
6	MX	GPC	0.557	0.761	0	0.779	-0.779	.	.	.	.	No
7	MX	2PL	0.828	0.778	.	.	.	.	.	.	.	No
8	MX	2PL	0.570	0.940	.	.	.	.	.	.	.	No
9	MX	2PL	0.655	1.981	.	.	.	.	.	.	.	No
10	CR	GPC	0.643	2.025	0	0.044	0.790	-0.228	-0.606	.	.	No
11	CR	GPC	0.764	1.383	0	0.402	0.077	-0.479	.	.	.	Yes
12	CR	GPC	0.591	1.351	0	1.070	0.691	-0.017	-1.743	.	.	Yes
13	CR	GPC	0.712	2.106	0	-0.057	0.021	0.036	.	.	.	No
14	CR	GPC	0.447	1.988	0	-0.715	1.101	0.952	0.496	-0.767	-1.066	No
15	XI	2PL	0.896	1.949	.	.	.	.	.	.	.	No
16	XI	2PL	0.586	1.531	.	.	.	.	.	.	.	No
17	XI	2PL	0.782	0.880	.	.	.	.	.	.	.	No
18	XI	2PL	0.939	1.535	.	.	.	.	.	.	.	No
19	XI	2PL	0.613	-0.469	.	.	.	.	.	.	.	Yes
20	XI	2PL	0.473	1.006	.	.	.	.	.	.	.	No
21	SR	2PL	0.649	0.294	.	.	.	.	.	.	.	No
22	SR	2PL	0.505	-0.455	.	.	.	.	.	.	.	No
23	SR	2PL	0.272	0.859	.	.	.	.	.	.	.	No
24	SR	2PL	0.492	0.367	.	.	.	.	.	.	.	No
25	SR	2PL	0.587	-0.120	.	.	.	.	.	.	.	Yes
26	SR	2PL	0.626	0.609	.	.	.	.	.	.	.	No
27	SR	2PL	0.555	-1.016	.	.	.	.	.	.	.	No
28	SR	2PL	0.257	0.354	.	.	.	.	.	.	.	No

Table Error! No text of specified style in document.**.7. Operational Item Parameter Estimates—ELA Grade 3**

Item	Item Type	Model	A	B	D1	D2	D3	D4	D5	Misfit Flag
1	MX	GPC	0.407	-0.619	0	-2.186	2.186	.	.	Yes
2	MX	GPC	0.497	0.396	0	0.782	-0.782	.	.	Yes
3	MX	GPC	0.281	-0.714	0	-1.709	1.709	.	.	Yes
4	MX	GPC	0.474	-0.497	0	-1.312	1.312	.	.	Yes
5	MX	GPC	0.618	-0.074	0	-0.571	0.571	.	.	Yes
6	MX	GPC	0.652	-0.987	0	0.300	-0.300	.	.	Yes
7	MX	GPC	0.524	-0.497	0	-0.256	0.256	.	.	No
8	MX	GPC	0.530	-0.423	0	-0.790	0.790	.	.	Yes
9	MX	GPC	0.483	-1.047	0	0.732	-0.732	.	.	No
10	MX	GPC	0.775	-0.434	0	-0.370	0.370	.	.	No
11	MX	GPC	0.773	-0.473	0	-0.529	0.529	.	.	Yes
12	MX	GPC	0.682	-0.443	0	0.334	-0.334	.	.	No
13	CR	GPC	0.675	2.494	0	2.441	-0.217	-2.223	.	No
14	CR	GPC	0.560	2.975	0	2.981	0.179	-3.159	.	No
15	CR	GPC	0.683	2.457	0	2.450	-0.005	-2.445	.	No
16	CR	GPC	0.991	2.491	0	2.377	-0.287	-2.090	.	No
17	XI	GPC	0.410	-0.214	0	-0.253	0.253	.	.	No
18	XI	GPC	0.358	2.032	0	3.429	-3.429	.	.	No
19	XI	GPC	0.364	-0.336	0	-0.159	0.159	.	.	No
20	XI	GPC	0.563	-0.459	0	1.494	-1.494	.	.	Yes
21	XI	GPC	0.763	-0.160	0	-0.036	0.036	.	.	No
22	XI	GPC	0.532	0.017	0	1.772	-1.772	.	.	Yes
23	XI	GPC	0.659	0.019	0	1.326	-1.326	.	.	Yes

Table Error! No text of specified style in document.**.8. Operational Item Parameter Estimates—ELA Grade 4**

Item	Item Type	Model	A	B	D1	D2	D3	D4	D5	Misfit Flag
1	MX	GPC	0.442	-0.620	0	-1.107	1.107	.	.	Yes
2	MX	GPC	0.456	1.416	0	0.257	-0.257	.	.	Yes
3	MX	GPC	0.340	0.746	0	-0.164	0.164	.	.	Yes
4	MX	GPC	0.207	1.171	0	-3.504	3.504	.	.	Yes
5	MX	GPC	0.303	0.657	0	0.508	-0.508	.	.	No
6	MX	GPC	0.732	-0.642	0	0.340	-0.340	.	.	Yes
7	MX	GPC	0.398	0.478	0	-1.697	1.697	.	.	Yes
8	MX	GPC	0.323	0.496	0	-1.466	1.466	.	.	Yes
9	MX	GPC	0.557	0.925	0	0.158	-0.158	.	.	Yes
10	MX	GPC	0.211	0.781	0	-2.381	2.381	.	.	Yes
11	MX	GPC	0.253	0.402	0	-0.247	0.247	.	.	Yes
12	MX	GPC	0.335	0.668	0	-1.259	1.259	.	.	Yes
13	MX	GPC	0.612	-1.114	0	-0.535	0.535	.	.	Yes
14	MX	GPC	0.547	-0.952	0	0.766	-0.766	.	.	Yes
15	MX	GPC	0.249	0.879	0	-0.024	0.024	.	.	Yes
16	MX	GPC	0.712	-0.686	0	-0.876	0.876	.	.	Yes
17	MX	GPC	0.263	1.576	0	-0.547	0.547	.	.	Yes
18	CR	GPC	0.630	1.356	0	1.357	0.039	-1.396	.	No
19	CR	GPC	0.627	0.881	0	1.553	0.146	-1.699	.	No
20	CR	GPC	0.665	1.867	0	1.638	-0.223	-1.415	.	No
21	CR	GPC	0.764	2.110	0	2.645	0.203	-1.137	-1.711	No
22	XI	GPC	0.286	1.958	0	-0.170	0.170	.	.	Yes
23	XI	GPC	0.419	-0.133	0	0.677	-0.677	.	.	No
24	XI	GPC	0.893	0.282	0	0.446	-0.446	.	.	Yes
25	XI	GPC	0.398	0.047	0	-0.452	0.452	.	.	Yes

Table Error! No text of specified style in document.**.9. Operational Item Parameter Estimates—ELA Grade 5**

Item	Item Type	Model	A	B	D1	D2	D3	D4	D5	Misfit Flag
1	MX	GPC	0.283	1.546	0	-2.189	2.189	.	.	Yes
2	MX	GPC	0.221	2.947	0	-0.025	0.025	.	.	Yes
3	MX	GPC	0.468	0.414	0	0.255	-0.255	.	.	Yes
4	MX	GPC	0.528	-0.424	0	-2.358	2.358	.	.	Yes
5	MX	GPC	0.312	0.334	0	-1.688	1.688	.	.	Yes
6	MX	GPC	0.525	1.034	0	1.217	-1.217	.	.	Yes
7	MX	GPC	0.268	0.295	0	-2.251	2.251	.	.	Yes
8	MX	GPC	0.216	1.245	0	-2.453	2.453	.	.	Yes
9	MX	GPC	0.393	0.667	0	-0.069	0.069	.	.	No
10	MX	GPC	0.285	0.977	0	-2.249	2.249	.	.	Yes
11	MX	GPC	0.379	0.157	0	-2.480	2.480	.	.	Yes
12	MX	GPC	0.459	-0.078	0	-0.753	0.753	.	.	No
13	MX	GPC	0.159	2.500	0	-0.792	0.792	.	.	No
14	MX	GPC	0.596	-0.575	0	-0.873	0.873	.	.	Yes
15	MX	GPC	0.327	0.591	0	-2.148	2.148	.	.	Yes
16	MX	GPC	0.266	2.838	0	1.223	-1.223	.	.	No
17	CR	GPC	0.754	1.235	0	1.268	0.038	-1.306	.	No
18	CR	GPC	0.797	0.565	0	1.603	0.151	-1.754	.	No
19	CR	GPC	0.819	1.658	0	1.550	-0.146	-1.405	.	No
20	CR	GPC	0.827	2.066	0	2.139	0.522	-0.957	-1.704	No
21	XI	GPC	0.527	-0.321	0	1.324	-1.324	.	.	No
22	XI	GPC	0.514	-0.221	0	1.851	-1.851	.	.	Yes
23	XI	GPC	0.412	0.872	0	0.087	-0.087	.	.	Yes
24	XI	GPC	0.518	1.049	0	-0.261	0.261	.	.	No

Table Error! No text of specified style in document.**.10. Operational Item Parameter Estimates—ELA Grade 6**

Item	Item Type	Model	A	B	D1	D2	D3	D4	D5	Misfit Flag
1	MX	GPC	0.437	0.531	0	-0.062	0.062	.	.	Yes
2	MX	GPC	0.367	0.428	0	-0.786	0.786	.	.	No
3	MX	GPC	0.350	0.323	0	0.274	-0.274	.	.	Yes
4	MX	GPC	0.448	0.099	0	-0.821	0.821	.	.	Yes
5	MX	GPC	0.635	-1.022	0	-0.237	0.237	.	.	Yes
6	MX	GPC	0.610	0.339	0	1.567	-1.567	.	.	Yes
7	MX	GPC	0.327	0.620	0	-1.265	1.265	.	.	Yes
8	MX	GPC	0.398	0.381	0	0.384	-0.384	.	.	Yes
9	MX	GPC	0.422	0.118	0	-0.097	0.097	.	.	No
10	MX	GPC	0.473	0.133	0	0.614	-0.614	.	.	No
11	MX	GPC	0.686	-0.275	0	-0.099	0.099	.	.	Yes
12	MX	GPC	0.426	0.220	0	0.566	-0.566	.	.	No
13	MX	GPC	0.309	1.735	0	-0.223	0.223	.	.	Yes
14	MX	GPC	0.428	0.749	0	-0.527	0.527	.	.	Yes
15	MX	GPC	0.265	1.013	0	-1.660	1.660	.	.	Yes
16	MX	GPC	0.401	0.146	0	-2.408	2.408	.	.	Yes
17	CR	GPC	0.813	1.300	0	1.425	0.154	-1.579	.	No
18	CR	GPC	0.904	1.838	0	2.375	0.756	-0.843	-2.289	No
19	CR	GPC	0.688	1.183	0	1.023	0.157	-1.180	.	No
20	CR	GPC	0.674	1.212	0	1.827	0.486	-0.685	-1.628	No
21	XI	GPC	0.481	0.290	0	1.041	-1.041	.	.	No
22	XI	GPC	0.577	0.694	0	0.991	-0.991	.	.	No
23	XI	GPC	0.710	0.111	0	0.909	-0.909	.	.	No
24	XI	GPC	0.482	0.103	0	1.390	-1.390	.	.	Yes
25	XI	GPC	0.872	-0.608	0	0.438	-0.438	.	.	Yes
26	XI	GPC	0.734	-0.114	0	0.523	-0.523	.	.	No

Table Error! No text of specified style in document.**.11. Operational Item Parameter Estimates—ELA Grade 7**

Item	Item Type	Model	A	B	D1	D2	D3	D4	D5	Misfit Flag
1	MX	GPC	0.617	-0.493	0	-1.041	1.041	.	.	Yes
2	MX	GPC	0.353	0.675	0	-0.307	0.307	.	.	Yes
3	MX	GPC	0.597	-0.276	0	-1.099	1.099	.	.	Yes
4	MX	GPC	0.642	0.369	0	1.364	-1.364	.	.	No
5	MX	GPC	0.394	0.260	0	-2.076	2.076	.	.	Yes
6	MX	GPC	0.355	0.310	0	-0.535	0.535	.	.	Yes
7	MX	GPC	0.547	-0.191	0	-0.588	0.588	.	.	Yes
8	MX	GPC	0.496	-0.015	0	-1.229	1.229	.	.	Yes
9	MX	GPC	0.654	-0.027	0	1.270	-1.270	.	.	No
10	MX	GPC	0.487	0.007	0	0.236	-0.236	.	.	No
11	MX	GPC	0.460	0.318	0	-1.992	1.992	.	.	Yes
12	MX	GPC	0.281	1.165	0	-0.871	0.871	.	.	Yes
13	MX	GPC	0.827	0.439	0	0.825	-0.825	.	.	Yes
14	MX	GPC	0.302	-0.348	0	-0.867	0.867	.	.	No
15	MX	GPC	0.268	0.301	0	-0.795	0.795	.	.	No
16	MX	GPC	0.282	0.035	0	-3.104	3.104	.	.	Yes
17	MX	GPC	0.200	-0.459	0	-5.067	5.067	.	.	Yes
18	MX	GPC	0.516	-1.004	0	-2.169	2.169	.	.	Yes
19	MX	GPC	0.258	1.518	0	-0.357	0.357	.	.	Yes
20	CR	GPC	0.786	1.000	0	1.235	0.006	-1.241	.	No
21	CR	GPC	0.766	1.544	0	1.996	0.653	-0.747	-1.901	No
22	CR	GPC	0.769	0.870	0	1.117	0.246	-1.363	.	No
23	CR	GPC	0.802	1.156	0	1.840	0.827	-0.897	-1.769	No
24	XI	GPC	0.433	0.558	0	1.771	-1.771	.	.	Yes
25	XI	GPC	0.485	0.701	0	0.057	-0.057	.	.	Yes
26	XI	GPC	0.391	0.558	0	-1.970	1.970	.	.	Yes
27	XI	GPC	0.391	0.473	0	2.019	-2.019	.	.	No

Table Error! No text of specified style in document.**.12. Operational Item Parameter Estimates—ELA Grade 8**

Item	Item Type	Model	A	B	D1	D2	D3	D4	D5	Misfit Flag
1	MX	GPC	0.523	-0.628	0	-1.378	1.378	.	.	Yes
2	MX	GPC	0.206	2.679	0	1.270	-1.270	.	.	Yes
3	MX	GPC	0.574	-0.511	0	-0.571	0.571	.	.	No
4	MX	GPC	0.368	-1.390	0	-0.551	0.551	.	.	No
5	MX	GPC	0.278	1.535	0	-0.754	0.754	.	.	Yes
6	MX	GPC	0.478	0.139	0	-0.219	0.219	.	.	No
7	MX	GPC	0.322	1.326	0	0.480	-0.480	.	.	Yes
8	MX	GPC	0.492	0.362	0	-0.388	0.388	.	.	No
9	MX	GPC	0.619	0.256	0	1.163	-1.163	.	.	Yes
10	MX	GPC	0.292	-1.341	0	-4.294	4.294	.	.	Yes
11	MX	GPC	0.504	-0.427	0	-0.953	0.953	.	.	No
12	MX	GPC	0.228	0.743	0	-0.286	0.286	.	.	No
13	MX	GPC	0.411	-0.581	0	-2.416	2.416	.	.	Yes
14	MX	GPC	0.519	-0.313	0	-1.019	1.019	.	.	Yes
15	MX	GPC	0.500	-0.026	0	0.621	-0.621	.	.	Yes
16	MX	GPC	0.345	0.211	0	-1.515	1.515	.	.	Yes
17	MX	GPC	0.488	-0.539	0	-1.568	1.568	.	.	Yes
18	MX	GPC	0.381	1.392	0	-0.477	0.477	.	.	No
19	CR	GPC	0.773	0.459	0	0.938	0.053	-0.991	.	No
20	CR	GPC	0.732	1.188	0	1.406	0.890	-0.343	-1.954	No
21	CR	GPC	0.776	0.463	0	0.961	0.150	-1.111	.	No
22	CR	GPC	0.721	0.853	0	1.428	0.689	-0.800	-1.317	No
23	XI	GPC	0.433	-0.088	0	-0.398	0.398	.	.	No
24	XI	GPC	0.486	-0.450	0	0.976	-0.976	.	.	Yes
25	XI	GPC	0.400	0.801	0	0.402	-0.402	.	.	No
26	XI	GPC	0.595	-0.203	0	1.180	-1.180	.	.	No
27	XI	GPC	0.353	0.117	0	0.964	-0.964	.	.	Yes

Table Error! No text of specified style in document.**.13. Operational Item Parameter Estimates—CSLA Grade 3**

Item	Item Type	Model	B	D1	D2	D3	D4	Infit	Outfit
1	CR	GPC	0.267	0	-0.866	0.150	0.716	0.92	0.86
2	CR	GPC	0.297	0	-0.579	-0.017	0.596	0.89	0.84
3	CR	GPC	0.215	0	-0.776	0.234	0.542	1	0.97
4	CR	GPC	0.249	0	-1.230	0.482	0.748	0.81	0.78
5	XI	GPC	-1.158	0	-0.567	0.567	.	0.86	0.83
6	XI	GPC	-0.004	0	0.040	-0.040	.	0.98	0.99
7	XI	GPC	0.070	0	0.437	-0.437	.	1.3	1.5
8	XI	GPC	0.052	0	0.900	-0.900	.	1.14	1.14
9	XI	GPC	-0.306	0	-0.033	0.033	.	0.84	0.82
10	XI	GPC	0.157	0	-0.090	0.090	.	1.15	1.3
11	XI	GPC	0.351	0	0.552	-0.552	.	1.28	1.65
12	XI	GPC	0.083	0	0.014	-0.014	.	1.08	1.25
13	XI	GPC	-0.813	0	0.283	-0.283	.	0.84	0.8
14	XI	GPC	0.175	0	0.099	-0.099	.	0.96	0.95
15	XI	GPC	-0.190	0	0.045	-0.045	.	0.99	1.04
16	XI	GPC	-0.554	0	0.294	-0.294	.	1.08	1.12
17	XI	GPC	-0.787	0	0.390	-0.390	.	0.92	0.93
18	XI	GPC	-0.026	0	0.003	-0.003	.	1.14	1.2
19	SR	GPC	0.030	0	0.338	-0.338	.	0.94	0.95
20	SR	GPC	-0.034	0	0.614	-0.614	.	0.89	0.81
21	SR	GPC	0.621	0	-0.367	0.367	.	1	1.09
22	SR	GPC	0.432	0	0.072	-0.072	.	0.95	1.06
23	SR	GPC	0.779	0	0.971	-0.971	.	0.93	1.02

Table Error! No text of specified style in document.**.14. Operational Item Parameter Estimates—CSLA Grade 4**

Item	Item Type	Model	B	D1	D2	D3	D4	D5	Infit	Outfit
1	CR	GPC	-0.227	0	-0.754	0.613	0.142	.	0.9	0.84
2	CR	GPC	0.302	0	-0.722	-0.349	0.012	1.059	0.67	0.67
3	CR	GPC	-0.185	0	-0.733	0.482	0.252	.	1	0.94
4	CR	GPC	-0.671	0	0.100	-0.933	0.833	.	0.9	0.87
5	XI	GPC	-1.463	0	-0.205	0.205	.	.	0.8	0.8
6	XI	GPC	0.945	0	-0.935	0.935	.	.	0.93	0.98
7	XI	GPC	-0.991	0	0.699	-0.699	.	.	0.92	0.9
8	XI	GPC	-0.149	0	0.836	-0.836	.	.	0.93	0.94
9	XI	GPC	-1.225	0	0.582	-0.582	.	.	0.89	0.88
10	XI	GPC	-1.045	0	0.784	-0.784	.	.	0.92	0.91
11	XI	GPC	-0.805	0	0.499	-0.499	.	.	0.96	0.96
12	XI	GPC	1.098	0	-0.299	0.299	.	.	1.09	1.28
13	XI	GPC	-0.679	0	0.449	-0.449	.	.	0.97	0.95
14	XI	GPC	-0.444	0	0.633	-0.633	.	.	1.1	1.2
15	XI	GPC	0.072	0	0.324	-0.324	.	.	1.21	1.48
16	XI	GPC	-0.025	0	0.359	-0.359	.	.	1.01	1.07
17	XI	GPC	0.128	0	0.645	-0.645	.	.	1.08	1.27
18	SR	GPC	0.354	0	0.547	-0.547	.	.	0.83	0.71
19	SR	GPC	0.402	0	-0.579	0.579	.	.	1.16	1.26
20	SR	GPC	-0.511	0	-0.080	0.080	.	.	0.9	0.88
21	SR	GPC	0.737	0	-1.491	1.491	.	.	1.17	1.21
22	SR	GPC	0.856	0	-1.333	1.333	.	.	1.12	1.14
23	SR	GPC	-1.084	0	-0.666	0.666	.	.	1.02	1.02
24	SR	GPC	-1.377	0	-0.316	0.316	.	.	0.94	0.91
25	SR	GPC	0.406	0	-0.707	0.707	.	.	1.11	1.19

Table Error! No text of specified style in document.**.15. Operational Item Parameter Estimates—Science Grade 5**

Item	Item Type	Model	A	B	C	D1	D2	D3	Misfit Flag
1	MX	3PL	1.226	-0.407	0.004	.	.	.	No
2	MX	3PL	0.873	1.691	0.126	.	.	.	No
3	MX	3PL	1.140	0.066	0.182	.	.	.	No
4	MX	3PL	0.937	-0.681	0.084	.	.	.	No
5	MX	3PL	0.675	2.444	0.221	.	.	.	No
6	MX	3PL	0.659	1.939	0.004	.	.	.	No
7	MX	3PL	0.789	-1.043	0.012	.	.	.	No
8	MX	3PL	0.688	0.772	0.064	.	.	.	No
9	MX	3PL	0.929	0.837	0.004	.	.	.	No
10	MX	3PL	1.170	1.431	0.078	.	.	.	No
11	CR	GPC	0.659	0.641	.	0	0.200	-0.200	No
12	CR	GPC	0.893	1.325	.	0	0.017	-0.017	No
13	CR	GPC	0.572	1.723	.	0	0.125	-0.125	No
14	CR	GPC	0.658	1.590	.	0	-0.052	0.052	No
15	CR	GPC	0.761	0.614	.	0	0.553	-0.553	No
16	CR	GPC	0.786	0.650	.	0	0.659	-0.659	No
17	CR	GPC	0.519	1.251	.	0	0.739	-0.739	No
18	CR	GPC	0.549	0.369	.	0	0.216	-0.216	No
19	CR	GPC	0.768	1.654	.	0	0.916	-0.916	No
20	CR	GPC	0.730	0.371	.	0	-0.522	0.522	No
21	CR	GPC	0.952	1.748	.	0	0.644	-0.644	No
22	CR	GPC	0.327	0.512	.	0	-2.901	2.901	No
23	XI	2PL	0.403	-0.184	.	.	.	.	No
24	XI	2PL	0.636	-0.885	.	.	.	.	No
25	XI	3PL	0.940	-0.870	0.218	.	.	.	No
26	XI	3PL	0.471	1.518	0.073	.	.	.	No
27	SR	3PL	0.728	-0.993	0.001	.	.	.	Yes
28	SR	3PL	0.745	0.465	0.221	.	.	.	No
29	SR	3PL	0.636	0.731	0.244	.	.	.	No
30	SR	3PL	0.611	0.371	0.503	.	.	.	No
31	SR	3PL	0.427	-1.328	0.034	.	.	.	No
32	SR	3PL	0.867	0.825	0.255	.	.	.	No
33	SR	3PL	1.028	0.016	0.085	.	.	.	No
34	SR	3PL	0.936	0.216	0.163	.	.	.	No
35	SR	3PL	0.516	0.493	0.137	.	.	.	No
36	SR	3PL	0.745	1.338	0.112	.	.	.	No
37	SR	3PL	0.796	0.407	0.258	.	.	.	No
38	SR	3PL	0.612	-0.435	0.094	.	.	.	No
39	SR	3PL	1.054	0.387	0.289	.	.	.	No

Table Error! No text of specified style in document.**.16. Operational Item Parameter Estimates—Science Grade 8**

Item	Item Type	Model	A	B	C	D1	D2	D3	Misfit Flag
1	MX	2PL	0.445	-0.121	.	.	.	.	No
2	MX	2PL	0.558	2.280	.	.	.	.	No
3	MX	2PL	1.153	0.161	.	.	.	.	No
4	MX	3PL	1.747	1.785	0.158	.	.	.	No
5	MX	3PL	0.873	0.736	0.106	.	.	.	No
6	MX	3PL	1.224	1.118	0.300	.	.	.	No
7	MX	3PL	1.090	1.011	0.182	.	.	.	No
8	MX	3PL	1.204	0.549	0.291	.	.	.	No
9	MX	3PL	0.878	1.468	0.188	.	.	.	No
10	MX	3PL	1.156	0.835	0.069	.	.	.	No
11	MX	3PL	1.581	0.788	0.043	.	.	.	No
12	MX	3PL	0.376	1.730	0.023	.	.	.	No
13	MX	3PL	0.921	1.167	0.323	.	.	.	No
14	MX	3PL	0.470	1.445	0.174	.	.	.	No
15	MX	3PL	0.382	2.162	0.023	.	.	.	No
16	MX	3PL	0.561	2.124	0.012	.	.	.	No
17	MX	3PL	1.331	0.830	0.077	.	.	.	No
18	CR	GPC	0.792	1.371	.	0	0.565	-0.565	No
19	CR	GPC	0.780	0.989	.	0	0.379	-0.379	No
20	CR	GPC	0.905	0.149	.	0	-0.070	0.070	No
21	CR	GPC	0.884	0.437	.	0	-0.103	0.103	No
22	CR	GPC	0.767	0.952	.	0	0.492	-0.492	No
23	CR	GPC	0.703	0.537	.	0	0.101	-0.101	No
24	CR	GPC	0.750	0.640	.	0	-0.446	0.446	No
25	CR	GPC	0.910	0.377	.	0	-0.286	0.286	No
26	CR	GPC	1.078	0.417	.	0	0.137	-0.137	No
27	CR	GPC	0.858	1.590	.	0	0.548	-0.548	No
28	CR	GPC	0.966	1.187	.	0	0.194	-0.194	No
29	CR	GPC	1.011	1.629	.	0	0.399	-0.399	No
30	CR	GPC	0.862	0.05	.	0	0.435	-0.435	No
31	CR	GPC	0.955	0.319	.	0	0.174	-0.174	No
32	XI	2PL	0.771	2.272	.	.	.	.	No
33	XI	2PL	0.72	0.594	.	.	.	.	No
34	XI	3PL	0.975	0.945	0.127	.	.	.	No
35	XI	3PL	1.374	1.304	0.227	.	.	.	No
36	XI	3PL	0.325	0.529	0	.	.	.	Yes
37	SR	3PL	1.291	1.335	0.259	.	.	.	No
38	SR	3PL	0.985	-0.556	0.242	.	.	.	No
39	SR	3PL	1.954	0.701	0.253	.	.	.	No
40	SR	3PL	1.557	0.548	0.158	.	.	.	No
41	SR	3PL	1.115	1.562	0.28	.	.	.	No
42	SR	3PL	0.809	0.616	0.328	.	.	.	No
43	SR	3PL	1.147	1.864	0.091	.	.	.	No
44	SR	3PL	0.875	-0.424	0.06	.	.	.	No
45	SR	3PL	0.358	1.701	0.011	.	.	.	No
46	SR	3PL	0.665	0.359	0.166	.	.	.	No

47	SR	3PL	0.872	0.998	0.119	.	.	.	No

Table Error! No text of specified style in document.**.17. Operational Item Parameter Estimates—Science Grade 11**

Item	Item Type	Model	A	B	C	D1	D2	D3	Misfit Flag
1	MX	2PL	0.452	1.180	.	.	.	.	No
2	MX	2PL	0.599	1.938	.	.	.	.	Yes
3	MX	3PL	0.826	0.349	0.107	.	.	.	No
4	MX	3PL	0.761	0.719	0.124	.	.	.	No
5	MX	3PL	1.069	1.703	0.055	.	.	.	No
6	MX	3PL	0.740	1.594	0.149	.	.	.	No
7	MX	3PL	0.916	-0.435	0.029	.	.	.	No
8	MX	3PL	0.768	0.272	0.058	.	.	.	No
9	MX	3PL	0.933	1.496	0.187	.	.	.	No
10	MX	3PL	0.250	0.929	0.066	.	.	.	No
11	MX	3PL	0.809	1.324	0.093	.	.	.	No
12	CR	GPC	0.826	0.490	.	0	-0.064	0.064	No
13	CR	GPC	0.694	0.337	.	0	-0.048	0.048	Yes
14	CR	GPC	0.942	0.910	.	0	0.385	-0.385	No
15	CR	GPC	0.693	1.509	.	0	1.203	-1.203	No
16	CR	GPC	0.688	0.592	.	0	0.818	-0.818	No
17	CR	GPC	1.361	1.077	.	0	0.777	-0.777	No
18	CR	GPC	0.681	1.903	.	0	0.088	-0.088	No
19	CR	GPC	0.503	1.188	.	0	-0.237	0.237	No
20	CR	GPC	0.846	0.373	.	0	1.194	-1.194	Yes
21	CR	GPC	0.677	1.592	.	0	0.718	-0.718	No
22	SR	2PL	0.445	-0.195	.	.	.	.	No
23	SR	2PL	0.400	0.637	.	.	.	.	No
24	SR	3PL	0.482	1.388	0.211	.	.	.	No
25	SR	3PL	1.545	1.808	0.292	.	.	.	No
26	SR	3PL	0.997	0.490	0.316	.	.	.	No
27	SR	3PL	0.705	0.689	0.226	.	.	.	No
28	SR	3PL	0.678	1.281	0.099	.	.	.	No
29	SR	3PL	0.526	-0.136	0.2	.	.	.	No
30	SR	3PL	1.076	0.664	0.234	.	.	.	No
31	SR	3PL	1.088	1.223	0.262	.	.	.	No
32	SR	3PL	0.528	-0.081	0.152	.	.	.	No

Appendix L: TCC, TIC, and CSEM Curves

Figure Error! No text of specified style in document.**.1. Mathematics Grade 3 TCC**

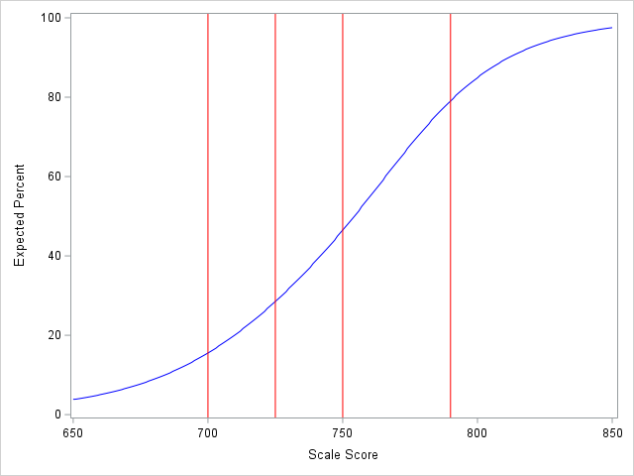


Figure Error! No text of specified style in document.**.2. Mathematics Grade 3 TIC**

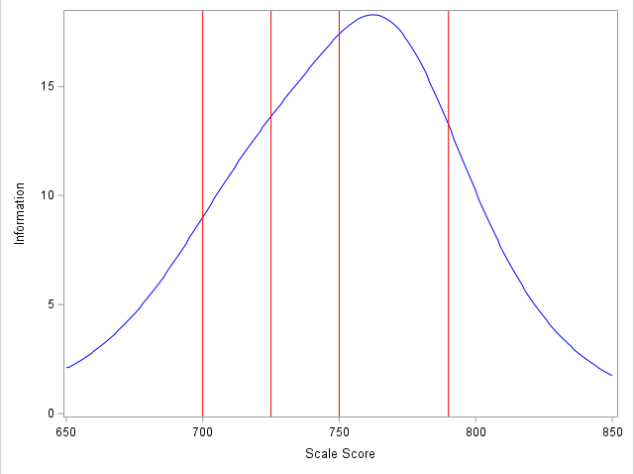


Figure Error! No text of specified style in document.**.3. Mathematics Grade 3 CSEM Curve**

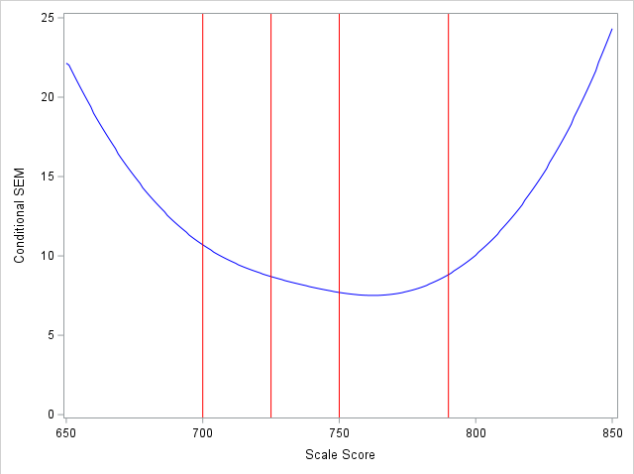


Figure Error! No text of specified style in document.**.4. Mathematics Grade 4 TCC**

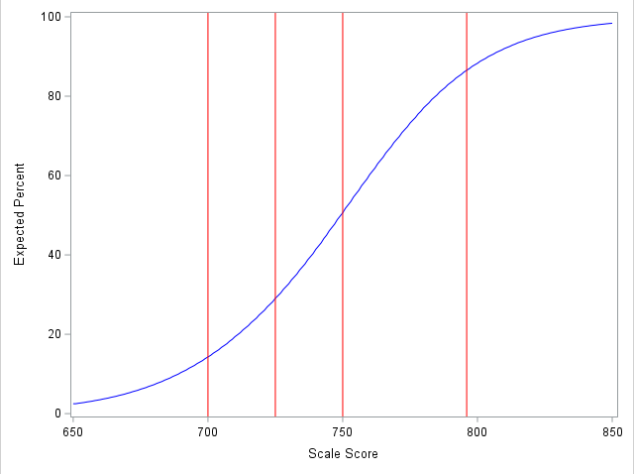


Figure Error! No text of specified style in document.**.5. Mathematics Grade 4 TIC**

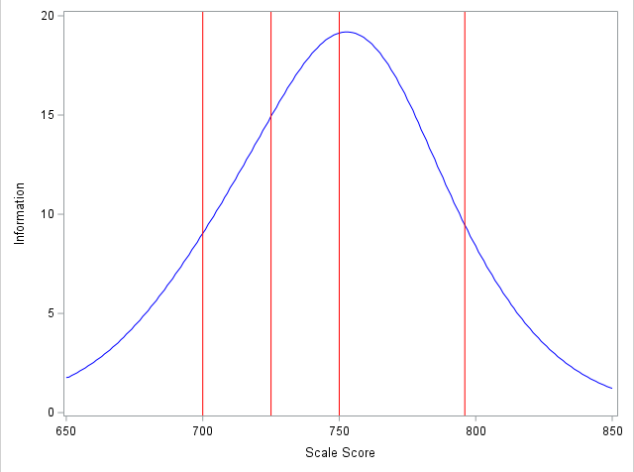


Figure Error! No text of specified style in document.**.6. Mathematics Grade 4 CSEM Curve**

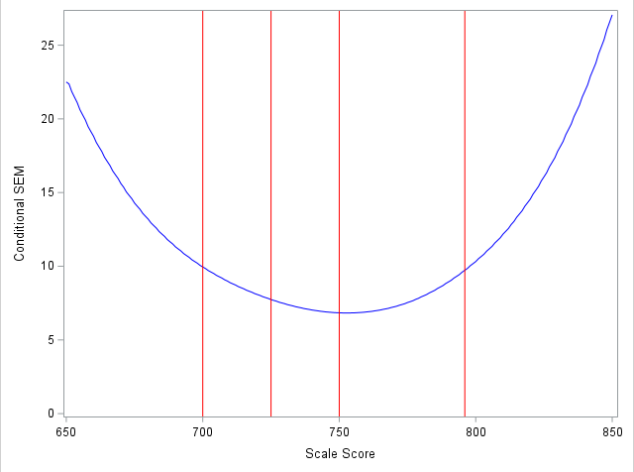


Figure Error! No text of specified style in document.**.7. Mathematics Grade 5 TCC**

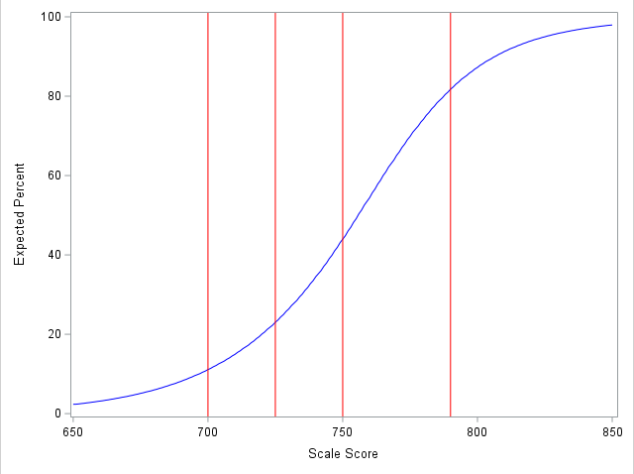


Figure Error! No text of specified style in document.**.8. Mathematics Grade 5 TIC**

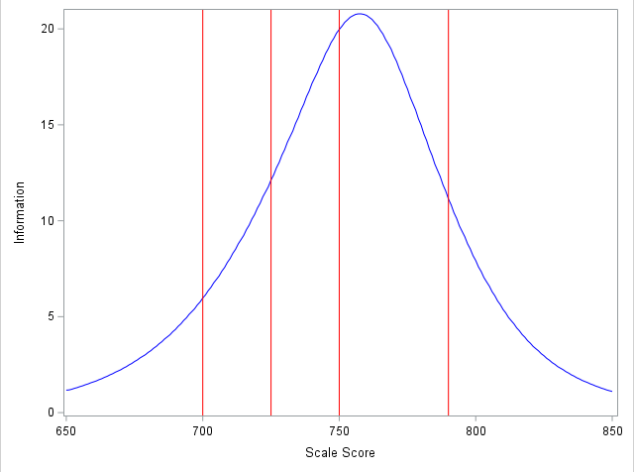


Figure Error! No text of specified style in document.**.9. Mathematics Grade 5 CSEM Curve**

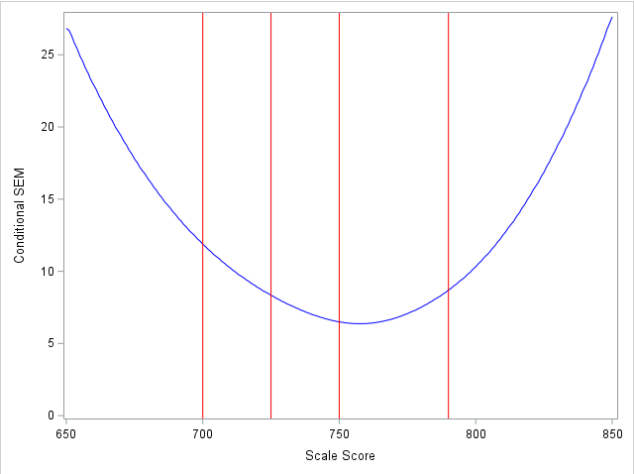


Figure Error! No text of specified style in document.**.10. Mathematics Grade 6 TCC**

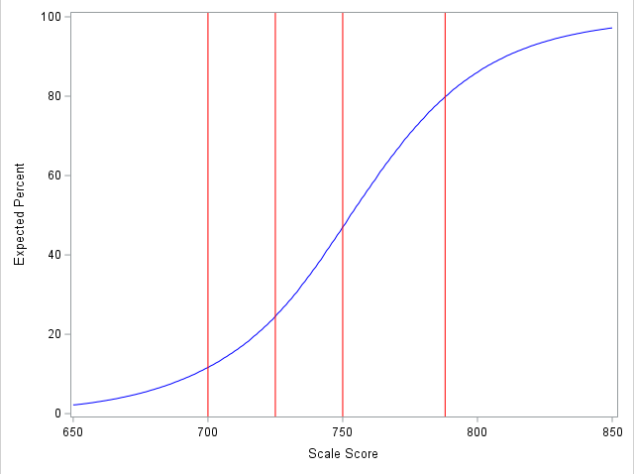


Figure Error! No text of specified style in document.**.11. Mathematics Grade 6 TIC**

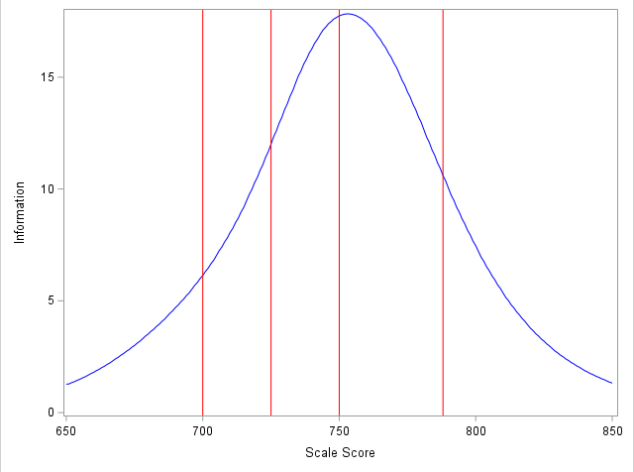


Figure Error! No text of specified style in document.**.12. Mathematics Grade 6 CSEM Curve**

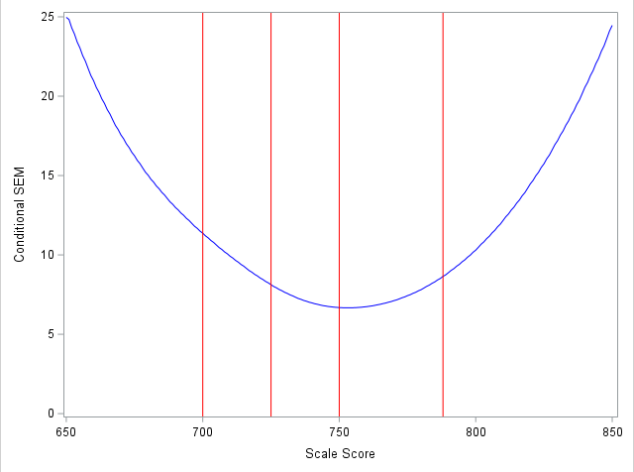


Figure Error! No text of specified style in document.**.13. Mathematics Grade 7 TCC**

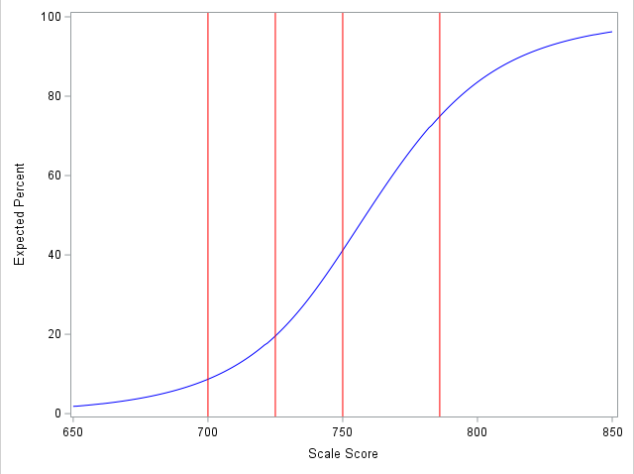


Figure Error! No text of specified style in document.**.14. Mathematics Grade 7 TIC**

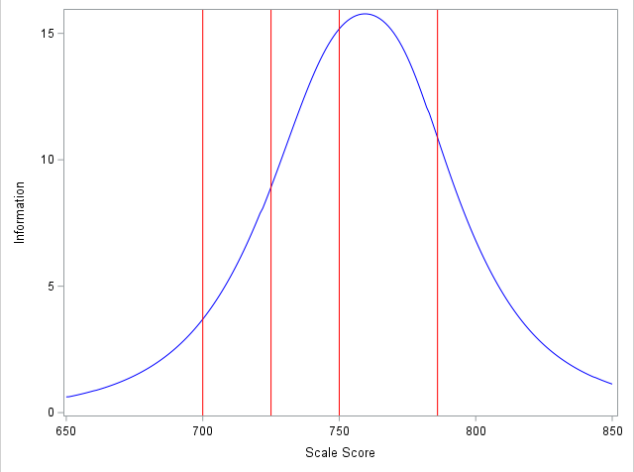


Figure Error! No text of specified style in document.**.15. Mathematics Grade 7 CSEM Curve**

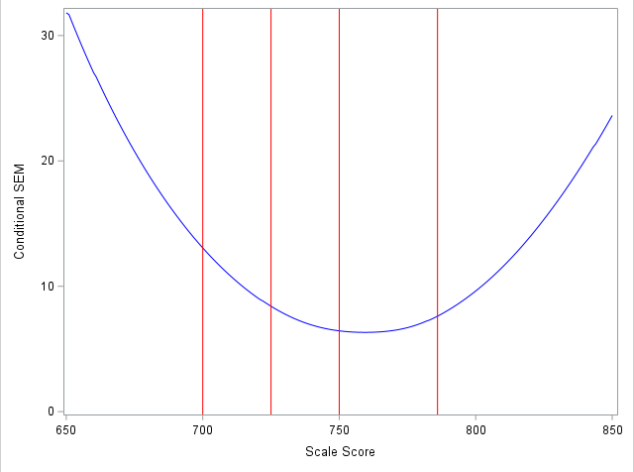


Figure Error! No text of specified style in document.**.16. Mathematics Grade 8 TCC**

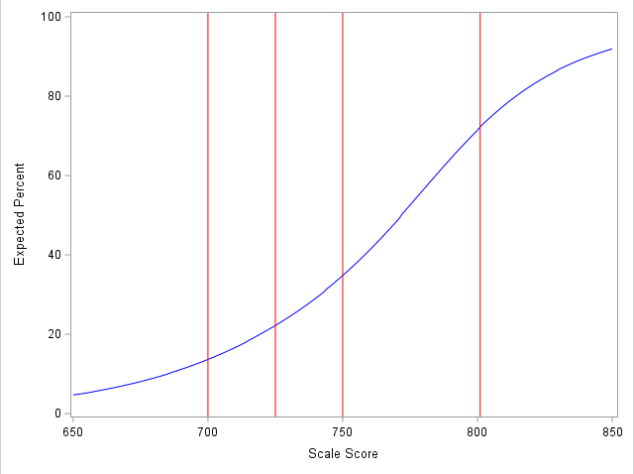


Figure Error! No text of specified style in document.**.17. Mathematics Grade 8 TIC**

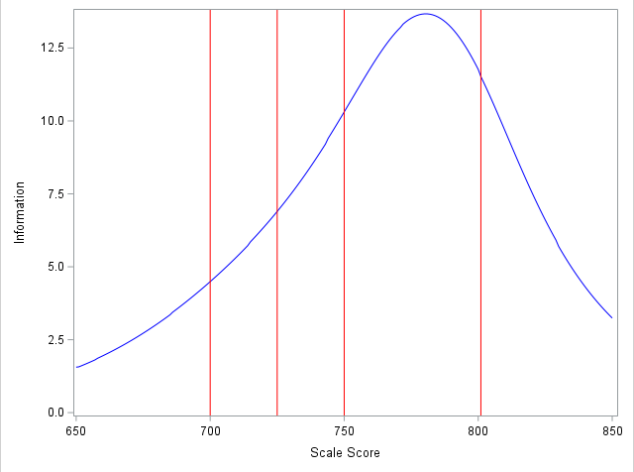


Figure Error! No text of specified style in document.**.18. Mathematics Grade 8 CSEM Curve**

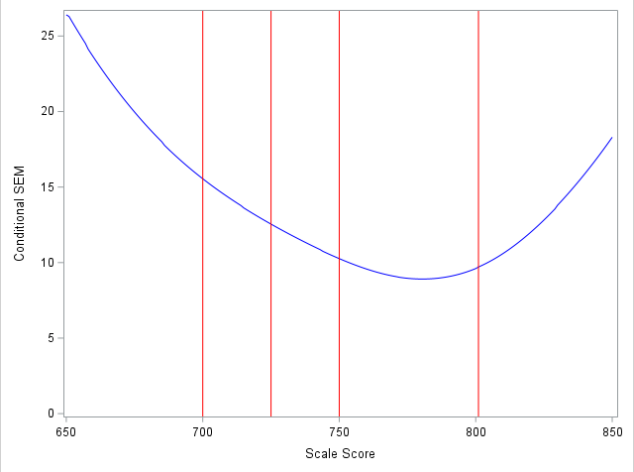


Figure Error! No text of specified style in document.**.19. ELA Grade 3 TCC**

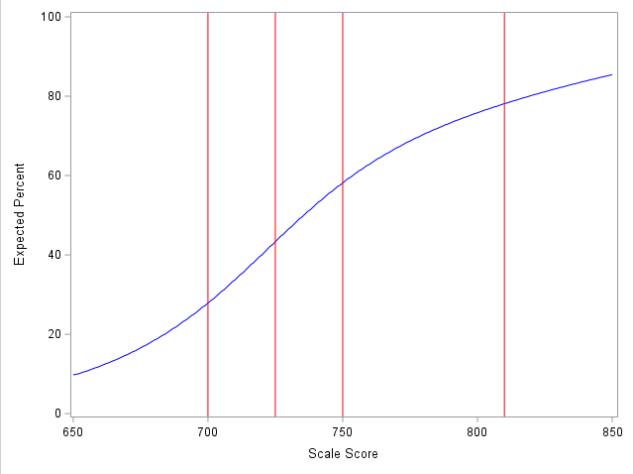


Figure Error! No text of specified style in document.**.20. ELA Grade 3 TIC**

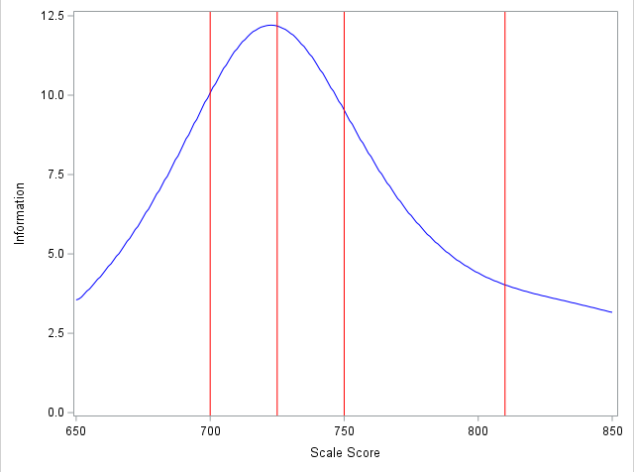


Figure Error! No text of specified style in document.**.21. ELA Grade 3 CSEM Curve**

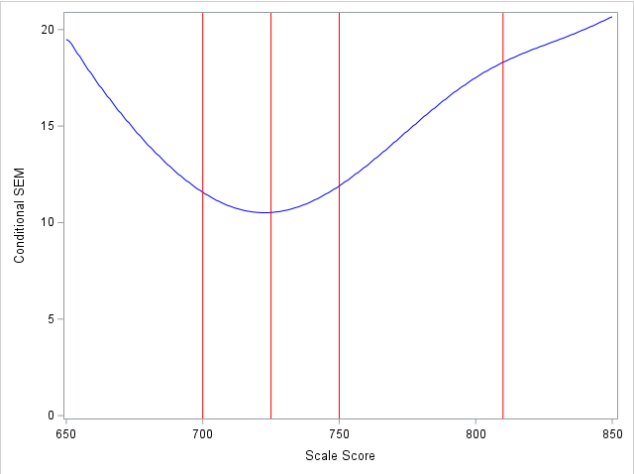


Figure Error! No text of specified style in document.**.22. ELA Grade 4 TCC**

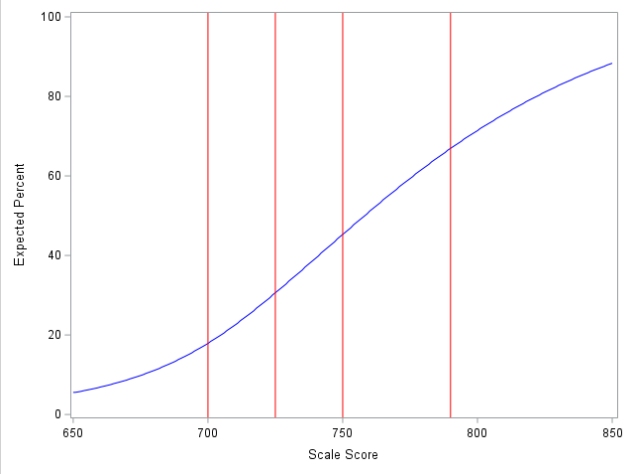


Figure Error! No text of specified style in document.**.23. ELA Grade 4 TIC**

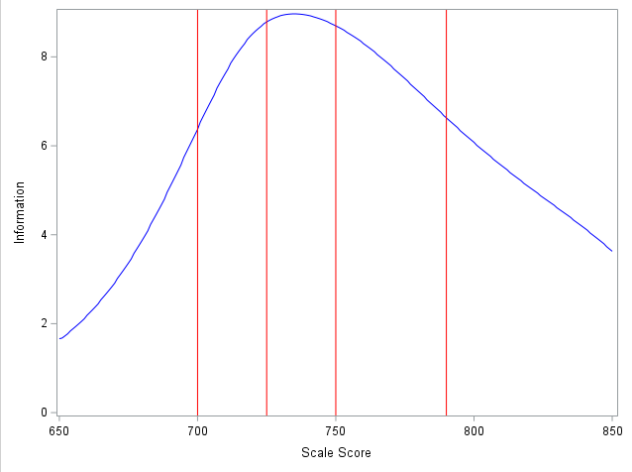


Figure Error! No text of specified style in document.**.24. ELA Grade 4 CSEM Curve**

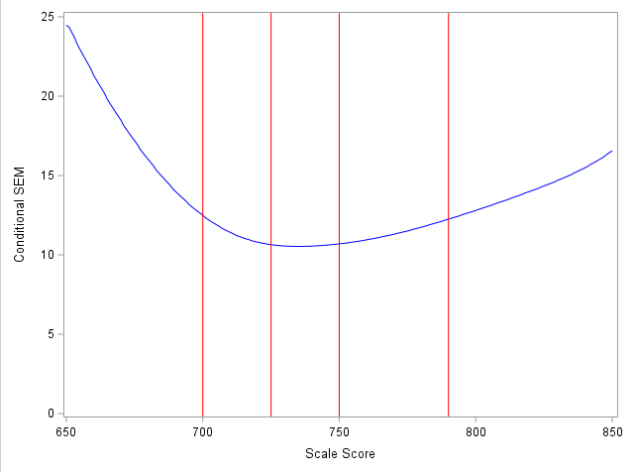


Figure Error! No text of specified style in document.**.25. ELA Grade 5 TCC**

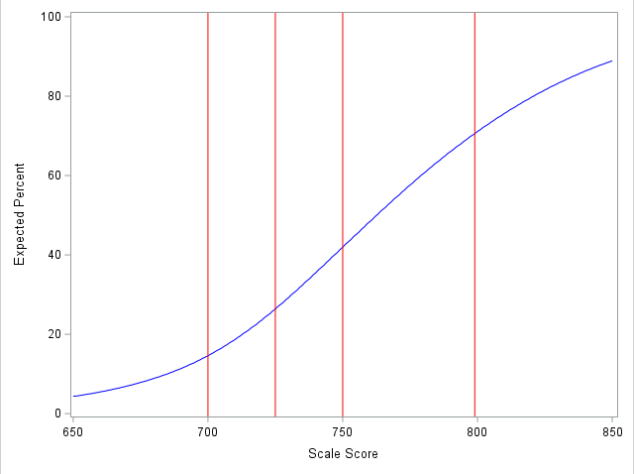


Figure Error! No text of specified style in document.**.26. ELA Grade 5 TIC**

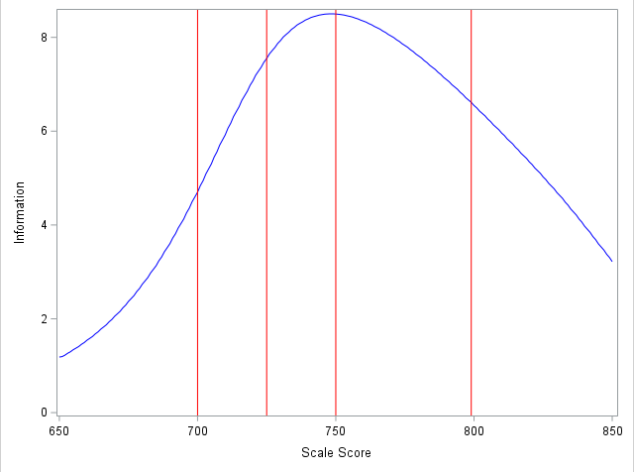


Figure Error! No text of specified style in document.**.27. ELA Grade 5 CSEM Curve**

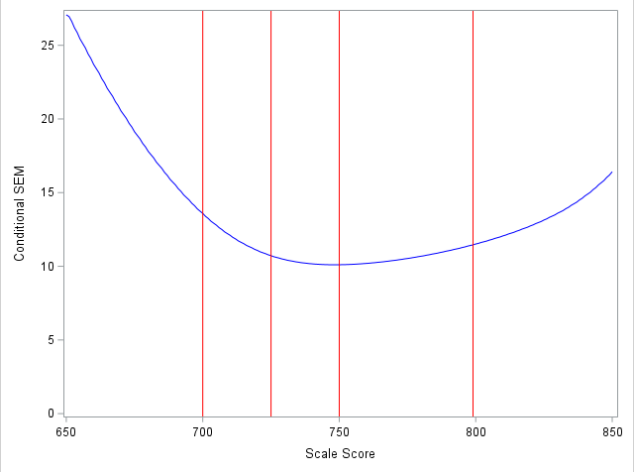


Figure Error! No text of specified style in document.**.28. ELA Grade 6 TCC**

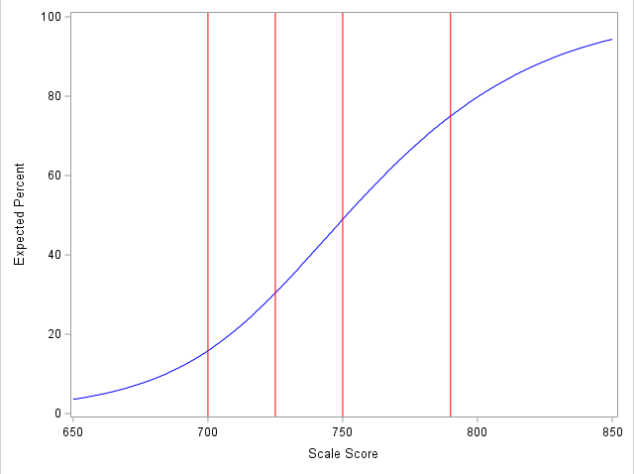


Figure Error! No text of specified style in document.**.29. ELA Grade 6 TIC**

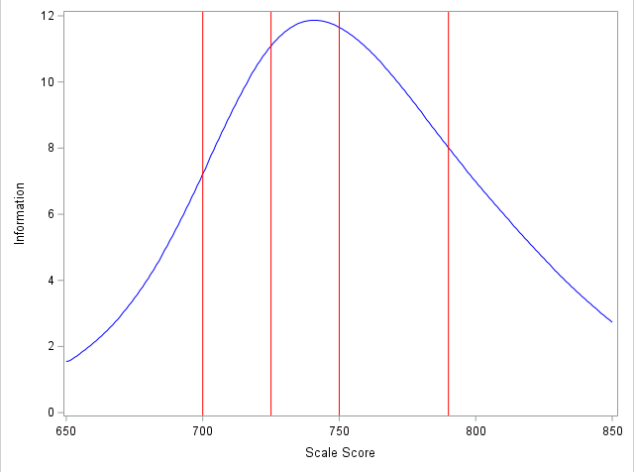


Figure Error! No text of specified style in document.**.30. ELA Grade 6 CSEM Curve**

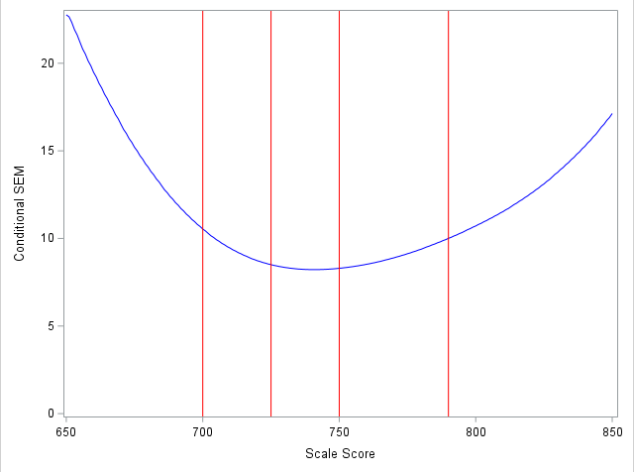


Figure Error! No text of specified style in document.**.31. ELA Grade 7 TCC**

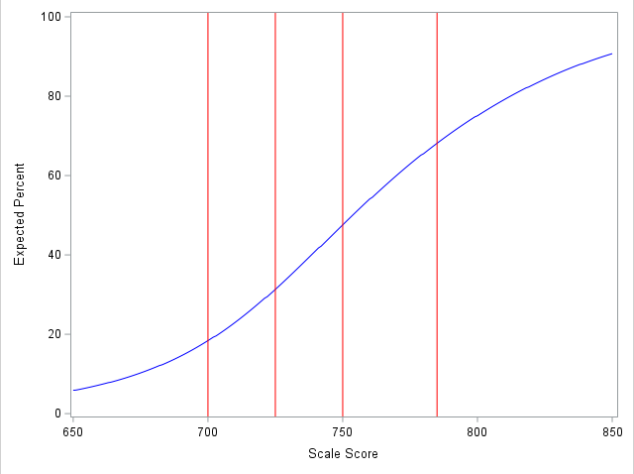


Figure Error! No text of specified style in document.**.32. ELA Grade 7 TIC**

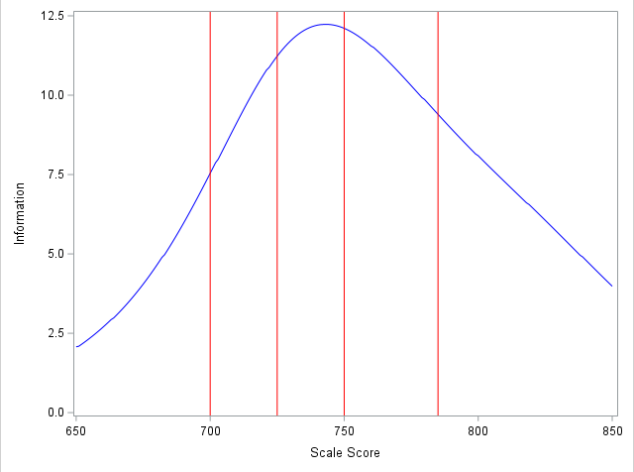


Figure Error! No text of specified style in document.**.33. ELA Grade 7 CSEM Curve**

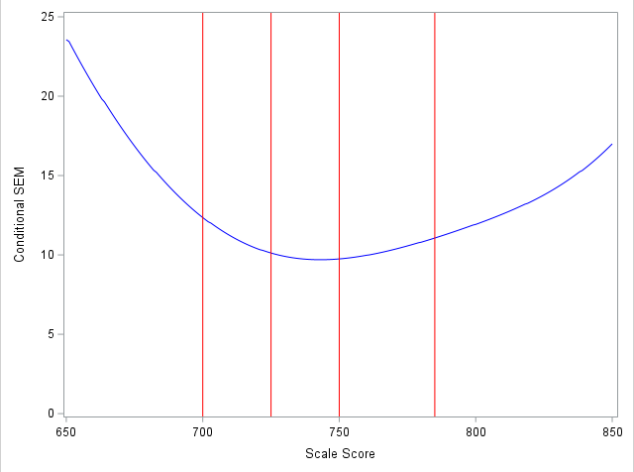


Figure Error! No text of specified style in document.**.34. ELA Grade 8 TCC**

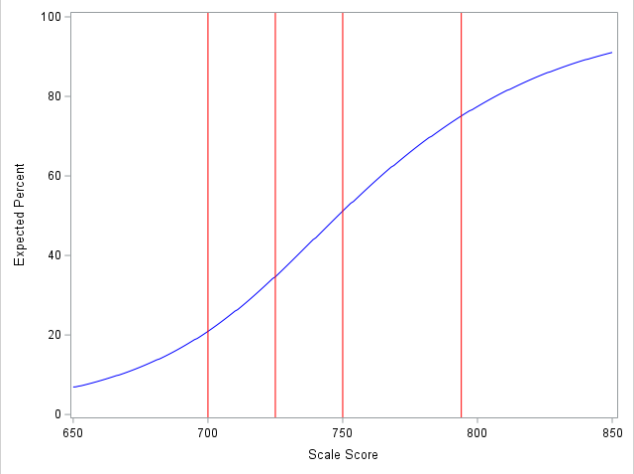


Figure Error! No text of specified style in document.**.35. ELA Grade 8 TIC**

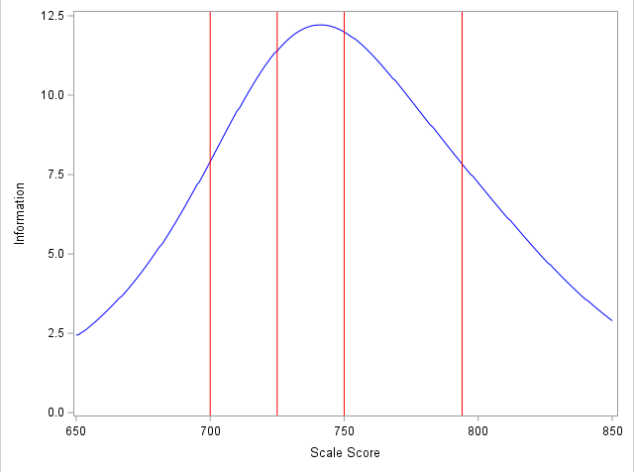


Figure Error! No text of specified style in document.**.36. ELA Grade 8 CSEM Curve**

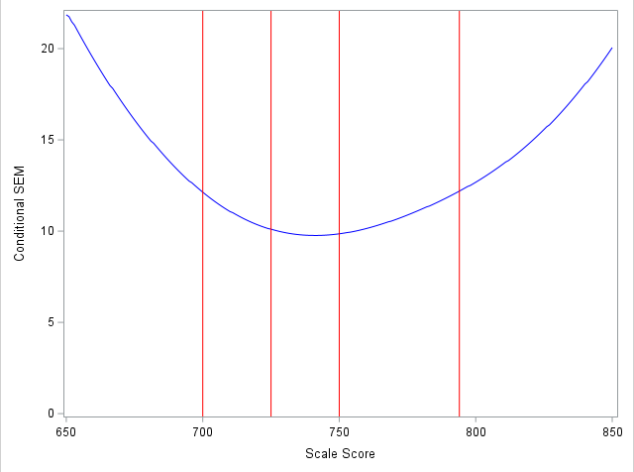


Figure Error! No text of specified style in document.**.37. CSLA Grade 3 TCC**

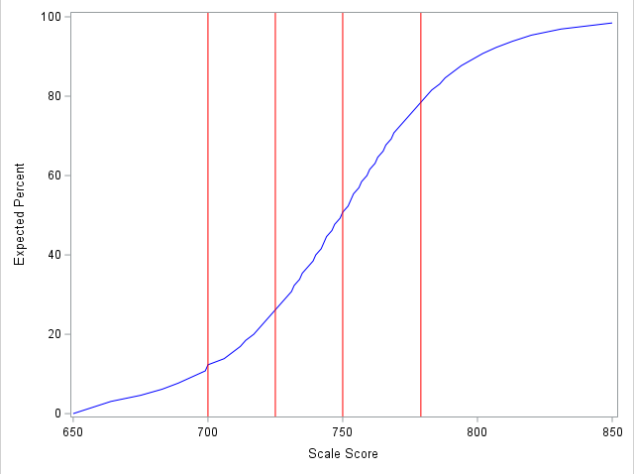


Figure Error! No text of specified style in document.**.38. CSLA Grade 3 TIC**

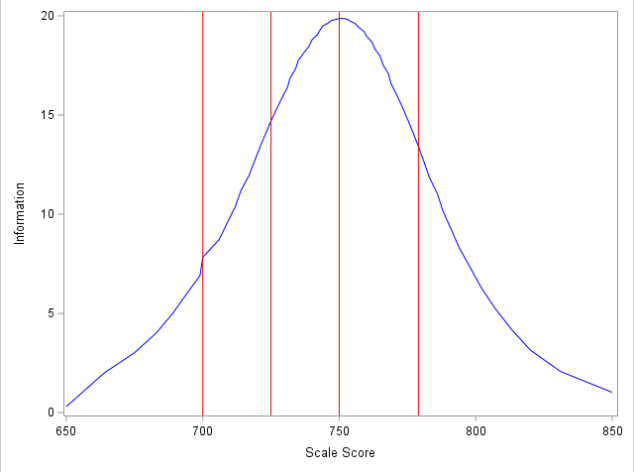


Figure Error! No text of specified style in document.**.39. CSLA Grade 3 CSEM Curve**

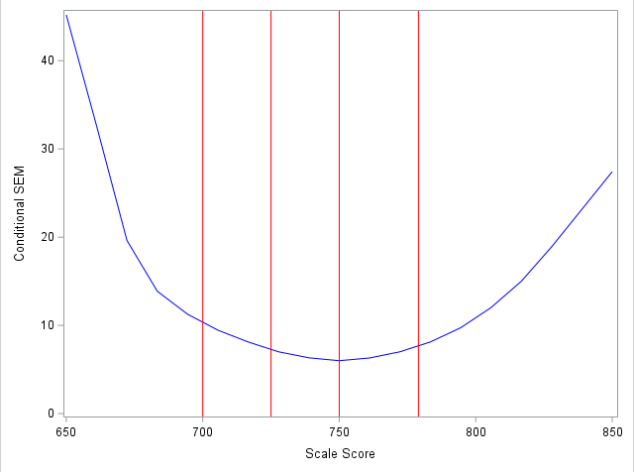


Figure Error! No text of specified style in document.**.40. CSLA Grade 4 TCC**

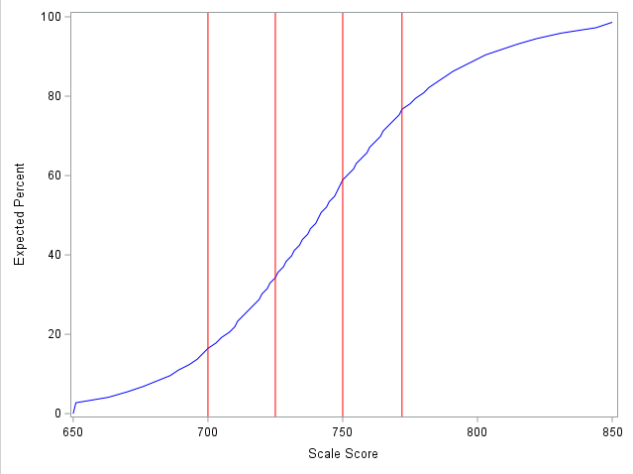


Figure Error! No text of specified style in document.**.41. CSLA Grade 4 TIC**

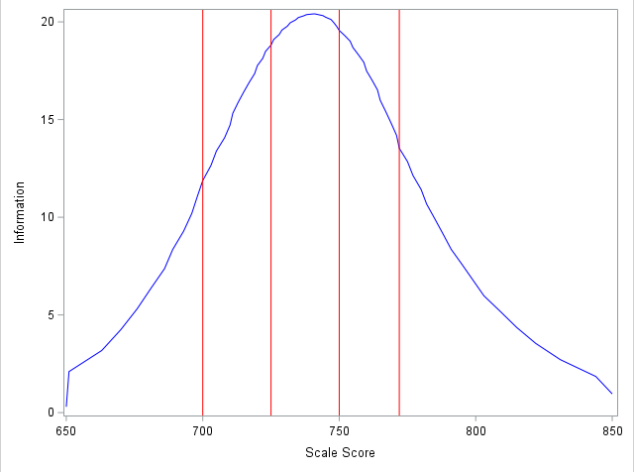


Figure Error! No text of specified style in document.**.42. CSLA Grade 4 CSEM Curve**

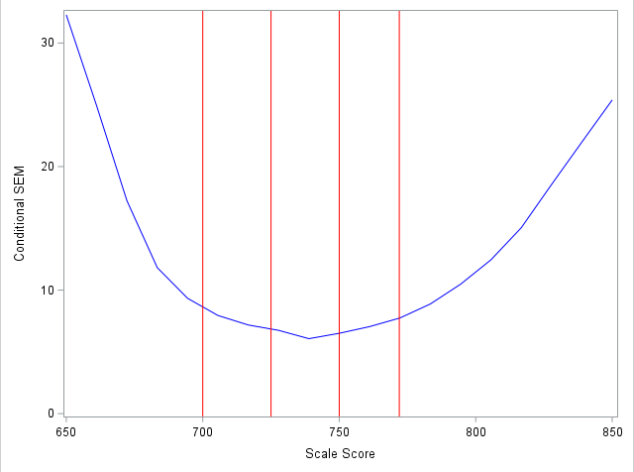


Figure Error! No text of specified style in document.**.43. ELA Reading Grade 3 TCC**

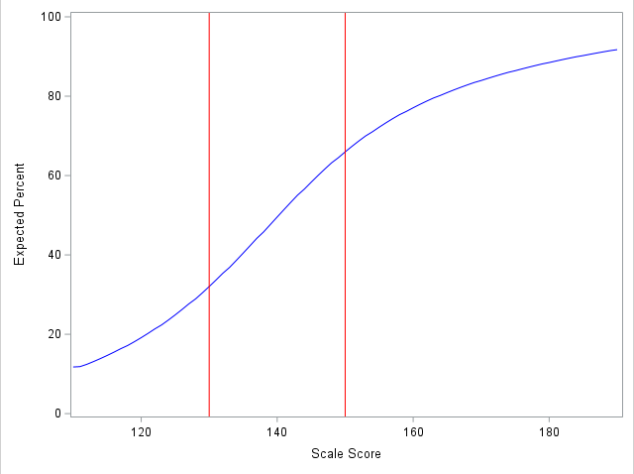


Figure Error! No text of specified style in document.**.44. ELA Reading Grade 3 TIC**

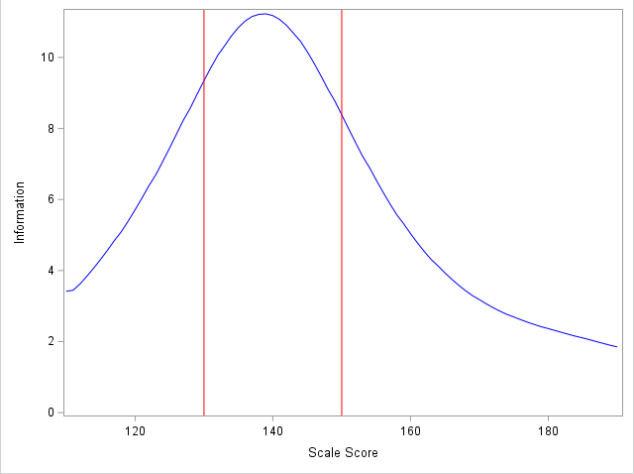


Figure Error! No text of specified style in document.**.45. ELA Reading Grade 3 CSEM Curve**

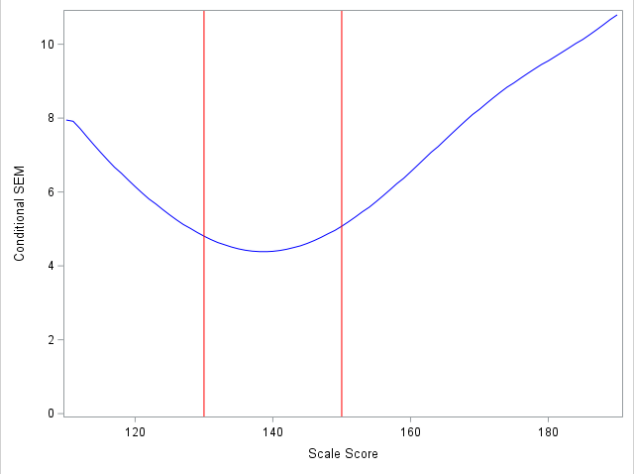


Figure Error! No text of specified style in document.**.46. ELA Reading Grade 4 TCC**

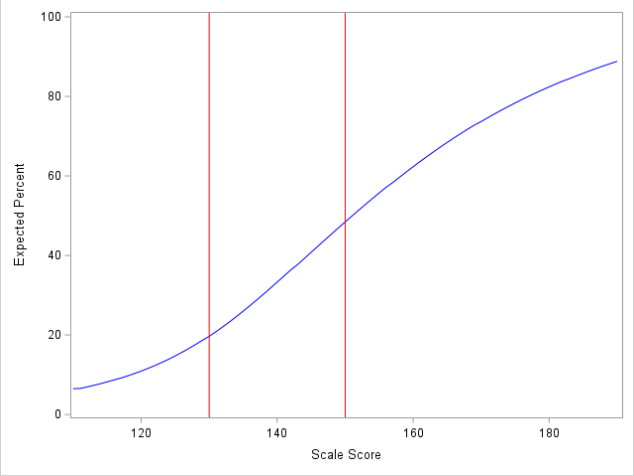


Figure Error! No text of specified style in document.**.47. ELA Reading Grade 4 TIC**

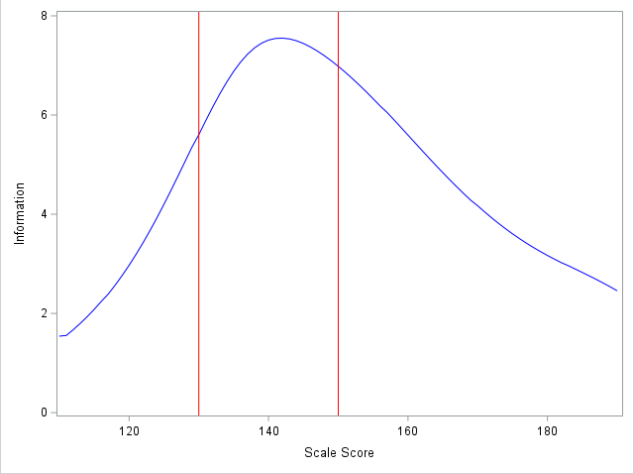


Figure Error! No text of specified style in document.**.48. ELA Reading Grade 4 CSEM Curve**

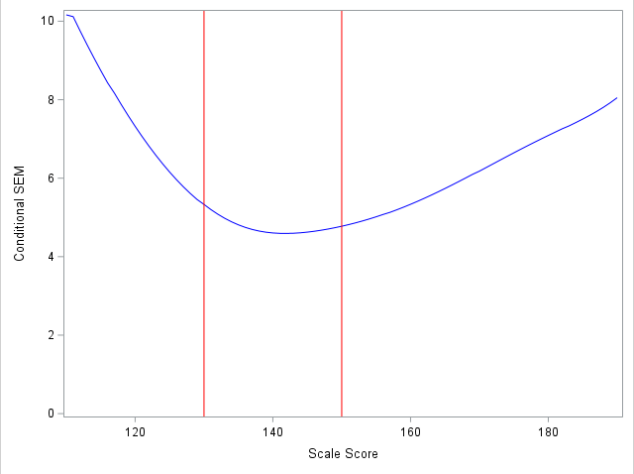


Figure Error! No text of specified style in document.**.49. ELA Reading Grade 5 TCC**

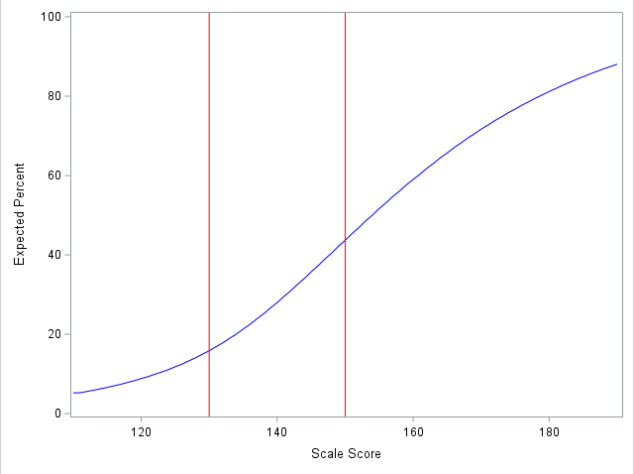


Figure Error! No text of specified style in document.**.50. ELA Reading Grade 5 TIC**

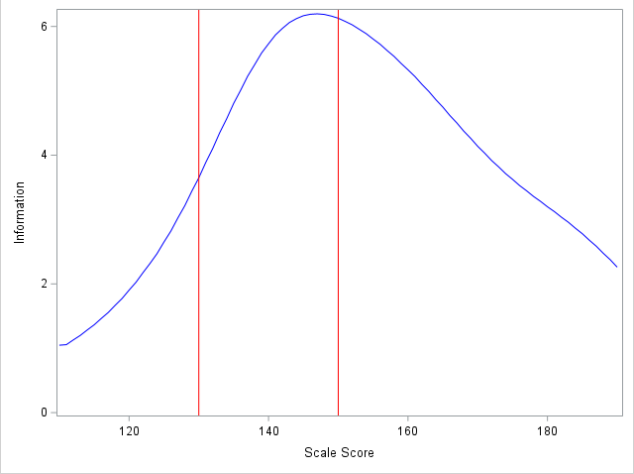


Figure Error! No text of specified style in document.**.51. ELA Reading Grade 5 CSEM Curve**

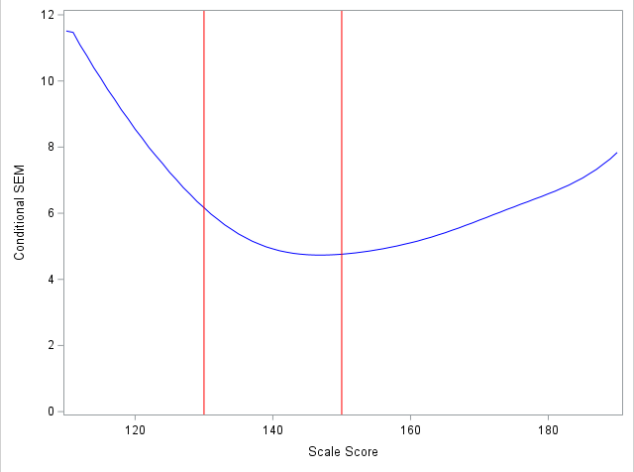


Figure Error! No text of specified style in document.**.52. ELA Reading Grade 6 TCC**

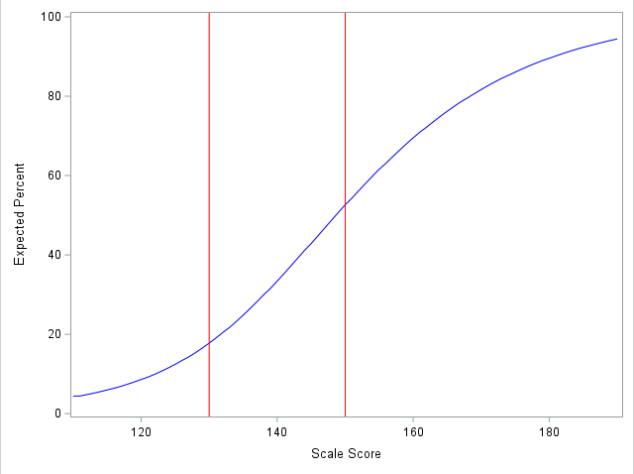


Figure Error! No text of specified style in document.**.53. ELA Reading Grade 6 TIC**

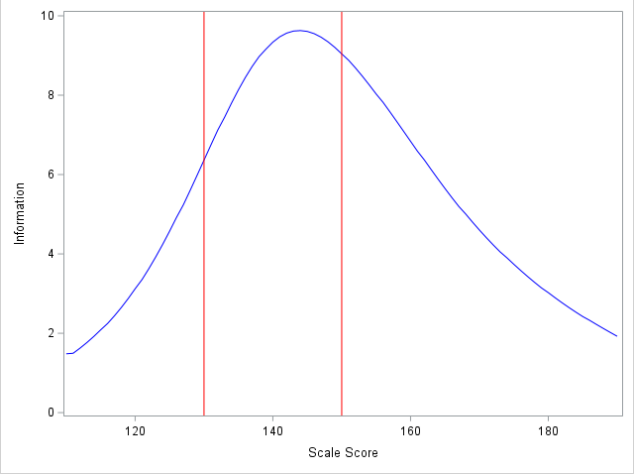


Figure Error! No text of specified style in document.**.54. ELA Reading Grade 6 CSEM Curve**

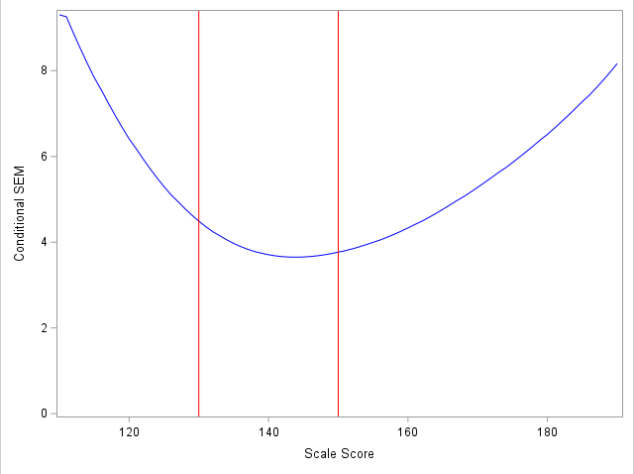


Figure Error! No text of specified style in document.**.55. ELA Reading Grade 7 TCC**

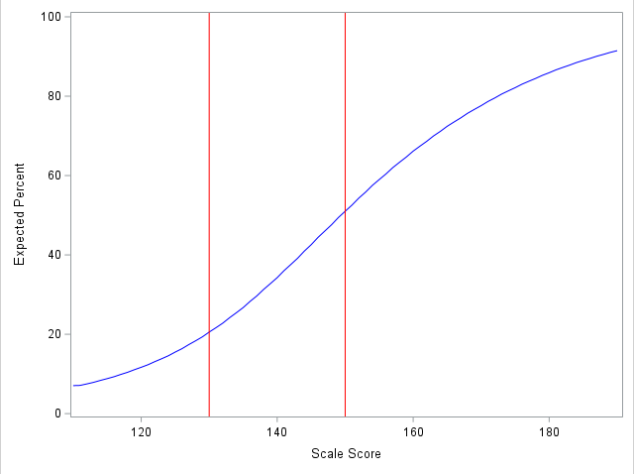


Figure Error! No text of specified style in document.**.56. ELA Reading Grade 7 TIC**

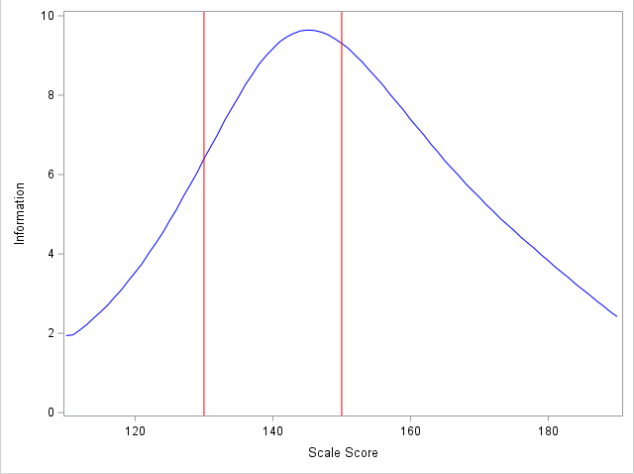


Figure Error! No text of specified style in document.**.57. ELA Reading Grade 7 CSEM Curve**

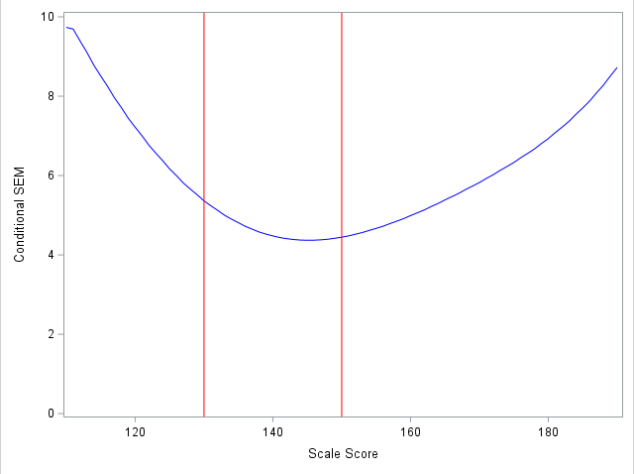


Figure Error! No text of specified style in document.**.58. ELA Reading Grade 8 TCC**

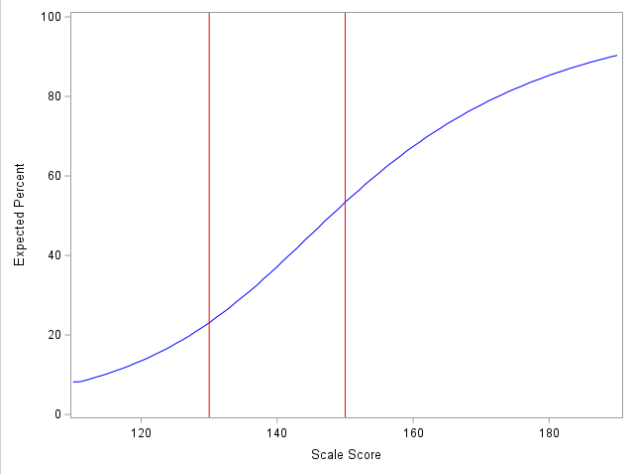


Figure Error! No text of specified style in document.**.59. ELA Reading Grade 8 TIC**

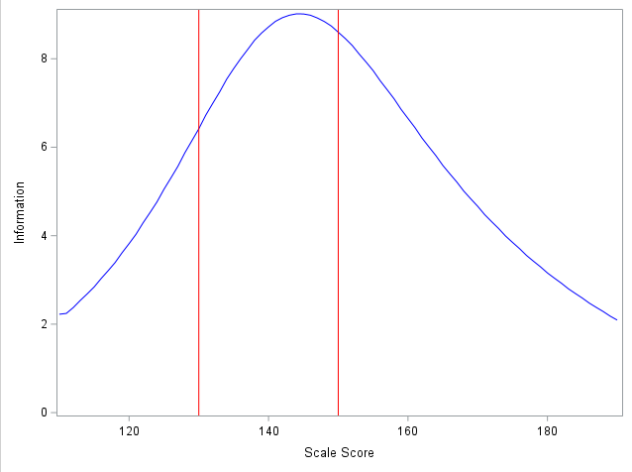


Figure Error! No text of specified style in document.**.60. ELA Reading Grade 8 CSEM Curve**

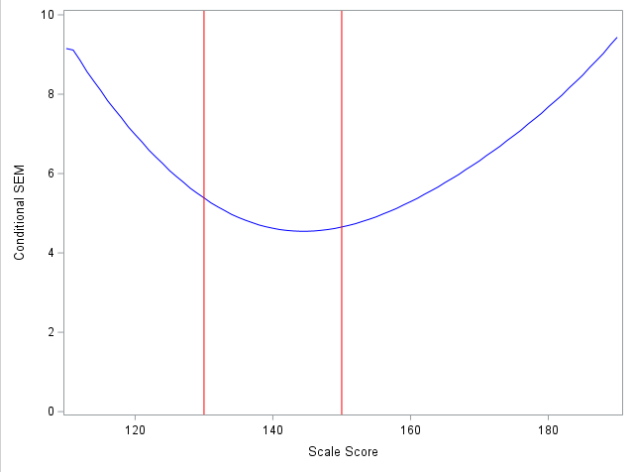


Figure Error! No text of specified style in document.**.61. CSLA Reading Grade 3 TCC**

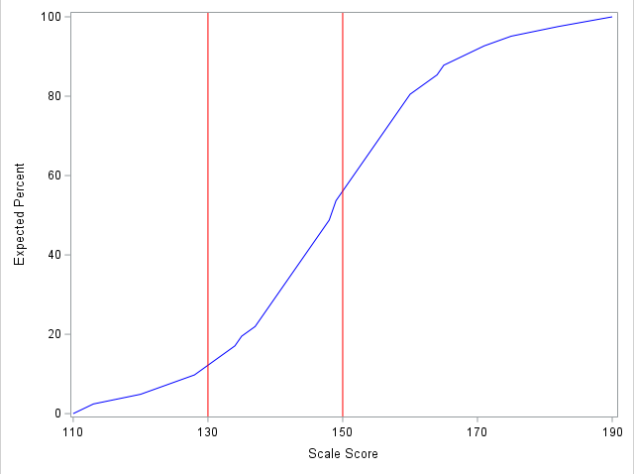


Figure Error! No text of specified style in document.**.62. CSLA Reading Grade 3 TIC**

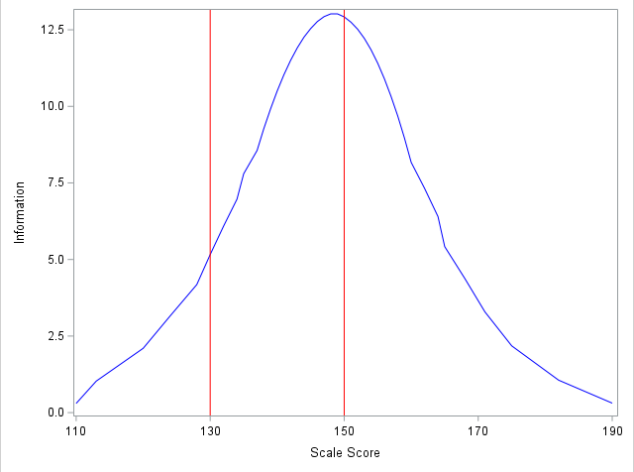


Figure Error! No text of specified style in document.**.63. CSLA Reading Grade 3 CSEM Curve**

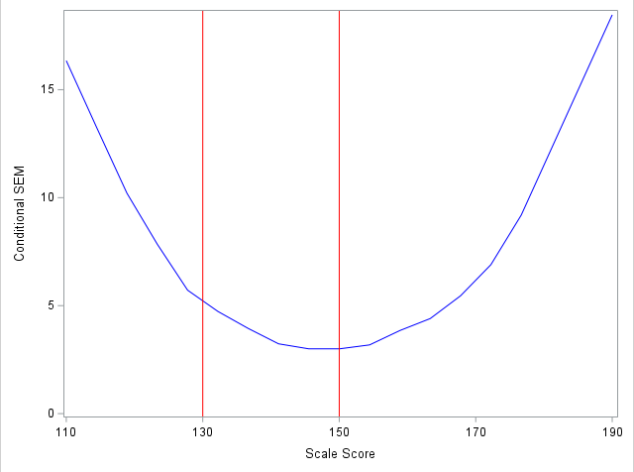


Figure Error! No text of specified style in document.**.64. CSLA Reading Grade 4 TCC**

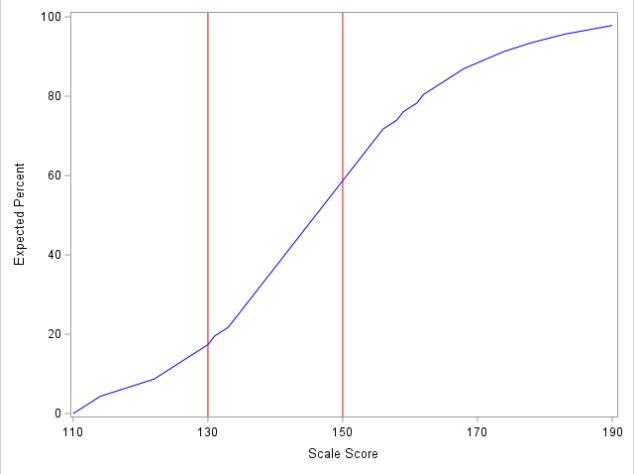


Figure Error! No text of specified style in document.**.65. CSLA Reading Grade 4 TIC**

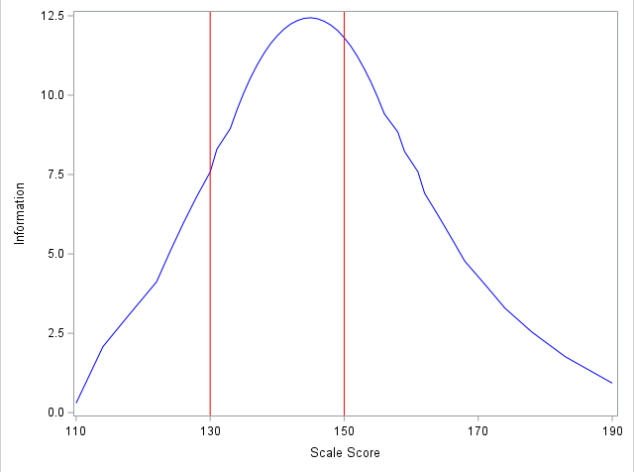


Figure Error! No text of specified style in document.**.66. CSLA Reading Grade 4 CSEM Curve**

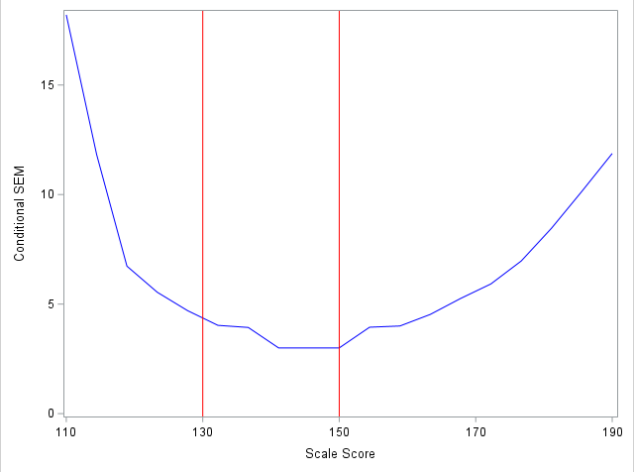


Figure Error! No text of specified style in document.**.67. Science Grade 5 TCC**

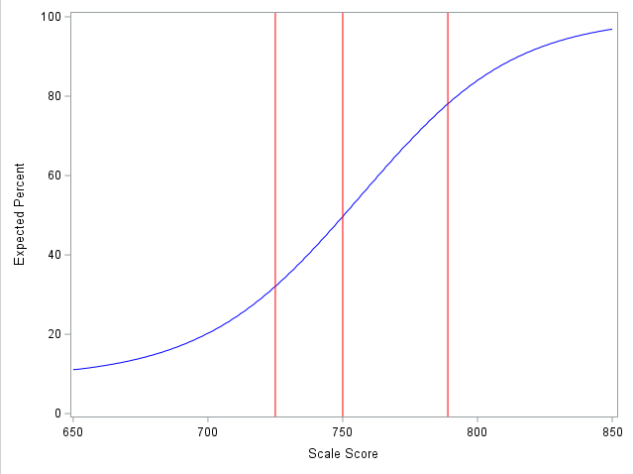


Figure Error! No text of specified style in document.**.68. Science Grade 5 TIC**

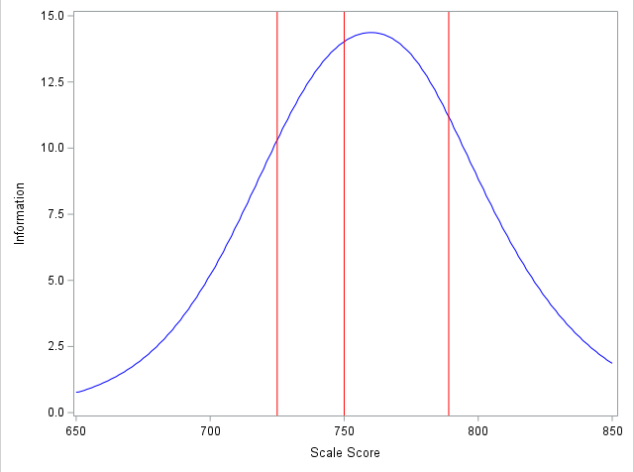


Figure Error! No text of specified style in document.**.69. Science Grade 5 CSEM**

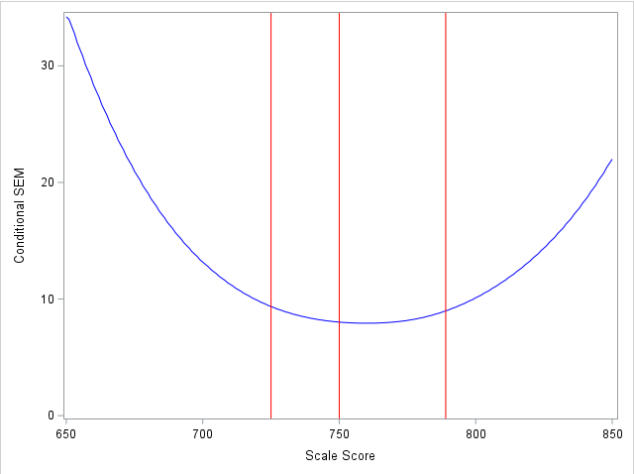


Figure Error! No text of specified style in document.**.70. Science Grade 8 TCC**

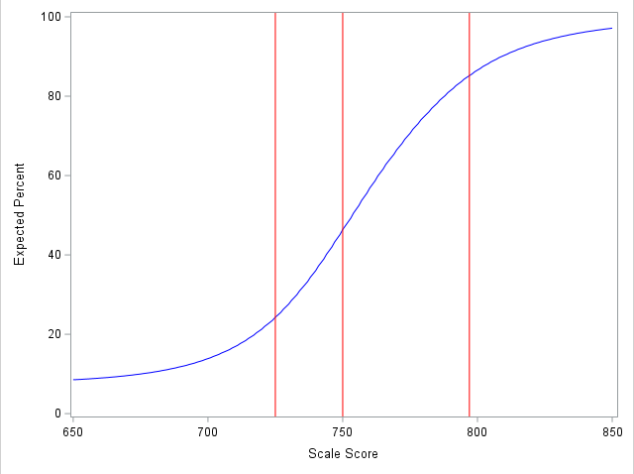


Figure Error! No text of specified style in document.**.71. Science Grade 8 TIC**

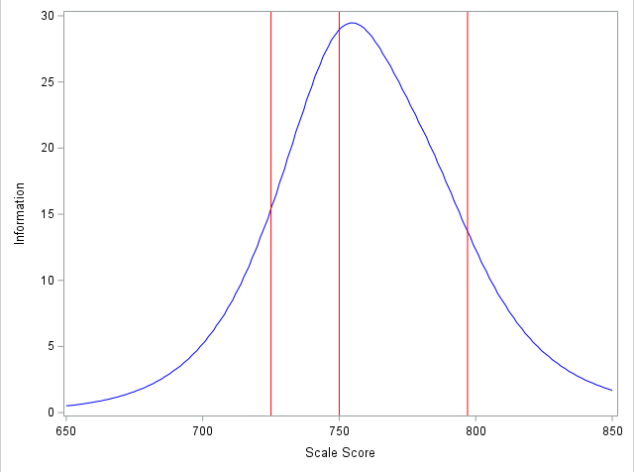


Figure Error! No text of specified style in document.**.72. Science Grade 8 CSEM**

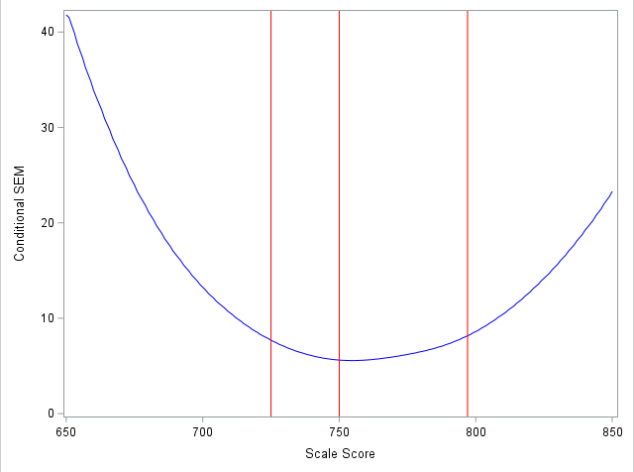


Figure Error! No text of specified style in document.**.73. Science Grade 11 TCC**

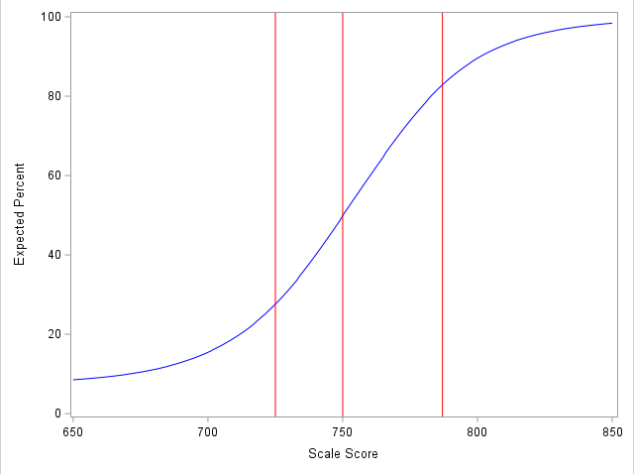


Figure Error! No text of specified style in document.**.74. Science Grade 11 TIC**

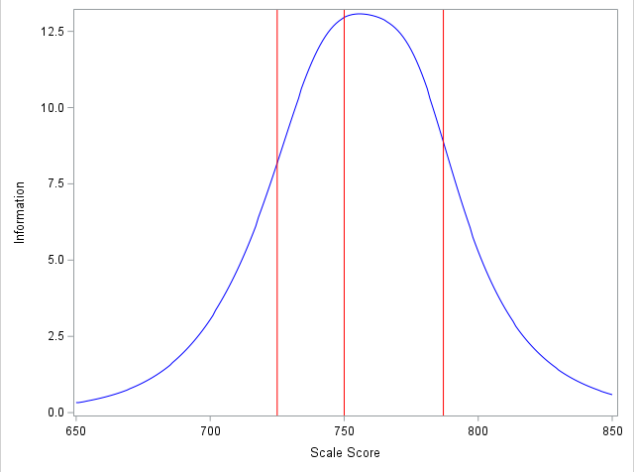
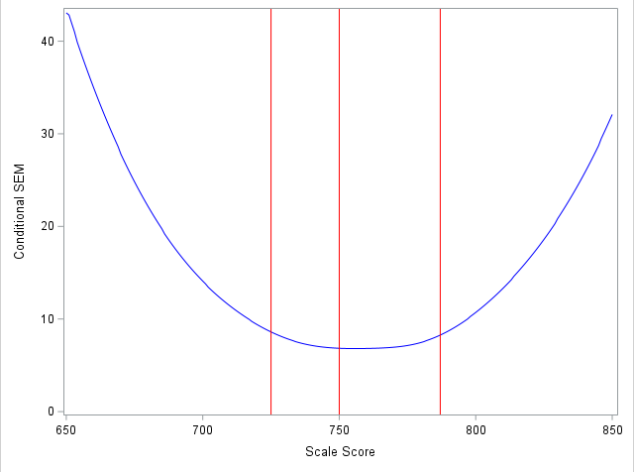


Figure Error! No text of specified style in document.**.75. Science Grade 11 CSEM**



Appendix M: Inter-Rater Agreement

Table Error! No text of specified style in document.**.1. Operational Rater Agreement Statistics—Mathematics Grade 3**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
Item 1	3	5729	88.9	10.1	1.0	0.94	0.00	0.94
Item 2, PartA	2	5687	90.6	9.2	0.2	0.91	0.00	0.91
Item 2, PartB	2	5526	96.5	3.3	0.2	0.96	0.00	0.96
Item 3, PartB	2	5531	95.3	3.8	0.9	0.93	0.00	0.93
Item 3, PartC	3	5361	95.3	4.3	0.4	0.97	0.00	0.97
Item 4	3	5673	82.1	16.8	1.2	0.91	0.00	0.91
Item 5, PartB	3	5619	80.4	18.6	1.0	0.87	0.01	0.87

Table Error! No text of specified style in document.**.2. Operational Rater Agreement Statistics—Mathematics Grade 4**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
Item 1	3	5523	91.9	7.6	0.5	0.90	0.01	0.90
Item 2, PartA	2	5577	91.6	6.8	1.6	0.92	0.00	0.92
Item 2, PartB	2	5490	91.4	6.2	2.4	0.91	0.01	0.91
Item 3, PartA	2	5520	93.5	6.5	0.1	0.96	0.00	0.96
Item 3, PartB	2	5472	92.4	7.5	0.1	0.93	0.00	0.93
Item 4, PartB	3	5386	87.7	11.6	0.7	0.94	0.00	0.94
Item 4, PartC	2	5198	96.2	3.4	0.3	0.97	0.00	0.97
Item 5	3	5574	94.5	5.1	0.3	0.96	0.00	0.96

Table Error! No text of specified style in document.**.3. Operational Rater Agreement Statistics—Mathematics Grade 5**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
Item 1	4	5577	90.7	7.9	1.4	0.96	0.00	0.96
Item 2	3	5627	91.7	7.8	0.4	0.96	0.00	0.96
Item 3	4	5635	83.4	15.2	1.5	0.94	0.00	0.94
Item 4	3	5570	80.1	18.5	1.4	0.90	0.01	0.90
Item 5, PartB	3	5450	85.9	13.2	0.9	0.92	0.00	0.92
Item 5, PartC	2	5381	92.9	6.9	0.2	0.95	0.00	0.95

Table Error! No text of specified style in document.**.4. Operational Rater Agreement Statistics—Mathematics Grade 6**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
Item 1	3	5484	88.3	11.1	0.6	0.93	0.01	0.93
Item 2, PartB	2	5195	90.1	9.5	0.4	0.87	0.00	0.87
Item 3	4	5497	87.8	10.9	1.2	0.94	0.00	0.94
Item 4	4	5448	84.5	14.6	0.9	0.96	0.01	0.96
Item 5, PartA	3	5459	88.9	8.8	2.3	0.93	0.01	0.93
Item 5, PartB	3	5387	85.9	13.8	0.3	0.92	0.00	0.92

Table Error! No text of specified style in document.**.5. Operational Rater Agreement Statistics—Mathematics Grade 7**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
Item 1, PartA	3	5322	81.5	17.2	1.4	0.90	0.00	0.90
Item 1, PartB	3	5202	91.0	7.3	1.7	0.94	0.00	0.94
Item 2	4	5305	91.8	7.2	1.1	0.95	0.01	0.95
Item 3	3	5316	80.3	18.5	1.2	0.91	0.00	0.91
Item 4	4	5358	86.8	12.1	1.0	0.96	0.00	0.96
Item 5	3	5346	87.9	11.3	0.9	0.91	0.01	0.91

Table Error! No text of specified style in document.**.6. Operational Rater Agreement Statistics—Mathematics Grade 8**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
Item 1	4	5034	87.6	11.1	1.3	0.93	0.00	0.93
Item 2	3	5063	90.7	9.0	0.3	0.95	0.01	0.95
Item 3	4	5111	81.4	17.1	1.5	0.93	0.01	0.93
Item 4, PartB	2	4967	97.6	2.3	0.1	0.96	0.00	0.96
Item 5, PartA	4	5043	90.0	9.1	0.9	0.97	0.00	0.97
Item 5, PartB	2	4962	98.1	1.9	0.0	0.96	0.00	0.96

Table Error! No text of specified style in document.**.7. Field Test Rater Agreement Statistics—Mathematics Grade 3**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
Item 1, PartA	2	2999	92.8	7.1	0.1	0.93	0.00	0.93
Item 1, PartB	2	2989	98.4	1.5	0.0	0.98	0.00	0.98
Item 2, PartA	2	2997	92.1	7.9	0.0	0.94	0.00	0.94
Item 2, PartB	2	2996	96.8	2.8	0.3	0.98	0.00	0.98
Item 3, PartA	2	2998	98.0	2.0	0.0	0.99	0.00	0.99
Item 4, PartA	2	2999	92.2	7.8	0.0	0.92	0.01	0.92
Item 4, PartB	2	2996	93.0	6.9	0.1	0.92	0.00	0.92
Item 5, PartA	2	2998	95.3	4.4	0.3	0.97	0.00	0.97
Item 5, PartB	2	2994	97.6	2.1	0.3	0.98	0.00	0.98
Item 5, PartC	2	2993	96.6	3.3	0.0	0.98	0.00	0.98

Table Error! No text of specified style in document.**.8. Field Test Rater Agreement Statistics—Mathematics Grade 4**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
Item 1, PartB	2	2998	93.7	6.2	0.1	0.95	0.00	0.95
Item 2, PartB	2	2991	90.7	9.1	0.2	0.91	0.02	0.91
Item 3	3	2997	96.3	3.7	0.0	0.98	0.01	0.98
Item 4	3	2997	90.3	9.4	0.3	0.96	0.00	0.96
Item 5, PartA	2	2997	90.6	9.3	0.1	0.93	0.00	0.93
Item 5, PartB	2	2997	93.5	6.4	0.1	0.95	0.01	0.95
Item 6	3	2997	95.4	4.5	0.1	0.97	0.00	0.97
Item 7, PartA	2	2999	96.7	3.2	0.1	0.97	0.00	0.97
Item 7, PartB	2	2999	95.0	5.0	0.1	0.97	0.00	0.97
Item 7, PartC	2	2999	97.2	2.6	0.3	0.98	0.00	0.98

Table Error! No text of specified style in document.**.9. Field Test Rater Agreement Statistics—Mathematics Grade 5**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
Item 1	4	2994	77.5	21.1	1.4	0.94	0.00	0.94
Item 2, PartB	3	2997	91.4	8.3	0.3	0.96	0.01	0.96
Item 3, PartA	2	2996	93.2	6.6	0.2	0.94	0.01	0.94
Item 3, PartB	2	2994	94.5	5.3	0.2	0.95	0.01	0.95
Item 4, PartB	3	2987	79.7	16.3	4.0	0.86	0.00	0.86
Item 5, PartA	2	2993	94.1	5.5	0.4	0.96	0.01	0.96
Item 5, PartB	2	2987	94.8	4.9	0.2	0.97	0.00	0.97
Item 6, PartA	2	2996	89.8	9.8	0.5	0.91	0.01	0.91
Item 6, PartB	2	2994	91.9	7.9	0.2	0.92	0.01	0.92
Item 7, PartA	3	2998	94.0	5.7	0.3	0.97	0.00	0.97
Item 7, PartB	3	2988	89.8	8.1	2.1	0.93	0.01	0.93
Item 8, PartA	4	2997	91.2	7.9	0.9	0.97	0.00	0.97
Item 8, PartB	2	2997	91.6	8.2	0.2	0.94	0.01	0.94

Table Error! No text of specified style in document.**.10. Field Test Rater Agreement Statistics—Mathematics Grade 6**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
Item 1	3	2987	92.6	6.6	0.8	0.90	0.01	0.90
Item 2, PartB	2	2994	95.8	3.8	0.4	0.97	0.00	0.97
Item 2, PartC	2	2990	94.9	5.0	0.1	0.97	0.00	0.97
Item 3, PartA	2	2993	90.2	9.4	0.5	0.92	0.01	0.92
Item 3, PartB	2	2992	93.1	6.1	0.7	0.95	0.01	0.95
Item 3, PartC	2	2978	96.1	2.6	1.3	0.94	0.01	0.94
Item 4, PartA	2	3003	96.1	3.7	0.2	0.98	0.00	0.98
Item 4, PartB	4	3000	90.7	8.8	0.5	0.98	0.00	0.98

Table Error! No text of specified style in document.**.11. Field Test Rater Agreement Statistics—Mathematics Grade 7**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
Item 1, PartA	2	2985	93.4	6.6	0.0	0.94	0.00	0.94
Item 2, PartC	2	2974	93.8	6.1	0.1	0.92	0.00	0.92
Item 3	4	2990	91.2	8.0	0.8	0.94	0.00	0.94
Item 4	3	2996	93.9	5.9	0.2	0.98	0.00	0.98
Item 5, PartA	3	2992	90.5	8.9	0.6	0.96	0.00	0.96
Item 5, PartB	3	2982	96.0	1.7	2.3	0.89	0.01	0.89
Item 6, PartC	4	2983	93.6	5.3	1.1	0.98	0.00	0.98

Table Error! No text of specified style in document.**.12. Field Test Rater Agreement Statistics—Mathematics Grade 8**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
Item 1	3	2972	85.1	14.1	0.8	0.91	0.01	0.91
Item 2	3	2980	93.4	6.3	0.4	0.98	0.00	0.98
Item 3, PartA	2	2989	96.6	3.3	0.1	0.97	0.01	0.97
Item 4, PartA	2	2991	94.7	5.0	0.4	0.96	0.00	0.96

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
Item 4, PartB	2	2989	97.8	1.9	0.3	0.98	0.00	0.98
Item 5	4	2981	84.5	14.3	1.2	0.96	0.00	0.96
Item 6, PartB	2	2975	94.6	5.4	0.1	0.96	0.00	0.96
Item 7, PartA	2	2995	95.9	3.8	0.3	0.97	0.00	0.97
Item 7, PartB	2	2983	98.7	1.2	0.1	0.96	0.00	0.96
Item 7, PartC	2	2981	90.3	9.5	0.2	0.91	0.00	0.91
Item 8, PartA	3	2992	88.1	10.9	1.0	0.92	0.00	0.92
Item 8, PartB	3	2976	82.8	16.3	1.0	0.86	0.01	0.86

Table Error! No text of specified style in document.**.13. Operational Rater Agreement Statistics—ELA Grade 3**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
PCR_1_WE	3	5721	80.8	18.7	0.4	0.75	0.00	0.75
PCR_1_WKL	3	5721	84.6	15.1	0.4	0.79	0.00	0.79
PCR_2_WE	3	5710	83.3	16.5	0.2	0.73	0.00	0.73
PCR_2_WKL	3	5710	81.5	18.3	0.2	0.76	0.02	0.76

Table Error! No text of specified style in document.**.14. Operational Rater Agreement Statistics—ELA Grade 4**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
PCR_1_WE	3	5557	80.6	19.1	0.3	0.84	0.01	0.84
PCR_1_WKL	3	5557	80.2	19.2	0.6	0.82	0.00	0.82
PCR_2_WE	4	5564	77.8	21.6	0.6	0.74	0.00	0.74
PCR_2_WKL	3	5564	80.7	18.6	0.7	0.78	0.01	0.78

Table Error! No text of specified style in document.**.15. Operational Rater Agreement Statistics—ELA Grade 5**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
PCR_1_WE	3	5718	81.7	18.2	0.1	0.88	0.01	0.88
PCR_1_WKL	3	5718	80.7	19.2	0.1	0.88	0.00	0.88
PCR_2_WE	4	5705	77.8	21.6	0.7	0.82	0.01	0.82
PCR_2_WKL	3	5705	80.7	18.7	0.6	0.82	0.02	0.82

Table Error! No text of specified style in document.**.16. Operational Rater Agreement Statistics—ELA Grade 6**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
PCR_1_WE	4	5520	80.9	18.7	0.4	0.85	0.00	0.85
PCR_1_WKL	3	5520	80.4	19.2	0.4	0.85	0.01	0.85
PCR_2_WE	4	5530	78.3	19.9	1.8	0.87	0.01	0.87
PCR_2_WKL	3	5530	80.9	17.6	1.4	0.86	0.00	0.86

Table Error! No text of specified style in document.**.17. Operational Rater Agreement Statistics—ELA Grade 7**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
PCR_1_WE	4	5383	79.2	19.7	1.1	0.85	0.01	0.85
PCR_1_WKL	3	5383	80.2	18.6	1.2	0.85	0.00	0.85
PCR_2_WE	4	5378	80.6	19.1	0.3	0.89	0.01	0.89
PCR_2_WKL	3	5378	80.1	19.3	0.6	0.88	0.00	0.88

Table Error! No text of specified style in document.**.18. Operational Rater Agreement Statistics—ELA Grade 8**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
PCR_1_WE	4	5093	81.0	16.8	2.1	0.88	0.01	0.88
PCR_1_WKL	3	5093	82.3	16.1	1.6	0.88	0.01	0.89
PCR_2_WE	4	5120	82.1	17.1	0.8	0.90	0.01	0.90
PCR_2_WKL	3	5120	83.1	16.1	0.8	0.90	0.01	0.90

Table Error! No text of specified style in document.**.19. Field Test Rater Agreement Statistics—ELA Grade 3**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
PCR_1_WE	3	2932	78.8	21.2	0.0	0.76	0.01	0.76
PCR_1_WKL	3	2932	82.3	17.6	0.1	0.79	0.03	0.79
PCR_2_WE	3	2919	79.8	20.1	0.1	0.72	0.01	0.72
PCR_2_WKL	3	2919	82.2	17.6	0.2	0.77	0.02	0.77
PCR_3_WE	3	2980	80.1	19.8	0.1	0.76	0.02	0.77
PCR_3_WKL	3	2980	80.0	20.0	0.0	0.77	0.06	0.78
PCR_4_WE	3	2947	80.7	18.7	0.6	0.74	0.10	0.75
PCR_4_WKL	3	2947	80.1	19.7	0.2	0.74	0.16	0.76
PCR_5_WE	3	2943	78.5	21.4	0.1	0.71	0.07	0.72
PCR_5_WKL	3	2943	80.7	19.3	0.1	0.77	0.07	0.77
PCR_6_WE	3	2908	79.3	20.7	0.0	0.77	0.17	0.78
PCR_6_WKL	3	2908	80.0	20.0	0.0	0.76	0.00	0.76
PCR_7_WE	3	3215	81.3	18.4	0.3	0.75	0.01	0.75
PCR_7_WKL	3	3215	82.0	17.5	0.5	0.76	0.00	0.76
PCR_8_WE	3	2970	78.9	21.1	0.0	0.71	0.00	0.71
PCR_8_WKL	3	2970	81.2	18.7	0.1	0.76	0.02	0.76

Table Error! No text of specified style in document.**.20. Field Test Rater Agreement Statistics—ELA Grade 4**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
PCR_1_WE	4	3007	74.9	23.7	1.3	0.74	0.01	0.74
PCR_1_WKL	3	3007	79.6	19.2	1.2	0.76	0.05	0.76
PCR_2_WE	4	3007	70.4	28.9	0.7	0.69	0.08	0.70
PCR_2_WKL	3	3007	79.3	20.5	0.2	0.77	0.12	0.78
PCR_3_WE	4	2980	71.6	27.8	0.6	0.63	0.03	0.63
PCR_3_WKL	3	2980	79.8	20.1	0.1	0.75	0.05	0.75
PCR_4_WE	4	2988	71.0	28.1	0.9	0.70	0.05	0.70
PCR_4_WKL	3	2988	79.7	19.8	0.5	0.78	0.04	0.78

Table Error! No text of specified style in document.**.21. Field Test Rater Agreement Statistics—ELA Grade 5**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
PCR_1_WE	4	2963	72.0	27.1	0.9	0.79	0.00	0.79
PCR_1_WKL	3	2963	79.9	19.5	0.5	0.85	0.02	0.85
PCR_2_WE	4	3007	77.5	22.1	0.4	0.83	0.02	0.83
PCR_2_WKL	3	3007	80.2	19.7	0.1	0.87	0.07	0.87
PCR_3_WE	3	2993	80.2	19.5	0.3	0.83	0.02	0.83
PCR_3_WKL	3	2993	79.9	20.1	0.0	0.81	0.04	0.81
PCR_4_WE	3	2993	82.2	17.7	0.1	0.91	0.05	0.91
PCR_4_WKL	3	2993	81.5	18.4	0.1	0.89	0.07	0.89
PCR_5_WE	4	2991	72.4	27.3	0.3	0.80	0.07	0.80
PCR_5_WKL	3	2991	80.5	19.2	0.3	0.83	0.10	0.84
PCR_6_WE	4	2979	73.2	26.1	0.7	0.80	0.01	0.80
PCR_6_WKL	3	2979	81.5	17.7	0.8	0.83	0.08	0.83

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
PCR_7_WE	3	2975	80.8	19.2	0.0	0.85	0.01	0.85
PCR_7_WKL	3	2975	79.8	20.1	0.1	0.82	0.02	0.82
PCR_8_WE	3	2987	81.9	17.8	0.3	0.89	0.00	0.89
PCR_8_WKL	3	2987	83.5	16.3	0.2	0.89	0.01	0.89
PCR_9_WE	4	2972	75.2	24.2	0.5	0.76	0.00	0.76
PCR_9_WKL	3	2972	80.5	19.2	0.3	0.80	0.02	0.80
PCR_10_WE	4	3015	77.7	21.9	0.5	0.81	0.07	0.81
PCR_10_WKL	3	3015	80.5	19.2	0.4	0.80	0.05	0.80
PCR_11_WE	3	2961	79.9	19.3	0.8	0.89	0.00	0.89
PCR_11_WKL	3	2961	79.9	19.8	0.3	0.87	0.02	0.88
PCR_12_WE	3	2987	82.1	17.6	0.3	0.90	0.01	0.90
PCR_12_WKL	3	2987	80.4	18.9	0.6	0.89	0.00	0.89

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Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
PCR_1_WE	4	2988	75.6	23.4	1.0	0.89	0.01	0.89
PCR_1_WKL	3	2988	82.4	17.2	0.4	0.90	0.00	0.90
PCR_2_WE	4	2993	82.9	16.4	0.7	0.92	0.01	0.92
PCR_2_WKL	3	2993	87.0	12.8	0.2	0.93	0.01	0.93
PCR_3_WE	4	2963	80.5	18.6	0.9	0.92	0.00	0.92
PCR_3_WKL	3	2963	83.3	15.8	0.9	0.90	0.01	0.90
PCR_4_WE	4	2995	83.7	13.9	2.4	0.88	0.01	0.88
PCR_4_WKL	3	2995	81.2	18.2	0.6	0.88	0.00	0.88
PCR_5_WE	4	2987	75.4	24.2	0.4	0.81	0.06	0.81
PCR_5_WKL	3	2987	79.7	20.1	0.3	0.82	0.11	0.83
PCR_6_WE	4	2993	73.0	27.0	0.0	0.79	0.03	0.79
PCR_6_WKL	3	2993	80.2	19.8	0.0	0.83	0.06	0.83
PCR_7_WE	4	2965	70.9	27.3	1.8	0.88	0.00	0.88
PCR_7_WKL	3	2965	80.2	19.3	0.5	0.89	0.01	0.89
PCR_8_WE	4	3046	70.3	29.0	0.7	0.87	0.03	0.87
PCR_8_WKL	3	3046	80.2	19.0	0.8	0.89	0.04	0.89
PCR_9_WE	4	2997	71.4	26.2	2.4	0.85	0.01	0.85
PCR_9_WKL	3	2997	81.0	18.6	0.4	0.90	0.02	0.90
PCR_10_WE	4	3039	78.8	20.6	0.6	0.91	0.00	0.91
PCR_10_WKL	3	3039	80.0	19.5	0.5	0.89	0.02	0.89
PCR_11_WE	4	2996	72.1	27.1	0.8	0.88	0.02	0.88
PCR_11_WKL	3	2996	80.3	19.2	0.5	0.90	0.04	0.90
PCR_12_WE	4	2972	78.4	19.5	2.1	0.89	0.03	0.90
PCR_12_WKL	3	2972	79.9	18.5	1.5	0.88	0.01	0.88

Table Error! No text of specified style in document.**.23. Field Test Rater Agreement Statistics—ELA Grade 7**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
PCR_1_WE	4	2952	76.0	24.0	0.0	0.76	0.02	0.76
PCR_1_WKL	3	2952	80.1	19.8	0.1	0.86	0.11	0.86
PCR_2_WE	4	2939	72.3	27.6	0.0	0.85	0.06	0.85
PCR_2_WKL	3	2939	80.8	19.2	0.0	0.89	0.13	0.89
PCR_3_WE	4	2961	72.1	27.8	0.1	0.82	0.02	0.82
PCR_3_WKL	3	2961	79.0	20.9	0.0	0.86	0.01	0.86
PCR_4_WE	4	2974	74.2	25.5	0.3	0.85	0.00	0.85
PCR_4_WKL	3	2974	79.3	20.7	0.0	0.87	0.00	0.87

Table Error! No text of specified style in document.**.24. Field Test Rater Agreement Statistics—ELA Grade 8**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
PCR_1_WE	4	3017	76.5	23.1	0.3	0.87	0.01	0.87
PCR_1_WKL	3	3017	79.2	20.7	0.1	0.89	0.04	0.89

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
PCR_2_WE	4	2999	80.5	19.2	0.4	0.89	0.03	0.89
PCR_2_WKL	3	2999	81.0	18.0	1.0	0.88	0.05	0.88
PCR_3_WE	4	2972	82.2	16.5	1.4	0.90	0.00	0.90
PCR_3_WKL	3	2972	80.6	17.8	1.6	0.88	0.00	0.88
PCR_4_WE	4	2998	88.5	10.9	0.6	0.94	0.00	0.94
PCR_4_WKL	3	2998	88.5	10.7	0.8	0.93	0.00	0.93
PCR_5_WE	4	2941	75.6	23.9	0.4	0.86	0.01	0.86
PCR_5_WKL	3	2941	80.3	19.1	0.6	0.88	0.01	0.89

Table Error! No text of specified style in document.**.25. Operational Rater Agreement Statistics—CSLA Grade 3**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
PCR_1_WE	3	209	92.3	7.7	0.0	0.96	0.00	0.96
PCR_1_WKL	3	209	95.2	4.3	0.5	0.94	0.01	0.94
PCR_2_WE	3	198	81.8	18.2	0.0	0.83	0.03	0.84
PCR_2_WKL	3	198	83.3	14.6	2.0	0.84	0.02	0.84

Table Error! No text of specified style in document.**.26. Operational Rater Agreement Statistics—CSLA Grade 4**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
PCR_1_WE	4	163	78.5	20.2	1.2	0.85	0.01	0.85
PCR_1_WKL	3	163	87.7	11.7	0.6	0.91	0.06	0.91
PCR_2_WE	3	174	89.7	9.2	1.1	0.93	0.03	0.93
PCR_2_WKL	3	174	89.7	9.8	0.6	0.93	0.03	0.93

Table Error! No text of specified style in document.**.27. Field Test Rater Agreement Statistics—CSLA Grade 3**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
PCR_1_WE	3	376	86.4	12.8	0.8	0.84	0.01	0.84
PCR_1_WKL	3	376	88.0	11.7	0.3	0.92	0.01	0.92
PCR_2_WE	3	397	88.2	11.3	0.5	0.85	0.02	0.85
PCR_2_WKL	3	397	89.2	8.8	2.0	0.85	0.03	0.85
PCR_3_WE	3	368	94.3	4.9	0.8	0.95	0.01	0.95
PCR_3_WKL	3	368	91.8	8.2	0.0	0.94	0.02	0.94
PCR_4_WE	3	391	88.0	11.5	0.5	0.91	0.01	0.91
PCR_4_WKL	3	391	90.3	9.5	0.3	0.93	0.01	0.93

Table Error! No text of specified style in document.**.28. Field Test Rater Agreement Statistics—CSLA Grade 4**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
PCR_1_WE	4	620	87.6	10.0	2.4	0.90	0.02	0.90
PCR_1_WKL	3	620	91.1	7.9	1.0	0.91	0.01	0.91
PCR_2_WE	4	658	88.4	10.6	0.9	0.90	0.03	0.90
PCR_2_WKL	3	658	93.8	6.1	0.2	0.96	0.01	0.96

Table Error! No text of specified style in document.**.29. Operational Rater Agreement Statistics—Science Grade 5**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
Item 1	2	5607	91.6	7.2	1.1	0.91	0.00	0.91
Item 2	2	5548	91.8	7.1	1.1	0.88	0.00	0.88
Item 3	2	4398	89.1	10.7	0.2	0.88	0.01	0.88
Item 4	2	4399	89.1	10.2	0.7	0.86	0.00	0.86
Item 5	2	5487	90.0	9.8	0.2	0.91	0.01	0.91
Item 6	2	5388	91.3	7.6	1.2	0.89	0.01	0.89
Item 7	2	5400	90.6	8.8	0.6	0.89	0.01	0.89
Item 8	2	5559	91.3	8.3	0.5	0.93	0.00	0.93
Item 9	2	5538	92.7	6.6	0.7	0.86	0.02	0.86
Item 10	2	5592	91.7	7.9	0.4	0.94	0.01	0.94
Item 11	2	5432	90.7	9.0	0.3	0.84	0.00	0.84
Item 12	2	5441	93.4	5.1	1.4	0.94	0.00	0.94

Table Error! No text of specified style in document.**.30. Operational Rater Agreement Statistics—Science Grade 8**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
Item 1	2	4797	90.1	9.5	0.3	0.87	0.01	0.87
Item 2	2	4878	85.5	14.5	0.0	0.87	0.02	0.87
Item 3	2	4958	91.1	8.5	0.4	0.94	0.01	0.94
Item 4	2	4974	88.8	9.3	1.9	0.89	0.04	0.89
Item 5	2	4884	92.9	6.6	0.5	0.92	0.01	0.92
Item 6	2	4942	92.5	5.9	1.7	0.91	0.01	0.91
Item 7	2	4970	92.0	6.2	1.8	0.92	0.00	0.92
Item 8	2	4767	90.5	8.1	1.4	0.92	0.00	0.92

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
Item 9	2	4808	91.1	7.1	1.8	0.91	0.01	0.91
Item 10	2	4833	87.7	11.8	0.5	0.81	0.00	0.81
Item 11	2	4851	91.8	6.4	1.8	0.87	0.00	0.87
Item 12	2	4798	92.8	6.9	0.4	0.87	0.01	0.87
Item 13	2	4964	90.9	8.6	0.4	0.92	0.00	0.92
Item 14	2	4983	90.3	9.4	0.3	0.93	0.01	0.93

Table Error! No text of specified style in document.**.31. Operational Rater Agreement Statistics—Science Grade 11**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
Item 1	2	3428	90.7	8.6	0.6	0.93	0.01	0.93
Item 2	2	3394	90.9	7.8	1.3	0.91	0.00	0.91
Item 3	2	3404	91.0	8.8	0.2	0.91	0.01	0.91
Item 4	2	3454	91.5	8.1	0.4	0.86	0.00	0.86
Item 5	2	3454	91.8	7.8	0.3	0.91	0.00	0.91
Item 6	2	3467	91.4	8.3	0.3	0.88	0.00	0.88
Item 7	2	3290	90.9	7.6	1.4	0.78	0.01	0.78
Item 8	2	3237	95.6	4.3	0.1	0.96	0.00	0.96
Item 9	2	3440	90.2	9.5	0.2	0.87	0.01	0.87
Item 10	2	3382	97.2	2.2	0.6	0.94	0.00	0.94

Table Error! No text of specified style in document.**.32. Field Test Rater Agreement Statistics—Science Grade 5**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
Item 1	2	2995	83.7	16.3	0.0	0.88	0.01	0.88
Item 2	2	2988	90.6	9.4	0.0	0.93	0.01	0.93
Item 3	2	2990	86.3	13.3	0.3	0.82	0.00	0.82
Item 4	2	2989	97.3	2.6	0.1	0.88	0.01	0.88
Item 5	2	2992	89.8	10.0	0.2	0.84	0.02	0.84
Item 6	2	2993	91.7	8.0	0.3	0.94	0.00	0.94
Item 7	2	2989	91.8	8.0	0.2	0.86	0.00	0.86
Item 8	2	2995	90.0	10.0	0.0	0.93	0.01	0.93
Item 9	2	2992	93.3	6.6	0.1	0.94	0.01	0.94
Item 10	2	2988	88.7	11.0	0.2	0.86	0.01	0.86
Item 11	2	2983	92.3	7.6	0.1	0.94	0.01	0.94
Item 12	2	2979	90.3	9.7	0.1	0.93	0.01	0.93
Item 13	2	2992	90.0	9.9	0.1	0.89	0.02	0.89
Item 14	2	2983	89.8	10.2	0.0	0.88	0.01	0.88
Item 15	2	2995	94.8	4.9	0.3	0.96	0.00	0.96

Table Error! No text of specified style in document.**.33. Field Test Rater Agreement Statistics—Science Grade 8**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
Item 1	2	2942	89.1	10.8	0.1	0.89	0.00	0.89
Item 2	2	2981	84.3	15.7	0.0	0.81	0.00	0.81
Item 3	2	2950	91.1	8.7	0.2	0.92	0.00	0.92

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
Item 4	2	2962	95.6	4.3	0.1	0.88	0.01	0.88
Item 5	2	2927	98.0	1.9	0.2	0.98	0.00	0.98
Item 6	2	2946	89.5	10.3	0.2	0.92	0.01	0.92
Item 7	2	2971	82.2	16.9	0.8	0.66	0.01	0.66
Item 8	2	2951	91.8	7.7	0.4	0.82	0.01	0.82
Item 9	2	2612	93.1	6.3	0.7	0.93	0.00	0.93
Item 10	2	2968	88.3	11.5	0.1	0.91	0.01	0.91
Item 11	2	2952	94.7	5.3	0.0	0.95	0.00	0.95
Item 12	2	2956	95.4	4.6	0.0	0.91	0.00	0.91
Item 13	2	2956	88.8	11.2	0.0	0.89	0.02	0.89
Item 14	2	2942	90.8	8.3	0.9	0.79	0.01	0.79
Item 15	2	2980	91.2	8.8	0.1	0.87	0.02	0.87
Item 16	2	2979	93.1	6.8	0.1	0.90	0.00	0.90
Item 17	2	2973	94.0	5.9	0.0	0.96	0.01	0.96
Item 18	2	2966	89.4	10.2	0.4	0.88	0.00	0.88
Item 19	2	2991	95.4	4.6	0.1	0.95	0.00	0.95
Item 20	2	2990	87.9	12.1	0.0	0.89	0.01	0.89
Item 21	2	2977	90.7	8.7	0.7	0.93	0.01	0.93
Item 22	2	2961	91.7	7.8	0.5	0.86	0.01	0.86

Table Error! No text of specified style in document.**.34. Field Test Rater Agreement Statistics—Science Grade 11**

Item	Max. Points	N	%Exact	%Adjacent	%Non-Adjacent	Kappa	MD	Corr.
Item 1	2	2314	90.7	9.1	0.3	0.79	0.02	0.79
Item 2	2	2323	96.2	3.7	0.2	0.91	0.01	0.91
Item 3	2	2321	93.1	6.8	0.1	0.95	0.00	0.95
Item 4	2	2411	96.4	3.6	0.0	0.97	0.01	0.97
Item 5	2	3015	90.4	9.0	0.6	0.85	0.01	0.85
Item 6	2	2990	97.2	2.8	0.0	0.91	0.01	0.91
Item 7	2	2331	89.6	10.3	0.1	0.93	0.01	0.93
Item 8	2	2323	93.3	6.7	0.0	0.85	0.03	0.85
Item 9	2	2292	89.2	10.8	0.0	0.90	0.01	0.90
Item 10	2	2338	91.0	8.6	0.3	0.92	0.00	0.92
Item 11	2	2404	89.6	10.2	0.2	0.91	0.01	0.91
Item 12	2	2373	90.8	9.2	0.0	0.89	0.00	0.89
Item 13	2	2355	90.5	9.5	0.0	0.92	0.01	0.92