



California Department of Education Assessment Development and Division



California Assessment of
Student Performance and Progress

California Assessment of Student Performance and Progress

California Alternate Assessment Technical Report 2015–16 Administration

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Acronyms and Initialisms Used in the Technical Report for CAA Technical Report

1PL	one-parameter logistic	IRT	Item Response Theory
1PL-IRT	one-parameter item response theory	ISAAP	Individual Student Assessment Accessibility Profile
AA-AAS	alternate achievement standards	LCI	Learning Characteristics Inventory
AERA	American Educational Research Association	LEA	local educational agency
AIR	American Institutes for Research	LEP	limited-English-proficient
AIS	average item score	LOSS	lowest obtainable scale score
APA	American Psychological Association	LPF	Learning Progression Framework
CAA	California Alternate Assessments	MC	multiple choice
CAASPP	California Assessment of Student Performance and Progress	MH DIF	Mantel-Haenszel Differential Item Functioning
CALPADS	California Longitudinal Pupil Achievement Data System	MST	multistage test
CaTAC	California Technical Assistance Center	NCME	National Council on Measurement in Education
CAPA	California Alternate Performance Assessment	NCSC	National Center and State Collaborative
CCR	<i>California Code of Regulations</i>	OIB	ordered item booklet
CCSS	Common Core State Standards	ORS	Online Reporting System
CDE	California Department of Education	OTI	Office of Testing Integrity
CDS	County/District/School	PECS	Picture Exchange System
CI	confidence interval	PLD	performance level descriptor
CMA	California Modified Assessment	QA	quality assurance
Connectors	Core Content Connectors	QC	quality control
CR	constructed response	QMS	Quality Monitoring System
CSEM	conditional standard error of measurement	RCOMP	router-based composite score
CST	California Standards Test	SBE	State Board of Education
DFA	<i>Directions for Administration</i>	SCOMP	SRC-based composite score
DIF	differential item functioning	SD	standard deviation
DLM	Dynamic Learning Maps	SEM	standard error of measurement
DoR	Database of Record	SMD	standardized mean difference
EC	<i>Education Code</i>	SRC	Student Response Check
EL	English learner	SSC	Survey of Student Characteristics
ELA	English language arts/literacy	SSPI	State Superintendent of Public Instruction
eSKM	Enterprise Score Key Management System	STAIRS	Security and Test Administration Incident Reporting System
ETS	Educational Testing Service	TCC	test characteristic curve
EUs	essential understandings	TDS	test delivery system
GPCM	general partial credit model	TIF	test information function
HOSS	highest obtainable scale score	TOMS	Test Operations Management System
IDEA	Individuals with Disabilities Education Act	USC	United States Code
IEP	Individualized Education Program		

Chapter 1: Introduction

1.1. Background

In October 2013, Assembly Bill 484 established the California Assessment of Student Performance and Progress (CAASPP) as the new student assessment system that replaced the Standardized Testing and Reporting program. The primary purpose of the CAASPP System of assessments is to assist teachers, administrators, and students and their parents/guardians by promoting high-quality teaching and learning through the use of a variety of item types and assessment approaches. These tests provide the foundation for the state's school accountability system.

The California Alternate Assessments (CAAs), which are online assessments for English language arts/literacy (ELA) and mathematics, were administered operationally for the first time during the 2015–16 CAASPP administration following pilot testing in 2014–15. This new assessment is for students whose individualized education program (IEP) teams have determined that a student should take the CAA (CDE, 2017). (See the participation criteria in subsection 2.4 *Participation* on page 14 for more information.)

During the 2015–16 administration, the overall CAASPP System had the following components:

- Smarter Balanced assessments and tools:
 - Summative Assessments—Online assessments for ELA and mathematics in grades three through eight and grade eleven
 - Interim Assessments—Optional resources developed for grades three through eight and grade eleven designed to inform and promote teaching and learning by providing information that can be used to monitor student progress toward mastery of the Common Core State Standards (CCSS) that may be administered to students at any grade level
 - Digital Library—Tools and practices designed to help teachers utilize formative assessment processes for improved teaching and learning in all grades
- CAAs for ELA and mathematics in grades three through eight and grade eleven
- Science assessments in grades five, eight, and ten (i.e., California Standards Tests [CSTs], California Modified Assessment [CMA], and California Alternate Performance Assessment [CAPA] for Science)
- A primary language assessment, the Standards-based Tests in Spanish for Reading/Language Arts, in grades two through eleven (optional for eligible Spanish-speaking English learners)

The CAAs were first administered operationally during the 2015–16 CAASPP administration; the scope of this technical report is the 2015–16 administration of the CAAs.

More background information about the CAASPP System can be found on the CAASPP Description – *CalEdFacts* Web page at <http://www.cde.ca.gov/ta/tg/ai/cefcaaspp.asp>.

1.2. Test Purpose

The purpose of the CAA is to ensure students with the most significant cognitive disabilities achieve increasingly higher academic outcomes and leave high school ready for postsecondary options. The CAAs are aligned with alternate achievement standards—

called the Core Content Connectors (Connectors)—that are linked to the CCSS. Connectors address knowledge and skills that are appropriate and challenging for the student. The student who is eligible for CAAs is learning content, linked to (and derived from) the CCSS, that appropriately breaks the standards into smaller steps. A Connector is a representation of the essential “core” content of a standard in the CCSS.

1.3. Test Content

The CAAs are administered in two content areas, ELA and mathematics, for eligible students in grades three through eight and grade eleven. The CAAs for ELA and mathematics are delivered online and through adaptive multistage testing (MST). The CAAs have two stages. A student’s final score is calculated by combining the student’s performance on items from both stages.

1.3.1. MST Design

Under the MST design used for the CAAs, sets of items or modules with varying difficulty or complexity levels are presented to match the ability of each student according to her or his performance on the previous set of test items. The primary advantage of the MST over the conventional fixed-form tests is that MST is more efficient. Namely, MST uses fewer test items to achieve more precise measurement of students’ performance. In addition, by providing an ability-appropriate test, MST also encourages a student’s engagement during testing, particularly for students with significant cognitive disabilities. These students represent a population with a large range of ability levels. Their performances are greatly diversified and may not be otherwise appropriately targeted by conventional fixed-form tests.

1.4. Intended Population

At each grade level, the CAAs for ELA and mathematics were administered to approximately 5,000 students during the 2015–16 CAASPP administration. All students enrolled in grades three through eight and grade eleven whose IEP designates the use of alternate assessments are required to take part in the CAAs (*California Code of Regulations*, Title 5 [5 CCR] Education, Division 1, Chapter 2, Subchapter 3.75, Article 1, Section 851.5 [c]). English learners (ELs) who are in their first 12 months of attending school in the United States are exempt from taking the ELA portion of the assessment. ELs are defined as follows:

“English learner students are those students for whom there is a report of a primary language other than English on the state-approved Home Language Survey and who, on the basis of the state approved oral language (kindergarten through grade twelve) assessment procedures and literacy (grades three through twelve only), have been determined to lack the clearly defined English language skills of listening comprehension, speaking, reading, and writing necessary to succeed in the school’s regular instructional programs.”¹

EL students within their first 12 months of enrollment in a U.S. school and whose parents/guardians elect to permit participation in the ELA assessment are included in the calculation of the percent of students testing but their scores are excluded from all aggregate calculations.

¹ “English Learner (EL) Students (Formerly Known as Limited-English-Proficient or LEP),” from the CDE Glossary of Terms Web page at <http://www.cde.ca.gov/ds/sd/cb/glossary.asp>.

For students with significant cognitive disabilities, the decision to administer the Smarter Balanced Summative Assessments or CAAs is made by her or his IEP team. Parents/Guardians may submit a written request to have their child exempted from taking any or all parts of the Smarter Balanced Summative Assessments or, as designated, the CAAs. Only students whose parents/guardians submit a written request may be exempted from taking the tests (*Education Code [EC] Section 60615*).

1.5. Intended Use and Purpose of Test Scores

The results of tests within the CAASPP System, including the CAAs, are used for two primary purposes as described in *EC* sections 60602.5 (a) and (a) (4). (Excerpted from the *EC* Section 60602 Web page at http://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=EDC&division=4.&title=2.&part=33.&chapter=5.&article=1 [outside source].)

“60602.5 (a) It is the intent of the Legislature in enacting this chapter to provide a system of assessments of pupils that has the primary purposes of assisting teachers, administrators, and pupils and their parents; improving teaching and learning; and promoting high-quality teaching and learning using a variety of assessment approaches and item types. The assessments, where applicable and valid, will produce scores that can be aggregated and disaggregated for the purpose of holding schools and local educational agencies accountable for the achievement of all their pupils in learning the California academic content standards.”

“60602.5 (a) (4) Provide information to pupils, parents or guardians, teachers, schools, and local educational agencies on a timely basis so that the information can be used to further the development of the pupil and to improve the educational program.”

Sections 60602.5 (c) and (d) provide additional information regarding intent and context for the system of assessments:

“60602.5 (c) It is the intent of the Legislature that parents, classroom teachers, other educators, pupil representatives, institutions of higher education, business community members, and the public be involved, in an active and ongoing basis, in the design and implementation of the statewide pupil assessment system and the development of assessment instruments.”

“60602.5 (d) It is the intent of the Legislature, insofar as is practically feasible and following the completion of annual testing, that the content, test structure, and test items in the assessments that are part of the statewide pupil assessment system become open and transparent to teachers, parents, and pupils, to assist stakeholders in working together to demonstrate improvement in pupil academic achievement. A planned change in annual test content, format, or design should be made available to educators and the public well before the beginning of the school year in which the change will be implemented.”

1.6. Testing Window

For the 2015–16 CAASPP administration, the CAAs were administered within a 50-day window, from April 11 through June 17, 2016. This testing window was identical for all local educational agencies (LEAs). Similar to other CAASPP assessments, the CAAs are untimed for test takers. This assessment is administered individually and the testing time varies from one student to another, based on factors such as the student’s response time and attention

span. A student may be tested with the CAA within the LEA’s testing window over as many days as required to meet a student’s needs (5 CCR, Section 855 [a] [3]).

1.7. Significant CAASPP Developments in 2015–16

In addition to the framework provided by the 2014–15 CAA pilot administration, several significant developments occurred for the 2015–16 administration.

1.7.1. First Operational Year of CAAs for ELA and Mathematics

The CAAs were administered operationally for the first time in the 2015–16 CAASPP administration to students in grades three through eight and grade eleven in ELA and mathematics. Because the tests were assembled from new items, no prior item statistics were available.

The MST design was also implemented for the first time; see subsection 4.2.1 *Multistage Test (MST) Design* on page 43 for more information on the MST design. The results from these tests are to be used as the baseline data with which the scores in the future CAA administrations will be compared.

Student scores were available as printed Student Score Reports and electronically in the Online Reporting System (ORS), as a downloaded student data extract in the Test Operations Management System (TOMS), and in the aggregate data requested on the Public Reporting Web site. See subsection 7.3 *Reports Produced and Scores for Each Report* on page 88 for more information about the types of reports available for the CAA.

1.7.2. CAA Item Pool

After the test administration, all CAA items—50 unique items per grade and content area—were calibrated and scaled onto a common scale using item response theory for each grade/content area to establish an item pool available for continued operational use. See subsection 8.3 *Item Response Theory (IRT) Analyses* on page 203 for more information about calibration.

1.7.3. Standard Setting and Achievement Levels

CAA achievement levels for each grade and content area were developed and reviewed with California educators and were approved by the California State Board of Education (SBE). These approved achievement level descriptors were then used in a standard setting process. Three achievement levels (Level 1—Alternate, Level 2—Alternate, and Level 3—Alternate) are used to describe student performance on the CAAs in CAASPP reporting. See *Chapter 6: Standard Setting* starting on page 74 for a description of the standard-setting process used to determine scale scores and achievement levels for the CAAs.

1.7.4. Reporting Scale Score

Through psychometric analyses, a score-reporting scale was established for each grade. See *Chapter 7: Scoring and Reporting* starting on page 80 for a description of the scale score and achievement levels for the CAAs.

1.7.5. Adoption of Emergency Regulations

CAASPP emergency regulations formally introducing the CAAs as a successor alternate assessment to the CAPA for ELA and mathematics were adopted by the SBE at its November 2015 meeting. These regulations provide changes to testing procedures and policies that are consistent with the new assessment.

1.7.6. Web Reporting

Statewide results were released via a newly designed Public Reporting Web site at <http://caaspp.cde.ca.gov/>, which is available to view summary results. One new feature, the ability to view results from up to three entities (i.e., school, district, county, or state), is available for CAA results.

1.8 Groups and Organizations Involved with the CAAs

1.8.1 State Board of Education (SBE)

The SBE is the state agency that establishes educational policy for kindergarten through grade twelve in the areas of standards, instructional materials, assessment, and accountability. The SBE adopts textbooks for kindergarten through grade eight, adopts regulations to implement legislation, and has the authority to grant waivers of the *EC*.

In addition to adopting the rules and regulations for itself, its appointees, and California's public schools, the SBE also is the state educational agency responsible for overseeing California's compliance of the Every Student Succeeds Act and the state's Public School Accountability Act, which measures the academic performance and progress of schools on a variety of academic metrics (CDE, 2016d).

1.8.2 California Department of Education (CDE)

The CDE oversees California's public school system, which is responsible for the education of more than 6,200,000 children and young adults in more than 9,800 schools. California aims to provide a world-class education for all students, from early childhood to adulthood. The CDE serves the state by innovating and collaborating with educators, school staff, parents/guardians, and community partners which together, as a team, prepares students to live, work, and thrive in a highly connected world.

Within the CDE, it is the Assessment Development & Administration Division that oversees programs promoting innovation and improving student achievement. Programs include oversight of statewide assessments and the collection and reporting of educational data (CDE, 2016d).

1.8.3 Contractors

1.8.3.1 Educational Testing Service

The CDE and the SBE contract with Educational Testing Service (ETS) to administer and report the CAAs. As the prime contractor, ETS has overall responsibility for working with the CDE to implement and maintain an effective assessment system and to coordinate the work of ETS with its subcontractors. Activities directly conducted by ETS include but are not limited to:

- Providing management of the program activities;
- Supporting and training counties, LEAs, and direct funded charter schools;
- Providing tiered help desk support to LEAs;
- Developing of all CAA test items;
- Constructing, producing, and controlling the quality of CAASPP test forms and related test materials, including grade- and content-specific directions for administration;
- Hosting and maintaining a Web site with resources for LEA CAASPP coordinators;
- Developing, hosting, and providing support for TOMS;

- Processing student test assignments;
- Producing and distributing score reports;
- Developing a score reporting Web site; and
- Completing all psychometric procedures.

1.8.3.2 American Institutes for Research (AIR)

ETS also monitors and manages the work of AIR, the subcontractor to ETS for the CAASPP System of online assessments. Activities conducted by AIR include:

- Providing the AIR proprietary test delivery system (TDS), including the Student Testing Interface, Test Administrator Interface, secure browser, and practice and training tests;
- Hosting and providing support for its TDS and the ORS, a component of the overall CAASPP Assessment Delivery System;
- Scoring machine-scorable items; and
- Providing Level 3 technology help desk support to LEAs.

1.9 Systems Overview and Functionality

1.9.1 Test Operations Management System (TOMS)

TOMS is the password-protected, Web-based system used by LEAs to manage all aspects of CAASPP testing. TOMS serves various functions for the CAAs, including but not limited to:

- Managing test administration windows;
- Assigning CAA test examiner user roles;
- Managing student test assignments and accessibility supports;
- Viewing and downloading reports; and
- Providing a platform for authorized user access to secure materials such as CAA *Directions for Administration*, student data and results, CAASPP user information, and access to the *CAASPP Security and Test Administration Incident Reporting System* form and the Appeals module.

TOMS receives student enrollment data and LEA/school hierarchy data from the California Longitudinal Pupil Achievement Data System (CALPADS) via a daily feed. CALPADS is “a longitudinal data system used to maintain individual-level data including student demographics, course data, discipline, assessments, staff assignments, and other data for state and federal reporting.”² LEA staff involved in the administration of the CAAs—such as LEA CAASPP coordinators, CAASPP test site coordinators, and test examiners—are assigned varying levels of access to TOMS. For example, only an LEA CAASPP coordinator is given permission to set up the LEA’s test administration window; a test examiner cannot download student reports. A description of user roles is explained more extensively in the *2015–16 CAASPP Smarter Balanced Online Test Administration Manual* (CDE, 2016b).

² From the CDE California Longitudinal Pupil Achievement Data System (CALPADS) Web page at <http://www.cde.ca.gov/ds/sp/cl/>.

1.9.2 Test Delivery System (TDS)

The TDS is the means by which the statewide online assessments are delivered to students. Sets of CAA items are selected for students according to the logic within the MST design. Components of the TDS include:

- Test Administrator Interface, the Web browser–based application that allows test examiners to activate student tests;
- Student Testing Interface, on which students take the CAAs using the secure browser with assistance from the test examiner as needed; and
- Secure browser, the online application through which the student testing interface may be accessed. The secure browser prevents students from accessing other applications during testing.

1.9.3 Training Tests

Training tests were provided to LEAs to prepare students and LEA staff for the CAAs. These tests simulate the experience of the CAA online assessments. Unlike the summative CAAs, the training tests do not assess standards, gauge student success on the operational test, or produce scores. Students, teachers, and the public may access them using a Web browser.

The training tests allow students and test examiners to become familiar with the user interface, item formats and functionality, and components of the TDS, as well as with the process of starting and completing a testing session.

1.9.4 Online Reporting System (ORS)

The ORS is the system used by LEAs to view preliminary student results from the CAASPP assessments. The primary purposes of the ORS are for LEAs to access completion data to determine which students need to complete testing or start testing, and for LEAs to access preliminary score reports that can provide data for schools within the LEA. Results in the ORS are preliminary and may not be used for accountability purposes. (Note that after the 2015–16 test administration, the ORS module was separate from the Completion Status Reporting module.)

1.10 Overview of the Technical Report

This technical report addresses the characteristics of the CAA administered in spring 2016. The technical report contains eight additional chapters as follows:

- Chapter 2 presents an overview of processes involved in a testing cycle for the CAAs. This includes item development, test construction, test administration, test participation, generation of test scores, and score reports.
- Chapter 3 describes the procedures followed during item development; various reviews (e.g., item content and bias/sensitivity reviews) and the process of item review are included.
- Chapter 4 describes the process of test assembly, including the content being measured, the test design for the two-stage MST assessment, as well as the content and psychometric criteria. Also discussed are the routing rules that guided the construction of the CAAs for ELA and mathematics, and the preparation of the test forms for the online multistage delivery.

- Chapter 5 details the processes involved in the actual 2015–16 administration, with emphasis on efforts made to ensure the standardization of CAA testing. It also details the procedures followed to maintain test security throughout the test administration process.
 - Chapter 6 summarizes the standard-setting process that established new achievement level scores. Details include the achievement level descriptors, an overview of the standard setting methodology, and the process conducted to establish the threshold scores that define the score ranges for each achievement level for the CAAs for ELA and mathematics. These standard setting processes were based on student testing results from the 2015–16 administration.
 - Chapter 7 provides information on the scoring processes and summarizes the types of scores and score reports produced following standard setting and SBE approval of the resulting score thresholds.
 - Chapter 8 summarizes the results of the item-level analyses performed for the 2015–16 CAA administration and the statistical procedures implemented during statistical analyses. These include:
 - classical item analysis,
 - differential item functioning analysis,
 - reliability analyses,
 - analyses of the consistency and accuracy of the achievement-level classifications, and
 - item response theory analyses.
- Chapter 8 also documents calibration and equating procedures as well as the creation of the CAA conversion tables. Chapter 8 concludes with a discussion of the procedures designed to ensure the validity of score uses and interpretations.
- Chapter 9 highlights the quality control processes used at various stages of the 2015–16 CAA administration, including item development, test assignment, test administration, scoring procedures, psychometric analysis processes, and score reporting.

References

- California Department of Education. (2016a). *California Code of Regulations, Title 5, Education, Division 1, Chapter 2, Subchapter 3.75, Article 2*. Sacramento, CA: California Department of Education. Retrieved from <https://bit.ly/2AMesVL>
- California Department of Education. (2016b). *CAASPP Smarter Balanced online test administration manual, 2015–16 administration*. Sacramento, CA: California Department of Education. Retrieved from <http://www.caaspp.org/administration/about/smarter-balanced/index.html>.
- California Department of Education. (2016c, January). *Organization*. Retrieved from <http://www.cde.ca.gov/re/di/or/>
- California Department of Education. (2016d). *State Board of Education responsibilities*. Retrieved from <http://www.cde.ca.gov/be/ms/po/sberesponsibilities.asp>
- California Department of Education. (2017). *California Alternate Assessments*. Retrieved from <http://www.cde.ca.gov/ta/tg/ca/altassessment.asp>

Chapter 2: Overview of California Alternate Assessment (CAA) Processes

This chapter provides an overview of the processes implemented by Educational Testing Service (ETS) during the full testing cycle for the 2015–16 California Alternate Assessment (CAA), including test development and administration, score production, and reporting. In addition, test participation, fairness, and accessibility for CAA are also described.

2.1. Item Development

CAAs for English language arts/literacy (ELA) and mathematics incorporate innovations and best practices from the recent alternate assessment initiatives on a national level, including the National Center and State Collaborative (NCSC) and Dynamic Learning Maps (DLM). All items developed and used in the 2015–16 CAA administration are appropriate for the grade level, aligned with the Core Content Connectors (Connectors) that correspond to the Common Core State Standards (CCSS), and based on the clarifications and guidelines from the Connectors derived from the CCSS.

Following the NCSC model, items were developed to three tiers of item complexity. Items were reviewed and revised at various stages by a variety of groups during development, including the California Department of Education (CDE), California educators, and ETS internal content specialists and item reviewers. Finally, guidelines for bias and sensitivity, accessibility and accommodations, and style helped item developers and reviewers ensure consistency and fairness across the item development process. Detailed information about CAA item development is described in *Chapter 3: Item Development and Review* on page 34.

2.1.1. Item Format

The CAAs include the following primary online item formats:

- **Selected-response items**—Students are instructed to select one or more choices to respond. Most CAA items have two or three options; a few items have four options.
- **Constructed response items**—Students are required to provide a response by writing words or numbers. These items are scored by the test examiner based on a rubric.
- **Technology-enhanced items**—Technology beyond simple option selection is incorporated. These items can resemble real-world scenarios in which students might interact with information using technology.

Table 2.A.1 on page 20 lists the types of items that are technology enhanced. Detailed information on item formats are included in subsection 3.1.4 *Item Types* in *Chapter 3: Item Development and Review*, which starts on page 34.

The CAAs consist of 1-point and 2-point machine-scored items. There is a small number of constructed-response (CR) items in the CAA for ELA. For these CR items, which are also assigned either one or two points, scoring rubrics specific to each item are included in the *Directions for Administration (DFA)* to be used by the test examiner for rating a student's response. All rubric-based scoring/rating was done by the test examiner during the test administration.

2.1.2. Item Specifications

The CAA item specifications were developed to measure the CCSS based on the guidelines and clarifications from the Connectors.

The item specifications describe the characteristics of the items that should be written to measure each content standard and help ensure that CAA items measure the content standards in the same way. To do this, item developers are given the CAA item specifications and a CAA style guide for detailed information that ensures consistency in the item development and review processes. Detailed information about item specifications is included in subsection *3.1.2 Item Specifications* in Chapter 3, starting on page 34.

2.1.3. Item Banking

All items developed for the 2015–16 administration of the CAA are new items. After the 2015–16 administration, statistics for these items are estimated and presented to content experts. These experts evaluate item performance and share overall findings with the CDE and California educators, who provide input on results. They also review flagged items—those items with statistics not within given parameters—to identify potential reasons why particular items or item types are not performing as expected, based on their knowledge of the student population.

Items, together with their statistical information, are entered into the item bank for use during future form assembly activities for operational tests. After the 2015–16 administration, more new items will be developed, field tested, and entered into the item bank. The item bank is expanding gradually to support the multistage test (MST) design and to permit eventual periodic release of operational items to the public.

2.2. Test Assembly

2.2.1. Test Design

The CAAs use an MST design, which consists of a small number of separate modules that can be assembled to meet a set of specifications for item content and item difficulty. Because an MST assessment is implemented in stages, students with a variety of ability levels can be routed to one of several different modules that best matches their ability. On the basis of their performance on Stage 1, students are routed to an appropriate module.

The CAA's MST design uses tiered items, which are items developed to three tiers of complexity and organized in order of increasing complexity and cognitive load, and a two-stage adaptive procedure with three modules (easy, moderate, and hard) tailored to student's ability at Stage 2. Refer to subsection *4.2 Test Design* on page 43 of *Chapter 4: Test Assembly* for more details about the MST design.

To route students appropriately in a situation without prior item statistics, a number-correct routing approach is used for students who completed the entire test, whereas the probability of chance is employed as the routing threshold for students who used early exit³. See subsection *4.2.4 Routing Rules for the 2015–16 Administration*, which starts on page 47 of *Chapter 4: Test Assembly*, for detailed information about the routing rules.

³ Early exit was one of the routing rules for a group of CAA students. The detail information is included in subsection *4.2.4 Routing Rules for the 2015–16 Administration*, which starts on page 47.

A Survey of Student Characteristics (SSC) was developed to help route students appropriately for subsequent operational administrations. The design, functions, and utilization of the SSC are described in Appendix 8.G, which starts on page 391.

2.2.2. Test Blueprints

The blueprints for the CAAs for ELA and mathematics for grades three through eight and grade eleven were adopted by the State Board of Education (SBE) in June 2015. Blueprint development involved the participation of California educators and was based on blueprints developed by the NCSC. The CAA item standards consist of the Connectors and essential understandings (EUs), both of which are derived from the CCSS. For any particular CCSS, the EU is considered the most basic concept needed to understand the greater CCSS. The Connector is considered the “linking knowledge” between the EU and the CCSS. The test blueprints specify the total number of items on each test and the percent breakdown of those items, by standard.

The CAA test blueprints are unique to each grade level and content area. These blueprints designate the breakdown of each assessment first by content category (e.g., ELA) and then by Connectors. Information on each test blueprint includes:

- Specific ratio of each content category/domain on the overall test;
- Specific Connectors to be assessed;
- Specific EUs to be assessed; and
- The maximum number of total items.

The CAA blueprints also include a content coverage percentage comparison to the NCSC blueprints upon which the CAA blueprints are based (CDE, 2015a and 2015b).

2.2.3. Test Length

The number of items in each CAA is the same across grades and subjects; there are 21 items in each version at Stage 1 and 6 items per module at Stage 2. Each student answers 27 items for a complete test. The early exit feature is implemented for the students who have significant difficulties in completing Tier 1 items and testing is more stressful than productive. A student who used the early exit feature took a total of 17 items: 11 items in Stage 1 and 6 items in the easy Stage 2 module.

Because two versions of the router (Stage 1) are administered and some linking items overlap in the versions, a total of 50 unique items are involved in the administration for a given grade and content area. Refer to subsection 4.2 *Test Design* on page 43 in *Chapter 4: Test Assembly* for more details on test form assembly.

2.2.4. Psychometric Criteria

As mentioned previously, there are no prior statistics associated with any of the items used during the 2015–16 administration because all are newly developed. Therefore, the 2015–16 MST forms do not have statistical targets or projected characteristics.

Nevertheless, ETS content and psychometric staff reviewed the assembled forms thoroughly before the administration for the following characteristics:

- Coverage of blueprints
- Consistency of possible raw score points between router versions
- Cognitive complexity
- Sequence of items within and across tiers

All item information obtained from the 2015–16 administration will be used during future CAA administrations. Refer to subsection 4.3 *Test Production Process* on page 48 of *Chapter 4: Test Assembly* for the test review process.

2.3. Test Administration

Because it is of utmost priority to administer the CAAs for ELA and mathematics in a secure, confidential, standardized, consistent, and appropriate manner, the assessments were administered online using the secure browser and test delivery system. Each CAA was administered in a one-to-one setting by a trained test examiner, usually the student’s teacher. Test examiners and students had an opportunity to use the CAA training tests to gain experience with different types of questions before taking the scored tests.

2.3.1. Test Security and Confidentiality

All tests within the California Assessment of Student Performance and Progress (CAASPP) System are secure. For CAAs, every person having access to test materials maintains the security and confidentiality of the tests. ETS’s internal Code of Ethics requires that all test information, including tangible materials associated with the CAAs (such as test questions and test results), confidential files, processes, and activities are kept secure. To ensure security for all tests that ETS develops or handles, ETS maintains an Office of Testing Integrity (OTI). A detailed description of the OTI and its mission is presented in subsection 5.2.1 *ETS’s Office of Testing Integrity (OTI)* on page 61 of *Chapter 5: Test Administration*.

In the pursuit of enforcing secure practices, ETS strives to safeguard the various processes involved in a test development and administration cycle. Those processes are listed below. The practices related to each of the following security processes are discussed in detail in Chapter 5, starting on page 62.

- Test delivery
- Security of electronic files using a firewall
- Transfer of scores via secure data exchange
- Data management
- Statistical analysis
- Student confidentiality
- Student test results

2.3.2. Procedures to Maintain Standardization

ETS takes all necessary measures to ensure the standardization of administration of the CAA. The measures for standardization include, but are not limited to, the aspects described in these subsections.

2.3.2.1. Test Administration

ETS employs processes to ensure the standardization of an administration cycle; these processes are discussed in more detail in *Chapter 5: Test Administration*, which starts on page 59.

Staff at local educational agencies (LEAs) involved in the CAASPP and CAA administration include LEA CAASPP coordinators, CAASPP test site coordinators, and CAA test examiners. The responsibilities of each of the staff members specifically for the CAAs are described in the *2015–16 CAA Test Administration Manual* (CDE, 2016c).

2.3.2.2. Test Directions

Several series of instructions regarding the CAASPP and CAA administration are compiled in detailed manuals and provided to the LEA staff. Such documents include, but are not limited to, the following:

- **CAA Directions for Administration (DFAs)**—A manual that provides the script and directions for administration to be followed exactly by test examiners during a testing session. The secure DFAs for the CAA contain item-specific instructions, and therefore are grade- and version-specific. An example of the CAA DFA format and content can be found in the *2015–16 SAMPLE Directions for Administration for the California Alternate Assessments* (CDE, 2016e). (See page 69 in Chapter 5 for more information.)
- **CAA Test Administration Manual**—A manual that provides test administration procedures and guidelines for LEA CAASPP coordinators and CAASPP test site coordinators (CDE, 2016c). (See page 69 in Chapter 5 for more information.)
- **CAASPP Smarter Balanced Online Test Administration Manual**—A manual that provides test administration procedures and guidelines for LEA CAASPP coordinators, CAASPP test site coordinators, test examiners, and test administrators (CDE, 2016b). (See page 69 in Chapter 5 for more information.)
- **Test Operations Management System (TOMS) manuals**—Manuals that provide instructions for TOMS that allow LEA CAASPP coordinators to set up test administrations, add and manage users, and configure online student test settings. Each functionality has its own user manual with detailed instructions on how to use the TOMS module. (See page 70 in Chapter 5 for a list of all manuals.)

2.4. Participation

The decision to assign a student to take a CAA is made by his or her individualized education program (IEP) team using the information on the CAA Participation Guidelines Web page to make the determination. This Web page describes the CAA and its administration as well as criteria for participation and the students who should be assigned to take this test (CDE, 2016a).

A student must meet all three of the following criteria to participate in the CAA:

1. **The student has a significant cognitive disability.** Review of the student’s school records indicates a disability or multiple disabilities that significantly impact intellectual functioning and adaptive behavior essential for someone to live independently and to function safely in daily life.
2. **The student is learning content derived from the CCSS.** Goals and instruction listed in the IEP for the student are linked to the enrolled grade-level CCSS and address knowledge and skills that are appropriate and challenging for this student.
3. **The student requires extensive, direct, individualized instruction and substantial supports to achieve measurable gains in the grade-level and age-appropriate curriculum.** The student:
 - a. Requires extensive, repeated, individualized instruction and support that is not of a temporary or transient nature; and

- b. Uses substantially adapted materials and individualized methods of accessing information in alternative ways to acquire, maintain, generalize, demonstrate, and transfer skills across multiple settings.

All students who are eligible to take the CAAs are required to participate. All students who are logged on and are presented with at least the first test item are counted as having participated.

The numbers and the percentages of students who participated in the tests during the 2015–16 administration are presented in the tables of Appendix 2.B, which starts on page 22. Data are sorted by demographic group for each grade and content area.

2.5. Fairness and Accessibility

There are several procedures in place to ensure that CAA assessments are fair and accessible to all test takers. This subsection provides information on the available accessibility supports for use with the online CAAs for ELA and mathematics. Additionally, information on the differential item functioning (DIF) analysis used to identify items that may function differently across groups of examinees (e.g., gender, ethnicity) also are discussed briefly.

2.5.1. Universal Tools, Designated Supports, and Accommodations

The CAAs are specifically designed for students with significant cognitive disabilities and an IEP that calls for the use of a CAA. Additional supports are sometimes needed for these students.

Universal tools are available to all CAA students. These supports may be turned on and off when embedded as part of the technology platform for the online CAA assessments on the basis of student preference and selection.

Designated supports are available to CAA students when determined as needed by an educator or team of educators, with parent/guardian and student input as appropriate, or when specified in the student’s IEP.

Accommodations must be permitted on CAAs for all eligible students when specified in the student’s IEP.

While most of the supports presented for the CAASPP online assessments are accessible for the CAAs, there are a few resources that are not applicable because the CAAs are designed to be given one-on-one in the student’s language of instruction, using the student’s identified instructional supports.

Assignment of designated supports and accommodations to individual students based on student need is made in TOMS by the LEA CAASPP coordinator and/or CAASPP test site coordinator, either through individual assignment in the student’s profile in TOMS or by batch upload, where settings were uploaded into TOMS for multiple students. Settings were either selected and entered into a macro-enabled template called the Individual Student Assessment Accessibility Profile (ISAAP) Tool that created an upload file; or entered into a template. These designated supports and accommodations were delivered to the student through the test delivery system at the time of testing.

Appendix 2.C, which begins on page 30, presents the numbers and percentages of students using designated supports, accommodations, or unlisted resources. Because universal tools are available to all students in the test delivery system, their use is not tracked.

2.5.1.1. Resources for Selection of Accessibility Supports

The CDE maintains a list of the universal tools, designated supports, and accommodations that are permitted for use in CAASPP online assessments in its Web document “Matrix One: Universal Tools, Designated Supports, and Accommodations for the CAASPP System”⁴ (CDE, 2016d). Most embedded universal tools, designated supports, and accommodations listed in Parts 1 and 2 of Matrix One are available for the CAA through the online testing interface. Part 3 of Matrix One includes non-embedded universal tools, designated supports, accommodations, and unlisted resources that are available particularly for CAA testing. School-level personnel, IEP teams, and Section 504 teams use Matrix One when deciding how best to support the student’s test-taking experience.

In addition to assigning accessibility supports individually and via file upload in TOMS, LEAs had the option of using the ISAAP Tool to assign supports to students. The ISAAP Tool was used by LEAs in conjunction with the Smarter Balanced Assessment Consortium’s *Usability, Accessibility, and Accommodations Guidelines* (Smarter Balanced, 2016) and the *CAA Test Administration Manual*, as well as with state regulations and policies (such as Matrix One) related to assessment accessibility. LEA personnel, including IEP and Section 504 plan teams, used the 2015–16 ISAAP Tool to facilitate the selection of designated supports and accommodations for students.

2.5.1.2. Delivery of Accessibility Supports

Universal tools, designated supports, and accommodations can be delivered as either embedded or non-embedded supports. Embedded supports are digitally delivered features or settings available as part of the technology platform for the online CAAs. Examples of embedded supports applicable to the CAAs include masking, color contrast, and print size. Non-embedded supports for the CAAs include magnification, calculator, and scribe.

2.5.1.3. Unlisted Resources

An unlisted resource is an instructional support that a student regularly uses in daily instruction and/or assessment that has not been previously identified as a universal tool, designated support, or accommodation. Matrix One includes an inventory of unlisted resources that have already been identified and are preapproved (CDE, 2016d). During the 2015–16 CAASPP administration, an LEA CAASPP coordinator, a CAASPP test site coordinator, or the test examiner may submit a request using forms available in TOMS to request such a support for an eligible student. The support must be specified in the eligible student’s IEP and only may be assigned with the CDE’s approval.

Test results for unlisted resources that are approved yet change the construct of what is being tested will not be considered valid for accountability purposes. The student will receive a score with a footnote that the test was administered under conditions that resulted in a score that may not be an accurate representation of the student’s achievement. Appendix 2.C on page 30 presents counts and percentages of students using designated supports, accommodations, and unlisted resources.

2.5.2. Differential Item Functioning (DIF)

DIF analyses were conducted to detect possible test bias and locate items for which one group of students performs significantly better than another group. DIF is a collection of statistical methods utilized to determine if items are appropriate and fair for testing the

⁴ This technical report is based on the version of Matrix One that was available during the 2015–16 CAASPP administration.

knowledge of different groups of examinees (e.g., male vs. female or white vs. African-American). If an item performs differentially across subgroups, when students are matched on ability, the item may be measuring something other than the intended construct. Therefore, it is important to recognize items flagged for DIF. Content experts and bias/sensitivity experts review these DIF-flagged items and determine the sources and meanings of performance differences. Refer to subsection 8.5. *Differential Item Functioning (DIF)* on page 207 for DIF analyses, and Appendix 8.D on page 314 for DIF analysis results.

2.6. Scores

2.6.1. Scoring

The IRT inverse test characteristic curve (TCC) method (Stocking, 1996) is used to estimate students' overall ability estimates. Then, for the purpose of reporting, students' ability estimates (theta scores) are expressed in the three-digit scale score by applying the appropriate linear transformation for each CAA. Student performance on the reporting scale is designated into one of three achievement levels:

1. Level 1—Alternate
2. Level 2—Alternate
3. Level 3—Alternate

For information regarding score specifications and the establishment of score reporting scales, refer to *Chapter 7: Scoring and Reporting*. For information regarding achievement levels, refer to *Chapter 6: Standard Setting* for a description of the process used to set achievement level standards.

2.6.2. Score Reporting

TOMS is a secure Web site hosted by ETS that permits LEA users to manage aspects of CAA test administration such as test assignment and test settings. It also provides a secure means for LEA CAASPP coordinators to download Student Score Reports as PDF files as well as aggregated results for the LEA.

Another means of viewing CAA scores is the Online Reporting System (ORS), a secure Web site that provides authorized users with interactive and cumulative online reports for ELA and mathematics at the student, school, and LEA levels. The ORS provides three types of score reports: an individual student score report, a school report, and an LEA report. Refer to subsection 7.3.1 *Online Reporting* on page 89 for details about TOMS and the ORS; and subsection 7.3.3 *Types of Score Reports* on page 89 for the content of each type of score report.

2.6.3. Aggregation Procedures

In order to provide meaningful results to the stakeholders, CAA scores for a given grade and content area are aggregated and generated at the school, LEA or direct funded charter school, county, and state levels. State-level results are available on the Public Reporting Web page at <http://caaspp.cde.ca.gov/>. The aggregated scores are presented for all students, or selected demographic subgroups.

A variety of aggregated score types are also used to check the validity of the scores.

The aggregation procedures used to present CAA results are described in subsection 7.2 *Overview of Score Aggregation Procedures* on page 85. In Table 7.D.1 through Table 7.D.14 starting on page 168, students are grouped by demographic characteristics, including gender, ethnicity, English-language fluency, primary disability, and economic

status. The tables show the numbers of students with valid scores in each group, scale score means and standard deviations, and percentage in a performance level. Table 7.5 on page 85 provides definitions for the demographic groups included in the tables.

2.7. Calibration and Scaling

Item response theory (IRT) methods are ideally suited to the assessments and measurement goals of the CAA in both establishing a common scale and ongoing maintenance of the program. The purpose of item calibration and scaling using IRT methods is to place item difficulty and student ability estimates onto a common theta scale for a given grade and content area. As a result, scores on different router versions or different modules of Stage 2 are statistically adjusted to compensate for any differences in difficulty. The IRT concurrent calibration method is used for item calibration for CAA assessments. As a result of concurrent calibration, the item parameter estimates are placed on a common scale for test items from the same grade and content area.

The concurrent calibration requires the “common items” and/or the “randomly equivalent groups” linking. The former requires that items partially overlap and be administered to different student samples, whereas the latter requires different student samples be considered as comparably “on scale” by virtue of the random equivalence of the groups. The CAA MST design incorporates both features. The MSTs are scaled by using tests assembled with overlapping items and students assigned randomly to the test versions, which supports the efficiency and accuracy of the concurrent calibrations.

The one-parameter logistic model (Hambleton and Rogers, 1991) and the corresponding general partial credit model (Muraki, 1992) were used for calibration. FlexMIRT® (Cai, 2016) version 3.0 was used to calibrate items. Refer to subsection *8.3 Item Response Theory (IRT) Analyses* on page 203 for more details on the IRT model and the calibration procedure.

A single-group concurrent calibration was used to support the estimation of student abilities, scaling, and item banking. Detailed procedures for the concurrent calibrations are included in subsection *8.3.1 Description of IRT Parameter Calibrations* starting on page 203.

References

- Cai, L. (2016). FlexMIRT®: *Flexible multilevel, multidimensional item analysis and test scoring* (Version 3.5) [computer software]. Chapel Hill, NC: Vector Psychometric Group.
- California Department of Education. (2015a). *California Alternate Assessments blueprint for English language arts*. Sacramento, CA: California Department of Education. Retrieved from <http://www.cde.ca.gov/ta/tg/ca/documents/caa15elablueprts.doc>
- California Department of Education (2015b). *California Alternate Assessments blueprint for mathematics*. Sacramento, CA: California Department of Education. Retrieved from <http://www.cde.ca.gov/ta/tg/ca/documents/caa15mathblueprts.doc>
- California Department of Education. (2016a). *CAA guidance for IEP teams*. Retrieved from <http://www.cde.ca.gov/ta/tg/ca/caaiepteamrev.asp>
- California Department of Education. (2016b). *CAASPP Smarter Balanced online test administration manual, 2015–16 administration*. Sacramento, CA: California Department of Education. Retrieved from <http://www.caaspp.org/administration/about/smarter-balanced/index.html>.
- California Department of Education. (2016c). *California Alternate Assessments test administration manual, 2015–16 administration*. Sacramento, CA: California Department of Education. Retrieved from <http://www.caaspp.org/administration/about/caa/index.html>
- California Department of Education. (2016d). *Matrix One: Universal tools, designated supports, and accommodations for the California Assessment of Student Performance and Progress for 2016–17*. Sacramento, CA: California Department of Education. Retrieved from <https://www.cde.ca.gov/ta/tg/ai/caasppmatrix1.asp>.
- California Department of Education. (2016e). *SAMPLE directions for administration for the California Alternate Assessments, spring 2016*. Sacramento, CA: California Department of Education. Retrieved from <http://www.caaspp.org/rsc/pdfs/CAASPP.caa.sample-dfa.2016.pdf>
- Hambleton, R. K., Swaminathan, H., & Rogers, H. J. (1991). *Fundamentals of item response theory*. Newbury Park, CA: Sage.
- Muraki, E. (1992). A generalized partial credit model: Application of an EM algorithm. *Applied Psychological Measurement*, 16(2): 159–176.
- Smarter Balanced Assessment Consortium. (2016). *Smarter Balanced Assessment Consortium: Usability, accessibility, and accommodations guidelines*. Los Angeles, CA: Smarter Balanced Assessment Consortium. Retrieved from <https://portal.smarterbalanced.org/library/en/usability-accessibility-and-accommodations-guidelines.pdf>
- Stocking, M. L. (1996). An alternative method for scoring adaptive tests. *Journal of Educational and Behavioral Statistics*, 21, 365–389.

Appendix 2.A Item Types

Table 2.A.1 California Alternate Assessment (CAA) Item Types

Item Type	Response Type	Description
MC	Multiple choice (MC) single select	The item generally consists of a stem and list of choices; test taker can select only one choice to respond. May also include a stimulus.
MC	Multiple choice multiple select	The item generally consists of a stem and list of choices; test taker can select two or more choices to respond. May also include a stimulus.
MC	Inline choice list single select	The stem contains a single blank; test taker must fill the blank by selecting a choice from its corresponding choice list.
MC	Inline choice list multiple select	The stem contains two or more blanks; test taker must fill each blank by selecting a choice from the corresponding choice lists.
Short Constructed Response (CR)	Fraction	The test taker responds by filling in the numerator and denominator of a fraction.
Short CR	Numeric	The test taker responds by filling in a single entry box with a numeric value. The entry box may be standalone, in line with text, or displayed on top of an image.
MC	Grid single select *	The test taker responds by marking a single cell in a table grid.
Hot Spot	Zones single select *	An item where the answer choices are predefined “hotspots” on an image. When the test taker selects (clicks) on the spot, the selection is highlighted, shaded, or outlined in red. The test taker selects one zone to respond.
Hot Spot	Zone multiple select *	An item where the answer choices are predefined “hotspots” on an image. When the test taker selects (clicks) on the spot, the selection is highlighted, shaded, or outlined in red. The test taker selects two or more zones to respond.
Drag & Drop	Match single select *	The test taker responds by dragging and dropping a single choice (“source”) into the appropriate location (“target”). For the CAA items, students do not drag items, they simply select (click) the source and then the target area, and the source snaps to the target area. There are four main varieties of this item type: <ol style="list-style-type: none"> 1. Target Table—text-based sources with targets arranged in table structure 2. Target Passage—text-based sources with targets arranged in paragraphs of text 3. Target Positions—text-based sources with targets arranged on top of an image 4. Image Map—image-based sources, and both sources and targets are arranged on top of an image
Drag & Drop	Match multiple select *	The test taker responds by dragging and dropping two or more choices (“sources”) into the appropriate locations (“targets”). For the CAA items, students do not drag items, they simply select (click) the source

Item Type	Response Type	Description
		<p>and then the target area, and the source snaps to the target area.</p> <p>There are four main varieties:</p> <ol style="list-style-type: none"> 1. Target Table—text-based sources with targets arranged in table structure 2. Target Passage—text-based sources with targets arranged in paragraphs of text 3. Target Positions—text-based sources with targets arranged on top of an image 4. Image Map—image-based sources, and both sources and targets are arranged on top of an image <p>These varieties allow for following scenarios:</p> <ul style="list-style-type: none"> • Exact matching (i.e., ordering) • Sources correctly placed in multiple different targets • Reuse sources • Reuse targets • Partial scoring
Short CR	Bar graph single select *	The test taker responds by manipulating a single bar on a graph. Bars can be solid or consist of stacked icons (e.g., dollar signs representing money, stick figures representing people, etc.). Bars can be horizontally or vertically oriented.
Short CR	Bar graph multiple select *	The test taker responds by manipulating two or more bars on a graph. Bars can be solid or consist of stacked icons (e.g., dollar signs representing money, stick figures representing people, etc.). Bars can be horizontally or vertically oriented.

* Indicates technology-enhanced items

Appendix 2.B California Alternate Assessment (CAA) Participation

Table 2.B.1 CAA 2015–16 Participation—English Language Arts/Literacy (ELA) Grades Three through Six

Student Group	Grade 3			Grade 4			Grade 5			Grade 6		
	Number Enrolled	Number Tested	Percent Tested	Number Enrolled	Number Tested	Percent Tested	Number Enrolled	Number Tested	Percent Tested	Number Enrolled	Number Tested	Percent Tested
All	5,462	4,962	91%	5,751	5,267	92%	5,674	5,098	90%	5,656	5,116	90%
Gender												
Male	3,732	3,383	91%	3,899	3,560	91%	3,825	3,440	90%	3,804	3,436	90%
Female	1,730	1,579	91%	1,852	1,707	92%	1,849	1,658	90%	1,852	1,680	91%
Ethnicity												
American Indian or Alaska Native	35	34	97%	40	37	93%	45	45	100%	44	38	86%
Asian	452	414	92%	420	389	93%	408	356	87%	437	392	90%
Native Hawaiian or Other Pacific Islander	21	17	81%	30	26	87%	31	31	100%	23	21	91%
Filipino	126	119	94%	162	148	91%	148	138	93%	158	149	94%
Hispanic or Latino	3,117	2,865	92%	3,313	3,095	93%	3,195	2,953	92%	3,172	2,952	93%
Black or African American	415	357	86%	475	412	87%	475	408	86%	473	400	85%
White	1,097	971	89%	1,103	970	88%	1,182	1,002	85%	1,191	1,031	87%
Two or more races	199	185	93%	208	190	91%	190	165	87%	158	133	84%
English Proficiency												
English only	3,298	2,953	90%	3,361	3,023	90%	3,391	2,968	88%	3,350	2,982	89%
Initially fluent English proficient	35	33	94%	60	59	98%	78	76	97%	87	83	95%
English learner	2,005	1,861	93%	2,154	2,024	94%	1,998	1,865	93%	1,936	1,779	92%
Reclassified fluent English proficient	112	105	94%	163	154	94%	190	177	93%	272	262	96%
To be determined	6	6	100%	8	4	50%	6	4	67%	3	2	67%
English proficiency unknown	6	4	67%	5	3	60%	11	8	73%	8	8	100%
Economic Status												
Not economically disadvantaged	1,884	1,647	87%	1,931	1,695	88%	2,002	1,687	84%	1,977	1,703	86%
Economically disadvantaged	3,578	3,315	93%	3,820	3,572	94%	3,672	3,411	93%	3,679	3,413	93%

Student Group	Grade 3			Grade 4			Grade 5			Grade 6		
	Number Enrolled	Number Tested	Percent Tested	Number Enrolled	Number Tested	Percent Tested	Number Enrolled	Number Tested	Percent Tested	Number Enrolled	Number Tested	Percent Tested
Primary Disability												
Intellectual disability	1,746	1,605	92%	1,931	1,802	93%	2,055	1,889	92%	2,105	1,960	93%
Hearing impairment	56	51	91%	51	47	92%	54	50	93%	60	57	95%
Speech or language impairment	247	227	92%	205	195	95%	191	178	93%	150	139	93%
Visual impairment	35	31	89%	37	30	81%	34	31	91%	40	34	85%
Emotional disturbance	27	20	74%	39	23	59%	39	25	64%	42	32	76%
Orthopedic impairment	299	243	81%	317	268	85%	339	271	80%	291	258	89%
Other health impairment	314	283	90%	309	280	91%	297	254	86%	299	261	87%
Specific learning disability	332	310	93%	436	408	94%	389	371	95%	398	342	86%
Deaf-blindness	0	–	–	7	6	86%	1	1	100%	8	5	63%
Multiple disabilities	300	256	85%	333	285	86%	267	215	81%	302	256	85%
Autism	2,025	1,863	92%	1,987	1,835	92%	1,915	1,734	91%	1,881	1,700	90%
Traumatic brain injury	23	17	74%	40	33	83%	35	31	89%	27	22	81%
Not Classified *	58	56	97%	59	55	93%	58	48	83%	53	50	94%

* Disability information was changed or removed after student testing.

Table 2.B.2 CAA 2015–16 Participation—ELA, Grades Seven through Eight and Grade Eleven

Student Group	Grade 7			Grade 8			Grade 11			
	Number Enrolled	Number Tested	Percent Tested	Number Enrolled	Number Tested	Percent Tested	Number Enrolled	Number Tested	Percent Tested	
All	5,672	5,123	90%	5,347	4,755	89%	5,210	4,273	82%	
Gender										
Male	3,744	3,401	91%	3,554	3,157	89%	3,422	2,799	82%	
Female	1,928	1,722	89%	1,793	1,598	89%	1,788	1,474	82%	
Ethnicity										
American Indian or Alaska Native	37	32	86%	55	43	78%	37	30	81%	
Asian	437	400	92%	415	372	90%	405	332	82%	
Native Hawaiian or Other Pacific Islander	28	25	89%	24	21	88%	26	19	73%	
Filipino	196	178	91%	172	149	87%	171	139	81%	
Hispanic or Latino	3,028	2,794	92%	2,826	2,580	91%	2,676	2,259	84%	
Black or African American	486	429	88%	480	416	87%	516	404	78%	
White	1,277	1,101	86%	1,234	1,060	86%	1,248	984	79%	
Two or more races	183	164	90%	141	114	81%	131	106	81%	
English Proficiency										
English only	3,411	3,018	88%	3,176	2,774	87%	3,255	2,601	80%	
Initially fluent English proficient	83	73	88%	98	87	89%	89	70	79%	
English learner	1,825	1,701	93%	1,716	1,564	91%	1,506	1,281	85%	
Reclassified fluent English proficient	340	323	95%	345	325	94%	353	316	90%	
To be determined	5	3	60%	4	2	50%	2	1	50%	
English proficiency unknown	8	5	63%	8	3	38%	5	4	80%	
Economic Status										
Not economically disadvantaged	2,071	1,781	86%	1,973	1,637	83%	1,987	1,523	77%	
Economically disadvantaged	3,601	3,342	93%	3,374	3,118	92%	3,223	2,750	85%	
Primary Disability										
Intellectual disability	2,157	2,008	93%	2,165	1,992	92%	2,199	1,923	87%	
Hearing impairment	44	38	86%	57	53	93%	57	48	84%	
Speech or language impairment	132	122	92%	81	73	90%	53	48	91%	
Visual impairment	53	45	85%	49	38	78%	45	30	67%	
Emotional disturbance	45	32	71%	42	29	69%	86	48	56%	

Student Group	Grade 7			Grade 8			Grade 11		
	Number Enrolled	Number Tested	Percent Tested	Number Enrolled	Number Tested	Percent Tested	Number Enrolled	Number Tested	Percent Tested
Orthopedic impairment	304	255	84%	338	283	84%	345	266	77%
Other health impairment	263	233	89%	231	210	91%	210	150	71%
Specific learning disability	349	318	91%	288	262	91%	396	295	74%
Deaf-blindness	7	6	86%	1	0	–	3	3	100%
Multiple disabilities	342	301	88%	292	232	79%	287	219	76%
Autism	1,909	1,709	90%	1,717	1,516	88%	1,450	1,186	82%
Traumatic brain injury	32	24	75%	31	25	81%	37	29	78%
Not Classified *	35	32	91%	55	42	76%	42	28	67%

* Disability information was changed or removed after student testing.

Table 2.B.3 CAA 2015–16 Participation—Mathematics, Grades Three through Six

Student Group	Grade 3			Grade 4			Grade 5			Grade 6		
	Number Enrolled	Number Tested	Percent Tested	Number Enrolled	Number Tested	Percent Tested	Number Enrolled	Number Tested	Percent Tested	Number Enrolled	Number Tested	Percent Tested
All	5,462	4,978	91%	5,751	5,283	92%	5,674	5,098	90%	5,656	5,123	91%
Gender												
Male	3,732	3,397	91%	3,899	3,569	92%	3,825	3,437	90%	3,804	3,445	91%
Female	1,730	1,581	91%	1,852	1,714	93%	1,849	1,661	90%	1,852	1,678	91%
Ethnicity												
American Indian or Alaska Native	35	34	97%	40	38	95%	45	44	98%	44	37	84%
Asian	452	415	92%	420	390	93%	408	361	88%	437	395	90%
Native Hawaiian or Other Pacific Islander	21	17	81%	30	26	87%	31	30	97%	23	21	91%
Filipino	126	117	93%	162	148	91%	148	139	94%	158	148	94%
Hispanic or Latino	3,117	2,877	92%	3,313	3,103	94%	3,195	2,948	92%	3,172	2,956	93%
Black or African American	415	360	87%	475	415	87%	475	405	85%	473	403	85%
White	1,097	974	89%	1,103	972	88%	1,182	1,006	85%	1,191	1,033	87%
Two or more races	199	184	92%	208	191	92%	190	165	87%	158	130	82%
English Proficiency												
English only	3,298	2,956	90%	3,361	3,026	90%	3,391	2,967	87%	3,350	2,990	89%
Initially fluent English proficient	35	34	97%	60	59	98%	78	76	97%	87	81	93%
English learner	2,005	1,873	93%	2,154	2,034	94%	1,998	1,865	93%	1,936	1,782	92%
Reclassified fluent English proficient	112	105	94%	163	154	94%	190	177	93%	272	260	96%
To be determined	6	6	100%	8	6	75%	6	5	83%	3	3	100%
English proficiency unknown	6	4	67%	5	4	80%	11	8	73%	8	7	88%
Economic Status												
Not economically disadvantaged	1,884	1,650	88%	1,931	1,695	88%	2,002	1,693	85%	1,977	1,712	87%
Economically disadvantaged	3,578	3,328	93%	3,820	3,588	94%	3,672	3,405	93%	3,679	3,411	93%
Primary Disability												
Intellectual disability	1,746	1,615	92%	1,931	1,808	94%	2,055	1,892	92%	2,105	1,962	93%
Hearing impairment	56	51	91%	51	47	92%	54	49	91%	60	56	93%
Speech or language impairment	247	228	92%	205	194	95%	191	178	93%	150	139	93%
Visual impairment	35	30	86%	37	30	81%	34	31	91%	40	32	80%
Emotional disturbance	27	20	74%	39	24	62%	39	26	67%	42	31	74%

Student Group	Grade 3			Grade 4			Grade 5			Grade 6		
	Number Enrolled	Number Tested	Percent Tested	Number Enrolled	Number Tested	Percent Tested	Number Enrolled	Number Tested	Percent Tested	Number Enrolled	Number Tested	Percent Tested
Orthopedic impairment	299	239	80%	317	270	85%	339	272	80%	291	260	89%
Other health impairment	314	282	90%	309	280	91%	297	256	86%	299	261	87%
Specific learning disability	332	309	93%	436	408	94%	389	370	95%	398	342	86%
Deaf-blindness	0	–	–	7	6	86%	1	1	100%	8	5	63%
Multiple disabilities	300	265	88%	333	288	86%	267	219	82%	302	257	85%
Autism	2,025	1,867	92%	1,987	1,840	93%	1,915	1,727	90%	1,881	1,704	91%
Traumatic brain injury	23	17	74%	40	33	83%	35	31	89%	27	21	78%
Not Classified *	58	55	95%	59	55	93%	58	46	79%	53	53	100%

* Disability information was changed or removed after student testing.

Table 2.B.4 CAA 2015–16 Participation—Mathematics, Grades Seven through Eight and Grade Eleven

Student Group	Grade 7			Grade 8			Grade 11			
	Number Enrolled	Number Tested	Percent Tested	Number Enrolled	Number Tested	Percent Tested	Number Enrolled	Number Tested	Percent Tested	
All	5,672	5,117	90%	5,347	4,757	89%	5,210	4,268	82%	
Gender										
Male	3,744	3,392	91%	3,554	3,162	89%	3,422	2,800	82%	
Female	1,928	1,725	89%	1,793	1,595	89%	1,788	1,468	82%	
Ethnicity										
American Indian or Alaska Native	37	32	86%	55	42	76%	37	30	81%	
Asian	437	397	91%	415	375	90%	405	332	82%	
Native Hawaiian or Other Pacific Islander	28	25	89%	24	21	88%	26	17	65%	
Filipino	196	179	91%	172	150	87%	171	142	83%	
Hispanic or Latino	3,028	2,793	92%	2,826	2,570	91%	2,676	2,257	84%	
Black or African American	486	424	87%	480	420	88%	516	402	78%	
White	1,277	1,102	86%	1,234	1,065	86%	1,248	982	79%	
Two or more races	183	165	90%	141	114	81%	131	106	81%	
English Proficiency										
English only	3,411	3,011	88%	3,176	2,778	87%	3,255	2,598	80%	
Initially fluent English proficient	83	73	88%	98	86	88%	89	69	78%	
English learner	1,825	1,705	93%	1,716	1,565	91%	1,506	1,278	85%	
Reclassified fluent English proficient	340	318	94%	345	321	93%	353	318	90%	
To be determined	5	3	60%	4	2	50%	2	1	50%	
English proficiency unknown	8	7	88%	8	5	63%	5	4	80%	
Economic Status										
Not economically disadvantaged	2,071	1,778	86%	1,973	1,646	83%	1,987	1,519	76%	
Economically disadvantaged	3,601	3,339	93%	3,374	3,111	92%	3,223	2,749	85%	
Primary Disability										
Intellectual disability	2,157	2,001	93%	2,165	1,976	91%	2,199	1,923	87%	
Hearing impairment	44	40	91%	57	54	95%	57	47	82%	
Speech or language impairment	132	119	90%	81	73	90%	53	46	87%	
Visual impairment	53	45	85%	49	39	80%	45	29	64%	
Emotional disturbance	45	35	78%	42	30	71%	86	48	56%	

Student Group	Grade 7			Grade 8			Grade 11		
	Number Enrolled	Number Tested	Percent Tested	Number Enrolled	Number Tested	Percent Tested	Number Enrolled	Number Tested	Percent Tested
Orthopedic impairment	304	255	84%	338	285	84%	345	263	76%
Other health impairment	263	232	88%	231	206	89%	210	149	71%
Specific learning disability	349	317	91%	288	261	91%	396	298	75%
Deaf–blindness	7	6	86%	1	0	%	3	3	100%
Multiple disabilities	342	303	89%	292	238	82%	287	218	76%
Autism	1,909	1,708	89%	1,717	1,528	89%	1,450	1,187	82%
Traumatic brain injury	32	24	75%	31	25	81%	37	29	78%
Not Classified *	35	32	91%	55	42	76%	42	28	67%

* Disability information was changed or removed after student testing.

Appendix 2.C. Accessibility

Table 2.C.1 Assignment of Designated Supports and Accommodations—English Language Arts/Literacy (ELA), Grades Three through Six

	Grade 3		Grade 4		Grade 5		Grade 6	
	N	% of Total tested	N	% of Total tested	N	% of Total tested	N	% of Total tested
Accommodations								
Embedded supports—Streamlining	132	3%	144	3%	134	3%	104	2%
Non-embedded supports—Print on demand	30	1%	39	1%	42	1%	21	0%
Non-embedded supports—Alternate response options	467	9%	451	9%	491	10%	454	9%
Non-embedded supports—Read aloud	763	15%	752	14%	825	16%	787	15%
Non-embedded supports—Unlisted resources	20	0%	12	0%	15	0%	22	0%
Non-embedded supports—Scribe	316	6%	299	6%	336	7%	317	6%
Non-embedded supports—Speech-to-text	140	3%	157	3%	213	4%	154	3%
Non-embedded supports—Additional alternate assessment resources	278	6%	269	5%	254	5%	255	5%
Designated Supports								
Embedded supports—Color contrast	50	1%	37	1%	47	1%	50	1%
Embedded supports—Masking	223	4%	254	5%	284	6%	217	4%
Embedded supports—Print size	119	2%	119	2%	119	2%	166	3%
Embedded supports—Permissive mode	65	1%	79	2%	82	2%	83	2%
Embedded supports—Turn off any universal tool	0	–	0	–	0	–	0	–
Non-embedded supports—Color contrast	50	1%	46	1%	36	1%	29	1%
Non-embedded supports—Color overlay	32	1%	17	0%	18	0%	18	0%
Non-embedded supports—Magnification	81	2%	98	2%	90	2%	96	2%
Non-embedded supports—Noise buffers	215	4%	197	4%	215	4%	164	3%
Non-embedded supports—Read aloud	983	20%	989	19%	1107	22%	947	19%
Non-embedded supports—Scribe	356	7%	354	7%	404	8%	351	7%
Non-embedded supports—Separate setting	882	18%	885	17%	962	19%	872	17%
Non-embedded designated supports—Translated test directions	43	1%	52	1%	55	1%	53	1%
Total Students Tested	4,962		5,267		5,098		5,116	

Table 2.C.2 Assignment of Using Designated Supports and Accommodations—ELA, Grades Seven through Eight and Grade Eleven

	Grade 7		Grade 8		Grade 11	
	N	% of Total tested	N	% of Total tested	N	% of Total tested
Accommodations						
Embedded supports—Streamlining	104	2%	73	2%	42	1%
Non-embedded supports—Print on demand	54	1%	35	1%	11	0%
Non-embedded supports—Alternate response options	431	8%	374	8%	210	5%
Non-embedded supports—Read aloud	781	15%	715	15%	459	11%
Non-embedded supports—Unlisted resources	16	0%	15	0%	18	0%
Non-embedded supports—Scribe	310	6%	294	6%	203	5%
Non-embedded supports—Speech-to-text	209	4%	164	3%	81	2%
Non-embedded supports—Additional alternate assessment resources	203	4%	167	4%	113	3%
Designated Supports						
Embedded supports—Color contrast	28	1%	39	1%	32	1%
Embedded supports—Masking	250	5%	199	4%	155	4%
Embedded supports—Print size	147	3%	135	3%	64	2%
Embedded supports—Permissive mode	86	2%	79	2%	16	0%
Embedded supports—Turn off any universal tool	0	—	0	—	0	—
Non-embedded supports—Color contrast	31	1%	30	1%	10	0%
Non-embedded supports—Color overlay	20	0%	13	0%	8	0%
Non-embedded supports—Magnification	104	2%	81	2%	48	1%
Non-embedded supports—Noise buffers	149	3%	106	2%	65	2%
Non-embedded supports—Read aloud	929	18%	849	18%	466	11%
Non-embedded supports—Scribe	351	7%	335	7%	182	4%
Non-embedded supports—Separate setting	897	18%	769	16%	510	12%
Non-embedded designated supports—Translated test directions	66	1%	32	1%	51	1%
Total Students Tested	5,123		4,755		4,273	

Table 2.C.3 Assignment of Designated Supports and Accommodations—Mathematics, Grades Three through Six

	Grade 3		Grade 4		Grade 5		Grade 6	
	N	% of Total Tested	N	% of Total Tested	N	% of Total Tested	N	% of Total Tested
Accommodations								
Embedded supports—Streamlining	132	3%	145	3%	135	3%	103	2%
Non-embedded supports—Print on demand	32	1%	37	1%	43	1%	23	0%
Non-embedded supports—Alternate response options	461	9%	445	8%	494	10%	451	9%
Non-embedded supports—Unlisted resources	20	0%	12	0%	15	0%	22	0%
Non-embedded supports—Speech-to-text	141	3%	154	3%	214	4%	152	3%
Non-embedded supports—Additional alternate assessment resources	278	6%	269	5%	253	5%	258	5%
Non-embedded supports—Abacus	0	–	0	–	0	–	0	–
Non-embedded supports—Calculator	0	–	0	–	0	–	0	–
Non-embedded supports—Multiplication table	0	–	0	–	0	–	0	–
Designated Supports								
Embedded supports—Color contrast	51	1%	37	1%	47	1%	49	1%
Embedded supports—Masking	221	4%	252	5%	284	6%	215	4%
Embedded supports—Print size	115	2%	118	2%	121	2%	158	3%
Embedded supports—Permissive mode	65	1%	78	1%	81	2%	85	2%
Embedded supports—Turn off any universal tool	0	0%	0	0%	0	0%	0	0%
Non-embedded supports—Color contrast	49	1%	45	1%	38	1%	29	1%
Non-embedded supports—Color overlay	31	1%	17	0%	18	0%	18	0%
Non-embedded supports—Magnification	80	2%	98	2%	93	2%	93	2%
Non-embedded supports—Noise buffers	210	4%	197	4%	213	4%	166	3%
Non-embedded supports—Read aloud	979	20%	986	19%	1110	22%	949	19%
Non-embedded supports—Scribe	354	7%	352	7%	405	8%	353	7%
Non-embedded supports—Separate setting	878	18%	880	17%	962	19%	872	17%
Non-embedded designated supports—Translated test directions	44	1%	52	1%	56	1%	54	1%
Total Students Tested	4,978		5,283		5,098		5,123	

Table 2.C.4 Assignment of Designated Supports and Accommodations—Mathematics, Grades Seven through Eight and Grade Eleven

	Grade 7		Grade 8		Grade 11	
	N	% of Total Tested	N	% of Total Tested	N	% of Total Tested
Accommodations						
Embedded supports—Streamlining	104	2%	74	2%	41	1%
Non-embedded supports—Print on demand	49	1%	35	1%	11	0%
Non-embedded supports—Alternate response options	432	8%	376	8%	210	5%
Non-embedded supports—Unlisted resources	17	0%	19	0%	17	0%
Non-embedded supports—Speech-to-text	207	4%	164	3%	78	2%
Non-embedded supports—Additional alternate assessment resources	207	4%	167	4%	113	3%
Non-embedded supports—Abacus	0	0%	0	0%	0	0%
Non-embedded supports—Calculator	0	0%	0	0%	0	0%
Non-embedded supports—Multiplication table	0	0%	0	0%	0	0%
Designated Supports						
Embedded supports—Color contrast	28	1%	43	1%	32	1%
Embedded supports—Masking	246	5%	195	4%	155	4%
Embedded supports—Print size	145	3%	131	3%	65	2%
Embedded supports—Permissive mode	87	2%	79	2%	16	0%
Embedded supports—Turn off any universal tool	0	0%	0	0%	0	0%
Non-embedded supports—Color contrast	31	1%	30	1%	10	0%
Non-embedded supports—Color overlay	20	0%	13	0%	8	0%
Non-embedded supports—Magnification	105	2%	81	2%	48	1%
Non-embedded supports—Noise buffers	149	3%	107	2%	64	2%
Non-embedded supports—Read aloud	931	18%	850	18%	467	11%
Non-embedded supports—Scribe	351	7%	337	7%	181	4%
Non-embedded supports—Separate setting	898	18%	768	16%	504	12%
Non-embedded designated supports—Translated test directions	67	1%	33	1%	51	1%
Total Students Tested	5,117		4,757		4,268	

Chapter 3: Item Development and Review

This chapter provides an overview of the processes implemented by Educational Testing Service (ETS) to develop items for use on the California Alternate Assessments (CAAs) for English language arts/literacy (ELA) and mathematics. These processes include those that are entirely internal to ETS and those that are conducted in coordination with the California Department of Education (CDE) and/or the American Institutes for Research (AIR).

The chapter provides a brief description of each process and a summary of the associated specifications. More details about the specifications and the analyses associated with each process are described in other chapters that are referenced in the subsections that follow.

3.1. Item Development and Review

3.1.1. Overview

Each CAA item is developed through a comprehensive development cycle and designed to conform to principles of item writing defined by ETS. Each item in the CAA operational item bank was developed to measure a specific Core Content Connector (Connector) or the essential understanding (EU) of a Connector derived from the Common Core State Standards (CCSS). In addition, guidelines for style, fairness, and bias and sensitivity help item developers and reviewers ensure consistency across the item development process.

3.1.2. Item Specifications

ETS maintains item development specifications for the CAAs for ELA and mathematics. These specifications describe the characteristics of the items that should be written to measure each content standard and help ensure that all items developed for CAA measure the content standards consistently. Item writing emphasis is determined in consultation with the CDE.

The specifications include:

- A full statement of each CCSS, Connector, and EU;
- A description of the item guidelines expected by tier for each standard/
- Sample item stems for some standards;
- A general list of elements to avoid (e.g. for mathematics, the use of certain variables such as m and n in the same item, which can be difficult for students with visual impairments to distinguish);
- A description of the kinds of item stems/formats appropriate to assess each standard;
- A description of appropriate data representations (such as charts, tables, graphs, or other illustrations);
- The content limits of the standard (such as one or two variables, maximum place values of numbers);
- A description of appropriate reading passages or stimulus cards, if applicable; and

- For ELA, guidelines for passages or stimulus cards used to assess reading comprehension, including the following:
 - A list of topics to be avoided
 - The acceptable ranges for the number of words on a stimulus card
 - Expected use of artwork
 - The target number of tasks attached to each reading stimulus card

3.1.3. Item Format

CAA items are designed to engage the target population. Items are developed with the understanding that a test examiner will deliver each item individually to a tested student and assist him or her in answering and/or recording the answer to each item.

Students who are able may select responses using a mouse, touchscreen, or other supported input device. In some cases, students will need to use other modes of communication, such as eye gaze or gesture, to indicate responses to the test examiner. The test examiner will enter these responses into the testing device for the student.

The majority of items will be presented in a split-screen format, with a “stimulus” on the left side of the screen and the item to be answered on the right side of the screen. For ELA items, the stimulus will usually be a passage or vocabulary set. For mathematics items, the stimulus is item-specific information or general mathematical knowledge. A selected number of items have a multimedia stimulus, either a short audio file, a video, or animation.

Items developed for the CAA may be scored as being worth one point or two points.

3.1.4. Item Types

Each Connector or EU may be assessed through one or more of nine available item types. An individual item may consist of one or more of the following:

1. **Multiple Choice (Single Select)**—Item that generally consists of stem and list of choices; the student can select only one choice (option) to respond. This type may also include a stimulus. Options use a radio button, but the student can select text or an image to fill in the radio button.
2. **Multiple Choice (Multiple Select)**—Item that generally consists of stem and list of choices; the student can select one or more choices (options) to respond. This type may also include a stimulus. Partial/Summative scoring are available. Options use a radio button, but the student can select text or an image to fill in button.
3. **Inline Choice List (Single Select)**—Item where the stem contains a single blank, and the student must fill the blank by selecting a choice from its corresponding choice list.
4. **Inline Choice List (Multiple Select)**—Item where the stem contains two or more blanks, and the student must fill each blank by selecting a choice from the corresponding choice lists. Partial/Summative scoring are available.
5. **Fraction**—Item where the student responds by filling in the numerator and denominator of a fraction.
6. **Numeric**—Item where the student responds by filling in a single entry box with a numeric value. The entry box may be standalone or in-line with text. Keys may be integers, decimals, and/or fractions.

7. **Grid Single Select**—Item where the student responds by marking a single cell in a table grid.
8. **Zone (Single Select)**—Item where the answer choices are predefined “hotspots” on an image. When the student selects (clicks on) the spot, the selection is highlighted, shaded, or outlined in red. The student selects one zone to respond.
9. **Zone (Multiple Select)**—Item where the answer choices are predefined “hotspots” on an image. When the student selects (clicks on) the spot, the selection is highlighted, shaded, or outlined in red. The student selects two or more zones to respond.
10. **Composite Objective**—Item that contains two or more item parts from the machine-scored list (item types 2–6 above); the item score, as a whole, is based on the student’s response to each individual part (machine scored).
11. **Match (Single Select)**—Item where the student responds by dragging and dropping a single choice (“source”) into the appropriate location (“target”).
12. **Match (Multiple Select)**—Item where the student responds by dragging and dropping two or more choices (“sources”) into the appropriate locations (“targets”).
13. **Bar Picturegraph (Single Select)**—Item where the student responds by manipulating a single bar on a graph.
14. **Bar Picturegraph (Multiple Select)**—Item where the student responds by manipulating two or more bars on a graph.

3.1.5. Selection of Item Writers

The items for the CAAs are written by individual item writers with a thorough understanding of the Connectors and EU. Applications for item writing are screened by senior ETS content staff. Only those with strong content and teaching backgrounds are approved for inclusion in the training program for item writing. Because all of the participants are current or former California educators, they are particularly knowledgeable about the standards assessed by the CAA.

All item writers meet the following minimum qualifications:

- Possession of a Bachelor’s degree in the relevant content area or in the field of education with special focus on a particular content area; an advanced degree in the relevant content is desirable
- Previous experience or training in writing items for standards-based assessments, including knowledge of the many considerations that are important when developing items for special populations
- Previous experience or training in writing items in the content areas covered by CAA grades and/or content areas
- Familiarity, understanding, and support of the Connectors
- Current teaching experience in California, when possible

3.2. Item Review Process

3.2.1. Overview

Items developed for the CAA undergo an extensive item review process that is designed to provide the best standards-based assessments possible. This subsection summarizes the item review process that ensures the quality of CAA items.

Item writer submissions are carefully reviewed by ETS assessment specialists, who determine whether or not each item meets the criteria expected for submission, including accuracy and adherence to the item specifications. Items that do not meet minimal criteria are rejected, with notes for future revision submitted to authors. Items that meet the criteria are accepted into the pool and authored into the system.

Once an item is accepted for authoring—that is, once it has been entered into ETS’s item bank and formatted for use in an assessment—ETS employs a series of internal reviews. These reviews use established criteria to judge the quality of item content and ensure that each item measures what it is intended to measure. These internal reviews also examine the overall quality of the test items before presentation to the CDE and California educators.

The ETS review process for the CAA includes the following:

1. Internal content review
2. Internal editorial review
3. Internal sensitivity review

Throughout this multistep item review process, the lead content-area assessment specialists and development team members continually evaluate the items in adherence to the rules for item development.

3.2.2. Internal Content Review

Items and stimuli undergo three reviews by content-area assessment specialists. These assessment specialists ensure that the items and stimuli are in compliance with ETS’s written guidelines for clarity, style, accuracy, and appropriateness for California students as well as in compliance with the approved item specifications. Assessment specialists reviewed each item in terms of the following characteristics:

- Relevance of each item to the purpose of the test
- Match of each item to the item specifications, including the tier of item complexity
- Match of each item to the principles of quality item writing
- Match of each item to the identified standard or standards
- Difficulty of the item
- Accuracy of the content of the item
- Readability of the item or passage
- Grade-level appropriateness of the item
- Appropriateness of any illustrations, graphs, or figures

Each item is classified with the Connector and/or EU it is intended to measure. The assessment specialists check each item against its classification codes, both to evaluate the correctness of the classification and to ensure that the task posed by the item is relevant to the outcome it was intended to measure. The reviewers can accept the item and classification as written, suggest revisions, or recommend that the item be discarded. These steps occur prior to the CDE’s review.

3.2.3. Internal Editorial Review

After the content-area assessment specialists review each item, a group of specially trained editors also review each item in preparation for consideration by the CDE and California educators. The editors check items for clarity, the correctness of language, appropriateness of language for the grade level assessed, adherence to the style guidelines, and conformity with accepted item-writing practices.

3.2.4. Internal Sensitivity Review

ETS assessment specialists who are specially trained to identify and eliminate questions that contain content or wording that could be construed to be offensive to or biased against members of specific ethnic, racial, or gender groups conduct the next level of review. These trained staff members review every item before the CDE and formal item reviews.

The review process promotes a general awareness of and responsiveness to the following:

- Cultural diversity
- Diversity of background, cultural tradition, and viewpoints to be found in the test-taking population
- Changing roles and attitudes toward various groups
- Role of language in setting and changing attitudes toward various groups
- 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
- Item accessibility for English-language learners

3.3. Content Expert Reviews

3.3.1. California Educators

Meetings with California educators are held at the end of the item review process as the final content expert review that items must undergo before being placed on an operational assessment. The California educators fill an advisory role to the CDE and ETS and provide guidance on matters related to item development for the CAAs. These educators are responsible for reviewing all newly developed items for alignment to the California content standards. Meeting participants also review the items for the accuracy of content, clarity of phrasing, and quality. In their examination of test items, a participant can raise concerns related to age/grade appropriateness and gender, racial, ethnic, and/or socioeconomic bias.

3.3.2. Composition of Item Review Meetings

California educators participating in item review meetings consist of current and former teachers, resource specialists, administrators, curricular experts, and other education professionals. Minimum qualifications to be invited to participate are:

- Three or more years of teaching experience in grades kindergarten through twelve and in the relevant content areas (ELA or mathematics),
- Bachelor's or higher degree in a grade or content area related to ELA or mathematics, and
- Knowledge and experience with the California content standards in ELA or mathematics.

Preferred qualifications include:

- Special education credential,
- Experience with more than one type of disability, and
- Three to five years of experience as a teacher or school administrator with a special education credential.

School administrators, local educational agency (LEA)/county content/program specialists, or university educators must meet the following qualifications to be invited to participate:

- Three or more years of experience as a school administrator, LEA/county content/program specialist, or university instructor in a grade-specific area;
- Bachelor’s or higher degree in a grade-specific; and
- Knowledge of and experience with the California content standards in ELA or mathematics.

Every effort is made to ensure that groups of item reviewers include a wide representation of genders and of the geographic regions and ethnic groups in California. Efforts also are made to ensure representation by members with experience serving California’s diverse special education population.

Table 3.1 shows the educational qualifications, present occupation, and credentials of the individuals who participated in CAA item review.

Table 3.1 CAA Item Review Qualifications, by Content Area and Total

Qualification	ELA	Math	Total
Total	12	10	22
Occupation			
Teacher or Program Specialist, Elementary School	6	1	7
Teacher or Program Specialist, Middle School	2	1	3
Teacher or Program Specialist, High School	4	8	12
Other District Personnel	0	0	0
Highest Degree Earned			
Bachelor’s Degree	5	3	8
Master’s Degree	7	6	13
Doctorate	0	1	1
K–12 Teaching Credentials (Members may hold multiple credentials.)			
Elementary Teaching (multiple subjects)	4	6	10
Secondary Teaching (single subject)	5	6	11
Special Education	10	7	17
Reading Specialist	0	0	0
English Learner (CLAD, BCLAD)	1	0	1
Administrative	1	0	1
Other	0	0	0

Item reviewers are recruited through an application process. Recommendations are solicited from LEAs and county offices of education as well as from the CDE. Applications are reviewed by the ETS assessment directors, who confirm that an applicant’s qualifications meet the specified criteria. Applications that meet the criteria are forwarded to the CDE for further review and agreement before invitations to participate are distributed.

3.3.3. Meetings for Review of CAA Items

ETS content-area assessment specialists facilitate CAA item review meetings. Each meeting begins with a brief training session on how to review items. ETS provides this training, which consists of the following topics:

- Overview of the purpose and scope of the CAA
- Overview of the CAA test design specifications and blueprints
- Analysis of the CAA item specifications
- Overview of criteria for evaluating test items
- Review and evaluation of items for bias and sensitivity issues

The criteria for evaluating items include the following:

- Overall technical quality
- Match to the Connectors
- Match to the construct being assessed by the standard
- Difficulty range
- Clarity
- Correctness of the answer
- Plausibility of the distractors
- Bias and sensitivity factors

Criteria also encompass more global factors, including—for ELA—the appropriateness, difficulty, and readability of reading passages. Meeting participants also are trained on how to make recommendations for revising items.

Guidelines for reviewing items are provided by ETS and approved by the CDE. The set of guidelines for reviewing items is summarized below.

Does the item:

- Have one and only one clearly correct answer?
- Measure the content standard?
- Match the test item specifications?
- Align with the construct being measured?
- Test worthwhile concepts or information?

Is the stimulus, if any, for the item:

- Required in order to answer the item?
- Likely to be interesting to students?
- Clearly and correctly labeled?
- Providing all the information needed to answer the item?

ETS staff maintain the minutes summarizing the review process and then forward copies of the minutes to the CDE, emphasizing, in particular, the recommendations of the panel members.

3.4. Data Review Meetings

After items have been included in an operational test, ETS prepares the items and the associated statistics for review by the CDE. Review materials include items with their statistical data along with annotated comment sheets for the CDE to use in its review. ETS conducts an introductory training to highlight any new issues and serve as a statistical

refresher. CDE consultants then make decisions about which items should be included in the item bank. ETS psychometric and content staff are available to CDE consultants throughout this process.

Chapter 4: Test Assembly

This chapter provides the details of test assembly, including a description of the content being measured (i.e., test blueprints), the design of the multistage test (MST), and routing rules that guide students from Stage 1 to modules of Stage 2. The process of item selection, final reviews before test production, and the production process (e.g., preparation of the test forms for online test delivery) also are included.

4.1. Test Content Specifications and Test Blueprints

The California Alternate Assessments (CAAs) incorporate innovations and best practices from recent national alternate assessment initiatives, including the National Center and State Collaborative (NCSC) and Dynamic Learning Maps (DLM). All items and tasks are developed to grade-level standards, the Core Content Connectors (Connectors) developed by the NCSC (NCSC, 2014a [reading], 2014b [writing], and 2014c [mathematics]). These Connectors are aligned with the Common Core State Standards (CCSS).

4.1.1. Test Content Specifications

The CAA assesses each CCSS through the NCSC-developed Connectors and essential understandings (EUs) derived from Connectors. These Connectors identify the most salient grade-level, core academic content in English language arts/literacy (ELA) and mathematics found in both the CCSS (Common Core State Standards Initiative, 2017) and the Learning Progression Frameworks (LPF) (NCSC, 2015), and illustrate the necessary knowledge and skills required in order to reach the learning targets within the LPF and the CCSS. Additionally, the Connectors focus on the core content, knowledge, and skills needed at each grade to promote success; and identify priorities in each content area to guide the instruction for students in this population and for an alternate assessment. Finally, Connectors ensure that students with significant cognitive disabilities achieve increasingly higher academic outcomes and leave high school ready for post-secondary options (NCSC, 2016).

Each content standard is assessed through the Connectors and related EUs under a three-tier structure of item complexity. Detailed information on the tiered items are described in subsection *4.2 Test Design*.

4.1.2. Test Blueprints

The CAA test blueprints are unique to each grade level and content area (California Department of Education [CDE], 2015a [ELA] and 2015b [mathematics]). These blueprints designate the breakdown of each assessment, first by Content Category (for ELA) or Domain (for mathematics) and then by Connectors. Information on a test blueprint for a given grade and content area includes:

- Specific ratio of each Content Category/Domain on overall test,
- Specific Connectors to be assessed,
- Specific EUs to be assessed, and
- The maximum number of items on a test.

More information regarding the alignment of each CAA test with the test blueprints is provided in Table 4.A.1 through Table 4.A.14 in Appendix 4.A, which starts on page 52.

4.2. Test Design

4.2.1. Multistage Test (MST) Design

As the simplest and most robust form of adaptive testing, an MST design consists of a number of modules. Each module can be assembled to meet a set of specifications such as item content and item difficulty/complexity; see subsection 3.1.2 *Item Specifications* on page 34 for additional information about the item specifications.

Educational Testing Service (ETS) implemented a two-stage MST design for the CAAs for ELA and mathematics. Students with a variety of ability levels, based on their performance on Stage 1, are routed to one of three alternative modules at Stage 2 that is appropriate for their abilities.

This design provides benefits such as increased measurement quality and student engagement, particularly for students who represent a diverse population with a wide range of ability levels and whose ability levels may not be appropriately targeted by conventional fixed-form tests. Additionally, it allows test developers to develop thoughtful test item sets (modules) that maximize the information provided about a student. Finally, it supports the balance between test standardization and full access to provide a valid measure for each student.

The CAA test assembly design meets content and psychometric requirements for items and forms and contains a number of important features that are described in the following subsections.

4.2.1.1. Tiered Items

First, an important feature of the CAA MST is the usage of tiered items. Given that the target population encompasses many types of cognitive disabilities and an extremely wide range of student abilities, items developed to three tiers of complexity are organized in order of increasing complexity and cognitive load. Items developed at Tier 1, considered the most accessible level, typically rely heavily on graphics. Items developed at Tier 2, considered the middle level, typically use a mix of graphics and text. Items developed at Tier 3, the most challenging level (with increased rigor and difficulty) rely more heavily on text and less on graphics than the lower tiers. Typically:

- A Tier 1 item would provide images with dichotomous answer choices,
- A Tier 2 item would provide three answer choices with fewer images, and
- A Tier 3 item would provide polytomous answer choice with more complicated text and fewest image.

In addition to the complexity increasing in text, the length of passages in an ELA assessment increases as the tier level increases. A Tier 1 ELA passage contains few sentences with heavy use of graphics. A Tier 2 passage typically contains several sentences with fewer graphics. A Tier 3 passage contains a paragraph or two of text with less reliance on graphics. In addition, ELA tiered item sets, consisting of three items paired with a tiered stimulus/passage, are targeted at one of three different tiers of understanding and complexity based on the same Connectors.

4.2.1.2. Modules

Items and passages from each tier are carefully composed into modules for both stages of CAAs. Two versions of the Stage 1 module, each of which serves as a router, are assigned

randomly at the school level in California. The purpose of the two routers is to increase the number of items developed and tested to support the future operational administrations.

Within each router, the first seven items are from Tier 1, followed by seven Tier 2 items and ending with seven Tier 3 items. In addition, the Stage 1 router is divided into two sections, Stage 1A and Stage 1B, where Stage 1A consists of the first 11 items, of which the first seven items are at Tier 1 and the remaining four are at Tier 2. Stage 1B consists of the remaining 10 items, of which the first three items are at Tier 2 and the remaining seven are at Tier 3.

At Stage 2, each module consists of six items from tiers 1, 2, and 3, respectively. Each of the three Stage 2 modules—easy, moderate, and hard—is tailored to a particular student ability level with appropriate item sets. This test design allows the collection of item information for 32 unique items from Stage 1 and 18 unique items from Stage 2 for a total of up to 50 unique items for each grade.

4.2.1.3. Pathways

The Stage 1 and Stage 2 module combination is called a “pathway.” The pathway varies depending on a student’s performance on the items and the routing rules. The two-stage MST design with two versions of the router and three modules at Stage 2 generates eight possible pathways, including the early exit pathways, which is when a student responds only to the first 11 items of the Stage 1 routers.

The eight possible pathways can be regarded as multiple forms of a linear test. Each MST pathway combination of the Stage 1 and Stage 2 modules is shown in Table 4.1.

Table 4.1 Eight Effective Unique Forms for Each Grade and Subject

	Effective Unique Form	Configuration
1.	R1AOE	Stage 1 Version 1 items 1–11 ^a and Stage 2 easy items (Tier 1 items)
2.	R1ABE	Stage 1 Version 1 items 1–21 and Stage 2 easy items (Tier 1 items)
3.	R1ABM	Stage 1 Version 1 items 1–21 and Stage 2 medium items (Tier 2 items)
4.	R1ABH	Stage 1 Version 1 items 1–21 and Stage 2 hard items (Tier 3 items)
5.	R2AOE	Stage 1 Version 2 items 1–11 ^a and Stage 2 easy items (Tier 1 items)
6.	R2ABE	Stage 1 Version 2 items 1–21 and Stage 2 easy items (Tier 1 items)
7.	R2ABM	Stage 1 Version 2 items 1–21 and Stage 2 medium items (Tier 2 items)
8.	R2ABH	Stage 1 Version 2 items 1–21 and Stage 2 hard items (Tier 3 items)

^a The early exit routing rule was implemented for students experiencing the greatest cognitive challenges with the content whose responses did not exceed a designated minimum score threshold on the first 11 items of Stage 1. The rule provides an early exit opportunity from Stage 1A to the Stage 2 easy module.

4.2.1.4. Purpose of the MST Design

In the inaugural year of the operational CAA, the test design balances two competing needs. The first competing need is the need to provide an appropriately challenging assessment to this cognitively diverse population while providing the best measurement precision possible. This need is addressed by the two-stage adaptive assessment with multiple exit points to end the test for students who are not orienting or responding to items or are experiencing difficulties in terms of performance and accessing the content.

The second competing need—designing an assessment to measure student achievement of the content standards within a wide range of item types and difficulties—is addressed through the overall length of the router. The 21-item router provides students access to the

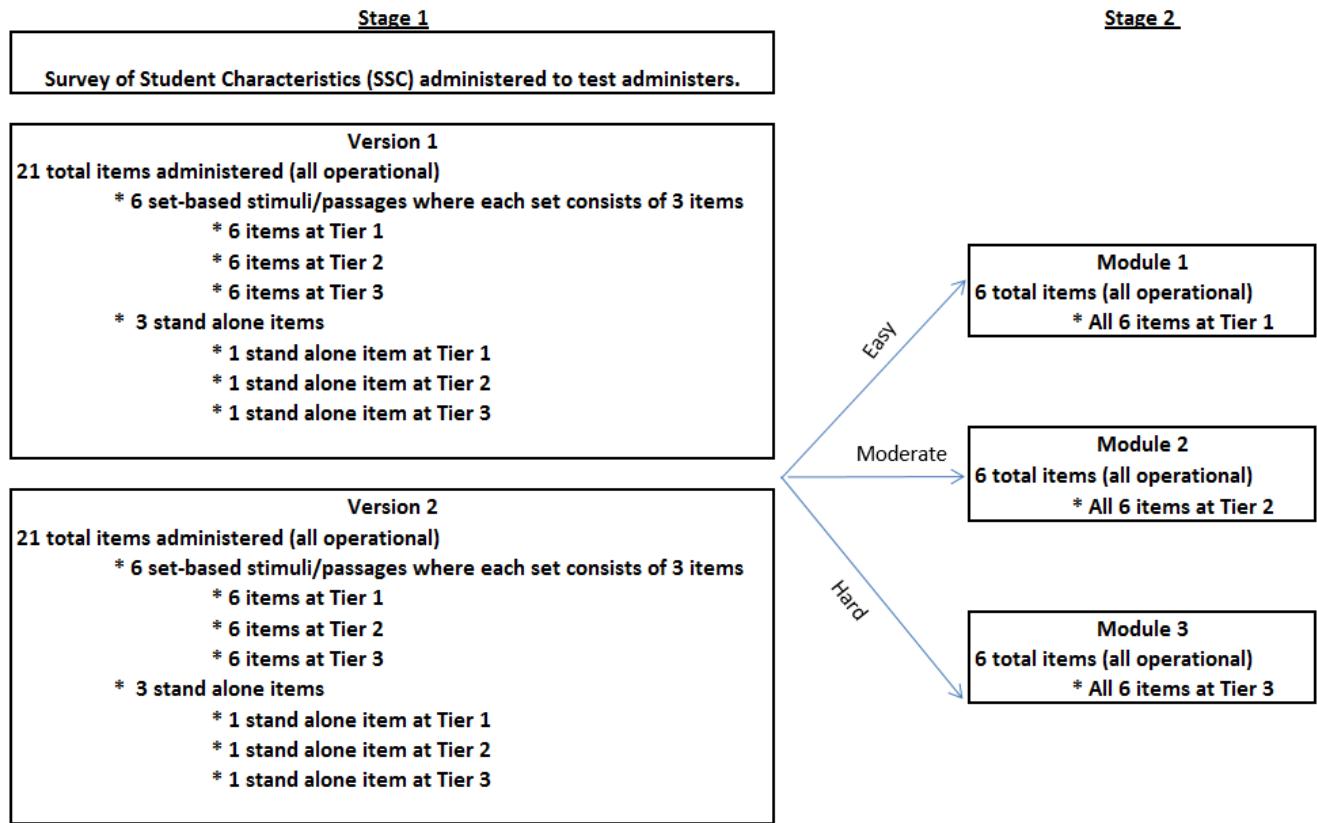
widest range of item types, difficulties, test content, and content standards. Moreover, the overall length of the router comprises a significant portion of a student's overall score along with its measurement characteristics.

Prior to giving the CAA tests to a student, a test examiner is required to complete the Survey of Student Characteristics (SSC). The purpose of the SSC is to elicit information from test examiners regarding each individual student's skills, which are reflected in the California performance level descriptors (PLDs). PLDs describe what students at each performance level within a grade level should know and be able to do. The SSC also incorporates selected questions from the Learner Characteristics Inventory (LCI) and two questions on the student's chosen response mode in ELA and mathematics.

The LCI questions included in the SSC are based on those developed by the National Alternate Assessment Center to gather data on characteristics of students taking alternate assessments based on alternate achievement standards (AA-AAS). This data collection effort is part of a broader research effort to determine whether routing decisions could be improved by the administration of the SSC. If successful, the SSC, in conjunction with router outcomes, could have been used to assign students to Stage 2 modules beginning with the 2016–17 CAA administration. However, the data show that the SSC does not improve routing decisions enough to justify operational use and will not be used for this purpose after the 2015–16 administration. See the tables in Appendix 8.G on page 391 for these data.

4.2.2. English Language Arts/Literacy Test Design

For the 2015–16 CAA administration in ELA, most students were required to complete a full-length test: the routing test in Stage 1A and Stage 1B, as well as one of the three modules in Stage 2. Figure 4.1 provides an illustration of the CAA for ELA test design.



- 1 Versions 1 and 2 are spiraled at school level
- 2 Ten items are shared across Versions 1 and 2

Figure 4.1 2015–16 ELA Two-Stage Test Design

At Stage 1, two routers, version 1 and version 2, are spiraled at the school level and administered to students. Of the 21 items in each router, 10 common items are shared across routers to support linking and equating. The remaining 11 items are unique items in each router. As mentioned earlier, items are ordered by tier level—Tier 1 items are the first part of the router, Tier 3 items are placed at the end of the router, and Tier 2 items are in the middle of the router. In ELA, one stand-alone item and six items with tiered stimuli/passages at the same tier level are grouped together. Stand-alone items are independent and do not share stimuli/passages with any other items.

At Stage 2, each of the three modules is defined as either Module 1, 2, or 3. Module 1 consists of six Tier 1 items; Module 2 consists of six Tier 2 items; and Module 3 consists of six Tier 3 items. Students are routed to one of the three modules of Stage 2 based on their performance on the router.

Additionally, students who are struggling at the early stage and cannot meet or exceed the minimum threshold score in the Stage 1A are provided with an “early exit.” Using the early exit, a student is routed directly to the easy Stage 2 module from Stage 1A, bypassing Stage 1B. Detailed information on early exit is included in subsection 5.1.1 *Two-Stage Multistage Test (MST) Administration Procedures* on page 59.

4.2.3. Mathematics Test Design

The CAA for Mathematics test design is almost identical to that of the CAA for ELA except that stimuli are used in mathematics whereas reading passages are used in ELA. The stimuli for the mathematics assessment are not in tiers, which means that a stimulus can be

associated with items from any of the tiers. Figure 4.2 provides an illustration of the two-stage adaptive test design for the 2015–16 CAA for Mathematics administration.

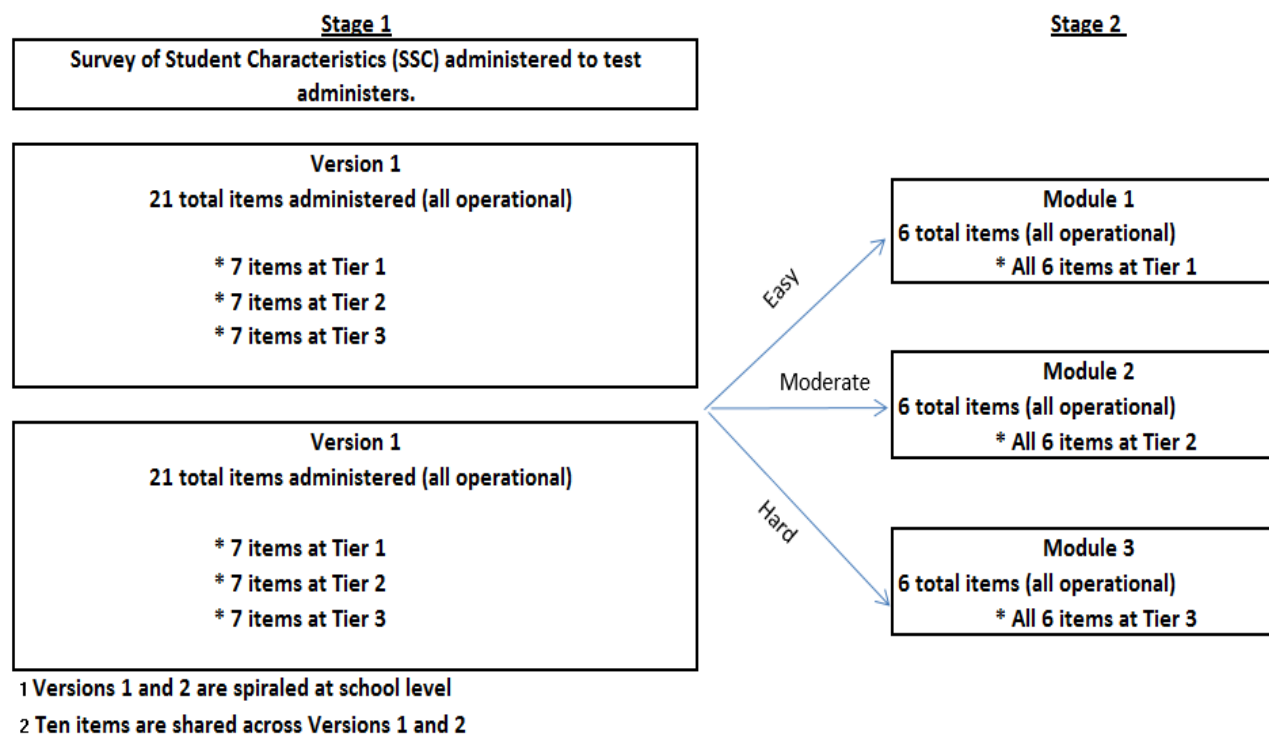


Figure 4.2 2015–16 Mathematics Two-Stage Test Design

4.2.4. Routing Rules for the 2015–16 Administration

Given that the CAA-eligible population consists of students with a wide range of cognitive disabilities, routing rules are used to minimize the test-taking burden on students, in addition to directing students to the modules that fit their ability levels. Students experiencing difficulties with the simplest tasks should not continue on with more complex items. Each student should be routed to a module that is appropriate for his or her ability level.

There are two sets of routing rules: one for Stage 1A (for students who will skip Stage 1B); and another applied after the completion of both Stages 1A and 1B. ETS conducted empirical analysis using historical data to capture the key characteristics of this student population and decide the thresholds of routing in consultation with CDE.

4.2.4.1. Routing Rules for Early Exit

The early exit routing rule is for students who demonstrate the ability to communicate and provide responses but have significant difficulties successfully completing Tier 1 items. Based on his or her performance on the first 11 items that constitute Stage 1A, a student would bypass more complicated Tier 2 and Tier 3 items and proceed directly to the Stage 2 module that consists of strictly Tier 1 items (i.e., the “easy” module).

At the end of Stage 1A (or the first 11 items), the threshold is established at 30 percent of the maximum score points of Stage 1A. For example, the maximum score points for the first 11 items on the CAA for ELA (Grade 5) test router is 14. Thus, the routing threshold is set at four. If a student is scored less than four score points at the end of Stage 1A, this student

is routed to the easy Stage 2 module directly from Stage 1A. Otherwise, the student should continue with Stage 1B.

4.2.4.2. Routing Rules for a Complete Test

When a student finishes the full Stage 1 (combining stages 1A and 1B), he or she is routed to one of the three Stage 2 modules based on his or her performance at the full Stage 1. The routing thresholds are set as 30 percent and 66 percent of the maximum score points for the “moderate” and “hard” Stage 2 modules, respectively.

For example, the maximum score points for the full Stage 1 for grade five ELA is 28. When a student earns between 9 and 18 score points, he or she is routed to the moderate Stage 2 module. When a student earns 19 or more score points, the student is routed to the hard Stage 2 module, whereas when a student earns 8 or fewer score points, the student is routed to the easy Stage 2 module.

To keep the routing threshold consistent across grades, rules for round up and round down are used for the 30 percent and 66 percent rules, respectively. An important consideration during the setup of the thresholds is to ensure sufficient samples for the hard and easy modules to support a successful calibration. The routing thresholds for each grade and subject are presented in Table 4.B.1 and Table 4.B.2.

4.3. Test Production Process

4.3.1. Psychometric Limitations and Identification of Eligible Items

In addition to the blueprints (CDE, 2015a [ELA] and 2015b [mathematics]) and test design documents, statistical guidelines were developed by the ETS psychometrics team to assist in test assembly. The guidelines include the following:

- The first item is kept the same for the two routers for a particular grade and content area.
- The total possible raw score for Stage 1 is equivalent for the two versions of Stage 1, for both the overall 21-item router and the first 11 early exit items.
- The complexity of items, content standards, item types, and item score points are comparable between the two versions of the Stage 1 router.
- Ten common items are maintained in the same positions between the two versions of the Stage 1 router.
- Most content standards of the blueprints are covered in Stage 1 with the 21 items.
- The first 11 items in Stage 1A and the easy module in Stage 2 represent different content standards, which allows early exit students to be assessed with a sufficient proportion of the content standards to meet test blueprint requirements.

4.3.2. Selection of Items

From the eligible item pool, test developers select items that, as a whole:

- Meet the coverage specifications of the test blueprint,
- Meet the form-building guidelines developed by the ETS psychometrics team,
- Provide for a wide variety of item types, and
- Provide for a wide variety of item context.

4.3.3. Verification of Statistics

ETS test development sends the proposed assessment to the ETS psychometrics team for approval. The proposed assessment is reviewed to ensure that all statistical guidelines are met for both individual items and the assessment as a whole.

4.3.4. Content Review of Forms

After psychometric approval, the proposed assessment undergoes two additional content reviews and one editorial review. The form reviewers are content specialists who work on testing programs for ETS other than the CAA, and who thereby are able to bring a set of “fresh eyes” to the review. They are given the appropriate materials to verify the bulleted items listed.

These reviews are intended to:

- Verify item keys,
- Identify possible clueing across the items,
- Verify individual item meet the standard,
- Verify coverage of the standards, and
- Identify any possible grammatical or production errors.

4.3.5. CDE Review of Forms

Following the content review, all proposed assessments are sent to the CDE for review. The CDE is provided with the following materials:

- Hardcopies of the proposed forms
- Modified form planners
- Comment sheets

Comments from the CDE were resolved during a virtual meeting with the ETS test development team.

4.3.6. Configuration of the Test Delivery System (TDS)

Once all the test reviews are completed and any concerns have been resolved, the official ordered item sequence of the proposed forms are sent to the American Institutes for Research (AIR) for configuration of the test delivery system (TDS).

AIR’s TDS supports a variety of item layouts. Most of the item layouts have the stimulus and item response options/response area displayed side by side. In each of these item layouts, both the stimulus and response options have independent scroll bars. Each item undergoes an extensive platform review on different operating systems, such as Windows, Linux, and iOS, to ensure that the item looks consistent across all platforms. The platform review is conducted by a team at AIR consisting of a team leader and several team members. The team leader projects the item as it was approved in ETS and AIR item banks. Each team member is assigned a different platform (hardware device and operating system) and reviews the item to see that it renders as expected. This platform review meeting ensures that all items will be presented consistently to all students regardless of testing device and/or operating system for standardization of the test administration.

Prior to operational deployment, the testing system and content are deployed to a staging server where they are subject to user acceptance testing (UAT) by both ETS and AIR staff. The TDS UAT serves both a software evaluation and content approval role.

The UAT procedures followed by the ETS staff include reviewing all items for ELA and mathematics. The possible routing outcomes, in conjunction with the separate grade- and version-specific *CAA Directions for Administration* manuals, are also checked.

Following the UAT by ETS and AIR staff, separate UAT cycles are conducted by the CDE. The UAT review provides the CDE with an opportunity to interact with the exact test that will be administered to the students. The CDE must approve the CAA UAT before the test can be released for administration to students.

References

- California Department of Education. (2015a). *California Alternate Assessments blueprint for English language arts*. Sacramento, CA: California Department of Education. Retrieved from <http://www.cde.ca.gov/ta/tg/ca/documents/caa15elablueprts.doc>
- California Department of Education. (2015b). *California Alternate Assessments blueprint for mathematics*. Sacramento, CA: California Department of Education. Retrieved from <http://www.cde.ca.gov/ta/tg/ca/documents/caa15mathblueprts.doc>
- Common Core State Standards Initiative. (2017). *Read the standards*. Retrieved from <http://www.corestandards.org/read-the-standards/>
- Kim, H., & Plake, B. S. (1993). *Monte Carlo simulation comparison of two-stage testing and computerized adaptive testing*. Paper presented at the meeting of the National Council on Measurement in Education. Atlanta, GA.
- National Center and State Collaborative. (2014a). *CCSS, prioritized English language arts CCCs, and essential understandings: Reading*. Minneapolis, MN: National Center and State Collaborative. Retrieved from <http://www.cde.ca.gov/ta/tg/ca/documents/ncscreading.doc>
- National Center and State Collaborative. (2014b). *CCSS, prioritized English language arts CCCs, and essential understandings: Writing*. Minneapolis, MN: National Center and State Collaborative. Retrieved from <http://www.cde.ca.gov/ta/tg/ca/documents/ncscwriting.doc>
- National Center and State Collaborative. (2014c). *CCSS, prioritized mathematics CCCs, and essential understandings*. Minneapolis, MN: National Center and State Collaborative. Retrieved from <http://www.cde.ca.gov/ta/tg/ca/documents/ncscmath.doc>
- National Center and State Collaborative. (2015). *Learning progression frameworks*. Retrieved from https://wiki.ncscpartners.org/index.php/Learning_Progression_Frameworks
- National Center and State Collaborative. (2016). *Main page: Welcome to the National Center and State Collaborative Wiki!*. Retrieved from https://wiki.ncscpartners.org/index.php/Main_Page

Appendix 4.A Test Blueprints Alignment by California Alternate Assessment (CAA) Form

Table 4.A.1 Test Blueprints Alignment by Form—English Language Arts/Literacy (ELA), Grade Three

Content Category	% of the blueprint	CAA Forms															
		R1AOE		R1ABE		R1ABM		R1ABH		R2AOE		R2ABE		R2ABM		R2ABH	
		N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
Reading: Literary	30%	4	24%	8	30%	8	30%	8	30%	4	24%	8	30%	8	30%	8	30%
Reading: Informational	25%	4	24%	6	22%	7	26%	6	22%	4	24%	6	22%	7	26%	6	22%
Reading: Vocabulary	9%	2	12%	3	11%	2	7%	3	11%	1	6%	2	7%	1	4%	2	7%
Reading: Foundation	6%	1	6%	2	7%	3	11%	2	7%	1	6%	2	7%	3	11%	2	7%
Writing	30%	6	35%	8	30%	7	26%	8	30%	7	41%	9	33%	8	30%	9	33%
Total	100%	17	100%	27	100%	27	100%	27	100%	17	100%	27	100%	27	100%	27	100%

Table 4.A.2 Test Blueprints Alignment by Form—ELA, Grade Four

Content Category	% of the blueprint	CAA Forms															
		R1AOE		R1ABE		R1ABM		R1ABH		R2AOE		R2ABE		R2ABM		R2ABH	
		N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
Reading: Literary	30%	6	35%	8	30%	8	30%	8	30%	6	35%	8	30%	8	30%	8	30%
Reading: Informational	25%	3	18%	7	26%	7	26%	7	26%	3	18%	7	26%	7	26%	7	26%
Reading: Vocabulary	9%	2	12%	3	11%	3	11%	3	11%	2	12%	3	11%	3	11%	3	11%
Reading: Foundation	6%	1	6%	1	4%	2	7%	2	7%	1	6%	1	4%	2	7%	2	7%
Writing	30%	5	29%	8	30%	7	26%	7	26%	5	29%	8	30%	7	26%	7	26%
Total	100%	17	100%	27	100%	27	100%	27	100%	17	100%	27	100%	27	100%	27	100%

Table 4.A.3 Test Blueprints Alignment by Form—ELA, Grade Five

Content Category	% of the blueprint	CAA Forms															
		R1AOE		R1ABE		R1ABM		R1ABH		R2AOE		R2ABE		R2ABM		R2ABH	
		N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
Reading: Literary	30%	7	41%	9	33%	9	33%	11	41%	6	35%	8	30%	8	30%	10	37%
Reading: Informational	30%	4	24%	8	30%	8	30%	7	26%	4	24%	9	33%	9	33%	8	30%
Reading: Vocabulary	10%	1	6%	2	7%	2	7%	1	4%	2	12%	2	7%	2	7%	1	4%
Writing	30%	5	29%	8	30%	8	30%	8	30%	5	29%	8	30%	8	30%	8	30%
Total	100%	17	100%	27	100%	27	100%	27	100%	17	100%	27	100%	27	100%	27	100%

Table 4.A.4 Test Blueprints Alignment by Form—ELA, Grade Six

Content Category	% of the blueprint	CAA Forms															
		R1AOE		R1ABE		R1ABM		R1ABH		R2AOE		R2ABE		R2ABM		R2ABH	
		N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
Reading: Literary	20%	2	12%	2	7%	4	15%	4	15%	4	24%	4	15%	6	22%	6	22%
Reading: Informational	40%	10	59%	16	59%	13	48%	14	52%	8	47%	14	52%	11	41%	12	44%
Reading: Vocabulary	10%	1	6%	1	4%	2	7%	2	7%	1	6%	1	4%	2	7%	2	7%
Writing	30%	4	24%	8	30%	8	30%	7	26%	4	24%	8	30%	8	30%	7	26%
Total	100%	17	100%	27	100%	27	100%	27	100%	17	100%	27	100%	27	100%	27	100%

Table 4.A.5 Test Blueprints Alignment by Form—ELA, Grade Seven

Content Category	% of the blueprint	CAA Forms															
		R1AOE		R1ABE		R1ABM		R1ABH		R2AOE		R2ABE		R2ABM		R2ABH	
		N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
Reading: Literary	20%	3	18%	3	11%	5	19%	5	19%	3	18%	3	11%	5	19%	5	19%
Reading: Informational	40%	7	41%	13	48%	11	41%	11	41%	7	41%	13	48%	11	41%	11	41%
Reading: Vocabulary	10%	2	12%	3	11%	2	7%	2	7%	2	12%	3	11%	2	7%	2	7%
Writing	30%	5	29%	8	30%	9	33%	9	33%	5	29%	8	30%	9	33%	9	33%
Total		17	100%	27	100%	27	100%	27	100%	17	100%	27	100%	27	100%	27	100%

Table 4.A.6 Test Blueprints Alignment by Form—ELA, Grade Eight

Content Category	% of the blueprint	CAA Forms															
		R1AOE		R1ABE		R1ABM		R1ABH		R2AOE		R2ABE		R2ABM		R2ABH	
		N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
Reading: Literary	20%	2	12%	6	22%	8	30%	6	22%	2	12%	4	15%	4	15%	4	15%
Reading: Informational	40%	9	53%	11	41%	10	37%	11	41%	8	47%	13	48%	13	48%	13	48%
Reading: Vocabulary	10%	2	12%	4	15%	3	11%	4	15%	3	18%	3	11%	3	11%	3	11%
Writing	30%	4	24%	6	22%	6	22%	6	22%	4	24%	7	26%	7	26%	7	26%
Total	100%	17	100%	27	100%	27	100%	27	100%	17	100%	27	100%	27	100%	27	100%

Table 4.A.7 Test Blueprints Alignment by Form—ELA, Grade Eleven

Content Category	% of the blueprint	CAA Forms															
		R1AOE		R1ABE		R1ABM		R1ABH		R2AOE		R2ABE		R2ABM		R2ABH	
		N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
Reading: Literary	15%	3	18%	7	26%	8	30%	7	26%	4	24%	6	22%	7	26%	6	22%
Reading: Informational	45%	9	53%	12	44%	12	44%	12	44%	8	47%	13	48%	13	48%	13	48%
Reading: Vocabulary	10%	1	6%	3	11%	3	11%	3	11%	1	6%	2	7%	2	7%	2	7%
Writing	30%	4	24%	5	19%	4	15%	5	19%	4	24%	6	22%	5	19%	6	22%
Total	100%	17	100%	27	100%	27	100%	27	100%	17	100%	27	100%	27	100%	27	100%

Table 4.A.8 Test Blueprints Alignment by Form—Mathematics, Grade Three

Domain	% of the blueprint	CAA Forms															
		R1AOE		R1ABE		R1ABM		R1ABH		R2AOE		R2ABE		R2ABM		R2ABH	
		N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
Geometry	35%	1	35%	2	33%	2	33%	2	33%	2	41%	3	33%	3	33%	3	33%
Measurement and Data		5		7		7		7		5		6		6		6	
Number and Operations — Fractions	35%	3	29%	4	33%	4	33%	4	33%	2	29%	4	37%	4	37%	4	37%
Number and Operations in Base Ten		2		5		5		5		3		6		6		6	
Operations and Algebraic Thinking	30%	6	35%	9	33%	9	33%	9	33%	5	29%	8	30%	8	30%	8	30%
Total	100%	17	100%	27	100%	27	100%	27	100%	17	100%	27	100%	27	100%	27	100%

Table 4.A.9 Test Blueprints Alignment by Form—Mathematics, Grade Four

Domain	% of the blueprint	CAA Forms															
		R1AOE		R1ABE		R1ABM		R1ABH		R2AOE		R2ABE		R2ABM		R2ABH	
		N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
Geometry	30%	2	35%	3	30%	3	30%	3	30%	2	29%	3	26%	3	26%	3	26%
Measurement and Data		4		5		5		5		3		4		4		4	
Number and Operations — Fractions		4		7		7		7		5		8		8		8	
Number and Operations in Base Ten	40%	1	29%	3	37%	3	37%	3	37%	2	41%	3	41%	3	41%	3	41%
Operations and Algebraic Thinking	30%	6	35%	9	33%	9	33%	9	33%	5	29%	9	33%	9	33%	9	33%
Total	100%	17	100%	27	100%	27	100%	27	100%	17	100%	27	100%	27	100%	27	100%

Table 4.A.10 Test Blueprints Alignment by Form—Mathematics, Grade Five

Domain	% of the blueprint	CAA Forms															
		R1AOE		R1ABE		R1ABM		R1ABH		R2AOE		R2ABE		R2ABM		R2ABH	
		N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
Geometry	30%	1	24%	2	26%	2	26%	2	26%	2	29%	3	30%	3	30%	3	30%
Measurement and Data		3		5		5		5		3		5		5		5	
Number and Operations — Fractions	55%	4	59%	6	59%	6	59%	6	59%	4	65%	5	59%	5	59%	5	59%
Number and Operations in Base Ten		6		10		10		10		7		11		11		11	
Operations and Algebraic Thinking	15%	3	18%	4	15%	4	15%	4	15%	1	6%	3	11%	3	11%	3	11%
Total	100%	17	100%	27	100%	27	100%	27	100%	17	100%	27	100%	27	100%	27	100%

Table 4.A.11 Test Blueprints Alignment by Form—Mathematics, Grade Six

Domain	% of the blueprint	CAA Forms															
		R1AOE		R1ABE		R1ABM		R1ABH		R2AOE		R2ABE		R2ABM		R2ABH	
		N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
Expressions and Equations	25%	5	29%	8	30%	8	30%	8	30%	4	24%	7	26%	7	26%	7	26%
Geometry	10%		0%	2	7%	2	7%	2	7%	1	6%	3	11%	3	11%	3	11%
Ratios and Proportional Relationships	30%	5	29%	7	26%	7	26%	7	26%	5	29%	6	22%	6	22%	6	22%
Statistics and Probability	10%	2	12%	3	11%	3	11%	3	11%	2	12%	3	11%	3	11%	3	11%
The Number System	25%	5	29%	7	26%	7	26%	7	26%	5	29%	8	30%	8	30%	8	30%
Total	100%	17	100%	27	100%	27	100%	27	100%	17	100%	27	100%	27	100%	27	100%

Table 4.A.12 Test Blueprints by Form—Mathematics, Grade Seven

Domain	% of the blueprint	CAA Forms															
		R1AOE		R1ABE		R1ABM		R1ABH		R2AOE		R2ABE		R2ABM		R2ABH	
		N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
Expressions and Equations	20%	1	6%	3	11%	3	11%	3	11%	2	12%	4	15%	4	15%	4	15%
Geometry	15%	4	24%	5	19%	5	19%	5	19%	3	18%	4	15%	4	15%	4	15%
Ratios and Proportional Relationships	35%	7	41%	10	37%	10	37%	10	37%	7	41%	10	37%	10	37%	10	37%
Statistics and Probability	15%	2	12%	3	11%	3	11%	3	11%	2	12%	3	11%	3	11%	3	11%
The Number System	15%	3	18%	6	22%	6	22%	6	22%	3	18%	6	22%	6	22%	6	22%
Total	100%	17	100%	27	100%	27	100%	27	100%	17	100%	27	100%	27	100%	27	100%

Table 4.A.13 Test Blueprints Alignment by Form—Mathematics, Grade Eight

Domain	% of the blueprint	CAA Forms															
		R1AOE		R1ABE		R1ABM		R1ABH		R2AOE		R2ABE		R2ABM		R2ABH	
		N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
Expressions and Equations	35%	4	41%	5	41%	5	41%	5	41%	3	35%	4	37%	4	37%	4	37%
Functions		3		6		6		6		3		6		6		6	
Geometry	30%	4	24%	8	30%	8	30%	8	30%	5	29%	9	33%	9	33%	9	33%
Statistics and Probability	25%	3	18%	5	19%	5	19%	5	19%	4	24%	6	22%	6	22%	6	22%
The Number System	10%	3	18%	3	11%	3	11%	3	11%	2	12%	2	7%	2	7%	2	7%
Total	100%	17	100%	27	100%	27	100%	27	100%	17	100%	27	100%	27	100%	27	100%

Table 4.A.14 Test Blueprints Alignment by Form—Mathematics, Grade Eleven

Domain	% of the blueprint	CAA Form IDs															
		R1AOE		R1ABE		R1ABM		R1ABH		R2AOE		R2ABE		R2ABM		R2ABH	
		N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
Algebra: Creating Equations	50%	3	35%	6	41%	6	41%	6	41%	5	41%	7	44%	7	44%	7	44%
Functions: Interpreting Functions		3		5		5		5		2		5		5		5	
Geometry: Similarity, Right Triangles, and Trigonometry	10%	3	18%	3	11%	3	11%	3	11%	3	18%	3	11%	3	11%	3	11%
Number and Quantity: Quantities	20%	1	29%	2	26%	2	26%	2	26%	1	24%	2	22%	2	22%	2	22%
Number and Quantity: The Real Number System		4		5		5		5		3		4		4		4	
Statistics and Probability: Interpreting Categorical and Quantitative Data	20%	3	18%	6	22%	6	22%	6	22%	3	18%	6	22%	6	22%	6	22%
Total	100%	17	100%	27	100%	27	100%	27	100%	17	100%	27	100%	27	100%	27	100%

Appendix 4.B Routing Thresholds

Table 4.B.1 CAA for ELA Routing Thresholds

Test		Stages			
Grade 3	Stage 1A	Stage 1B R* > 4	Stage 2–Easy R* ≤ 4	Stage 2–Moderate 9 ≤ R** ≤ 19	Stage 2–Hard R** > 19
	Stage 1B		R** < 9		
Grade 4	Stage 1A	Stage 1B R* > 4	Stage 2–Easy R* ≤ 4	Stage 2–Moderate 9 ≤ R** ≤ 19	Stage 2–Hard R** > 19
	Stage 1B		R** < 9		
Grade 5	Stage 1A	Stage 1B R* > 4	Stage 2–Easy R* ≤ 4	Stage 2–Moderate 9 ≤ R** ≤ 18	Stage 2–Hard R** > 18
	Stage 1B		R** < 9		
Grade 6	Stage 1A	Stage 1B R* > 4	Stage 2–Easy R* ≤ 4	Stage 2–Moderate 9 ≤ R** ≤ 19	Stage 2–Hard R** > 19
	Stage 1B		R** < 9		
Grade 7	Stage 1A	Stage 1B R* > 4	Stage 2–Easy R* ≤ 4	Stage 2–Moderate 9 ≤ R** ≤ 17	Stage 2–Hard R** > 17
	Stage 1B		R** < 9		
Grade 8	Stage 1A	Stage 1B R* > 5	Stage 2–Easy R* ≤ 5	Stage 2–Moderate 11 ≤ R** ≤ 23	Stage 2–Hard R** > 23
	Stage 1B		R** < 11		
Grade 11	Stage 1A	Stage 1B R* > 4	Stage 2–Easy R* ≤ 4	Stage 2–Moderate 9 ≤ R** ≤ 19	Stage 2–Hard R** > 19
	Stage 1B		R** < 9		

Notes:

* Indicates the raw score of items 1 through 11

** Indicates the raw score of items 1 through 21

Table 4.B.2 CAA for Mathematics Routing Thresholds

Test		Stages			
Grade 3	Stage 1A	Stage 1B R* > 4	Stage 2–Easy R* ≤ 4	Stage 2–Moderate	Stage 2–Hard
	Stage 1B		R** < 9	9 ≤ R** ≤ 17	R** > 17
Grade 4	Stage 1A	Stage 1B R* > 4	Stage 2–Easy R* ≤ 4	Stage 2–Moderate	Stage 2–Hard
	Stage 1B		R** < 9	9 ≤ R** ≤ 19	R** > 19
Grade 5	Stage 1A	Stage 1B R* > 4	Stage 2–Easy R* ≤ 4	Stage 2–Moderate	Stage 2–Hard
	Stage 1B		R** < 9	9 ≤ R** ≤ 19	R** > 19
Grade 6	Stage 1A	Stage 1B R* > 5	Stage 2–Easy R* ≤ 5	Stage 2–Moderate	Stage 2–Hard
	Stage 1B		R** < 10	10 ≤ R** ≤ 20	R** > 20
Grade 7	Stage 1A	Stage 1B R* > 5	Stage 2–Easy R* ≤ 5	Stage 2–Moderate	Stage 2–Hard
	Stage 1B		R* < 11	11 ≤ R** ≤ 23	R** > 23
Grade 8	Stage 1A	Stage 1B R* > 5	Stage 2–Easy R* ≤ 5	Stage 2–Moderate	Stage 2–Hard
	Stage 1B		R** < 11	11 ≤ R** ≤ 23	R** > 23
Grade 11	Stage 1A	Stage 1B R* > 4	Stage 2–Easy R* ≤ 4	Stage 2–Moderate	Stage 2–Hard
	Stage 1B		R** < 9	9 ≤ R** ≤ 19	R** > 19

Notes:

- * Indicates the raw score of items 1 through 11
- ** Indicates the raw score of items 1 through 21

Chapter 5: Test Administration

This chapter provides an overview of the test administration of the 2015–16 California Alternate Assessment (CAA) and includes system functionality overview, descriptions of the efforts and measures to ensure test security, procedures to maintain standardization, and procedures for implementation of test accommodations based on the *Standards for Educational and Psychological Testing* (American Educational Research Association [AERA], American Psychological Association [APA], & National Council on Measurement in Education [NCME], 2014, Chapter 6).

5.1. Test Administration

The testing window for 2015–16 administration of the CAAs was April 11 through June 17, 2016. Specific test administration schedules within this window were determined locally.

To ensure the 2015–16 test administration was a successful experience for CAA test examiners and students, Educational Testing Service (ETS) provided on-site test administration workshops in various locations throughout California in January and February 2016 and also produced Webcasts and videos for detailed information on California Assessment of Student Performance and Progress (CAASPP) test administration procedures. The on-site workshops included a session dedicated exclusively to the topic of the CAA test administration procedures. In addition, ETS presented a number of test administration resources to schools and local educational agencies (LEAs). These resources included detailed information on topics such as technology readiness, test administration, test security, accommodations, using the test delivery system, and general testing rules.

Two CAA-specific Webcasts were presented—one for pretest procedures and instructions and the other, for CAA reporting.

5.1.1. Two-Stage Multistage Test (MST) Administration Procedures

The 2015–16 CAAs for English language arts/literacy (ELA) and mathematics are a two-stage MST. Refer to Chapter 4 *Test Assembly* for the details of the MST design. Figure 5.1 presents the components of CAA test administration.

Given that the CAAs are administered to students who have severe cognitive disabilities, every individual student is assigned with a test examiner for an one-to-one test administration. Refer to *Chapter 4: Test Assembly* for the details in the MST design. Other special considerations and procedures during administration process are shown in Figure 5.1.

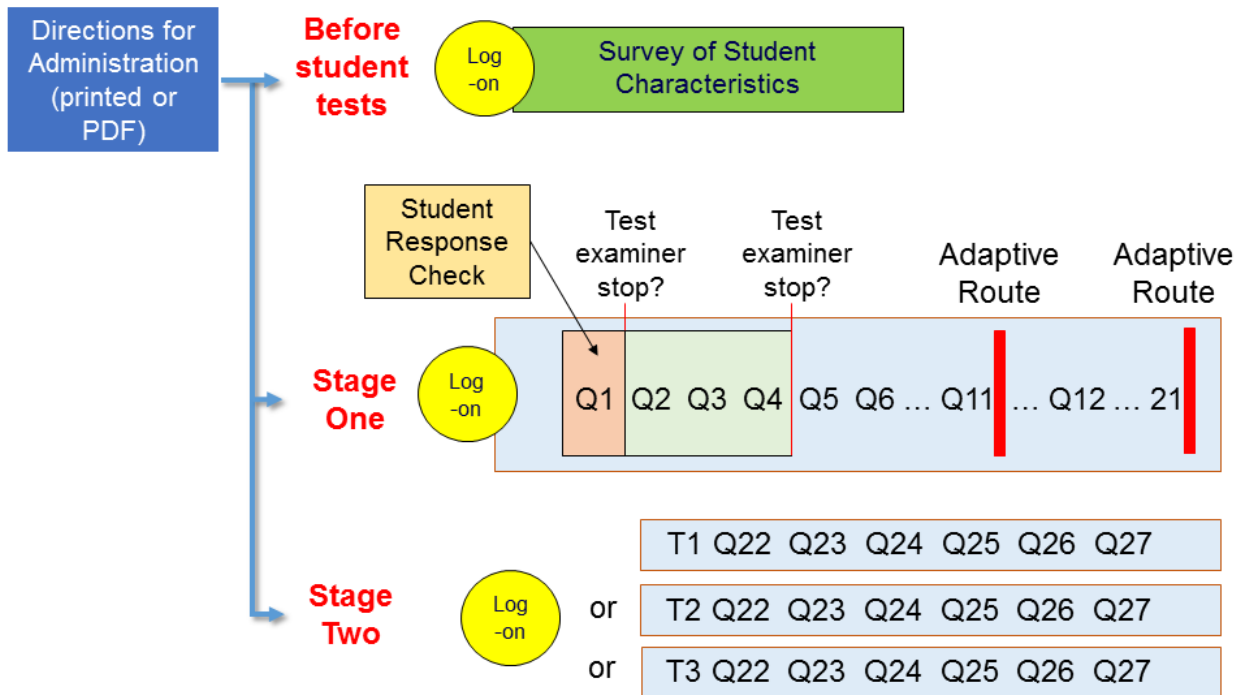


Figure 5.1 Test Components and Administration Process

5.1.1.1. Administration of the Survey of Student Characteristics

Prior to the test administration, the test examiner is asked to respond to the Survey of Student Characteristics (SSC) in regard to the student to whom the CAA is to be administered. These questions are intended to elicit information about a student’s characteristics relevant to the constructs measured by the CAAs. Research on the alternate assessments indicates that the SSC helps test examiners better understand their students and make informative decisions during the test administration (Kearns, Kleinert, Kleinert, & Towles-Reeves, 2006).

Tests are administered to students after completion of the SSC.

5.1.1.2. Administration of the Student Response Check

Test examiners respond to the Student Response Check (SRC) during test administration to ensure that the assessments are accessible and students are able to take the test. Instructions are provided in the *CAA Test Administration Manual* ([California Department of Education [CDE], 2016a) on specific behaviors that a test examiner should observe. There are three possible outcomes from the first item of the SRC:

1. The student demonstrates an observable, consistent response, even though the answer to the item may be incorrect.
2. The student demonstrates an observable, but inconsistent, response.
3. The student does not demonstrate any observable responses.

If the SRC outcome is 1, the test examiner administers the entire assessment (including stages 1 and 2).

If the outcome is **2**, the test examiner finishes the next three items and, if a consistent and observable response is elicited through the next three items, the entire assessment (including stages 1 and 2) is administered.

If the outcome is **3**, the test examiner is instructed not to administer the entire assessment. If, during testing, the student ceases to provide any observable response, the test examiner is instructed to end the test.

5.1.1.3. Administration of the CAA

If the decision is made to continue with the test administration as a result of the SRC, students are given the following opportunities for continuing to the end of the full test or exiting early at the eleventh item (Stage 1A) as shown in Figure 5.1.

- After the completion of the first 11 questions (Stage 1A), the test delivery system (TDS) compares the student's performance against the routing thresholds as shown in Table 4.B.1 (ELA) or Table 4.B.2 (mathematics) and determines whether to direct the student to Stage 1B or skip Stage 1B and direct the student to the easy module (T1) at Stage 2.
- After the completion of the full Stage 1 (including stages 1A and 1B), the TDS routes the student to one of the three modules of Stage 2, as shown in Figure 5.1.

5.2. Test Security and Confidentiality

All tests within the CAASPP System, as well as the confidentiality of student information, should be protected to ensure the validity, reliability, and fairness of the results. As stated in Standard 7.9 (AERA, APA, & NCME, 2014), "The documentation should explain the steps necessary to protect test materials and to prevent inappropriate exchange of information during the test administration session" (p. 128). This section of the standard describes the measures intended to prevent potential test security incidents prior to testing and the actions that were taken to handle security incidents occurring during or after the testing window using the Security and Test Administration Incident Reporting System (STAIRS) process.

For the CAA test administration, every person who works with the assessments, communicates test results, and/or receives testing information is responsible for maintaining the security and confidentiality of the tests, including CDE staff, ETS staff, ETS subcontractors, LEA assessment coordinators, school assessment coordinators, students, parents, teachers, and cooperative educational service agency staff. ETS's Code of Ethics requires that all test information, including tangible materials (such as test items), confidential files (such as those containing personally identifiable student information), and processes related to test administration (such as the configurations of secure servers) are kept secure. ETS has systems in place that maintain tight security for test items and test results, as well as for student data. To ensure security for all the tests that ETS develops or handles, ETS maintains an Office of Testing Integrity (OTI), which is described in the next subsection.

5.2.1. ETS's Office of Testing Integrity (OTI)

The OTI is a division of ETS that provides quality assurance services for all testing programs managed by ETS; this division resides in the ETS legal department. The Office of Professional Standards Compliance at ETS publishes and maintains the *ETS Standards for Quality and Fairness* (2014), which supports the OTI's goals and activities. The *ETS*

Standards for Quality and Fairness provides guidelines to help ETS staff design, develop, and deliver technically sound, fair, and beneficial products and services and help the public and auditors evaluate those products and services.

The OTI’s mission is to:

- minimize any testing security violations that can impact the fairness of testing,
- minimize and investigate any security breach that threatens the validity of the interpretation of test scores, and
- report on security activities.

The OTI helps prevent misconduct on the part of students and administrators, detects potential misconduct through empirically established indicators, and resolves situations involving misconduct in a fair and balanced way that reflects the laws and professional standards governing the integrity of testing. In its pursuit of enforcing secure testing practices, the OTI strives to safeguard the various processes involved in a test development and administration cycle.

5.2.2. Test Delivery

Test security requires the accounting of all secure materials—including online summative test items, and student data—before, during, and after each test administration. The LEA CAASPP coordinator is responsible for keeping all electronic test materials secure, keeping student information confidential, and making sure the CAASPP test site coordinators and test examiners are properly trained regarding security policies and procedures.

The CAASPP test site coordinator is responsible for mitigating test security incidents at the test site and for reporting incidents to the LEA CAASPP coordinator.

The test examiner is responsible for reporting testing incidents to the CAASPP test site coordinator and securely destroying printed and digital media for items and/or passages generated by the print-on-demand feature of the TDS (CDE, 2016a and 2016b).

The following measures ensure the security of CAASPP System assessments:

- LEA CAASPP coordinators and test site coordinators must sign and submit a “CAASPP Test Security Agreement for LEA CAASPP coordinators and CAASPP test site coordinators” form to the California Technical Assistance Center before ETS can grant the coordinators access to the Test Operations Management System (TOMS). (*California Code of Regulations*, Title 5 [5 CCR], Education, Division 1, Chapter 2, Subchapter 3.75, Article 1, Section 859 [a])
- Anyone having access to the testing materials must sign and submit a “Test Security Affidavit for Test Examiners, Test Administrators, Proctors, Translators, Scribes, and Any Other Person Having Access to CAASPP Tests, 2015–2016 School Year” form to the CAASPP test site coordinator before receiving access to any testing materials. (5 CCR, Section 859 [c])

In addition, it is the responsibility of every participant in the CAASPP System to immediately report any violation or suspected violation of test security or confidentiality. The CAASPP test site coordinator must report to the LEA CAASPP coordinator. The LEA CAASPP coordinator must report to the CDE within 24 hours of the incident. (5 CCR, Section 859 [e])

5.2.3. Security of Electronic Files Using a Firewall

A firewall software is used to prevent unauthorized entry to files, e-mail, and other organization-specific information. All ETS data exchanges and internal e-mail remain within the ETS firewall at all ETS locations, ranging from Princeton, New Jersey, to San Antonio, Texas, to Concord and Sacramento, California.

All electronic applications that are included in TOMS remain protected by the ETS firewall software at all times. Due to the sensitive nature of the student information processed by TOMS, the firewall plays a significant role in maintaining an assurance of confidentiality among the users of this information.

See the subsection on Systems Overview and Functionality on page 5 in Chapter 1 for more information on TOMS.

5.2.4. Transfer of Scores via Secure Data Exchange

Due to the confidential nature of test results, ETS uses secure file transfer protocol (SFTP) and encryption for all data file transfers, including student data files. SFTP is a method for reliable and exclusive routing of files. Files reside on a password-protected server that can be accessed only by authorized users. ETS shares an SFTP server with the CDE. On that site, ETS posts Microsoft Word and Excel files, Adobe Acrobat PDFs, or other document files for the CDE to review; the CDE returns reviewed materials in the same manner.

ETS enters information about the files posted to the SFTP server in a Web form on a SharePoint Web site; a CDE staff member checks this log throughout the day to check the status of deliverables and downloads the file from the SFTP server when its status shows it has been posted.

Data are always transmitted to the SFTP server in an encrypted format; test data are never sent via e-mail. The SFTP server is used as a conduit for the transfer of files; secure test data are only temporarily stored on the shared SFTP server.

5.2.5. Data Management

ETS maintains a secure database to house all student demographic data and assessment results. Information associated with each student has a database relationship to the LEA, school, and grade codes as these data are collected during operational testing. Only individuals with the appropriate credentials can access these data. ETS builds all interfaces with the most stringent security considerations, including interfaces with data encryption for databases that store test items and student data. ETS applies best and up-to-date security practices, including system-to-system authentication and authorization, in all solution designs.

In TOMS, staff at LEAs and test sites have different levels of access appropriate to the role assigned to them.

All stored test content and student data are encrypted. Industry-standard secure protocols are used to transfer test content and student data from the ETS internal data center to any external systems. ETS complies with the Family Educational Rights and Privacy Act (20 *United States Code [USC]* § 1232g; 34 *Code of Federal Regulations* Part 99) and the Children's Online Privacy Protection Act (15 USC §§ 6501-6506, P.L. No. 105–277, 112 Stat. 2681–1728).

5.2.6. Statistical Analysis

The information technology staff at ETS retrieves data files from the American Institutes for Research (AIR) and loads them into a database. The ETS Data Quality Services staff extract the data from the database and perform quality control procedures (e.g., the values of all variables are as expected) before passing files to the ETS statistical analysis group. The statistical analysis staff store the files on secure servers. All staff members involved with the data adhere to the ETS Code of Ethics and the ETS Information Protection Policies to prevent any unauthorized access to data.

5.2.7. Student Confidentiality

To meet requirements of the Every Student Succeeds Act as well as state requirements, LEAs must collect demographic data about students' ethnicity, disabilities, parent/guardian education, and so forth. ETS takes every precaution to prevent any of this information from becoming public or being used for anything other than for testing and score reporting purposes. These procedures are applied to all documents in which student demographic data appear, such as reports.

5.2.8. Student Test Results

5.2.8.1. Types of Results

The following deliverables are produced for reporting of the CAAs:

- Preliminary student reports for online assessments in the Online Reporting System (ORS)
- Individual student score reports (printed)
- Internet reports aggregated by content area and state, county, LEA, or test site

5.2.8.2. Security of Results Files

ETS takes measures to protect files and reports that show students' scores and achievement levels. ETS is committed to safeguarding all secure information in its possession from unauthorized access, disclosure, modification, or destruction. ETS has strict information security policies in place to protect the confidentiality of both student and client data. ETS staff access to production databases is limited to personnel with a business need to access the data. User IDs for production systems must be person-specific or for systems use only.

ETS has implemented network controls for routers, gateways, switches, firewalls, network tier management, and network connectivity. Routers, gateways, and switches represent points of access between networks. However, these do not contain mass storage or represent points of vulnerability, particularly for unauthorized access or denial of service.

ETS has many facilities, policies, and procedures to protect computer files. Software and procedures such as firewalls, intrusion detection, and virus control are in place to provide for physical security, data security, and disaster recovery. ETS is certified in the BS 25999-2 standard for business continuity and conducts disaster recovery exercises annually. ETS routinely backs up all data to either disks through deduplication or to tapes, all of which are stored off site.

Access to the ETS Computer Processing Center is controlled by employee and visitor identification badges. The Center is secured by doors that only can be unlocked by the badges of personnel who have functional responsibilities within its secure perimeter. Authorized personnel accompany visitors to the ETS Computer Processing Center at all

times. Extensive smoke detection and alarm systems, as well as a pre-action fire-control system, are installed in the Center.

5.2.8.3. Security of Individual Results

ETS protects individual students' results on both electronic files and paper reports during the following events:

- Scoring
- Transfer of scores by means of secure data exchange
- Reporting
- Posting of aggregate data
- Storage

In addition to protecting the confidentiality of testing materials, ETS's Code of Ethics further prohibits ETS employees from financial misuse, conflicts of interest, and unauthorized appropriation of ETS property and resources. Specific rules are also given to ETS employees and their immediate families who may take a test developed by ETS (e.g., a CAA). The ETS OTI verifies that these standards are followed throughout ETS. This verification is conducted, in part, by periodic onsite security audits of departments, with follow-up reports containing recommendations for improvement.

5.2.9. Security and Test Administration Incident Reporting System (STAIRS) Process

Test security incidents, such as improprieties, irregularities, and breaches, are prohibited behaviors that give a student an unfair advantage or compromise the secure administration of the tests, which, in turn, compromises the reliability and validity of test results (CDE, 2016f). Whether intentional or unintentional, failure by staff or students to comply with security rules constitutes a test security incident. Test security incidents have impacts on scoring and affect students' performance on the test.

LEA CAASPP coordinators and CAASPP test site coordinators must ensure that all test security and summative administration incidents are documented by filling out the secure STAIRS form for reporting, which contains selectable options to guide coordinators in their submittal. Incidents are then resolved when the LEA CAASPP coordinator or CAASPP test site coordinator either files an appeal to reset, re-open, invalidate, restore, or grant a grace period extension to a student's test, or by following other instructions in a system-generated e-mail in response to the STAIRS form submittal.

The following types of STAIRS reports, as applicable to the CAA, are also forwarded to the CDE:

- Security breach (where secure materials are exposed)
- Accidental access to a summative assessment
- Incorrect Statewide Student Identifier used (intentionally switched)
- Restoring a test that had been reset

Appeals requests are reviewed by the CDE. Appeals cannot be requested without a STAIRS case number (CDE, 2016f).

Types of appeals available during the 2015–16 CAASPP administration are described in Table 5.1, on the next page.

5.2.9.1. Impropriety

A testing impropriety is an unusual circumstance that has a low impact on the individual or group of students who are testing and has a low risk of potentially affecting student performance on the test, test security, or test validity. An impropriety can be corrected and contained at a local level. An impropriety should be reported to the LEA CAASPP coordinator and CAASPP test site coordinator immediately. The coordinator will report the incident within 24 hours, using the online CAASPP STAIRS form.

5.2.9.2. Irregularity

A testing irregularity is an unusual circumstance that impacts an individual or a group of students who are testing and may potentially affect student performance on the test, or impact test security or test validity. In many cases, these circumstances can be corrected and contained at the local level; however, some cases may need to be submitted in the online Appeals system for resolution. An irregularity must be reported to the LEA CAASPP coordinator and CAASPP test site coordinator immediately. The coordinator will report the irregularity within 24 hours, using the online CAASPP STAIRS form.

5.2.9.3. Breach

A testing breach is an event that poses the greatest threat to the validity of the test. Breaches require immediate attention and escalation to the CDE via telephone. Following the call, the CAASPP test site coordinator or LEA CAASPP coordinator must complete the online CAASPP STAIRS form within 24 hours. Examples may include such situations as a release of secure materials or a security/system risk. These circumstances may result in a decision to remove the test item(s) from the available secure item bank. A breach incident must be reported to the LEA CAASPP coordinator immediately.

5.2.10. Appeals

For incidents that result in a need to reset, reopen, invalidate, or restore individual online student assessments, the request must be approved by the CDE. In most instances, an appeal will be submitted to address a test security breach or irregularity. The LEA CAASPP coordinator or CAASPP test site coordinator may submit appeals within TOMS. All submitted appeals are available for retrieval and review by the appropriate credentialed users within a given organization. However, the view of appeals will be restricted according to the user role as established in TOMS (CDE, 2016i). An appeal only can be requested by the LEA CAASPP coordinator or CAASPP test site coordinator if directed in the e-mail response to the STAIRS form (CDE, 2016f).

Types of appeals available during the 2015–16 CAASPP administration are described in Table 5.1.

Table 5.1 Types of Appeals in CAASPP Testing

Type of Appeal	Description
Reset	Resetting a student’s summative test removes that test from the system and enables the student to start a new test from the beginning.
Invalidation	Invalidated summative tests will be scored and scores will be provided on the Student Score Report with a note that an irregularity occurred. The student(s) will be counted as participating in the calculation of the school’s participation rate for federal accountability purposes.
Re-open	Reopening a summative test allows a student to access a test that has already been submitted.
Restore	Restoring a summative test returns a test from the Reset status to its prior status. This action can only be performed on tests that have been reset.

5.3. Processing and Scoring

The CAAs are administered online only and required two Internet-connected devices: a student testing device and a separate device the test examiner uses to start a test session through the Test Administrator Interface. Test examiners also used their device to open a *Directions for Administration (DFA)* document, which is used to guide the student through the test. The CAAs require the installation of CAASPP secure browsers on student testing devices. These are the same secure browsers that are used for the other online CAASPP assessments.

All item types are designed to be machine scorable with the exception of a small subset of constructed response (CR) items. For CR items, item-specific rubrics are included in the *DFAs* to be used by the test examiner for rating a student's response. All rubric-based scoring is conducted and entered into the TDS by the test examiner during test administration.

5.4. Procedures to Maintain Standardization

The test administration and scoring procedures are designed so that the tests are administered and scored in a standardized manner. ETS takes all necessary measures to ensure the standardization of test administration, as described in this subsection of the technical report.

5.4.1. LEA CAASPP Coordinator

An LEA CAASPP coordinator was designated by the district superintendent at the beginning of the 2015–16 school year. LEAs include public school districts, statewide benefit charter schools, State Board of Education–authorized charter schools, county office of education programs, and charter schools testing independently from their home district.

LEA CAASPP coordinators are responsible for ensuring the proper and consistent administration of the assessments that are part of the CAASPP System, including the CAAs. In addition to the responsibilities set forth in 5 CCR Section 857, their responsibilities include:

- add CAASPP test site coordinators and test examiners into TOMS;
- train CAASPP test site coordinators and test examiners regarding state requirements and CAA administration as well as security policies and procedures;
- report test security incidents (including testing irregularities) to the CDE;
- oversee test administration activities;
- file a report of a testing incident in STAIRS; and
- request an appeal (if the STAIRS response e-mail indicates that an appeal is warranted).

5.4.2. CAASPP Test Site Coordinator

A CAASPP test site coordinator is designated by the LEA CAASPP coordinator or district superintendent for each test site (5 CCR Section 858 [a]). A test site coordinator must be an employee of the LEA and must sign a security agreement.

A test site coordinator is responsible for identifying test administrators and ensuring that they have signed CAA Test Security Affidavits (5 CCR Section 850 [w]). CAASPP test site coordinators' duties may include:

- add test examiners into TOMS;
- enter test settings for students;
- create testing schedules and procedures for a school consistent with state and LEA policies;
- work with technology staff to ensure secure browsers are installed and any technical issues are resolved;
- monitor testing progress during the testing window and ensure all students participate, as appropriate;
- coordinate and verify the correction of student data errors in the California Longitudinal Pupil Achievement Data System;
- ensure a student's test session is rescheduled, if necessary;
- address testing problems;
- report security incidents;
- oversee administration activities at a school site;
- file a report of a testing incident in STAIRS; and
- request an appeal (if the STAIRS response e-mail indicates that an appeal is warranted).

5.4.3. Test Examiners

Test examiners are identified by CAASPP test site coordinators as individuals who will administer the CAASPP assessments. A test examiner must be a certificated or licensed school staff member (5 CCR Section 850 [ae]).

A test examiner must sign a security affidavit (5 CCR Section 859 [d]). A test examiner's duties may include:

- participating in training by either viewing the online test administration tutorial or attending any locally provided training;
- ensuring the physical conditions of the testing room meet the criteria for a secure test environment;
- administering the CAAs;
- reporting all test security incidents to the test site coordinator and LEA CAASPP coordinator in a manner consistent with state, and LEA policies;
- viewing student information prior to testing to ensure that the correct student receives the proper test with appropriate supports and report potential data errors to test site coordinators and LEA CAASPP coordinators;

- monitoring student progress throughout the test session using the Test Administrator Interface; and
- complying fully with all directions provided in the *Directions for Administration for the California Alternate Assessments*.

5.4.4. Instructions for Test Examiners

5.4.4.1. *Directions for Administration*

Test examiners use a grade-level edition of the *Directions for Administration for the California Alternate Assessments* to administer the CAAs for ELA and mathematics to students (CDE, 2016d). Test examiners must follow all directions and guidelines and read, word-for-word, the instructions to students in the administration script to ensure standardization of test administration.

Sample *Directions for Administration for the California Alternate Assessments* to be used in conjunction with the CAA training tests were provided to LEAs as well.

Transcripts of the 2015–16 SSC are included in the CAA DFA, giving test examiners the option of prerecording answers to this survey to expedite entry in the student interface before each student tested.

5.4.4.2. *Test Administrator Reference Guide*

The *Test Administrator Reference Guide* provides additional information to test examiners regarding the systems involved in testing, including sections on the TDS so they may become familiar with the testing application used by their students (CDE, 2016h).

5.4.4.3. *CAA Test Administration Manual*

The *2015–16 California Alternate Assessments Test Administration Manual* contains information and instructions on overall procedures and guidelines for all LEA and test site staff involved in the administration of CAA assessments (CDE, 2016a). Sections address the following topics:

- Roles and responsibilities
- Accessibility resources
- Preparing for the CAA test administration
- Administering the CAAs
- Test security

Appendixes include definitions of common item types and a matrix comparing the California Alternate Performance Assessment to the CAA.

5.4.4.4. *CAASPP Smarter Balanced Online Test Administration Manual*

The *CAASPP Smarter Balanced Online Test Administration Manual* (CDE, 2016b) contains information and instructions on overall procedures and guidelines for all LEA and test site staff involved in the administration of online assessments. Sections include the following topics:

- Resources
- Test security
- Responding to testing incidents
- Filing appeals
- Technology infrastructure
- Accessibility supports

- General test administration
- Instructions for steps to take before, during, and after testing

Appendixes include definitions of common terms, descriptions of different aspects of the test and systems associated with the test, and checklists of activities for LEA CAASPP coordinators and CAASPP test site coordinators.

5.4.4.5. Test Operations Management System (TOMS) Manuals

TOMS is a Web-based application that allows LEA CAASPP coordinators to set up test administrations, add and manage users, and submit online student test settings. Each functionality has its own user manual with detailed instructions on how to use TOMS. These manuals include the following:

- **Test Administration Setup Guide**—Allows LEAs to determine and calculate dates for the LEA's 2015–16 administration of the CAA assessments (CDE, 2016k).
- **Adding and Managing Users Guide**—Allows LEA CAASPP coordinators to add CAASPP test site coordinators and test examiners to TOMS so that the designated user can administer, monitor, and manage the online alternate assessments (CDE, 2016i).
- **Online Student Test Settings User Guide**—Allows LEA CAASPP coordinators and CAASPP test site coordinators to configure online test settings so that students receive the assigned accessibility tools and accommodations for the online alternate assessments (CDE, 2016j).

5.4.4.6. Other System Manuals

Other manuals were created to assist LEA CAASPP coordinators with the other technological components of the CAASPP System and are listed below.

- **Secure Browser Installation Manual**—Provides instructions for installing secure browsers on computers and devices running a supported operating system (CDE, 2016e).
- **Technical Specifications for Online Testing Manual**—Provides information, tools, and recommended configuration details to help technology staff prepare computers to be used for the online CAASPP assessments (CDE, 2016g).
- **Security Incidents and Appeals Procedure Guide**—Provides information on how to report and submit an appeal to the CDE to reset, reopen, invalidate, or restore individual online student assessments within TOMS (CDE, 2016f).
- **Online Testing Manual: Requirements for Testing Students with Visual Impairments**—Provides information about supported hardware and software requirements for administering a test to a student with a braille accommodation using the software Job Access With Speech (JAWS®) tool or a braille embosser (hardware). Students with a braille accommodation are able to take advantage of the adaptive algorithm using the TDS's Enhanced Accessibility Mode and JAWS (CDE, 2016c).

5.5. LEA Training

ETS established and implemented a training plan for LEA assessment staff on all aspects of the assessment program. The CDE and ETS, in collaboration with the CDE Senior Assessment Fellows and other stakeholders as needed, determined the audience, topics, frequency, and mode (in-person, Webcast, videos, modules, etc.) of the training, including such elements as format, participants, and logistics.

ETS conducted 24 pretest workshops and presented 13 Webcasts for the 2015–16 administration. Two of the Webcasts covered topics exclusive to the CAA administration.

Following approval by the CDE, the ancillary materials were posted for each Webcast on the CAASPP Web site at <http://www.caaspp.org/> so the LEAs could download the training materials.

5.5.1. In-person Training

ETS also provided a series of in-person trainings. Beginning in January 2016, the first in-person trainings provided were the pretest CAA workshops, which focused on training LEA CAASPP coordinators on how to prepare for administering the CAAs. CAA-specific sessions were provided in each of the pretest workshops.

5.5.2. Webcasts

ETS provided a series of live Webcasts throughout the school year that were archived and made available for training LEA and test site staff as well as test examiners. Webcast viewers were provided with a method of electronically submitting questions to the presenters during the Webcast. The Webcasts were recorded and archived for on-demand viewing on the CAASPP Training Videos and Resources Web page at <http://www.caaspp.org/training/caaspp/>. CAA-specific Webcasts are also archived to the CAASPP CAA Web page at <http://www.caaspp.org/administration/about/caa/>. CAASPP Webcasts are available to everyone and require neither preregistration nor a logon account. Two CAA-specific Webcasts were produced:

- The CAA Test Administration Webcast, which provides background information on the CAAs relevant to LEA CAASPP coordinators, CAASPP test site coordinators, and test examiners, as well as instructions on how to prepare for the CAA administration, how to administer the CAAs, and how to train others to administer the CAAs.
- The CAA Post-Test Reporting Webcast, which provides information on student scores and reporting for the CAAs, as well as instructions on how to use the ORS to view results, how to view the CAA Student Score Report, and how to access TOMS to download final results.

5.5.3. Videos and Narrated PowerPoint Presentations

To supplement the live Webcasts and in-person workshops, ETS also produced short “how-to” videos and narrated PowerPoint presentations that were available on the CAASPP Training Videos and Resources Web page at <http://www.caaspp.org/training/caaspp/>.

ETS produced an online module, the CAA Test Examiner Tutorial, designed to teach test examiners on how to administer a CAA for ELA and mathematics. Test examiners were required to complete a training session before administering the CAAs by either completing a local training or completing this stand-alone online training module.

Two short videos were produced to demonstrate how to administer the California Alternate Assessment:

- The 2015–16 California Alternate Assessments Item Routing video demonstrated the stage-adaptive nature of the CAAs for ELA and mathematics and what to do when there is a mismatch between the item that appears in the TDS and the item that the test examiner is accessing in the *DFA*.
- The 2015–16 California Alternate Assessments Logon video demonstrated the TDS logon processes for the CAAs.

References

- American Educational Research Association, American Psychological Association, & National Council on Measurement in Education. (2014). *Standards for educational and psychological testing*. Washington, DC: American Educational Research Association.
- California Department of Education. (2016a). *California Alternate Assessments test administration manual, 2015–16 administration*. Sacramento, CA: California Department of Education. Retrieved from <http://www.caaspp.org/rsc/pdfs/CAASPP.caa-tam.2016.pdf>
- California Department of Education. (2016b). *CAASPP Smarter Balanced online test administration manual, 2015–16 administration*. Sacramento, CA: California Department of Education. Retrieved from <http://www.caaspp.org/administration/about/caa/index.html>.
- California Department of Education. (2016c). *Online testing manual: Requirements for testing students with visual impairments, 2015–16 administration*. Sacramento, CA: California Department of Education. Retrieved from <http://www.caaspp.org/rsc/pdfs/CAASPP.braille-requirements.2016.pdf>
- California Department of Education. (2016d). *SAMPLE directions for administration for the California Alternate Assessments, spring 2016*. Sacramento, CA: California Department of Education. Retrieved from <http://www.caaspp.org/rsc/pdfs/CAASPP.caa.sample-dfa.2016.pdf>
- California Department of Education. (2016e). *Secure browser installation manual, 2015–16 administration*. Sacramento, CA: California Department of Education. Retrieved from <http://www.caaspp.org/rsc/pdfs/CAASPP.secure-browser-manual.2016.pdf>
- California Department of Education. (2016f). *Security incidents and appeals procedure guide, 2015–16 administration*. Sacramento, CA: California Department of Education. Retrieved from <http://www.caaspp.org/rsc/pdfs/CAASPP.stairs-appeals-guide.2016.pdf>
- California Department of Education. (2016g). *Technical specifications for online testing manual, 2015–16 administration*. Sacramento, CA: California Department of Education. Retrieved from <http://www.caaspp.org/rsc/pdfs/CAASPP.tech-specs-manual.2016.pdf>
- California Department of Education. (2016h). *Test administrator reference guide, 2015–16 administration*. Sacramento, CA: California Department of Education. Retrieved from <http://www.caaspp.org/rsc/pdfs/CAASPP.ta-reference-guide.2016.pdf>
- California Department of Education. (2016i). *Test Operations Management System: Adding and managing users guide, 2015–16 administration*. Sacramento, CA: California Department of Education. Retrieved from http://www.caaspp.org/rsc/pdfs/CAASPP.adding_managing_users.2016.pdf
- California Department of Education. (2016j). *Test Operations Management System: Online student test settings user guide, 2015–16 administration*. Sacramento, CA: California Department of Education. Retrieved from <http://www.caaspp.org/rsc/pdfs/CAASPP.student-test-settings.2016.pdf>

- California Department of Education. (2016k). *Test Operations Management System: Test administration setup guide, 2015–16 administration*. Sacramento, CA: California Department of Education. Retrieved from http://www.caaspp.org/rsc/pdfs/CAASPP.test_admin_setup.2016.pdf
- Educational Testing Service. (2014). *ETS standards for quality and fairness*. Princeton, NJ: Educational Testing Service. Retrieved from <https://www.ets.org/s/about/pdf/standards.pdf>
- Kearns, J., Kleinert, H., Kleinert, J., & Towles-Reeves, E. (2006). *Learner characteristics inventory*. Lexington, Kentucky: University of Kentucky, National Alternate Assessment Center.

Chapter 6: Standard Setting

This chapter summarizes the standard-setting process through which the achievement levels were established. Included are an overview of the standard-setting methodology, a summary of the standard-setting procedure, the description of the performance level descriptors, and the results. The detailed standard setting information for the California Alternate Assessments (CAAs) for English language arts/literacy (ELA) and mathematics are described in the *Standard-Setting Technical Report for the California Alternate Assessments* (ETS, 2016).

6.1. Background

Standard setting refers to a class of methodologies by which one or more performance threshold scores are used to determine achievement levels. The purpose of the standard setting process for the CAAs in 2016 was to collect recommendations from California educators for the placement of the CAA threshold scores for review by the California Department of Education (CDE), with final determination by the State Board of Education (SBE). The content of the CAAs is aligned to the Core Content Connectors (Connectors) that are derived from the Common Core State Standards (CCSS).

Educational Testing Service (ETS) conducted standard-setting workshops in Sacramento, California, for the grades three through eight and grade eleven ELA and mathematics CAAs on August 16–19 (ELA) and August 22–26 (mathematics), 2016, following the first operational administration. The Bookmark standard-setting method was applied to all items on each test, by grade. See subsection 6.3 *Standard Setting Methodology* on page 75 for more information about the Bookmark method.

Through the standard-setting process, input and recommendations on performance standards are solicited from California educators, local educational agencies, and community leaders. The CDE reviews the input and recommendations and the SBE establishes the standards based on these recommendations. For each test per grade and content area, there are three achievement levels, in the order from low to high performance: Level 1—Alternate, Level 2—Alternate, and Level 3—Alternate. Two achievement threshold scores are needed to define the three achievement levels. All scale scores that do not meet a lower bound for the Level 2—Alternate are assigned to the lowest achievement level, Level 1—Alternate.

6.2. Performance Level Descriptors (PLDs)

The CAA general (policy) performance level descriptors (PLDs), which were derived from the documents of the National Center and State Collaborative (NCSC), describe what students at each performance level know and are able to do. General PLDs are short policy descriptors that convey the expectation at a given achievement level.

A team of local educational agency educators who are familiar with the Connectors and the target student population reviewed the general PLDs for California’s target student population. They developed more specific descriptions for each grade and content area using the CAA blueprints and the Connectors as resources. The grade- and content-specific PLDs, together with threshold scores and the assessment results, are accessible to educators, parents, students, and the public (CDE, 2016a and 2016b).

Table 6.1 provides a description of the three general PLDs, with Level 3 reflecting the highest level of achievement (CDE, 2017).

Table 6.1 Three General PLDs and CAA Achievement Levels

Level	General Performance Level Descriptors	CAA Achievement Level
3	Students at this level demonstrate understanding of core subject matter in the content area. They are actively working with adapted grade-level content that focuses on the essential knowledge and skills and may need occasional prompts and assistance to complete tasks and activities.	Level 3—Alternate
2	Students at this level demonstrate foundational understanding of core subject matter in the content area when provided with frequent prompts and supports. They are actively working with adapted grade-level content that focuses on the essential knowledge and skills and may frequently need supports to complete tasks and activities.	Level 2—Alternate
1	Students at this level demonstrate limited understanding of adapted grade level content that focuses on much of the basic knowledge and skills, even with extensive supports.	Level 1—Alternate

6.3. Standard Setting Methodology

For the CAAs, the Bookmark method was used for standard setting. The Bookmark method is an item-mapping procedure that allows multiple performance threshold scores to be set in an efficient manner. This method represents an appropriate balance between statistical rigor and informed opinion, as explained in the following subsection.

6.3.1. Bookmark Method

The Bookmark method (Lewis, et al., 1998; Mitzel, et al., 2001) is a commonly used item-mapping procedure in which test items are ordered from easiest to most difficult based on actual student performance; the ordered items are presented in a booklet known as an ordered item booklet (OIB). The task of each panelist is to place a “bookmark” in the OIB that differentiates item content that a student with just enough content knowledge to be performing at a defined achievement level would likely know from item content that he or she would not likely know. A “bookmark” is placed in the OIB for each item defined at the border of each achievement level. For each CAA, two bookmarks were required to set three achievement levels: Level 1—Alternate, Level 2—Alternate, and Level 3—Alternate.

The Bookmark method has its basis in item response theory (IRT) analysis. IRT is used to estimate item difficulties. These estimates are used to order items by student performance and to place item difficulty estimates on the score scale. One benefit of this approach is that once panelists make judgments in the OIB, the difficulty (theta) values associated with each item have a built-in relationship to scale scores, a fact that allows results to be provided to policy makers in the familiar metric of the scale score.

6.4. Standard Setting Procedures

This subsection describes what occurred prior to and during the standard-setting workshop.

6.4.1. Panelists

Prior to the standard setting, panelists were recruited from across the state to be representative of the educators of CAA-eligible students; panelists were primarily special education teachers. Special efforts were made to assemble panels that were representative of the geographic and socioeconomic diversity of California in general and the CAA educator population in particular. The educators who participated in the standard setting

included representatives from across regions in California (north, south, and central) and across gender, race, and ethnic categories. The final selection of panelists invited to the workshops was made by the CDE. The total number of panelists who participated was 68. Of these, 61 teachers have experience in special education, 43 administered the CAAs, and 7 were general education teachers.

6.4.2. Materials

Panelists were provided with a letter describing the purpose and procedures of the standard-setting workshop along with a preworkshop assignment specific to their panel assignment, instructions, a note-taking form, and the links to the general PLDs and the CAA blueprints. During the workshop, panelists received training materials, a draft of list of competencies to develop borderline student definitions, a set of operational materials, and evaluation forms. The set of operational materials included *Directions for Administration* for the assessment, the OIB, bookmark recording forms, and an item map. All references such as the CCSS, the Connectors, and the Essential Understandings were made available for panelists during the workshop. The detailed procedures keeping those materials secure were described in the *Standard Setting Technical Report for the California Alternate Assessments* (ETS, 2016).

6.4.3. Process

Prior to making judgments in the OIB, panelists reviewed and discussed the test blueprints and the SBE-approved PLDs, including the specific PLDs for each level, and then developed borderline student definitions as a group. Two borderline student definitions were developed, Level 2 and Level 3. For example, the borderline Level 2 student is the student at the beginning of Level 2; this student differentiates the knowledge and skills of the highest performing Level 1 student from the lowest performing Level 2 student.

To make judgments and place bookmarks in the OIB, panelists reviewed each item in the OIB in sequence and considered if the student at the beginning of Level 2, known as the borderline Level 2 student, would most likely be able to answer the item correctly. A panelist placed the Level 2 bookmark on the first item encountered in the OIB that he or she believed the borderline Level 2 student would most likely not be able to address because items beyond that point were too difficult for that borderline student. The panelist continued from that point in the OIB and then stopped at the item that the borderline Level 3 student would not likely be able to address (i.e., the item that likely exceeds the content understanding of the borderline Level 3 student). Note that in the Bookmark method, the definition of “most likely” is related to the IRT model. That is, panelists were instructed to think of “most likely” as having a two-thirds likelihood of answering a multiple-choice item correctly. In ordering the items in the OIB, a response probability of 0.67 is employed in the IRT model; thus, the instructions to the panelists and the analytical model are aligned.⁵

The Bookmark process was implemented in three rounds. Each test-specific panel was split up and seated in small groups to facilitate discussion. This table format provided an environment more conducive to panelists sharing their opinions and rationales, as some panelists may be less inclined to speak or have less opportunity to be heard in a large group. The table format also increased the independence of the threshold-score

⁵ In several applications of the Bookmark method, a target probability of two-thirds is used to define “most likely.” See, for example, Mitzel, et al. (2001).

recommendations, because each table of experts provided its own recommendations, which were then aggregated across the tables.

The final recommended threshold scores were based on the median of panelists' judgment scores. At the conclusion of the workshop, the results were shared with the panelists and the CDE.

As part of the standard-setting process, the CDE analyzed the standard-setting panel's judgments and refined the threshold scores for consistency across all the CAA grade levels tested. The CDE's recommendations were then presented to the SBE for approval.

6.5. Results of the Standard Setting

The SBE approved the recommendation of the final threshold scores for the CAAs. The recommendations are presented in Table 6.2 (ELA) and Table 6.3 (mathematics). The scales in these tables were presented and used in the standard-setting process. They range from 50 to 350 score points and are more user friendly than the theta metric. The theta score is not used because panelists were not familiar with the concept of theta. As the theta scores range from -6.00 to 6.00 approximately, it was less accessible to panelists as well. As a result, the theta scale was transformed linearly to an arbitrary scale score unique to each grade.

The tables show the percent of students statewide who would be placed at this alternate achievement standard (level) on the basis of the results of the 2015–16 CAASPP administration. Also shown in both tables is the percent of students statewide who would be at and above this alternate achievement standard (level) on the basis of the results of the 2015–16 administration. Finally, the standard-setting threshold score is the minimum standard-setting scale score needed to achieve this alternate achievement standard (level) on the 2015–16 administration of tests. Note that threshold scores were generated solely for the standard-setting process; reporting scales were developed to report scores on the Student Score Report and public reporting.

Table 6.2 SSPI's Recommendations for the Proposed Achievement Standards (Levels) for the CAA for ELA

Grade	Level 1—Alternate		Level 2—Alternate			Level 3—Alternate		
	% of Students	% At or Above	% of Students	Standard-Setting Scale Threshold Score	% At or Above	% of Students	Standard-Setting Scale Threshold Score	% At or Above
3	54.3	100	24.7	195	45.7	21.0	220	21.0
4	60.6	100	27.8	200	39.4	11.6	225	11.6
5	57.0	100	34.5	200	43.0	8.5	225	8.5
6	57.0	100	36.2	200	43.0	6.8	230	6.8
7	59.4	100	32.2	200	40.6	8.4	225	8.4
8	49.4	100	43.0	195	50.6	7.5	225	7.5
11	46.0	100	46.8	195	54.0	7.1	225	7.1

Table 6.3 SSPI's Recommendations for the Proposed Achievement Standards (Levels) for the CAA for Mathematics

Grade	Level 1—Alternate		Level 2—Alternate			Alternate-Level 3—Alternate		
	% of Students	% at or above	% of Students	Standard-Setting Scale Threshold Score	% at or above	% of Students	Standard-Setting Scale Threshold Score	% at or above
3	72.3	100	23.1	205	27.7	4.6	225	4.6
4	70.0	100	25.8	205	30.0	4.3	225	4.3
5	72.8	100	23.0	205	27.2	4.2	225	4.2
6	72.7	100	23.2	205	27.3	4.1	225	4.1
7	70.4	100	24.4	205	29.6	5.2	225	5.2
8	71.1	100	24.5	205	28.9	4.4	225	4.4
11	68.4	100	26.2	205	31.6	5.4	225	5.4

The reporting scale score ranges for each achievement level are presented in Table 7.3 on page 84. The performance threshold score for each level is the lower bound of each scale score range. The scale score ranges do not change from year to year. Once established, they remain unchanged from administration to administration until such time that new performance standards are adopted. Table 7.5 on page 85 in Chapter 7 presents the percentages of students meeting each achievement level in the 2015–16 administration of the CAAs.

References

- California Department of Education. (2016a). *California Alternate Assessments performance level descriptors—English language arts*. Sacramento, CA: California Department of Education. Retrieved from <http://www.cde.ca.gov/ta/tg/ca/documents/caapldela.pdf>
- California Department of Education. (2016b). *California Alternate Assessments performance level descriptors—mathematics*. Sacramento, CA: California Department of Education. Retrieved from <http://www.cde.ca.gov/ta/tg/ca/documents/caapldmath.pdf>
- California Department of Education. (2017). *CAAs performance level descriptors*. Retrieved from <http://www.cde.ca.gov/ta/tg/ca/caapld.asp>
- Educational Testing Service. (2016). *Standard-setting technical report for the California Alternate Assessments: English language arts/literacy and mathematics grades three through eight and grade eleven*. Princeton, NJ: Educational Testing Service. Retrieved from <http://www.cde.ca.gov/ta/tg/ca/documents/caa16standardsetting.pdf>
- Lewis, D. M., Green, D. R., Mitzel, H. C., Baum, K., & Patz, R. J. (1998). *The Bookmark standard setting procedure: Methodology and recent implementations*. Paper presented at the 1998 annual meeting of the National Council on Measurement, San Diego, CA.
- Mitzel, H. C., Lewis, D. M., Patz, R. J., & Green, D. R. (2001). The bookmark procedure: Psychological perspectives. In G. J. Cizek (Ed.), *Setting performance standards: Concepts, methods, and perspectives* (pp. 249–281). Mahwah, NJ: Erlbaum.

Chapter 7: Scoring and Reporting

In order to determine individual students' scores for the California Alternate Assessment (CAA), student item responses are scored and analyzed. Based on the analyses of the item responses, individual student scores (i.e., overall scale scores) are calculated and reported. In addition, student test scores are aggregated to produce summary reports for schools and local educational agencies (LEAs). This chapter describes how the various types of student responses are scored for the CAA online assessments, as well as the various types of scores and reports that are generated.

7.1. Student Test Scores

Prior to the test administration, Educational Testing Service (ETS) Assessment Development staff review each item and determine the keys and scoring rubrics. These keys and rubrics are provided to American Institute for Research (AIR) for implementation in the test delivery system. After AIR finishes machine scoring, scores and responses are delivered to ETS. ETS's enterprise score key management (eSKM) system collects and calculates individual students' overall scores (e.g., total raw scores).

ETS developed two parallel scoring systems to produce and verify students' scores: the eSKM scoring system, which receives the individual students' item scores and item responses from AIR and computes individual student scores for the ETS reporting system; and the work of the Statistical Analysis Team, which also computes individual student scores based on the same data files. The scores from the two systems are then compared for the purpose of internal quality control. Any differences in the total raw scores are discussed and resolved.

All scores must comply with the ETS scoring specifications. The parallel scoring process ensures the quality and accuracy of scoring and supports the transfer of scores into the database of the student records scoring system, the Test Operations Management System (TOMS).

7.1.1. Total Test Scores

7.1.1.1. Theta Estimates

Multistage testing (MST) is a compromise between the traditional linear test and computer adaptive testing (CAT). Rather than administering a single linear test form or adapting the test to individual students item by item as in a computer adaptive test, an MST is adapted to students in stages.

The CAA uses a two-stage MST design; refer to subsection *4.2 Test Design* on page 43 of Chapter 4 for details about MST design. In the initial stage, Stage 1, all students are administered a common set of items. Depending on a student's performance in the Stage 1 module, the student is routed to one of the three alternative Stage 2 modules, each consisting of a fixed set of items with differing levels of complexity and difficulty. In addition, two versions of Stage 1 are spiraled and distributed to students at school level during administration. Common items are shared across the two Stage-1 versions as part of a backup linking approach if the spiraling approach is unsuccessful. Students are divided into different groups based on their Stage 1 version assignments, and their Stage 2 module assignments are determined by their performance on Stage 1. Each combination of Stage 1 version and Stage 2 module is illustrated in Table 4.1 on page 44.

Based on this design, groups of students who took those forms are not considered to be equivalent in ability levels. Item parameter estimates from multiple forms are not on a common scale. Two methods that can place parameter estimates from separate forms onto a common scale are reviewed: concurrent calibration or separate calibration. Previous studies show that concurrent calibration is more accurate when the data fit the item response theory (IRT) model (Kim & Cohen, 1998; Hanson & Béguin, 2002). In consultation with the California Department of Education (CDE) and its Technical Advisory Group, a single-group concurrent calibration approach is used for item calibration of the CAAs.

In the single-group concurrent calibration process, the one-parameter logistic (1PL) model (Hambleton, Swaminathan, & Rogers, 1991) and the corresponding general partial credit model (GPCM) (Muraki, 1992) are jointly used to concurrently calibrate dichotomously and polytomously scored items, via the flexMIRT[®] software, for a given grade and content area. Because each student takes only one of the forms (Stage 1/Stage 2 combinations), response strings for given items from all forms actually constitute a sparse matrix. The marginal maximum likelihood estimation embedded in flexMIRT is used for the single-group concurrent calibration with sparse data structure. See subsection 8.3 *Item Response Theory (IRT) Analyses* on page 203 for more details on the IRT models and the calibration procedure.

After all item parameters are on a common scale, students' overall ability estimates were derived from the IRT inverse test characteristic curve (TCC) method (Stocking, 1996). This method transforms the sum of the expected item scores into an ability estimate. That estimate is the ability level at which the sum of the expected scores on the items administered to the student is equal to the sum of the scores that the student actually received on those items.

Equation 7.1 is the TCC over items for each Stage 1/Stage 2 pathway. The test curve relates IRT ability to the expected sum score. The TCC for a set of items shows the expected total score on those items as a function of the student's ability defined as:

$$\xi(\theta) = \sum_{i=1}^{ndich} P_i(\theta) + \sum_{j=1}^{npoly} \sum_{x=1}^m s_{xj} P_{xj}(\theta) \quad (7.1)$$

where,

ndich is the number of dichotomous items in the test,

$P_i(\theta)$ is the probability of a correct response to item i at ability θ on the dichotomous item in Equation 8.4,

npoly is the number of polytomous items in the test,

m is the number of score categories for each polytomous item,

s_{xj} is the value for score category x for the polytomous item j ,

$P_{xj}(\theta)$ is the probability that an examinee with ability θ obtains score s_x on the polytomous item j in Equation 8.4, and

$\xi(\theta)$ is the corresponding expected score.

7.1.1.2. Incomplete/Complete Cases

Sometimes students fail to complete their tests. Depending on the nature of the missing data, different actions are taken.

As defined in the CAA scoring and reporting specifications, tests are considered “complete” if students respond to the minimum number of four items; “partial complete” if students respond to one or less than four items; and “non-complete” if students log on but do not respond to any item. ETS, in consultation with the CDE, implemented several rules for identifying an incomplete test; these rules are presented in Table 7.1.

Table 7.1 Rules for Incomplete Tests

If the student	Classify the student as participating?	Score the student’s responses?	Classify the student as attempting the test (test completion status)?	Report a score for the student?
Logged on to the test, but answered no items	Yes	Lowest obtainable scaled score (LOSS) for the test	INC0 (Non-completion)	Yes
Logged on to the test, and answered at least one item but not more than three items	Yes	Next lowest obtainable scaled score for the test (LOSS+1)	INC1 (Partial completion)	Yes
Logged on to the test and answered at least four items	Yes	Yes	Yes (Completion)	Yes
Did not log on to the test	No	N/A	Not Tested	No
Logged on and answered at least one item with a special condition code (refer to subsection 7.3.2 <i>Special Cases</i>)	No	N/A	Not Tested	No

The overall theta score distributions for each grade and content area are presented in Table 7.A.1 and Table 7.A.2 in Appendix 7.A, starting on page 93. The estimated theta score distributions for each grade, content area, and test pathway are presented in Table 7.A.3 through Table 7.A.16.

7.1.1.3. Scale Scores for the Total Assessment

Students’ ability estimates (theta scores) were expressed in the scale score metric by applying the appropriate linear transformation with the applicable slope and intercept for each CAA form as described by Equation 7.2. The scale score transformations are integrated with the scale score threshold for Level 2 and Level 3 that were approved by California State Board of Education (SBE) after standard setting. Table 6.2 on page 77 and Table 6.3 on page 78 show the standard setting threshold scores.

$$\text{ScaleScore} = \text{Intercept} + \text{Slope} \times \hat{\theta} \quad (7.2)$$

where,

$\hat{\theta}$ represents student ability.

The slope and intercept are calculated in equations 7.3 and 7.4 for the Level 2—Alternate and Level 3—Alternate thresholds that were set as 45 and 60, respectively.

$$\text{Slope} = \frac{60 - 45}{\hat{\theta}_{\text{Level3}} - \hat{\theta}_{\text{Level2}}} \quad (7.3)$$

$$\text{Intercept} = 60 - \hat{\theta}_{\text{Level3}} \times \left(\frac{60 - 45}{\hat{\theta}_{\text{Level3}} - \hat{\theta}_{\text{Level2}}} \right) \quad (7.4)$$

where,

$\hat{\theta}_{\text{Level3}}$ represents the threshold score for Level 3—Alternate on the theta scale, and

$\hat{\theta}_{\text{Level2}}$ represents the threshold score for Level 2—Alternate on the theta scale.

The slopes and intercepts for each grade test are shown in Table 7.2.

Table 7.2 Slopes and Intercepts for Reporting Scale Scores

Content Area	Grade	Threshold Theta Score		Reporting Scale Score		Slope	Intercept
		Level 2—Alternate	Level 3—Alternate	Level 2—Alternate	Level 3—Alternate		
ELA	3	-0.2	0.8	45	60	15.00	48.0
	4	0.0	1.0	45	60	15.00	45.0
	5	0.0	1.0	45	60	15.00	45.0
	6	0.0	1.2	45	60	12.50	45.0
	7	0.0	1.0	45	60	15.00	45.0
	8	-0.2	1.0	45	60	12.50	47.5
	11	-0.2	1.0	45	60	12.50	47.5
Mathematics	3	0.2	1.0	45	60	18.75	41.3
	4	0.2	1.0	45	60	18.75	41.3
	5	0.2	1.0	45	60	18.75	41.3
	6	0.2	1.0	45	60	18.75	41.3
	7	0.2	1.0	45	60	18.75	41.3
	8	0.2	1.0	45	60	18.75	41.3
	11	0.2	1.0	45	60	18.75	41.3

The following requirements were used to develop and define the CAA reporting scale ranges:

1. Each scale score has three digits (e.g., 320, 551, or 780) where the first digit is indicative of the grade being reported. For example, the leading digit is defined by the grade for elementary and middle school, while the high school leading digit is set to “9.”
2. Score ranges are grade-specific. For example, the possible scale scores would be 300 to 399 for grade three with the LOSS at 300 and the highest obtainable scale score (HOSS) at 399. For grade four, this range is 400 to 499 with a LOSS of 400 and a HOSS of 499, and so on for the other grades. For grade eleven, the scale ranges from 900 to 999 with a LOSS of 900 and a HOSS of 999.
3. Each threshold score on the scale is the same from year to year. Also, across the grade levels, the last two digits corresponding to the Level 2—Alternate and Level 3—Alternate threshold scores are the same (see subsection 7.1.1.4 for a brief description of alternate achievement levels).
4. Two incomplete tests, as shown in Table 7.1, were assigned to LOSS or LOSS+1, respectively. If a student who logged on to the test system did not answer any items (INC0), this student would be assigned to LOSS. If a student who logged on to the test

delivery system (TDS) answered fewer than four items (INC1), he or she would be assigned to LOSS+1.

For students completing a CAA, their scale scores cannot be lower than LOSS+3 and cannot be higher than the HOSS. As a result, the range of student ability estimates [-6, +6] are transformed to the scale score range [303, 399] for grade three and [403, 499] for grade four. The scale score range for other grades follows the same pattern.

In summary, for each ability level estimate (theta score) on each form of the CAAs, the IRT inverse TCC procedure is used to first solve for the corresponding expected sum score (raw score) using Equation 7.1. Theta scores are transformed linearly to the appropriate CAA scale score scale using Equations 7.2 through 7.4. Once these are transformed, the theta-to-scale score relationship can be mapped to the raw scores. Finally, the raw-score-to-scale-score conversion tables are established. The complete raw-score-to-scale-score conversion tables for each CAA pathway are presented in Table 7.B.1 through Table 7.B.42 in Appendix 7.B, starting on page 109. The raw scores, theta scores, and transformed scale scores and the number and percentage of students at each raw score are listed in those tables.

7.1.1.4. Achievement Levels

CAA reporting scales designate student performance into one of the three achievement levels⁶, with Level 1—Alternate indicating the lowest level of performance and Level 3—Alternate indicating the highest level of performance. Although scale scores are used to report student performance on the CAAs, achievement levels are used to describe student performance and how well the content standards have been mastered. Student test results are reported in the following overall achievement levels:

Level 1—Alternate. Student demonstrates a limited understanding of core concepts in ELA and mathematics.

Level 2—Alternate. Student demonstrates a foundational understanding of core concepts in ELA and mathematics.

Level 3—Alternate. Student demonstrates an understanding of core concepts in ELA and mathematics.

The scale score ranges defining the various achievement levels and grades are presented in Table 7.3.

Table 7.3 CAA Reporting Scale Score Ranges for Each Achievement Level and Grade

Grade	Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
3	300–344	345–359	360–399
4	400–444	445–459	460–499
5	500–544	545–559	560–599
6	600–644	645–659	660–699
7	700–744	745–759	760–799
8	800–844	845–859	860–899
11	900–944	945–959	960–999

⁶ Detailed information regarding the determination of the achievement levels can be found in the *CAA Standard Setting Technical Report* (ETS, 2016).

7.2. Overview of Score Aggregation Procedures

To provide meaningful results to the stakeholders, test scores for a given grade and content area are aggregated at the school, LEA or direct funded charter school, county, and state levels. The aggregated scores are generated for the selected groups of interest (gender, ethnicity, primary disability, etc.) and for the population. This subsection contains a description of the types of aggregation that are performed on the CAA summary test scores.

7.2.1. Score Distributions and Summary Statistics

Summary statistics that describe student performance on each test are presented in Table 7.4. Included in the table are the number of students taking each test and the means and standard deviations of student scores expressed in terms of both scale scores and theta scores.

Table 7.4 Mean and Standard Deviation of Theta and Scale Scores

Content Area	Grade	Number of Students	Scale Score		Theta Score *	
			Mean	SD	Mean	SD
ELA	3	4,962	339	25	-1.13	2.56
	4	5,267	437	22	-1.07	2.42
	5	5,098	537	21	-1.04	2.35
	6	5,116	637	20	-0.96	2.33
	7	5,123	736	21	-1.14	2.41
	8	4,755	838	21	-1.12	2.42
	11	4,273	940	20	-0.91	2.21
Mathematics	3	4,978	331	21	-1.34	2.50
	4	5,283	432	20	-1.18	2.37
	5	5,098	532	20	-1.23	2.44
	6	5,123	631	20	-1.25	2.38
	7	5,117	732	21	-1.23	2.44
	8	4,757	831	20	-1.28	2.42
	11	4,268	933	20	-1.03	2.28

* Student theta scores are assigned a missing value for any incomplete cases. The number of students who did not complete a test or who did not answer any items is shown in Appendix 7, Table 7.A.1 and Table 7.A.2.

The number of students and the percentage of students at each achievement level for each test is presented in Table 7.5.

Table 7.5 Numbers and Percentages of Students in Achievement Levels

Content Area	Grade	Level 1—Alternate		Level 2—Alternate		Level 3—Alternate	
		N	%	N	%	N	%
ELA	3	2,686	54	1,231	25	1,045	21
	4	3,132	59	1,533	29	602	11
	5	2,896	57	1,767	35	435	9
	6	2,779	54	1,943	38	394	8
	7	2,901	57	1,791	35	431	8
	8	2,239	47	2,090	44	426	9
	11	1,826	43	2,110	49	337	8

Content Area	Grade	Level 1—Alternate		Level 2—Alternate		Level 3—Alternate	
		N	%	N	%	N	%
Mathematics	3	3,595	72	1,152	23	231	5
	4	3,693	70	1,365	26	225	4
	5	3,593	70	1,272	25	233	5
	6	3,718	73	1,193	23	212	4
	7	3,600	70	1,242	24	275	5
	8	3,377	71	1,170	25	210	4
	11	2,812	66	1,217	29	239	6

Figure 7.1 presents the percentages of students at each achievement level by grade for ELA.

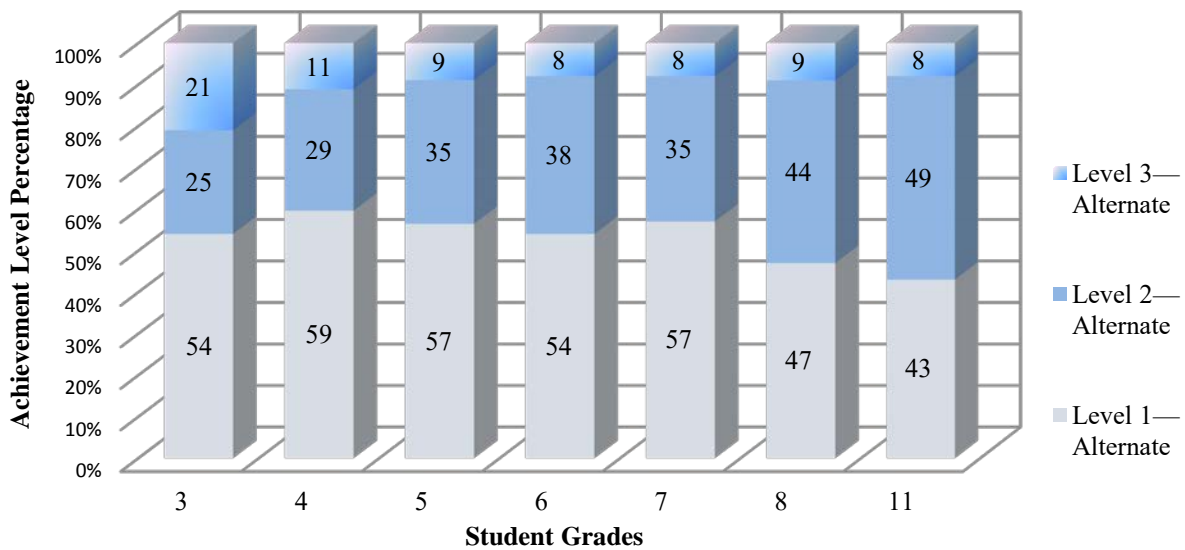


Figure 7.1 Percentage of Students at Each Achievement Level in ELA

Figure 7.2 presents the percentages of students at each achievement level by grade for mathematics.

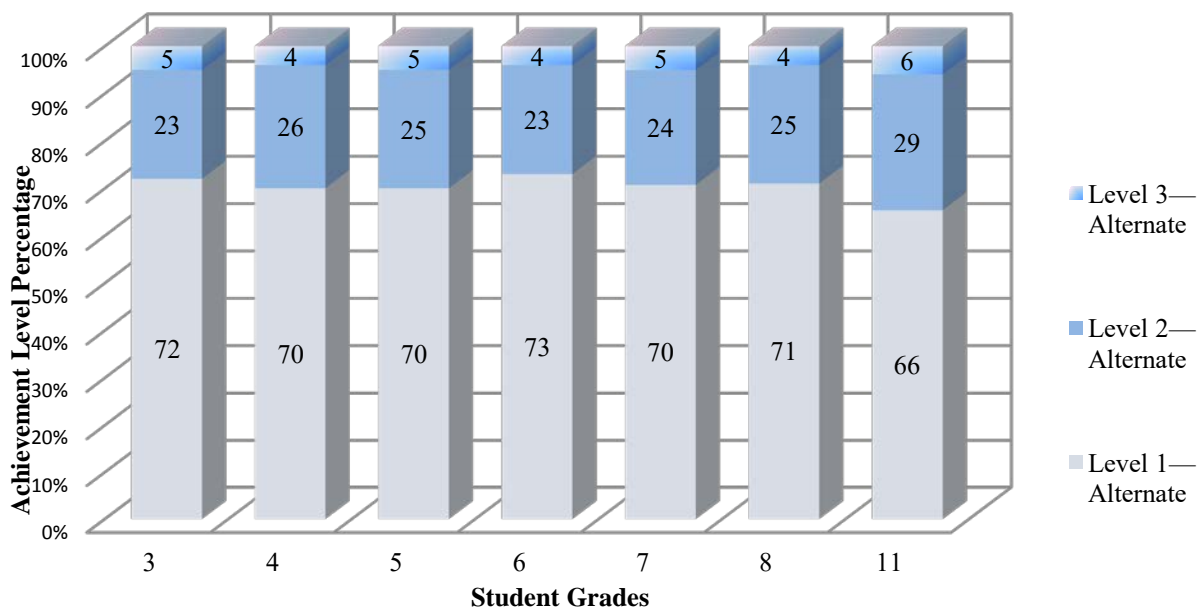


Figure 7.2 Percentage of Students at Each Achievement Level in Mathematics

The selected percentiles of the scale score distributions are presented in Table 7.C.1 and Table 7.C.2 in Appendix 7.C on page 153. CAA reporting scale score distribution information for each grade and content area is also available in Table 7.C.3 through Table 7.C.16 in Appendix 7.C starting on page 154.

7.2.2. Group Scores

Statistics summarizing student performance by content area and grade, for selected groups of students, are provided starting on page 168. In Table 7.D.1 through Table 7.D.14, students are grouped by demographic characteristics, including gender, ethnicity, English-language fluency, economic status (disadvantaged or not), primary disability, migrant status, and ethnicity by economic status. For each demographic group, the number of students with a valid scale score, scale score means and standard deviations, and the percentage of students in each achievement level are included in the tables.

Table 7.6 provides definitions of the demographic subgroups. To protect student privacy, when the number of students in a subgroup is 10 or fewer, the summary statistics are not reported and are presented as hyphens.

Table 7.6 Demographic Groups to Be Reported

Value	Subgroups
Gender	<ul style="list-style-type: none"> • Male • Female
Ethnicity	<ul style="list-style-type: none"> • American Indian or Alaska Native • Asian • Native Hawaiian or Other Pacific Islander • Filipino • Hispanic or Latino • Black or African American

Value	Subgroups
	<ul style="list-style-type: none"> • White • Two or more races
English-language Fluency	<ul style="list-style-type: none"> • English only • Initially fluent English proficient • English learner • Reclassified fluent English proficient • To be determined • English proficiency Unknown
Economic Status	<ul style="list-style-type: none"> • Not economically disadvantaged • Economically disadvantaged
Primary Disability Type	<ul style="list-style-type: none"> • Intellectual disability • Hearing Impairment • Speech or language impairment • Visual Impairment • Emotional disturbance • Orthopedic impairment • Other health impairment • Specific learning disability • Deaf-blindness • Multiple disabilities • Autism • Traumatic brain injury • Not classified⁷
Migrant Status	<ul style="list-style-type: none"> • Eligible for the Title I Part C Migrant Program (Migrant) • Not eligible for the Title I Part C Migrant Program (Non-migrant)

7.3. Reports Produced and Scores for Each Report

Score summaries are reported for different purposes for the CAA online assessments. The four major purposes are to:

1. Help facilitate conversations between parents/guardians and teachers about student performance;
2. Serve as a tool to help parents/guardians and teachers work together to improve student learning;
3. Help schools and school districts identify strengths and areas that need improvement in their educational programs; and
4. Provide the public and policymakers with information about student achievement.

This subsection provides detailed descriptions of the uses and applications of the California Assessment of Student Performance and Progress (CAASPP) reporting for students. CAAs, as one of the components in CAASPP, are reported through the CAASPP reporting system.

⁷ Disability information was changed or removed after student testing.

7.3.1. Online Reporting

TOMS is a secure Web site hosted by ETS that permits LEA users to manage the CAASPP online summative assessments and inform the TDS. This system uses a role-specific design to restrict access to certain tools and applications based on the user's designated role.

Specific functions of TOMS include the following:

- Manage user access privileges
- Manage test administration calendars and testing windows
- Manage student test assignments
- Manage and confirm the accuracy of students' test settings (i.e., designated supports and accommodations) prior to testing
- Run and download various reports

In addition, TOMS communicates with the Online Reporting System (ORS) that provides authorized users with interactive and cumulative online reports for ELA and mathematics at the student, school, and LEA levels. The ORS provides access to two CAASPP functions: Score Reports, which provide preliminary score data for each administered test available in the reporting system; and Completion Status Reports, which provide completion data for students taking the test in the reporting system.

Based on CAA reporting requirements for ELA and mathematics, the ORS generates preliminary summative reports containing information describing student knowledge and skills. The online aggregate reports provide data at the student, classroom, school, and LEA levels and are available to be downloaded in PDF, Excel, and CSV formats.

7.3.2. Special Cases

Student scores are not reported for the following cases:

- Student was absent from the test
- Student moved or had a medical emergency during testing
- Student's parent/guardian requested exemption from testing
- Student did not log on to test systems
- Student was administered out-of-grade level tests
- Student was invalidated in the system (not reported in aggregated reporting)

7.3.3. Types of Score Reports

There are three categories of CAASPP reports. The categories and the specific reports within each category are as follows:

7.3.3.1. Student Score Report

The CAA Student Score Report is the official score report for the parents or guardians and describes the student's results. CAA results presented for the CAASPP online assessments include the following metrics:

- Scale scores for each content area assessment reported (The ranges of scale scores for both ELA and mathematics are provided in Table 7.3.)
- Achievement levels for each content area assessment reported

Scores for students who use accommodations or designated supports are reported in the same way as for students without accommodations or designated supports. Detailed

information about accessibility supports is described in subsection *2.5.1 Universal Tools, Designated Supports, and Accommodations*, on page 15 in Chapter 2.

LEAs receive printed Student Score Reports to distribute to parents/guardians and students' schools. This report is also provided in a printable PDF file that the LEA CAASPP coordinator may download from TOMS. Further information about the Student Score Report and other reports is provided at <http://caaspp.cde.ca.gov/>.

7.3.3.2. School Reports

The school performance report provides group information by content area, including the school's average scale score and the percentage of students at each achievement level. This report also provides a list of students' scale scores and achievement levels.

The school scale score report is presented as a dashboard to provide group information by content area. It includes a histogram showing the distribution of students' scale scores.

7.3.3.3. District Reports

The district performance report provides school-level information by content area, including the school average scale score and the percentage of students at each achievement level.

This report lists all the proficiency information for each school, including the testing status, number of students who completed testing, average scale score, and percentage of students in each achievement level.

The district scale score report is presented as a dashboard to provide cumulative information. The histogram shows the frequency of schools with mean scale scores in each score interval.

The CAASPP aggregate reports and student data files for the LEA are available for the LEA CAASPP coordinator to download from TOMS. The LEA CAASPP coordinator forwards the appropriate reports to test sites. In the case of the CAA Student Score Report, the LEA sends the printed report(s) to the child's parent or guardian and forwards a copy to the student's school or test site. CAA Student Score Reports that include individual student results are not distributed beyond the student's school.

Internet reports are described on the CDE Web site and are accessible to the public online at <http://caaspp.cde.ca.gov/>.

Preliminary individual student scores are also available to LEAs prior to the release of final reports via electronic reporting, accessed using the ORS. This application permits LEAs to view preliminary results for all tests taken.

7.3.4. Score Report Applications

CAA test results provide parents and guardians with information about their child's progress. The results are a tool for increasing communication and collaboration between parents or guardians and teachers. These results are one measure of student's academic performance and provide limited information. Like any important measure of student performance, they should be viewed with other available information such as progress on individualized education program (IEP) goals, assignments, and teacher conferences, and they can be used to communicate with a student's teachers about how to help the student's progress in ELA and mathematics.

Schools may use the CAA results to help make decisions about how to support student achievement. CAA results, however, should never be used as the only source of information to make important decisions about a child's education.

CAA results help schools and LEAs identify strengths and weaknesses in their instructional programs. Each year, staff from schools and LEAs examine CAA test results at each grade level and content area tested. Their findings are used to help determine:

- The extent to which students are learning the alternate achievement standards,
- Instructional areas that can be improved,
- Teaching strategies that can be developed to address needs of students, and
- Decisions about how to use funds to help ensure that students achieve the alternate achievement standards.

CAA results are used as a source of information about how individual students progress toward meeting their IEP goals.

7.3.5. Criteria for Interpreting Test Scores

LEAs may use CAA results to help make decisions about a student's placement, promotion, retention, or other considerations related to student's achievement. However, it is important to remember that results from a single test can provide only limited information. Other relevant information should be considered as well. It is advisable for parents to evaluate their child's strengths and weaknesses in the relevant topics by reviewing classroom work and progress reports in addition to the student's CAA results. It is also important to note that a student's score in a content area contains measurement error and could vary to some extent if the student were retested.

7.3.6. Criteria for Interpreting Score Reports

The information presented in various reports must be interpreted with caution when making performance comparisons. When comparing scale score and achievement-level results, the user is limited to the comparisons within a content area and grade level. The score scales for ELA and mathematics are not comparable to each other, nor are the score scales comparable across grade levels. The user may compare scale scores for the same content area and grade, within a school, between schools, or between a school and its district, its county, or the state. For more details on the criteria for interpreting information provided on the score reports, see the *2015–16 CAASPP Post-Test Guide* (CDE, 2016).

References

- California Department of Education. (2016). *2015–16 CAASPP post-test guide: Technical information for student score reports for CAASPP LEA and test site coordinators and research specialists*. Sacramento, CA: California Department of Education. Retrieved from http://www.caaspp.org/rsc/pdfs/CAASPP.post-test_guide.2016.pdf
- Educational Testing Service. (2016). *Technical report on the standard setting workshop for the California Alternate Assessment*. Princeton, NJ: Educational Testing Service.
- Hambleton, R. K., & Swaminathan, H. (1985). *Item response theory: Principles and applications*. Boston, MA: Kluwer-Nijhoff.
- Hambleton, R. K., Swaminathan, H., & Rogers, H. J. (1991). *Fundamentals of item response theory*. Newbury Park, CA: Sage.
- Hanson, B. A., & Béguin, A. A. (2002). Obtaining a common scale for item response theory item parameters using separate versus concurrent estimation in the common item equating design. *Applied Psychological Measurement, 26*, 3–24.
- Kim, S. H., & Cohen, A. S. (1998). A comparison of linking and concurrent calibration under item response theory. *Applied Psychological Measurement, 22*, 131–143.
- Muraki, E. (1992). A generalized partial credit model: Application of an EM algorithm. *Applied Psychological Measurement, 16*, 159–176.
- Stocking, M. L. (1996). An alternative method for scoring adaptive tests. *Journal of Educational and Behavioral Statistics, 21*, 365–389.

Appendix 7.A: Theta Scores of Tests

Note: An expression that opens with a parenthesis and closes with a bracket indicates that a value is greater than the first number and is less than or equal to the second number. For example, “(0.5, 2]” indicates a value greater than 0.5 but less than or equal to 2.

Table 7.A.1 Frequency Distribution of Theta for Overall Scores—English Language Arts/Literacy (ELA)

Theta Score	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 11
Incomplete	949	956	879	873	958	888	625
[−6.0, −6.0]	2	3	4	10	4	3	4
(−6.0, −5.5]	–	–	–	–	–	–	–
(−5.5, −5.0]	–	–	–	–	–	–	–
(−5.0, −4.5]	11	–	–	–	–	4	–
(−4.5, −4.0]	6	10	13	4	2	–	9
(−4.0, −3.5]	24	–	–	7	10	17	7
(−3.5, −3.0]	45	30	9	18	33	21	20
(−3.0, −2.5]	73	50	23	40	58	49	37
(−2.5, −2.0]	79	89	65	68	63	69	77
(−2.0, −1.5]	152	131	181	146	205	88	130
(−1.5, −1.0]	357	192	206	276	263	172	166
(−1.0, −0.5]	577	693	555	578	493	431	366
(−0.5, 0.0]	734	982	961	852	952	1040	1075
(0.0, 0.5]	641	928	1132	827	947	1033	900
(0.5, 1.0]	528	676	635	909	704	580	560
(1.0, 1.5]	397	302	292	358	272	237	217
(1.5, 2.0]	197	153	92	105	120	95	49
(2.0, 2.5]	99	38	39	31	28	22	23
(2.5, 3.0]	47	15	6	7	4	5	7
(3.0, 3.5]	23	10	–	4	6	1	1
(3.5, 4.0]	16	5	6	3	1	–	–
(4.0, 4.5]	–	–	–	–	–	–	–
(4.5, 5.0]	–	–	–	–	–	–	–
(5.0, 5.5]	–	–	–	–	–	–	–
(5.5, 6.0]	5	4	–	–	–	–	–

Table 7.A.2 Frequency Distribution of Theta for Overall Scores—Mathematics

Theta Score	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 11
Incomplete	1099	994	1031	1003	1041	966	695
[-6.0, -6.0]	11	13	5	11	13	16	21
(-6.0, -5.5]	–	–	–	–	–	–	–
(-5.5, -5.0]	–	–	–	–	–	–	–
(-5.0, -4.5]	–	–	–	–	–	–	–
(-4.5, -4.0]	–	–	–	–	–	–	–
(-4.0, -3.5]	–	–	–	–	–	–	–
(-3.5, -3.0]	15	22	15	7	13	17	17
(-3.0, -2.5]	–	49	24	11	22	15	33
(-2.5, -2.0]	32	52	47	58	62	55	43
(-2.0, -1.5]	82	120	92	63	164	197	131
(-1.5, -1.0]	289	330	203	412	284	320	280
(-1.0, -0.5]	494	379	474	723	337	270	289
(-0.5, 0.0]	1049	1095	1233	861	1204	1051	1035
(0.0, 0.5]	1182	1484	1261	1316	1204	1124	1089
(0.5, 1.0]	525	550	530	446	505	530	405
(1.0, 1.5]	124	132	112	121	161	144	149
(1.5, 2.0]	44	35	35	63	52	41	33
(2.0, 2.5]	15	11	17	14	39	7	27
(2.5, 3.0]	9	12	8	4	11	2	8
(3.0, 3.5]	4	3	3	4	3	2	10
(3.5, 4.0]	–	–	–	4	1	–	2
(4.0, 4.5]	3	1	6	–	–	–	–
(4.5, 5.0]	–	–	–	–	–	–	–
(5.0, 5.5]	–	–	–	–	–	–	–
(5.5, 6.0]	1	1	2	2	1	–	1

Notes for pathway frequency distribution tables:

- R1A0E is included in R1ABE in Table 7.A.3 through Table 7.A.16.
- R2A0E is included in R2ABE in Table 7.A.3 through Table 7.A.16.

Table 7.A.3 Frequency Distribution of Theta by Pathway for ELA, Grade Three

Theta Score	Form ID					
	R1ABE	R2ABE	R1ABM	R2ABM	R1ABH	R2ABH
Incomplete	460	489	–	–	–	–
[–6.0, –6.0]	2	–	–	–	–	–
(–6.0, –5.5]	–	–	–	–	–	–
(–5.5, –5.0]	–	–	–	–	–	–
(–5.0, –4.5]	–	11	–	–	–	–
(–4.5, –4.0]	6	–	–	–	–	–
(–4.0, –3.5]	10	14	–	–	–	–
(–3.5, –3.0]	13	32	–	–	–	–
(–3.0, –2.5]	38	35	–	–	–	–
(–2.5, –2.0]	46	33	–	–	–	–
(–2.0, –1.5]	82	47	5	18	–	–
(–1.5, –1.0]	41	17	153	146	–	–
(–1.0, –0.5]	–	1	266	310	–	–
(–0.5, 0.0]	1	1	350	373	2	7
(0.0, 0.5]	–	–	110	219	188	124
(0.5, 1.0]	–	–	–	–	261	267
(1.0, 1.5]	–	–	–	–	204	193
(1.5, 2.0]	–	–	–	–	91	106
(2.0, 2.5]	–	–	–	–	36	63
(2.5, 3.0]	–	–	–	–	27	20
(3.0, 3.5]	–	–	–	–	23	–
(3.5, 4.0]	–	–	–	–	–	16
(4.0, 4.5]	–	–	–	–	–	–
(4.5, 5.0]	–	–	–	–	–	–
(5.0, 5.5]	–	–	–	–	–	–
(5.5, 6.0]	–	–	–	–	1	4

Table 7.A.4 Frequency Distribution of Theta by Pathway for ELA, Grade Four

Theta Score	Form ID					
	R1ABE	R2ABE	R1ABM	R2ABM	R1ABH	R2ABH
Incomplete	469	487	–	–	–	–
[–6.0, –6.0]	2	1	–	–	–	–
(–6.0, –5.5]	–	–	–	–	–	–
(–5.5, –5.0]	–	–	–	–	–	–
(–5.0, –4.5]	–	–	–	–	–	–
(–4.5, –4.0]	4	6	–	–	–	–
(–4.0, –3.5]	–	–	–	–	–	–
(–3.5, –3.0]	12	18	–	–	–	–
(–3.0, –2.5]	23	27	–	–	–	–
(–2.5, –2.0]	50	39	–	–	–	–
(–2.0, –1.5]	81	43	7	–	–	–
(–1.5, –1.0]	27	47	62	56	–	–
(–1.0, –0.5]	5	7	398	283	–	–
(–0.5, 0.0]	–	–	379	596	3	4
(0.0, 0.5]	–	–	308	332	183	105
(0.5, 1.0]	–	–	6	22	285	363
(1.0, 1.5]	–	–	–	–	158	144
(1.5, 2.0]	–	–	–	–	103	50
(2.0, 2.5]	–	–	–	–	18	20
(2.5, 3.0]	–	–	–	–	5	10
(3.0, 3.5]	–	–	–	–	10	–
(3.5, 4.0]	–	–	–	–	–	5
(4.0, 4.5]	–	–	–	–	–	–
(4.5, 5.0]	–	–	–	–	–	–
(5.0, 5.5]	–	–	–	–	–	–
(5.5, 6.0]	–	–	–	–	2	2

Table 7.A.5 Frequency Distribution of Theta by Pathway for ELA, Grade Five

Theta Score	Form ID					
	R1ABE	R2ABE	R1ABM	R2ABM	R1ABH	R2ABH
Incomplete	412	467	–	–	–	–
[–6.0, –6.0]	–	4	–	–	–	–
(–6.0, –5.5]	–	–	–	–	–	–
(–5.5, –5.0]	–	–	–	–	–	–
(–5.0, –4.5]	–	–	–	–	–	–
(–4.5, –4.0]	3	10	–	–	–	–
(–4.0, –3.5]	–	–	–	–	–	–
(–3.5, –3.0]	2	7	–	–	–	–
(–3.0, –2.5]	17	6	–	–	–	–
(–2.5, –2.0]	39	26	–	–	–	–
(–2.0, –1.5]	77	97	7	–	–	–
(–1.5, –1.0]	57	92	28	29	–	–
(–1.0, –0.5]	50	42	230	233	–	–
(–0.5, 0.0]	4	4	414	539	–	–
(0.0, 0.5]	–	–	454	548	57	73
(0.5, 1.0]	–	–	30	48	277	280
(1.0, 1.5]	–	–	–	–	161	131
(1.5, 2.0]	–	–	–	–	42	50
(2.0, 2.5]	–	–	–	–	19	20
(2.5, 3.0]	–	–	–	–	1	5
(3.0, 3.5]	–	–	–	–	–	–
(3.5, 4.0]	–	–	–	–	2	4
(4.0, 4.5]	–	–	–	–	–	–
(4.5, 5.0]	–	–	–	–	–	–
(5.0, 5.5]	–	–	–	–	–	–
(5.5, 6.0]	–	–	–	–	–	–

Table 7.A.6 Frequency Distribution of Theta by Pathway for ELA, Grade Six

Theta Score	Form ID					
	R1ABE	R2ABE	R1ABM	R2ABM	R1ABH	R2ABH
Incomplete	415	458	–	–	–	–
[–6.0, –6.0]	3	7	–	–	–	–
(–6.0, –5.5]	–	–	–	–	–	–
(–5.5, –5.0]	–	–	–	–	–	–
(–5.0, –4.5]	–	–	–	–	–	–
(–4.5, –4.0]	4	–	–	–	–	–
(–4.0, –3.5]	–	7	–	–	–	–
(–3.5, –3.0]	7	11	–	–	–	–
(–3.0, –2.5]	30	10	–	–	–	–
(–2.5, –2.0]	35	33	–	–	–	–
(–2.0, –1.5]	65	81	–	–	–	–
(–1.5, –1.0]	30	96	109	41	–	–
(–1.0, –0.5]	1	45	261	271	–	–
(–0.5, 0.0]	–	3	410	439	–	–
(0.0, 0.5]	–	–	392	355	50	30
(0.5, 1.0]	–	–	79	128	397	305
(1.0, 1.5]	–	–	–	–	193	165
(1.5, 2.0]	–	–	–	–	48	57
(2.0, 2.5]	–	–	–	–	12	19
(2.5, 3.0]	–	–	–	–	1	6
(3.0, 3.5]	–	–	–	–	–	4
(3.5, 4.0]	–	–	–	–	–	3
(4.0, 4.5]	–	–	–	–	–	–
(4.5, 5.0]	–	–	–	–	–	–
(5.0, 5.5]	–	–	–	–	–	–
(5.5, 6.0]	–	–	–	–	–	–

Table 7.A.7 Frequency Distribution of Theta by Pathway for ELA, Grade Seven

Theta Score	Form ID					
	R1ABE	R2ABE	R1ABM	R2ABM	R1ABH	R2ABH
Incomplete	490	468	–	–	–	–
[–6.0, –6.0]	1	3	–	–	–	–
(–6.0, –5.5]	–	–	–	–	–	–
(–5.5, –5.0]	–	–	–	–	–	–
(–5.0, –4.5]	–	–	–	–	–	–
(–4.5, –4.0]	–	2	–	–	–	–
(–4.0, –3.5]	10	–	–	–	–	–
(–3.5, –3.0]	18	15	–	–	–	–
(–3.0, –2.5]	21	37	–	–	–	–
(–2.5, –2.0]	42	21	–	–	–	–
(–2.0, –1.5]	90	115	–	–	–	–
(–1.5, –1.0]	142	93	14	14	–	–
(–1.0, –0.5]	105	63	170	155	–	–
(–0.5, 0.0]	11	14	463	464	–	–
(0.0, 0.5]	1	–	469	457	12	8
(0.5, 1.0]	–	–	173	196	165	170
(1.0, 1.5]	–	–	3	–	145	124
(1.5, 2.0]	–	–	–	–	61	59
(2.0, 2.5]	–	–	–	–	10	18
(2.5, 3.0]	–	–	–	–	2	2
(3.0, 3.5]	–	–	–	–	1	5
(3.5, 4.0]	–	–	–	–	–	1
(4.0, 4.5]	–	–	–	–	–	–
(4.5, 5.0]	–	–	–	–	–	–
(5.0, 5.5]	–	–	–	–	–	–
(5.5, 6.0]	–	–	–	–	–	–

Table 7.A.8 Frequency Distribution of Theta by Pathway for ELA, Grade Eight

Theta Score	Form ID					
	R1ABE	R2ABE	R1ABM	R2ABM	R1ABH	R2ABH
Incomplete	436	452	–	–	–	–
[–6.0, –6.0]	1	2	–	–	–	–
(–6.0, –5.5]	–	–	–	–	–	–
(–5.5, –5.0]	–	–	–	–	–	–
(–5.0, –4.5]	1	3	–	–	–	–
(–4.5, –4.0]	–	–	–	–	–	–
(–4.0, –3.5]	14	3	–	–	–	–
(–3.5, –3.0]	7	14	–	–	–	–
(–3.0, –2.5]	22	27	–	–	–	–
(–2.5, –2.0]	41	28	–	–	–	–
(–2.0, –1.5]	33	49	3	3	–	–
(–1.5, –1.0]	18	21	81	52	–	–
(–1.0, –0.5]	3	3	200	225	–	–
(–0.5, 0.0]	–	1	513	526	–	–
(0.0, 0.5]	–	–	365	426	212	30
(0.5, 1.0]	–	–	13	44	311	212
(1.0, 1.5]	–	–	–	–	111	126
(1.5, 2.0]	–	–	–	–	47	48
(2.0, 2.5]	–	–	–	–	9	13
(2.5, 3.0]	–	–	–	–	3	2
(3.0, 3.5]	–	–	–	–	1	–
(3.5, 4.0]	–	–	–	–	–	–
(4.0, 4.5]	–	–	–	–	–	–
(4.5, 5.0]	–	–	–	–	–	–
(5.0, 5.5]	–	–	–	–	–	–
(5.5, 6.0]	–	–	–	–	–	–

Table 7.A.9 Frequency Distribution of Theta by Pathway for ELA, Grade Eleven

Theta Score	Form ID					
	R1ABE	R2ABE	R1ABM	R2ABM	R1ABH	R2ABH
Incomplete	283	342	–	–	–	–
[–6.0, –6.0]	2	2	–	–	–	–
(–6.0, –5.5]	–	–	–	–	–	–
(–5.5, –5.0]	–	–	–	–	–	–
(–5.0, –4.5]	–	–	–	–	–	–
(–4.5, –4.0]	–	9	–	–	–	–
(–4.0, –3.5]	7	–	–	–	–	–
(–3.5, –3.0]	9	11	–	–	–	–
(–3.0, –2.5]	6	31	–	–	–	–
(–2.5, –2.0]	34	43	–	–	–	–
(–2.0, –1.5]	59	67	–	4	–	–
(–1.5, –1.0]	79	51	14	22	–	–
(–1.0, –0.5]	12	8	175	171	–	–
(–0.5, 0.0]	–	1	511	561	–	2
(0.0, 0.5]	–	–	352	410	58	80
(0.5, 1.0]	–	–	48	51	232	229
(1.0, 1.5]	–	–	–	–	102	115
(1.5, 2.0]	–	–	–	–	29	20
(2.0, 2.5]	–	–	–	–	14	9
(2.5, 3.0]	–	–	–	–	7	–
(3.0, 3.5]	–	–	–	–	1	–
(3.5, 4.0]	–	–	–	–	–	–
(4.0, 4.5]	–	–	–	–	–	–
(4.5, 5.0]	–	–	–	–	–	–
(5.0, 5.5]	–	–	–	–	–	–
(5.5, 6.0]	–	–	–	–	–	–

Table 7.A.10 Frequency Distribution of Theta by Pathway for Mathematics, Grade Three

Theta Score	Form ID					
	R1ABE	R2ABE	R1ABM	R2ABM	R1ABH	R2ABH
Incomplete	536	563	–	–	–	–
[–6.0, –6.0]	6	5	–	–	–	–
(–6.0, –5.5]	–	–	–	–	–	–
(–5.5, –5.0]	–	–	–	–	–	–
(–5.0, –4.5]	–	–	–	–	–	–
(–4.5, –4.0]	–	–	–	–	–	–
(–4.0, –3.5]	–	–	–	–	–	–
(–3.5, –3.0]	7	8	–	–	–	–
(–3.0, –2.5]	–	–	–	–	–	–
(–2.5, –2.0]	12	20	–	–	–	–
(–2.0, –1.5]	41	41	–	–	–	–
(–1.5, –1.0]	152	137	–	–	–	–
(–1.0, –0.5]	195	263	29	7	–	–
(–0.5, 0.0]	119	99	440	391	–	–
(0.0, 0.5]	–	1	496	677	6	2
(0.5, 1.0]	–	–	125	214	134	52
(1.0, 1.5]	–	–	1	14	61	48
(1.5, 2.0]	–	–	–	–	35	9
(2.0, 2.5]	–	–	–	–	9	6
(2.5, 3.0]	–	–	–	–	7	2
(3.0, 3.5]	–	–	–	–	3	1
(3.5, 4.0]	–	–	–	–	–	–
(4.0, 4.5]	–	–	–	–	3	–
(4.5, 5.0]	–	–	–	–	–	–
(5.0, 5.5]	–	–	–	–	–	–
(5.5, 6.0]	–	–	–	–	1	–

Table 7.A.11 Frequency Distribution of Theta by Pathway for Mathematics, Grade Four

Theta Score	Form ID					
	R1ABE	R2ABE	R1ABM	R2ABM	R1ABH	R2ABH
Incomplete	508	486	–	–	–	–
[–6.0, –6.0]	6	7	–	–	–	–
(–6.0, –5.5]	–	–	–	–	–	–
(–5.5, –5.0]	–	–	–	–	–	–
(–5.0, –4.5]	–	–	–	–	–	–
(–4.5, –4.0]	–	–	–	–	–	–
(–4.0, –3.5]	–	–	–	–	–	–
(–3.5, –3.0]	13	9	–	–	–	–
(–3.0, –2.5]	24	25	–	–	–	–
(–2.5, –2.0]	20	32	–	–	–	–
(–2.0, –1.5]	62	58	–	–	–	–
(–1.5, –1.0]	173	157	–	–	–	–
(–1.0, –0.5]	144	175	32	28	–	–
(–0.5, 0.0]	33	34	486	542	–	–
(0.0, 0.5]	–	–	762	717	4	1
(0.5, 1.0]	–	–	175	240	92	43
(1.0, 1.5]	–	–	2	7	56	67
(1.5, 2.0]	–	–	–	–	15	20
(2.0, 2.5]	–	–	–	–	1	10
(2.5, 3.0]	–	–	–	–	2	10
(3.0, 3.5]	–	–	–	–	1	2
(3.5, 4.0]	–	–	–	–	–	–
(4.0, 4.5]	–	–	–	–	–	1
(4.5, 5.0]	–	–	–	–	–	–
(5.0, 5.5]	–	–	–	–	–	–
(5.5, 6.0]	–	–	–	–	–	1

Table 7.A.12 Frequency Distribution of Theta by Pathway for Mathematics, Grade Five

Theta Score	Form ID					
	R1ABE	R2ABE	R1ABM	R2ABM	R1ABH	R2ABH
Incomplete	479	552	–	–	–	–
[–6.0, –6.0]	2	3	–	–	–	–
(–6.0, –5.5]	–	–	–	–	–	–
(–5.5, –5.0]	–	–	–	–	–	–
(–5.0, –4.5]	–	–	–	–	–	–
(–4.5, –4.0]	–	–	–	–	–	–
(–4.0, –3.5]	–	–	–	–	–	–
(–3.5, –3.0]	7	8	–	–	–	–
(–3.0, –2.5]	9	15	–	–	–	–
(–2.5, –2.0]	29	18	–	–	–	–
(–2.0, –1.5]	44	48	–	–	–	–
(–1.5, –1.0]	62	141	–	–	–	–
(–1.0, –0.5]	42	93	231	108	–	–
(–0.5, 0.0]	1	14	600	618	–	–
(0.0, 0.5]	–	–	521	714	22	4
(0.5, 1.0]	–	–	68	213	175	74
(1.0, 1.5]	–	–	–	1	48	63
(1.5, 2.0]	–	–	–	–	22	13
(2.0, 2.5]	–	–	–	–	8	9
(2.5, 3.0]	–	–	–	–	1	7
(3.0, 3.5]	–	–	–	–	1	2
(3.5, 4.0]	–	–	–	–	–	–
(4.0, 4.5]	–	–	–	–	1	5
(4.5, 5.0]	–	–	–	–	–	–
(5.0, 5.5]	–	–	–	–	–	–
(5.5, 6.0]	–	–	–	–	1	1

Table 7.A.13 Frequency Distribution of Theta by Pathway for Mathematics, Grade Six

Theta Score	Form ID					
	R1ABE	R2ABE	R1ABM	R2ABM	R1ABH	R2ABH
Incomplete	477	526	–	–	–	–
[–6.0, –6.0]	7	4	–	–	–	–
(–6.0, –5.5]	–	–	–	–	–	–
(–5.5, –5.0]	–	–	–	–	–	–
(–5.0, –4.5]	–	–	–	–	–	–
(–4.5, –4.0]	–	–	–	–	–	–
(–4.0, –3.5]	–	–	–	–	–	–
(–3.5, –3.0]	–	7	–	–	–	–
(–3.0, –2.5]	11	–	–	–	–	–
(–2.5, –2.0]	16	42	–	–	–	–
(–2.0, –1.5]	25	38	–	–	–	–
(–1.5, –1.0]	186	226	–	–	–	–
(–1.0, –0.5]	436	278	–	9	–	–
(–0.5, 0.0]	169	60	286	346	–	–
(0.0, 0.5]	8	–	612	695	–	1
(0.5, 1.0]	–	–	187	157	31	71
(1.0, 1.5]	–	–	6	7	58	50
(1.5, 2.0]	–	–	–	–	24	39
(2.0, 2.5]	–	–	–	–	4	10
(2.5, 3.0]	–	–	–	–	1	3
(3.0, 3.5]	–	–	–	–	1	3
(3.5, 4.0]	–	–	–	–	–	4
(4.0, 4.5]	–	–	–	–	–	–
(4.5, 5.0]	–	–	–	–	–	–
(5.0, 5.5]	–	–	–	–	–	–
(5.5, 6.0]	–	–	–	–	–	2

Table 7.A.14 Frequency Distribution of Theta by Pathway for Mathematics, Grade Seven

Theta Score	Form ID					
	R1ABE	R2ABE	R1ABM	R2ABM	R1ABH	R2ABH
Incomplete	534	507	–	–	–	–
[–6.0, –6.0]	11	2	–	–	–	–
(–6.0, –5.5]	–	–	–	–	–	–
(–5.5, –5.0]	–	–	–	–	–	–
(–5.0, –4.5]	–	–	–	–	–	–
(–4.5, –4.0]	–	–	–	–	–	–
(–4.0, –3.5]	–	–	–	–	–	–
(–3.5, –3.0]	11	2	–	–	–	–
(–3.0, –2.5]	13	9	–	–	–	–
(–2.5, –2.0]	20	42	–	–	–	–
(–2.0, –1.5]	96	68	–	–	–	–
(–1.5, –1.0]	144	140	–	–	–	–
(–1.0, –0.5]	83	61	36	157	–	–
(–0.5, 0.0]	35	3	612	554	–	–
(0.0, 0.5]	1	–	651	544	–	8
(0.5, 1.0]	–	–	156	98	78	173
(1.0, 1.5]	–	–	–	–	78	83
(1.5, 2.0]	–	–	–	–	21	31
(2.0, 2.5]	–	–	–	–	25	14
(2.5, 3.0]	–	–	–	–	4	7
(3.0, 3.5]	–	–	–	–	1	2
(3.5, 4.0]	–	–	–	–	1	–
(4.0, 4.5]	–	–	–	–	–	–
(4.5, 5.0]	–	–	–	–	–	–
(5.0, 5.5]	–	–	–	–	–	–
(5.5, 6.0]	–	–	–	–	1	–

Table 7.A.15 Frequency Distribution of Theta by Pathway for Mathematics, Grade Eight

Theta Score	Form ID					
	R1ABE	R2ABE	R1ABM	R2ABM	R1ABH	R2ABH
Incomplete	479	487	–	–	–	–
[–6.0, –6.0]	9	7	–	–	–	–
(–6.0, –5.5]	–	–	–	–	–	–
(–5.5, –5.0]	–	–	–	–	–	–
(–5.0, –4.5]	–	–	–	–	–	–
(–4.5, –4.0]	–	–	–	–	–	–
(–4.0, –3.5]	–	–	–	–	–	–
(–3.5, –3.0]	8	9	–	–	–	–
(–3.0, –2.5]	15	–	–	–	–	–
(–2.5, –2.0]	18	37	–	–	–	–
(–2.0, –1.5]	99	98	–	–	–	–
(–1.5, –1.0]	186	134	–	–	–	–
(–1.0, –0.5]	94	130	39	7	–	–
(–0.5, 0.0]	25	62	489	475	–	–
(0.0, 0.5]	–	1	538	585	–	–
(0.5, 1.0]	–	–	278	191	40	21
(1.0, 1.5]	–	–	22	13	70	39
(1.5, 2.0]	–	–	–	–	25	16
(2.0, 2.5]	–	–	–	–	4	3
(2.5, 3.0]	–	–	–	–	2	–
(3.0, 3.5]	–	–	–	–	1	1
(3.5, 4.0]	–	–	–	–	–	–
(4.0, 4.5]	–	–	–	–	–	–
(4.5, 5.0]	–	–	–	–	–	–
(5.0, 5.5]	–	–	–	–	–	–
(5.5, 6.0]	–	–	–	–	–	–

Table 7.A.16 Frequency Distribution of Theta by Pathway for Mathematics, Grade Eleven

Theta Score	Form ID					
	R1ABE	R2ABE	R1ABM	R2ABM	R1ABH	R2ABH
Incomplete	307	388	–	–	–	–
[–6.0, –6.0]	10	11	–	–	–	–
(–6.0, –5.5]	–	–	–	–	–	–
(–5.5, –5.0]	–	–	–	–	–	–
(–5.0, –4.5]	–	–	–	–	–	–
(–4.5, –4.0]	–	–	–	–	–	–
(–4.0, –3.5]	–	–	–	–	–	–
(–3.5, –3.0]	8	9	–	–	–	–
(–3.0, –2.5]	11	22	–	–	–	–
(–2.5, –2.0]	18	25	–	–	–	–
(–2.0, –1.5]	65	66	–	–	–	–
(–1.5, –1.0]	150	130	–	–	–	–
(–1.0, –0.5]	70	101	71	47	–	–
(–0.5, 0.0]	4	11	498	522	–	–
(0.0, 0.5]	–	–	490	585	13	1
(0.5, 1.0]	–	–	88	177	91	49
(1.0, 1.5]	–	–	–	5	90	54
(1.5, 2.0]	–	–	–	–	25	8
(2.0, 2.5]	–	–	–	–	16	11
(2.5, 3.0]	–	–	–	–	6	2
(3.0, 3.5]	–	–	–	–	5	5
(3.5, 4.0]	–	–	–	–	1	1
(4.0, 4.5]	–	–	–	–	–	–
(4.5, 5.0]	–	–	–	–	–	–
(5.0, 5.5]	–	–	–	–	–	–
(5.5, 6.0]	–	–	–	–	–	1

Appendix 7.B: Raw-Score-to-Scale-Score Distribution

Notes:

- An incomplete test was assigned either the lowest obtainable scale score (LOSS) or lowest scale score +1 (LOSS+1).
- When a student was logged on to the test delivery system but did not answer any item, LOSS was assigned as 300 for grade three, 400 for grade four, . . . , 900 for grade 11.
- When a student was logged on and answered fewer than four items, LOSS+1 was assigned, such as 301 for grade three, 401 for grade four, . . . , 901 for grade eleven.
- For those incomplete test cases, raw scores were overwritten as zero and theta scores were not estimated.
- Percentages in these tables may not sum up to 100 due to rounding.
- In Table 7.B.1 through Table 7.B.42, the pathway indicates the set of modules a given student received:

Pathway	Combination of Modules	Form ID
Easy	Stage 1 (as router) and Stage 2 Easy Module	R1A0E,R1ABE, R2A0E, R2ABE
Moderate	Stage 1 (as router) and Stage 2 Moderate Module	R1ABM, R2ABM
Hard	Stage 1 (as router) and Stage 2 Hard Module	R1ABH, R2ABH

Table 7.B.1 Raw-Score-to-Scale-Score Distribution for ELA, Grade Three—Easy Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
–	–	300	384	55%	–	300	394	58%
–	–	301	76	11%	–	301	95	14%
0	–6.000	303	2	0%	–6.000	303	–	–
1	–4.400	303	6	1%	–4.720	303	11	2%
2	–3.651	303	10	1%	–3.947	303	14	2%
3	–3.193	303	13	2%	–3.466	303	17	3%
4	–2.856	305	16	2%	–3.105	303	15	2%
5	–2.585	309	22	3%	–2.813	306	14	2%
6	–2.358	313	26	4%	–2.565	310	21	3%
7	–2.159	316	20	3%	–2.348	313	16	2%
8	–1.983	318	27	4%	–2.153	316	17	3%
9	–1.822	321	15	2%	–1.975	318	19	3%
10	–1.674	323	26	4%	–1.811	321	10	1%
11	–1.535	325	14	2%	–1.656	323	8	1%
12	–1.404	327	17	2%	–1.509	325	10	1%
13	–1.278	329	11	2%	–1.367	327	9	1%
14	–1.157	331	10	1%	–1.230	330	4	1%
15	–1.040	332	3	0%	–1.096	332	4	1%
16	–0.925	334	–	–	–0.965	334	1	0%
17	–0.812	336	–	–	–0.835	335	–	–
18	–0.701	337	–	–	–0.707	337	–	–
19	–0.590	339	–	–	–0.580	339	–	–

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
20	-0.479	341	-	-	-0.453	341	-	-
21	-0.368	342	1	0%	-0.327	343	1	0%
22	-0.255	344	-	-	-0.200	345	-	-
23	-0.140	346	-	-	-0.073	347	-	-
24	-0.023	348	-	-	0.055	349	-	-
25	0.098	349	-	-	0.186	351	-	-
26	0.223	351	-	-	0.321	353	-	-
27	0.354	353	-	-	0.460	355	-	-
28	0.492	355	-	-	0.605	357	-	-
29	0.639	358	-	-	0.758	359	-	-
30	0.797	360	-	-	0.921	362	-	-
31	0.971	363	-	-	1.098	364	-	-
32	1.164	365	-	-	1.295	367	-	-
33	1.384	369	-	-	1.518	371	-	-
34	1.645	373	-	-	1.781	375	-	-
35	1.971	378	-	-	2.108	380	-	-
36	2.416	384	-	-	2.553	386	-	-
37	3.151	395	-	-	3.286	397	-	-
38	6.000	399	-	-	6.000	399	-	-

Table 7.B.2 Raw-Score-to-Scale-Score Distribution for ELA, Grade Three—Moderate Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
0	-6.000	303	—	—	-6.000	303	—	—
1	-4.248	303	—	—	-4.609	303	—	—
2	-3.485	303	—	—	-3.819	303	—	—
3	-3.012	303	—	—	-3.319	303	—	—
4	-2.660	308	—	—	-2.941	304	—	—
5	-2.376	312	—	—	-2.630	309	—	—
6	-2.136	316	—	—	-2.363	313	—	—
7	-1.927	319	—	—	-2.128	316	—	—
8	-1.741	322	—	—	-1.917	319	—	—
9	-1.574	324	5	1%	-1.724	322	9	1%
10	-1.420	327	19	2%	-1.546	325	9	1%
11	-1.279	329	37	4%	-1.380	327	39	4%
12	-1.146	331	40	5%	-1.225	330	48	5%
13	-1.021	333	57	6%	-1.078	332	59	6%
14	-0.901	334	60	7%	-0.939	334	62	6%
15	-0.786	336	61	7%	-0.805	336	81	8%
16	-0.675	338	81	9%	-0.676	338	86	8%
17	-0.565	340	64	7%	-0.552	340	81	8%
18	-0.458	341	64	7%	-0.430	342	101	9%
19	-0.351	343	93	11%	-0.310	343	80	8%
20	-0.244	344	71	8%	-0.192	345	92	9%
21	-0.136	346	67	8%	-0.074	347	100	9%
22	-0.027	348	55	6%	0.045	349	75	7%
23	0.084	349	50	6%	0.165	350	76	7%
24	0.199	351	43	5%	0.287	352	41	4%
25	0.318	353	11	1%	0.413	354	27	3%
26	0.443	355	6	1%	0.544	356	—	—
27	0.574	357	—	—	0.681	358	—	—
28	0.714	359	—	—	0.826	360	—	—
29	0.866	361	—	—	0.982	363	—	—
30	1.032	363	—	—	1.152	365	—	—
31	1.218	366	—	—	1.341	368	—	—
32	1.431	369	—	—	1.558	371	—	—
33	1.684	373	—	—	1.813	375	—	—
34	2.002	378	—	—	2.133	380	—	—
35	2.438	385	—	—	2.570	387	—	—
36	3.163	395	—	—	3.295	397	—	—
37	6.000	399	—	—	6.000	399	—	—

Table 7.B.3 Raw-Score-to-Scale Score Distribution for ELA, Grade Three—Hard Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
0	-6.000	303	—	—	-6.000	303	—	—
1	-4.262	303	—	—	-4.619	303	—	—
2	-3.500	303	—	—	-3.830	303	—	—
3	-3.029	303	—	—	-3.333	303	—	—
4	-2.679	308	—	—	-2.956	304	—	—
5	-2.397	312	—	—	-2.648	308	—	—
6	-2.158	316	—	—	-2.383	312	—	—
7	-1.951	319	—	—	-2.151	316	—	—
8	-1.767	321	—	—	-1.942	319	—	—
9	-1.601	324	—	—	-1.751	322	—	—
10	-1.449	326	—	—	-1.576	324	—	—
11	-1.309	328	—	—	-1.413	327	—	—
12	-1.178	330	—	—	-1.260	329	—	—
13	-1.055	332	—	—	-1.116	331	—	—
14	-0.937	334	—	—	-0.979	333	—	—
15	-0.825	336	—	—	-0.849	335	—	—
16	-0.716	337	—	—	-0.723	337	—	—
17	-0.609	339	—	—	-0.602	339	—	—
18	-0.505	340	—	—	-0.485	341	—	—
19	-0.403	342	—	—	-0.370	342	—	—
20	-0.301	343	—	—	-0.257	344	—	—
21	-0.199	345	1	0%	-0.145	346	2	0%
22	-0.096	347	1	0%	-0.034	347	5	1%
23	0.007	348	13	2%	0.076	349	11	1%
24	0.112	350	21	3%	0.188	351	15	2%
25	0.219	351	38	5%	0.301	353	48	6%
26	0.329	353	60	7%	0.416	354	50	6%
27	0.444	355	56	7%	0.535	356	56	7%
28	0.563	356	59	7%	0.658	358	77	10%
29	0.688	358	75	9%	0.786	360	81	10%
30	0.820	360	61	7%	0.922	362	53	7%
31	0.962	362	66	8%	1.066	364	72	9%
32	1.116	365	74	9%	1.221	366	55	7%
33	1.284	367	63	8%	1.391	369	66	8%
34	1.473	370	67	8%	1.581	372	50	6%
35	1.689	373	39	5%	1.797	375	56	7%
36	1.946	377	52	6%	2.053	379	34	4%
37	2.265	382	36	4%	2.371	384	29	4%
38	2.701	389	27	3%	2.806	390	20	3%
39	3.422	399	23	3%	3.526	399	16	2%
40	6.000	399	1	0%	6.000	399	4	1%

Table 7.B.4 Raw-Score-to-Scale-Score Distribution for ELA, Grade Four—Easy Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
–	–	400	369	55%	–	400	394	58%
–	–	401	100	15%	–	401	93	14%
0	–6.000	403	2	0%	–6.000	403	1	0%
1	–4.205	403	4	1%	–4.153	403	6	1%
2	–3.446	403	12	2%	–3.388	403	18	3%
3	–2.977	403	10	1%	–2.914	403	10	1%
4	–2.628	406	13	2%	–2.562	407	17	3%
5	–2.347	410	23	3%	–2.280	411	18	3%
6	–2.109	413	27	4%	–2.042	414	21	3%
7	–1.902	416	35	5%	–1.836	417	23	3%
8	–1.718	419	26	4%	–1.654	420	20	3%
9	–1.553	422	20	3%	–1.490	423	28	4%
10	–1.401	424	10	1%	–1.340	425	8	1%
11	–1.260	426	8	1%	–1.202	427	4	1%
12	–1.129	428	4	1%	–1.073	429	7	1%
13	–1.005	430	5	1%	–0.952	431	2	0%
14	–0.888	432	4	1%	–0.836	432	4	1%
15	–0.775	433	1	0%	–0.725	434	–	–
16	–0.665	435	–	–	–0.617	436	–	–
17	–0.559	437	–	–	–0.512	437	1	0%
18	–0.455	438	–	–	–0.409	439	–	–
19	–0.352	440	–	–	–0.306	440	–	–
20	–0.250	441	–	–	–0.204	442	–	–
21	–0.149	443	–	–	–0.102	443	–	–
22	–0.047	444	–	–	0.001	445	–	–
23	0.056	446	–	–	0.106	447	–	–
24	0.161	447	–	–	0.214	448	–	–
25	0.268	449	–	–	0.325	450	–	–
26	0.378	451	–	–	0.439	452	–	–
27	0.493	452	–	–	0.559	453	–	–
28	0.612	454	–	–	0.686	455	–	–
29	0.739	456	–	–	0.820	457	–	–
30	0.874	458	–	–	0.964	459	–	–
31	1.021	460	–	–	1.120	462	–	–
32	1.184	463	–	–	1.292	464	–	–
33	1.366	465	–	–	1.485	467	–	–
34	1.578	469	–	–	1.707	471	–	–
35	1.831	472	–	–	1.970	475	–	–
36	2.151	477	–	–	2.297	479	–	–
37	2.590	484	–	–	2.743	486	–	–
38	3.319	495	–	–	3.477	497	–	–
39	6.000	499	–	–	6.000	499	–	–

Table 7.B.5 Raw-Score-to-Scale-Score Distribution for ELA, Grade Four—Moderate Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
0	-6.000	403	—	—	-6.000	403	—	—
1	-4.262	403	—	—	-4.212	403	—	—
2	-3.496	403	—	—	-3.440	403	—	—
3	-3.019	403	—	—	-2.957	403	—	—
4	-2.662	405	—	—	-2.596	406	—	—
5	-2.372	409	—	—	-2.303	410	—	—
6	-2.125	413	—	—	-2.056	414	—	—
7	-1.910	416	—	—	-1.840	417	—	—
8	-1.718	419	—	—	-1.650	420	—	—
9	-1.544	422	7	1%	-1.478	423	3	0%
10	-1.386	424	8	1%	-1.322	425	5	0%
11	-1.239	426	21	2%	-1.178	427	17	1%
12	-1.102	428	33	3%	-1.044	429	31	2%
13	-0.973	430	60	5%	-0.918	431	34	3%
14	-0.851	432	61	5%	-0.797	433	59	5%
15	-0.734	434	78	7%	-0.682	435	82	6%
16	-0.621	436	101	9%	-0.571	436	108	8%
17	-0.511	437	98	8%	-0.462	438	119	9%
18	-0.403	439	102	9%	-0.355	440	129	10%
19	-0.296	441	100	9%	-0.249	441	116	9%
20	-0.191	442	91	8%	-0.143	443	120	9%
21	-0.085	444	86	7%	-0.036	444	112	9%
22	0.021	445	97	8%	0.072	446	123	10%
23	0.128	447	89	8%	0.182	448	87	7%
24	0.238	449	65	6%	0.295	449	65	5%
25	0.350	450	42	4%	0.412	451	57	4%
26	0.467	452	15	1%	0.534	453	17	1%
27	0.588	454	6	1%	0.662	455	5	0%
28	0.717	456	—	—	0.798	457	—	—
29	0.854	458	—	—	0.944	459	—	—
30	1.003	460	—	—	1.103	462	—	—
31	1.167	463	—	—	1.277	464	—	—
32	1.352	465	—	—	1.472	467	—	—
33	1.565	468	—	—	1.696	470	—	—
34	1.821	472	—	—	1.961	474	—	—
35	2.143	477	—	—	2.291	479	—	—
36	2.585	484	—	—	2.740	486	—	—
37	3.317	495	—	—	3.476	497	—	—
38	6.000	499	—	—	6.000	499	—	—

Table 7.B.6 Raw-Score-to-Scale-Score Distribution for ELA, Grade Four—Hard Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
0	-6.000	403	—	—	-6.000	403	—	—
1	-4.104	403	—	—	-4.046	403	—	—
2	-3.334	403	—	—	-3.268	403	—	—
3	-2.854	403	—	—	-2.782	403	—	—
4	-2.496	408	—	—	-2.421	409	—	—
5	-2.206	412	—	—	-2.130	413	—	—
6	-1.962	416	—	—	-1.887	417	—	—
7	-1.750	419	—	—	-1.676	420	—	—
8	-1.562	422	—	—	-1.491	423	—	—
9	-1.392	424	—	—	-1.325	425	—	—
10	-1.238	426	—	—	-1.174	427	—	—
11	-1.096	429	—	—	-1.035	429	—	—
12	-0.963	431	—	—	-0.905	431	—	—
13	-0.838	432	—	—	-0.783	433	—	—
14	-0.718	434	—	—	-0.666	435	—	—
15	-0.604	436	—	—	-0.554	437	—	—
16	-0.494	438	—	—	-0.445	438	—	—
17	-0.386	439	—	—	-0.339	440	—	—
18	-0.281	441	—	—	-0.234	441	—	—
19	-0.177	442	—	—	-0.130	443	—	—
20	-0.074	444	3	0%	-0.027	445	4	1%
21	0.028	445	9	1%	0.077	446	7	1%
22	0.131	447	18	2%	0.181	448	20	3%
23	0.234	449	27	4%	0.287	449	31	4%
24	0.339	450	38	5%	0.395	451	47	7%
25	0.445	452	91	12%	0.505	453	55	8%
26	0.555	453	71	9%	0.620	454	77	11%
27	0.668	455	76	10%	0.738	456	75	11%
28	0.787	457	75	10%	0.862	458	81	12%
29	0.912	459	63	8%	0.994	460	75	11%
30	1.045	461	66	9%	1.134	462	54	8%
31	1.190	463	45	6%	1.286	464	53	8%
32	1.350	465	47	6%	1.452	467	37	5%
33	1.529	468	39	5%	1.639	470	32	5%
34	1.737	471	34	4%	1.854	473	18	3%
35	1.986	475	30	4%	2.110	477	9	1%
36	2.300	480	18	2%	2.431	481	11	2%
37	2.734	486	5	1%	2.870	488	10	1%
38	3.458	497	10	1%	3.598	499	5	1%
39	6.000	499	2	0%	6.000	499	2	0%

Table 7.B.7 Raw-Score-to-Scale-Score Distribution for ELA, Grade Five—Easy Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
–	–	500	339	51%	–	500	390	52%
–	–	501	73	11%	–	501	77	10%
0	–6.000	503	–	–	–6.000	503	4	1%
1	–4.158	503	3	0%	–4.036	503	10	1%
2	–3.401	503	2	0%	–3.275	503	7	1%
3	–2.934	503	5	1%	–2.810	503	6	1%
4	–2.586	506	12	2%	–2.468	508	14	2%
5	–2.305	510	23	3%	–2.194	512	12	2%
6	–2.067	514	16	2%	–1.965	516	33	4%
7	–1.858	517	24	4%	–1.767	518	27	4%
8	–1.672	520	29	4%	–1.590	521	37	5%
9	–1.503	522	24	4%	–1.431	524	29	4%
10	–1.348	525	18	3%	–1.284	526	26	3%
11	–1.204	527	19	3%	–1.148	528	19	3%
12	–1.069	529	20	3%	–1.020	530	18	2%
13	–0.942	531	24	4%	–0.899	532	14	2%
14	–0.820	533	18	3%	–0.783	533	17	2%
15	–0.703	534	5	1%	–0.671	535	9	1%
16	–0.590	536	3	0%	–0.563	537	2	0%
17	–0.481	538	3	0%	–0.457	538	3	0%
18	–0.373	539	–	–	–0.352	540	1	0%
19	–0.266	541	1	0%	–0.248	541	–	–
20	–0.161	543	–	–	–0.145	543	–	–
21	–0.055	544	–	–	–0.041	544	–	–
22	0.052	546	–	–	0.064	546	–	–
23	0.161	547	–	–	0.170	548	–	–
24	0.271	549	–	–	0.280	549	–	–
25	0.386	551	–	–	0.393	551	–	–
26	0.504	553	–	–	0.510	553	–	–
27	0.628	554	–	–	0.633	554	–	–
28	0.758	556	–	–	0.763	556	–	–
29	0.898	558	–	–	0.901	559	–	–
30	1.048	561	–	–	1.051	561	–	–
31	1.212	563	–	–	1.215	563	–	–
32	1.396	566	–	–	1.398	566	–	–
33	1.605	569	–	–	1.607	569	–	–
34	1.854	573	–	–	1.856	573	–	–
35	2.166	577	–	–	2.167	578	–	–
36	2.594	584	–	–	2.594	584	–	–
37	3.307	595	–	–	3.307	595	–	–
38	6.000	599	–	–	6.000	599	–	–

Table 7.B.8 Raw-Score-to-Scale-Score Distribution for ELA, Grade Five—Moderate Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
0	-6.000	503	—	—	-6.000	503	—	—
1	-4.367	503	—	—	-4.266	503	—	—
2	-3.592	503	—	—	-3.481	503	—	—
3	-3.104	503	—	—	-2.987	503	—	—
4	-2.734	504	—	—	-2.616	506	—	—
5	-2.430	509	—	—	-2.314	510	—	—
6	-2.169	512	—	—	-2.058	514	—	—
7	-1.938	516	—	—	-1.836	517	—	—
8	-1.730	519	—	—	-1.638	520	—	—
9	-1.542	522	7	1%	-1.460	523	5	0%
10	-1.369	524	4	0%	-1.297	526	4	0%
11	-1.209	527	7	1%	-1.147	528	5	0%
12	-1.060	529	17	1%	-1.007	530	15	1%
13	-0.921	531	37	3%	-0.876	532	26	2%
14	-0.789	533	49	4%	-0.751	534	58	4%
15	-0.664	535	80	7%	-0.632	536	79	6%
16	-0.545	537	64	6%	-0.517	537	70	5%
17	-0.429	539	103	9%	-0.405	539	127	9%
18	-0.316	540	121	10%	-0.296	541	130	9%
19	-0.206	542	98	8%	-0.189	542	137	10%
20	-0.097	544	92	8%	-0.082	544	145	10%
21	0.012	545	123	11%	0.025	545	138	10%
22	0.122	547	115	10%	0.132	547	136	10%
23	0.233	548	87	7%	0.242	549	119	9%
24	0.346	550	79	7%	0.353	550	95	7%
25	0.462	552	50	4%	0.468	552	60	4%
26	0.583	554	23	2%	0.588	554	39	3%
27	0.708	556	6	1%	0.713	556	9	1%
28	0.841	558	1	0%	0.845	558	—	—
29	0.982	560	—	—	0.985	560	—	—
30	1.134	562	—	—	1.137	562	—	—
31	1.301	565	—	—	1.303	565	—	—
32	1.486	567	—	—	1.488	567	—	—
33	1.699	570	—	—	1.700	571	—	—
34	1.950	574	—	—	1.951	574	—	—
35	2.265	579	—	—	2.266	579	—	—
36	2.696	585	—	—	2.696	585	—	—
37	3.414	596	—	—	3.414	596	—	—
38	6.000	599	—	—	6.000	599	—	—

Table 7.B.9 Raw-Score-to-Scale-Score Distribution for ELA, Grade Five—Hard Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
0	-6.000	503	—	—	-6.000	503	—	—
1	-4.028	503	—	—	-3.886	503	—	—
2	-3.253	503	—	—	-3.106	503	—	—
3	-2.769	503	—	—	-2.624	506	—	—
4	-2.404	509	—	—	-2.268	511	—	—
5	-2.107	513	—	—	-1.983	515	—	—
6	-1.854	517	—	—	-1.744	519	—	—
7	-1.632	521	—	—	-1.536	522	—	—
8	-1.435	523	—	—	-1.353	525	—	—
9	-1.256	526	—	—	-1.187	527	—	—
10	-1.093	529	—	—	-1.035	529	—	—
11	-0.943	531	—	—	-0.894	532	—	—
12	-0.804	533	—	—	-0.763	534	—	—
13	-0.673	535	—	—	-0.639	535	—	—
14	-0.549	537	—	—	-0.521	537	—	—
15	-0.431	539	—	—	-0.407	539	—	—
16	-0.318	540	—	—	-0.298	541	—	—
17	-0.208	542	—	—	-0.191	542	—	—
18	-0.100	544	—	—	-0.086	544	—	—
19	0.007	545	1	0%	0.019	545	1	0%
20	0.113	547	1	0%	0.123	547	1	0%
21	0.219	548	6	1%	0.227	548	9	2%
22	0.326	550	16	3%	0.334	550	20	4%
23	0.436	552	33	6%	0.442	552	42	7%
24	0.549	553	57	10%	0.554	553	45	8%
25	0.666	555	64	11%	0.671	555	76	14%
26	0.789	557	75	13%	0.792	557	92	16%
27	0.918	559	81	14%	0.922	559	67	12%
28	1.057	561	79	14%	1.060	561	59	10%
29	1.207	563	45	8%	1.210	563	43	8%
30	1.372	566	37	7%	1.375	566	29	5%
31	1.558	568	24	4%	1.560	568	27	5%
32	1.772	572	18	3%	1.773	572	23	4%
33	2.027	575	13	2%	2.028	575	11	2%
34	2.347	580	6	1%	2.348	580	9	2%
35	2.788	587	1	0%	2.788	587	5	1%
36	3.519	598	2	0%	3.519	598	4	1%
37	6.000	599	—	—	6.000	599	—	—

Table 7.B.10 Raw-Score-to-Scale-Score Distribution for ELA, Grade Six—Easy Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
–	–	600	324	55%	–	600	358	48%
–	–	601	91	15%	–	601	100	13%
0	–6.000	603	3	1%	–6.000	603	7	1%
1	–4.110	603	4	1%	–3.713	603	7	1%
2	–3.374	603	7	1%	–3.012	607	11	1%
3	–2.930	608	12	2%	–2.600	613	10	1%
4	–2.608	612	18	3%	–2.304	616	10	1%
5	–2.354	616	17	3%	–2.072	619	23	3%
6	–2.142	618	18	3%	–1.878	622	24	3%
7	–1.960	621	18	3%	–1.709	624	21	3%
8	–1.798	623	19	3%	–1.559	626	36	5%
9	–1.652	624	19	3%	–1.421	627	35	5%
10	–1.517	626	9	2%	–1.293	629	24	3%
11	–1.390	628	13	2%	–1.172	630	24	3%
12	–1.270	629	9	2%	–1.057	632	13	2%
13	–1.155	631	6	1%	–0.945	633	18	2%
14	–1.044	632	2	0%	–0.837	635	15	2%
15	–0.935	633	1	0%	–0.730	636	8	1%
16	–0.827	635	–	–	–0.625	637	3	0%
17	–0.720	636	–	–	–0.522	638	1	0%
18	–0.612	637	–	–	–0.419	640	2	0%
19	–0.504	639	–	–	–0.316	641	1	0%
20	–0.394	640	–	–	–0.213	642	–	–
21	–0.282	641	–	–	–0.109	644	–	–
22	–0.168	643	–	–	–0.004	645	–	–
23	–0.051	644	–	–	0.102	646	–	–
24	0.070	646	–	–	0.210	648	–	–
25	0.194	647	–	–	0.320	649	–	–
26	0.322	649	–	–	0.434	650	–	–
27	0.456	651	–	–	0.551	652	–	–
28	0.594	652	–	–	0.673	653	–	–
29	0.739	654	–	–	0.800	655	–	–
30	0.891	656	–	–	0.935	657	–	–
31	1.052	658	–	–	1.079	658	–	–
32	1.224	660	–	–	1.235	660	–	–
33	1.410	663	–	–	1.405	663	–	–
34	1.615	665	–	–	1.594	665	–	–
35	1.848	668	–	–	1.812	668	–	–
36	2.120	672	–	–	2.069	671	–	–
37	2.455	676	–	–	2.390	675	–	–
38	2.908	681	–	–	2.828	680	–	–
39	3.647	691	–	–	3.553	689	–	–
40	6.000	699	–	–	6.000	699	–	–

Table 7.B.11 Raw-Score-to-Scale-Score Distribution for ELA, Grade Six—Moderate Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
0	-6.000	603	—	—	-6.000	603	—	—
1	-3.942	603	—	—	-3.468	603	—	—
2	-3.196	605	—	—	-2.773	610	—	—
3	-2.744	611	—	—	-2.364	615	—	—
4	-2.416	615	—	—	-2.070	619	—	—
5	-2.155	618	—	—	-1.836	622	—	—
6	-1.937	621	—	—	-1.638	625	—	—
7	-1.748	623	—	—	-1.464	627	—	—
8	-1.578	625	—	—	-1.307	629	—	—
9	-1.423	627	10	1%	-1.161	630	11	1%
10	-1.279	629	18	1%	-1.025	632	30	2%
11	-1.142	631	27	2%	-0.895	634	47	4%
12	-1.011	632	54	4%	-0.772	635	68	6%
13	-0.884	634	47	4%	-0.653	637	63	5%
14	-0.760	636	51	4%	-0.538	638	93	8%
15	-0.639	637	73	6%	-0.427	640	73	6%
16	-0.519	639	90	7%	-0.318	641	93	8%
17	-0.401	640	82	7%	-0.212	642	93	8%
18	-0.284	641	93	7%	-0.108	644	87	7%
19	-0.167	643	121	10%	-0.005	645	93	8%
20	-0.050	644	114	9%	0.097	646	95	8%
21	0.066	646	133	11%	0.199	647	95	8%
22	0.182	647	102	8%	0.301	649	82	7%
23	0.300	649	92	7%	0.404	650	83	7%
24	0.418	650	65	5%	0.508	651	65	5%
25	0.539	652	44	4%	0.614	653	39	3%
26	0.662	653	24	2%	0.724	654	17	1%
27	0.789	655	8	1%	0.838	655	6	0%
28	0.921	657	3	0%	0.957	657	1	0%
29	1.060	658	—	—	1.083	659	—	—
30	1.207	660	—	—	1.218	660	—	—
31	1.365	662	—	—	1.364	662	—	—
32	1.538	664	—	—	1.524	664	—	—
33	1.730	667	—	—	1.705	666	—	—
34	1.950	669	—	—	1.912	669	—	—
35	2.210	673	—	—	2.160	672	—	—
36	2.535	677	—	—	2.472	676	—	—
37	2.977	682	—	—	2.902	681	—	—
38	3.707	691	—	—	3.619	690	—	—
39	6.000	699	—	—	6.000	699	—	—

Table 7.B.12 Raw-Score-to-Scale-Score Distribution for ELA, Grade Six—Hard Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
0	-6.000	603	—	—	-6.000	603	—	—
1	-4.043	603	—	—	-3.609	603	—	—
2	-3.292	604	—	—	-2.891	609	—	—
3	-2.834	610	—	—	-2.464	614	—	—
4	-2.498	614	—	—	-2.156	618	—	—
5	-2.231	617	—	—	-1.911	621	—	—
6	-2.006	620	—	—	-1.704	624	—	—
7	-1.811	622	—	—	-1.522	626	—	—
8	-1.636	625	—	—	-1.358	628	—	—
9	-1.475	627	—	—	-1.205	630	—	—
10	-1.325	628	—	—	-1.061	632	—	—
11	-1.183	630	—	—	-0.925	633	—	—
12	-1.046	632	—	—	-0.793	635	—	—
13	-0.912	634	—	—	-0.666	637	—	—
14	-0.781	635	—	—	-0.542	638	—	—
15	-0.651	637	—	—	-0.422	640	—	—
16	-0.523	638	—	—	-0.304	641	—	—
17	-0.394	640	—	—	-0.189	643	—	—
18	-0.265	642	—	—	-0.075	644	—	—
19	-0.136	643	—	—	0.037	645	—	—
20	-0.007	645	—	—	0.148	647	—	—
21	0.122	647	4	1%	0.259	648	1	0%
22	0.251	648	13	2%	0.370	650	8	1%
23	0.380	650	33	5%	0.481	651	21	4%
24	0.510	651	59	8%	0.593	652	46	8%
25	0.640	653	143	20%	0.707	654	101	17%
26	0.771	655	113	16%	0.822	655	83	14%
27	0.903	656	82	12%	0.941	657	75	13%
28	1.039	658	65	9%	1.063	658	49	8%
29	1.177	660	62	9%	1.190	660	46	8%
30	1.321	662	38	5%	1.323	662	37	6%
31	1.473	663	28	4%	1.465	663	33	6%
32	1.634	665	26	4%	1.617	665	25	4%
33	1.809	668	22	3%	1.783	667	17	3%
34	2.003	670	6	1%	1.969	670	15	3%
35	2.223	673	4	1%	2.181	672	11	2%
36	2.483	676	2	0%	2.434	675	8	1%
37	2.806	680	1	0%	2.750	679	6	1%
38	3.248	686	—	—	3.184	685	4	1%
39	3.976	695	—	—	3.906	694	3	1%
40	6.000	699	—	—	6.000	699	—	—

Table 7.B.13 Raw-Score-to-Scale-Score Distribution for ELA, Grade Seven—Easy Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
–	–	700	373	40%	–	700	377	45%
–	–	701	117	13%	–	701	91	11%
0	–6.000	703	1	0%	–6.000	703	3	0%
1	–3.944	703	10	1%	–4.265	703	2	0%
2	–3.178	703	18	2%	–3.452	703	15	2%
3	–2.702	704	21	2%	–2.937	703	17	2%
4	–2.348	710	21	2%	–2.548	707	20	2%
5	–2.061	714	21	2%	–2.232	712	21	3%
6	–1.817	718	40	4%	–1.963	716	27	3%
7	–1.605	721	50	5%	–1.728	719	46	6%
8	–1.416	724	53	6%	–1.520	722	42	5%
9	–1.244	726	45	5%	–1.333	725	31	4%
10	–1.087	729	44	5%	–1.162	728	27	3%
11	–0.941	731	32	3%	–1.004	730	35	4%
12	–0.804	733	21	2%	–0.858	732	23	3%
13	–0.674	735	30	3%	–0.720	734	24	3%
14	–0.550	737	22	2%	–0.590	736	16	2%
15	–0.431	739	5	1%	–0.465	738	9	1%
16	–0.315	740	5	1%	–0.345	740	3	0%
17	–0.202	742	1	0%	–0.228	742	2	0%
18	–0.091	744	–	–	–0.114	743	–	–
19	0.020	745	–	–	0.000	745	–	–
20	0.130	747	1	0%	0.112	747	–	–
21	0.242	749	–	–	0.225	748	–	–
22	0.355	750	–	–	0.340	750	–	–
23	0.471	752	–	–	0.457	752	–	–
24	0.590	754	–	–	0.577	754	–	–
25	0.715	756	–	–	0.701	756	–	–
26	0.846	758	–	–	0.832	757	–	–
27	0.985	760	–	–	0.970	760	–	–
28	1.135	762	–	–	1.118	762	–	–
29	1.298	764	–	–	1.279	764	–	–
30	1.478	767	–	–	1.456	767	–	–
31	1.682	770	–	–	1.655	770	–	–
32	1.917	774	–	–	1.883	773	–	–
33	2.197	778	–	–	2.154	777	–	–
34	2.547	783	–	–	2.493	782	–	–
35	3.021	790	–	–	2.952	789	–	–
36	3.791	799	–	–	3.703	799	–	–
37	6.000	799	–	–	6.000	799	–	–

Table 7.B.14 Raw-Score-to-Scale-Score Distribution for ELA, Grade Seven—Moderate Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
0	-6.000	703	—	—	-6.000	703	—	—
1	-4.079	703	—	—	-4.374	703	—	—
2	-3.300	703	—	—	-3.563	703	—	—
3	-2.811	703	—	—	-3.043	703	—	—
4	-2.441	708	—	—	-2.646	705	—	—
5	-2.139	713	—	—	-2.318	710	—	—
6	-1.880	717	—	—	-2.036	714	—	—
7	-1.652	720	—	—	-1.786	718	—	—
8	-1.448	723	—	—	-1.563	722	—	—
9	-1.263	726	3	0%	-1.360	725	5	0%
10	-1.093	729	11	1%	-1.174	727	3	0%
11	-0.935	731	14	1%	-1.003	730	6	0%
12	-0.787	733	30	2%	-0.845	732	27	2%
13	-0.647	735	51	4%	-0.696	735	52	4%
14	-0.514	737	75	6%	-0.556	737	76	6%
15	-0.387	739	98	8%	-0.422	739	98	8%
16	-0.265	741	107	8%	-0.295	741	111	9%
17	-0.145	743	118	9%	-0.171	742	121	9%
18	-0.029	745	140	11%	-0.051	744	134	10%
19	0.086	746	108	8%	0.066	746	132	10%
20	0.201	748	132	10%	0.183	748	124	10%
21	0.315	750	125	10%	0.299	749	105	8%
22	0.431	751	104	8%	0.416	751	96	7%
23	0.549	753	76	6%	0.535	753	75	6%
24	0.671	755	60	5%	0.657	755	62	5%
25	0.797	757	28	2%	0.783	757	40	3%
26	0.929	759	9	1%	0.915	759	19	1%
27	1.069	761	3	0%	1.054	761	—	—
28	1.220	763	—	—	1.203	763	—	—
29	1.383	766	—	—	1.364	765	—	—
30	1.564	768	—	—	1.540	768	—	—
31	1.767	772	—	—	1.739	771	—	—
32	2.000	775	—	—	1.966	774	—	—
33	2.278	779	—	—	2.236	779	—	—
34	2.626	784	—	—	2.572	784	—	—
35	3.096	791	—	—	3.029	790	—	—
36	3.860	799	—	—	3.777	799	—	—
37	6.000	799	—	—	6.000	799	—	—

Table 7.B.15 Raw-Score-to-Scale-Score Distribution for ELA, Grade Seven—Hard Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
0	-6.000	703	—	—	-6.000	703	—	—
1	-3.870	703	—	—	-4.209	703	—	—
2	-3.096	703	—	—	-3.385	703	—	—
3	-2.614	706	—	—	-2.859	703	—	—
4	-2.253	711	—	—	-2.461	708	—	—
5	-1.961	716	—	—	-2.136	713	—	—
6	-1.712	719	—	—	-1.859	717	—	—
7	-1.494	723	—	—	-1.617	721	—	—
8	-1.299	726	—	—	-1.402	724	—	—
9	-1.121	728	—	—	-1.208	727	—	—
10	-0.958	731	—	—	-1.030	730	—	—
11	-0.806	733	—	—	-0.866	732	—	—
12	-0.663	735	—	—	-0.714	734	—	—
13	-0.527	737	—	—	-0.570	736	—	—
14	-0.398	739	—	—	-0.434	738	—	—
15	-0.273	741	—	—	-0.304	740	—	—
16	-0.153	743	—	—	-0.179	742	—	—
17	-0.035	744	—	—	-0.057	744	—	—
18	0.082	746	1	0%	0.062	746	1	0%
19	0.197	748	—	—	0.179	748	1	0%
20	0.312	750	1	0%	0.296	749	1	0%
21	0.428	751	10	3%	0.413	751	5	1%
22	0.546	753	19	5%	0.532	753	17	4%
23	0.666	755	38	10%	0.653	755	34	9%
24	0.791	757	55	14%	0.777	757	61	16%
25	0.920	759	53	13%	0.907	759	58	15%
26	1.056	761	54	14%	1.042	761	51	13%
27	1.201	763	47	12%	1.184	763	34	9%
28	1.355	765	44	11%	1.337	765	39	10%
29	1.523	768	29	7%	1.502	768	16	4%
30	1.707	771	16	4%	1.683	770	24	6%
31	1.914	774	16	4%	1.885	773	19	5%
32	2.151	777	7	2%	2.115	777	13	3%
33	2.430	781	3	1%	2.388	781	5	1%
34	2.777	787	2	1%	2.726	786	2	1%
35	3.245	794	1	0%	3.183	793	5	1%
36	4.003	799	—	—	3.929	799	1	0%
37	6.000	799	—	—	6.000	799	—	—

Table 7.B.16 Raw-Score-to-Scale-Score Distribution for ELA, Grade Eight—Easy Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
–	–	800	367	64%	–	800	393	65%
–	–	801	69	12%	–	801	59	10%
0	–6.000	803	1	0%	–6.000	803	2	0%
1	–4.735	803	1	0%	–4.678	803	3	1%
2	–3.980	803	6	1%	–3.919	803	3	1%
3	–3.511	804	8	1%	–3.448	804	10	2%
4	–3.160	808	7	1%	–3.094	809	4	1%
5	–2.873	812	10	2%	–2.805	812	12	2%
6	–2.627	815	12	2%	–2.557	816	15	2%
7	–2.409	817	9	2%	–2.338	818	17	3%
8	–2.213	820	14	2%	–2.140	821	11	2%
9	–2.033	822	18	3%	–1.959	823	15	2%
10	–1.867	824	11	2%	–1.791	825	19	3%
11	–1.712	826	14	2%	–1.635	827	15	2%
12	–1.567	828	8	1%	–1.488	829	7	1%
13	–1.431	830	8	1%	–1.350	831	7	1%
14	–1.302	831	4	1%	–1.218	832	2	0%
15	–1.180	833	5	1%	–1.093	834	5	1%
16	–1.064	834	1	0%	–0.974	835	1	0%
17	–0.953	836	2	0%	–0.859	837	1	0%
18	–0.847	837	–	–	–0.749	838	–	–
19	–0.744	838	–	–	–0.643	839	1	0%
20	–0.646	839	–	–	–0.539	841	–	–
21	–0.550	841	1	0%	–0.438	842	1	0%
22	–0.456	842	–	–	–0.340	843	–	–
23	–0.364	843	–	–	–0.243	844	–	–
24	–0.274	844	–	–	–0.147	846	–	–
25	–0.185	845	–	–	–0.052	847	–	–
26	–0.096	846	–	–	0.043	848	–	–
27	–0.007	847	–	–	0.138	849	–	–
28	0.083	849	–	–	0.233	850	–	–
29	0.174	850	–	–	0.329	852	–	–
30	0.267	851	–	–	0.426	853	–	–
31	0.361	852	–	–	0.526	854	–	–
32	0.459	853	–	–	0.628	855	–	–
33	0.561	855	–	–	0.734	857	–	–
34	0.667	856	–	–	0.844	858	–	–
35	0.780	857	–	–	0.960	860	–	–
36	0.899	859	–	–	1.082	861	–	–
37	1.028	860	–	–	1.212	863	–	–
38	1.167	862	–	–	1.352	864	–	–
39	1.320	864	–	–	1.505	866	–	–
40	1.491	866	–	–	1.674	868	–	–
41	1.684	869	–	–	1.864	871	–	–
42	1.908	871	–	–	2.083	874	–	–
43	2.175	875	–	–	2.344	877	–	–

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
44	2.509	879	–	–	2.670	881	–	–
45	2.963	885	–	–	3.115	886	–	–
46	3.707	894	–	–	3.848	896	–	–
47	6.000	899	–	–	6.000	899	–	–

Table 7.B.17 Raw-Score-to-Scale-Score Distribution for ELA, Grade Eight—Moderate Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
0	-6.000	803	—	—	-6.000	803	—	—
1	-4.721	803	—	—	-4.662	803	—	—
2	-3.960	803	—	—	-3.897	803	—	—
3	-3.485	804	—	—	-3.418	805	—	—
4	-3.126	808	—	—	-3.056	809	—	—
5	-2.830	812	—	—	-2.757	813	—	—
6	-2.575	815	—	—	-2.499	816	—	—
7	-2.348	818	—	—	-2.270	819	—	—
8	-2.141	821	—	—	-2.061	822	—	—
9	-1.951	823	—	—	-1.868	824	—	—
10	-1.774	825	—	—	-1.689	826	—	—
11	-1.609	827	3	0%	-1.522	828	3	0%
12	-1.455	829	11	1%	-1.364	830	12	1%
13	-1.309	831	17	1%	-1.214	832	17	1%
14	-1.171	833	24	2%	-1.073	834	23	2%
15	-1.041	834	29	2%	-0.938	836	38	3%
16	-0.917	836	53	5%	-0.809	837	53	4%
17	-0.798	838	41	3%	-0.685	839	60	5%
18	-0.685	839	50	4%	-0.566	840	74	6%
19	-0.576	840	56	5%	-0.451	842	111	9%
20	-0.470	842	94	8%	-0.339	843	92	7%
21	-0.367	843	96	8%	-0.231	845	106	8%
22	-0.267	844	103	9%	-0.124	846	105	8%
23	-0.168	845	117	10%	-0.020	847	112	9%
24	-0.070	847	103	9%	0.084	849	103	8%
25	0.028	848	97	8%	0.187	850	117	9%
26	0.126	849	112	10%	0.290	851	96	8%
27	0.224	850	85	7%	0.393	852	58	5%
28	0.325	852	50	4%	0.498	854	52	4%
29	0.427	853	21	2%	0.604	855	30	2%
30	0.533	854	13	1%	0.714	856	11	1%
31	0.644	856	—	—	0.827	858	3	0%
32	0.759	857	—	—	0.945	859	—	—
33	0.882	859	—	—	1.069	861	—	—
34	1.013	860	—	—	1.201	863	—	—
35	1.154	862	—	—	1.343	864	—	—
36	1.309	864	—	—	1.497	866	—	—
37	1.481	866	—	—	1.667	868	—	—
38	1.676	868	—	—	1.858	871	—	—
39	1.900	871	—	—	2.077	873	—	—
40	2.168	875	—	—	2.338	877	—	—
41	2.502	879	—	—	2.664	881	—	—
42	2.956	884	—	—	3.109	886	—	—
43	3.700	894	—	—	3.842	896	—	—
44	6.000	899	—	—	6.000	899	—	—

Table 7.B.18 Raw-Score-to-Scale-Score Distribution for ELA, Grade Eight—Hard Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
0	-6.000	803	—	—	-6.000	803	—	—
1	-4.649	803	—	—	-4.586	803	—	—
2	-3.883	803	—	—	-3.816	803	—	—
3	-3.404	805	—	—	-3.333	806	—	—
4	-3.041	809	—	—	-2.966	810	—	—
5	-2.742	813	—	—	-2.664	814	—	—
6	-2.483	816	—	—	-2.402	817	—	—
7	-2.252	819	—	—	-2.168	820	—	—
8	-2.042	822	—	—	-1.956	823	—	—
9	-1.849	824	—	—	-1.760	826	—	—
10	-1.670	827	—	—	-1.578	828	—	—
11	-1.503	829	—	—	-1.408	830	—	—
12	-1.346	831	—	—	-1.247	832	—	—
13	-1.198	833	—	—	-1.095	834	—	—
14	-1.059	834	—	—	-0.950	836	—	—
15	-0.927	836	—	—	-0.812	837	—	—
16	-0.801	837	—	—	-0.681	839	—	—
17	-0.681	839	—	—	-0.554	841	—	—
18	-0.565	840	—	—	-0.432	842	—	—
19	-0.454	842	—	—	-0.314	844	—	—
20	-0.346	843	—	—	-0.200	845	—	—
21	-0.240	845	—	—	-0.088	846	—	—
22	-0.136	846	—	—	0.022	848	—	—
23	-0.033	847	—	—	0.130	849	—	—
24	0.069	848	1	0%	0.238	850	1	0%
25	0.172	850	15	2%	0.345	852	6	1%
26	0.276	851	32	5%	0.453	853	23	5%
27	0.381	852	71	10%	0.562	855	41	10%
28	0.489	854	93	13%	0.673	856	59	14%
29	0.601	855	87	13%	0.787	857	48	11%
30	0.717	856	86	12%	0.905	859	64	15%
31	0.839	858	72	10%	1.028	860	50	12%
32	0.969	860	66	10%	1.157	862	26	6%
33	1.107	861	47	7%	1.294	864	28	7%
34	1.256	863	36	5%	1.441	866	22	5%
35	1.419	865	28	4%	1.600	868	17	4%
36	1.599	867	30	4%	1.776	870	19	4%
37	1.802	870	17	2%	1.972	872	12	3%
38	2.034	873	7	1%	2.196	875	6	1%
39	2.308	876	2	0%	2.462	878	7	2%
40	2.649	881	3	0%	2.793	882	2	0%
41	3.107	886	1	0%	3.242	888	—	—
42	3.855	896	—	—	3.978	897	—	—
43	6.000	899	—	—	6.000	899	—	—

Table 7.B.19 Raw-Score-to-Scale-Score Distribution for ELA, Grade Eleven—Easy Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
–	–	900	247	50%	–	900	278	49%
–	–	901	36	7%	–	901	64	11%
0	–6.000	903	2	0%	–6.000	903	2	0%
1	–3.988	903	7	1%	–4.201	903	9	2%
2	–3.246	907	9	2%	–3.445	904	11	2%
3	–2.792	913	6	1%	–2.977	910	14	2%
4	–2.457	917	13	3%	–2.629	915	17	3%
5	–2.188	920	21	4%	–2.346	918	16	3%
6	–1.960	923	16	3%	–2.106	921	27	5%
7	–1.761	925	23	5%	–1.895	924	19	3%
8	–1.584	928	20	4%	–1.705	926	25	4%
9	–1.424	930	19	4%	–1.533	928	23	4%
10	–1.276	932	28	6%	–1.374	930	24	4%
11	–1.139	933	15	3%	–1.226	932	16	3%
12	–1.011	935	17	3%	–1.087	934	11	2%
13	–0.889	936	8	2%	–0.956	936	3	1%
14	–0.773	938	3	1%	–0.831	937	1	0%
15	–0.662	939	1	0%	–0.712	939	2	0%
16	–0.554	941	–	–	–0.596	940	2	0%
17	–0.449	942	–	–	–0.485	941	–	–
18	–0.346	943	–	–	–0.377	943	1	0%
19	–0.245	944	–	–	–0.270	944	–	–
20	–0.143	946	–	–	–0.165	945	–	–
21	–0.042	947	–	–	–0.061	947	–	–
22	0.059	948	–	–	0.044	948	–	–
23	0.163	950	–	–	0.148	949	–	–
24	0.268	951	–	–	0.255	951	–	–
25	0.376	952	–	–	0.363	952	–	–
26	0.488	954	–	–	0.475	953	–	–
27	0.604	955	–	–	0.590	955	–	–
28	0.726	957	–	–	0.710	956	–	–
29	0.854	958	–	–	0.837	958	–	–
30	0.991	960	–	–	0.972	960	–	–
31	1.138	962	–	–	1.117	961	–	–
32	1.298	964	–	–	1.274	963	–	–
33	1.475	966	–	–	1.447	966	–	–
34	1.672	968	–	–	1.642	968	–	–
35	1.898	971	–	–	1.867	971	–	–
36	2.165	975	–	–	2.133	974	–	–
37	2.498	979	–	–	2.467	978	–	–
38	2.949	984	–	–	2.920	984	–	–
39	3.688	994	–	–	3.663	993	–	–
40	6.000	999	–	–	6.000	999	–	–

Table 7.B.20 Raw-Score-to-Scale-Score Distribution for ELA, Grade Eleven—Moderate Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
0	-6.000	903	—	—	-6.000	903	—	—
1	-4.191	903	—	—	-4.377	903	—	—
2	-3.418	905	—	—	-3.602	903	—	—
3	-2.937	911	—	—	-3.117	909	—	—
4	-2.578	915	—	—	-2.751	913	—	—
5	-2.287	919	—	—	-2.451	917	—	—
6	-2.040	922	—	—	-2.194	920	—	—
7	-1.825	925	—	—	-1.968	923	—	—
8	-1.633	927	—	—	-1.764	925	—	—
9	-1.460	929	2	0%	-1.578	928	4	0%
10	-1.302	931	1	0%	-1.407	930	6	0%
11	-1.155	933	3	0%	-1.248	932	5	0%
12	-1.018	935	8	1%	-1.100	934	11	1%
13	-0.889	936	19	2%	-0.960	936	14	1%
14	-0.766	938	32	3%	-0.827	937	31	3%
15	-0.649	939	56	5%	-0.701	939	46	4%
16	-0.536	941	68	6%	-0.579	940	80	7%
17	-0.426	942	84	8%	-0.462	942	74	6%
18	-0.318	944	114	10%	-0.348	943	112	9%
19	-0.211	945	90	8%	-0.237	945	110	9%
20	-0.106	946	120	11%	-0.127	946	129	11%
21	0.000	948	103	9%	-0.018	947	136	11%
22	0.107	949	118	11%	0.091	949	124	10%
23	0.216	950	108	10%	0.201	950	117	10%
24	0.327	952	72	7%	0.313	951	102	8%
25	0.441	953	54	5%	0.428	953	67	6%
26	0.560	955	37	3%	0.546	954	36	3%
27	0.684	956	10	1%	0.668	956	13	1%
28	0.814	958	1	0%	0.797	957	2	0%
29	0.953	959	—	—	0.934	959	—	—
30	1.103	961	—	—	1.081	961	—	—
31	1.264	963	—	—	1.240	963	—	—
32	1.442	966	—	—	1.415	965	—	—
33	1.641	968	—	—	1.611	968	—	—
34	1.869	971	—	—	1.837	970	—	—
35	2.138	974	—	—	2.106	974	—	—
36	2.473	978	—	—	2.440	978	—	—
37	2.925	984	—	—	2.895	984	—	—
38	3.666	993	—	—	3.640	993	—	—
39	6.000	999	—	—	6.000	999	—	—

Table 7.B.21 Raw-Score-to-Scale-Score Distribution for ELA, Grade Eleven—Hard Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
0	-6.000	903	—	—	-6.000	903	—	—
1	-3.935	903	—	—	-4.157	903	—	—
2	-3.189	908	—	—	-3.396	905	—	—
3	-2.731	913	—	—	-2.924	911	—	—
4	-2.392	918	—	—	-2.571	915	—	—
5	-2.119	921	—	—	-2.284	919	—	—
6	-1.888	924	—	—	-2.038	922	—	—
7	-1.687	926	—	—	-1.823	925	—	—
8	-1.507	929	—	—	-1.630	927	—	—
9	-1.344	931	—	—	-1.454	929	—	—
10	-1.195	933	—	—	-1.291	931	—	—
11	-1.056	934	—	—	-1.140	933	—	—
12	-0.926	936	—	—	-0.999	935	—	—
13	-0.803	937	—	—	-0.866	937	—	—
14	-0.685	939	—	—	-0.739	938	—	—
15	-0.572	940	—	—	-0.618	940	—	—
16	-0.463	942	—	—	-0.501	941	—	—
17	-0.356	943	—	—	-0.388	943	—	—
18	-0.252	944	—	—	-0.278	944	—	—
19	-0.148	946	—	—	-0.170	945	—	—
20	-0.045	947	—	—	-0.064	947	2	0%
21	0.058	948	—	—	0.042	948	1	0%
22	0.163	950	1	0%	0.148	949	5	1%
23	0.268	951	7	2%	0.255	951	14	3%
24	0.376	952	16	4%	0.364	952	19	4%
25	0.487	954	34	8%	0.474	953	41	9%
26	0.602	955	75	17%	0.588	955	52	11%
27	0.721	957	68	15%	0.706	956	51	11%
28	0.846	958	49	11%	0.830	958	66	15%
29	0.978	960	40	9%	0.959	959	60	13%
30	1.118	961	33	7%	1.097	961	48	11%
31	1.268	963	42	9%	1.245	963	37	8%
32	1.430	965	27	6%	1.405	965	30	7%
33	1.608	968	18	4%	1.582	967	13	3%
34	1.808	970	11	2%	1.780	970	7	2%
35	2.036	973	11	2%	2.007	973	6	1%
36	2.305	976	3	1%	2.276	976	3	1%
37	2.639	980	7	2%	2.611	980	—	—
38	3.091	986	1	0%	3.066	986	—	—
39	3.831	995	—	—	3.810	995	—	—
40	6.000	999	—	—	6.000	999	—	—

Table 7.B.22 Raw-Score-to-Scale-Score Distribution for Mathematics, Grade Three—Easy Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
–	–	300	458	43%	–	300	491	43%
–	–	301	78	7%	–	301	72	6%
0	–6.000	303	6	1%	–6.000	303	5	0%
1	–3.114	303	7	1%	–3.047	303	8	1%
2	–2.405	303	12	1%	–2.338	303	20	2%
3	–1.987	304	18	2%	–1.919	305	19	2%
4	–1.689	310	23	2%	–1.621	311	22	2%
5	–1.456	314	51	5%	–1.387	315	36	3%
6	–1.263	318	41	4%	–1.194	319	46	4%
7	–1.099	321	60	6%	–1.029	322	55	5%
8	–0.953	323	56	5%	–0.883	325	57	5%
9	–0.822	326	55	5%	–0.751	327	80	7%
10	–0.701	328	47	4%	–0.630	329	77	7%
11	–0.589	330	37	3%	–0.516	332	49	4%
12	–0.482	332	41	4%	–0.409	334	33	3%
13	–0.380	334	33	3%	–0.306	336	31	3%
14	–0.281	336	34	3%	–0.207	337	25	2%
15	–0.184	338	7	1%	–0.110	339	10	1%
16	–0.089	340	4	0%	–0.014	341	–	–
17	0.006	341	–	–	0.081	343	1	0%
18	0.102	343	–	–	0.176	345	–	–
19	0.199	345	–	–	0.273	346	–	–
20	0.298	347	–	–	0.372	348	–	–
21	0.401	349	–	–	0.473	350	–	–
22	0.508	351	–	–	0.579	352	–	–
23	0.620	353	–	–	0.690	354	–	–
24	0.741	355	–	–	0.808	356	–	–
25	0.871	358	–	–	0.934	359	–	–
26	1.014	360	–	–	1.073	361	–	–
27	1.172	363	–	–	1.226	364	–	–
28	1.352	367	–	–	1.399	368	–	–
29	1.560	371	–	–	1.599	371	–	–
30	1.807	375	–	–	1.836	376	–	–
31	2.107	381	–	–	2.126	381	–	–
32	2.488	388	–	–	2.495	388	–	–
33	3.006	398	–	–	3.002	398	–	–
34	3.832	399	–	–	3.819	399	–	–
35	6.000	399	–	–	6.000	399	–	–

Table 7.B.23 Raw-Score-to-Scale-Score Distribution for Mathematics, Grade Three—Moderate Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
0	-6.000	303	—	—	-6.000	303	—	—
1	-2.970	303	—	—	-2.892	303	—	—
2	-2.267	303	—	—	-2.190	303	—	—
3	-1.853	307	—	—	-1.777	308	—	—
4	-1.559	312	—	—	-1.482	314	—	—
5	-1.328	316	—	—	-1.252	318	—	—
6	-1.137	320	—	—	-1.060	321	—	—
7	-0.973	323	—	—	-0.896	325	—	—
8	-0.827	326	—	—	-0.750	327	—	—
9	-0.695	328	8	1%	-0.617	330	7	1%
10	-0.573	331	21	2%	-0.495	332	25	2%
11	-0.459	333	48	4%	-0.380	334	49	4%
12	-0.349	335	76	7%	-0.271	336	74	6%
13	-0.244	337	82	8%	-0.165	338	116	9%
14	-0.142	339	112	10%	-0.063	340	127	10%
15	-0.041	341	122	11%	0.037	342	140	11%
16	0.059	342	117	11%	0.137	344	155	12%
17	0.159	344	111	10%	0.236	346	149	11%
18	0.261	346	96	9%	0.336	348	123	9%
19	0.364	348	96	9%	0.438	350	110	8%
20	0.471	350	76	7%	0.543	351	92	7%
21	0.581	352	51	5%	0.651	354	54	4%
22	0.698	354	50	5%	0.764	356	47	4%
23	0.820	357	16	1%	0.883	358	21	2%
24	0.952	359	8	1%	1.010	360	9	1%
25	1.094	362	1	0%	1.147	363	5	0%
26	1.250	365	—	—	1.296	366	—	—
27	1.422	368	—	—	1.461	369	—	—
28	1.614	372	—	—	1.646	372	—	—
29	1.833	376	—	—	1.857	376	—	—
30	2.087	380	—	—	2.103	381	—	—
31	2.389	386	—	—	2.397	386	—	—
32	2.764	393	—	—	2.764	393	—	—
33	3.265	399	—	—	3.259	399	—	—
34	4.063	399	—	—	4.051	399	—	—
35	6.000	399	—	—	6.000	399	—	—

Table 7.B.24 Raw-Score-to-Scale-Score Distribution for Mathematics, Grade Three—Hard Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
0	-6.000	303	—	—	-6.000	303	—	—
1	-2.791	303	—	—	-2.698	303	—	—
2	-2.088	303	—	—	-1.996	304	—	—
3	-1.676	310	—	—	-1.585	312	—	—
4	-1.382	315	—	—	-1.292	317	—	—
5	-1.153	320	—	—	-1.064	321	—	—
6	-0.963	323	—	—	-0.874	325	—	—
7	-0.799	326	—	—	-0.711	328	—	—
8	-0.654	329	—	—	-0.567	331	—	—
9	-0.523	331	—	—	-0.437	333	—	—
10	-0.401	334	—	—	-0.316	335	—	—
11	-0.287	336	—	—	-0.204	337	—	—
12	-0.178	338	—	—	-0.097	339	—	—
13	-0.074	340	—	—	0.006	341	—	—
14	0.028	342	—	—	0.106	343	—	—
15	0.128	344	—	—	0.204	345	—	—
16	0.228	346	—	—	0.302	347	—	—
17	0.327	347	—	—	0.399	349	—	—
18	0.428	349	6	2%	0.497	351	2	2%
19	0.531	351	14	5%	0.597	352	6	5%
20	0.636	353	15	6%	0.699	354	7	6%
21	0.746	355	34	13%	0.805	356	19	16%
22	0.861	357	40	15%	0.916	358	20	17%
23	0.982	360	31	12%	1.034	361	17	14%
24	1.112	362	24	9%	1.160	363	15	13%
25	1.253	365	23	9%	1.295	366	11	9%
26	1.408	368	14	5%	1.444	368	5	4%
27	1.579	371	17	7%	1.609	371	5	4%
28	1.772	375	9	3%	1.796	375	4	3%
29	1.993	379	9	3%	2.010	379	4	3%
30	2.250	383	9	3%	2.261	384	2	2%
31	2.558	389	3	1%	2.562	389	—	—
32	2.940	396	4	2%	2.937	396	2	2%
33	3.448	399	3	1%	3.441	399	1	1%
34	4.251	399	3	1%	4.240	399	—	—
35	6.000	399	1	0%	6.000	399	—	—

Table 7.B.25 Raw-Score-to-Scale-Score Distribution for Mathematics, Grade Four—Easy Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
–	–	400	400	41%	–	400	397	40%
–	–	401	108	11%	–	401	89	9%
0	–6.000	403	6	1%	–6.000	403	7	1%
1	–3.331	403	13	1%	–3.404	403	9	1%
2	–2.607	403	24	2%	–2.671	403	25	3%
3	–2.171	403	20	2%	–2.227	403	32	3%
4	–1.853	407	28	3%	–1.902	406	27	3%
5	–1.601	411	34	3%	–1.642	411	31	3%
6	–1.389	415	51	5%	–1.423	415	41	4%
7	–1.206	419	47	5%	–1.234	418	60	6%
8	–1.044	422	75	8%	–1.065	421	56	6%
9	–0.898	424	50	5%	–0.912	424	43	4%
10	–0.764	427	40	4%	–0.772	427	66	7%
11	–0.639	429	34	3%	–0.642	429	44	4%
12	–0.523	431	20	2%	–0.519	432	22	2%
13	–0.413	434	15	2%	–0.404	434	16	2%
14	–0.308	436	14	1%	–0.293	436	11	1%
15	–0.207	437	4	0%	–0.187	438	6	1%
16	–0.109	439	–	–	–0.084	440	1	0%
17	–0.014	441	–	–	0.017	442	–	–
18	0.079	443	–	–	0.116	443	–	–
19	0.172	445	–	–	0.213	445	–	–
20	0.264	446	–	–	0.310	447	–	–
21	0.356	448	–	–	0.407	449	–	–
22	0.448	450	–	–	0.505	451	–	–
23	0.543	451	–	–	0.604	453	–	–
24	0.639	453	–	–	0.705	455	–	–
25	0.738	455	–	–	0.808	456	–	–
26	0.841	457	–	–	0.916	458	–	–
27	0.948	459	–	–	1.027	461	–	–
28	1.062	461	–	–	1.145	463	–	–
29	1.183	463	–	–	1.270	465	–	–
30	1.314	466	–	–	1.404	468	–	–
31	1.457	469	–	–	1.549	470	–	–
32	1.615	472	–	–	1.710	473	–	–
33	1.794	475	–	–	1.891	477	–	–
34	2.002	479	–	–	2.099	481	–	–
35	2.252	484	–	–	2.347	485	–	–
36	2.566	489	–	–	2.660	491	–	–
37	3.000	498	–	–	3.090	499	–	–
38	3.722	499	–	–	3.808	499	–	–
39	6.000	499	–	–	6.000	499	–	–

Table 7.B.26 Raw-Score-to-Scale-Score Distribution for Mathematics, Grade Four—Moderate Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
0	-6.000	403	—	—	-6.000	403	—	—
1	-3.097	403	—	—	-3.184	403	—	—
2	-2.384	403	—	—	-2.456	403	—	—
3	-1.960	405	—	—	-2.019	403	—	—
4	-1.653	410	—	—	-1.701	409	—	—
5	-1.411	415	—	—	-1.449	414	—	—
6	-1.210	419	—	—	-1.239	418	—	—
7	-1.036	422	—	—	-1.058	421	—	—
8	-0.882	425	—	—	-0.897	424	—	—
9	-0.744	427	8	1%	-0.751	427	9	1%
10	-0.617	430	24	2%	-0.618	430	19	1%
11	-0.499	432	52	4%	-0.494	432	40	3%
12	-0.388	434	63	4%	-0.377	434	88	6%
13	-0.283	436	100	7%	-0.267	436	117	8%
14	-0.182	438	117	8%	-0.160	438	138	9%
15	-0.085	440	154	11%	-0.058	440	159	10%
16	0.010	441	129	9%	0.042	442	183	12%
17	0.102	443	154	11%	0.140	444	173	11%
18	0.194	445	138	9%	0.236	446	151	10%
19	0.285	447	138	9%	0.332	448	108	7%
20	0.376	448	113	8%	0.428	449	102	7%
21	0.467	450	90	6%	0.524	451	90	6%
22	0.560	452	59	4%	0.621	453	62	4%
23	0.655	454	54	4%	0.720	455	42	3%
24	0.752	455	37	3%	0.822	457	33	2%
25	0.853	457	22	2%	0.926	459	13	1%
26	0.958	459	3	0%	1.035	461	5	0%
27	1.068	461	1	0%	1.148	463	1	0%
28	1.185	464	1	0%	1.268	465	1	0%
29	1.309	466	—	—	1.395	467	—	—
30	1.444	468	—	—	1.531	470	—	—
31	1.590	471	—	—	1.679	473	—	—
32	1.753	474	—	—	1.842	476	—	—
33	1.936	478	—	—	2.024	479	—	—
34	2.148	482	—	—	2.235	483	—	—
35	2.400	486	—	—	2.485	488	—	—
36	2.717	492	—	—	2.799	494	—	—
37	3.152	499	—	—	3.231	499	—	—
38	3.874	499	—	—	3.948	499	—	—
39	6.000	499	—	—	6.000	499	—	—

Table 7.B.27 Raw-Score-to-Scale-Score Distribution for Mathematics, Grade Four—Hard Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
0	-6.000	403	—	—	-6.000	403	—	—
1	-3.141	403	—	—	-3.226	403	—	—
2	-2.416	403	—	—	-2.488	403	—	—
3	-1.981	404	—	—	-2.041	403	—	—
4	-1.665	410	—	—	-1.714	409	—	—
5	-1.414	415	—	—	-1.454	414	—	—
6	-1.206	419	—	—	-1.237	418	—	—
7	-1.027	422	—	—	-1.049	422	—	—
8	-0.869	425	—	—	-0.883	425	—	—
9	-0.726	428	—	—	-0.734	428	—	—
10	-0.596	430	—	—	-0.597	430	—	—
11	-0.476	432	—	—	-0.470	432	—	—
12	-0.363	434	—	—	-0.351	435	—	—
13	-0.257	436	—	—	-0.239	437	—	—
14	-0.155	438	—	—	-0.131	439	—	—
15	-0.057	440	—	—	-0.028	441	—	—
16	0.038	442	—	—	0.072	443	—	—
17	0.131	444	—	—	0.170	444	—	—
18	0.223	445	—	—	0.267	446	—	—
19	0.314	447	—	—	0.363	448	—	—
20	0.405	449	2	1%	0.458	450	1	1%
21	0.497	451	2	1%	0.554	452	—	—
22	0.590	452	4	2%	0.651	454	3	2%
23	0.684	454	16	9%	0.750	455	7	5%
24	0.782	456	15	9%	0.851	457	12	8%
25	0.883	458	27	16%	0.956	459	21	14%
26	0.988	460	30	18%	1.065	461	12	8%
27	1.099	462	23	13%	1.179	463	19	12%
28	1.216	464	11	6%	1.300	466	19	12%
29	1.343	466	16	9%	1.428	468	17	11%
30	1.480	469	6	4%	1.567	471	6	4%
31	1.630	472	6	4%	1.719	474	10	6%
32	1.798	475	6	4%	1.887	477	4	3%
33	1.988	479	3	2%	2.076	480	6	4%
34	2.209	483	1	1%	2.295	484	4	3%
35	2.474	488	—	—	2.557	489	4	3%
36	2.807	494	2	1%	2.886	495	6	4%
37	3.263	499	1	1%	3.336	499	2	1%
38	4.012	499	—	—	4.079	499	1	1%
39	6.000	499	—	—	6.000	499	1	1%

Table 7.B.28 Raw-Score-to-Scale-Score Distribution for Mathematics, Grade Five—Easy Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
–	–	500	419	62%	–	500	479	54%
–	–	501	60	9%	–	501	73	8%
0	–6.000	503	2	0%	–6.000	503	3	0%
1	–3.496	503	7	1%	–3.356	503	8	1%
2	–2.777	503	9	1%	–2.624	503	15	2%
3	–2.344	503	17	3%	–2.181	503	18	2%
4	–2.029	503	12	2%	–1.858	506	16	2%
5	–1.778	508	18	3%	–1.600	511	32	4%
6	–1.567	512	26	4%	–1.384	515	50	6%
7	–1.384	515	28	4%	–1.197	519	45	5%
8	–1.221	518	24	4%	–1.031	522	46	5%
9	–1.073	521	10	1%	–0.882	525	24	3%
10	–0.937	524	12	2%	–0.745	527	38	4%
11	–0.811	526	11	2%	–0.618	530	19	2%
12	–0.691	528	13	2%	–0.500	532	12	1%
13	–0.578	530	6	1%	–0.388	534	5	1%
14	–0.469	533	1	0%	–0.282	536	5	1%
15	–0.364	534	–	–	–0.180	538	3	0%
16	–0.262	536	–	–	–0.081	540	1	0%
17	–0.162	538	–	–	0.016	542	–	–
18	–0.063	540	–	–	0.111	543	–	–
19	0.036	542	–	–	0.205	545	–	–
20	0.135	544	–	–	0.299	547	–	–
21	0.235	546	–	–	0.393	549	–	–
22	0.336	548	–	–	0.489	550	–	–
23	0.440	550	–	–	0.587	552	–	–
24	0.548	552	–	–	0.688	554	–	–
25	0.660	554	–	–	0.794	556	–	–
26	0.778	556	–	–	0.905	558	–	–
27	0.904	558	–	–	1.023	560	–	–
28	1.039	561	–	–	1.150	563	–	–
29	1.187	564	–	–	1.288	565	–	–
30	1.350	567	–	–	1.441	568	–	–
31	1.534	570	–	–	1.613	572	–	–
32	1.744	574	–	–	1.809	575	–	–
33	1.991	579	–	–	2.040	580	–	–
34	2.291	584	–	–	2.321	585	–	–
35	2.671	591	–	–	2.678	592	–	–
36	3.189	599	–	–	3.171	599	–	–
37	4.020	599	–	–	3.978	599	–	–
38	6.000	599	–	–	6.000	599	–	–

Table 7.B.29 Raw-Score-to-Scale-Score Distribution for Mathematics, Grade Five—Moderate Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
0	-6.000	503	—	—	-6.000	503	—	—
1	-3.388	503	—	—	-3.230	503	—	—
2	-2.670	503	—	—	-2.500	503	—	—
3	-2.240	503	—	—	-2.060	503	—	—
4	-1.928	505	—	—	-1.742	509	—	—
5	-1.681	510	—	—	-1.490	513	—	—
6	-1.474	514	—	—	-1.281	517	—	—
7	-1.295	517	—	—	-1.101	521	—	—
8	-1.137	520	—	—	-0.943	524	—	—
9	-0.994	523	6	0%	-0.801	526	15	1%
10	-0.862	525	24	2%	-0.671	529	32	2%
11	-0.740	527	46	3%	-0.551	531	61	4%
12	-0.625	530	66	5%	-0.438	533	81	5%
13	-0.516	532	89	6%	-0.332	535	104	6%
14	-0.412	534	93	7%	-0.230	537	119	7%
15	-0.310	535	118	8%	-0.132	539	161	10%
16	-0.212	537	129	9%	-0.037	541	153	9%
17	-0.114	539	144	10%	0.057	542	198	12%
18	-0.018	541	116	8%	0.149	544	149	9%
19	0.078	543	122	9%	0.241	546	149	9%
20	0.175	545	116	8%	0.333	548	113	7%
21	0.272	546	134	9%	0.425	549	105	6%
22	0.372	548	99	7%	0.520	551	95	6%
23	0.475	550	50	4%	0.617	553	55	3%
24	0.582	552	39	3%	0.718	555	38	2%
25	0.694	554	20	1%	0.823	557	22	1%
26	0.812	557	6	0%	0.934	559	3	0%
27	0.938	559	3	0%	1.053	561	1	0%
28	1.074	561	—	—	1.181	563	—	—
29	1.223	564	—	—	1.320	566	—	—
30	1.387	567	—	—	1.474	569	—	—
31	1.572	571	—	—	1.648	572	—	—
32	1.785	575	—	—	1.846	576	—	—
33	2.034	579	—	—	2.079	580	—	—
34	2.334	585	—	—	2.361	586	—	—
35	2.714	592	—	—	2.719	592	—	—
36	3.231	599	—	—	3.211	599	—	—
37	4.057	599	—	—	4.015	599	—	—
38	6.000	599	—	—	6.000	599	—	—

Table 7.B.30 Raw-Score-to-Scale-Score Distribution for Mathematics, Grade Five—Hard Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
0	-6.000	503	—	—	-6.000	503	—	—
1	-3.363	503	—	—	-3.200	503	—	—
2	-2.641	503	—	—	-2.463	503	—	—
3	-2.206	503	—	—	-2.016	504	—	—
4	-1.889	506	—	—	-1.689	510	—	—
5	-1.635	511	—	—	-1.429	515	—	—
6	-1.422	515	—	—	-1.212	519	—	—
7	-1.237	518	—	—	-1.024	522	—	—
8	-1.072	521	—	—	-0.858	525	—	—
9	-0.922	524	—	—	-0.709	528	—	—
10	-0.784	527	—	—	-0.573	531	—	—
11	-0.655	529	—	—	-0.447	533	—	—
12	-0.533	531	—	—	-0.329	535	—	—
13	-0.417	533	—	—	-0.217	537	—	—
14	-0.306	536	—	—	-0.111	539	—	—
15	-0.198	538	—	—	-0.009	541	—	—
16	-0.092	540	—	—	0.090	543	—	—
17	0.012	542	—	—	0.187	545	—	—
18	0.115	543	—	—	0.283	547	—	—
19	0.217	545	—	—	0.378	548	—	—
20	0.320	547	4	1%	0.473	550	4	2%
21	0.424	549	18	6%	0.569	552	7	4%
22	0.529	551	35	13%	0.666	554	16	9%
23	0.637	553	38	14%	0.766	556	16	9%
24	0.748	555	35	13%	0.869	558	17	10%
25	0.864	558	35	13%	0.976	560	18	10%
26	0.985	560	32	11%	1.089	562	18	10%
27	1.114	562	17	6%	1.209	564	18	10%
28	1.251	565	17	6%	1.338	566	14	8%
29	1.400	568	14	5%	1.477	569	13	7%
30	1.564	571	9	3%	1.632	572	6	3%
31	1.748	574	9	3%	1.804	575	7	4%
32	1.957	578	4	1%	2.001	579	4	2%
33	2.201	583	3	1%	2.232	583	5	3%
34	2.496	588	5	2%	2.511	588	5	3%
35	2.866	595	1	0%	2.863	595	2	1%
36	3.369	599	1	0%	3.348	599	2	1%
37	4.177	599	1	0%	4.138	599	5	3%
38	6.000	599	1	0%	6.000	599	1	1%

Table 7.B.31 Raw-Score-to-Scale-Score Distribution for Mathematics, Grade Six—Easy Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
–	–	600	402	30%	–	600	450	38%
–	–	601	75	6%	–	601	76	6%
0	–6.000	603	7	1%	–6.000	603	4	0%
1	–2.903	603	11	1%	–3.179	603	7	1%
2	–2.202	603	16	1%	–2.460	603	18	2%
3	–1.790	608	25	2%	–2.032	603	24	2%
4	–1.499	613	41	3%	–1.725	609	38	3%
5	–1.272	617	58	4%	–1.484	613	50	4%
6	–1.085	621	87	7%	–1.285	617	77	7%
7	–0.927	624	116	9%	–1.116	620	99	8%
8	–0.787	627	104	8%	–0.967	623	96	8%
9	–0.662	629	115	9%	–0.833	626	80	7%
10	–0.549	631	101	8%	–0.712	628	63	5%
11	–0.443	633	44	3%	–0.599	630	39	3%
12	–0.345	635	56	4%	–0.495	632	27	2%
13	–0.252	637	30	2%	–0.396	634	10	1%
14	–0.164	638	27	2%	–0.302	636	10	1%
15	–0.079	640	12	1%	–0.211	637	8	1%
16	0.004	641	5	0%	–0.124	639	4	0%
17	0.084	643	3	0%	–0.039	641	1	0%
18	0.163	644	–	–	0.045	642	–	–
19	0.240	646	–	–	0.127	644	–	–
20	0.318	647	–	–	0.209	645	–	–
21	0.395	649	–	–	0.291	647	–	–
22	0.472	650	–	–	0.373	648	–	–
23	0.551	652	–	–	0.457	650	–	–
24	0.631	653	–	–	0.541	651	–	–
25	0.713	655	–	–	0.629	653	–	–
26	0.798	656	–	–	0.719	655	–	–
27	0.887	658	–	–	0.813	657	–	–
28	0.980	660	–	–	0.912	658	–	–
29	1.079	662	–	–	1.018	660	–	–
30	1.185	664	–	–	1.131	663	–	–
31	1.300	666	–	–	1.254	665	–	–
32	1.428	668	–	–	1.389	667	–	–
33	1.571	671	–	–	1.541	670	–	–
34	1.735	674	–	–	1.714	673	–	–
35	1.928	677	–	–	1.918	677	–	–
36	2.164	682	–	–	2.165	682	–	–
37	2.469	688	–	–	2.479	688	–	–
38	2.897	696	–	–	2.916	696	–	–
39	3.620	699	–	–	3.645	699	–	–
40	6.000	699	–	–	6.000	699	–	–

Table 7.B.32 Raw-Score-to-Scale-Score Distribution for Mathematics, Grade Six—Moderate Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
0	-6.000	603	—	—	-6.000	603	—	—
1	-2.824	603	—	—	-3.120	603	—	—
2	-2.112	603	—	—	-2.392	603	—	—
3	-1.691	610	—	—	-1.956	605	—	—
4	-1.390	615	—	—	-1.639	611	—	—
5	-1.155	620	—	—	-1.390	615	—	—
6	-0.962	623	—	—	-1.183	619	—	—
7	-0.797	626	—	—	-1.006	622	—	—
8	-0.653	629	—	—	-0.850	625	—	—
9	-0.524	631	—	—	-0.710	628	—	—
10	-0.407	634	11	1%	-0.583	630	9	1%
11	-0.299	636	17	2%	-0.465	633	20	2%
12	-0.198	638	61	6%	-0.355	635	42	3%
13	-0.103	639	88	8%	-0.252	637	70	6%
14	-0.012	641	109	10%	-0.153	638	89	7%
15	0.075	643	126	12%	-0.059	640	125	10%
16	0.159	644	142	13%	0.032	642	149	12%
17	0.241	646	104	10%	0.121	644	144	12%
18	0.322	647	92	8%	0.208	645	110	9%
19	0.401	649	85	8%	0.294	647	118	10%
20	0.480	650	63	6%	0.380	648	99	8%
21	0.559	652	63	6%	0.465	650	75	6%
22	0.639	653	40	4%	0.551	652	49	4%
23	0.719	655	26	2%	0.637	653	50	4%
24	0.801	656	23	2%	0.725	655	31	3%
25	0.884	658	24	2%	0.815	657	17	1%
26	0.970	659	11	1%	0.907	658	10	1%
27	1.059	661	3	0%	1.003	660	4	0%
28	1.152	663	3	0%	1.102	662	1	0%
29	1.250	665	—	—	1.206	664	2	0%
30	1.353	667	—	—	1.316	666	—	—
31	1.463	669	—	—	1.434	668	—	—
32	1.583	671	—	—	1.560	671	—	—
33	1.714	673	—	—	1.698	673	—	—
34	1.860	676	—	—	1.850	676	—	—
35	2.027	679	—	—	2.023	679	—	—
36	2.222	683	—	—	2.224	683	—	—
37	2.458	687	—	—	2.466	688	—	—
38	2.761	693	—	—	2.774	693	—	—
39	3.185	699	—	—	3.202	699	—	—
40	3.901	699	—	—	3.921	699	—	—
41	6.000	699	—	—	6.000	699	—	—

Table 7.B.33 Raw-Score-to-Scale-Score Distribution for Mathematics, Grade Six—Hard Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
0	-6.000	603	—	—	-6.000	603	—	—
1	-2.902	603	—	—	-3.179	603	—	—
2	-2.191	603	—	—	-2.455	603	—	—
3	-1.769	608	—	—	-2.020	603	—	—
4	-1.466	614	—	—	-1.705	609	—	—
5	-1.228	618	—	—	-1.455	614	—	—
6	-1.031	622	—	—	-1.247	618	—	—
7	-0.862	625	—	—	-1.068	621	—	—
8	-0.715	628	—	—	-0.910	624	—	—
9	-0.582	630	—	—	-0.768	627	—	—
10	-0.462	633	—	—	-0.639	629	—	—
11	-0.351	635	—	—	-0.519	632	—	—
12	-0.248	637	—	—	-0.408	634	—	—
13	-0.151	638	—	—	-0.303	636	—	—
14	-0.059	640	—	—	-0.203	637	—	—
15	0.029	642	—	—	-0.108	639	—	—
16	0.114	643	—	—	-0.016	641	—	—
17	0.197	645	—	—	0.074	643	—	—
18	0.278	647	—	—	0.161	644	—	—
19	0.357	648	—	—	0.247	646	—	—
20	0.436	649	—	—	0.333	648	—	—
21	0.515	651	—	—	0.417	649	1	1%
22	0.594	652	2	2%	0.503	651	—	—
23	0.674	654	1	1%	0.589	652	1	1%
24	0.755	655	2	2%	0.676	654	5	3%
25	0.838	657	10	8%	0.765	656	14	8%
26	0.924	659	16	13%	0.857	657	22	12%
27	1.013	660	15	13%	0.952	659	29	16%
28	1.105	662	12	10%	1.051	661	11	6%
29	1.203	664	10	8%	1.156	663	15	8%
30	1.308	666	12	10%	1.267	665	10	5%
31	1.420	668	9	8%	1.386	667	14	8%
32	1.542	670	10	8%	1.515	670	17	9%
33	1.676	673	7	6%	1.657	672	7	4%
34	1.827	676	4	3%	1.815	675	8	4%
35	2.000	679	3	3%	1.994	679	7	4%
36	2.202	683	2	2%	2.203	683	6	3%
37	2.447	687	2	2%	2.455	687	4	2%
38	2.760	693	1	1%	2.773	693	3	2%
39	3.194	699	1	1%	3.211	699	3	2%
40	3.920	699	—	—	3.940	699	4	2%
41	6.000	699	—	—	6.000	699	2	1%

Table 7.B.34 Raw-Score-to-Scale-Score Distribution for Mathematics, Grade Seven—Easy Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
–	–	700	453	48%	–	700	428	51%
–	–	701	81	9%	–	701	79	9%
0	–6.000	703	11	1%	–6.000	703	2	0%
1	–3.401	703	11	1%	–3.441	703	2	0%
2	–2.686	703	13	1%	–2.732	703	9	1%
3	–2.260	703	20	2%	–2.313	703	20	2%
4	–1.952	705	18	2%	–2.014	704	22	3%
5	–1.710	709	26	3%	–1.780	708	35	4%
6	–1.509	713	52	5%	–1.587	712	33	4%
7	–1.336	716	59	6%	–1.422	715	45	5%
8	–1.183	719	48	5%	–1.276	717	48	6%
9	–1.045	722	37	4%	–1.146	720	26	3%
10	–0.919	724	28	3%	–1.026	722	21	3%
11	–0.803	726	18	2%	–0.915	724	11	1%
12	–0.693	728	19	2%	–0.811	726	12	1%
13	–0.590	730	18	2%	–0.711	728	18	2%
14	–0.491	732	24	3%	–0.616	730	7	1%
15	–0.396	734	5	1%	–0.524	731	13	2%
16	–0.304	736	3	0%	–0.434	733	3	0%
17	–0.214	737	3	0%	–0.346	735	–	–
18	–0.126	739	–	–	–0.258	736	–	–
19	–0.039	741	–	–	–0.172	738	–	–
20	0.047	742	–	–	–0.085	740	–	–
21	0.132	744	1	0%	0.002	741	–	–
22	0.218	745	–	–	0.090	743	–	–
23	0.304	747	–	–	0.179	745	–	–
24	0.392	749	–	–	0.269	746	–	–
25	0.481	750	–	–	0.362	748	–	–
26	0.572	752	–	–	0.457	750	–	–
27	0.665	754	–	–	0.556	752	–	–
28	0.762	756	–	–	0.658	754	–	–
29	0.863	757	–	–	0.765	756	–	–
30	0.970	759	–	–	0.878	758	–	–
31	1.082	762	–	–	0.997	760	–	–
32	1.203	764	–	–	1.124	762	–	–
33	1.333	766	–	–	1.262	765	–	–
34	1.475	769	–	–	1.411	768	–	–
35	1.632	772	–	–	1.577	771	–	–
36	1.811	775	–	–	1.764	774	–	–
37	2.017	779	–	–	1.980	778	–	–
38	2.265	784	–	–	2.237	783	–	–
39	2.577	790	–	–	2.560	789	–	–
40	3.008	798	–	–	3.002	798	–	–
41	3.727	799	–	–	3.734	799	–	–
42	6.000	799	–	–	6.000	799	–	–

Table 7.B.35 Raw-Score-to-Scale-Score Distribution for Mathematics, Grade Seven—Moderate Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
0	-6.000	703	—	—	-6.000	703	—	—
1	-3.222	703	—	—	-3.270	703	—	—
2	-2.514	703	—	—	-2.570	703	—	—
3	-2.096	703	—	—	-2.161	703	—	—
4	-1.796	708	—	—	-1.870	706	—	—
5	-1.560	712	—	—	-1.644	710	—	—
6	-1.365	716	—	—	-1.457	714	—	—
7	-1.198	719	—	—	-1.297	717	—	—
8	-1.050	722	—	—	-1.156	720	—	—
9	-0.917	724	—	—	-1.029	722	—	—
10	-0.795	726	—	—	-0.913	724	—	—
11	-0.681	729	13	1%	-0.804	726	9	1%
12	-0.575	731	23	2%	-0.701	728	29	2%
13	-0.474	732	54	4%	-0.603	730	55	4%
14	-0.377	734	77	5%	-0.509	732	64	5%
15	-0.284	736	101	7%	-0.417	733	99	7%
16	-0.193	738	114	8%	-0.327	735	105	8%
17	-0.105	739	125	9%	-0.239	737	105	8%
18	-0.018	741	141	10%	-0.151	738	126	9%
19	0.068	743	128	9%	-0.064	740	119	9%
20	0.153	744	123	8%	0.023	742	105	8%
21	0.238	746	126	9%	0.111	743	103	8%
22	0.324	747	107	7%	0.200	745	88	7%
23	0.410	749	91	6%	0.290	747	94	7%
24	0.497	751	76	5%	0.382	748	92	7%
25	0.586	752	56	4%	0.476	750	62	5%
26	0.677	754	48	3%	0.572	752	51	4%
27	0.772	756	35	2%	0.672	754	34	3%
28	0.869	758	10	1%	0.776	756	10	1%
29	0.971	760	7	0%	0.884	758	3	0%
30	1.079	762	—	—	0.997	760	—	—
31	1.192	764	—	—	1.118	762	—	—
32	1.314	766	—	—	1.246	765	—	—
33	1.445	768	—	—	1.385	767	—	—
34	1.589	771	—	—	1.536	770	—	—
35	1.748	774	—	—	1.702	773	—	—
36	1.927	777	—	—	1.889	777	—	—
37	2.135	781	—	—	2.105	781	—	—
38	2.383	786	—	—	2.362	786	—	—
39	2.697	792	—	—	2.685	792	—	—
40	3.128	799	—	—	3.126	799	—	—
41	3.847	799	—	—	3.855	799	—	—
42	6.000	799	—	—	6.000	799	—	—

Table 7.B.36 Raw-Score-to-Scale-Score Distribution for Mathematics, Grade Seven—Hard Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
0	-6.000	703	—	—	-6.000	703	—	—
1	-3.183	703	—	—	-3.233	703	—	—
2	-2.476	703	—	—	-2.534	703	—	—
3	-2.058	703	—	—	-2.126	703	—	—
4	-1.758	708	—	—	-1.836	707	—	—
5	-1.523	713	—	—	-1.610	711	—	—
6	-1.328	716	—	—	-1.424	715	—	—
7	-1.161	720	—	—	-1.265	718	—	—
8	-1.013	722	—	—	-1.124	720	—	—
9	-0.880	725	—	—	-0.997	723	—	—
10	-0.757	727	—	—	-0.880	725	—	—
11	-0.644	729	—	—	-0.770	727	—	—
12	-0.537	731	—	—	-0.667	729	—	—
13	-0.435	733	—	—	-0.568	731	—	—
14	-0.338	735	—	—	-0.473	732	—	—
15	-0.244	737	—	—	-0.380	734	—	—
16	-0.152	738	—	—	-0.289	736	—	—
17	-0.063	740	—	—	-0.199	738	—	—
18	0.025	742	—	—	-0.110	739	—	—
19	0.112	743	—	—	-0.021	741	—	—
20	0.198	745	—	—	0.068	743	—	—
21	0.285	747	—	—	0.158	744	—	—
22	0.372	748	—	—	0.249	746	—	—
23	0.460	750	—	—	0.341	748	—	—
24	0.549	752	1	0%	0.435	749	8	3%
25	0.640	753	5	2%	0.532	751	20	6%
26	0.734	755	18	9%	0.631	753	33	10%
27	0.831	757	20	10%	0.734	755	37	12%
28	0.931	759	34	16%	0.841	757	43	14%
29	1.036	761	19	9%	0.953	759	40	13%
30	1.147	763	24	11%	1.070	761	23	7%
31	1.264	765	18	9%	1.194	764	16	5%
32	1.389	767	17	8%	1.327	766	17	5%
33	1.525	770	6	3%	1.470	769	27	8%
34	1.673	773	11	5%	1.625	772	9	3%
35	1.836	776	4	2%	1.796	775	13	4%
36	2.021	779	8	4%	1.989	779	9	3%
37	2.234	783	12	6%	2.210	783	10	3%
38	2.488	788	5	2%	2.472	788	4	1%
39	2.808	794	4	2%	2.799	794	7	2%
40	3.245	799	1	0%	3.245	799	2	1%
41	3.971	799	1	0%	3.979	799	—	—
42	6.000	799	1	0%	6.000	799	—	—

Table 7.B.37 Raw-Score-to-Scale-Score Distribution for Mathematics, Grade Eight—Easy Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
–	–	800	397	43%	–	800	420	44%
–	–	801	82	9%	–	801	67	7%
0	–6.000	803	9	1%	–6.000	803	7	1%
1	–3.257	803	8	1%	–3.186	803	9	1%
2	–2.545	803	15	2%	–2.473	803	15	2%
3	–2.121	803	18	2%	–2.048	803	22	2%
4	–1.815	807	47	5%	–1.742	809	46	5%
5	–1.574	812	52	6%	–1.502	813	52	5%
6	–1.374	816	66	7%	–1.302	817	74	8%
7	–1.201	819	70	8%	–1.131	820	60	6%
8	–1.048	822	50	5%	–0.979	823	51	5%
9	–0.911	824	29	3%	–0.842	826	30	3%
10	–0.784	827	23	2%	–0.717	828	27	3%
11	–0.667	829	23	2%	–0.601	830	22	2%
12	–0.557	831	19	2%	–0.491	832	20	2%
13	–0.452	833	13	1%	–0.387	834	22	2%
14	–0.351	835	8	1%	–0.287	836	15	2%
15	–0.254	837	3	0%	–0.190	838	2	0%
16	–0.160	838	1	0%	–0.096	840	3	0%
17	–0.067	840	–	–	–0.004	841	–	–
18	0.025	842	–	–	0.088	843	1	0%
19	0.116	843	–	–	0.178	845	–	–
20	0.207	845	–	–	0.269	846	–	–
21	0.298	847	–	–	0.360	848	–	–
22	0.390	849	–	–	0.451	850	–	–
23	0.483	850	–	–	0.544	852	–	–
24	0.578	852	–	–	0.638	853	–	–
25	0.675	854	–	–	0.734	855	–	–
26	0.774	856	–	–	0.833	857	–	–
27	0.878	858	–	–	0.935	859	–	–
28	0.985	860	–	–	1.041	861	–	–
29	1.096	862	–	–	1.151	863	–	–
30	1.214	864	–	–	1.266	865	–	–
31	1.338	866	–	–	1.387	867	–	–
32	1.470	869	–	–	1.516	870	–	–
33	1.613	872	–	–	1.655	872	–	–
34	1.767	874	–	–	1.805	875	–	–
35	1.938	878	–	–	1.970	878	–	–
36	2.129	881	–	–	2.155	882	–	–
37	2.348	885	–	–	2.368	886	–	–
38	2.607	890	–	–	2.621	890	–	–
39	2.932	896	–	–	2.938	896	–	–
40	3.374	899	–	–	3.372	899	–	–
41	4.103	899	–	–	4.093	899	–	–
42	6.000	899	–	–	6.000	899	–	–

Table 7.B.38 Raw-Score-to-Scale-Score Distribution for Mathematics, Grade Eight—Moderate Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
0	-6.000	803	—	—	-6.000	803	—	—
1	-3.190	803	—	—	-3.115	803	—	—
2	-2.483	803	—	—	-2.407	803	—	—
3	-2.063	803	—	—	-1.987	804	—	—
4	-1.761	808	—	—	-1.686	810	—	—
5	-1.524	813	—	—	-1.450	814	—	—
6	-1.326	816	—	—	-1.254	818	—	—
7	-1.156	820	—	—	-1.085	821	—	—
8	-1.006	822	—	—	-0.936	824	—	—
9	-0.871	825	—	—	-0.802	826	—	—
10	-0.746	827	—	—	-0.679	829	—	—
11	-0.631	829	11	1%	-0.564	831	7	1%
12	-0.522	832	28	2%	-0.457	833	32	3%
13	-0.418	833	54	4%	-0.354	835	63	5%
14	-0.319	835	83	6%	-0.255	837	102	8%
15	-0.223	837	96	7%	-0.160	838	126	10%
16	-0.129	839	109	8%	-0.066	840	152	12%
17	-0.037	841	147	11%	0.025	842	113	9%
18	0.053	842	116	8%	0.115	843	129	10%
19	0.143	844	111	8%	0.205	845	109	9%
20	0.234	846	121	9%	0.295	847	93	7%
21	0.324	847	115	8%	0.385	849	66	5%
22	0.415	849	75	5%	0.476	850	75	6%
23	0.507	851	74	5%	0.568	852	61	5%
24	0.602	853	64	5%	0.661	854	44	3%
25	0.698	854	56	4%	0.757	855	44	3%
26	0.797	856	43	3%	0.855	857	23	2%
27	0.899	858	41	3%	0.956	859	19	1%
28	1.006	860	15	1%	1.061	861	7	1%
29	1.117	862	7	1%	1.170	863	6	0%
30	1.233	864	—	—	1.284	865	—	—
31	1.357	867	—	—	1.404	868	—	—
32	1.488	869	—	—	1.533	870	—	—
33	1.629	872	—	—	1.670	873	—	—
34	1.783	875	—	—	1.819	875	—	—
35	1.952	878	—	—	1.984	879	—	—
36	2.142	881	—	—	2.168	882	—	—
37	2.360	886	—	—	2.380	886	—	—
38	2.618	890	—	—	2.632	891	—	—
39	2.941	896	—	—	2.947	897	—	—
40	3.382	899	—	—	3.380	899	—	—
41	4.110	899	—	—	4.100	899	—	—
42	6.000	899	—	—	6.000	899	—	—

Table 7.B.39 Raw-Score-to-Scale-Score Distribution for Mathematics, Grade Eight—Hard Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
0	-6.000	803	—	—	-6.000	803	—	—
1	-3.185	803	—	—	-3.109	803	—	—
2	-2.477	803	—	—	-2.401	803	—	—
3	-2.057	803	—	—	-1.981	804	—	—
4	-1.755	808	—	—	-1.679	810	—	—
5	-1.517	813	—	—	-1.442	814	—	—
6	-1.319	817	—	—	-1.246	818	—	—
7	-1.149	820	—	—	-1.077	821	—	—
8	-0.998	823	—	—	-0.928	824	—	—
9	-0.862	825	—	—	-0.793	826	—	—
10	-0.738	827	—	—	-0.670	829	—	—
11	-0.622	830	—	—	-0.555	831	—	—
12	-0.512	832	—	—	-0.446	833	—	—
13	-0.408	834	—	—	-0.343	835	—	—
14	-0.308	836	—	—	-0.244	837	—	—
15	-0.212	837	—	—	-0.148	839	—	—
16	-0.117	839	—	—	-0.054	840	—	—
17	-0.025	841	—	—	0.038	842	—	—
18	0.067	843	—	—	0.130	844	—	—
19	0.158	844	—	—	0.220	845	—	—
20	0.249	846	—	—	0.311	847	—	—
21	0.340	848	—	—	0.402	849	—	—
22	0.433	849	—	—	0.494	851	—	—
23	0.526	851	—	—	0.587	852	—	—
24	0.622	853	1	1%	0.682	854	—	—
25	0.720	855	2	1%	0.779	856	3	4%
26	0.820	857	14	10%	0.878	858	4	5%
27	0.924	859	23	16%	0.981	860	14	18%
28	1.033	861	18	13%	1.087	862	11	14%
29	1.146	863	24	17%	1.198	864	13	16%
30	1.264	865	12	8%	1.315	866	6	8%
31	1.390	867	16	11%	1.437	868	9	11%
32	1.524	870	12	8%	1.568	871	7	9%
33	1.668	873	4	3%	1.707	873	7	9%
34	1.824	876	1	1%	1.859	876	2	3%
35	1.997	879	8	6%	2.027	879	2	3%
36	2.190	882	3	2%	2.214	883	1	1%
37	2.411	887	1	1%	2.429	887	—	—
38	2.673	891	1	1%	2.685	892	—	—
39	3.000	898	1	1%	3.005	898	1	1%
40	3.445	899	1	1%	3.442	899	—	—
41	4.178	899	—	—	4.167	899	—	—
42	6.000	899	—	—	6.000	899	—	—

Table 7.B.40 Raw-Score-to-Scale-Score Distribution for Mathematics, Grade Eleven—Easy Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
–	–	900	255	40%	–	900	305	40%
–	–	901	52	8%	–	901	83	11%
0	–6.000	903	10	2%	–6.000	903	11	1%
1	–3.362	903	8	1%	–3.296	903	9	1%
2	–2.651	903	11	2%	–2.564	903	22	3%
3	–2.229	903	18	3%	–2.126	903	25	3%
4	–1.924	905	30	5%	–1.812	907	19	2%
5	–1.684	910	35	5%	–1.566	912	47	6%
6	–1.485	913	38	6%	–1.364	916	42	6%
7	–1.313	917	37	6%	–1.190	919	41	5%
8	–1.161	920	46	7%	–1.038	922	47	6%
9	–1.023	922	29	5%	–0.901	924	41	5%
10	–0.897	924	27	4%	–0.775	927	30	4%
11	–0.779	927	28	4%	–0.658	929	13	2%
12	–0.668	929	10	2%	–0.548	931	17	2%
13	–0.562	931	5	1%	–0.443	933	8	1%
14	–0.459	933	2	0%	–0.341	935	2	0%
15	–0.359	935	–	–	–0.243	937	1	0%
16	–0.261	936	2	0%	–0.146	939	–	–
17	–0.164	938	–	–	–0.051	940	–	–
18	–0.067	940	–	–	0.044	942	–	–
19	0.031	942	–	–	0.139	944	–	–
20	0.129	944	–	–	0.235	946	–	–
21	0.229	946	–	–	0.332	948	–	–
22	0.332	948	–	–	0.431	949	–	–
23	0.438	950	–	–	0.533	951	–	–
24	0.549	952	–	–	0.638	953	–	–
25	0.665	954	–	–	0.749	955	–	–
26	0.788	956	–	–	0.865	958	–	–
27	0.919	959	–	–	0.990	960	–	–
28	1.061	961	–	–	1.124	962	–	–
29	1.217	964	–	–	1.272	965	–	–
30	1.391	967	–	–	1.436	968	–	–
31	1.588	971	–	–	1.623	972	–	–
32	1.818	975	–	–	1.840	976	–	–
33	2.093	981	–	–	2.102	981	–	–
34	2.438	987	–	–	2.433	987	–	–
35	2.907	996	–	–	2.887	995	–	–
36	3.669	999	–	–	3.635	999	–	–
37	6.000	999	–	–	6.000	999	–	–

Table 7.B.41 Raw-Score-to-Scale-Score Distribution for Mathematics, Grade Eleven—Moderate Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
0	-6.000	903	—	—	-6.000	903	—	—
1	-3.245	903	—	—	-3.166	903	—	—
2	-2.528	903	—	—	-2.422	903	—	—
3	-2.098	903	—	—	-1.974	904	—	—
4	-1.786	908	—	—	-1.649	910	—	—
5	-1.537	912	—	—	-1.393	915	—	—
6	-1.329	916	—	—	-1.182	919	—	—
7	-1.148	920	—	—	-1.000	923	—	—
8	-0.986	923	—	—	-0.839	926	—	—
9	-0.840	926	9	1%	-0.695	928	4	0%
10	-0.704	928	21	2%	-0.563	931	43	3%
11	-0.578	930	41	4%	-0.440	933	52	4%
12	-0.458	933	58	5%	-0.324	935	107	8%
13	-0.344	935	100	9%	-0.215	937	104	8%
14	-0.235	937	97	8%	-0.110	939	127	10%
15	-0.128	939	127	11%	-0.008	941	132	10%
16	-0.024	941	116	10%	0.090	943	139	10%
17	0.078	943	129	11%	0.187	945	136	10%
18	0.179	945	108	9%	0.282	947	119	9%
19	0.280	947	93	8%	0.377	948	112	8%
20	0.381	948	76	7%	0.472	950	79	6%
21	0.483	950	84	7%	0.568	952	67	5%
22	0.586	952	48	4%	0.666	954	50	4%
23	0.693	954	19	2%	0.766	956	34	3%
24	0.803	956	14	1%	0.870	958	17	1%
25	0.917	958	7	1%	0.978	960	9	1%
26	1.037	961	—	—	1.092	962	3	0%
27	1.166	963	—	—	1.214	964	2	0%
28	1.304	966	—	—	1.345	967	—	—
29	1.455	969	—	—	1.489	969	—	—
30	1.622	972	—	—	1.649	972	—	—
31	1.812	975	—	—	1.830	976	—	—
32	2.032	979	—	—	2.042	980	—	—
33	2.295	984	—	—	2.296	984	—	—
34	2.627	991	—	—	2.617	990	—	—
35	3.081	999	—	—	3.060	999	—	—
36	3.827	999	—	—	3.796	999	—	—
37	6.000	999	—	—	6.000	999	—	—

Table 7.B.42 Raw-Score-to-Scale-Score Distribution for Mathematics, Grade Eleven—Hard Pathway

Raw Score	Version 1				Version 2			
	Theta	Scale Score	N	Percent	Theta	Scale Score	N	Percent
0	-6.000	903	—	—	-6.000	903	—	—
1	-3.243	903	—	—	-3.164	903	—	—
2	-2.528	903	—	—	-2.423	903	—	—
3	-2.101	903	—	—	-1.977	904	—	—
4	-1.791	908	—	—	-1.656	910	—	—
5	-1.545	912	—	—	-1.404	915	—	—
6	-1.339	916	—	—	-1.196	919	—	—
7	-1.161	920	—	—	-1.017	922	—	—
8	-1.003	922	—	—	-0.860	925	—	—
9	-0.859	925	—	—	-0.719	928	—	—
10	-0.727	928	—	—	-0.59	930	—	—
11	-0.604	930	—	—	-0.469	933	—	—
12	-0.487	932	—	—	-0.356	935	—	—
13	-0.375	934	—	—	-0.249	937	—	—
14	-0.268	936	—	—	-0.145	939	—	—
15	-0.164	938	—	—	-0.045	940	—	—
16	-0.061	940	—	—	0.053	942	—	—
17	0.040	942	—	—	0.150	944	—	—
18	0.140	944	—	—	0.246	946	—	—
19	0.241	946	—	—	0.342	948	—	—
20	0.343	948	4	2%	0.438	950	1	1%
21	0.446	950	9	4%	0.536	951	1	1%
22	0.552	952	12	5%	0.636	953	9	7%
23	0.660	954	28	11%	0.739	955	8	6%
24	0.774	956	29	12%	0.846	957	15	11%
25	0.892	958	22	9%	0.957	959	16	12%
26	1.017	960	30	12%	1.076	961	20	15%
27	1.150	963	23	9%	1.202	964	12	9%
28	1.294	966	19	8%	1.338	966	12	9%
29	1.451	969	18	7%	1.487	969	10	8%
30	1.625	972	12	5%	1.653	972	4	3%
31	1.821	975	13	5%	1.840	976	4	3%
32	2.047	980	11	4%	2.057	980	4	3%
33	2.317	985	5	2%	2.316	985	7	5%
34	2.653	991	6	2%	2.643	991	2	2%
35	3.111	999	5	2%	3.090	999	5	4%
36	3.858	999	1	0%	3.828	999	1	1%
37	6.000	999	—	—	6.000	999	1	1%

Appendix 7.C: Scale Scores

Table 7.C.1 Percentiles of Scale Scores in English Language Arts/Literacy (ELA)

Percentile	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 11
p1	300	400	500	600	700	800	900
p10	300	400	500	600	700	800	900
p20	303	410	516	621	704	812	926
p30	330	432	533	634	729	837	939
p40	338	437	539	640	737	842	943
p50	343	441	542	643	742	845	946
p60	348	445	545	646	746	848	949
p70	353	449	549	650	749	851	951
p80	360	454	553	653	753	854	954
p90	369	461	559	657	759	859	958
p99	390	480	575	670	774	870	970

Table 7.C.2 Percentiles of Scale Scores in Mathematics

Percentile	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 11
p1	300	400	500	600	700	800	900
p10	300	400	500	600	700	800	900
p20	301	403	501	603	701	801	907
p30	322	424	527	621	720	819	924
p40	332	434	534	629	733	833	935
p50	337	438	539	637	738	838	939
p60	341	441	541	641	741	841	943
p70	344	445	544	644	744	844	945
p80	348	448	548	647	748	847	948
p90	354	454	553	653	755	854	954
p99	375	472	574	673	779	870	980

Note: In Table 7.C.3 through Table 7.C.16, an expression that opens and closes with a bracket indicates that a value is greater than or equal to the first number and is less than or equal to the second number. For example, “[345, 347]” indicates a value greater than or equal to 345 but less than or equal to 347.

Table 7.C.3 Frequency Distribution of Overall Scale Scores—ELA, Grade Three

Scale Score	N	Cumulative Frequency	Percent	Cumulative Percent
[300, 302]	949	949	19%	19%
[303, 305]	104	1053	2%	21%
[306, 308]	14	1067	0%	22%
[309, 311]	43	1110	1%	22%
[312, 314]	42	1152	1%	23%
[315, 317]	37	1189	1%	24%
[318, 320]	46	1235	1%	25%
[321, 323]	68	1303	1%	26%
[324, 326]	38	1341	1%	27%
[327, 329]	132	1473	3%	30%
[330, 332]	168	1641	3%	33%
[333, 335]	180	1821	4%	37%
[336, 338]	309	2130	6%	43%
[339, 341]	209	2339	4%	47%
[342, 344]	347	2686	7%	54%
[345, 347]	268	2954	5%	60%
[348, 350]	301	3255	6%	66%
[351, 353]	256	3511	5%	71%
[354, 356]	254	3765	5%	76%
[357, 359]	152	3917	3%	79%
[360, 362]	261	4178	5%	84%
[363, 365]	146	4324	3%	87%
[366, 368]	118	4442	2%	90%
[369, 371]	133	4575	3%	92%
[372, 374]	89	4664	2%	94%
[375, 377]	108	4772	2%	96%
[378, 380]	34	4806	1%	97%
[381, 383]	36	4842	1%	98%
[384, 386]	29	4871	1%	98%
[387, 389]	27	4898	1%	99%
[390, 392]	20	4918	0%	99%
[393, 395]	0	4918	0%	99%
[396, 398]	0	4918	0%	99%
[399, 399]	44	4962	1%	100%

Table 7.C.4 Frequency Distribution of Overall Scale Scores—ELA, Grade Four

Scale Score	N	Cumulative Frequency	Percent	Cumulative Percent
[400, 402]	956	956	18%	18%
[403, 405]	63	1019	1%	19%
[406, 408]	30	1049	1%	20%
[409, 411]	41	1090	1%	21%
[412, 414]	48	1138	1%	22%
[415, 417]	58	1196	1%	23%
[418, 420]	46	1242	1%	24%
[421, 423]	58	1300	1%	25%
[424, 426]	60	1360	1%	26%
[427, 429]	96	1456	2%	28%
[430, 432]	170	1626	3%	31%
[433, 435]	220	1846	4%	35%
[436, 438]	427	2273	8%	43%
[439, 441]	447	2720	8%	52%
[442, 444]	412	3132	8%	59%
[445, 447]	347	3479	7%	66%
[448, 450]	375	3854	7%	73%
[451, 453]	353	4207	7%	80%
[454, 456]	239	4446	5%	84%
[457, 459]	219	4665	4%	89%
[460, 462]	195	4860	4%	92%
[463, 465]	145	5005	3%	95%
[466, 468]	76	5081	1%	96%
[469, 471]	66	5147	1%	98%
[472, 474]	18	5165	0%	98%
[475, 477]	39	5204	1%	99%
[478, 480]	18	5222	0%	99%
[481, 483]	11	5233	0%	99%
[484, 486]	5	5238	0%	99%
[487, 489]	10	5248	0%	100%
[490, 492]	0	5248	0%	100%
[493, 495]	0	5248	0%	100%
[496, 498]	10	5258	0%	100%
[499, 499]	9	5267	0%	100%

Table 7.C.5 Frequency Distribution of Overall Scale Scores—ELA, Grade Five

Scale Score	N	Cumulative Frequency	Percent	Cumulative Percent
[500, 502]	879	879	17%	17%
[503, 505]	37	916	1%	18%
[506, 508]	26	942	1%	18%
[509, 511]	23	965	0%	19%
[512, 514]	28	993	1%	19%
[515, 517]	57	1050	1%	21%
[518, 520]	56	1106	1%	22%
[521, 523]	73	1179	1%	23%
[524, 526]	81	1260	2%	25%
[527, 529]	87	1347	2%	26%
[530, 532]	134	1481	3%	29%
[533, 535]	236	1717	5%	34%
[536, 538]	224	1941	4%	38%
[539, 541]	483	2424	9%	48%
[542, 544]	472	2896	9%	57%
[545, 547]	516	3412	10%	67%
[548, 550]	431	3843	8%	75%
[551, 553]	287	4130	6%	81%
[554, 556]	217	4347	4%	85%
[557, 559]	316	4663	6%	91%
[560, 562]	138	4801	3%	94%
[563, 565]	88	4889	2%	96%
[566, 568]	117	5006	2%	98%
[569, 571]	0	5006	0%	98%
[572, 574]	41	5047	1%	99%
[575, 577]	24	5071	0%	99%
[578, 580]	15	5086	0%	100%
[581, 583]	0	5086	0%	100%
[584, 586]	0	5086	0%	100%
[587, 589]	6	5092	0%	100%
[590, 592]	0	5092	0%	100%
[593, 595]	0	5092	0%	100%
[596, 598]	6	5098	0%	100%
[599, 599]	0	5098	0%	100%

Table 7.C.6 Frequency Distribution of Overall Scale Scores—ELA, Grade Six

Scale Score	N	Cumulative Frequency	Percent	Cumulative Percent
[600, 602]	873	873	17%	17%
[603, 605]	28	901	1%	18%
[606, 608]	23	924	0%	18%
[609, 611]	0	924	0%	18%
[612, 614]	28	952	1%	19%
[615, 617]	27	979	1%	19%
[618, 620]	41	1020	1%	20%
[621, 623]	61	1081	1%	21%
[624, 626]	85	1166	2%	23%
[627, 629]	109	1275	2%	25%
[630, 632]	167	1442	3%	28%
[633, 635]	196	1638	4%	32%
[636, 638]	292	1930	6%	38%
[639, 641]	434	2364	8%	46%
[642, 644]	415	2779	8%	54%
[645, 647]	522	3301	10%	65%
[648, 650]	377	3678	7%	72%
[651, 653]	441	4119	9%	81%
[654, 656]	410	4529	8%	89%
[657, 659]	193	4722	4%	92%
[660, 662]	183	4905	4%	96%
[663, 665]	112	5017	2%	98%
[666, 668]	39	5056	1%	99%
[669, 671]	21	5077	0%	99%
[672, 674]	15	5092	0%	100%
[675, 677]	10	5102	0%	100%
[678, 680]	7	5109	0%	100%
[681, 683]	0	5109	0%	100%
[684, 686]	4	5113	0%	100%
[687, 689]	0	5113	0%	100%
[690, 692]	0	5113	0%	100%
[693, 695]	3	5116	0%	100%
[696, 698]	0	5116	0%	100%
[699, 699]	0	5116	0%	100%

Table 7.C.7 Frequency Distribution of Overall Scale Scores—ELA, Grade Seven

Scale Score	N	Cumulative Frequency	Percent	Cumulative Percent
[700, 702]	958	958	19%	19%
[703, 705]	87	1045	2%	20%
[706, 708]	20	1065	0%	21%
[709, 711]	21	1086	0%	21%
[712, 714]	42	1128	1%	22%
[715, 717]	27	1155	1%	23%
[718, 720]	86	1241	2%	24%
[721, 723]	92	1333	2%	26%
[724, 726]	137	1470	3%	29%
[727, 729]	85	1555	2%	30%
[730, 732]	137	1692	3%	33%
[733, 735]	208	1900	4%	37%
[736, 738]	198	2098	4%	41%
[739, 741]	427	2525	8%	49%
[742, 744]	376	2901	7%	57%
[745, 747]	383	3284	7%	64%
[748, 750]	489	3773	10%	74%
[751, 753]	402	4175	8%	81%
[754, 756]	194	4369	4%	85%
[757, 759]	323	4692	6%	92%
[760, 762]	108	4800	2%	94%
[763, 765]	164	4964	3%	97%
[766, 768]	45	5009	1%	98%
[769, 771]	40	5049	1%	99%
[772, 774]	35	5084	1%	99%
[775, 777]	20	5104	0%	100%
[778, 780]	0	5104	0%	100%
[781, 783]	8	5112	0%	100%
[784, 786]	2	5114	0%	100%
[787, 789]	2	5116	0%	100%
[790, 792]	0	5116	0%	100%
[793, 795]	6	5122	0%	100%
[796, 798]	0	5122	0%	100%
[799, 799]	1	5123	0%	100%

Table 7.C.8 Frequency Distribution of Overall Scale Scores—ELA, Grade Eight

Scale Score	N	Cumulative Frequency	Percent	Cumulative Percent
[800, 802]	888	888	19%	19%
[803, 805]	34	922	1%	19%
[806, 808]	7	929	0%	20%
[809, 811]	4	933	0%	20%
[812, 814]	22	955	0%	20%
[815, 817]	36	991	1%	21%
[818, 820]	31	1022	1%	21%
[821, 823]	44	1066	1%	22%
[824, 826]	44	1110	1%	23%
[827, 829]	47	1157	1%	24%
[830, 832]	67	1224	1%	26%
[833, 835]	88	1312	2%	28%
[836, 838]	188	1500	4%	32%
[839, 841]	242	1742	5%	37%
[842, 844]	497	2239	10%	47%
[845, 847]	543	2782	11%	59%
[848, 850]	531	3313	11%	70%
[851, 853]	357	3670	8%	77%
[854, 856]	472	4142	10%	87%
[857, 859]	187	4329	4%	91%
[860, 862]	189	4518	4%	95%
[863, 865]	92	4610	2%	97%
[866, 868]	69	4679	1%	98%
[869, 871]	36	4715	1%	99%
[872, 874]	19	4734	0%	100%
[875, 877]	8	4742	0%	100%
[878, 880]	7	4749	0%	100%
[881, 883]	5	4754	0%	100%
[884, 886]	1	4755	0%	100%
[887, 889]	0	4755	0%	100%
[890, 892]	0	4755	0%	100%
[893, 895]	0	4755	0%	100%
[896, 898]	0	4755	0%	100%
[899, 899]	0	4755	0%	100%

Table 7.C.9 Frequency Distribution of Overall Scale Scores—ELA, Grade Eleven

Scale Score	N	Cumulative Frequency	Percent	Cumulative Percent
[900, 902]	625	625	15%	15%
[903, 905]	31	656	1%	15%
[906, 908]	9	665	0%	16%
[909, 911]	14	679	0%	16%
[912, 914]	6	685	0%	16%
[915, 917]	30	715	1%	17%
[918, 920]	37	752	1%	18%
[921, 923]	43	795	1%	19%
[924, 926]	67	862	2%	20%
[927, 929]	49	911	1%	21%
[930, 932]	99	1010	2%	24%
[933, 935]	65	1075	2%	25%
[936, 938]	111	1186	3%	28%
[939, 941]	255	1441	6%	34%
[942, 944]	385	1826	9%	43%
[945, 947]	587	2413	14%	56%
[948, 950]	577	2990	14%	70%
[951, 953]	392	3382	9%	79%
[954, 956]	308	3690	7%	86%
[957, 959]	246	3936	6%	92%
[960, 962]	121	4057	3%	95%
[963, 965]	136	4193	3%	98%
[966, 968]	31	4224	1%	99%
[969, 971]	18	4242	0%	99%
[972, 974]	17	4259	0%	100%
[975, 977]	6	4265	0%	100%
[978, 980]	7	4272	0%	100%
[981, 983]	0	4272	0%	100%
[984, 986]	1	4273	0%	100%
[987, 989]	0	4273	0%	100%
[990, 992]	0	4273	0%	100%
[993, 995]	0	4273	0%	100%
[996, 998]	0	4273	0%	100%
[999, 999]	0	4273	0%	100%

Table 7.C.10 Frequency Distribution of Overall Scale Scores—Mathematics, Grade Three

Scale Score	N	Cumulative Frequency	Percent	Cumulative Percent
[300, 302]	1,099	1099	22%	22%
[303, 305]	95	1194	2%	24%
[306, 308]	0	1194	2%	24%
[309, 311]	45	1239	1%	25%
[312, 314]	51	1290	1%	26%
[315, 317]	36	1326	1%	27%
[318, 320]	87	1413	2%	28%
[321, 323]	171	1584	3%	32%
[324, 326]	112	1696	2%	34%
[327, 329]	212	1908	4%	38%
[330, 332]	180	2088	4%	42%
[333, 335]	239	2327	5%	47%
[336, 338]	369	2696	7%	54%
[339, 341]	375	3071	8%	62%
[342, 344]	524	3595	11%	72%
[345, 347]	245	3840	5%	77%
[348, 350]	411	4251	8%	85%
[351, 353]	180	4431	4%	89%
[354, 356]	211	4642	4%	93%
[357, 359]	105	4747	2%	95%
[360, 362]	82	4829	2%	97%
[363, 365]	43	4872	1%	98%
[366, 368]	30	4902	1%	98%
[369, 371]	22	4924	0%	99%
[372, 374]	0	4924	0%	99%
[375, 377]	13	4937	0%	99%
[378, 380]	13	4950	0%	99%
[381, 383]	9	4959	0%	100%
[384, 386]	2	4961	0%	100%
[387, 389]	3	4964	0%	100%
[390, 392]	0	4964	0%	100%
[393, 395]	0	4964	0%	100%
[396, 398]	6	4970	0%	100%
[399, 399]	8	4978	0%	100%

Table 7.C.11 Frequency Distribution of Overall Scale Scores—Mathematics, Grade Four

Scale Score	N	Cumulative Frequency	Percent	Cumulative Percent
[400, 402]	994	994	19%	19%
[403, 405]	136	1130	3%	21%
[406, 408]	55	1185	1%	22%
[409, 411]	65	1250	1%	24%
[412, 414]	0	1250	1%	24%
[415, 417]	92	1342	2%	25%
[418, 420]	107	1449	2%	27%
[421, 423]	131	1580	2%	30%
[424, 426]	93	1673	2%	32%
[427, 429]	201	1874	4%	35%
[430, 432]	177	2051	3%	39%
[433, 435]	182	2233	3%	42%
[436, 438]	507	2740	10%	52%
[439, 441]	443	3183	8%	60%
[442, 444]	510	3693	10%	70%
[445, 447]	427	4120	8%	78%
[448, 450]	416	4536	8%	86%
[451, 453]	217	4753	4%	90%
[454, 456]	174	4927	3%	93%
[457, 459]	131	5058	2%	96%
[460, 462]	71	5129	1%	97%
[463, 465]	33	5162	1%	98%
[466, 468]	52	5214	1%	99%
[469, 471]	12	5226	0%	99%
[472, 474]	16	5242	0%	99%
[475, 477]	10	5252	0%	99%
[478, 480]	9	5261	0%	100%
[481, 483]	1	5262	0%	100%
[484, 486]	4	5266	0%	100%
[487, 489]	4	5270	0%	100%
[490, 492]	0	5270	0%	100%
[493, 495]	8	5278	0%	100%
[496, 498]	0	5278	0%	100%
[499, 499]	5	5283	0%	100%

Table 7.C.12 Frequency Distribution of Overall Scale Scores—Mathematics, Grade Five

Scale Score	N	Cumulative Frequency	Percent	Cumulative Percent
[500, 502]	1,031	1031	20%	20%
[503, 505]	91	1122	2%	22%
[506, 508]	34	1156	1%	23%
[509, 511]	32	1188	1%	23%
[512, 514]	26	1214	1%	24%
[515, 517]	78	1292	2%	25%
[518, 520]	69	1361	1%	27%
[521, 523]	62	1423	1%	28%
[524, 526]	86	1509	2%	30%
[527, 529]	129	1638	3%	32%
[530, 532]	253	1891	5%	37%
[533, 535]	402	2293	8%	45%
[536, 538]	256	2549	5%	50%
[539, 541]	575	3124	11%	61%
[542, 544]	469	3593	9%	70%
[545, 547]	403	3996	8%	78%
[548, 550]	389	4385	8%	86%
[551, 553]	269	4654	5%	91%
[554, 556]	125	4779	2%	94%
[557, 559]	86	4865	2%	95%
[560, 562]	86	4951	2%	97%
[563, 565]	35	4986	1%	98%
[566, 568]	28	5014	1%	98%
[569, 571]	22	5036	0%	99%
[572, 574]	15	5051	0%	99%
[575, 577]	7	5058	0%	99%
[578, 580]	8	5066	0%	99%
[581, 583]	8	5074	0%	100%
[584, 586]	0	5074	0%	100%
[587, 589]	10	5084	0%	100%
[590, 592]	0	5084	0%	100%
[593, 595]	3	5087	0%	100%
[596, 598]	0	5087	0%	100%
[599, 599]	11	5098	0%	100%

Table 7.C.13 Frequency Distribution of Overall Scale Scores—Mathematics, Grade Six

Scale Score	N	Cumulative Frequency	Percent	Cumulative Percent
[600, 602]	1,003	1003	20%	20%
[603, 605]	87	1090	2%	21%
[606, 608]	25	1115	0%	22%
[609, 611]	38	1153	1%	23%
[612, 614]	91	1244	2%	24%
[615, 617]	135	1379	3%	27%
[618, 620]	99	1478	2%	29%
[621, 623]	183	1661	4%	32%
[624, 626]	196	1857	4%	36%
[627, 629]	282	2139	6%	42%
[630, 632]	176	2315	3%	45%
[633, 635]	183	2498	4%	49%
[636, 638]	312	2810	6%	55%
[639, 641]	344	3154	7%	62%
[642, 644]	564	3718	11%	73%
[645, 647]	424	4142	8%	81%
[648, 650]	323	4465	6%	87%
[651, 653]	205	4670	4%	91%
[654, 656]	102	4772	2%	93%
[657, 659]	139	4911	3%	96%
[660, 662]	46	4957	1%	97%
[663, 665]	40	4997	1%	98%
[666, 668]	35	5032	1%	98%
[669, 671]	27	5059	1%	99%
[672, 674]	14	5073	0%	99%
[675, 677]	12	5085	0%	99%
[678, 680]	10	5095	0%	99%
[681, 683]	8	5103	0%	100%
[684, 686]	0	5103	0%	100%
[687, 689]	6	5109	0%	100%
[690, 692]	0	5109	0%	100%
[693, 695]	4	5113	0%	100%
[696, 698]	0	5113	0%	100%
[699, 699]	10	5123	0%	100%

Table 7.C.14 Frequency Distribution of Overall Scale Scores—Mathematics, Grade Seven

Scale Score	N	Cumulative Frequency	Percent	Cumulative Percent
[700, 702]	1,041	1041	20%	20%
[703, 705]	128	1169	3%	23%
[706, 708]	35	1204	1%	24%
[709, 711]	26	1230	1%	24%
[712, 714]	85	1315	2%	26%
[715, 717]	152	1467	3%	29%
[718, 720]	74	1541	1%	30%
[721, 723]	58	1599	1%	31%
[724, 726]	78	1677	2%	33%
[727, 729]	79	1756	2%	34%
[730, 732]	258	2014	5%	39%
[733, 735]	289	2303	6%	45%
[736, 738]	452	2755	9%	54%
[739, 741]	385	3140	8%	61%
[742, 744]	460	3600	9%	70%
[745, 747]	415	4015	8%	78%
[748, 750]	253	4268	5%	83%
[751, 753]	242	4510	5%	88%
[754, 756]	182	4692	4%	92%
[757, 759]	150	4842	3%	95%
[760, 762]	49	4891	1%	96%
[763, 765]	58	4949	1%	97%
[766, 768]	34	4983	1%	97%
[769, 771]	33	5016	1%	98%
[772, 774]	20	5036	0%	98%
[775, 777]	17	5053	0%	99%
[778, 780]	17	5070	0%	99%
[781, 783]	22	5092	0%	100%
[784, 786]	0	5092	0%	100%
[787, 789]	9	5101	0%	100%
[790, 792]	0	5101	0%	100%
[793, 795]	11	5112	0%	100%
[796, 798]	0	5112	0%	100%
[799, 799]	5	5117	0%	100%

Table 7.C.15 Frequency Distribution of Overall Scale Scores—Mathematics, Grade Eight

Scale Score	N	Cumulative Frequency	Percent	Cumulative Percent
[800, 802]	966	966	20%	20%
[803, 805]	103	1069	2%	22%
[806, 808]	47	1116	1%	23%
[809, 811]	46	1162	1%	24%
[812, 814]	104	1266	2%	27%
[815, 817]	140	1406	3%	30%
[818, 820]	130	1536	3%	32%
[821, 823]	101	1637	2%	34%
[824, 826]	59	1696	1%	36%
[827, 829]	84	1780	2%	37%
[830, 832]	96	1876	2%	39%
[833, 835]	275	2151	6%	45%
[836, 838]	345	2496	7%	52%
[839, 841]	411	2907	9%	61%
[842, 844]	470	3377	10%	71%
[845, 847]	438	3815	9%	80%
[848, 850]	216	4031	5%	85%
[851, 853]	200	4231	4%	89%
[854, 856]	192	4423	4%	93%
[857, 859]	124	4547	3%	96%
[860, 862]	72	4619	2%	97%
[863, 865]	55	4674	1%	98%
[866, 868]	31	4705	1%	99%
[869, 871]	19	4724	0%	99%
[872, 874]	11	4735	0%	100%
[875, 877]	3	4738	0%	100%
[878, 880]	10	4748	0%	100%
[881, 883]	4	4752	0%	100%
[884, 886]	0	4752	0%	100%
[887, 889]	1	4753	0%	100%
[890, 892]	1	4754	0%	100%
[893, 895]	0	4754	0%	100%
[896, 898]	2	4756	0%	100%
[899, 899]	1	4757	0%	100%

Table 7.C.16 Frequency Distribution of Overall Scale Scores—Mathematics, Grade Eleven

Scale Score	N	Cumulative Frequency	Percent	Cumulative Percent
[900, 902]	695	695	16%	16%
[903, 905]	144	839	3%	20%
[906, 908]	19	858	0%	20%
[909, 911]	35	893	1%	21%
[912, 914]	85	978	2%	23%
[915, 917]	79	1057	2%	25%
[918, 920]	87	1144	2%	27%
[921, 923]	76	1220	2%	29%
[924, 926]	77	1297	2%	30%
[927, 929]	106	1403	2%	33%
[930, 932]	106	1509	2%	35%
[933, 935]	329	1838	8%	43%
[936, 938]	204	2042	5%	48%
[939, 941]	502	2544	12%	60%
[942, 944]	268	2812	6%	66%
[945, 947]	456	3268	11%	77%
[948, 950]	365	3633	9%	85%
[951, 953]	137	3770	3%	88%
[954, 956]	182	3952	4%	93%
[957, 959]	77	4029	2%	94%
[960, 962]	62	4091	1%	96%
[963, 965]	37	4128	1%	97%
[966, 968]	31	4159	1%	97%
[969, 971]	28	4187	1%	98%
[972, 974]	16	4203	0%	98%
[975, 977]	17	4220	0%	99%
[978, 980]	15	4235	0%	99%
[981, 983]	0	4235	0%	99%
[984, 986]	12	4247	0%	100%
[987, 989]	0	4247	0%	100%
[990, 992]	8	4255	0%	100%
[993, 995]	0	4255	0%	100%
[996, 998]	0	4255	0%	100%
[999, 999]	13	4268	0%	100%

Appendix 7.D: Demographic Summaries

Notes:

- To protect privacy when the number of students in a subgroup is 10 or fewer, the summary statistics at the test- and reporting-level are not reported and are presented as hyphens in the tables in Appendix 7.D.
- Percentages in these tables may not sum up to 100 due to rounding.

Table 7.D.1 Demographic Summary for ELA, Grade Three

	Number Tested	Mean Scale Score	SD of Scale Scores	Percent in Performance Level		
				Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
All Valid Scores	4,962	339	25	54%	25%	21%
Male	3,383	339	25	53%	25%	22%
Female	1,579	337	25	56%	24%	20%
American Indian or Alaska Native	34	345	20	44%	35%	21%
Asian	414	336	24	60%	27%	14%
Native Hawaiian or Other Pacific Islander	17	329	25	71%	12%	18%
Filipino	119	332	23	66%	22%	13%
Hispanic or Latino	2,865	339	25	53%	26%	21%
Black or African American	357	338	25	56%	21%	23%
White	971	339	26	53%	24%	23%
Two or more races	185	341	24	51%	23%	26%
English only	2,953	338	26	55%	24%	21%
Initially fluent English proficient	33	335	24	64%	24%	12%
English learner	1,861	339	24	53%	26%	21%
Reclassified fluent English proficient	105	342	25	51%	23%	26%
To be determined	6	—	—	—	—	—
English proficiency unknown	4	—	—	—	—	—
Intellectual disability	1,605	335	22	65%	23%	12%
Hearing impairment	51	345	20	37%	39%	24%
Speech or language impairment	227	356	19	21%	32%	47%
Visual impairment	31	320	27	74%	19%	6%
Emotional disturbance	20	359	20	20%	20%	60%
Orthopedic impairment	243	328	29	68%	17%	15%
Other health impairment	283	345	25	45%	24%	31%
Specific learning disability	310	365	17	7%	27%	66%
Deaf-blindness	0	—	—	—	—	—
Multiple disabilities	256	318	22	84%	11%	4%
Autism	1,863	339	24	53%	27%	20%
Traumatic brain injury	17	345	23	35%	41%	24%
Not classified	56	335	23	61%	25%	14%
Not economically disadvantaged	1,647	334	25	62%	23%	15%
Economically disadvantaged	3,315	341	25	50%	26%	24%

	Number Tested	Mean Scale Score	SD of Scale Scores	Percent in Performance Level		
				Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
Migrant	26	355	24	35%	23%	42%
Non-migrant	4,936	339	25	54%	25%	21%
Primary Ethnicity—Not Economically Disadvantaged						
American Indian or Alaska Native	12	336	24	67%	17%	17%
Asian	233	332	23	66%	25%	9%
Native Hawaiian or Other Pacific Islander	3	—	—	—	—	—
Filipino	75	332	23	64%	27%	9%
Hispanic or Latino	553	334	26	59%	25%	16%
Black or African American	102	334	25	65%	17%	19%
White	564	335	25	61%	23%	16%
Two or more races	105	336	25	63%	19%	18%
Primary Ethnicity—Economically Disadvantaged						
American Indian or Alaska Native	22	350	16	32%	45%	23%
Asian	181	340	24	52%	29%	19%
Native Hawaiian or Other Pacific Islander	14	325	24	71%	14%	14%
Filipino	44	332	25	68%	14%	18%
Hispanic or Latino	2,312	340	25	52%	26%	23%
Black or African American	255	340	25	53%	22%	25%
White	407	345	25	43%	24%	33%
Two or more races	80	349	21	35%	29%	36%

Table 7.D.2 Demographic Summary for ELA, Grade Four

	Number Tested	Mean Scale Score	SD of Scale Scores	Percent in Performance Level		
				Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
All Valid Scores	5,267	437	22	59%	29%	11%
Male	3,560	437	21	59%	30%	12%
Female	1,707	435	22	61%	28%	10%
American Indian or Alaska Native	37	439	26	54%	32%	14%
Asian	389	431	22	70%	23%	7%
Native Hawaiian or Other Pacific Islander	26	440	20	58%	27%	15%
Filipino	148	433	20	71%	23%	6%
Hispanic or Latino	3,095	438	21	57%	31%	12%
Black or African American	412	436	23	60%	29%	11%
White	970	437	22	60%	27%	12%
Two or more races	190	436	24	59%	28%	13%
English only	3,023	436	22	60%	29%	12%
Initially fluent English proficient	59	430	22	73%	17%	10%
English learner	2,024	437	21	59%	30%	11%
Reclassified fluent English proficient	154	437	21	57%	32%	11%
To be determined	4	—	—	—	—	—
English proficiency unknown	3	—	—	—	—	—
Intellectual disability	1,802	435	19	66%	27%	7%
Hearing impairment	47	444	18	45%	34%	21%
Speech or language impairment	195	451	15	30%	44%	26%
Visual impairment	30	424	28	77%	7%	17%
Emotional disturbance	23	456	15	22%	39%	39%
Orthopedic impairment	268	426	25	72%	20%	8%
Other health impairment	280	444	21	44%	36%	20%
Specific learning disability	408	458	13	11%	47%	41%
Deaf-blindness	6	—	—	—	—	—
Multiple disabilities	285	417	20	88%	11%	1%
Autism	1,835	435	21	63%	28%	8%
Traumatic brain injury	33	436	27	52%	27%	21%
Not classified	55	438	20	58%	35%	7%
Not economically disadvantaged	1,695	432	22	68%	24%	8%
Economically disadvantaged	3,572	439	21	55%	32%	13%
Migrant	54	450	19	37%	37%	26%
Non-migrant	5,213	436	22	60%	29%	11%
Primary Ethnicity—Not Economically Disadvantaged						
American Indian or Alaska Native	12	429	24	75%	25%	0%
Asian	227	429	21	74%	19%	6%
Native Hawaiian or Other Pacific Islander	10	—	—	—	—	—
Filipino	95	430	21	76%	18%	6%
Hispanic or Latino	576	432	22	65%	27%	8%

	Number Tested	Mean Scale Score	SD of Scale Scores	Percent in Performance Level		
				Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
Black or African American	122	432	23	68%	21%	11%
White	553	434	22	67%	24%	9%
Two or more races	100	431	23	67%	25%	8%
Primary Ethnicity—Economically Disadvantaged						
American Indian or Alaska Native	25	444	26	44%	36%	20%
Asian	162	434	22	64%	28%	8%
Native Hawaiian or Other Pacific Islander	16	440	23	50%	31%	19%
Filipino	53	437	17	62%	32%	6%
Hispanic or Latino	2,519	439	21	56%	32%	13%
Black or African American	290	437	22	57%	32%	12%
White	417	441	22	51%	31%	18%
Two or more races	90	441	23	51%	31%	18%

Table 7.D.3 Demographic Summary for ELA, Grade Five

	Number Tested	Mean Scale Score	SD of Scale Scores	Percent in Performance Level		
				Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
All Valid Scores	5,098	537	21	57%	35%	9%
Male	3,440	537	21	56%	35%	9%
Female	1,658	536	20	59%	34%	7%
American Indian or Alaska Native	45	545	18	36%	47%	18%
Asian	356	531	21	66%	30%	4%
Native Hawaiian or Other Pacific Islander	31	532	23	65%	29%	6%
Filipino	138	534	19	70%	28%	3%
Hispanic or Latino	2,953	538	21	55%	36%	8%
Black or African American	408	538	20	58%	32%	10%
White	1,002	537	21	56%	34%	10%
Two or more races	165	535	20	61%	31%	8%
English only	2,968	537	21	57%	34%	9%
Initially fluent English proficient	76	531	20	68%	29%	3%
English learner	1,865	538	20	56%	36%	8%
Reclassified fluent English proficient	177	537	21	56%	36%	7%
To be determined	4	—	—	—	—	—
English proficiency unknown	8	—	—	—	—	—
Intellectual disability	1,889	536	19	63%	32%	5%
Hearing impairment	50	541	18	48%	46%	6%
Speech or language impairment	178	551	12	22%	58%	20%
Visual impairment	31	525	22	74%	26%	0%
Emotional disturbance	25	553	16	20%	48%	32%
Orthopedic impairment	271	526	24	72%	20%	8%
Other health impairment	254	545	19	39%	43%	18%
Specific learning disability	371	556	12	12%	57%	32%
Deaf-blindness	1	—	—	—	—	—
Multiple disabilities	215	518	21	85%	14%	1%
Autism	1,734	535	20	60%	34%	6%
Traumatic brain injury	31	535	24	61%	29%	1%
Not classified	48	538	21	56%	40%	4%
Not economically disadvantaged	1,687	532	21	65%	29%	6%
Economically disadvantaged	3,411	539	20	53%	37%	10%
Migrant	26	545	21	35%	54%	12%
Non-migrant	5,072	537	21	57%	35%	9%
Primary Ethnicity—Not Economically Disadvantaged						
American Indian or Alaska Native	14	533	21	64%	29%	7%
Asian	209	528	21	71%	26%	3%
Native Hawaiian or Other Pacific Islander	12	529	25	67%	33%	0%
Filipino	105	533	19	70%	27%	3%
Hispanic or Latino	578	532	22	63%	30%	7%

	Number Tested	Mean Scale Score	SD of Scale Scores	Percent in Performance Level		
				Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
Black or African American	114	531	19	74%	24%	3%
White	572	535	20	61%	31%	7%
Two or more races	83	530	21	69%	27%	5%
Primary Ethnicity—Economically Disadvantaged						
American Indian or Alaska Native	31	551	13	23%	55%	23%
Asian	147	536	20	59%	36%	5%
Native Hawaiian or Other Pacific Islander	19	535	22	63%	26%	11%
Filipino	33	535	19	67%	30%	3%
Hispanic or Latino	2,375	539	20	53%	38%	9%
Black or African American	294	540	20	52%	35%	13%
White	430	540	21	49%	37%	15%
Two or more races	82	540	18	52%	35%	12%

Table 7.D.4 Demographic Summary for ELA, Grade Six

	Number Tested	Mean Scale Score	SD of Scale Scores	Percent in Performance Level		
				Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
All Valid Scores	5,116	637	20	54%	38%	8%
Male	3,436	638	20	53%	39%	8%
Female	1,680	637	20	56%	37%	7%
American Indian or Alaska Native	38	642	19	39%	47%	13%
Asian	392	635	20	60%	34%	5%
Native Hawaiian or Other Pacific Islander	21	628	22	67%	33%	0%
Filipino	149	637	20	55%	38%	7%
Hispanic or Latino	2,952	638	20	53%	39%	8%
Black or African American	400	637	19	57%	39%	5%
White	1,031	637	21	54%	37%	9%
Two or more races	133	635	21	62%	34%	5%
English only	2,982	637	20	55%	37%	8%
Initially fluent English proficient	83	634	22	63%	30%	7%
English learner	1,779	637	20	54%	39%	7%
Reclassified fluent English proficient	262	641	18	48%	43%	10%
To be determined	2	—	—	—	—	—
English proficiency unknown	8	—	—	—	—	—
Intellectual disability	1,960	637	18	58%	37%	5%
Hearing impairment	57	641	17	40%	58%	2%
Speech or language impairment	139	651	9	14%	68%	17%
Visual impairment	34	618	24	74%	21%	6%
Emotional disturbance	32	650	16	16%	59%	25%
Orthopedic impairment	258	625	23	73%	22%	5%
Other health impairment	261	645	17	37%	51%	12%
Specific learning disability	342	655	10	11%	61%	28%
Deaf-blindness	5	—	—	—	—	—
Multiple disabilities	256	619	22	84%	13%	3%
Autism	1,700	636	20	59%	35%	6%
Traumatic brain injury	22	645	20	36%	41%	23%
Not classified	50	637	19	52%	48%	0%
Not economically disadvantaged	1,703	633	21	62%	32%	6%
Economically disadvantaged	3,413	639	19	50%	41%	9%
Migrant	36	650	14	33%	44%	22%
Non-migrant	5,080	637	20	54%	38%	8%
Primary Ethnicity—Not Economically Disadvantaged						
American Indian or Alaska Native	12	641	16	50%	42%	8%
Asian	226	632	20	65%	33%	2%
Native Hawaiian or Other Pacific Islander	7	—	—	—	—	—
Filipino	87	636	20	56%	36%	8%
Hispanic or Latino	560	632	22	63%	31%	6%

	Number Tested	Mean Scale Score	SD of Scale Scores	Percent in Performance Level		
				Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
Black or African American	114	631	21	68%	30%	2%
White	632	635	21	59%	33%	8%
Two or more races	65	631	21	71%	23%	6%
Primary Ethnicity—Economically Disadvantaged						
American Indian or Alaska Native	26	643	20	35%	50%	15%
Asian	166	638	19	54%	37%	10%
Native Hawaiian or Other Pacific Islander	14	631	22	64%	36%	0%
Filipino	62	638	20	53%	42%	5%
Hispanic or Latino	2,392	639	19	51%	41%	9%
Black or African American	286	640	18	52%	42%	6%
White	399	639	20	47%	44%	10%
Two or more races	68	638	19	53%	44%	3%

Table 7.D.5 Demographic Summary for ELA, Grade Seven

	Number Tested	Mean Scale Score	SD of Scale Scores	Percent in Performance Level		
				Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
All Valid Scores	5,123	736	21	57%	35%	8%
Male	3,401	736	21	57%	34%	9%
Female	1,722	735	22	57%	36%	7%
American Indian or Alaska Native	32	743	24	41%	41%	19%
Asian	400	733	21	64%	30%	6%
Native Hawaiian or Other Pacific Islander	25	734	23	52%	40%	8%
Filipino	178	734	20	61%	36%	3%
Hispanic or Latino	2,794	736	21	56%	36%	8%
Black or African American	429	734	22	59%	34%	7%
White	1,101	737	22	56%	34%	10%
Two or more races	164	736	23	53%	35%	12%
English only	3,018	736	22	57%	35%	9%
Initially fluent English proficient	73	729	22	71%	26%	3%
English learner	1,701	735	21	57%	36%	7%
Reclassified fluent English proficient	323	739	21	52%	36%	12%
To be determined	3	—	—	—	—	—
English proficiency unknown	5	—	—	—	—	—
Intellectual disability	2,008	736	20	58%	36%	6%
Hearing impairment	38	739	19	47%	50%	3%
Speech or language impairment	122	750	11	25%	61%	13%
Visual impairment	45	722	24	76%	20%	4%
Emotional disturbance	32	750	21	25%	53%	22%
Orthopedic impairment	255	721	24	75%	20%	5%
Other health impairment	233	743	20	36%	49%	14%
Specific learning disability	318	753	13	20%	55%	25%
Deaf-blindness	6	—	—	—	—	—
Multiple disabilities	301	720	23	80%	17%	3%
Autism	1,709	735	21	60%	32%	8%
Traumatic brain injury	24	739	25	46%	38%	17%
Not classified	32	728	24	69%	22%	9%
Not economically disadvantaged	1,781	732	22	63%	31%	6%
Economically disadvantaged	3,342	738	21	53%	37%	10%
Migrant	34	747	15	29%	56%	15%
Non-migrant	5,089	736	21	57%	35%	8%
Primary Ethnicity—Not Economically Disadvantaged						
American Indian or Alaska Native	13	742	24	46%	46%	8%
Asian	213	733	20	64%	31%	4%
Native Hawaiian or Other Pacific Islander	7	—	—	—	—	—
Filipino	130	733	20	62%	35%	3%
Hispanic or Latino	566	731	22	64%	31%	5%

	Number Tested	Mean Scale Score	SD of Scale Scores	Percent in Performance Level		
				Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
Black or African American	123	727	23	67%	27%	6%
White	647	733	22	62%	30%	8%
Two or more races	82	732	23	61%	30%	9%
Primary Ethnicity—Economically Disadvantaged						
American Indian or Alaska Native	19	743	24	37%	37%	26%
Asian	187	734	22	64%	28%	8%
Native Hawaiian or Other Pacific Islander	18	738	22	50%	39%	11%
Filipino	48	735	20	58%	38%	4%
Hispanic or Latino	2,228	737	21	54%	37%	9%
Black or African American	306	736	21	55%	37%	8%
White	454	742	21	46%	39%	14%
Two or more races	82	740	22	45%	39%	16%

Table 7.D.6 Demographic Summary for ELA, Grade Eight

	Number Tested	Mean Scale Score	SD of Scale Scores	Percent in Performance Level		
				Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
All Valid Scores	4,755	838	21	47%	44%	9%
Male	3,157	838	21	48%	44%	9%
Female	1,598	838	21	46%	44%	9%
American Indian or Alaska Native	43	845	22	28%	47%	26%
Asian	372	835	21	56%	40%	4%
Native Hawaiian or Other Pacific Islander	21	830	22	67%	33%	0%
Filipino	149	834	22	56%	38%	6%
Hispanic or Latino	2,580	839	21	46%	46%	9%
Black or African American	416	839	21	47%	44%	9%
White	1,060	839	22	46%	43%	11%
Two or more races	114	838	22	51%	38%	11%
English only	2,774	838	21	47%	44%	9%
Initially fluent English proficient	87	836	21	45%	53%	2%
English learner	1,564	838	21	47%	44%	9%
Reclassified fluent English proficient	325	840	19	48%	43%	8%
To be determined	2	—	—	—	—	—
English proficiency unknown	3	—	—	—	—	—
Intellectual disability	1,992	839	19	46%	46%	8%
Hearing impairment	53	841	18	42%	51%	8%
Speech or language impairment	73	850	16	29%	55%	16%
Visual impairment	38	821	24	74%	24%	3%
Emotional disturbance	29	849	17	28%	45%	28%
Orthopedic impairment	283	828	26	63%	28%	9%
Other health impairment	210	846	19	32%	48%	20%
Specific learning disability	262	854	11	11%	59%	30%
Deaf-blindness	0	—	—	—	—	—
Multiple disabilities	232	822	23	74%	23%	3%
Autism	1,516	837	20	50%	43%	6%
Traumatic brain injury	25	843	18	36%	60%	4%
Not classified	42	831	22	62%	38%	0%
Not economically disadvantaged	1,637	835	22	53%	40%	7%
Economically disadvantaged	3,118	840	20	44%	46%	10%
Migrant	20	848	7	30%	70%	0%
Non-migrant	4,735	838	21	47%	44%	9%
Primary Ethnicity—Not Economically Disadvantaged						
American Indian or Alaska Native	10	—	—	—	—	—
Asian	215	833	22	60%	38%	2%
Native Hawaiian or Other Pacific Islander	8	—	—	—	—	—
Filipino	92	832	22	58%	39%	3%
Hispanic or Latino	489	835	22	52%	41%	7%

	Number Tested	Mean Scale Score	SD of Scale Scores	Percent in Performance Level		
				Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
Black or African American	122	835	22	55%	40%	5%
White	637	836	22	50%	42%	8%
Two or more races	64	837	21	55%	38%	8%
Primary Ethnicity—Economically Disadvantaged						
American Indian or Alaska Native	33	850	19	21%	48%	30%
Asian	157	838	20	51%	42%	7%
Native Hawaiian or Other Pacific Islander	13	836	20	62%	38%	0%
Filipino	57	837	22	54%	35%	11%
Hispanic or Latino	2,091	840	20	44%	47%	9%
Black or African American	294	840	20	44%	45%	11%
White	423	842	20	39%	46%	15%
Two or more races	50	838	22	46%	38%	16%

Table 7.D.7 Demographic Summary for ELA, Grade Eleven

	Number Tested	Mean Scale Score	SD of Scale Scores	Percent in Performance Level		
				Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
All Valid Scores	4,273	940	20	43%	49%	8%
Male	2,799	941	19	41%	50%	9%
Female	1,474	939	20	45%	49%	6%
American Indian or Alaska Native	30	946	16	27%	57%	17%
Asian	332	936	20	49%	46%	4%
Native Hawaiian or Other Pacific Islander	19	941	21	42%	47%	11%
Filipino	139	937	20	53%	42%	4%
Hispanic or Latino	2,259	940	20	43%	50%	7%
Black or African American	404	942	19	38%	53%	9%
White	984	941	19	42%	48%	10%
Two or more races	106	941	20	40%	46%	14%
English only	2,601	941	19	41%	50%	9%
Initially fluent English proficient	70	936	24	49%	39%	13%
English learner	1,281	938	19	46%	49%	5%
Reclassified fluent English proficient	316	942	19	40%	50%	11%
To be determined	1	—	—	—	—	—
English proficiency unknown	4	—	—	—	—	—
Intellectual disability	1,923	940	18	44%	51%	4%
Hearing impairment	48	939	18	46%	48%	6%
Speech or language impairment	48	952	10	13%	73%	15%
Visual impairment	30	935	23	57%	33%	10%
Emotional disturbance	48	952	13	23%	52%	25%
Orthopedic impairment	266	931	24	56%	38%	6%
Other health impairment	150	947	16	26%	59%	15%
Specific learning disability	295	953	11	13%	62%	25%
Deaf-blindness	3	—	—	—	—	—
Multiple disabilities	219	925	24	66%	29%	5%
Autism	1,186	940	19	43%	48%	8%
Traumatic brain injury	29	941	22	38%	52%	1%
Not classified	28	917	22	79%	21%	0%
Not economically disadvantaged	1,523	938	20	47%	46%	8%
Economically disadvantaged	2,750	941	19	41%	52%	8%
Migrant	17	938	19	35%	65%	0%
Non-migrant	4,256	940	20	43%	49%	8%
Primary Ethnicity—Not Economically Disadvantaged						
American Indian or Alaska Native	5	—	—	—	—	—
Asian	182	936	20	53%	44%	3%
Native Hawaiian or Other Pacific Islander	7	—	—	—	—	—
Filipino	91	937	21	53%	42%	5%
Hispanic or Latino	470	937	21	48%	44%	7%

	Number Tested	Mean Scale Score	SD of Scale Scores	Percent in Performance Level		
				Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
Black or African American	113	937	20	50%	46%	4%
White	595	941	19	42%	49%	9%
Two or more races	60	938	21	47%	37%	17%
Primary Ethnicity—Economically Disadvantaged						
American Indian or Alaska Native	25	947	14	24%	64%	12%
Asian	150	937	21	45%	49%	5%
Native Hawaiian or Other Pacific Islander	12	938	20	50%	50%	0%
Filipino	48	936	19	54%	44%	2%
Hispanic or Latino	1,789	940	19	41%	52%	7%
Black or African American	291	944	18	33%	56%	11%
White	389	942	19	41%	48%	10%
Two or more races	46	945	17	30%	59%	11%

Table 7.D.8 Demographic Summary for Mathematics, Grade Three

	Number Tested	Mean Scale Score	SD of Scale Scores	Percent in Performance Level		
				Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
All Valid Scores	4,978	331	21	72%	23%	5%
Male	3,397	332	21	70%	24%	6%
Female	1,581	330	20	77%	21%	3%
American Indian or Alaska Native	34	333	18	71%	26%	3%
Asian	415	330	22	73%	20%	7%
Native Hawaiian or Other Pacific Islander	17	327	20	76%	24%	0%
Filipino	117	328	22	75%	23%	2%
Hispanic or Latino	2,877	332	21	72%	24%	5%
Black or African American	360	330	20	75%	21%	4%
White	974	331	21	73%	23%	4%
Two or more races	184	333	19	71%	25%	4%
English only	2,956	331	21	73%	22%	4%
Initially fluent English proficient	34	329	21	71%	29%	0%
English learner	1,873	332	20	71%	24%	5%
Reclassified fluent English proficient	105	332	20	68%	24%	9%
To be determined	6	—	—	—	—	—
English proficiency unknown	4	—	—	—	—	—
Intellectual disability	1615	329	19	82%	16%	2%
Hearing impairment	51	339	20	65%	18%	18%
Speech or language impairment	228	342	15	52%	42%	6%
Visual impairment	30	313	19	93%	7%	0%
Emotional disturbance	20	349	10	25%	70%	5%
Orthopedic impairment	239	321	21	87%	10%	3%
Other health impairment	282	334	20	69%	27%	4%
Specific learning disability	309	350	14	29%	53%	18%
Deaf-blindness	0	—	—	—	—	—
Multiple disabilities	265	314	18	93%	6%	1%
Autism	1,867	332	21	69%	25%	6%
Traumatic brain injury	17	337	18	0.65	0.35	0
Not classified	55	327	19	78%	22%	0%
Not economically disadvantaged	1,650	328	21	78%	19%	3%
Economically disadvantaged	3,328	333	20	70%	25%	5%
Migrant	27	344	19	48%	41%	11%
Non-migrant	4,951	331	21	72%	23%	5%
Primary Ethnicity—Not Economically Disadvantaged						
American Indian or Alaska Native	12	320	22	92%	0%	8%
Asian	234	328	22	76%	21%	3%
Native Hawaiian or Other Pacific Islander	3	—	—	—	—	—
Filipino	74	329	22	77%	20%	3%
Hispanic or Latino	556	328	21	77%	20%	3%

	Number Tested	Mean Scale Score	SD of Scale Scores	Percent in Performance Level		
				Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
Black or African American	104	326	20	78%	22%	0%
White	563	327	20	79%	18%	3%
Two or more races	104	329	20	78%	18%	4%
Primary Ethnicity—Economically Disadvantaged						
American Indian or Alaska Native	22	340	11	59%	41%	0%
Asian	181	334	22	70%	19%	11%
Native Hawaiian or Other Pacific Islander	14	324	21	79%	21%	0%
Filipino	43	325	22	72%	28%	0%
Hispanic or Latino	2,321	332	20	70%	25%	5%
Black or African American	256	332	20	73%	21%	5%
White	411	335	20	64%	29%	7%
Two or more races	80	337	17	61%	34%	5%

Table 7.D.9 Demographic Summary for Mathematics, Grade Four

	Number Tested	Mean Scale Score	SD of Scale Scores	Percent in Performance Level		
				Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
All Valid Scores	5,283	432	20	70%	26%	4%
Male	3,569	433	20	68%	27%	5%
Female	1,714	430	20	74%	23%	4%
American Indian or Alaska Native	38	432	23	68%	21%	11%
Asian	390	428	21	76%	22%	3%
Native Hawaiian or Other Pacific Islander	26	438	17	62%	31%	8%
Filipino	148	430	19	74%	23%	3%
Hispanic or Latino	3,103	433	20	68%	28%	4%
Black or African American	415	430	21	73%	22%	5%
White	972	432	20	71%	24%	5%
Two or more races	191	432	22	71%	23%	6%
English only	3,026	432	20	71%	25%	4%
Initially fluent English proficient	59	426	20	76%	24%	0%
English learner	2,034	433	20	69%	27%	4%
Reclassified fluent English proficient	154	434	20	62%	31%	6%
To be determined	6	—	—	—	—	—
English proficiency unknown	4	—	—	—	—	—
Intellectual disability	1,808	431	18	76%	22%	2%
Hearing impairment	47	442	17	47%	43%	11%
Speech or language impairment	194	444	15	48%	42%	10%
Visual impairment	30	423	27	70%	20%	10%
Emotional disturbance	24	446	18	46%	38%	17%
Orthopedic impairment	270	420	22	81%	16%	2%
Other health impairment	280	438	19	59%	35%	7%
Specific learning disability	408	449	13	34%	50%	16%
Deaf-blindness	6	—	—	—	—	—
Multiple disabilities	288	415	19	92%	7%	1%
Autism	1,840	432	20	71%	25%	4%
Traumatic brain injury	33	429	25	73%	24%	3%
Not classified	55	432	18	73%	27%	0%
Not economically disadvantaged	1,695	428	21	75%	22%	3%
Economically disadvantaged	3,588	434	19	68%	28%	5%
Migrant	55	443	19	53%	35%	13%
Non-migrant	5,228	432	20	70%	26%	4%
Primary Ethnicity—Not Economically Disadvantaged						
American Indian or Alaska Native	12	424	22	83%	17%	0%
Asian	226	427	21	77%	21%	2%
Native Hawaiian or Other Pacific Islander	10	—	—	—	—	—
Filipino	95	426	20	80%	18%	2%
Hispanic or Latino	578	428	21	74%	23%	3%

	Number Tested	Mean Scale Score	SD of Scale Scores	Percent in Performance Level		
				Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
Black or African American	121	427	22	77%	19%	4%
White	552	430	21	72%	24%	4%
Two or more races	101	428	22	78%	18%	4%
Primary Ethnicity—Economically Disadvantaged						
American Indian or Alaska Native	26	435	23	62%	23%	15%
Asian	164	429	21	74%	23%	3%
Native Hawaiian or Other Pacific Islander	16	436	20	56%	38%	6%
Filipino	53	436	17	64%	32%	4%
Hispanic or Latino	2,525	434	19	67%	29%	4%
Black or African American	294	431	21	72%	23%	5%
White	420	434	19	69%	25%	6%
Two or more races	90	436	21	62%	29%	9%

Table 7.D.10 Demographic Summary for Mathematics, Grade Five

	Number Tested	Mean Scale Score	SD of Scale Scores	Percent in Performance Level		
				Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
All Valid Scores	5,098	532	20	70%	25%	5%
Male	3,437	533	21	70%	25%	5%
Female	1,661	531	19	72%	25%	3%
American Indian or Alaska Native	44	539	19	57%	30%	14%
Asian	361	528	21	78%	17%	5%
Native Hawaiian or Other Pacific Islander	30	527	21	77%	20%	3%
Filipino	139	530	20	75%	24%	1%
Hispanic or Latino	2,948	533	20	70%	26%	4%
Black or African American	405	533	19	71%	25%	4%
White	1,006	532	21	70%	24%	5%
Two or more races	165	532	21	70%	24%	6%
English only	2,967	532	20	71%	24%	5%
Initially fluent English proficient	76	523	20	83%	14%	3%
English learner	1,865	533	20	69%	27%	4%
Reclassified fluent English proficient	177	533	21	71%	23%	6%
To be determined	5	—	—	—	—	—
English proficiency unknown	8	—	—	—	—	—
Intellectual disability	1,892	531	18	75%	23%	2%
Hearing impairment	49	536	21	63%	27%	10%
Speech or language impairment	178	544	12	46%	46%	8%
Visual impairment	31	522	22	77%	19%	3%
Emotional disturbance	26	551	21	38%	31%	31%
Orthopedic impairment	272	521	22	82%	14%	4%
Other health impairment	256	539	18	60%	32%	8%
Specific learning disability	370	548	13	35%	51%	14%
Deaf-blindness	1	—	—	—	—	—
Multiple disabilities	219	515	20	90%	9%	1%
Autism	1,727	531	21	73%	22%	5%
Traumatic brain injury	31	529	23	77%	16%	6%
Not classified	46	533	18	72%	26%	2%
Not economically disadvantaged	1,693	528	21	77%	20%	4%
Economically disadvantaged	3,405	534	19	67%	28%	5%
Migrant	26	542	24	50%	35%	15%
Non-migrant	5,072	532	20	71%	25%	5%
Primary Ethnicity—Not Economically Disadvantaged						
American Indian or Alaska Native	13	531	22	69%	15%	15%
Asian	211	525	22	81%	15%	5%
Native Hawaiian or Other Pacific Islander	12	524	21	83%	17%	0%
Filipino	106	530	19	76%	23%	1%
Hispanic or Latino	581	526	21	78%	20%	2%

	Number Tested	Mean Scale Score	SD of Scale Scores	Percent in Performance Level		
				Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
Black or African American	112	528	21	76%	20%	4%
White	575	531	21	75%	21%	5%
Two or more races	83	526	20	75%	24%	1%
Primary Ethnicity—Economically Disadvantaged						
American Indian or Alaska Native	31	543	16	52%	35%	13%
Asian	150	532	19	74%	20%	6%
Native Hawaiian or Other Pacific Islander	18	529	21	72%	22%	6%
Filipino	33	533	20	70%	27%	3%
Hispanic or Latino	2,367	534	19	67%	28%	5%
Black or African American	293	534	19	69%	27%	4%
White	431	534	20	65%	29%	6%
Two or more races	82	537	20	65%	24%	11%

Table 7.D.11 Demographic Summary for Mathematics, Grade Six

	Number Tested	Mean Scale Score	SD of Scale Scores	Percent in Performance Level		
				Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
All Valid Scores	5,123	631	20	73%	23%	4%
Male	3,445	632	20	72%	23%	5%
Female	1,678	630	20	74%	23%	3%
American Indian or Alaska Native	37	635	23	59%	27%	14%
Asian	395	629	20	72%	25%	3%
Native Hawaiian or Other Pacific Islander	21	620	22	81%	19%	0%
Filipino	148	632	20	72%	24%	5%
Hispanic or Latino	2,956	632	20	72%	24%	4%
Black or African American	403	630	19	76%	21%	4%
White	1,033	630	20	74%	22%	4%
Two or more races	130	631	21	75%	19%	5%
English only	2,990	631	20	74%	23%	4%
Initially fluent English proficient	81	629	21	75%	20%	5%
English learner	1,782	632	20	71%	24%	5%
Reclassified fluent English proficient	260	634	19	68%	29%	3%
To be determined	3	—	—	—	—	—
English proficiency unknown	7	—	—	—	—	—
Intellectual disability	1,962	631	18	76%	22%	2%
Hearing impairment	56	639	18	54%	43%	4%
Speech or language impairment	139	642	14	55%	36%	9%
Visual impairment	32	617	23	91%	9%	0%
Emotional disturbance	31	640	19	58%	29%	13%
Orthopedic impairment	260	621	22	80%	18%	2%
Other health impairment	261	637	18	66%	28%	7%
Specific learning disability	342	647	17	42%	43%	15%
Deaf-blindness	5	—	—	—	—	—
Multiple disabilities	257	616	20	88%	11%	1%
Autism	1,704	630	20	74%	21%	4%
Traumatic brain injury	21	635	20	57%	43%	0%
Not classified	53	631	18	72%	26%	2%
Not economically disadvantaged	1,712	628	21	76%	21%	3%
Economically disadvantaged	3,411	633	20	71%	25%	5%
Migrant	36	643	19	56%	25%	19%
Non-migrant	5,087	631	20	73%	23%	4%
Primary Ethnicity—Not Economically Disadvantaged						
American Indian or Alaska Native	12	634	25	58%	33%	8%
Asian	228	627	20	74%	25%	1%
Native Hawaiian or Other Pacific Islander	7	—	—	—	—	—
Filipino	87	632	21	74%	21%	6%
Hispanic or Latino	566	627	21	77%	20%	3%

	Number Tested	Mean Scale Score	SD of Scale Scores	Percent in Performance Level		
				Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
Black or African American	115	627	21	80%	16%	4%
White	632	629	21	75%	21%	4%
Two or more races	65	627	21	77%	20%	3%
Primary Ethnicity—Economically Disadvantaged						
American Indian or Alaska Native	25	635	23	60%	24%	16%
Asian	167	632	20	69%	25%	5%
Native Hawaiian or Other Pacific Islander	14	622	21	79%	21%	0%
Filipino	61	631	18	69%	28%	3%
Hispanic or Latino	2,390	633	20	71%	25%	5%
Black or African American	288	632	18	74%	23%	3%
White	401	632	20	71%	25%	4%
Two or more races	65	635	20	74%	18%	8%

Table 7.D.12 Demographic Summary for Mathematics, Grade Seven

	Number Tested	Mean Scale Score	SD of Scale Scores	Percent in Performance Level		
				Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
All Valid Scores	5,117	732	21	70%	24%	5%
Male	3,392	733	21	69%	25%	6%
Female	1,725	730	21	73%	23%	4%
American Indian or Alaska Native	32	735	21	66%	25%	9%
Asian	397	732	22	70%	22%	8%
Native Hawaiian or Other Pacific Islander	25	734	25	64%	20%	16%
Filipino	179	730	20	75%	22%	3%
Hispanic or Latino	2,793	733	21	69%	26%	5%
Black or African American	424	730	21	75%	21%	4%
White	1,102	731	21	72%	23%	5%
Two or more races	165	731	21	70%	27%	4%
English only	3,011	732	21	72%	23%	5%
Initially fluent English proficient	73	726	20	79%	21%	0%
English learner	1,705	733	22	68%	26%	6%
Reclassified fluent English proficient	318	734	21	64%	30%	6%
To be determined	3	—	—	—	—	—
English proficiency unknown	7	—	—	—	—	—
Intellectual disability	2,001	731	19	75%	22%	3%
Hearing impairment	40	740	20	45%	43%	13%
Speech or language impairment	119	747	15	36%	51%	13%
Visual impairment	45	718	21	89%	11%	0%
Emotional disturbance	35	742	19	51%	43%	6%
Orthopedic impairment	255	718	22	87%	9%	3%
Other health impairment	232	737	20	65%	28%	7%
Specific learning disability	317	749	14	36%	49%	15%
Deaf-blindness	6	—	—	—	—	—
Multiple disabilities	303	715	19	90%	8%	1%
Autism	1,708	733	21	69%	24%	7%
Traumatic brain injury	24	732	23	75%	17%	8%
Not classified	32	727	23	75%	22%	3%
Not economically disadvantaged	1,778	729	21	76%	19%	4%
Economically disadvantaged	3,339	734	21	67%	27%	6%
Migrant	34	745	17	29%	65%	6%
Non-migrant	5,083	732	21	71%	24%	5%
Primary Ethnicity—Not Economically Disadvantaged						
American Indian or Alaska Native	13	735	19	77%	15%	8%
Asian	211	732	22	72%	21%	7%
Native Hawaiian or Other Pacific Islander	7	—	—	—	—	—
Filipino	130	730	21	74%	22%	4%
Hispanic or Latino	566	728	22	77%	19%	4%

	Number Tested	Mean Scale Score	SD of Scale Scores	Percent in Performance Level		
				Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
Black or African American	121	726	22	79%	17%	4%
White	648	728	21	77%	19%	4%
Two or more races	82	728	21	78%	18%	4%
Primary Ethnicity—Economically Disadvantaged						
American Indian or Alaska Native	19	736	23	58%	32%	11%
Asian	186	732	23	68%	23%	9%
Native Hawaiian or Other Pacific Islander	18	736	21	61%	28%	11%
Filipino	49	730	20	78%	20%	2%
Hispanic or Latino	2,227	734	21	67%	27%	6%
Black or African American	303	732	20	73%	22%	5%
White	454	736	19	65%	28%	7%
Two or more races	83	734	20	61%	35%	4%

Table 7.D.13 Demographic Summary for Mathematics, Grade Eight

	Number Tested	Mean Scale Score	SD of Scale Scores	Percent in Performance Level		
				Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
All Valid Scores	4,757	831	20	71%	25%	4%
Male	3,162	831	21	70%	25%	5%
Female	1,595	831	20	73%	24%	3%
American Indian or Alaska Native	42	834	20	62%	33%	5%
Asian	375	829	21	75%	21%	4%
Native Hawaiian or Other Pacific Islander	21	823	21	81%	19%	0%
Filipino	150	827	21	76%	22%	2%
Hispanic or Latino	2,570	832	20	71%	25%	4%
Black or African American	420	831	20	72%	23%	5%
White	1,065	831	21	69%	25%	5%
Two or more races	114	832	21	65%	29%	6%
English only	2,778	831	21	71%	24%	5%
Initially fluent English proficient	86	830	21	67%	30%	2%
English learner	1,565	831	20	71%	25%	4%
Reclassified fluent English proficient	321	832	20	71%	25%	4%
To be determined	2	—	—	—	—	—
English proficiency unknown	5	—	—	—	—	—
Intellectual disability	1,976	832	19	73%	24%	3%
Hearing impairment	54	840	19	56%	35%	9%
Speech or language impairment	73	841	17	53%	37%	10%
Visual impairment	39	816	21	87%	13%	0%
Emotional disturbance	30	843	19	50%	37%	13%
Orthopedic impairment	285	822	22	80%	17%	3%
Other health impairment	206	838	19	55%	38%	7%
Specific learning disability	261	846	14	41%	48%	11%
Deaf-blindness	0	—	—	—	—	—
Multiple disabilities	238	816	20	88%	11%	1%
Autism	1,528	831	20	73%	23%	5%
Traumatic brain injury	25	833	17	72%	28%	0%
Not classified	42	822	17	93%	7%	0%
Not economically disadvantaged	1,646	828	21	74%	22%	4%
Economically disadvantaged	3,111	833	20	69%	26%	5%
Migrant	21	840	16	76%	10%	14%
Non-migrant	4,736	831	20	71%	25%	4%
Primary Ethnicity—Not Economically Disadvantaged						
American Indian or Alaska Native	9	—	—	—	—	—
Asian	219	827	21	79%	17%	4%
Native Hawaiian or Other Pacific Islander	8	—	—	—	—	—
Filipino	93	826	21	81%	18%	1%
Hispanic or Latino	485	829	21	74%	22%	4%

	Number Tested	Mean Scale Score	SD of Scale Scores	Percent in Performance Level		
				Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
Black or African American	124	828	20	76%	22%	2%
White	644	829	21	72%	24%	4%
Two or more races	64	831	21	69%	28%	3%
Primary Ethnicity—Economically Disadvantaged						
American Indian or Alaska Native	33	839	18	52%	42%	6%
Asian	156	831	21	70%	27%	3%
Native Hawaiian or Other Pacific Islander	13	830	19	77%	23%	0%
Filipino	57	830	22	68%	28%	4%
Hispanic or Latino	2,085	832	20	70%	25%	4%
Black or African American	296	833	19	71%	24%	6%
White	421	835	20	66%	27%	7%
Two or more races	50	834	21	60%	30%	10%

Table 7.D.14 Demographic Summary for Mathematics, Grade Eleven

	Number Tested	Mean Scale Score	SD of Scale Scores	Percent in Performance Level		
				Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
All Valid Scores	4,268	933	20	66%	29%	6%
Male	2,800	934	21	64%	29%	7%
Female	1,468	931	20	69%	27%	3%
American Indian or Alaska Native	30	941	17	60%	30%	10%
Asian	332	931	22	70%	23%	7%
Native Hawaiian or Other Pacific Islander	17	936	19	71%	24%	6%
Filipino	142	931	20	68%	26%	6%
Hispanic or Latino	2,257	933	20	67%	28%	5%
Black or African American	402	936	21	60%	34%	6%
White	982	934	20	64%	30%	6%
Two or more races	106	934	19	61%	34%	5%
English only	2,598	934	20	65%	29%	6%
Initially fluent English proficient	69	932	23	61%	32%	7%
English learner	1,278	932	20	70%	26%	4%
Reclassified fluent English proficient	318	936	21	62%	29%	9%
To be determined	1	—	—	—	—	—
English proficiency unknown	4	—	—	—	—	—
Intellectual disability	1,923	932	19	70%	27%	3%
Hearing impairment	47	934	19	68%	28%	4%
Speech or language impairment	46	946	12	46%	43%	11%
Visual impairment	29	927	25	66%	28%	7%
Emotional disturbance	48	950	17	29%	48%	23%
Orthopedic impairment	263	924	21	83%	15%	2%
Other health impairment	149	942	19	50%	38%	11%
Specific learning disability	298	948	14	34%	48%	18%
Deaf-blindness	3	—	—	—	—	—
Multiple disabilities	218	919	21	82%	16%	2%
Autism	1,187	934	21	64%	29%	7%
Traumatic brain injury	29	933	21	66%	31%	3%
Not classified	28	906	14	96%	4%	0%
Not economically disadvantaged	1,519	931	21	70%	25%	5%
Economically disadvantaged	2,749	935	20	64%	30%	6%
Migrant	17	938	18	59%	41%	0%
Non-migrant	4,251	933	20	66%	28%	6%
Primary Ethnicity—Not Economically Disadvantaged						
American Indian or Alaska Native	5	—	—	—	—	—
Asian	181	931	22	72%	20%	8%
Native Hawaiian or Other Pacific Islander	7	—	—	—	—	—
Filipino	92	931	20	67%	27%	5%
Hispanic or Latino	468	930	20	73%	24%	3%

	Number Tested	Mean Scale Score	SD of Scale Scores	Percent in Performance Level		
				Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
Black or African American	112	931	20	67%	31%	2%
White	594	933	20	68%	26%	5%
Two or more races	60	931	21	65%	27%	8%
Primary Ethnicity—Economically Disadvantaged						
American Indian or Alaska Native	25	944	16	52%	36%	12%
Asian	151	931	21	67%	28%	5%
Native Hawaiian or Other Pacific Islander	10	—	—	—	—	—
Filipino	50	931	21	70%	24%	6%
Hispanic or Latino	1,789	934	20	66%	29%	6%
Black or African American	290	938	20	58%	34%	8%
White	388	936	21	57%	35%	8%
Two or more races	46	938	16	57%	43%	0%

Chapter 8: Analyses

This chapter summarizes the item- and test-level statistics from the analyses conducted for the California Alternate Assessments (CAAs) for English language arts/literacy (ELA) and mathematics administered during the 2015–16 California Assessment of Student Performance and Progress (CAASPP) administration.

8.1. Background

This chapter provides information on the psychometric analyses of the 2015–16 CAA operational data. It presents and describes the data samples used for the statistical analyses and the results of the item and test analyses, such as classical item analyses, differential item functioning (DIF), and item calibration. It includes explanations for all statistical procedures implemented during the psychometric analyses, including item response theory (IRT) analyses, reliability estimates, standard errors of measurement, and decision consistency and accuracy of the achievement-level classifications. Information on the procedures designed to ensure the validity of score uses and interpretations is also provided.

8.1.1. Summary of the Analyses

Each of these sets of analyses is presented in the body of the text and in the appendixes listed below.

1. **Classical Item Analyses.** Appendix 8.A on page 226 presents the classical item analyses, including item difficulty indices, item-total correlation coefficient, and the distribution of score points for the dichotomous and polytomous items. In addition, the item type and associated flag for each item are provided.
2. **Item Response Theory.** Appendix 8.B on page 256 includes summaries of the item difficulty parameter estimates (*b*-value) for all of the items in each test. For polytomous items, partial credit step values (*d*-values) are also provided.
3. **Omission and Completion Analyses.** The omit rate and item difficulties for each item are presented in Appendix 8.C on page 287. These analyses examine whether the items with high omit rates are systematically more difficult than items with low omit rates. Table 8.C.17 through Table 8.C.24 in Appendix 8.C, starting on page 306, present the total number answered by students by each performance level.
4. **Differential Item Functioning (DIF).** Appendix 8.D on page 314 presents the results of the DIF analyses applied to all items for which sufficient student samples were available. The distributions of items across DIF categories are listed.
5. **Reliability Analyses.** Appendix 8.E on page 328 provides results of the reliability analyses of total test scores for the population as a whole and for selected subgroups of interest (e.g., gender, ethnicity, etc.). Table 8.E.15 through Table 8.E.56 in Appendix 8.E, starting on page 337, present the score conversion tables with the conditional standard errors of measurement (CSEM) for the reporting scale score and the performance level. Table 8.E.57 through Table 8.E.70 in Appendix 8.E, starting on page 379, present statistics describing the decision accuracy and decision consistency of the performance classifications.
6. **Validity Evidence.** Validity evidence related to the CAA is discussed in subsection 8.7 on page 215. Appendix 8.F, on page 383, presents distributions of the observed testing time to complete the total test for each content area. Table 8.F.5 through

Table 8.F.11 in Appendix 8.F, starting on page 387, present correlations between ELA and mathematics scores calculated for all students and for demographic subgroups of interest.

8.1.2. Samples for the Analyses

In general, all analyses included in the technical report are implemented based on all valid students' scores in the tested population. However, because each analysis has its own requirements in terms of timeline and information, the use of the data source depends on the time that data source becomes available as well as the information contained in the data.

The classical-item analyses (Appendix 8.A), IRT analyses (Appendix 8.B), and item-level DIF analyses (Appendix 8.D) were conducted based on the data file available in early June 2016 (analysis sample). All other analyses, such as the reliability analysis, were created using student demographic data that are in version 3 of the production data file ("P3"), available on October 31, 2016. Both data sources include all valid student scores except for a small number of student scores that were included or excluded in P3 on the basis of the data validation process; see subsection 7.3.2 *Special Cases* on page 89 for a list of cases for which student scores are not reported. Table 8.1 shows the differences between the two data sources.

Table 8.1 CAA 2015–16 Analyses Data Sources

Content Area	Grade	Analyses Sample				P3 Data			
		Completion	Partial Completion	Non-Completion	Total No. Tested	Completion	Partial Completion	Non-Completion	Total No. Tested
ELA	3	4,018	174	790	4,982	4,013	171	778	4,962
	4	4,228	195	773	5,196	4,311	193	763	5,267
	5	4,233	151	743	5,127	4,219	150	729	5,098
	6	3,972	194	689	4,855	4,243	191	682	5,116
	7	4,167	211	758	5,136	4,165	208	750	5,123
	8	3,870	130	767	4,767	3,867	128	760	4,755
	11	3,553	101	530	4,184	3,648	100	525	4,273
Mathematics	3	3,886	152	953	4,991	3,879	150	949	4,978
	4	4,297	198	798	5,293	4,289	197	797	5,283
	5	4,076	134	904	5,114	4,067	133	898	5,098
	6	4,122	154	857	5,133	4,120	151	852	5,123
	7	4,077	162	884	5,123	4,076	160	881	5,117
	8	3,797	149	821	4,767	3,791	149	817	4,757
	11	3,580	136	560	4,276	3,573	135	560	4,268

Note: Students who do not answer any items are considered to have returned a “non-completion.” Students who answer more than one item, but fewer than four items, are considered to have returned a “partial completion.” Students who answer at least four items are considered to have returned a “completion.”

8.1.2.1. Student Inclusion/Exclusion Rules

Students who did not answer any items (non-completion) or answered fewer than four items (partial completion) are excluded from the sample of analyses. The same rule applies to both classical item analysis and item calibration. See subsection 7.1.1.2 *Incomplete/Complete* on page 81 for the details.

8.2. Classical Item Analysis Statistics

Classical item analyses are used to evaluate the performance of all operational test items with respect to item difficulty, item discrimination, and student performance on key-based selected response or dichotomous items and rubric-based constructed-response items or polytomous items. Due to the nature of the multistage test (MST) design, routing rules present the items in one module to a group of students instead of to all students. The combination of Stage 1 and Stage 2 modules produce multiple linear test forms. Descriptions of these forms are provided in Table 4.1.

Item analyses are conducted on each of the unique forms.

8.2.1. Description of Classical Item Analysis Statistics

The classical item analyses include the computing of item-by-item proportion-correct indices and the item-total correlation indices. The associated flagging rules of these statistics are used to identify items that are not performing as expected. The omit rate of each item, the proportion and correlation of each distractor, and the distribution of each score point for the polytomous items are also included in the classical item analyses.

8.2.1.1. Classical Item Difficulty Indices (*p*-value and Average Item Score)

For dichotomous items, item difficulty is indicated by its *p*-value, which is the proportion of students who answer the item correctly. The range of *p*-values is from 0.00 to 1.00. Items with high *p*-values are easier items; those with low *p*-values are more difficult items. Dichotomous items are flagged for review with *p*-values above 0.95 (i.e., too easy) or below 0.33 (i.e., too difficult).

The formula for *p*-value for dichotomous item is:

$$p\text{-value}_{dich} = \frac{\sum X_{ic}}{N_i}, \quad (8.1)$$

where,

x_{ic} is the number of students that answered item i correctly, and

N_i is the total number of students who were presented with item i .

For polytomous items, the difficulty is indicated by the average item score (AIS). The AIS can range from 0.00 to the maximum total possible points for an item. Desired AIS values for polytomous items generally fall within the range of 30 percent to 80 percent of the maximum obtainable item score; items with values outside this range are flagged for review. To facilitate the interpretation, the AIS values for polytomous items are often expressed as the proportion of the maximum possible score, which are equivalent to the *p*-values of dichotomous items.

For polytomous items, the *p*-value is defined as:

$$p\text{-value}_{poly} = \frac{\sum X_{ij}}{N_i \times \text{Max}(X_i)}, \quad (8.2)$$

where,

X_{ij} is the score assigned for a given polytomous item i ,

$\text{Max}(X_i)$ is the maximum score for item i , and

N_i is the total number of students who were presented with item i .

8.2.1.2. Item-total Correlation

The item-total correlation statistic describes the relationship between students' performance on a specific item and their performance on the total test. The item-total correlation, also referred to as the "item discrimination index," is calculated as the correlation coefficient between the item score and total score.

In general, the item-total correlation ranges from -1.0 (for a perfect negative relationship) to 1.0 (for a perfect positive relationship). A relatively high item-total correlation coefficient value is desired, as it indicates that students with higher total raw scores on the overall test tended to perform better on the item than students with lower total raw scores. However, an item with a negative item-total correlation typically signifies a problem with the item, as the higher-ability students on the overall test are getting the item wrong or are assigned a low score for the item; or the lower-ability students on the overall test are getting the item right or are assigned a high score for that item.

For the CAA item analysis, the raw score on the router was used as the total raw score (also referred to as the criterion score) for computing the item-total correlations. "Omit-by-design"⁸ or "not presented" items in the second part of the Stage 1 router for forms R1A0E and R2A0E⁹ are treated as incorrect to calculate a criterion score.

The polyserial correlation measures the relationship between an item and the total test score and can be estimated as:

$$r_{polyreg} = \frac{\hat{\beta} s_{tot}}{\sqrt{\hat{\beta}^2 s_{tot}^2 + 1}} \quad (8.3)$$

where,

s_{tot} is the standard deviation of the students' total test scores as a criterion score,

β is the item parameter to be estimated from the data, with the estimate denoted as $\hat{\beta}$, using maximum likelihood estimation, and

β is a regression coefficient (slope) for predicting the continuous version of a binary item score onto the continuous version of the total score.

⁸ "Omit-by-design" refers to a test design feature in which a set of questions are not presented to a group of students so there are no student responses to these items. For example, a student may bypass Stage 1B (items 12 through 21 in a router) and is, instead, routed directly to the Easy Stage 2 module.

⁹ See Table 4.1 for detailed information about the CAA forms.

There are as many regressions as there are boundaries between scores with all sharing a common slope, β . For a polytomous item, there are $k-1$ regressions, where k is the number of score points on the item. Beta (β) is the slope for all $k-1$ regressions.

The polyserial correlation was calculated for both polytomous items and dichotomous items as an estimate of the correlation between an observed continuous variable and an unobserved continuous variable hypothesized to underlie the variable with ordered categories (Olsson, Drasgow, and Dorans, 1982). Desired values are positive and larger than 0.20. Negative item-total correlations indicate that low-ability students perform better on an item than high-ability students, suggesting that the key may be potentially flawed. Item-total correlations below 0.20 were flagged for review.

8.2.1.3. Distribution of Item Scores

For polytomous items, examination of the distribution of scores helps to identify how well the item functions. If no students are given the highest possible score point, it suggests that the item may not be functioning as expected (e.g., the item is confusing, poorly worded, or just unexpectedly difficult), the scoring rubric is flawed, and/or students did not have an opportunity to learn the content. In addition, if all or most students score at the extreme ends of the distribution (e.g., 0 and 2 for a 2-point item), it indicates that there may be problems with the item or the rubric in that students receive either full credit or zero credit, but no partial credit.

Items with a low percentage (i.e., <1%) of students obtaining any score point were identified and flagged. Items with such response patterns may pose problems during the IRT calibrations and, therefore, need to be carefully reviewed during item calibration and, if needed, excluded from the item calibration analyses.

8.2.2. Summary of Classical Item Analysis Flagging Criteria

In summary, items are flagged for review if the item analysis yield any of the following results:

1. The p -value is above 0.95 for dichotomous items or above 0.80 for polytomous items.
2. The p -value is below 0.33 for dichotomous items or below 0.30 for polytomous items.
3. Item-total correlation is below 0.20.
4. The number of high-performing students (top 20 percent) choosing a distractor is greater than the number choosing the key.
5. The omit rate is above 5 percent for dichotomous items or above 20 percent for polytomous response items.

ETS's psychometric staff and content assessment development staff carefully reviewed each of the flagged items and summarized the results for the California Department of Education (CDE) with recommendations for subsequent analyses.

8.2.3. Classical Item Analysis Results Summary

This subsection presents tables of the classical item analysis results for the 2015–16 test items. Table 8.2 and Table 8.3 present p -value and item-total correlation information by grade and subject for each module. There are two versions of the Stage 1 router with 21 items for each version of the test. Some items in the Stage 1 router could appear on both versions. The number of unique items in each test are listed in the tables. The reported item

statistics (p -value and polyserial correlation) are based on the weighted averages across multiple occurrences of an item.

Table 8.2 Classical Item Statistics for Each Stage for ELA

Grade	Module	No. of Unique Items	Max No. of Students	Mean p -value	Minimum p -value	Maximum p -value	Polyserial
	Grade 3 Total:	50	4,018	0.56	0.26	0.88	0.48
3	Stage 1 routers ^b	32	4,018	0.58	0.26	0.80	0.61
	Stage 2 easy	6	404	0.35	0.27	0.40	0.15
	Stage 2 moderate	6	1,951	0.47	0.30	0.67	0.24
	Stage 2 hard	6	1,633	0.69	0.39	0.88	0.34
		Grade 4 Total:	50	4,228	0.50	0.18	0.79
4	Stage 1 routers ^b	32	4,228	0.53	0.28	0.79	0.50
	Stage 2 easy	6	372	0.27	0.18	0.34	0.09
	Stage 2 moderate	6	2,448	0.47	0.32	0.73	0.20
	Stage 2 hard	6	1,385	0.61	0.50	0.71	0.27
		Grade 5 Total:	50	4,233	0.52	0.24	0.86
5	Stage 1 routers ^b	32	4,233	0.53	0.24	0.86	0.50
	Stage 2 easy	6	516	0.37	0.28	0.47	0.15
	Stage 2 moderate	6	2,568	0.52	0.30	0.67	0.13
	Stage 2 hard	6	1,124	0.63	0.43	0.73	0.18
		Grade 6 Total:	50	3,972	0.48	0.20	0.87
6	Stage 1 routers ^b	32	3,972	0.52	0.27	0.87	0.52
	Stage 2 easy	6	448	0.33	0.20	0.41	0.16
	Stage 2 moderate	6	2,459	0.40	0.28	0.57	0.26
	Stage 2 hard	6	1,043	0.49	0.38	0.73	0.22
		Grade 7 Total:	50	4,167	0.50	0.12	0.84
7	Stage 1 routers ^b	32	4,167	0.49	0.12	0.84	0.48
	Stage 2 easy	6	768	0.36	0.27	0.47	0.20
	Stage 2 moderate	6	2,580	0.53	0.43	0.67	0.21
	Stage 2 hard	6	783	0.61	0.48	0.68	0.21
		Grade 8 Total:	50	3,870	0.50	0.15	0.87
8	Stage 1 routers ^b	32	3,870	0.55	0.29	0.87	0.49
	Stage 2 easy	6	266	0.25	0.15	0.35	0.00
	Stage 2 moderate	6	2,455	0.42	0.28	0.63	0.21
	Stage 2 hard	6	1,124	0.50	0.30	0.65	0.19
		Grade 11 Total:	50	3,553	0.52	0.21	0.79
11	Stage 1 routers ^b	32	3,553	0.53	0.21	0.79	0.47
	Stage 2 easy	6	387	0.34	0.25	0.39	0.07
	Stage 2 moderate	6	2,305	0.53	0.34	0.70	0.12
	Stage 2 hard	6	817	0.63	0.51	0.77	0.22

^b The data from both versions of the router are combined.

Table 8.3 Classical Item Statistics for Each Stage for Mathematics

Grade	Module	No. of Unique Items	Max No. of Students	Mean p -value	Minimum p -value	Maximum p -value	Polyserial
3	Grade 3 Total:	50	3,886	0.43	0.07	0.73	0.35
	Stage 1 routers ^b	32	3,886	0.41	0.07	0.73	0.43
	Stage 2 easy	6	1,085	0.49	0.36	0.57	0.12
	Stage 2 moderate	6	2,398	0.44	0.22	0.69	0.17
	Stage 2 hard	6	379	0.42	0.14	0.68	0.31
4	Grade 4 Total:	50	4,297	0.44	0.18	0.87	0.32
	Stage 1 routers ^b	32	4,297	0.44	0.24	0.70	0.42
	Stage 2 easy	6	951	0.39	0.18	0.49	0.09
	Stage 2 moderate	6	2,995	0.37	0.19	0.60	0.10
	Stage 2 hard	6	326	0.55	0.36	0.87	0.19
5	Grade 5 Total:	50	4,076	0.44	0.05	0.77	0.34
	Stage 1 routers ^b	32	4,076	0.45	0.05	0.77	0.43
	Stage 2 easy	6	511	0.35	0.18	0.49	0.10
	Stage 2 moderate	6	3,081	0.42	0.27	0.60	0.12
	Stage 2 hard	6	458	0.45	0.31	0.61	0.34
6	Grade 6 Total:	50	4,122	0.43	0.10	0.85	0.35
	Stage 1 routers ^b	32	4,122	0.43	0.16	0.64	0.45
	Stage 2 easy	6	1,503	0.40	0.27	0.51	0.09
	Stage 2 moderate	6	2,304	0.32	0.10	0.52	0.13
	Stage 2 hard	6	301	0.56	0.28	0.85	0.26
7	Grade 7 Total:	50	4,077	0.46	0.27	0.71	0.37
	Stage 1 routers ^b	32	4,077	0.47	0.27	0.71	0.47
	Stage 2 easy	6	719	0.42	0.38	0.46	0.11
	Stage 2 moderate	6	2,807	0.41	0.34	0.53	0.19
	Stage 2 Hard	6	527	0.51	0.33	0.70	0.29
8	Grade 8 Total:	50	3,797	0.43	0.17	0.71	0.33
	Stage 1 routers ^b	32	3,797	0.42	0.21	0.69	0.43
	Stage 2 easy	6	907	0.34	0.17	0.56	0.13
	Stage 2 moderate	6	2,639	0.43	0.37	0.51	0.19
	Stage 2 hard	6	222	0.58	0.27	0.71	0.20
11	Grade 11 Total:	50	3,580	0.45	0.13	0.81	0.36
	Stage 1 routers ^b	32	3,580	0.47	0.13	0.80	0.48
	Stage 2 easy	6	673	0.37	0.18	0.53	0.06
	Stage 2 moderate	6	2,486	0.32	0.27	0.42	0.08
	Stage 2 hard	6	381	0.55	0.43	0.81	0.31

The results of item analyses for each item in each grade and subject are presented in Appendix 8.A, starting on page 226. The item statistics, including AIS, p -value, polyserial correlation, statistical flagging criteria, and item type are listed in those tables. The distribution of score points on each polytomous item are presented in Table 8.A.15 through Table 8.A.28. Note that only the raw score of Stage 1 is used for the criterion score for polyserial and DIF analyses because the total score points in each module of Stage 2 may

vary. The summaries of criterion scores of each test are presented in Table 8.A.29 and Table 8.A.30.

8.3. Item Response Theory (IRT) Analyses

The purpose of using IRT for calibration and scaling is to develop a common scale for all items so that scores for students who answered different items are comparable. This subsection describes the procedures used to calibrate and scale the CAA item response data using IRT. The following topics related to IRT calibration and scaling are also discussed: IRT data file preparation, description of the calibration process, and model fit evaluation and criteria.

8.3.1. Description of IRT Parameter Calibrations

The one-parameter item response theory model (1PL-IRT) is used for the CAA item calibration and was selected in consultation with the CDE. In particular, the generalized partial credit model (GPCM) (Muraki, 1992) restricted for 1PL-IRT is applied to both dichotomous and polytomous items. The mathematical form of the GPCM is the following:

$$P_{ih}(\theta_j) = \begin{cases} \frac{\exp(\sum_{v=1}^h Da_i(\theta_j - b_i + d_{iv}))}{1 + \sum_{c=1}^{n_i} \exp(\sum_{v=1}^c Da_i(\theta_j - b_i + d_{iv}))}, & \text{if score } h = 1, 2, \dots, n_i \\ \frac{1}{1 + \sum_{c=1}^{n_i} \exp[\sum_{v=1}^c Da_i(\theta_j - b_i + d_{iv})]}, & \text{if score } h = 0 \end{cases}, \quad (8.4)$$

where,

$P_{ih}(\theta_j)$ is the probability of student with proficiency θ_j obtaining score h on item i ;

n_i is the maximum number of score points for item i ;

α_i is the discrimination parameter (when restricting to 1PL-IRT, $\alpha = 1/1.7$ which is equal to 0.588) for item i ;

b_i is the location parameter for item i ;

d_{iv} is the category parameter for item i on score v ; and

D is a scaling constant of 1.7 that makes the logistic model approximate the normal ogive model.

When $n_i = 1$, equation 8.4 becomes an expression of the 1-parameter logistic model for dichotomous items.

FlexMIRT® (Cai, 2016), a multilevel and multiple-group IRT software package for item analysis and test scoring, was used for CAA item calibration analysis. FlexMIRT is used because it is known as one of the most flexible IRT software programs. FlexMIRT can fit a variety of IRT models onto both single-level and multilevel data. In addition, flexMIRT can be

used for item calibration of mixed item formats consisting of dichotomous and polytomous items.

8.3.1.1. Data Preparation

Prior to IRT calibration analyses, ETS psychometricians review the results of the classical item analyses to decide whether some items are of poor quality and need to be removed from calibration. For the CAAs for ELA and mathematics administered during the 2015–16 CAASPP administration, no items were excluded from the calibration analyses either based on statistical criteria or as a result of the data review meeting with the CDE.

For IRT calibration, scored item response data are used to create the IRT analysis input data files, for each grade and content area, including responses to items on both Stage 1 and Stage 2. For each possible form, there are 27 items in total, with 21 items from Stage 1 and 6 items from Stage 2. Across the eight possible forms for each grade and content area, there are a total of 50 unique items. The IRT analysis data input file is a sparse matrix, because each student only completed one of the eight possible forms (refer to Table 4.1 for the list of forms). Similar to the classical item analyses, “omit” items are treated as incorrect and “omit-by-design” items¹⁰ are treated as not presented.

8.3.1.2. Description of the Calibration Process

The calibration procedure is described in Figure 8.1.

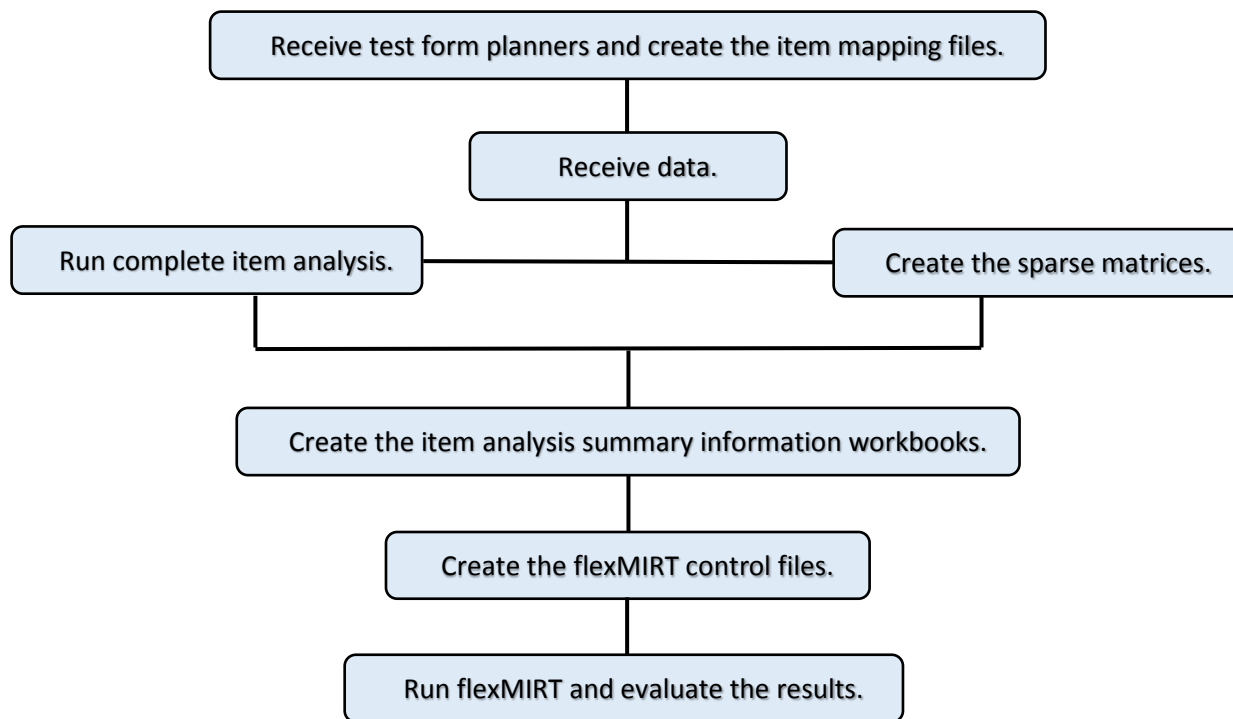


Figure 8.1 CAA Calibration Procedure

The procedure described here is followed to calibrate the 2015–16 student response data using flexMIRT for each grade and subject:

1. Prepare and format the input data files as required by flexMIRT.

¹⁰ Refer to subsection 8.4.1 for definition of “omits-by-design.”

2. Prepare flexMIRT control files and specify the IRT models and analyses. The 1PL-IRT and the corresponding partial credit model are used.
3. Evaluate the flexMIRT output to examine whether every execution of flexMIRT analysis reaches satisfactory convergence.
4. Review the item parameter estimates to examine whether these estimates are reasonable.
 - a. At the form level, the summary statistics for the *b*-parameter estimates (location difficulty) and *d*-parameter estimates (step difficulty) are examined, including the mean, standard deviation, median, minimum, and maximum, and goodness-of-fit.
 - b. At the item level, statistics of individual items are examined, including item difficulty estimates, model-fit statistics, and the order-of-step parameters.
5. Flagged items are discussed thoroughly with the CDE to decide whether those items should be removed from calibration or whether the scoring categories need to be collapsed. As a result of consultation with CDE, no items used during the 2015–16 CAA administration were removed from the analysis and no categories were collapsed.

During the calibration process, ETS conducts a parallel process to ensure the quality of IRT calibration: two ETS psychometricians create flexMIRT control files and run the same input data files independently and compare the results. Any differences in the output are discussed and resolved.

8.3.2. IRT Parameter Calibration Results Summary

The overall summary of IRT *b*-value estimates for 2015–16 CAA calibration is shown in Table 8.4. The mean, standard deviation (SD), minimum, and maximum values are presented, in addition to the number of items for each test.

Table 8.4 IRT Summary Parameter Estimates for All ELA and Mathematics Items

Content Area	Grade	Number of Items	Average of <i>b</i> -value	SD <i>b</i> -value	Minimum <i>b</i> -value	Maximum <i>b</i> -value
ELA	3	50	−0.4283	0.7754	−1.6005	1.3727
	4	50	−0.0849	0.6316	−1.5323	1.1395
	5	50	−0.1458	0.7311	−1.9210	1.0745
	6	50	0.0185	0.8102	−2.0224	1.3716
	7	50	0.0127	0.7847	−1.8188	2.3343
	8	50	−0.1228	0.7254	−2.0646	1.6237
	11	50	−0.1201	0.6955	−1.4018	1.5383
Mathematics	3	50	0.4631	0.8967	−1.0428	2.8711
	4	50	0.3445	0.5738	−1.0960	1.5794
	5	50	0.3270	0.8004	−1.0661	3.2009
	6	50	0.4171	0.6369	−0.6293	1.9169
	7	50	0.2271	0.5409	−0.6187	1.6117
	8	50	0.4188	0.5948	−0.8526	1.9410
	11	50	0.2770	0.7028	−1.1308	2.1128

Table 8.B.1 through Table 8.B.14, which start on page 256, provide the IRT difficulty and step parameter estimates at the item level for each grade level for ELA and mathematics. Table 8.B.15 on page 271 and Table 8.B.16 on page 272 present the summary statistics

(mean, SD, minimum, maximum, and median) of the IRT b -values for all items in the test and also present the summary statistics of IRT b -value by tier level (see subsection 4.2.1.1 *Tiered Items* on page 43 for discussion of tier levels). In addition, IRT b -value distributions conditional by test stage and item tier level are provided in Table 8.B.17 through Table 8.B.30, which start on page 273.

8.4. Omission and Completion Rates

8.4.1. Omit Rates

When a question has been seen but has not been answered (left blank) in the middle of an administered assessment wherein the student has viewed and responded to successive items, that response is regarded as an “omit.” (When a question has not been answered—left blank—and the student did not view any of the successive items, that response is regarded as “not presented.”)

For both dichotomous and polytomous items, this measure is useful for identifying potential problems with test features such as testing time and item/test layout. Typically, given that students have an adequate amount of testing time, approximately 95 percent of students should attempt to answer each question on the test. Two types of missing responses are possible for CAAs:

1. An item is considered “omit”: An item that has been seen but has not been answered (i.e., left blank) in the middle of an administered assessment wherein the student has viewed and responded to successive items.
2. An item is considered “not presented” or “omitted-by-design”: A set of items that are not presented to the student, such as the part B of the Stage 1 router where students who experience significant cognitive challenges on the first 11 items of the router are directly moved to the Stage 2 easy module. “Not presented” items in the second part of the router for forms R1A0E and R2A0E¹¹ are treated as incorrect to calculate a criterion score.

Table 8.C.1 through Table 8.C.14 provide the item omit rates. Overall, students assigned to the easy Stage 2 module had higher omit rates on items administered to them in relation to students assigned to other modules. This pattern suggests that low-performing students with the most severe cognitive disabilities experienced significant challenges completing a version of the CAA that consisted primarily of the most accessible content.

The items with high omit rates were flagged. Omit rates for polytomous items tended to be higher than for dichotomous items. Therefore, the omit rate for flagging individual items was 5 percent for selected response items and 20 percent for constructed response items. An omit response was scored as zero and was included in the N-count¹² for that item. A response that is considered omit-by-design was not scored and not included in the N-count for the item.

Table 8.C.1 through Table 8.C.14 present the relationship between the omit rate and IRT item difficulty for each item. Table 8.C.15 and Table 8.C.16 present the average number of omitted items for each form and the number of items in each module for each form.

¹¹ See Table 4.1 for more detailed information.

¹² N-count indicates the number of students who answered the item.

8.4.2. Completion Rates

Completion rates indicate the proportion of students who failed to complete a certain number of items on the test. A student's record for the test is not considered complete unless the student answered at least four items.

Table 8.C.17 through Table 8.C.24 present the distribution of total number of answered items by performance level. Most students answered all 27 items.

8.5. Differential Item Functioning (DIF)

DIF analyses were conducted using the data obtained from the 2015–16 CAA items. If an item performs differentially across identifiable subgroups—e.g., gender or ethnicity—when students are matched on ability, the item may be measuring something other than the intended construct (i.e., possible evidence of DIF). It is important, however, to recognize that item performance differences flagged for DIF might be related to actual differences in relevant knowledge or skills (item impact) or statistical Type I error, which might falsely assert DIF exists for an item. As a result, DIF statistics are used to identify *potential* item bias. Subsequent reviews by content experts and bias/sensitivity experts are required to determine the source and meaning of performance differences.

The sample size requirements for the DIF analyses were 100 in the smaller of either the focal group or the reference group and 400 in the combined focal and reference groups. These sample sizes are based on standard operating procedures with respect to DIF analyses at ETS.

8.5.1. DIF Procedure

8.5.1.1. Dichotomous Items

The Mantel-Haenszel (MH) DIF statistic was calculated for dichotomous items. In this method, students are classified to relevant subgroups of interest (e.g., gender or ethnicity). Using the raw score on the 21 item router as the criterion score, students in each total score category in the focal group (e.g., females) are compared with examinees in the same total score category in the reference group (e.g., males). On each item, students in the focal group also are compared to students in the reference group who performed equally well on the test as a whole. The common odds ratio is estimated across all categories of matched student ability using the formula in Equation 8.5 (Dorans & Holland, 1993). The resulting estimate is interpreted as the relative likelihood of success on a particular item for members of two groups when matched on ability.

$$\alpha_{MH} = \frac{\left(\sum_m R_{rm} \frac{W_{fm}}{N_{tm}} \right)}{\left(\sum_m R_{fm} \frac{W_{rm}}{N_{tm}} \right)} \quad (8.5)$$

where,

m = the number of score categories,

R_{rm} = the number of students in the reference group who answer the item correctly,

W_{fm} = the number of students in the focal group who answer the item incorrectly,

R_{fm} = the number of students in the focal group who answer the item correctly,

W_{rm} = the number of students in the reference group who answer the item incorrectly, and

N_{im} = the total number of students.

To facilitate the interpretation of MH results, the common odds ratio is frequently transformed to the delta scale using the following formula (Holland & Thayer, 1988):

$$MH\ D - DIF = -2.35 \ln[\alpha_{MH}] \quad (8.6)$$

Positive values indicate DIF in favor of the focal group—i.e., positive DIF items are differentially easier for the focal group—whereas negative values indicate DIF in favor of the reference group (i.e., negative DIF item are differentially easier for the reference group).

8.5.1.2. Polytomous Items

The MH D-DIF statistic is not calculated for polytomous items; instead the standardization DIF (Dorans & Schmitt, 1993; Zwick, Thayer & Mazzeo, 1997; Dorans, 2013), in conjunction with the Mantel chi-square statistic (Mantel, 1963; Mantel & Haenszel, 1959), is used to identify items with DIF. The standardized mean difference (SMD) compares the item means of the two groups after adjusting for differences in the distribution of students across the values of the matching variable (e.g., raw score on the 21-item router) and is calculated using the following formula:

$$SMD = \frac{\sum_{m=1}^M N_{fm} \times E_f(Y | X = m)}{\sum_{m=1}^M N_{fm}} - \frac{\sum_{m=1}^M N_{rm} \times E_r(Y | X = m)}{\sum_{m=1}^M N_{rm}} = \frac{\sum_{m=1}^M D_m}{\sum_{m=1}^M N_{fm}} \quad (8.7)$$

where,

X = the criterion score (raw score on the 21 item router),

Y = the item score,

M = the number of score categories on X ,

N_{rm} = the number of students in the reference group in score category m ,

N_{fm} = the number of students in the focal group in score category m ,

E_r = the expected item score for the reference group, and

E_f = the expected item score for the focal group.

A positive SMD value means that, conditional on the criterion score, the focal group has a higher mean item score than the reference group. In contrast, a negative SMD value means that, conditional upon the criterion score, the focal group has a lower mean item score than the reference group.

8.5.1.3. Classification

Based on the DIF statistics and significance tests, items are classified into three categories and assigned values of A, B, or C. Category A items contain negligible DIF, Category B items exhibit slight to moderate DIF, and Category C items possess moderate to large DIF values.

Positive values indicate that, conditional on the criterion score, the focal group has a higher mean item score than the reference group. In contrast, negative DIF values indicate that, conditional on the criterion score, the focal group has a lower mean item score than the

reference group. The flagging criteria for dichotomous items are presented in Table 8.5; the flagging criteria for polytomous items are provided in Table 8.6.

Table 8.5 DIF Categories for Dichotomous Items

DIF Category	Criteria
A (negligible)	<ul style="list-style-type: none"> • Absolute value of MH D-DIF is not significantly different from zero, or is less than one. • Positive values are classified as “A+” and negative values as “A-.”
B (moderate)	<ul style="list-style-type: none"> • Absolute value of MH D-DIF is significantly different from zero but not from one, and is at least one; OR • Absolute value of MH D-DIF is significantly different from one, but is less than 1.5. • Positive values are classified as “B+” and negative values as “B-.”
C (large)	<ul style="list-style-type: none"> • Absolute value of MH D-DIF is significantly different from one, and is at least 1.5. • Positive values are classified as “C+” and negative values as “C-.”

Table 8.6 DIF Categories for Polytomous Items

DIF Category	Criteria
A (negligible)	• Mantel Chi-square p value > 0.05 or $ SMD/SD \leq 0.17$
B (moderate)	• Mantel Chi-square p value > 0.05 or $0.17 < SMD/SD \leq 0.25$
C (large)	• Mantel Chi-square p value > 0.05 or $ SMD/SD > 0.25$

Note: SMD = standardized DIF; SD = total group standard deviation of item score.

DIF analyses were conducted on each test for designated comparison groups defined on the basis of demographic variables, including: gender, race/ethnicity, and primary disabilities. These comparison groups are specified in Table 8.7.

Table 8.7 Student Subgroups for DIF Comparison

DIF Type	Reference Group	Focal Group
Gender	Male	<ul style="list-style-type: none"> • Female
Race/Ethnicity	White	<ul style="list-style-type: none"> • American Indian or Alaska Native * • Asian • Black or African American • Filipino • Hispanic or Latino • Native Hawaiian or Other Pacific Islander * • Two or more races
Disability	Intellectual Disability	<ul style="list-style-type: none"> • Autism • Deaf-blindness * • Emotional disturbance * • Hearing Impairment * • Multiple disabilities • Orthopedic impairment • Other health impairment • Specific learning disability • Speech or language impairment • Traumatic brain injury * • Visual Impairment*

* DIF analysis was not performed due to insufficient sample sizes.

These DIF results can be found in Appendix 8.D, which starts on page 314. In the DIF results tables, data in the N column show the number of item occurrences with sufficient

sample sizes to be included in DIF analyses. In addition, “–” indicates that the DIF analysis did not classify any items in the particular DIF category, while “NA” indicates that the DIF analysis was not performed due to insufficient sample size. Note that “NA” occurs mostly for items at Stage 2 due to the small sample sizes for easy and hard modules at Stage 2.

8.6. Reliability Analyses

Reliability focuses on the extent to which differences in test scores reflect true differences in the knowledge, ability, or the skill being tested rather than fluctuations due to chance. Thus, reliability measures the consistency of the scores across conditions that can be assumed to differ at random, especially which form of the test the student is administered. In statistical terms, the variance in the distributions of test scores—essentially, the differences among individuals—is due partly to real differences in the knowledge, skill, or ability being tested (true variance) and due partly to random errors in the measurement process (error variance). Reliability is an estimate of the proportion of the total variance that is true variance.

There are several different ways of estimating reliability. The type of reliability estimate reported here is an internal-consistency measure, which is derived from analysis of the consistency of the performance of individuals across items within a test. Reliability coefficients range from 0 to 1. The higher the reliability coefficient for a set of scores, the more likely individuals would be to obtain very similar scores upon repeated testing occasions if the students do not change in their level of the knowledge or skills measured by the test.

The reliability of classification is an estimate of the proportion of students who are accurately classified into achievement levels. There are two kinds of classification reliability statistics: decision accuracy and decision consistency. Decision accuracy is the agreement between the classifications actually made and the classifications that would be made if the test scores were perfectly reliable. Decision consistency is the agreement between the classifications that would be made on two independent different forms of the test. Standard error of measurement (SEM) quantifies the amount of error in the test scores. SEM is the extent by which students’ scores tend to differ from the scores they would receive if the test were perfectly reliable. The larger the SEM, the more the variability of a student’s observed scores across repeated testing. Observed scores with large SEMs pose a challenge to the valid interpretation of a single test score.

8.6.1. Description of Reliability Analyses

In classical test theory, the reliability coefficient can be defined as the squared correlation between the observed score and the true score, which is equal to the correlation between parallel observed scores (Lord and Novick, 1968, p.61). In applied settings, the requirement of repeated administrations is impractical, and methodologies estimating reliability from relationships among student performances on items within a single test form are often used. Coefficient alpha (Cronbach, 1951) is among the most common of these methodologies.

These reliability indices are not directly applicable to an MST because each student takes a different test form based on his or her ability. Therefore, an IRT-based approach called marginal reliability (Green, Bock, Humphreys, Linn, & Reckase, 1984) is used to estimate the reliability of MST scores. The estimates of reliability coefficients reported here are for item response model-based ability estimates.

This reliability coefficient for theta estimates, $\rho_{\hat{\theta}\hat{\theta}'}$ is defined, based on the single test administration, as shown in Equation 8.8:

$$\rho_{\hat{\theta}\hat{\theta}'} = 1 - \frac{M_{SEM^2_{\hat{\theta}}}}{S_{\hat{\theta}}^2} \quad (8.8)$$

where,

$\hat{\theta}$ is an ability estimate (i.e., theta score),

$S_{\hat{\theta}}^2$ is the measure of variance in ability estimates, and

$M_{SEM^2_{\hat{\theta}}}$ is an average of the squared CSEM (i.e., error variances) at each value of the ability estimate.

8.6.2. Standard Error of Measurement (SEM)

The SEM provides a measure of score instability in the scale score metric. The SEM is the square root of the error variance in the scores—i.e., the standard deviation of the distribution of the differences between students' observed scores and their true scores. The SEM is calculated by:

$$SEM = s_t \sqrt{1 - \rho_{\hat{\theta}\hat{\theta}'}} \quad (8.9)$$

where,

$\rho_{\hat{\theta}\hat{\theta}'}$ is the reliability estimated in Equation 8.8, and

S_t is the standard deviation of the total score (either the theta score or scale score).

The SEM is useful in determining the confidence interval (CI) that likely captures a student's true score. A student's true score can be thought of as the score a student would earn over an infinite number of independent administrations of the test. Across those administrations, approximately 95 percent of CIs from a student's observed score of -1.96 SEMs to that student's observed score of $+1.96$ SEMs would contain a student's true score (Crocker & Algina, 1986). For example, if a student's observed score on a given test equals 345 points, and the SEM equals 5, one can be 95 percent confident that the student's true score lies between 335 and 355 points (345 ± 10).

Table 8.8 presents the total score reliability for theta, and the mean, SD, and SEM of both thetas and scale scores for each of the 14 tests, along with the number of student results upon which those analyses are performed. Note that in the case of the total test reliability, the reliability is for the whole test on the theta score scale; it is calculated using the total test theta scale score of individual students.

Table 8.8 Summary Statistics for Scale Scores, Theta Scores, and Reliability

Content Area	Grade	No. of Students	Reliability	Scale Score			Theta Score		
				Mean	SD	SEM	Mean	SD	SEM
ELA	3	4,013	0.89	347.83	18.38	6.11	-0.03	1.29	0.43
	4	4,311	0.85	444.62	14.81	5.65	-0.03	1.03	0.39
	5	4,219	0.83	544.53	13.27	5.43	-0.04	0.92	0.38
	6	4,243	0.85	645.10	11.97	4.69	0.00	0.99	0.39
	7	4,165	0.84	744.01	14.31	5.65	-0.08	0.99	0.39
	8	3,867	0.86	846.98	11.53	4.35	-0.05	0.94	0.36
	11	3,648	0.84	946.68	11.42	4.58	-0.07	0.94	0.38
Mathematics	3	3,879	0.74	340.04	14.02	7.15	-0.08	0.83	0.43
	4	4,289	0.78	439.50	14.46	6.78	-0.12	0.88	0.41
	5	4,067	0.78	540.35	13.53	6.35	-0.06	0.80	0.37
	6	4,120	0.76	638.69	14.64	7.17	-0.15	0.86	0.42
	7	4,076	0.81	740.12	15.24	6.67	-0.08	0.90	0.40
	8	3,791	0.76	839.06	14.77	7.17	-0.15	0.89	0.43
	11	3,573	0.77	939.83	15.42	7.43	-0.11	0.96	0.46

The reliabilities and SEMs of the CAAs were examined for various subgroups of the student population. The subgroups included in these analyses were defined by their gender, ethnicity, economic status, migrant status, primary disability, and English-language fluency. The reliability analyses and SEMs are also presented by ethnicity within economic status. Table 8.E.1 through Table 8.E.14 present the reliabilities for the subgroups based on gender, ethnicity, English-language fluency, economic status, migrant status, and primary disability.

8.6.3. Theta Scores Standard Error

For all of the tests, theta scores are obtained through an IRT inverse test characteristic curve approach. The SEM is the standard deviation of the distribution of theta scores that the student would earn under different testing conditions. In IRT, the only differences taken into account in the SEM are those associated with different sets of items that could be presented to the student. In the framework of IRT, the SEM is the reciprocal of the square root of the test information function (TIF) based on the items taken by each student. It is also the estimate of standard error for the estimate of theta. The TIF is the sum of information from each item on the test. With maximum likelihood estimate, the SEM for a student with proficiency θ_j is:

$$SEM(\theta_j) = \frac{1}{\sqrt{I(\theta_j)}} \quad (8.10)$$

where,

$I(\theta_j)$ is the test information for student j , and

$$I(\theta_j) = \sum_{i=1}^n I_i(\theta_j), \quad I_i(\theta_j) \text{ is the item information of item } i \text{ for student } j.$$

When item information is based on the GPCM for both dichotomous and polytomous items for the one-parameter model, it is calculated as:

$$I_i(\theta_j) = [s_{i2}(\theta_j) - s_i^2(\theta_j)] \quad (8.11)$$

where,

$s_i(\theta_j)$ is the expected item score for item i on a theta score θ_j calculated as

$$s_i(\theta_j) = \sum_{h=0}^{n_i} h p_{ih}(\theta_j) \quad (8.12)$$

and

$$s_{i2}(\theta_j) = \sum_{h=0}^{n_i} h^2 p_{ih}(\theta_j) \quad (8.13)$$

where,

$p_{ih}(\theta_j)$ is the probability of an examinee with θ_j getting score h on item i , the computation of which is shown in Equation 8.4, and

n_i is the maximum number of score points for item i .

8.6.4. Conditional Standard Errors of Measurement (CSEM)

As part of the IRT-based scoring procedure, CSEMs are produced. CSEMs for scale scores are based on IRT and are estimated as a function of measured ability. The CSEMs are typically smaller in scale score units toward the center of the scale where more items are located, whereas the CSEMs are usually larger at the extreme ends of the scale. A student's CSEM under the IRT framework is equal to the reciprocal of the square root of the TIF multiplied by the scaling factor a :

$$\text{CSEM}(SS) = \frac{1}{\sqrt{I(\hat{\theta})}} a \quad (8.14)$$

where,

$$SS = a \times \theta + b,$$

$\text{CSEM}(SS)$ is the conditional standard error of measurement on scale score scale,

$I(\hat{\theta})$ is the test information function at ability level $\hat{\theta}$ as shown in equations 8.11, 8.12, and 8.13, and

a is the scaling factor (the slope) needed to transform theta to the scale score metric.

The value of a varies by content area (the slope values in Table 7.2).

CSEMs vary across the scale. When a test has cut scores, it is important to provide CSEMs at the cut scores. Table 8.9 presents the scale score CSEMs at the lowest score required for a student to be classified in the Level 2—Alternate and Level 3—Alternate achievement levels for each CAA.

Table 8.9 Scale Score CSEM at Achievement-level Threshold

Content Area	Grade	Level 2—Alternate		Level 3—Alternate	
		Scale Score Threshold	CSEM	Scale Score Threshold	CSEM
ELA	3	345	5	360	6
	4	445	5	460	6
	5	545	5	560	6
	6	645	4	660	5
	7	745	5	760	6
	8	845	4	860	4
	11	945	4	960	5
Mathematics	3	345	6	360	7
	4	445	6	460	6
	5	545	6	560	7
	6	645	5	660	6
	7	745	6	760	6
	8	845	6	860	6
	11	945	6	960	7

The theta score, theta CSEM, scale score, and scale score CSEM are shown in Table 8.E.15 through Table 8.E.56. Typically, the values of CSEMs for the middle scale scores tend to be lower than those for extreme scale scores.

8.6.5. Decision Classification Analyses

The accuracy of decisions (classifications) based on specified cut scores for the CAA is evaluated as a measure of the reliability of achievement level classifications. Every discrete test administration will result in some errors in the classification of students. When an assessment uses achievement levels as the primary method to report test results, accuracy and consistency of decisions become key indicators about the quality of the assessment.

The methodology used for estimating the reliability of classification decisions described in Livingston and Lewis (1995) is implemented using the Educational Testing Service (ETS)-proprietary computer program RELCLASS-COMP (Version 4.14).

Decision accuracy describes the extent to which students are classified in the same way as they would be on the basis of the average of all possible forms of a test. Decision accuracy answers the following question: How closely does the actual classification of students, based on their single-form scores, agree with the classification that would be made on the basis of their true scores, if their true scores are somehow known?

Decision consistency describes the extent to which students are classified in the same way as they would be on the basis of a single form of a test other than the one for which data are available. Decision consistency answers the following question: What is the agreement between the classifications based on two non-overlapping, equally difficult forms of the test?

In each case, the estimated proportion of classifications with exact agreement is the sum of the entries in the diagonal of a contingency table representing the multivariate distribution (see Figure 8.2 and Figure 8.3). Reliability of classification at a cut score is estimated by combining the multivariate distribution at any particular cut score into a two-by-two table indicating whether the students are above or below the cut score and summing the entries in the diagonal.

		Decision made on the all-forms average	
		Does not reach an achievement level	Reaches an achievement level
True status on all-forms average	Does not reach an achievement level	Correct classification	Misclassification
	Reaches an achievement level	Misclassification	Correct classification

Figure 8.2 Decision Accuracy for Reaching an Achievement Level

		Decision made on a hypothetical alternate form	
		Does not reach an achievement level	Reaches an achievement level
Decision made on the form taken	Does not reach an achievement level	Correct classification	Misclassification
	Reaches an achievement level	Misclassification	Correct classification

Figure 8.3 Decision Consistency for Reaching an Achievement Level

For each test, the classification consistency and accuracy table includes estimates of the proportion of:

- Overall consistent and accurate classifications, and
- Consistency and accuracy around all cut scores.

The results of these analyses are presented in Table 8.E.57 through Table 8.E.70 in Appendix 8.E. Each table includes the contingency tables for both accuracy and consistency of the various achievement-level classifications. The proportion of students being accurately classified is determined by summing across the diagonals of the upper tables. The proportion of consistently classified students is determined by summing the diagonals of the lower tables.

8.7. Validity Evidence

Validity refers to the degree to which each interpretation or use of a test score is supported by the accumulated evidence (American Educational Research Association [AERA], American Psychological Association [APA], & National Council on Measurement in Education [NCME], 2014; ETS, 2014). It constitutes the central notion underlying the development, administration, scoring, and the uses and interpretations of test scores. The validation process does not rely on a single study or gathering only one type of evidence. Rather, validation involves multiple investigations and different kinds of supporting evidence (AERA, APA, & NCME, 2014; Cronbach, 1971; ETS, 2014; Kane, 2006). It begins with the test design and is implicit throughout the entire assessment process, which includes item development and field testing, analyses of items, test scaling and linking, scoring, reporting, and score usage.

In this subsection, the evidence gathered is presented to support the intended uses and interpretations of scores for the CAA. This subsection is organized primarily around the principles prescribed by AERA, APA, and NCME's *Standards for Educational and Psychological Testing* (2014). These *Standards* require a clear definition of the purpose of the test, a description of the constructs to be assessed, and the population to be assessed, as well as how the scores are to be interpreted and used. Since many aspects of the

CAASPP System are still under development at the time of this report, future possible research is mentioned, when appropriate, throughout this subsection.

The *Standards* identify five kinds of evidence that can provide support for score interpretations and uses:

1. Evidence based on test content,
2. Evidence based on relations to other variables,
3. Evidence based on response processes,
4. Evidence based on internal structure, and
5. Evidence based on the consequences of testing.

The next subsection defines the purpose of the CAAs, followed by a description and discussion of the kinds of validity evidence that have been gathered.

8.7.1. Evidence in the Design of the CAAs

8.7.1.1. Purpose

The CAAs are designed to assess the students with the most significant cognitive disabilities and whose individualized education program (IEP) team has designated the use of an alternate assessment on the statewide summative assessments. The goals of the CAAs are to ensure that students with the most significant cognitive disabilities achieve increasingly higher academic outcomes and leave high school ready for postsecondary options.

8.7.1.2. The Constructs to Be Measured

The CAAs are designed to show how well students perform relative to the Core Content Connectors (Connectors) for ELA and mathematics, which were developed by the National Center and State Collaborative (NCSC). These Connectors are content targets linked to the Common Core State Standards (CCSS) and are less complex than the CCSS, focusing on the main academic content in each subject and grade level.

The Connectors illustrate the necessary knowledge and skills needed to reach the learning targets within the CCSS and the knowledge and skills needed at each grade level. The Connectors identify priorities in each content area to guide instruction for students in this population and for the alternate assessment.

Test blueprints define the procedures used to measure the Connectors. They also provide an operational definition of the construct to which each set of standards refers and define the following for each content area:

- Subject to be assessed
- Tasks to be presented
- Administration instructions to be given
- Rules used to score student responses

The test blueprints control as many aspects of the measurement procedure as possible so that the testing conditions will remain the same over test administrations (Cronbach, 1971) in order to minimize construct irrelevant score variance (Messick, 1989).

ETS developed all CAA test items to conform to the SBE-approved Connectors and test blueprints (CDE, 2015a [ELA] and 2015b [mathematics]).

8.7.1.3. The Interpretations and Uses of the Scores

Overall student performance expressed as scale scores and achievement levels are generated for the CAAs for ELA and mathematics. An inference is drawn about what students at each achievement level *do know* and what they *are able to do*. The total score also is used to classify students in terms of their achievement level in the content area by grade.

The grade- and content-specific achievement level descriptors describe what students at each achievement level know and can do, by grade and content area. They reflect the level of expectation represented in the general performance level descriptors (PLDs) as well as the specific content reflected in the CCSS and the Connectors, including the essential understandings (EUs). California educators gathered to develop the grade- and content-specific PLDs using the general PLDs, which provided the number of reporting levels and the general definition of each reporting level. The importance of the grade- and content-specific PLDs is that they define the knowledge or skill expectations at each performance level on a functional basis, define the standards as they apply to threshold scores, and give standardized meaning to scores or score ranges.

A description of the uses and applications of the CAA results is presented in Chapter 7, starting on page 80. Additional information also can be found in the *2015–16 CAASPP Post-Test Guide* (CDE, 2016b).

The CAA test results have four primary purposes:

1. Help facilitate conversations between parents/guardians and teachers about student performance.
2. Serve as a tool to help parents/guardians and teachers work together to improve student learning.
3. Help staff from schools and local educational agencies identify strengths and areas that need improvement in their educational programs.
4. Provide the public and policymakers with information about student achievement.

More detailed descriptions regarding score use can be found in the *Education Code* Section 60602 Web page at http://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=EDC&division=4.&title=2.&part=33.&chapter=5.&article=1 (outside source).

8.7.1.4. Intended Test Population

Only eligible students may participate in the administration of the CAAs. Any student identified for alternate testing takes CAAs. IEP teams “shall determine when a child with a significant cognitive disability shall participate in an alternate assessment aligned with the alternate academic achievement standards.”¹³

8.7.2. Evidence Based on Test Content

Evidence based on test content refers to traditional forms of content validity evidence, such as the rating of test specifications and test items (Crocker, Miller, & Franks, 1989; Sireci, 1998), as well as alignment methods for educational tests that evaluate the interactions between curriculum frameworks, testing, and instruction (Rothman, Slattery, Vranek, & Resnick, 2002; Bhola, Impara & Buckendahl, 2003; Martone & Sireci, 2009).

¹³ S. 1177—114th Congress: Every Student Succeeds Act. 2015. Title 1, Part A, Subpart 1, Section 1111 (b) (2) (D) (ii) (I)

With MST test design, an additional dimension of content validity evidence is to ensure that the pathways and combination of two stages produce forms for individual students that conform to the test blueprint. The extent to which test forms administered in 2015–16 meet the blueprints is provided in *Chapter 4: Test Assembly*, starting on page 42, and in Table 4.A.1 through Table 4.A.14.

8.7.2.1. Description of the State Standards

The CAAs are aligned with the alternate achievement standards, the Connectors, for ELA and mathematics. The purpose of the Connectors is to ensure that students with the most significant cognitive disabilities achieve increasingly higher academic outcomes and leave high school ready for postsecondary options. The Connectors illustrate the necessary knowledge and skills needed to reach the learning targets within the CCSS and the knowledge and skills needed in each grade. They also identify priorities in each content area to guide the instruction for students in this population and for the alternate assessment (NCSC, 2014a [Reading], 2014b [Writing], and 2014c [mathematics]).

8.7.2.2. Item Specifications

Item specifications describe the characteristics of items that are written to measure each content standard. The specifications for ELA and mathematics are described in *Chapter 3: Item Development and Review* on page 34.

8.7.2.3. Module Selection and Pathway

The routing rules for the stages are designed to cover the alternate content standards-based blueprints in the assembly of MST forms. The general module routing approach is based on the routing rules (refer to *Chapter 4: Test Assembly*) that evaluates a module contribution to each of these measures:

1. a measure of content match to the blueprint,
2. a measure of overall test information, and
3. a measure of content complexity (tier).

8.7.2.4. Assessment Blueprints

The CAA test blueprints describe the content of the ELA and mathematics assessments for all grades tested and how that content is assessed. The test blueprints address the basic core content domains, the CCSS, the Connectors, and the essential understanding for each standard. Each test is described by a single blueprint. The degree to which test forms administered in 2015–16 meet the blueprint is provided in *Chapter 4: Test Assembly*, starting on page 42, and in Table 4.A.1 through Table 4.A.14.

8.7.2.5. Form Assembly Process

The content standards, blueprints, and routing rules are the basis for choosing items and modules for each assessment. Additionally item difficulty, and the content complexity of item, are provided to evaluate the statistical characteristics of the form. See *Chapter 4: Test Assembly*, starting on page 42, for information on the test design. The distributions of item difficulty conditional on the Stage 1/Stage 2 pathway are shown in Table 8.B.17 through Table 8.B.30. Note that the two different versions of the Stage 1 router have 10 common items.

8.7.3. Evidence Based on Response Processes

Validity evidence based on response processes refers to “evidence concerning the fit between the construct and the detailed nature of performance or response actually engaged

in by students” (AERA et al., 2014, p. 12). This type of evidence generally includes documentation of activities such as:

- Systematic observations of test response behavior,
- Showing the relationships of items intended to require demonstrations or applications of knowledge and skills to other measures that require similar levels of cognitive complexity in the content (i.e., teacher ratings of student performance), and
- Evaluation of the reasoning processes students employ when solving test items (Embretson, 1983; Messick, 1989).

This type of evidence, such as the Survey of Student Characteristics (SSC) and Student Response Check described in subsection 5.1.1: *Two-Stage Multistage Test (MST) Administration Procedures* in Chapter 5, is used to confirm that the CAAs are measuring the cognitive skills that are intended to be the objects of measurement and that students are using these targeted skills to respond to the items. Also, use of the SSC is planned as part of a research agenda, with the end result being better student routing during future administrations.

8.7.3.1. Analysis of Testing Time

Testing times for each administration can be evaluated for consistency by examining the expected response processes for the items presented to students. The length of time it takes students to take a test is collected and analyzed to build a profile describing what a typical testing event looks like for each content area and grade. In addition, variability in testing time is investigated to determine whether a student’s testing time should be viewed as unusual or irregular. The students with no item response or students who didn’t answer at least four items were removed from these analyses. The remaining testing population is partitioned into quartiles based on scale scores. These quartile groupings are not the same as the achievement levels. It should be noted that the CAAs are untimed tests.

The descriptive statistics—e.g., the number of students, mean, standard deviation, the minimum and maximum, and the percentiles—of the time required to complete the total test are computed for each of the four quartile groups by content area and grade level.

Some cases of extremely long testing time may be attributed to students with special needs taking longer to complete the tests, or the test not being closed down properly. With that being said, the results should be interpreted with caution. Mean testing times should not be interpreted directly, whereas the medians (50th percentile) are more meaningful in the interpretation of the time comparisons because medians are less impacted by the extreme values than means. Some very long durations are present in the data that suggest errors such as the failure to close a testing session. These are reminders that the medians are to be preferred in evaluating testing time information.

Table 8.F.1 and Table 8.F.2, which start on page 383, provide the descriptive statistics for ELA and mathematics testing time for each test pathway, respectively. These tables include total testing time and percentile information for each test pathway. Table 8.F.3 and Table 8.F.4 present total testing time and percentile information at each student performance quartile level. The unit of testing time is minutes; for example, in Table 8.F.3, the median of the testing time for the first quartile group (Q1) of ELA grade three is 14.96 minutes.

Overall, students in the lowest quartile level (Q1) have shorter testing times than students in the other quartile groups. The median total testing time generally increases as the quartile level increases from Q1 to Q4. ELA shows longer testing times than mathematics. With the exception of the grade eleven ELA assessment, nearly all students took approximately 95 cumulative minutes or fewer to complete a single content area of the CAA.

8.7.4. Evidence Based on Internal Structure

Internal structure evidence evaluates the strength or salience of the major dimensions underlying an assessment using indices of measurement precision such as test reliability, decision accuracy and consistency, generalizability coefficients, conditional and unconditional SEMs, and TIFs.

8.7.4.1. Differential Item Functioning (DIF)

DIF falls under the category of internal structure. DIF analyses were conducted to assess differences in the item performance of groups of students that differ in their demographic characteristics. For both ELA and mathematics, few items were identified as having significant levels of DIF. See subsection 8.5 for a description the DIF analyses and Appendix 8.D, where the results of the DIF analyses are reported.

8.7.4.2. Overall Reliability Estimates

The results of reliability analyses on the theta scores and scale score for each test are presented in Table 8.8. The results indicate that the reliability estimates for all tests are moderately high, ranging from 0.74 to 0.89.

8.7.4.3. Subgroup Reliability Estimates

The reliabilities are also examined for various subgroups. The subgroups considered were based on gender, ethnicity, economic status, primary disability, migrant status, and English-language fluency. Reliability estimates and SEM information for the theta scores are reported for each subgroup. Table 8.E.1 through Table 8.E.14 present the reliabilities and SEMs on the theta scores for the various subgroups.

8.7.4.4. Reliability of Performance Classifications

The methodology used for estimating the reliability of classification decisions is described with the decision classification analyses on page 214. The results of these analyses are presented in Table 8.E.57 through Table 8.E.70 in Appendix 8.E.

8.7.4.5. Correlations between Content Area Test Scores

The degree to which students' content area test scores correlate as expected provides evidence that those scores are measuring the intended constructs. Table 8.10 provides the correlations between scores on the ELA and mathematics tests and the number of students on which these correlations are based. Sample sizes for the individual tests are shown on the left; the numbers of students on which the correlations are based are shown on the lower right in bold font. The correlations are provided in the upper right. The correlations are based on all students with valid scale scores for both tests and are provided by grade.

Table 8.10 Correlations for All Students

Grade	Content Area	Students	R and Sample Size
3	ELA	4,013	0.65
	Mathematics	3,879	3,820
4	ELA	4,311	0.62
	Mathematics	4,289	4,166

Grade	Content Area	Students	R and Sample Size
5	ELA	4,219	0.55
	Mathematics	4,067	4,011
6	ELA	4,243	0.51
	Mathematics	4,120	4,045
7	ELA	4,165	0.56
	Mathematics	4,076	3,983
8	ELA	3,867	0.59
	Mathematics	3,791	3,706
11	ELA	3,648	0.60
	Mathematics	3,573	3,505

Notes:

- Numbers in **bold** font are the sample sizes to calculate the correlations.
- R denotes the correlation coefficient.

Results for these students appear to be consistent with expectations. In general, students' ELA scores correlated moderately with their mathematics scores. They are correlated more highly among students in lower grades than students in higher grades.

Table 8.F.5 through Table 8.F.11 starting on page 387 in Appendix 8.F provide the content area test score correlations by gender, ethnicity, English-language fluency, economic status, and migrant status. Similar patterns of correlations were found between students' ELA and mathematics results within the subgroups.

Note that the correlations are reported only for groups of more than 10 students. Correlations between scores on any two content area tests where 10 or fewer students took the tests are expressed as hyphens.

8.7.5. Evidence Based on Relationship to Other Variables

Evidence based on *relations to other variables* can be evaluated using the correlation between the CAA assessment results and variables related to students, as well as the correlation between the CAA scores with teacher judgments of student readiness for the next grade level. This type of evidence is essential for supporting the validity of certain inferences based on scores from the CAA and the SSC.

8.7.5.1. Survey of Student Characteristics (SSC)

The purpose of the SSC is to elicit information from teachers regarding the PLDs. PLDs describe what students at each performance level within a grade level know and are able to do. Refer to subsection 6.2 *Performance Level Descriptors (PLDs)* on page 74 of *Chapter 6: Standard Setting* for information about the use of PLDs.

The SSC includes selected questions from the Learner Characteristics Inventory (LCI) (Kearns, Kleinert, Kleinert, & Towles, 2006) and two questions on the student's preferable ways of responding to the CAAs in ELA and mathematics respectively. The LCI for alternate assessments based on alternate achievement standards (AA-AAS) are developed by the National Alternate Assessment Center to gather data on characteristics of students taking alternate assessments.

The purposes of LCI are to identify the learner characteristic patterns across grades and years, provide validity evidence regarding the population, and support the use of the AA-AAS for this population. The additional SSC questions based on PLDs provide a more

detailed picture of grade-based content area proficiency as observed by the teacher than does the LCI, which focuses more on the characteristics of the student's disability and types and level of engagement. The survey was completed by teachers of students who took the CAAs. More detailed information and results of SSC analyses are presented in Appendix 8.G.

References

- American Educational Research Association, American Psychological Association, & National Council on Measurement in Education. (2014). *Standards for educational and psychological testing*. Washington, DC: American Educational Research Association.
- Bhola, D. S., Impara, J. C., & Buckendahl, C. W. (2003). Aligning tests with states' content standards: Methods and issues. *Educational Measurement: Issues and Practice*, 22, 21–29.
- Cai, L. (2016). FlexMIRT®: *Flexible multilevel, multidimensional item analysis and test scoring* (Version 3.5) [computer software]. Chapel Hill, NC: Vector Psychometric Group.
- California Department of Education. (2015a). *California Alternate Assessments blueprint for English language arts*. Sacramento, CA: California Department of Education. Retrieved from <http://www.cde.ca.gov/ta/tg/ca/documents/caa15elablueprts.doc>
- California Department of Education. (2015b). *California Alternate Assessments blueprint for mathematics*. Sacramento, CA: California Department of Education. Retrieved from <http://www.cde.ca.gov/ta/tg/ca/documents/caa15mathblueprts.doc>
- California Department of Education. (2016). *2015–16 CAASPP post-test guide: Technical information for student score reports for CAASPP LEA and test site coordinators and research specialists*. Sacramento, CA: California Department of Education. Retrieved from http://www.caaspp.org/rsc/pdfs/CAASPP.post-test_guide.2016.pdf
- Crocker, L. & Algina, J. (1986). *Introduction to classical and modern test theory*. New York, NY: Holt.
- Crocker, L. M., Miller, D., & Franks, E. A. (1989). Quantitative methods for assessing the fit between test and curriculum. *Applied Measurement in Education*, 2, 179–94.
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16(3), 297–334.
- Cronbach, L. J. (1971). Test validation. In R. L. Thorndike (Ed.), *Educational measurement* (2nd ed.). Washington, DC: American Council on Education.
- Dorans, N. J. (2013). ETS contributions to the quantitative assessment of item, test, and score fairness. *ETS Research Report Series*, i–38.
- Dorans, N. J., & Holland, P. W. (1993). DIF detection and description: Mantel-Haenszel and standardization. In P. W. Holland & H. Wainer (Eds.), *Differential item functioning* (pp. 35–66). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Dorans, N. J., & Schmitt, A. P. (1993). Constructed response and differential item functioning: A pragmatic approach. In R. E. Bennett & W. C. Ward (Eds.), *Construction versus choice in cognitive measurement* (pp. 135–65). Hillsdale, NH: Lawrence Erlbaum Associates, Inc.
- Educational Testing Service. (2014). *ETS standards for quality and fairness*. Princeton, NJ: Educational Testing Service.

- Embretson (Whitley), S. (1983). Construct validity: construct representation versus nomothetic span. *Psychological Bulletin*, 93, 179–197.
- Green, B. F., Bock, R. D., Humphreys, L. G., Linn, R. L., & Reckase, M. D. (1984). Technical guidelines for assessing computerized adaptive tests. *Journal of Educational Measurement*, 21(4), 347–360.
- Holland, P. W., & Thayer, D. T. (1985). *An alternative definition of the ETS delta scale of item difficulty* (Research Report 85–43). Princeton, NJ: Educational Testing Service.
- Kane, M. (2006). Validation. In R. L. Brennan (Ed.), *Educational measurement* (4th ed., pp. 17–64). Washington, DC: American Council on Education and Praeger.
- Kearns, J., Kleinert, H., Kleinert, J., and Towles-Reeves, E. (2006). *Learner characteristics inventory*. Lexington, Kentucky: University of Kentucky, National Alternate Assessment Center.
- Livingston, S. A., & Lewis, C. (1995). Estimating the consistency and accuracy of classification based on test scores. *Journal of Educational Measurement*, 32, 179–97.
- Lord, F. M. & Novick, M. R. (1968). *Statistical theories of mental test scores*. Reading, MA: Addison-Wesley Publishing Company.
- Mantel, N. (1963). Chi-square tests with one degree of freedom: Extensions of the Mantel-Haenszel procedure. *Journal of the American Statistical Association*, 58, 690–700.
- Mantel, N. & Haenszel, W. (1959). Statistical aspects of the analyses of data from retrospective studies of disease. *Journal of the National Cancer Institute*, 22, 719–48.
- Martone, A., & Sireci, S. G. (2009). Evaluating alignment between curriculum, assessments, and instruction. *Review of Educational Research*, 4, 1332–61.
- Messick, S. (1989). Validity. In R. Linn (Ed.), *Educational measurement* (3rd ed.). Washington, DC: American Council on Education.
- Muraki, E. (1992). A generalized partial credit model: Application of an EM algorithm. *Applied Psychological Measurement*, 16(2): 159–176.
- National Center and State Collaborative. (2014a). *CCSS, prioritized English language arts CCCs, and essential understandings: Reading*. Minneapolis, MN: National Center and State Collaborative. Retrieved from <http://www.cde.ca.gov/ta/tg/ca/documents/ncscreading.doc>
- National Center and State Collaborative. (2014b). *CCSS, prioritized English language arts CCCs, and essential understandings: Writing*. Minneapolis, MN: National Center and State Collaborative. Retrieved from <http://www.cde.ca.gov/ta/tg/ca/documents/ncscwriting.doc>
- National Center and State Collaborative. (2014c). *CCSS, prioritized mathematics CCCs, and essential understandings*. Minneapolis, MN: National Center and State Collaborative. Retrieved from <http://www.cde.ca.gov/ta/tg/ca/documents/ncscmath.doc>
- Olsson, U., Drasgow, F., & Dorans, N. J. (1982). The polyserial correlation coefficient. *Psychometrika*, 47, 337–347.

- Rothman, R., Slattery, J. B., Vranek, J. L., & Resnick, L. B. (2002). *Benchmarking and alignment of standards and testing* [Technical Report 566]. Washington, DC: Center for the Study of Evaluation.
- Sireci, S. G. (1998). Gathering and analyzing content validity data. *Educational Assessment, 5*, 299–321.
- Zwick, R., Thayer, D. T., & Mazzeo, J. (1997). Descriptive and inferential procedures for assessing differential item functioning in polytomous items. *Applied Measurement in Education, 10*(4), 321–344.

Appendix 8.A Classical Item Analyses

Note 1: In Table 8.A.1 through Table 8.A.28, the value in the *Position* column indicates the item location in the module and version.

Position	Forms
router_all	Item appears in both routers with item 1 through item 21 (included forms: R1AOE, R1ABE, R1ABM, R1AMH, R2AOE, R2ABE, R2ABM, R2ABH)
router1	Item appears in router version 1 only (included forms: R1AOE, R1ABE, R1ABM, R1ABH)
router2	Item appears in router version 2 only (included forms: R2AOE, R2ABE, R2ABM, R2ABH)
stage2E	Item appears in Stage 2 easy module (included forms: R1AOE, R1ABE, R2AOE, R2ABE)
stage2M	Item appears in Stage 2 moderate module (included forms: R1ABM, R2ABM)
stage2H	Item appears in Stage 2 hard module (included forms: R1ABH, R2ABH)

Note 2: What follows are the possible values that will appear in the *Flag* column in Table 8.A.1 through Table 8.A.14 as a result of classical item analysis of the California Alternate Assessment (CAA) items.

Flag	Description	Criteria
A	Indicates low average item score (AIS) /low p -value (difficult item)	Dichotomous item: p -value < 0.33 Polytomous item: AIS < 30 percent of maximum possible score points
H	Indicates high average item score (AIS) /high p -value (easy item)	Dichotomous item: p -value > 0.95 Polytomous item: AIS > 80 percent of maximum possible score points
Rpoly	Indicates low correlation with the criterion Item – Total Correlation < 0.20	Polyserial < 0.20
O	Indicates high percent of omits/not responding	Dichotomous item: %omit > 5% Polytomous item: %omit > 20%
D	Indicates high ability students select distractor	Dichotomous item: High scoring students tend to select distractor over correct option Polytomous item: High scoring students tend to score lower than at the top score level (0 score for completion item, 0 or 1 for 2-point item)

Table 8.A.1 Average Item Score and Polyserial for English Language Arts/Literacy (ELA), Grade Three

Item ID	AIS	Polyserial	Flag	Position	Maximum Score Points	Item Type
CLTW3020095T1	1.52	0.60		router_all	2	ZoneMS Discrete
CLTR3020054T1	0.73	0.67		router1	1	MCSS Member
CLTR3020055T1	0.63	0.63		router1	1	MCSS Member
CLTW3020056T1	1.34	0.70		router1	2	MCMS Member
CLTR3020052T1	0.76	0.73		router_all	1	MCSS Member
CLTR3020051T1	0.69	0.71		router_all	1	MCSS Member
CLTR3020053T1	0.66	0.61		router_all	1	MatchSS Member
CLTW3020145T2	1.36	0.68		router_all	2	MatchMS Discrete
CLTW3020161T2	0.26	0.62	A	router_all	1	MatchMS Discrete
CLTR3020159T2	1.28	0.64		router_all	2	ZoneMS Discrete
CLTR3020160T2	1.34	0.58		router1	2	MCMS Discrete
CLTR3020093T1	0.70	0.55		router2	1	MCSS Discrete
CLTR3020094T1	0.50	0.52		router2	1	MCSS Discrete
CLTW3020096T1	1.26	0.61		router2	2	ZoneMS Discrete
CLTW3020146T2	1.42	0.75		router2	2	ZoneMS Discrete
CLTR3020147T2	0.58	0.72		router1	1	MCSS Member
CLTR3020148T2	0.38	0.40		router1	1	MCSS Member
CLTW3020149T2	1.24	0.65		router1	2	ZoneMS Member
CLTR3020081T3	0.75	0.64		router_all	1	ZoneSS Member
CLTR3020080T3	0.49	0.44	O	router_all	1	MCSS Member
CLTR3020082T3	0.98	0.60		router_all	2	MCSS Partial Credit Member
CLTW3020403T3	0.66	0.60		router1	2	MCSS Partial Credit Member
CLTR3020172T3	0.80	0.63		router1	1	MatchSS Discrete
CLTR3020400T3	0.56	0.66	O	router1	1	MCSS Discrete
CLTR3020401T3	1.02	0.61		router1	2	MCMS Discrete
CLTR3020142T2	1.10	0.62		router2	2	MCMS Member
CLTR3020140T2	1.44	0.59		router2	2	ZoneMS Member
CLTR3020141T2	0.39	0.37		router2	1	MCSS Member
CLTW3020176T3	0.38	0.65		router2	1	MatchMS Discrete
CLTR3020014T3	0.61	0.61	O	router2	1	MCSS Member
CLTR3020013T3	0.57	0.62	O	router2	1	MCSS Member
CLTW3020015T3	0.64	0.57		router2	2	MCSS Partial Credit Member
CLTR3020057T1	0.54	0.13	A Rpoly O	stage2E	2	ZoneMS Member
CLTR3020058T1	0.40	0.11	Rpoly O	stage2E	1	MCSS Member
CLTR3020059T1	0.78	0.21	O	stage2E	2	MCMS Member
CLTW3020107T1	0.40	0.25	O	stage2E	1	MCSS Discrete
CLTW3020108T1	0.38	0.15	Rpoly O	stage2E	1	ZoneSS Discrete
CLTR3020105T1	0.28	0.03	A Rpoly O	stage2E	1	MCSS Discrete
CLTR3020195T2	0.90	0.38		stage2M	2	MCSS Partial Credit Member
CLTR3020194T2	0.30	0.06	D A Rpoly	stage2M	1	MCSS Member
CLTR3020193T2	0.38	0.25		stage2M	1	MCSS Member
CLTR3020144T2	0.50	0.27		stage2M	1	MCMS Discrete
CLTW3020162T2	0.51	0.15	Rpoly O	stage2M	1	MCSS Discrete
CLTR3020143T2	0.67	0.33		stage2M	1	MCSS Discrete
CLTR3020166T3	1.30	0.20		stage2H	2	ZoneMS Member
CLTR3020167T3	0.83	0.43		stage2H	1	MCMS Member
CLTR3020168T3	1.52	0.36		stage2H	2	MCMS Member
CLTR3020174T3	1.76	0.31	H	stage2H	2	MatchMS Discrete
CLTW3020402T3	0.65	0.37		stage2H	1	MCSS Discrete
CLTW3020179T3	0.78	0.38		stage2H	2	MCSS Partial Credit Member

Table 8.A.2 Average Item Score and Polyserial for ELA, Grade Four

Item ID	AIS	Polyserial	Flag	Position	Maximum Score Points	Item Type
CLTR4020239T1	0.79	0.55		router_all	1	MCSS Discrete
CLTR4020434T1	0.46	0.48		router1	1	MCSS Member
CLTR4020435T1	1.10	0.38		router1	2	ZoneMS Member
CLTW4020436T1	0.41	0.46		router1	1	MCSS Member
CLTR4020256T1	0.64	0.66		router_all	1	MCSS Member
CLTR4020257T1	1.58	0.72		router_all	2	ZoneMS Member
CLTR4020258T1	1.34	0.59		router_all	2	MCMS Member
CLTR4020090T2	0.29	0.29	A	router_all	1	MCSS Member
CLTR4020091T2	1.08	0.60		router_all	2	ZoneMS Member
CLTR4020092T2	1.02	0.60		router_all	2	MCMS Member
CLTW4020138T2	0.56	0.37		router1	1	MCSS Discrete
CLTR4020241T1	0.41	0.44		router2	1	MCSS Member
CLTR4020242T1	1.44	0.60		router2	2	ZoneMS Member
CLTW4020243T1	0.38	0.26		router2	1	MCSS Member
CLTW4020139T2	0.46	0.34	O	router2	1	MCSS Discrete
CLTR4020116T2	0.65	0.61		router1	1	MCSS Member
CLTR4020117T2	1.36	0.44		router1	2	ZoneMS Member
CLTW4020118T2	0.49	0.49		router1	1	MCSS Member
CLTR4020448T3	0.48	0.54		router_all	1	MCSS Member
CLTR4020449T3	1.42	0.70		router_all	2	ZoneMS Member
CLTR4020450T3	1.40	0.59		router_all	2	MCMS Member
CLTW4020134T3	0.62	0.64		router1	1	MCSS Discrete
CLTR4020016T3	0.58	0.65	O	router1	1	MCSS Member
CLTR4020017T3	0.70	0.69		router1	2	MatchMS Member
CLTW4020018T3	0.36	0.54		router1	1	MCMS Member
CLTR4020119T2	0.28	0.37	A	router2	1	MCSS Member
CLTR4020120T2	1.00	0.37		router2	2	ZoneMS Member
CLTW4020121T2	0.46	0.42		router2	1	ZoneSS Member
CLTW4020131T3	0.54	0.56		router2	1	MCSS Discrete
CLTR4020298T3	0.44	0.29		router2	1	MCSS Member
CLTR4020299T3	1.04	0.64		router2	2	MatchMS Member
CLTW4020300T3	0.40	0.29	O	router2	1	MCSS Member
CLTR4020304T1	0.29	0.07	A Rpoly O	stage2E	1	MCSS Member
CLTR4020305T1	0.68	0.13	Rpoly O	stage2E	2	ZoneMS Member
CLTW4020306T1	0.64	0.15	Rpoly O	stage2E	2	ZoneMS Member
CLTW4020310T1	0.20	0.06	D A Rpoly O	stage2E	1	MCSS Discrete
CLTW4020240T1	0.36	0.11	A Rpoly O	stage2E	2	MatchMS Discrete
CLTR4020308T1	0.27	< 0.01	D A Rpoly O	stage2E	1	MCSS Discrete
CLTR4020087T2	0.32	0.08	A Rpoly	stage2M	1	MatchMS Member
CLTR4020088T2	0.40	0.18	Rpoly	stage2M	1	MCSS Member
CLTW4020089T2	1.46	0.25		stage2M	2	MatchMS Member
CLTW4020086T2	0.84	0.28		stage2M	2	MCSS Partial Credit Member
CLTR4020137T2	0.40	0.07	Rpoly	stage2M	1	MCSS Discrete
CLTR4020085T2	0.54	0.32		stage2M	1	MatchMS Discrete
CLTR4020245T3	0.69	0.30		stage2H	1	MCSS Member
CLTR4020244T3	1.00	0.35		stage2H	2	MatchMS Member
CLTW4020246T3	1.04	0.22		stage2H	2	MCSS Partial Credit Member
CLTR4020130T3	0.64	0.23		stage2H	1	MCSS Discrete
CLTW4020135T3	1.42	0.21		stage2H	2	MCSS Partial Credit Member
CLTR4020132T3	0.57	0.28		stage2H	1	ZoneMS Discrete

Table 8.A.3 Average Item Score and Polyserial for ELA, Grade Five

Item ID	AIS	Polyserial	Flag	Position	Maximum Score points	Item Type
CLTR5020314T1	0.66	0.55		router_all	1	MCSS Discrete
CLTR5020452T1	0.59	0.56		router1	1	MCSS Member
CLTR5020453T1	1.72	0.72	H	router1	2	ZoneMS Member
CLTW5020454T1	1.32	0.65		router1	2	ZoneMS Member
CLTR5020318T1	0.75	0.71		router_all	1	MCSS Member
CLTR5020319T1	0.67	< 0.01	Rpoly	router_all	1	MCSS Member
CLTW5020320T1	0.47	0.37		router_all	1	MCSS Member
CLTR5020338T2	0.60	0.66		router_all	1	MCSS Member
CLTR5020337T2	0.51	0.62		router_all	1	MCSS Member
CLTW5020339T2	1.24	0.43		router_all	2	ZoneMS Member
CLTR5020340T2	0.52	0.54		router1	1	MCSS Discrete
CLTR5020311T1	0.72	0.64		router2	1	MCSS Member
CLTR5020312T1	0.55	0.61		router2	1	MCSS Member
CLTW5020313T1	1.50	0.67		router2	2	MatchMS Member
CLTR5020342T2	1.00	0.36		router2	2	MCMS Discrete
CLTR5020330T2	0.34	0.23		router1	1	MCSS Member
CLTW5020331T2	0.43	0.35		router1	1	MCSS Member
CLTR5020332T2	0.55	0.45		router1	1	MCSS Member
CLTR5020248T3	1.18	0.52		router_all	2	MatchMS Member
CLTR5020247T3	0.61	0.58		router_all	1	MCSS Member
CLTR5020249T3	0.74	0.60		router_all	2	MCSS Partial Credit Member
CLTR5020050T3	1.06	0.65		router1	2	MCMS Discrete
CLTR5020044T3	0.30	0.40	A	router1	1	MCMS Member
CLTR5020045T3	0.47	0.65		router1	1	MCSS Member
CLTW5020046T3	0.52	0.50	A	router1	2	MCSS Partial Credit Member
CLTR5020253T2	0.67	0.58		router2	1	MCSS Member
CLTR5020254T2	1.42	0.40		router2	2	ZoneMS Member
CLTW5020255T2	0.31	0.29	A	router2	1	MCSS Member
CLTR5020073T3	0.39	0.57		router2	1	MCSS Discrete
CLTR5020038T3	0.30	0.37	A	router2	1	MCMS Member
CLTR5020039T3	0.36	0.41		router2	1	MCSS Member
CLTW5020040T3	0.48	0.53	A	router2	2	MCSS Partial Credit Member
CLTR5020327T1	0.29	0.11	A Rpoly O	stage2E	1	MCSS Member
CLTR5020328T1	0.94	0.17	Rpoly O	stage2E	2	ZoneMS Member
CLTW5020329T1	0.28	0.10	A Rpoly O	stage2E	1	MCSS Member
CLTR5020316T1	0.68	0.13	Rpoly O	stage2E	2	MCMS Discrete
CLTW5020317T1	0.88	0.18	Rpoly O	stage2E	2	ZoneMS Discrete
CLTR5020315T1	0.82	0.20	Rpoly O	stage2E	2	ZoneMS Discrete
CLTW5020343T2	1.28	0.12	Rpoly	stage2M	2	ZoneMS Discrete
CLTR5020047T2	1.34	0.29		stage2M	2	ZoneMS Discrete
CLTR5020346T2	1.14	0.22		stage2M	2	MCMS Discrete
CLTW5020347T2	0.30	0.06	D A Rpoly	stage2M	1	MCSS Discrete
CLTR5020344T2	0.31	0.07	A Rpoly	stage2M	1	MCSS Discrete
CLTR5020345T2	1.26	0.04	Rpoly	stage2M	2	ZoneMS Discrete
CLTR5020041T3	0.43	0.07	Rpoly	stage2H	1	MatchSS Member
CLTR5020042T3	0.73	0.18	Rpoly	stage2H	1	MCSS Member
CLTW5020043T3	1.24	0.31		stage2H	2	MCSS Partial Credit Member
CLTW5020076T3	0.69	0.26		stage2H	1	MatchMS Discrete
CLTR5020341T3	1.18	0.12	Rpoly	stage2H	2	ZoneMS Discrete
CLTR5020074T3	1.46	0.16	Rpoly	stage2H	2	MCMS Discrete

Table 8.A.4 Average Item Score and Polyserial for ELA, Grade Six

Item ID	AIS	Polyserial	Flag	Position	Maximum Score Points	Item Type
CLTR6020097T1	1.74	0.67	H	router_all	2	MCMS Discrete
CLTR6020113T1	1.42	0.71		router1	2	MCMS Member
CLTR6020115T1	0.37	0.42		router1	1	MCSS Member
CLTR6020114T1	0.86	0.46		router1	1	MCSS Member
CLTR6020150T1	1.62	0.74	H	router_all	2	MCMS Member
CLTR6020151T1	0.79	0.36		router_all	1	MCSS Member
CLTW6020152T1	0.35	0.27		router_all	1	MCSS Member
CLTR6020184T2	0.92	0.46		router_all	2	ZoneMS Member
CLTW6020186T2	0.46	0.41	O	router_all	1	MCSS Member
CLTR6020185T2	0.63	0.65	O	router_all	1	MCSS Member
CLTR6020204T2	1.40	0.62		router1	2	ZoneMS Discrete
CLTR6020063T1	0.72	0.65		router2	1	MCSS Member
CLTR6020064T1	1.04	0.69		router2	2	MatchMS Member
CLTR6020065T1	0.96	0.58		router2	2	MCMS Member
CLTR6020205T2	0.46	0.39	O	router2	1	MCSS Discrete
CLTR6020197T2	0.55	0.40		router1	1	MCSS Member
CLTR6020196T2	1.16	0.59		router1	2	ZoneMS Member
CLTW6020198T2	0.50	0.75		router1	1	MatchMS Member
CLTW6020415T3	0.41	0.62		router_all	1	MatchMS Member
CLTR6020413T3	1.06	0.53		router_all	2	ZoneMS Member
CLTR6020414T3	0.29	0.25	A O	router_all	1	MCSS Member
CLTW6020424T3	0.33	0.26	A O	router1	1	MCSS Discrete
CLTR6020404T3	1.14	0.55		router1	2	ZoneMS Member
CLTR6020405T3	0.27	0.34	A O	router1	1	MCSS Member
CLTW6020406T3	0.60	0.39		router1	2	MCSS Partial Credit Member
CLTR6020200T2	0.70	0.59		router2	1	MCSS Member
CLTW6020201T2	0.76	0.63		router2	2	MCSS Partial Credit Member
CLTR6020199T2	0.68	0.64		router2	1	MCSS Member
CLTW6020426T3	0.70	0.66		router2	2	MCSS Partial Credit Member
CLTR6020398T3	0.41	0.40	O	router2	1	MCSS Member
CLTW6020399T3	0.70	0.66		router2	2	MCSS Partial Credit Member
CLTR6020397T3	0.32	0.45	A O	router2	1	MCSS Member
CLTR6020295T1	0.20	0.18	D A Rpoly O	stage2E	1	MCSS Member
CLTR6020296T1	0.41	0.11	Rpoly O	stage2E	1	MCSS Member
CLTW6020297T1	0.74	0.17	Rpoly O	stage2E	2	ZoneMS Member
CLTR6020098T1	0.64	0.19	Rpoly O	stage2E	2	ZoneMS Discrete
CLTW6020104T1	0.66	0.19	Rpoly O	stage2E	2	ZoneMS Discrete
CLTR6020099T1	0.70	0.12	Rpoly O	stage2E	2	MCMS Discrete
CLTR6020019T2	0.28	0.12	A Rpoly	stage2M	1	MCMS Member
CLTR6020020T2	0.57	0.47	O	stage2M	1	MCSS Member
CLTR6020021T2	0.68	0.13	Rpoly	stage2M	2	MCMS Member
CLTR6020203T2	0.62	0.22		stage2M	2	MatchMS Discrete
CLTW6020209T2	0.66	0.33		stage2M	2	MCSS Partial Credit Member
CLTW6020208T2	0.56	0.30		stage2M	1	MCSS Discrete
CLTR6020418T3	0.86	0.26		stage2H	2	MCMS Member
CLTR6020416T3	0.38	0.21		stage2H	1	MCMS Member
CLTR6020417T3	1.22	0.11	Rpoly	stage2H	2	ZoneMS Member
CLTR6020420T3	1.46	0.36		stage2H	2	ZoneMS Discrete
CLTR6020422T3	0.43	0.21		stage2H	1	MCSS Discrete
CLTW6020425T3	0.76	0.15	Rpoly	stage2H	2	MatchMS Discrete

Table 8.A.5 Average Item Score and Polyserial for ELA, Grade Seven

Item ID	AIS	Polyserial	Flag	Position	Maximum Score Points	Item Type
CLTW7020385T1	0.81	0.57		router_all	1	MCSS Discrete
CLTR7020408T1	0.71	0.27		router1	1	MCSS Member
CLTW7020407T1	1.08	0.68		router1	2	ZoneMS Member
CLTR7020409T1	0.62	0.68		router1	1	MCSS Member
CLTR7020008T1	1.46	0.67		router_all	2	ZoneMS Member
CLTR7020009T1	0.40	0.55		router_all	1	MCSS Member
CLTW7020007T1	0.53	0.53		router_all	1	MCSS Member
CLTR7020378T2	0.80	0.54		router_all	2	MCMS Member
CLTR7020377T2	0.34	0.24		router_all	1	MCSS Member
CLTR7020376T2	0.49	0.55		router_all	1	MCSS Member
CLTW7020374T2	0.48	0.35	O	router1	1	MCSS Discrete
CLTR7020411T1	0.84	0.39		router2	1	MCSS Member
CLTR7020410T1	0.64	0.66		router2	1	MCSS Member
CLTW7020412T1	1.22	0.59		router2	2	ZoneMS Member
CLTW7020373T2	0.47	0.56	O	router2	1	MCSS Discrete
CLTR7020153T2	0.46	0.24		router1	1	MCSS Member
CLTR7020154T2	0.67	0.55		router1	1	MCSS Member
CLTWT020155T2	0.90	0.52		router1	2	MCSS Partial Credit Member
CLTR7020357T3	0.98	0.46		router_all	2	MCMS Member
CLTW7020359T3	0.54	0.38		router_all	1	MCSS Member
CLTR7020358T3	0.13	0.29	A	router_all	1	MCMS Member
CLTW7020366T3	0.57	0.63		router1	1	MCSS Discrete
CLTW7020350T3	0.86	0.54		router1	2	MCSS Partial Credit Member
CLTR7020348T3	0.37	0.28		router1	1	MCSS Member
CLTR7020349T3	0.12	0.32	A	router1	1	MCMS Member
CLTR7020158T2	1.02	0.50		router2	2	MCSS Partial Credit Member
CLTR7020156T2	0.49	0.30		router2	1	MCSS Member
CLTR7020157T2	0.39	0.35		router2	1	MCSS Member
CLTW7020367T3	0.45	0.44		router2	1	MCSS Discrete
CLTR7020351T3	0.25	0.49	A	router2	1	MCMS Member
CLTR7020352T3	0.46	0.65		router2	1	MCMS Member
CLTW7020353T3	0.84	0.53		router2	2	MCSS Partial Credit Member
CLTR7020010T1	0.30	0.11	A Rpoly O	stage2E	1	MCSS Member
CLTR7020011T1	0.27	0.25	A O	stage2E	1	MCSS Member
CLTR7020012T1	0.60	0.15	A Rpoly	stage2E	2	MCMS Member
CLTW7020386T1	0.82	0.23		stage2E	2	ZoneMS Discrete
CLTR7020379T1	0.94	0.22	O	stage2E	2	ZoneMS Discrete
CLTR7020382T1	0.86	0.26		stage2E	2	ZoneMS Discrete
CLTR7020427T2	1.14	0.15	Rpoly	stage2M	2	ZoneMS Member
CLTW7020429T2	0.43	0.27		stage2M	1	MCSS Member
CLTR7020428T2	0.46	0.05	Rpoly	stage2M	1	MCSS Member
CLTR7020368T2	1.26	0.21		stage2M	2	ZoneMS Discrete
CLTW7020375T2	0.86	0.24		stage2M	2	MCSS Partial Credit Member
CLTR7020371T2	1.34	0.31		stage2M	2	ZoneMS Discrete
CLTW7020356T3	1.26	0.18	Rpoly	stage2H	2	MCSS Partial Credit Member
CLTR7020354T3	1.36	0.28		stage2H	2	ZoneMS Member
CLTR7020355T3	0.61	0.30		stage2H	1	MCSS Member
CLTW7020361T3	1.26	0.18	Rpoly	stage2H	2	MCSS Partial Credit Member
CLTR7020364T3	1.32	0.12	Rpoly	stage2H	2	ZoneMS Discrete
CLTR7020362T3	0.48	0.19	Rpoly	stage2H	1	ZoneMS Discrete

Table 8.A.6 Average Item Score and Polyserial for ELA, Grade Eight

Item ID	AIS	Polyserial	Flag	Position	Maximum Score Points	Item Type
CLTR8020446T1	1.50	0.61		router_all	2	ZoneMS Discrete
CLTR8020445T1	0.61	0.49		router1	1	MCSS Discrete
CLTR8020444T1	1.24	0.50		router1	2	MatchMS Discrete
CLTW8020390T1	0.87	0.51		router1	1	MCSS Discrete
CLTR8020394T1	1.24	0.50		router_all	2	ZoneMS Member
CLTR8020395T1	0.74	0.22		router_all	1	MCSS Member
CLTW8020396T1	1.22	0.54		router_all	2	ZoneMS Member
CLTR8020292T2	1.04	0.65		router_all	2	MCMS Member
CLTR8020293T2	1.18	0.56		router_all	2	MatchMS Member
CLTR8020294T2	1.10	0.49		router_all	2	ZoneMS Member
CLTR8020288T2	1.30	0.48		router1	2	ZoneMS Discrete
CLTR8020284T1	0.62	0.23		router2	2	MCMS Member
CLTR8020282T1	1.48	0.67		router2	2	ZoneMS Member
CLTR8020283T1	0.50	0.52		router2	1	MCSS Member
CLTW8020262T2	0.29	0.18	D A Rpoly	router2	1	MCSS Discrete
CLTR8020321T2	1.54	0.66		router1	2	ZoneMS Member
CLTR8020322T2	0.38	0.29		router1	1	MCSS Member
CLTR8020323T2	1.18	0.61		router1	2	MCMS Member
CLTR8020269T3	0.49	0.60		router_all	1	MCSS Member
CLTW8020270T3	0.76	0.67		router_all	2	MatchMS Member
CLTR8020271T3	1.02	0.34		router_all	2	ZoneMS Member
CLTW8020070T3	1.26	0.56		router1	2	ZoneMS Discrete
CLTR8020066T3	0.98	0.42		router1	2	ZoneMS Member
CLTR8020068T3	1.04	0.48		router1	2	MCMS Member
CLTR8020067T3	0.36	0.42		router1	1	MCSS Member
CLTR8020001T2	0.55	0.49		router2	1	MCSS Member
CLTR8020002T2	1.20	0.45		router2	2	ZoneMS Member
CLTW8020003T2	1.08	0.59		router2	2	ZoneMS Member
CLTW8020071T3	1.14	0.58		router2	2	ZoneMS Discrete
CLTR8020437T3	1.08	0.55		router2	2	ZoneMS Discrete
CLTR8020438T3	0.32	0.32	A O	router2	1	MCSS Discrete
CLTR8020439T3	1.08	0.64		router2	2	ZoneMS Discrete
CLTR8020391T1	0.20	< 0.01	D A Rpoly O	stage2E	1	MCSS Member
CLTR8020392T1	0.40	0.04	A Rpoly O	stage2E	2	ZoneMS Member
CLTR8020393T1	0.30	< 0.01	A Rpoly O	stage2E	2	MCMS Member
CLTR8020447T1	0.62	0.04	Rpoly O	stage2E	2	ZoneMS Discrete
CLTW8020389T1	0.56	0.00	A Rpoly O	stage2E	2	ZoneMS Discrete
CLTW8020388T1	0.70	0.01	Rpoly O	stage2E	2	ZoneMS Discrete
CLTR8020285T2	0.34	0.21		stage2M	1	MCSS Member
CLTR8020286T2	0.39	0.19	Rpoly	stage2M	1	MCSS Member
CLTW8020287T2	0.28	0.13	A Rpoly	stage2M	1	MatchMS Member
CLTW8020260T2	0.96	0.14	Rpoly	stage2M	2	MCSS Partial Credit Member
CLTR8020290T2	0.40	0.25	O	stage2M	1	MCSS Discrete
CLTR8020291T2	1.26	0.32		stage2M	2	ZoneMS Discrete
CLTW8020062T3	0.30	0.16	A Rpoly	stage2H	1	MCSS Member
CLTR8020061T3	0.65	0.17	Rpoly	stage2H	1	MCSS Member
CLTR8020060T3	0.53	0.07	Rpoly	stage2H	1	MCMS Member
CLTR8020440T3	1.24	0.35		stage2H	2	ZoneMS Discrete
CLTR8020072T3	0.48	0.21		stage2H	1	MCSS Discrete
CLTW8020069T3	0.45	0.16	Rpoly	stage2H	1	MCSS Discrete

Table 8.A.7 Average Item Score and Polyserial for ELA, Grade Eleven

Item ID	AIS	Polyserial	Flag	Position	Maximum Score Points	Item Type
CLTRH020034T1	0.77	0.26		router_all	1	MCSS Discrete
CLTRH020227T1	0.79	0.55		router1	1	MCSS Member
CLTRH020228T1	1.02	0.41		router1	2	ZoneMS Member
CLTWH020229T1	0.69	0.58		router1	1	MCSS Member
CLTRH020022T1	0.39	0.45		router_all	1	MatchMS Member
CLTRH020023T1	0.72	0.34		router_all	2	MatchMS Member
CLTRH020024T1	1.06	0.53		router_all	2	MCMS Member
CLTRH020220T2	0.68	0.64		router_all	1	MCSS Member
CLTRH020221T2	0.52	0.60	O	router_all	1	MCSS Member
CLTWH020222T2	1.32	0.64		router_all	2	ZoneMS Member
CLTRH020216T2	0.62	0.66		router1	1	MCSS Discrete
CLTRH020230T1	0.58	0.51		router2	1	MCSS Member
CLTRH020231T1	0.78	0.65		router2	1	MCSS Member
CLTWH020232T1	1.42	0.63		router2	2	ZoneMS Member
CLTRH020213T2	0.45	0.41		router2	1	MCSS Discrete
CLTRH020188T2	1.16	0.51		router1	2	MatchMS Member
CLTRH020189T2	1.38	0.63		router1	2	MCMS Member
CLTRH020187T2	0.31	0.59	A	router1	1	MCMS Member
CLTRH020441T3	0.21	0.41	A	router_all	1	MCMS Member
CLTRH020442T3	1.30	0.43		router_all	2	ZoneMS Member
CLTRH020443T3	1.08	0.60		router_all	2	MCMS Member
CLTRH020278T3	0.24	0.21	D A	router1	1	MCSS Discrete
CLTRH020266T3	0.39	0.30		router1	1	MCSS Member
CLTWH020268T3	0.32	0.27	A O	router1	1	MCSS Member
CLTRH020267T3	1.04	0.43		router1	2	ZoneMS Member
CLTRH020217T2	0.69	0.55		router2	1	MCSS Member
CLTRH020218T2	1.14	0.33		router2	2	ZoneMS Member
CLTWH020219T2	0.57	0.56		router2	1	MCSS Member
CLTRH020277T3	0.84	0.21		router2	2	ZoneMS Discrete
CLTRH020279T3	0.49	0.49		router2	1	MCSS Member
CLTRH020280T3	0.36	0.36		router2	1	MCSS Member
CLTWH020281T3	0.84	0.38		router2	2	ZoneMS Member
CLTRH020025T1	0.66	0.04	Rpoly O	stage2E	2	ZoneMS Member
CLTRH020026T1	0.70	0.06	Rpoly O	stage2E	2	ZoneMS Member
CLTRH020027T1	0.25	0.09	A Rpoly O	stage2E	1	MCSS Member
CLTRH020233T1	0.37	0.13	Rpoly O	stage2E	1	MCSS Discrete
CLTWH020236T1	0.78	0.08	Rpoly O	stage2E	2	ZoneMS Discrete
CLTRH020033T1	0.70	0.01	Rpoly O	stage2E	2	ZoneMS Discrete
CLTRH020191T2	1.30	0.20	Rpoly	stage2M	2	ZoneMS Member
CLTRH020190T2	1.40	0.03	Rpoly	stage2M	2	MatchMS Member
CLTRH020192T2	0.34	0.03	Rpoly	stage2M	1	MCSS Member
CLTRH020214T2	1.12	0.18	Rpoly	stage2M	2	MatchMS Discrete
CLTRH020223T2	0.50	0.08	Rpoly	stage2M	1	MCSS Discrete
CLTRH020225T2	0.44	0.23		stage2M	1	MCSS Discrete
CLTRH020272T3	1.08	0.17	Rpoly	stage2H	2	ZoneMS Member
CLTRH020273T3	1.32	0.28		stage2H	2	ZoneMS Member
CLTWH020274T3	0.55	0.23		stage2H	1	MatchMS Member
CLTWH020433T3	1.02	0.11	Rpoly	stage2H	2	MCSS Partial Credit Member
CLTRH020430T3	0.73	0.26		stage2H	1	MCSS Discrete
CLTRH020276T3	1.54	0.24		stage2H	2	ZoneMS Discrete

Table 8.A.8 Average Item Score and Polyserial for Mathematics, Grade Three

Item ID	AIS	Polyserial	Flag	Position	Maximum Score Points	Item Type
CLTM3020174T1	0.59	0.54		router_all	1	MCSS Discrete
CLTM3020010T1	1.20	0.63		router1	2	MCMS Discrete
CLTM3020210T1	0.68	0.39		router1	1	MCSS Discrete
CLTM3020201T1	0.39	0.28		router1	1	MCSS Discrete
CLTM3020007T1	0.45	0.24		router_all	1	ZoneSS Discrete
CLTM3020004T1	0.73	0.45		router_all	1	MCSS Discrete
CLTM3020171T1	0.88	0.61		router_all	2	MCMS Discrete
CLTM3020011T2	1.26	0.67		router_all	2	InLineChoicelistMS Discrete
CLTM3020168T2	0.38	0.47	O	router_all	1	MCSS Discrete
CLTM3020202T2	0.53	0.33	O	router_all	1	MCSS Discrete
CLTM3020204T2	0.26	0.47	A O	router1	1	MCSS Discrete
CLTM3020056T1	0.36	0.13	Rpoly	router2	1	ZoneSS Discrete
CLTM3020013T1	0.35	0.05	D Rpoly	router2	1	MCSS Discrete
CLTM3020053T1	0.82	0.30		router2	2	MCMS Discrete
CLTM3020175T2	0.39	0.39		router2	1	MCSS Discrete
CLTM3020008T2	0.44	0.28		router1	1	MCSS Discrete
CLTM3020005T2	0.28	0.35	A	router1	1	MCSS Discrete
CLTM3020014T2	0.49	0.54		router1	1	MCSS Discrete
CLTM3020012T3	1.10	0.73		router_all	2	MatchMS Discrete
CLTM3020169T3	0.10	0.64	A	router_all	1	Numeric Discrete
CLTM3020203T3	0.27	0.41	A	router_all	1	MCSS Discrete
CLTM3020055T3	0.94	0.34		router1	2	MCMS Discrete
CLTM3020006T3	0.07	0.61	A	router1	1	Numeric Discrete
CLTM3020173T3	0.86	0.47		router1	2	MCMS Discrete
CLTM3020176T3	0.38	0.58		router1	1	MCSS Discrete
CLTM3020057T2	0.52	0.40		router2	1	MCSS Discrete
CLTM3020172T2	0.88	0.48		router2	2	MCMS Discrete
CLTM3020054T2	0.70	0.37		router2	2	MCMS Discrete
CLTM3020058T3	0.07	0.45	A	router2	1	Numeric Discrete
CLTM3020015T3	0.45	0.50		router2	1	MCSS Discrete
CLTM3020009T3	0.31	0.26	A	router2	1	MCSS Discrete
CLTM3020205T3	0.40	0.34		router2	1	MCSS Discrete
CLTM3020186T1	0.57	0.08	Rpoly O	stage2E	1	MCSS Discrete
CLTM3020001T1	0.72	0.17	Rpoly	stage2E	2	MCMS Discrete
CLTM3020062T1	0.98	0.15	Rpoly	stage2E	2	MCMS Discrete
CLTM3020059T1	0.48	0.10	Rpoly O	stage2E	1	MCSS Discrete
CLTM3020018T1	0.53	0.08	Rpoly O	stage2E	1	MCSS Discrete
CLTM3020065T1	0.52	0.16	Rpoly	stage2E	1	ZoneSS Discrete
CLTM3020187T2	0.22	0.07	D A Rpoly	stage2M	1	MCSS Discrete
CLTM3020002T2	0.82	0.08	Rpoly	stage2M	2	InLineChoicelistMS Discrete
CLTM3020063T2	1.38	0.32		stage2M	2	MCMS Discrete
CLTM3020060T2	0.51	0.23		stage2M	1	MCSS Discrete
CLTM3020208T2	0.34	0.11	D Rpoly	stage2M	1	MCSS Discrete
CLTM3020066T2	0.51	0.21		stage2M	1	MCSS Discrete
CLTM3020188T3	0.14	0.45	A	stage2H	1	Numeric Discrete
CLTM3020003T3	1.36	0.38		stage2H	2	MCMS Discrete
CLTM3020064T3	1.00	0.20		stage2H	2	MCMS Discrete
CLTM3020061T3	0.47	0.37		stage2H	1	MCSS Discrete
CLTM3020209T3	0.27	0.31	A	stage2H	1	MCSS Discrete
CLTM3020067T3	0.45	0.14	Rpoly	stage2H	1	MCSS Discrete

Table 8.A.9 Average Item Score and Polyserial for Mathematics, Grade Four

Item ID	AIS	Polyserial	Flag	Position	Maximum Score Points	Item Type
CLTM4020216T1	0.76	0.43		router_all	2	MCMS Discrete
CLTM4020225T1	0.86	0.73		router1	2	MatchMS Discrete
CLTM4020246T1	0.70	0.42		router1	1	MCSS Discrete
CLTM4020243T1	0.49	0.28		router1	1	MCSS Discrete
CLTM4020252T1	0.57	0.25		router_all	1	MCSS Discrete
CLTM4020249T1	0.90	0.56		router_all	2	ZoneMS Discrete
CLTM4020240T1	0.52	0.27		router_all	1	MCSS Discrete
CLTM4020226T2	1.02	0.62		router_all	2	MatchMS Discrete
CLTM4020247T2	0.48	0.48	O	router_all	1	MCSS Discrete
CLTM4020244T2	0.28	0.17	D A Rpoly O	router_all	1	MCSS Discrete
CLTM4020229T2	0.86	0.48		router1	2	InLineChoicelistMS Discrete
CLTM4020189T1	0.65	0.46		router2	1	MCSS Discrete
CLTM4020219T1	0.53	0.30		router2	1	MCSS Discrete
CLTM4020170T1	0.88	0.50		router2	2	MCMS Discrete
CLTM4020217T2	0.68	0.57		router2	2	MatchMS Discrete
CLTM4020190T2	0.33	0.37		router1	1	MCSS Discrete
CLTM4020220T2	0.36	0.32		router1	1	MCSS Discrete
CLTM4020241T2	0.32	0.44	A	router1	1	MCSS Discrete
CLTM4020227T3	0.94	0.67		router_all	2	BarPicturegraphMS Discrete
CLTM4020248T3	0.37	0.24		router_all	1	MCSS Discrete
CLTM4020221T3	0.41	0.31		router_all	1	MCSS Discrete
CLTM4020254T3	0.42	0.25		router1	1	MCSS Discrete
CLTM4020251T3	0.76	0.42		router1	2	MCMS Discrete
CLTM4020212T3	0.80	0.45		router1	2	ZoneMS Discrete
CLTM4020218T3	1.08	0.46		router1	2	InLineChoicelistMS Discrete
CLTM4020253T2	0.35	0.47		router2	1	MCSS Discrete
CLTM4020250T2	1.02	0.50		router2	2	ZoneMS Discrete
CLTM4020211T2	0.48	0.49	A	router2	2	MatchMS Discrete
CLTM4020191T3	0.47	0.42		router2	1	MCSS Discrete
CLTM4020245T3	0.41	0.41		router2	1	MCSS Discrete
CLTM4020242T3	0.36	0.40		router2	1	MCSS Discrete
CLTM4020230T3	0.82	0.44		router2	2	ZoneMS Discrete
CLTM4020231T1	0.80	0.16	Rpoly O	stage2E	2	ZoneMS Discrete
CLTM4020222T1	0.36	0.11	A Rpoly O	stage2E	2	MatchMS Discrete
CLTM4020237T1	0.49	0.05	Rpoly O	stage2E	1	MCSS Discrete
CLTM4020177T1	0.80	0.11	Rpoly O	stage2E	2	ZoneMS Discrete
CLTM4020255T1	0.48	0.06	Rpoly O	stage2E	1	MCSS Discrete
CLTM4020192T1	0.40	0.02	D Rpoly O	stage2E	1	MCSS Discrete
CLTM4020232T2	0.38	0.04	A Rpoly	stage2M	2	MatchMS Discrete
CLTM4020223T2	0.78	0.16	Rpoly	stage2M	2	MatchMS Discrete
CLTM4020238T2	0.36	< 0.01	D Rpoly	stage2M	1	MCSS Discrete
CLTM4020178T2	1.20	0.20	Rpoly	stage2M	2	InLineChoicelistMS Discrete
CLTM4020256T2	0.44	0.22		stage2M	1	MCSS Discrete
CLTM4020193T2	0.25	0.09	D A Rpoly	stage2M	1	MCSS Discrete
CLTM4020233T3	1.18	0.27		stage2H	2	MCMS Discrete
CLTM4020224T3	0.72	0.10	Rpoly	stage2H	2	InLineChoicelistMS Discrete
CLTM4020239T3	0.40	< 0.01	D Rpoly	stage2H	1	MCSS Discrete
CLTM4020179T3	1.36	0.41		stage2H	2	MatchMS Discrete
CLTM4020257T3	0.87	0.28		stage2H	1	MCSS Discrete
CLTM4020194T3	0.40	0.15	Rpoly	stage2H	1	MCSS Discrete

Table 8.A.10 Average Item Score and Polyserial for Mathematics, Grade Five

Item ID	AIS	Polyserial	Flag	Position	Maximum Score Points	Item Type
CLTM5020165T1	0.57	0.39		router_all	1	MCSS Discrete
CLTM5020258T1	0.60	0.46		router1	1	MCSS Discrete
CLTM5020195T1	1.54	0.60		router1	2	ZoneMS Discrete
CLTM5020345T1	0.70	0.53		router1	1	MCSS Discrete
CLTM5020340T1	0.80	0.49		router_all	2	MCMS Discrete
CLTM5020180T1	0.73	0.52		router_all	1	MCSS Discrete
CLTM5020183T1	1.20	0.41		router_all	2	ZoneMS Discrete
CLTM5020259T2	0.33	0.38		router_all	1	MCSS Discrete
CLTM5020196T2	1.30	0.58		router_all	2	ZoneMS Discrete
CLTM5020346T2	0.34	0.33		router_all	1	MCSS Discrete
CLTM5020405T2	1.08	0.52		router1	2	MCMS Discrete
CLTM5020354T1	0.73	0.55		router2	1	MCSS Discrete
CLTM5020267T1	0.74	0.43		router2	2	MatchMS Discrete
CLTM5020360T1	0.48	0.30		router2	1	MCSS Discrete
CLTM5020341T2	0.84	0.60		router2	2	MCMS Discrete
CLTM5020166T2	0.48	0.31		router1	1	MCSS Discrete
CLTM5020361T2	0.42	0.17	Rpoly	router1	1	MCSS Discrete
CLTM5020268T2	0.84	0.48		router1	2	ZoneMS Discrete
CLTM5020260T3	0.05	0.57	A	router_all	1	Numeric Discrete
CLTM5020197T3	1.06	0.48		router_all	2	ZoneMS Discrete
CLTM5020347T3	0.24	0.34	A	router_all	1	MCSS Discrete
CLTM5020342T3	1.12	0.67		router1	2	MatchMS Discrete
CLTM5020182T3	0.09	0.52	A	router1	1	Numeric Discrete
CLTM5020185T3	0.88	0.27		router1	2	ZoneMS Discrete
CLTM5020350T3	0.44	0.32		router1	1	MCSS Discrete
CLTM5020355T2	0.32	0.24	A	router2	1	MCSS Discrete
CLTM5020184T2	0.86	0.45		router2	2	MCMS Discrete
CLTM5020181T2	0.25	0.42	A	router2	1	MCSS Discrete
CLTM5020356T3	0.41	0.30		router2	1	MCSS Discrete
CLTM5020269T3	0.90	0.42		router2	2	ZoneMS Discrete
CLTM5020362T3	0.26	0.17	A Rpoly	router2	1	MCSS Discrete
CLTM5020339T3	0.94	0.55		router2	2	ZoneMS Discrete
CLTM5020357T1	0.74	0.09	Rpoly O	stage2E	2	ZoneMS Discrete
CLTM5020404T1	0.41	< 0.01	D Rpoly O	stage2E	1	MCSS Discrete
CLTM5020351T1	0.36	0.09	A Rpoly O	stage2E	2	MatchMS Discrete
CLTM5020213T1	0.49	0.08	Rpoly O	stage2E	1	ZoneSS Discrete
CLTM5020264T1	0.28	0.14	D A Rpoly O	stage2E	1	MCSS Discrete
CLTM5020261T1	0.36	0.18	Rpoly O	stage2E	1	MCSS Discrete
CLTM5020358T2	0.72	0.16	Rpoly	stage2M	2	MCMS Discrete
CLTM5020343T2	0.27	< 0.01	A Rpoly	stage2M	1	InLineChoicelistSS Discrete
CLTM5020352T2	1.20	0.23		stage2M	2	MCMS Discrete
CLTM5020214T2	0.44	0.15	Rpoly	stage2M	1	MCSS Discrete
CLTM5020265T2	0.39	0.07	Rpoly	stage2M	1	MCSS Discrete
CLTM5020262T2	0.46	0.18	Rpoly	stage2M	1	MCSS Discrete
CLTM5020359T3	1.22	0.14	Rpoly	stage2H	2	ZoneMS Discrete
CLTM5020344T3	0.51	0.24		stage2H	1	MCSS Discrete
CLTM5020353T3	0.88	0.44		stage2H	2	MatchMS Discrete
CLTM5020215T3	0.46	0.29		stage2H	1	Graph Discrete
CLTM5020266T3	0.38	0.46		stage2H	1	Numeric Discrete
CLTM5020263T3	0.31	0.46	A	stage2H	1	Numeric Discrete

Table 8.A.11 Average Item Score and Polyserial for Mathematics, Grade Six

Item ID	AIS	Polyserial	Flag	Position	Maximum Score Points	Item Type
CLTM6020363T1	0.72	0.45		router_all	2	MCMS Discrete
CLTM6020284T1	0.63	0.38		router1	1	MCSS Discrete
CLTM6020432T1	0.64	0.42		router1	2	MCMS Discrete
CLTM6020040T1	0.64	0.50		router1	1	MCSS Discrete
CLTM6020094T1	0.88	0.42		router_all	2	ZoneMS Discrete
CLTM6020290T1	0.76	0.58		router_all	2	MCMS Discrete
CLTM6020320T1	0.53	0.41		router_all	1	MCSS Discrete
CLTM6020285T2	0.53	0.43		router_all	1	MCSS Discrete
CLTM6020433T2	0.80	0.52		router_all	2	MCMS Discrete
CLTM6020041T2	0.39	0.48		router_all	1	MCSS Discrete
CLTM6020436T2	0.48	0.58	A	router1	2	ZoneMS Discrete
CLTM6020198T1	0.64	0.44		router2	1	MCSS Discrete
CLTM6020435T1	0.98	0.45		router2	2	ZoneMS Discrete
CLTM6020293T1	0.63	0.45		router2	1	ZoneSS Discrete
CLTM6020364T2	0.80	0.63		router2	2	MCMS Discrete
CLTM6020425T2	0.48	0.41		router1	1	MCSS Discrete
CLTM6020291T2	0.86	0.35		router1	2	MCMS Discrete
CLTM6020321T2	0.24	0.33	D A	router1	1	MCSS Discrete
CLTM6020286T3	0.16	0.17	D A Rpoly	router_all	1	MCSS Discrete
CLTM6020434T3	1.00	0.46		router_all	2	ZoneMS Discrete
CLTM6020042T3	0.35	0.51		router_all	1	MCSS Discrete
CLTM6020096T3	0.74	0.46		router1	2	MCMS Discrete
CLTM6020200T3	0.50	0.33		router1	1	ZoneSS Discrete
CLTM6020295T3	0.20	0.60	A	router1	1	Numeric Discrete
CLTM6020365T3	0.78	0.57		router1	2	MatchSS Discrete
CLTM6020199T2	0.44	0.39		router2	1	MCSS Discrete
CLTM6020095T2	0.84	0.53		router2	2	MCMS Discrete
CLTM6020294T2	0.38	0.50		router2	1	ZoneSS Discrete
CLTM6020292T3	0.98	0.48		router2	2	MatchMS Discrete
CLTM6020437T3	1.16	0.59		router2	2	ZoneMS Discrete
CLTM6020322T3	0.26	0.28	D A	router2	1	MCSS Discrete
CLTM6020426T3	0.44	0.44		router2	1	MCSS Discrete
CLTM6020366T1	0.54	0.14	A Rpoly	stage2E	2	MCMS Discrete
CLTM6020037T1	0.44	0.05	Rpoly O	stage2E	1	MCSS Discrete
CLTM6020314T1	0.58	0.10	A Rpoly	stage2E	2	MCMS Discrete
CLTM6020427T1	0.51	0.12	Rpoly O	stage2E	1	MCSS Discrete
CLTM6020287T1	1.00	0.09	Rpoly	stage2E	2	MCMS Discrete
CLTM6020097T1	0.35	0.06	Rpoly	stage2E	1	ZoneMS Discrete
CLTM6020367T2	0.70	0.20		stage2M	2	ZoneMS Discrete
CLTM6020038T2	0.70	0.06	Rpoly	stage2M	2	InLineChoicelistMS Discrete
CLTM6020315T2	1.04	0.18	Rpoly	stage2M	2	MatchMS Discrete
CLTM6020428T2	0.37	0.07	Rpoly	stage2M	1	MatchSS Discrete
CLTM6020288T2	0.20	0.26	A	stage2M	2	MatchMS Discrete
CLTM6020098T2	0.20	0.00	A Rpoly	stage2M	1	MatchMS Discrete
CLTM6020368T3	1.00	0.12	Rpoly	stage2H	2	InLineChoicelistMS Discrete
CLTM6020039T3	1.00	0.20		stage2H	2	InLineChoicelistMS Discrete
CLTM6020316T3	1.70	0.35	H	stage2H	2	InLineChoicelistMS Discrete
CLTM6020429T3	0.62	0.34		stage2H	1	MCSS Discrete
CLTM6020289T3	1.16	0.28		stage2H	2	MCMS Discrete
CLTM6020099T3	0.28	0.26	A	stage2H	1	ZoneMS Discrete

Table 8.A.12 Average Item Score and Polyserial for Mathematics, Grade Seven

Item ID	AIS	Polyserial	Flag	Position	Maximum Score Points	Item Type
CLTM7020091T1	1.40	0.62		router_all	2	ZoneMS Discrete
CLTM7020296T1	0.60	0.47		router1	1	MCSS Discrete
CLTM7020281T1	0.92	0.58		router1	2	MCMS Discrete
CLTM7020418T1	0.94	0.32		router1	2	MCMS Discrete
CLTM7020372T1	1.06	0.52		router_all	2	MatchMS Discrete
CLTM7020085T1	0.63	0.45		router_all	1	MCSS Discrete
CLTM7020326T1	1.26	0.58		router_all	2	MatchMS Discrete
CLTM7020297T2	0.48	0.61		router_all	1	InLineChoicelistSS Discrete
CLTM7020282T2	0.80	0.56		router_all	2	InLineChoicelistMS Discrete
CLTM7020419T2	0.74	0.48		router_all	2	InLineChoicelistMS Discrete
CLTM7020330T2	0.86	0.57		router1	2	ZoneMS Discrete
CLTM7020047T1	1.42	0.52		router2	2	MCMS Discrete
CLTM7020323T1	0.52	0.47		router2	1	MCSS Discrete
CLTM7020088T1	0.92	0.46		router2	2	MCMS Discrete
CLTM7020092T2	1.36	0.69		router2	2	ZoneMS Discrete
CLTM7020373T2	0.86	0.53		router1	2	InLineChoicelistMS Discrete
CLTM7020086T2	0.52	0.38		router1	1	MCSS Discrete
CLTM7020327T2	0.86	0.37		router1	2	MCMS Discrete
CLTM7020298T3	0.44	0.41		router_all	1	InLineChoicelistSS Discrete
CLTM7020283T3	0.82	0.51		router_all	2	InLineChoicelistMS Discrete
CLTM7020420T3	0.54	0.44	A	router_all	2	MatchMS Discrete
CLTM7020374T3	0.82	0.48		router1	2	MatchMS Discrete
CLTM7020087T3	0.36	0.43		router1	1	MatchSS Discrete
CLTM7020328T3	0.90	0.24		router1	2	ZoneMS Discrete
CLTM7020093T3	0.64	0.40		router1	2	InLineChoicelistMS Discrete
CLTM7020048T2	1.08	0.29		router2	2	ZoneMS Discrete
CLTM7020324T2	0.43	0.43		router2	1	MCSS Discrete
CLTM7020089T2	0.98	0.41		router2	2	ZoneMS Discrete
CLTM7020049T3	0.88	0.49		router2	2	InLineChoicelistMS Discrete
CLTM7020325T3	0.27	0.44	A	router2	1	MatchSS Discrete
CLTM7020090T3	0.76	0.55		router2	2	MatchMS Discrete
CLTM7020331T3	0.82	0.40		router2	2	InLineChoicelistMS Discrete
CLTM7020031T1	0.38	0.06	D Rpoly O	stage2E	1	MCSS Discrete
CLTM7020034T1	0.46	0.10	Rpoly O	stage2E	1	MCSS Discrete
CLTM7020280T1	0.44	0.15	Rpoly O	stage2E	1	MCSS Discrete
CLTM7020421T1	0.42	0.09	Rpoly O	stage2E	1	MCSS Discrete
CLTM7020369T1	0.39	0.10	Rpoly O	stage2E	1	MCSS Discrete
CLTM7020299T1	0.45	0.15	Rpoly O	stage2E	1	MCSS Discrete
CLTM7020032T2	0.43	0.33		stage2M	1	MCSS Discrete
CLTM7020035T2	0.37	0.29		stage2M	1	MCSS Discrete
CLTM7020449T2	0.42	0.20		stage2M	1	MCSS Discrete
CLTM7020422T2	0.36	< 0.01	Rpoly	stage2M	1	MCSS Discrete
CLTM7020370T2	0.53	0.14	Rpoly	stage2M	1	MCSS Discrete
CLTM7020300T2	0.34	0.19	Rpoly	stage2M	1	MCSS Discrete
CLTM7020033T3	0.70	0.25		stage2H	1	MCSS Discrete
CLTM7020036T3	0.33	0.42		stage2H	1	Numeric Discrete
CLTM7020451T3	0.42	0.23		stage2H	1	MCSS Discrete
CLTM7020423T3	0.46	0.20		stage2H	1	MCSS Discrete
CLTM7020371T3	0.46	0.34		stage2H	1	MCSS Discrete
CLTM7020301T3	0.68	0.30		stage2H	1	MCSS Discrete

Table 8.A.13 Average Item Score and Polyserial for Mathematics, Grade Eight

Item ID	AIS	Polyserial	Flag	Position	Maximum Score Points	Item Type
CLTM8020387T1	0.47	0.43		router_all	1	ZoneSS Discrete
CLTM8020277T1	1.06	0.47		router1	2	MCMS Discrete
CLTM8020160T1	0.82	0.37		router1	2	ZoneMS Discrete
CLTM8020278T1	0.67	0.48		router1	1	MCSS Discrete
CLTM8020028T1	1.32	0.62		router_all	2	InLineChoicelistMS Discrete
CLTM8020415T1	1.02	0.47		router_all	2	MCMS Discrete
CLTM8020391T1	1.18	0.59		router_all	2	MCMS Discrete
CLTM8020276T2	0.80	0.52		router_all	2	InLineChoicelistMS Discrete
CLTM8020046T2	0.46	0.34	A	router_all	2	ZoneMS Discrete
CLTM8020069T2	0.26	0.25	A	router_all	1	ZoneSS Discrete
CLTM8020452T2	0.42	0.43		router1	1	ZoneSS Discrete
CLTM8020378T1	1.18	0.48		router2	2	MCMS Discrete
CLTM8020305T1	0.84	0.44		router2	2	MCMS Discrete
CLTM8020079T1	0.69	0.45		router2	1	MCSS Discrete
CLTM8020333T2	0.35	0.34	O	router2	1	MCSS Discrete
CLTM8020029T2	1.24	0.60		router1	2	InLineChoicelistMS Discrete
CLTM8020416T2	0.82	0.42		router1	2	InLineChoicelistMS Discrete
CLTM8020392T2	0.70	0.35		router1	2	InLineChoicelistMS Discrete
CLTM8020275T3	0.88	0.57		router_all	2	MatchMS Discrete
CLTM8020161T3	0.68	0.40		router_all	2	ZoneMS Discrete
CLTM8020279T3	0.49	0.38		router_all	1	MCSS Discrete
CLTM8020030T3	0.90	0.60		router1	2	InLineChoicelistMS Discrete
CLTM8020417T3	0.74	0.43		router1	2	InLineChoicelistMS Discrete
CLTM8020393T3	0.58	0.21	A	router1	2	InLineChoicelistMS Discrete
CLTM8020334T3	0.21	0.50	A	router1	1	Numeric Discrete
CLTM8020379T2	0.52	0.36	A	router2	2	ZoneMS Discrete
CLTM8020306T2	0.48	0.26	A	router2	2	InLineChoicelistMS Discrete
CLTM8020080T2	0.78	0.45		router2	2	InLineChoicelistMS Discrete
CLTM8020380T3	0.60	0.37	A	router2	2	ZoneMS Discrete
CLTM8020307T3	0.84	0.37		router2	2	InLineChoicelistMS Discrete
CLTM8020081T3	0.78	0.44		router2	2	InLineChoicelistMS Discrete
CLTM8020414T3	0.22	0.23	D A	router2	1	MCSS Discrete
CLTM8020388T1	0.41	< 0.01	D Rpoly O	stage2E	1	MCSS Discrete
CLTM8020375T1	0.17	0.26	A	stage2E	1	MatchSS Discrete
CLTM8020394T1	0.22	0.17	A Rpoly O	stage2E	1	MatchSS Discrete
CLTM8020025T1	0.37	0.04	D Rpoly O	stage2E	1	MCSS Discrete
CLTM8020302T1	0.56	0.22	O	stage2E	1	MCSS Discrete
CLTM8020082T1	0.30	0.09	A Rpoly O	stage2E	1	ZoneSS Discrete
CLTM8020389T2	0.37	0.31		stage2M	1	MCSS Discrete
CLTM8020376T2	0.51	0.28		stage2M	1	MatchSS Discrete
CLTM8020395T2	0.40	0.09	Rpoly	stage2M	1	InLineChoicelistSS Discrete
CLTM8020026T2	0.43	0.12	Rpoly	stage2M	1	MCSS Discrete
CLTM8020303T2	0.41	0.17	Rpoly	stage2M	1	ZoneSS Discrete
CLTM8020083T2	0.45	0.17	Rpoly	stage2M	1	InLineChoicelistSS Discrete
CLTM8020390T3	0.69	0.26		stage2H	1	Numeric Discrete
CLTM8020377T3	0.59	0.07	Rpoly	stage2H	1	MatchSS Discrete
CLTM8020396T3	0.27	0.11	A Rpoly	stage2H	1	InLineChoicelistSS Discrete
CLTM8020027T3	0.58	0.37		stage2H	1	MCSS Discrete
CLTM8020304T3	0.63	0.25		stage2H	1	Numeric Discrete
CLTM8020084T3	0.71	0.11	Rpoly	stage2H	1	InLineChoicelistSS Discrete

Table 8.A.14 Average Item Score and Polyserial for Mathematics, Grade Eleven

Item ID	AIS	Polyserial	Flag	Position	Maximum Score Points	Item Type
CLTMH020335T1	0.46	0.21		router_all	1	MCSS Discrete
CLTMH020454T1	0.74	0.47		router1	2	MCMS Discrete
CLTMH020043T1	0.62	0.69		router1	1	ZoneSS Discrete
CLTMH020019T1	0.74	0.40		router1	1	MCSS Discrete
CLTMH020073T1	1.36	0.67		router_all	2	MatchMS Discrete
CLTMH020447T1	0.64	0.65		router_all	1	ZoneSS Discrete
CLTMH020022T1	0.67	0.55		router_all	1	MCSS Discrete
CLTMH020382T2	0.60	0.45		router_all	2	MCMS Discrete
CLTMH020044T2	0.26	0.28	D A	router_all	1	MCSS Discrete
CLTMH020020T2	0.62	0.48		router_all	1	MCSS Discrete
CLTMH020402T2	0.90	0.56		router1	2	InLineChoicelistMS Discrete
CLTMH020384T1	0.76	0.44		router2	2	MCMS Discrete
CLTMH020076T1	0.53	0.54		router2	1	ZoneSS Discrete
CLTMH020308T1	0.59	0.61		router2	1	ZoneSS Discrete
CLTMH020398T2	1.26	0.49		router2	2	ZoneMS Discrete
CLTMH020074T2	1.60	0.72	H	router1	2	MatchMS Discrete
CLTMH020400T2	0.31	0.26	A	router1	1	MCSS Discrete
CLTMH020023T2	0.45	0.48		router1	1	MCSS Discrete
CLTMH020383T3	0.90	0.39		router_all	2	ZoneMS Discrete
CLTMH020045T3	0.55	0.30		router_all	1	MCSS Discrete
CLTMH020021T3	0.13	0.49	A	router_all	1	Numeric Discrete
CLTMH020075T3	1.08	0.77		router1	2	BarPicturegraphMS Discrete
CLTMH020401T3	0.35	0.44		router1	1	ZoneSS Discrete
CLTMH020024T3	0.18	0.47	A	router1	1	Numeric Discrete
CLTMH020399T3	1.14	0.54		router1	2	MatchMS Discrete
CLTMH020385T2	0.82	0.39		router2	2	MCMS Discrete
CLTMH020077T2	0.30	0.30	A	router2	1	ZoneSS Discrete
CLTMH020309T2	0.50	0.53		router2	1	MCSS Discrete
CLTMH020386T3	0.94	0.47		router2	2	MCMS Discrete
CLTMH020078T3	0.31	0.29	A	router2	1	ZoneSS Discrete
CLTMH020310T3	0.45	0.66		router2	1	Numeric Discrete
CLTMH020403T3	0.60	0.42	A	router2	2	InLineChoicelistMS Discrete
CLTMH020070T1	0.18	0.08	A Rpoly O	stage2E	1	MatchSS Discrete
CLTMH020406T1	0.68	< 0.01	Rpoly	stage2E	2	MCMS Discrete
CLTMH020068T1	0.42	0.00	D Rpoly O	stage2E	1	MCSS Discrete
CLTMH020409T1	0.80	0.01	Rpoly O	stage2E	2	MCMS Discrete
CLTMH020311T1	0.35	0.09	Rpoly O	stage2E	1	MatchMS Discrete
CLTMH020272T1	0.53	0.18	Rpoly O	stage2E	1	MCSS Discrete
CLTMH020071T2	0.32	< 0.01	A Rpoly	stage2M	1	MatchMS Discrete
CLTMH020407T2	0.66	0.14	Rpoly	stage2M	2	MCMS Discrete
CLTMH020270T2	0.42	0.10	Rpoly	stage2M	1	MCSS Discrete
CLTMH020410T2	0.54	0.14	A Rpoly	stage2M	2	MatchMS Discrete
CLTMH020312T2	0.30	0.00	A Rpoly	stage2M	1	ZoneSS Discrete
CLTMH020273T2	0.31	0.13	A Rpoly	stage2M	1	MCSS Discrete
CLTMH020072T3	0.52	0.11	Rpoly	stage2H	1	ZoneSS Discrete
CLTMH020408T3	0.96	0.29		stage2H	2	MatchMS Discrete
CLTMH020446T3	0.43	0.52		stage2H	1	Numeric Discrete
CLTMH020411T3	1.62	0.33	H	stage2H	2	MCMS Discrete
CLTMH020313T3	0.56	0.09	Rpoly	stage2H	1	MCSS Discrete
CLTMH020271T3	0.51	0.54		stage2H	1	Numeric Discrete

Note: In Table 8.A.15 through Table 8.A.28, the columns *Score 0*, *Score 1*, and *Score 2* indicate the possible scores for the item.

Table 8.A.15 Distribution of Item Scores for ELA, Grade Three

Item ID	Position	Max Points	Score 0	Score 1	Score 2	Blank
CLTW3020095T1	router_all	2	4%	35%	59%	2%
CLTW3020056T1	router1	2	28%	6%	63%	2%
CLTR3020053T1	router_all	1	27%	66%	–	7%
CLTW3020145T2	router_all	2	10%	34%	51%	6%
CLTW3020161T2	router_all	1	68%	26%	–	6%
CLTR3020159T2	router_all	2	5%	52%	37%	5%
CLTR3020160T2	router1	2	25%	6%	64%	5%
CLTW3020096T1	router2	2	5%	56%	35%	4%
CLTW3020146T2	router2	2	2%	44%	49%	5%
CLTW3020149T2	router1	2	6%	59%	33%	3%
CLTR3020081T3	router_all	1	22%	75%	–	4%
CLTR3020082T3	router_all	2	36%	19%	39%	6%
CLTW3020403T3	router1	2	48%	21%	23%	8%
CLTR3020172T3	router1	1	15%	80%	–	6%
CLTR3020401T3	router1	2	38%	15%	43%	4%
CLTR3020142T2	router2	2	35%	14%	48%	2%
CLTR3020140T2	router2	2	2%	50%	47%	2%
CLTW3020176T3	router2	1	57%	38%	–	5%
CLTW3020015T3	router2	2	52%	20%	22%	7%
CLTR3020057T1	stage2E	2	18%	47%	3%	31%
CLTR3020059T1	stage2E	2	29%	4%	37%	30%
CLTW3020108T1	stage2E	1	10%	38%	–	52%
CLTR3020195T2	stage2M	2	38%	19%	36%	7%
CLTR3020144T2	stage2M	1	46%	50%	–	5%
CLTR3020166T3	stage2H	2	4%	56%	37%	2%
CLTR3020167T3	stage2H	1	15%	83%	–	2%
CLTR3020168T3	stage2H	2	17%	9%	71%	2%
CLTR3020174T3	stage2H	2	4%	15%	81%	1%
CLTW3020179T3	stage2H	2	41%	32%	23%	3%

Table 8.A.16 Distribution of Item Scores for ELA, Grade Four

Item ID	Position	Max Points	Score 0	Score 1	Score 2	Blank
CLTR4020435T1	router1	2	12%	55%	28%	5%
CLTR4020257T1	router_all	2	3%	32%	63%	2%
CLTR4020258T1	router_all	2	26%	8%	63%	3%
CLTR4020091T2	router_all	2	11%	63%	22%	4%
CLTR4020092T2	router_all	2	37%	16%	43%	4%
CLTR4020242T1	router2	2	3%	44%	51%	3%
CLTR4020117T2	router1	2	4%	51%	42%	2%
CLTR4020449T3	router_all	2	2%	46%	48%	4%
CLTR4020450T3	router_all	2	21%	11%	64%	4%
CLTR4020017T3	router1	2	58%	0%	35%	7%
CLTW4020018T3	router1	1	58%	36%	–	6%
CLTR4020120T2	router2	2	22%	44%	28%	6%
CLTW4020121T2	router2	1	51%	46%	–	4%
CLTR4020299T3	router2	2	25%	35%	35%	6%
CLTR4020305T1	stage2E	2	7%	42%	13%	37%
CLTW4020306T1	stage2E	2	12%	38%	13%	37%
CLTW4020240T1	stage2E	2	28%	20%	8%	44%
CLTR4020087T2	stage2M	1	63%	32%	–	5%
CLTW4020089T2	stage2M	2	2%	41%	53%	4%
CLTW4020086T2	stage2M	2	39%	20%	32%	9%
CLTR4020085T2	stage2M	1	41%	54%	–	5%
CLTR4020244T3	stage2H	2	41%	15%	43%	1%
CLTW4020246T3	stage2H	2	19%	50%	27%	4%
CLTW4020135T3	stage2H	2	15%	22%	60%	4%
CLTR4020132T3	stage2H	1	41%	57%	–	1%

Table 8.A.17 Distribution of Item Scores for ELA, Grade Five

Item ID	Position	Max Points	Score 0	Score 1	Score 2	Blank
CLTR5020453T1	router1	2	2%	23%	74%	1%
CLTW5020454T1	router1	2	4%	55%	39%	2%
CLTW5020339T2	router_all	2	9%	52%	36%	4%
CLTW5020313T1	router2	2	13%	18%	66%	2%
CLTR5020342T2	router2	2	43%	8%	46%	3%
CLTR5020248T3	router_all	2	37%	1%	58%	4%
CLTR5020249T3	router_all	2	45%	23%	25%	7%
CLTR5020050T3	router1	2	35%	16%	45%	4%
CLTR5020044T3	router1	1	65%	30%	–	5%
CLTW5020046T3	router1	2	55%	23%	14%	8%
CLTR5020254T2	router2	2	2%	50%	46%	1%
CLTR5020038T3	router2	1	66%	30%	–	4%
CLTW5020040T3	router2	2	59%	19%	14%	8%
CLTR5020328T1	stage2E	2	7%	44%	25%	24%
CLTR5020316T1	stage2E	2	38%	12%	28%	22%
CLTW5020317T1	stage2E	2	9%	45%	22%	25%
CLTR5020315T1	stage2E	2	8%	57%	12%	23%
CLTW5020343T2	stage2M	2	6%	55%	36%	2%
CLTR5020047T2	stage2M	2	2%	55%	40%	3%
CLTR5020346T2	stage2M	2	32%	15%	50%	3%
CLTR5020345T2	stage2M	2	4%	59%	34%	3%
CLTR5020041T3	stage2H	1	57%	43%	–	1%
CLTW5020043T3	stage2H	2	19%	29%	47%	4%
CLTW5020076T3	stage2H	1	30%	69%	–	1%
CLTR5020341T3	stage2H	2	5%	70%	24%	1%
CLTR5020074T3	stage2H	2	23%	8%	69%	1%

Table 8.A.18 Distribution of Item Scores for ELA, Grade Six

Item ID	Position	Max Points	Score 0	Score 1	Score 2	Blank
CLTR6020097T1	router_all	2	10%	4%	85%	1%
CLTR6020113T1	router1	2	24%	10%	66%	1%
CLTR6020150T1	router_all	2	16%	4%	79%	2%
CLTR6020184T2	router_all	2	24%	48%	22%	6%
CLTR6020204T2	router1	2	4%	41%	49%	5%
CLTR6020064T1	router2	2	40%	14%	44%	2%
CLTR6020065T1	router2	2	43%	16%	40%	2%
CLTR6020196T2	router1	2	6%	63%	27%	4%
CLTW6020198T2	router1	1	46%	50%	–	3%
CLTW6020415T3	router_all	1	54%	41%	–	5%
CLTR6020413T3	router_all	2	14%	57%	24%	5%
CLTR6020404T3	router1	2	4%	67%	23%	6%
CLTW6020406T3	router1	2	48%	26%	17%	9%
CLTW6020201T2	router2	2	35%	36%	20%	8%
CLTW6020426T3	router2	2	37%	34%	18%	11%
CLTW6020399T3	router2	2	38%	30%	20%	13%
CLTW6020297T1	stage2E	2	13%	44%	15%	29%
CLTR6020098T1	stage2E	2	16%	41%	11%	31%
CLTW6020104T1	stage2E	2	13%	44%	11%	31%
CLTR6020099T1	stage2E	2	36%	4%	33%	27%
CLTR6020019T2	stage2M	1	66%	28%	–	5%
CLTR6020021T2	stage2M	2	51%	19%	25%	5%
CLTR6020203T2	stage2M	2	56%	19%	21%	4%
CLTW6020209T2	stage2M	2	40%	33%	16%	10%
CLTR6020418T3	stage2H	2	47%	17%	34%	1%
CLTR6020416T3	stage2H	1	61%	38%	–	1%
CLTR6020417T3	stage2H	2	4%	69%	26%	1%
CLTR6020420T3	stage2H	2	6%	39%	54%	1%
CLTW6020425T3	stage2H	2	45%	31%	23%	1%

Table 8.A.19 Distribution of Item Scores for ELA, Grade Seven

Item ID	Position	Max Points	Score 0	Score 1	Score 2	Blank
CLTW7020407T1	router1	2	21%	45%	31%	2%
CLTR7020008T1	router_all	2	3%	43%	52%	2%
CLTR7020378T2	router_all	2	48%	16%	32%	4%
CLTW7020412T1	router2	2	2%	70%	26%	2%
CLTWT020155T2	router1	2	27%	42%	24%	7%
CLTR7020357T3	router_all	2	43%	12%	44%	2%
CLTR7020358T3	router_all	1	83%	13%	–	3%
CLTW7020350T3	router1	2	28%	38%	24%	10%
CLTR7020349T3	router1	1	84%	12%	–	5%
CLTR7020158T2	router2	2	24%	37%	32%	7%
CLTR7020351T3	router2	1	72%	25%	–	3%
CLTR7020352T3	router2	1	51%	46%	–	3%
CLTW7020353T3	router2	2	28%	38%	24%	11%
CLTR7020012T1	stage2E	2	47%	8%	26%	19%
CLTW7020386T1	stage2E	2	11%	58%	12%	19%
CLTR7020379T1	stage2E	2	7%	51%	22%	20%
CLTR7020382T1	stage2E	2	11%	57%	14%	18%
CLTR7020427T2	stage2M	2	4%	67%	24%	5%
CLTR7020368T2	stage2M	2	5%	58%	33%	4%
CLTW7020375T2	stage2M	2	28%	35%	26%	11%
CLTR7020371T2	stage2M	2	4%	52%	41%	3%
CLTW7020356T3	stage2H	2	8%	47%	40%	5%
CLTR7020354T3	stage2H	2	5%	51%	42%	1%
CLTW7020361T3	stage2H	2	8%	48%	39%	5%
CLTR7020364T3	stage2H	2	3%	61%	35%	1%
CLTR7020362T3	stage2H	1	51%	48%	–	1%

Table 8.A.20 Distribution of Item Scores for ELA, Grade Eight

Item ID	Position	Max Points	Score 0	Score 1	Score 2	Blank
CLTR8020446T1	router_all	2	3%	39%	55%	2%
CLTR8020444T1	router1	2	17%	39%	43%	1%
CLTR8020394T1	router_all	2	4%	64%	29%	2%
CLTW8020396T1	router_all	2	6%	62%	30%	2%
CLTR8020292T2	router_all	2	36%	14%	45%	5%
CLTR8020293T2	router_all	2	18%	39%	39%	4%
CLTR8020294T2	router_all	2	7%	67%	22%	4%
CLTR8020288T2	router1	2	3%	54%	38%	5%
CLTR8020284T1	router2	2	61%	15%	23%	1%
CLTR8020282T1	router2	2	4%	42%	52%	1%
CLTR8020321T2	router1	2	3%	38%	58%	2%
CLTR8020323T2	router1	2	34%	10%	54%	2%
CLTW8020270T3	router_all	2	59%	0%	38%	3%
CLTR8020271T3	router_all	2	12%	68%	17%	4%
CLTW8020070T3	router1	2	4%	58%	34%	3%
CLTR8020066T3	router1	2	15%	66%	16%	3%
CLTR8020068T3	router1	2	41%	10%	47%	3%
CLTR8020002T2	router2	2	4%	65%	28%	3%
CLTW8020003T2	router2	2	17%	48%	30%	5%
CLTW8020071T3	router2	2	10%	58%	28%	4%
CLTR8020437T3	router2	2	12%	61%	23%	4%
CLTR8020439T3	router2	2	15%	55%	27%	4%
CLTR8020392T1	stage2E	2	21%	33%	4%	42%
CLTR8020393T1	stage2E	2	46%	3%	14%	37%
CLTR8020447T1	stage2E	2	8%	46%	8%	38%
CLTW8020389T1	stage2E	2	12%	46%	5%	36%
CLTW8020388T1	stage2E	2	11%	39%	15%	35%
CLTW8020287T2	stage2M	1	68%	28%	–	4%
CLTW8020260T2	stage2M	2	24%	35%	31%	10%
CLTR8020291T2	stage2M	2	5%	56%	35%	3%
CLTR8020060T3	stage2H	1	45%	53%	–	2%
CLTR8020440T3	stage2H	2	9%	56%	34%	1%

Table 8.A.21 Distribution of Item Scores for ELA, Grade Eleven

Item ID	Position	Max Points	Score 0	Score 1	Score 2	Blank
CLTRH020228T1	router1	2	16%	62%	20%	2%
CLTRH020022T1	router_all	1	58%	39%	–	3%
CLTRH020023T1	router_all	2	46%	31%	20%	3%
CLTWH020222T2	router_all	2	6%	45%	44%	5%
CLTWH020232T1	router2	2	4%	46%	48%	2%
CLTRH020188T2	router1	2	19%	42%	37%	2%
CLTRH020442T3	router_all	2	5%	55%	37%	3%
CLTRH020267T3	router1	2	17%	56%	24%	3%
CLTRH020218T2	router2	2	6%	68%	24%	3%
CLTRH020277T3	router2	2	25%	60%	12%	4%
CLTWH020281T3	router2	2	35%	27%	29%	9%
CLTRH020025T1	stage2E	2	14%	41%	12%	33%
CLTRH020026T1	stage2E	2	8%	50%	10%	32%
CLTWH020236T1	stage2E	2	7%	42%	18%	33%
CLTRH020033T1	stage2E	2	10%	45%	12%	32%
CLTRH020191T2	stage2M	2	6%	54%	38%	3%
CLTRH020190T2	stage2M	2	1%	53%	43%	3%
CLTRH020214T2	stage2M	2	19%	44%	34%	3%
CLTRH020272T3	stage2H	2	15%	62%	23%	1%
CLTRH020273T3	stage2H	2	8%	51%	40%	1%
CLTWH020274T3	stage2H	1	45%	55%	–	1%
CLTWH020433T3	stage2H	2	23%	38%	32%	6%
CLTRH020276T3	stage2H	2	5%	35%	60%	0%

Table 8.A.22 Distribution of Item Scores for Mathematics, Grade Three

Item ID	Position	Max Points	Score 0	Score 1	Score 2	Blank
CLTM3020010T1	router1	2	30%	15%	53%	2%
CLTM3020007T1	router_all	1	52%	45%	–	3%
CLTM3020171T1	router_all	2	45%	17%	35%	3%
CLTM3020011T2	router_all	2	19%	22%	52%	6%
CLTM3020056T1	router2	1	60%	36%	–	4%
CLTM3020053T1	router2	2	52%	8%	37%	3%
CLTM3020012T3	router_all	2	40%	0%	55%	4%
CLTM3020169T3	router_all	1	83%	10%	–	7%
CLTM3020055T3	router1	2	43%	11%	41%	5%
CLTM3020006T3	router1	1	85%	7%	–	9%
CLTM3020173T3	router1	2	47%	11%	38%	5%
CLTM3020172T2	router2	2	44%	19%	35%	3%
CLTM3020054T2	router2	2	57%	9%	30%	3%
CLTM3020058T3	router2	1	87%	7%	–	6%
CLTM3020001T1	stage2E	2	46%	8%	31%	14%
CLTM3020062T1	stage2E	2	34%	5%	46%	15%
CLTM3020065T1	stage2E	1	33%	52%	–	14%
CLTM3020002T2	stage2M	2	26%	57%	13%	5%
CLTM3020063T2	stage2M	2	26%	7%	65%	2%
CLTM3020188T3	stage2H	1	85%	14%	–	1%
CLTM3020003T3	stage2H	2	26%	9%	63%	1%
CLTM3020064T3	stage2H	2	42%	13%	44%	1%
CLTM3020010T1	router1	2	30%	15%	53%	2%
CLTM3020007T1	router_all	1	52%	45%	–	3%
CLTM3020171T1	router_all	2	45%	17%	35%	3%
CLTM3020011T2	router_all	2	19%	22%	52%	6%
CLTM3020056T1	router2	1	60%	36%	–	4%
CLTM3020053T1	router2	2	52%	8%	37%	3%
CLTM3020012T3	router_all	2	40%	0%	55%	4%
CLTM3020169T3	router_all	1	83%	10%	–	7%
CLTM3020055T3	router1	2	43%	11%	41%	5%
CLTM3020006T3	router1	1	85%	7%	–	9%
CLTM3020173T3	router1	2	47%	11%	38%	5%
CLTM3020172T2	router2	2	44%	19%	35%	3%
CLTM3020054T2	router2	2	57%	9%	30%	3%
CLTM3020058T3	router2	1	87%	7%	–	6%
CLTM3020001T1	stage2E	2	46%	8%	31%	14%
CLTM3020062T1	stage2E	2	34%	5%	46%	15%
CLTM3020065T1	stage2E	1	33%	52%	–	14%
CLTM3020002T2	stage2M	2	26%	57%	13%	5%
CLTM3020063T2	stage2M	2	26%	7%	65%	2%
CLTM3020188T3	stage2H	1	85%	14%	–	1%
CLTM3020003T3	stage2H	2	26%	9%	63%	1%
CLTM3020064T3	stage2H	2	42%	13%	44%	1%

Table 8.A.23 Distribution of Item Scores for Mathematics, Grade Four

Item ID	Position	Max Points	Score 0	Score 1	Score 2	Blank
CLTM4020216T1	router_all	2	55%	11%	32%	1%
CLTM4020225T1	router1	2	52%	4%	41%	3%
CLTM4020249T1	router_all	2	21%	43%	24%	12%
CLTM4020226T2	router_all	2	23%	41%	31%	5%
CLTM4020229T2	router1	2	19%	52%	16%	12%
CLTM4020170T1	router2	2	44%	19%	35%	3%
CLTM4020217T2	router2	2	41%	35%	16%	7%
CLTM4020227T3	router_all	2	32%	30%	32%	6%
CLTM4020251T3	router1	2	47%	21%	28%	4%
CLTM4020212T3	router1	2	28%	54%	13%	5%
CLTM4020218T3	router1	2	23%	32%	38%	7%
CLTM4020250T2	router2	2	12%	67%	18%	3%
CLTM4020211T2	router2	2	59%	27%	10%	4%
CLTM4020230T3	router2	2	29%	50%	16%	5%
CLTM4020231T1	stage2E	2	12%	54%	12%	21%
CLTM4020222T1	stage2E	2	45%	17%	10%	28%
CLTM4020177T1	stage2E	2	12%	43%	18%	27%
CLTM4020232T2	stage2M	2	65%	27%	6%	2%
CLTM4020223T2	stage2M	2	46%	24%	27%	2%
CLTM4020178T2	stage2M	2	21%	29%	46%	5%
CLTM4020233T3	stage2H	2	29%	21%	48%	1%
CLTM4020224T3	stage2H	2	36%	53%	10%	2%
CLTM4020179T3	stage2H	2	21%	17%	60%	2%

Table 8.A.24 Distribution of Item Scores for Mathematics, Grade Five

Item ID	Position	Max Points	Score 0	Score 1	Score 2	Blank
CLTM5020195T1	router1	2	9%	27%	63%	1%
CLTM5020340T1	router_all	2	53%	10%	35%	1%
CLTM5020183T1	router_all	2	19%	34%	43%	4%
CLTM5020196T2	router_all	2	13%	38%	46%	3%
CLTM5020405T2	router1	2	39%	8%	50%	3%
CLTM5020267T1	router2	2	60%	1%	36%	3%
CLTM5020341T2	router2	2	52%	9%	37%	2%
CLTM5020268T2	router1	2	27%	45%	20%	8%
CLTM5020260T3	router_all	1	89%	5%	–	6%
CLTM5020197T3	router_all	2	14%	63%	21%	2%
CLTM5020342T3	router1	2	29%	19%	47%	6%
CLTM5020182T3	router1	1	85%	9%	–	6%
CLTM5020185T3	router1	2	35%	33%	27%	4%
CLTM5020184T2	router2	2	46%	19%	33%	1%
CLTM5020269T3	router2	2	29%	46%	22%	3%
CLTM5020339T3	router2	2	24%	47%	23%	5%
CLTM5020357T1	stage2E	2	17%	35%	19%	28%
CLTM5020351T1	stage2E	2	42%	12%	12%	34%
CLTM5020213T1	stage2E	1	25%	49%	–	26%
CLTM5020358T2	stage2M	2	57%	10%	31%	2%
CLTM5020343T2	stage2M	1	66%	27%	–	7%
CLTM5020352T2	stage2M	2	35%	7%	57%	1%
CLTM5020359T3	stage2H	2	20%	36%	43%	0%
CLTM5020195T1	router1	2	9%	27%	63%	1%
CLTM5020340T1	router_all	2	53%	10%	35%	1%
CLTM5020183T1	router_all	2	19%	34%	43%	4%
CLTM5020196T2	router_all	2	13%	38%	46%	3%
CLTM5020405T2	router1	2	39%	8%	50%	3%
CLTM5020267T1	router2	2	60%	1%	36%	3%
CLTM5020341T2	router2	2	52%	9%	37%	2%
CLTM5020268T2	router1	2	27%	45%	20%	8%
CLTM5020260T3	router_all	1	89%	5%	–	6%
CLTM5020197T3	router_all	2	14%	63%	21%	2%
CLTM5020342T3	router1	2	29%	19%	47%	6%
CLTM5020182T3	router1	1	85%	9%	–	6%
CLTM5020185T3	router1	2	35%	33%	27%	4%
CLTM5020184T2	router2	2	46%	19%	33%	1%
CLTM5020269T3	router2	2	29%	46%	22%	3%
CLTM5020339T3	router2	2	24%	47%	23%	5%
CLTM5020357T1	stage2E	2	17%	35%	19%	28%
CLTM5020351T1	stage2E	2	42%	12%	12%	34%
CLTM5020213T1	stage2E	1	25%	49%	–	26%
CLTM5020358T2	stage2M	2	57%	10%	31%	2%
CLTM5020343T2	stage2M	1	66%	27%	–	7%
CLTM5020352T2	stage2M	2	35%	7%	57%	1%
CLTM5020359T3	stage2H	2	20%	36%	43%	0%

Table 8.A.25 Distribution of Item Scores for Mathematics, Grade Six

Item ID	Position	Max Points	Score 0	Score 1	Score 2	Blank
CLTM6020363T1	router_all	2	58%	10%	31%	2%
CLTM6020432T1	router1	2	62%	9%	27%	1%
CLTM6020094T1	router_all	2	25%	57%	16%	3%
CLTM6020290T1	router_all	2	51%	18%	29%	2%
CLTM6020433T2	router_all	2	48%	16%	32%	4%
CLTM6020436T2	router1	2	61%	17%	16%	7%
CLTM6020435T1	router2	2	27%	45%	26%	1%
CLTM6020293T1	router2	1	34%	63%	–	3%
CLTM6020364T2	router2	2	48%	16%	32%	4%
CLTM6020291T2	router1	2	48%	14%	36%	1%
CLTM6020434T3	router_all	2	32%	29%	36%	3%
CLTM6020096T3	router1	2	54%	11%	31%	3%
CLTM6020200T3	router1	1	44%	50%	–	5%
CLTM6020295T3	router1	1	74%	20%	–	7%
CLTM6020365T3	router1	2	45%	15%	32%	8%
CLTM6020095T2	router2	2	52%	10%	36%	2%
CLTM6020294T2	router2	1	60%	38%	–	2%
CLTM6020292T3	router2	2	27%	41%	28%	4%
CLTM6020437T3	router2	2	10%	57%	30%	4%
CLTM6020366T1	stage2E	2	58%	12%	21%	9%
CLTM6020314T1	stage2E	2	55%	12%	24%	10%
CLTM6020287T1	stage2E	2	36%	6%	47%	11%
CLTM6020097T1	stage2E	1	51%	35%	–	15%
CLTM6020367T2	stage2M	2	39%	47%	12%	2%
CLTM6020038T2	stage2M	2	40%	38%	16%	6%
CLTM6020315T2	stage2M	2	32%	24%	40%	3%
CLTM6020428T2	stage2M	1	59%	37%	–	4%
CLTM6020288T2	stage2M	2	86%	1%	10%	4%
CLTM6020098T2	stage2M	1	76%	20%	–	4%
CLTM6020368T3	stage2H	2	28%	39%	31%	3%
CLTM6020039T3	stage2H	2	28%	41%	29%	1%
CLTM6020316T3	stage2H	2	2%	21%	75%	2%

Table 8.A.26 Distribution of Item Scores for Mathematics, Grade Seven

Item ID	Position	Max Points	Score 0	Score 1	Score 2	Blank
CLTM7020091T1	router_all	2	23%	3%	69%	6%
CLTM7020281T1	router1	2	48%	10%	41%	1%
CLTM7020418T1	router1	2	43%	19%	38%	1%
CLTM7020372T1	router_all	2	18%	52%	27%	3%
CLTM7020326T1	router_all	2	19%	29%	49%	3%
CLTM7020297T2	router_all	1	45%	48%	–	7%
CLTM7020282T2	router_all	2	35%	35%	22%	7%
CLTM7020419T2	router_all	2	38%	33%	20%	9%
CLTM7020330T2	router1	2	41%	11%	38%	11%
CLTM7020047T1	router2	2	24%	8%	66%	2%
CLTM7020088T1	router2	2	48%	11%	40%	1%
CLTM7020092T2	router2	2	23%	2%	67%	8%
CLTM7020373T2	router1	2	29%	51%	17%	3%
CLTM7020327T2	router1	2	45%	18%	34%	3%
CLTM7020298T3	router_all	1	52%	44%	–	4%
CLTM7020283T3	router_all	2	37%	36%	23%	4%
CLTM7020420T3	router_all	2	52%	33%	10%	5%
CLTM7020374T3	router1	2	31%	48%	17%	4%
CLTM7020087T3	router1	1	59%	36%	–	5%
CLTM7020328T3	router1	2	20%	61%	15%	4%
CLTM7020093T3	router1	2	47%	32%	16%	5%
CLTM7020048T2	router2	2	30%	26%	41%	3%
CLTM7020089T2	router2	2	14%	68%	15%	3%
CLTM7020049T3	router2	2	36%	33%	28%	4%
CLTM7020325T3	router2	1	69%	27%	–	4%
CLTM7020090T3	router2	2	40%	37%	19%	4%
CLTM7020331T3	router2	2	25%	57%	13%	5%
CLTM7020036T3	stage2H	1	65%	33%	–	1%

Table 8.A.27 Distribution of Item Scores for Mathematics, Grade Eight

Item ID	Position	Max Points	Score 0	Score 1	Score 2	Blank
CLTM8020387T1	router_all	1	49%	47%	–	4%
CLTM8020277T1	router1	2	37%	16%	45%	2%
CLTM8020160T1	router1	2	32%	26%	28%	14%
CLTM8020028T1	router_all	2	9%	41%	46%	4%
CLTM8020415T1	router_all	2	39%	15%	43%	3%
CLTM8020391T1	router_all	2	32%	13%	53%	2%
CLTM8020276T2	router_all	2	35%	40%	20%	5%
CLTM8020046T2	router_all	2	50%	31%	7%	12%
CLTM8020069T2	router_all	1	69%	26%	–	5%
CLTM8020452T2	router1	1	54%	42%	–	4%
CLTM8020378T1	router2	2	35%	10%	54%	1%
CLTM8020305T1	router2	2	49%	13%	36%	3%
CLTM8020029T2	router1	2	22%	27%	48%	2%
CLTM8020416T2	router1	2	32%	50%	16%	2%
CLTM8020392T2	router1	2	41%	41%	14%	4%
CLTM8020275T3	router_all	2	32%	41%	24%	3%
CLTM8020161T3	router_all	2	36%	44%	11%	8%
CLTM8020030T3	router1	2	32%	38%	26%	3%
CLTM8020417T3	router1	2	32%	52%	11%	4%
CLTM8020393T3	router1	2	46%	41%	8%	5%
CLTM8020334T3	router1	1	70%	21%	–	9%
CLTM8020379T2	router2	2	50%	36%	8%	7%
CLTM8020306T2	router2	2	58%	28%	10%	4%
CLTM8020080T2	router2	2	34%	46%	16%	4%
CLTM8020380T3	router2	2	45%	37%	11%	7%
CLTM8020307T3	router2	2	36%	35%	25%	4%
CLTM8020081T3	router2	2	31%	50%	14%	6%
CLTM8020375T1	stage2E	1	65%	17%	–	17%
CLTM8020394T1	stage2E	1	53%	22%	–	25%
CLTM8020082T1	stage2E	1	46%	30%	–	24%
CLTM8020376T2	stage2M	1	46%	51%	–	3%
CLTM8020395T2	stage2M	1	58%	40%	–	3%
CLTM8020303T2	stage2M	1	54%	41%	–	5%
CLTM8020083T2	stage2M	1	53%	45%	–	2%
CLTM8020390T3	stage2H	1	29%	69%	–	2%
CLTM8020377T3	stage2H	1	40%	59%	–	0%
CLTM8020396T3	stage2H	1	73%	27%	–	0%

Table 8.A.28 Distribution of Item Scores for Mathematics, Grade Eleven

Item ID	Position	Max Points	Score 0	Score 1	Score 2	Blank
CLTMH020454T1	router1	2	55%	14%	29%	1%
CLTMH020043T1	router1	1	34%	62%	–	4%
CLTMH020073T1	router_all	2	26%	2%	68%	4%
CLTMH020447T1	router_all	1	28%	64%	–	8%
CLTMH020382T2	router_all	2	62%	9%	26%	3%
CLTMH020402T2	router1	2	24%	42%	24%	10%
CLTMH020384T1	router2	2	53%	14%	31%	2%
CLTMH020076T1	router2	1	43%	53%	–	5%
CLTMH020308T1	router2	1	30%	59%	–	10%
CLTMH020398T2	router2	2	7%	52%	37%	4%
CLTMH020074T2	router1	2	7%	22%	69%	2%
CLTMH020383T3	router_all	2	22%	60%	16%	2%
CLTMH020021T3	router_all	1	83%	13%	–	4%
CLTMH020075T3	router1	2	38%	1%	54%	8%
CLTMH020401T3	router1	1	53%	35%	–	12%
CLTMH020024T3	router1	1	77%	18%	–	5%
CLTMH020399T3	router1	2	16%	46%	34%	4%
CLTMH020385T2	router2	2	52%	9%	37%	2%
CLTMH020077T2	router2	1	62%	30%	–	8%
CLTMH020386T3	router2	2	46%	9%	43%	3%
CLTMH020078T3	router2	1	61%	31%	–	8%
CLTMH020310T3	router2	1	52%	45%	–	3%
CLTMH020403T3	router2	2	44%	34%	13%	9%
CLTMH020070T1	stage2E	1	60%	18%	–	21%
CLTMH020406T1	stage2E	2	45%	5%	32%	18%
CLTMH020409T1	stage2E	2	38%	3%	38%	20%
CLTMH020311T1	stage2E	1	40%	35%	–	25%
CLTMH020071T2	stage2M	1	67%	32%	–	2%
CLTMH020407T2	stage2M	2	59%	13%	26%	2%
CLTMH020410T2	stage2M	2	60%	20%	17%	2%
CLTMH020312T2	stage2M	1	66%	30%	–	4%
CLTMH020072T3	stage2H	1	44%	52%	–	4%
CLTMH020408T3	stage2H	2	33%	34%	31%	2%
CLTMH020446T3	stage2H	1	55%	43%	–	2%
CLTMH020411T3	stage2H	2	16%	3%	80%	1%
CLTMH020271T3	stage2H	1	47%	51%	–	1%

Table 8.A.29 Summary of the Criterion Scores for ELA

Grade	Module	No. of items	Maximum Score	Mean Score	Standard Deviation
3	Stage 1 router *	21	30	17.32	6.86
4	Stage 1 router *	21	30	16.59	6.07
5	Stage 1 router *	21	28	14.68	5.45
6	Stage 1 router *	21	30	15.79	5.89
7	Stage 1 router *	21	27	12.74	5.25
8	Stage 1 router *	21	36	19.86	6.31
11	Stage 1 router *	21	30	15.39	5.67

* average of two versions

Table 8.A.30 Summary of the Criterion Scores for Mathematics

Grade	Module	No of items	Maximum Score	Mean Score	Standard Deviation
3	Stage 1 router *	21	27	11.04	5.10
4	Stage 1 router *	21	30	12.12	5.51
5	Stage 1 router *	21	30	13.52	5.10
6	Stage 1 router *	21	31	11.28	6.23
7	Stage 1 router *	21	36	16.10	6.90
8	Stage 1 router *	21	36	14.02	6.41
11	Stage 1 router *	21	29	12.84	5.73

* average of two versions

Appendix 8.B IRT Analyses

Note: For Table 8.B.1 through Table 8.B.14, a dash (–) in the *d-values* and *d-values Standard Error (SE)* columns indicates that the item is a 1-point item with no *d-value*. The colon (:) is used to separate the two *d-values*.

Table 8.B.1 Item Response Theory (IRT) Item Difficulty for English Language Arts/Literacy (ELA), Grade Three

Item ID	Position	<i>b-value</i>	<i>b-value SE</i>	<i>d-values</i>	<i>d-values SE</i>
CLTW3020095T1	router_all	–1.6005	0.04	1.0632 : –1.0632	0.0449 : 0.0449
CLTR3020054T1	router_all	–1.2207	0.06	–	–
CLTR3020055T1	router_all	–0.6621	0.06	–	–
CLTW3020056T1	router_all	–0.6304	0.04	–1.5921 : 1.5921	0.0961 : 0.0961
CLTR3020052T1	router_all	–1.3967	0.05	–	–
CLTR3020051T1	router_all	–0.9876	0.04	–	–
CLTR3020053T1	router_all	–0.8003	0.04	–	–
CLTW3020145T2	router_all	–0.8761	0.03	0.5736 : –0.5736	0.0379 : 0.0379
CLTW3020161T2	router_all	1.3096	0.04	–	–
CLTR3020159T2	router_all	–0.8867	0.04	1.4204 : –1.4204	0.0395 : 0.0395
CLTR3020160T2	router_all	–0.6364	0.04	–1.6354 : 1.6354	0.0981 : 0.0981
CLTR3020147T2	router1	–0.2456	0.06	–	–
CLTR3020148T2	router1	0.7034	0.06	–	–
CLTW3020149T2	router1	–0.6938	0.06	1.6163 : –1.6163	0.0576 : 0.0576
CLTR3020081T3	router1	–1.1489	0.05	–	–
CLTR3020080T3	router1	0.1616	0.04	–	–
CLTR3020082T3	router1	0.1656	0.03	–0.4711 : 0.4711	0.0431 : 0.0431
CLTW3020403T3	router1	0.8171	0.04	–0.1962 : 0.1962	0.0606 : 0.0606
CLTR3020172T3	router1	–1.4843	0.07	–	–
CLTR3020400T3	router1	–0.1668	0.06	–	–
CLTR3020401T3	router1	0.0903	0.04	–0.7273 : 0.7273	0.0681 : 0.0681
CLTR3020093T1	router2	–1.0421	0.06	–	–
CLTR3020094T1	router2	0.0304	0.05	–	–
CLTW3020096T1	router2	–0.8733	0.05	1.5778 : –1.5778	0.0542 : 0.0542
CLTW3020146T2	router2	–1.3031	0.06	1.2899 : –1.2899	0.0641 : 0.0641
CLTR3020142T2	router2	–0.0777	0.04	–0.7981 : 0.7981	0.0666 : 0.0666
CLTR3020140T2	router2	–1.5381	0.08	1.7496 : –1.7496	0.0778 : 0.0778
CLTR3020141T2	router2	0.6542	0.05	–	–
CLTW3020176T3	router2	0.7093	0.06	–	–
CLTR3020014T3	router2	–0.4217	0.06	–	–
CLTR3020013T3	router2	–0.2101	0.06	–	–
CLTW3020015T3	router2	0.8529	0.04	–0.273 : 0.273	0.0602 : 0.0602
CLTR3020057T1	Stage2E	–0.2655	0.15	1.4885 : –1.4885	0.1647 : 0.1647
CLTR3020058T1	Stage2E	–1.3696	0.12	–	–
CLTR3020059T1	Stage2E	–1.4780	0.07	–2.374 : 2.374	0.2696 : 0.2696
CLTW3020107T1	Stage2E	–1.3696	0.12	–	–
CLTW3020108T1	Stage2E	–1.2675	0.12	–	–
CLTR3020105T1	Stage2E	–0.7802	0.12	–	–
CLTR3020195T2	Stage2M	–0.2998	0.04	–0.6322 : 0.6322	0.059 : 0.059
CLTR3020194T2	Stage2M	0.4765	0.05	–	–
CLTR3020193T2	Stage2M	0.0978	0.05	–	–
CLTR3020144T2	Stage2M	–0.4366	0.05	–	–
CLTW3020162T2	Stage2M	–0.4717	0.05	–	–

Item ID	Position	<i>b</i>-value	<i>b</i>-value SE	<i>d</i>-values	<i>d</i>-values SE
CLTR3020143T2	Stage2M	-1.1865	0.06	–	–
CLTR3020166T3	Stage2H	-0.0195	0.06	1.475 : -1.475	0.0633 : 0.0633
CLTR3020167T3	Stage2H	-0.7220	0.07	–	–
CLTR3020168T3	Stage2H	0.1273	0.04	-1.2305 : 1.2305	0.0882 : 0.0882
CLTR3020174T3	Stage2H	-0.7123	0.06	-0.1303 : 0.1303	0.088 : 0.088
CLTW3020402T3	Stage2H	0.2990	0.06	–	–
CLTW3020179T3	Stage2H	1.3727	0.04	0.1969 : -0.1969	0.0548 : 0.0548

Table 8.B.2 IRT Item Difficulty for ELA, Grade Four

Item ID	Position	<i>b</i> -value	<i>b</i> -value SE	<i>d</i> -values	<i>d</i> -values SE
CLTR4020239T1	router_all	-1.4845	0.04	–	–
CLTR4020434T1	router_all	0.1458	0.05	–	–
CLTR4020435T1	router_all	-0.3221	0.04	1.1983 : -1.1983	0.046 : 0.046
CLTW4020436T1	router_all	0.3873	0.05	–	–
CLTR4020256T1	router_all	-0.6712	0.04	–	–
CLTR4020257T1	router_all	-1.5323	0.04	0.7969 : -0.7969	0.048 : 0.048
CLTR4020258T1	router_all	-0.5565	0.03	-1.4206 : 1.4206	0.0582 : 0.0582
CLTR4020090T2	router_all	1.0212	0.04	–	–
CLTR4020091T2	router_all	-0.2391	0.03	1.5246 : -1.5246	0.035 : 0.035
CLTR4020092T2	router_all	-0.0386	0.02	-0.7329 : 0.7329	0.0439 : 0.0439
CLTW4020138T2	router_all	-0.3176	0.05	–	–
CLTR4020116T2	router1	-0.6035	0.06	–	–
CLTR4020117T2	router1	-1.0061	0.05	1.3291 : -1.3291	0.0595 : 0.0595
CLTW4020118T2	router1	0.1020	0.05	–	–
CLTR4020448T3	router1	0.1682	0.04	–	–
CLTR4020449T3	router1	-1.2116	0.05	1.2861 : -1.2861	0.0485 : 0.0485
CLTR4020450T3	router1	-0.5613	0.03	-1.0772 : 1.0772	0.0533 : 0.0533
CLTW4020134T3	router1	-0.4661	0.06	–	–
CLTR4020016T3	router1	-0.2855	0.06	–	–
CLTR4020017T3	router1	0.4954	0.03	-5.2022 : 5.2022	0.5037 : 0.5037
CLTW4020018T3	router1	0.7359	0.06	–	–
CLTR4020241T1	router2	0.4063	0.05	–	–
CLTR4020242T1	router2	-1.3067	0.06	1.1957 : -1.1957	0.0614 : 0.0614
CLTW4020243T1	router2	0.5662	0.05	–	–
CLTW4020139T2	router2	0.1892	0.05	–	–
CLTR4020119T2	router2	1.1395	0.05	–	–
CLTR4020120T2	router2	0.0825	0.04	0.6582 : -0.6582	0.0454 : 0.0454
CLTW4020121T2	router2	0.2895	0.05	–	–
CLTW4020131T3	router2	-0.1065	0.05	–	–
CLTR4020298T3	router2	0.3642	0.05	–	–
CLTR4020299T3	router2	-0.0019	0.04	0.2695 : -0.2695	0.0481 : 0.0481
CLTW4020300T3	router2	0.5471	0.05	–	–
CLTR4020304T1	Stage2E	-0.3072	0.12	–	–
CLTR4020305T1	Stage2E	-0.5677	0.1	0.6808 : -0.6808	0.121 : 0.121
CLTW4020306T1	Stage2E	-0.5215	0.1	0.5089 : -0.5089	0.124 : 0.124
CLTW4020310T1	Stage2E	0.1990	0.14	–	–
CLTW4020240T1	Stage2E	0.0145	0.11	-0.024 : 0.024	0.1559 : 0.1559
CLTR4020308T1	Stage2E	-0.1804	0.13	–	–
CLTR4020087T2	Stage2M	0.5483	0.05	–	–
CLTR4020088T2	Stage2M	0.1582	0.05	–	–
CLTW4020089T2	Stage2M	-1.4423	0.05	0.9401 : -0.9401	0.057 : 0.057
CLTW4020086T2	Stage2M	-0.0155	0.03	-0.5997 : 0.5997	0.0518 : 0.0518
CLTR4020137T2	Stage2M	0.1924	0.05	–	–
CLTR4020085T2	Stage2M	-0.4393	0.05	–	–
CLTR4020245T3	Stage2H	-0.0646	0.06	–	–
CLTR4020244T3	Stage2H	0.7770	0.04	-0.9229 : 0.9229	0.0768 : 0.0768
CLTW4020246T3	Stage2H	0.7030	0.05	0.8117 : -0.8117	0.0554 : 0.0554
CLTR4020130T3	Stage2H	0.1959	0.06	–	–
CLTW4020135T3	Stage2H	0.1028	0.04	-0.3096 : 0.3096	0.069 : 0.069
CLTR4020132T3	Stage2H	0.4724	0.06	–	–

Table 8.B.3 IRT Item Difficulty for ELA, Grade Five

Item ID	Position	<i>b</i> -value	<i>b</i> -value SE	<i>d</i> -values	<i>d</i> -values SE
CLTR5020314T1	router_all	-0.7189	0.04	–	–
CLTR5020452T1	router_all	-0.4171	0.05	–	–
CLTR5020453T1	router_all	-1.9210	0.07	0.6283 : -0.6283	0.0828 : 0.0828
CLTW5020454T1	router_all	-1.0832	0.06	1.5034 : -1.5034	0.0612 : 0.0612
CLTR5020318T1	router_all	-1.1968	0.05	–	–
CLTR5020319T1	router_all	-0.8034	0.04	–	–
CLTW5020320T1	router_all	0.1565	0.04	–	–
CLTR5020338T2	router_all	-0.4316	0.04	–	–
CLTR5020337T2	router_all	-0.0540	0.04	–	–
CLTW5020339T2	router_all	-0.6228	0.03	1.106 : -1.106	0.0342 : 0.0342
CLTR5020340T2	router_all	-0.0755	0.05	–	–
CLTR5020330T2	router1	0.7813	0.05	–	–
CLTW5020331T2	router1	0.3554	0.05	–	–
CLTR5020332T2	router1	-0.1344	0.05	–	–
CLTR5020248T3	router1	-0.1509	0.02	-4.1049 : 4.1049	0.1947 : 0.1947
CLTR5020247T3	router1	-0.3973	0.04	–	–
CLTR5020249T3	router1	0.5325	0.03	-0.2565 : 0.2565	0.0396 : 0.0396
CLTR5020050T3	router1	-0.0349	0.03	-0.8127 : 0.8127	0.0656 : 0.0656
CLTR5020044T3	router1	1.0217	0.06	–	–
CLTR5020045T3	router1	0.2120	0.06	–	–
CLTW5020046T3	router1	0.9914	0.04	-0.0872 : 0.0872	0.0618 : 0.0618
CLTR5020311T1	router2	-1.0247	0.06	–	–
CLTR5020312T1	router2	-0.2030	0.05	–	–
CLTW5020313T1	router2	-0.9286	0.04	-0.3471 : 0.3471	0.0589 : 0.0589
CLTR5020342T2	router2	0.0141	0.03	-1.5756 : 1.5756	0.0791 : 0.0791
CLTR5020253T2	router2	-0.6458	0.05	–	–
CLTR5020254T2	router2	-1.2697	0.06	1.4868 : -1.4868	0.0679 : 0.0679
CLTW5020255T2	router2	0.9660	0.05	–	–
CLTR5020073T3	router2	0.5665	0.05	–	–
CLTR5020038T3	router2	1.0306	0.05	–	–
CLTR5020039T3	router2	0.7219	0.05	–	–
CLTW5020040T3	router2	1.0395	0.04	-0.2945 : 0.2945	0.0616 : 0.0616
CLTR5020327T1	Stage2E	-0.0775	0.11	–	–
CLTR5020328T1	Stage2E	-0.9186	0.08	0.5573 : -0.5573	0.0972 : 0.0972
CLTW5020329T1	Stage2E	-0.0475	0.11	–	–
CLTR5020316T1	Stage2E	-0.5876	0.06	-1.1212 : 1.1212	0.1402 : 0.1402
CLTW5020317T1	Stage2E	-0.7916	0.08	0.6143 : -0.6143	0.0971 : 0.0971
CLTR5020315T1	Stage2E	-0.5510	0.09	1.1966 : -1.1966	0.1028 : 0.1028
CLTW5020343T2	Stage2M	-0.8984	0.04	1.2505 : -1.2505	0.0477 : 0.0477
CLTR5020047T2	Stage2M	-1.1863	0.05	1.4279 : -1.4279	0.0555 : 0.0555
CLTR5020346T2	Stage2M	-0.3218	0.03	-0.907 : 0.907	0.0563 : 0.0563
CLTW5020347T2	Stage2M	0.7618	0.05	–	–
CLTR5020344T2	Stage2M	0.7216	0.05	–	–
CLTR5020345T2	Stage2M	-0.9329	0.05	1.4107 : -1.4107	0.0505 : 0.0505
CLTR5020041T3	Stage2H	1.0745	0.06	–	–
CLTR5020042T3	Stage2H	-0.3046	0.07	–	–
CLTW5020043T3	Stage2H	0.3605	0.04	-0.0366 : 0.0366	0.068 : 0.068
CLTW5020076T3	Stage2H	-0.0616	0.07	–	–
CLTR5020341T3	Stage2H	0.0578	0.07	1.8406 : -1.8406	0.0769 : 0.0769
CLTR5020074T3	Stage2H	0.1372	0.04	-1.5748 : 1.5748	0.1145 : 0.1145

Table 8.B.4 IRT Item Difficulty for ELA, Grade Six

Item ID	Position	<i>b</i> -value	<i>b</i> -value SE	<i>d</i> -values	<i>d</i> -values SE
CLTR6020097T1	router_all	-1.3935	0.03	-1.7601 : 1.7601	0.0856 : 0.0856
CLTR6020113T1	router_all	-0.6702	0.04	-1.1638 : 1.1638	0.0787 : 0.0787
CLTR6020115T1	router_all	0.6190	0.05	—	—
CLTR6020114T1	router_all	-2.0224	0.07	—	—
CLTR6020150T1	router_all	-1.0591	0.03	-1.9281 : 1.9281	0.0834 : 0.0834
CLTR6020151T1	router_all	-1.5112	0.05	—	—
CLTW6020152T1	router_all	0.7074	0.04	—	—
CLTR6020184T2	router_all	0.2163	0.03	0.8872 : -0.8872	0.0331 : 0.0331
CLTW6020186T2	router_all	0.2053	0.04	—	—
CLTR6020185T2	router_all	-0.6038	0.04	—	—
CLTR6020204T2	router_all	-1.0296	0.05	0.9279 : -0.9279	0.0581 : 0.0581
CLTR6020197T2	router1	-0.1257	0.05	—	—
CLTR6020196T2	router1	-0.4586	0.05	1.5711 : -1.5711	0.0552 : 0.0552
CLTW6020198T2	router1	0.0805	0.06	—	—
CLTW6020415T3	router1	0.5136	0.04	—	—
CLTR6020413T3	router1	-0.0493	0.03	1.2052 : -1.2052	0.0354 : 0.0354
CLTR6020414T3	router1	1.1011	0.04	—	—
CLTW6020424T3	router1	0.9071	0.06	—	—
CLTR6020404T3	router1	-0.3855	0.05	1.711 : -1.711	0.0561 : 0.0561
CLTR6020405T3	router1	1.1741	0.06	—	—
CLTW6020406T3	router1	0.8476	0.04	-0.0024 : 0.0024	0.0569 : 0.0569
CLTR6020063T1	router2	-1.0896	0.06	—	—
CLTR6020064T1	router2	-0.0556	0.03	-0.8785 : 0.8785	0.0699 : 0.0699
CLTR6020065T1	router2	0.0794	0.03	-0.7375 : 0.7375	0.0645 : 0.0645
CLTR6020205T2	router2	0.1998	0.05	—	—
CLTR6020200T2	router2	-0.8372	0.06	—	—
CLTW6020201T2	router2	0.5956	0.04	0.4118 : -0.4118	0.0559 : 0.0559
CLTR6020199T2	router2	-0.7398	0.06	—	—
CLTW6020426T3	router2	0.7430	0.05	0.3718 : -0.3718	0.0583 : 0.0583
CLTR6020398T3	router2	0.5201	0.05	—	—
CLTW6020399T3	router2	0.7138	0.04	0.1508 : -0.1508	0.0578 : 0.0578
CLTR6020397T3	router2	0.9327	0.06	—	—
CLTR6020295T1	Stage2E	0.2076	0.13	—	—
CLTR6020296T1	Stage2E	-0.8772	0.11	—	—
CLTW6020297T1	Stage2E	-0.6703	0.09	0.7027 : -0.7027	0.1109 : 0.1109
CLTR6020098T1	Stage2E	-0.4368	0.1	0.707 : -0.707	0.1155 : 0.1155
CLTW6020104T1	Stage2E	-0.4891	0.1	0.7998 : -0.7998	0.1162 : 0.1162
CLTR6020099T1	Stage2E	-0.8526	0.06	-2.3136 : 2.3136	0.2473 : 0.2473
CLTR6020019T2	Stage2M	0.8493	0.05	—	—
CLTR6020020T2	Stage2M	-0.4326	0.05	—	—
CLTR6020021T2	Stage2M	0.3416	0.03	-0.5738 : 0.5738	0.0545 : 0.0545
CLTR6020203T2	Stage2M	0.4764	0.03	-0.5336 : 0.5336	0.0551 : 0.0551
CLTW6020209T2	Stage2M	0.5019	0.04	0.259 : -0.259	0.0478 : 0.0478
CLTW6020208T2	Stage2M	-0.3835	0.05	—	—
CLTR6020418T3	Stage2H	1.0566	0.04	-0.7442 : 0.7442	0.083 : 0.083
CLTR6020416T3	Stage2H	1.3716	0.07	—	—
CLTR6020417T3	Stage2H	-0.0280	0.08	1.9158 : -1.9158	0.0861 : 0.0861
CLTR6020420T3	Stage2H	-0.2600	0.07	0.8177 : -0.8177	0.081 : 0.081
CLTR6020422T3	Stage2H	1.1648	0.07	—	—
CLTW6020425T3	Stage2H	1.2599	0.05	0.0521 : -0.0521	0.0698 : 0.0698

Table 8.B.5 IRT Item Difficulty for ELA, Grade Seven

Item ID	Position	<i>b</i> -value	<i>b</i> -value SE	<i>d</i> -values	<i>d</i> -values SE
CLTW7020385T1	router_all	-1.6019	0.05	—	—
CLTR7020408T1	router_all	-0.9802	0.05	—	—
CLTW7020407T1	router_all	-0.1749	0.04	0.7128 : -0.7128	0.0456 : 0.0456
CLTR7020409T1	router_all	-0.5694	0.05	—	—
CLTR7020008T1	router_all	-1.3596	0.04	1.1891 : -1.1891	0.0455 : 0.0455
CLTR7020009T1	router_all	0.4484	0.04	—	—
CLTW7020007T1	router_all	-0.1141	0.04	—	—
CLTR7020378T2	router_all	0.3261	0.02	-0.7147 : 0.7147	0.0438 : 0.0438
CLTR7020377T2	router_all	0.7529	0.04	—	—
CLTR7020376T2	router_all	0.0316	0.04	—	—
CLTW7020374T2	router_all	0.0977	0.05	—	—
CLTR7020153T2	router1	0.3091	0.05	—	—
CLTR7020154T2	router1	-0.6373	0.06	—	—
CLTWT020155T2	router1	0.3543	0.04	0.5393 : -0.5393	0.0522 : 0.0522
CLTR7020357T3	router1	0.1608	0.02	-1.1852 : 1.1852	0.0532 : 0.0532
CLTW7020359T3	router1	-0.0135	0.04	—	—
CLTR7020358T3	router1	2.1737	0.05	—	—
CLTW7020366T3	router1	-0.1657	0.06	—	—
CLTW7020350T3	router1	0.4202	0.04	0.382 : -0.382	0.0537 : 0.0537
CLTR7020348T3	router1	0.7071	0.05	—	—
CLTR7020349T3	router1	2.3343	0.08	—	—
CLTR7020411T1	router2	-1.8188	0.07	—	—
CLTR7020410T1	router2	-0.6310	0.05	—	—
CLTW7020412T1	router2	-1.0520	0.07	2.1889 : -2.1889	0.0693 : 0.0693
CLTW7020373T2	router2	0.1258	0.05	—	—
CLTR7020158T2	router2	0.1027	0.04	0.3352 : -0.3352	0.0537 : 0.0537
CLTR7020156T2	router2	0.1911	0.05	—	—
CLTR7020157T2	router2	0.6140	0.05	—	—
CLTW7020367T3	router2	0.3793	0.05	—	—
CLTR7020351T3	router2	1.3391	0.06	—	—
CLTR7020352T3	router2	0.3033	0.06	—	—
CLTW7020353T3	router2	0.4422	0.04	0.4017 : -0.4017	0.0542 : 0.0542
CLTR7020010T1	Stage2E	-0.0578	0.09	—	—
CLTR7020011T1	Stage2E	0.1243	0.09	—	—
CLTR7020012T1	Stage2E	-0.3484	0.05	-1.5037 : 1.5037	0.135 : 0.135
CLTW7020386T1	Stage2E	-0.4572	0.08	1.249 : -1.249	0.0838 : 0.0838
CLTR7020379T1	Stage2E	-0.8145	0.07	0.8841 : -0.8841	0.0795 : 0.0795
CLTR7020382T1	Stage2E	-0.5565	0.08	1.178 : -1.178	0.0831 : 0.0831
CLTR7020427T2	Stage2M	-0.4965	0.05	1.6311 : -1.6311	0.0474 : 0.0474
CLTW7020429T2	Stage2M	0.3025	0.05	—	—
CLTR7020428T2	Stage2M	0.1900	0.04	—	—
CLTR7020368T2	Stage2M	-0.7423	0.05	1.3619 : -1.3619	0.0495 : 0.0495
CLTW7020375T2	Stage2M	0.2564	0.03	0.2013 : -0.2013	0.0453 : 0.0453
CLTR7020371T2	Stage2M	-0.9201	0.05	1.2123 : -1.2123	0.0515 : 0.0515
CLTW7020356T3	Stage2H	0.2987	0.07	0.8077 : -0.8077	0.0849 : 0.0849
CLTR7020354T3	Stage2H	-0.1129	0.08	1.2398 : -1.2398	0.0925 : 0.0925
CLTR7020355T3	Stage2H	0.4498	0.08	—	—
CLTW7020361T3	Stage2H	0.2983	0.07	0.8651 : -0.8651	0.0856 : 0.0856
CLTR7020364T3	Stage2H	-0.2397	0.1	1.7145 : -1.7145	0.1063 : 0.1063
CLTR7020362T3	Stage2H	0.9664	0.08	—	—

Table 8.B.6 IRT Item Difficulty for ELA, Grade Eight

Item ID	Position	<i>b</i> -value	<i>b</i> -value SE	<i>d</i> -values	<i>d</i> -values SE
CLTR8020446T1	router_all	-1.3987	0.04	1.0746 : -1.0746	0.0465 : 0.0465
CLTR8020445T1	router_all	-0.4820	0.05	–	–
CLTR8020444T1	router_all	-0.5038	0.04	0.5285 : -0.5285	0.0485 : 0.0485
CLTW8020390T1	router_all	-2.0646	0.07	–	–
CLTR8020394T1	router_all	-0.8920	0.04	1.806 : -1.806	0.0451 : 0.0451
CLTR8020395T1	router_all	-1.1356	0.04	–	–
CLTW8020396T1	router_all	-0.7466	0.04	1.6293 : -1.6293	0.0414 : 0.0414
CLTR8020292T2	router_all	-0.0437	0.02	-0.9073 : 0.9073	0.0475 : 0.0475
CLTR8020293T2	router_all	-0.3621	0.03	0.5059 : -0.5059	0.0346 : 0.0346
CLTR8020294T2	router_all	-0.3490	0.04	1.6577 : -1.6577	0.0389 : 0.0389
CLTR8020288T2	router_all	-0.9364	0.05	1.3982 : -1.3982	0.059 : 0.059
CLTR8020321T2	router1	-1.4306	0.07	1.065 : -1.065	0.0726 : 0.0726
CLTR8020322T2	router1	0.6122	0.05	–	–
CLTR8020323T2	router1	-0.1846	0.03	-1.2753 : 1.2753	0.0765 : 0.0765
CLTR8020269T3	router1	0.1199	0.04	–	–
CLTW8020270T3	router1	0.4009	0.02	-4.9196 : 4.9196	0.3074 : 0.3074
CLTR8020271T3	router1	0.0088	0.04	1.6522 : -1.6522	0.0367 : 0.0367
CLTW8020070T3	router1	-0.7710	0.06	1.4776 : -1.4776	0.0602 : 0.0602
CLTR8020066T3	router1	0.1570	0.05	1.5633 : -1.5633	0.0499 : 0.0499
CLTR8020068T3	router1	0.0310	0.03	-1.3894 : 1.3894	0.0796 : 0.0796
CLTR8020067T3	router1	0.7202	0.05	–	–
CLTR8020284T1	router2	0.6430	0.03	-0.7378 : 0.7378	0.0681 : 0.0681
CLTR8020282T1	router2	-1.3820	0.06	1.1827 : -1.1827	0.068 : 0.068
CLTR8020283T1	router2	-0.0083	0.05	–	–
CLTW8020262T2	router2	1.0052	0.06	–	–
CLTR8020001T2	router2	-0.1568	0.05	–	–
CLTR8020002T2	router2	-0.7219	0.06	1.7599 : -1.7599	0.0626 : 0.0626
CLTW8020003T2	router2	-0.1268	0.04	0.8184 : -0.8184	0.0501 : 0.0501
CLTW8020071T3	router2	-0.3335	0.05	1.276 : -1.276	0.0536 : 0.0536
CLTR8020437T3	router2	-0.1473	0.05	1.3446 : -1.3446	0.0525 : 0.0525
CLTR8020438T3	router2	0.8768	0.06	–	–
CLTR8020439T3	router2	-0.1417	0.04	1.0895 : -1.0895	0.0512 : 0.0512
CLTR8020391T1	Stage2E	0.1182	0.17	–	–
CLTR8020392T1	Stage2E	0.1332	0.17	0.8276 : -0.8276	0.1994 : 0.1994
CLTR8020393T1	Stage2E	-0.3142	0.1	-2.3084 : 2.3084	0.3818 : 0.3818
CLTR8020447T1	Stage2E	-0.4273	0.14	0.9807 : -0.9807	0.167 : 0.167
CLTW8020389T1	Stage2E	-0.1161	0.16	1.2206 : -1.2206	0.1793 : 0.1793
CLTW8020388T1	Stage2E	-0.7481	0.12	0.5342 : -0.5342	0.151 : 0.151
CLTR8020285T2	Stage2M	0.5318	0.05	–	–
CLTR8020286T2	Stage2M	0.2951	0.05	–	–
CLTW8020287T2	Stage2M	0.8242	0.05	–	–
CLTW8020260T2	Stage2M	-0.1240	0.03	0.1796 : -0.1796	0.043 : 0.043
CLTR8020290T2	Stage2M	0.2610	0.05	–	–
CLTR8020291T2	Stage2M	-0.9559	0.05	1.2992 : -1.2992	0.0491 : 0.0491
CLTW8020062T3	Stage2H	1.6237	0.07	–	–
CLTR8020061T3	Stage2H	0.0664	0.07	–	–
CLTR8020060T3	Stage2H	0.6089	0.06	–	–
CLTR8020440T3	Stage2H	0.0869	0.06	1.187 : -1.187	0.0675 : 0.0675
CLTR8020072T3	Stage2H	0.8109	0.06	–	–
CLTW8020069T3	Stage2H	0.9273	0.06	–	–

Table 8.B.7 IRT Item Difficulty for ELA, Grade Eleven

Item ID	Position	<i>b</i> -value	<i>b</i> -value SE	<i>d</i> -values	<i>d</i> -values SE
CLTRH020034T1	router_all	-1.3133	0.04	–	–
CLTRH020227T1	router_all	-1.4018	0.07	–	–
CLTRH020228T1	router_all	-0.0734	0.05	1.3693 : -1.3693	0.0517 : 0.0517
CLTWH020229T1	router_all	-0.8483	0.07	–	–
CLTRH020022T1	router_all	0.4838	0.04	–	–
CLTRH020023T1	router_all	0.5446	0.03	0.1503 : -0.1503	0.038 : 0.038
CLTRH020024T1	router_all	-0.0897	0.02	-1.3716 : 1.3716	0.0581 : 0.0581
CLTRH020220T2	router_all	-0.8181	0.04	–	–
CLTRH020221T2	router_all	-0.0805	0.04	–	–
CLTWH020222T2	router_all	-0.8046	0.04	0.8959 : -0.8959	0.0414 : 0.0414
CLTRH020216T2	router_all	-0.5132	0.06	–	–
CLTRH020188T2	router1	-0.2427	0.04	0.5677 : -0.5677	0.056 : 0.056
CLTRH020189T2	router1	-0.4663	0.04	-1.5164 : 1.5164	0.0991 : 0.0991
CLTRH020187T2	router1	0.9723	0.06	–	–
CLTRH020441T3	router1	1.5383	0.05	–	–
CLTRH020442T3	router1	-0.7832	0.04	1.3285 : -1.3285	0.0451 : 0.0451
CLTRH020443T3	router1	-0.0224	0.03	-1.4238 : 1.4238	0.0623 : 0.0623
CLTRH020278T3	router1	1.3462	0.06	–	–
CLTRH020266T3	router1	0.5614	0.06	–	–
CLTWH020268T3	router1	0.9286	0.06	–	–
CLTRH020267T3	router1	0.0104	0.05	1.0945 : -1.0945	0.0543 : 0.0543
CLTRH020230T1	router2	-0.3483	0.05	–	–
CLTRH020231T1	router2	-1.3701	0.06	–	–
CLTWH020232T1	router2	-1.2216	0.06	1.2294 : -1.2294	0.0637 : 0.0637
CLTRH020213T2	router2	0.2294	0.05	–	–
CLTRH020217T2	router2	-0.7708	0.06	–	–
CLTRH020218T2	router2	-0.4572	0.05	1.7079 : -1.7079	0.0587 : 0.0587
CLTWH020219T2	router2	-0.1989	0.06	–	–
CLTRH020277T3	router2	0.5930	0.05	1.3513 : -1.3513	0.053 : 0.053
CLTRH020279T3	router2	0.1495	0.05	–	–
CLTRH020280T3	router2	0.7240	0.06	–	–
CLTWH020281T3	router2	0.3519	0.04	-0.1337 : 0.1337	0.0558 : 0.0558
CLTRH020025T1	Stage2E	-0.2315	0.1	0.669 : -0.669	0.1216 : 0.1216
CLTRH020026T1	Stage2E	-0.2219	0.11	1.0719 : -1.0719	0.1239 : 0.1239
CLTRH020027T1	Stage2E	0.1938	0.13	–	–
CLTRH020233T1	Stage2E	-0.4305	0.12	–	–
CLTWH020236T1	Stage2E	-0.5339	0.1	0.5797 : -0.5797	0.1142 : 0.1142
CLTRH020033T1	Stage2E	-0.2808	0.11	0.838 : -0.838	0.1209 : 0.1209
CLTRH020191T2	Stage2M	-0.8740	0.05	1.1727 : -1.1727	0.0521 : 0.0521
CLTRH020190T2	Stage2M	-1.3618	0.06	1.4889 : -1.4889	0.0689 : 0.0689
CLTRH020192T2	Stage2M	0.6168	0.05	–	–
CLTRH020214T2	Stage2M	-0.3073	0.03	0.5397 : -0.5397	0.0433 : 0.0433
CLTRH020223T2	Stage2M	-0.0856	0.05	–	–
CLTRH020225T2	Stage2M	0.1565	0.05	–	–
CLTRH020272T3	Stage2H	0.5185	0.06	1.2732 : -1.2732	0.074 : 0.074
CLTRH020273T3	Stage2H	-0.0886	0.07	1.0941 : -1.0941	0.0831 : 0.0831
CLTWH020274T3	Stage2H	0.5331	0.08	–	–
CLTWH020433T3	Stage2H	0.6859	0.05	0.3037 : -0.3037	0.0737 : 0.0737
CLTRH020430T3	Stage2H	-0.3219	0.09	–	–
CLTRH020276T3	Stage2H	-0.5788	0.09	0.7604 : -0.7604	0.1011 : 0.1011

Table 8.B.8 IRT Item Difficulty for Mathematics, Grade Three

Item ID	Position	<i>b</i> -value	<i>b</i> -value SE	<i>d</i> -values	<i>d</i> -values SE
CLTM3020174T1	router_all	-0.4061	0.04	–	–
CLTM3020010T1	router_all	-0.2979	0.03	-0.9045 : 0.9045	0.0679 : 0.0679
CLTM3020210T1	router_all	-0.8151	0.05	–	–
CLTM3020201T1	router_all	0.4968	0.05	–	–
CLTM3020007T1	router_all	0.2274	0.04	–	–
CLTM3020004T1	router_all	-1.0428	0.04	–	–
CLTM3020171T1	router_all	0.1763	0.02	-0.772 : 0.772	0.0466 : 0.0466
CLTM3020011T2	router_all	-0.4208	0.02	-0.4024 : 0.4024	0.0405 : 0.0405
CLTM3020168T2	router_all	0.5382	0.04	–	–
CLTM3020202T2	router_all	-0.1129	0.04	–	–
CLTM3020204T2	router_all	1.1393	0.06	–	–
CLTM3020008T2	router1	0.3698	0.06	–	–
CLTM3020005T2	router1	1.1043	0.06	–	–
CLTM3020014T2	router1	0.1565	0.06	–	–
CLTM3020012T3	router1	-0.0207	0.02	-4.6347 : 4.6347	0.2708 : 0.2708
CLTM3020169T3	router1	2.3913	0.07	–	–
CLTM3020203T3	router1	1.1592	0.04	–	–
CLTM3020055T3	router1	0.2041	0.03	-1.2397 : 1.2397	0.0833 : 0.0833
CLTM3020006T3	router1	2.8711	0.11	–	–
CLTM3020173T3	router1	0.2962	0.03	-1.3148 : 1.3148	0.0856 : 0.0856
CLTM3020176T3	router1	0.6283	0.06	–	–
CLTM3020056T1	router2	0.5861	0.05	–	–
CLTM3020013T1	router2	0.6690	0.05	–	–
CLTM3020053T1	router2	0.2337	0.03	-1.6185 : 1.6185	0.0847 : 0.0847
CLTM3020175T2	router2	0.4892	0.05	–	–
CLTM3020057T2	router2	0.0205	0.05	–	–
CLTM3020172T2	router2	0.2677	0.03	-0.6372 : 0.6372	0.0665 : 0.0665
CLTM3020054T2	router2	0.5026	0.03	-1.4338 : 1.4338	0.0883 : 0.0883
CLTM3020058T3	router2	2.8268	0.1	–	–
CLTM3020015T3	router2	0.2996	0.06	–	–
CLTM3020009T3	router2	0.9402	0.06	–	–
CLTM3020205T3	router2	0.5482	0.06	–	–
CLTM3020186T1	Stage2E	-0.7773	0.07	–	–
CLTM3020001T1	Stage2E	-0.1234	0.04	-1.5732 : 1.5732	0.1129 : 0.1129
CLTM3020062T1	Stage2E	-0.4612	0.04	-2.1253 : 2.1253	0.1386 : 0.1386
CLTM3020059T1	Stage2E	-0.4302	0.07	–	–
CLTM3020018T1	Stage2E	-0.6068	0.07	–	–
CLTM3020065T1	Stage2E	-0.5915	0.07	–	–
CLTM3020187T2	Stage2M	1.4316	0.05	–	–
CLTM3020002T2	Stage2M	0.5653	0.04	1.1202 : -1.1202	0.0441 : 0.0441
CLTM3020063T2	Stage2M	-0.3684	0.03	-1.8233 : 1.8233	0.0851 : 0.0851
CLTM3020060T2	Stage2M	0.0637	0.05	–	–
CLTM3020208T2	Stage2M	0.7783	0.05	–	–
CLTM3020066T2	Stage2M	0.0672	0.05	–	–
CLTM3020188T3	Stage2H	2.7005	0.16	–	–
CLTM3020003T3	Stage2H	0.3173	0.07	-1.403 : 1.403	0.1829 : 0.1829
CLTM3020064T3	Stage2H	0.7819	0.06	-1.1167 : 1.1167	0.1551 : 0.1551
CLTM3020061T3	Stage2H	0.9231	0.11	–	–
CLTM3020209T3	Stage2H	1.8350	0.13	–	–
CLTM3020067T3	Stage2H	1.0227	0.11	–	–

Table 8.B.9 IRT Item Difficulty for Mathematics, Grade Four

Item ID	Position	<i>b</i> -value	<i>b</i> -value SE	<i>d</i> -values	<i>d</i> -values SE
CLTM4020216T1	router_all	0.3442	0.02	-1.2069 : 1.2069	0.0496 : 0.0496
CLTM4020225T1	router_all	0.1773	0.03	-2.4731 : 2.4731	0.1183 : 0.1183
CLTM4020246T1	router_all	-0.8811	0.05	—	—
CLTM4020243T1	router_all	0.0378	0.05	—	—
CLTM4020252T1	router_all	-0.2826	0.03	—	—
CLTM4020249T1	router_all	0.1897	0.02	0.5461 : -0.5461	0.0323 : 0.0323
CLTM4020240T1	router_all	-0.0727	0.03	—	—
CLTM4020226T2	router_all	-0.0522	0.03	0.442 : -0.442	0.0333 : 0.0333
CLTM4020247T2	router_all	0.1019	0.03	—	—
CLTM4020244T2	router_all	1.0018	0.04	—	—
CLTM4020229T2	router_all	0.3550	0.04	0.9634 : -0.9634	0.0465 : 0.0465
CLTM4020190T2	router1	0.8306	0.06	—	—
CLTM4020220T2	router1	0.7066	0.05	—	—
CLTM4020241T2	router1	0.8958	0.06	—	—
CLTM4020227T3	router1	0.2037	0.03	-0.0669 : 0.0669	0.0381 : 0.0381
CLTM4020248T3	router1	0.6678	0.04	—	—
CLTM4020221T3	router1	0.5025	0.04	—	—
CLTM4020254T3	router1	0.4544	0.05	—	—
CLTM4020251T3	router1	0.4529	0.03	-0.4822 : 0.4822	0.0611 : 0.0611
CLTM4020212T3	router1	0.5862	0.04	1.0609 : -1.0609	0.0519 : 0.0519
CLTM4020218T3	router1	-0.0383	0.04	0.0352 : -0.0352	0.0526 : 0.0526
CLTM4020189T1	router2	-0.6402	0.05	—	—
CLTM4020219T1	router2	-0.1231	0.05	—	—
CLTM4020170T1	router2	0.1822	0.03	-0.636 : 0.636	0.0559 : 0.0559
CLTM4020217T2	router2	0.6234	0.04	0.3598 : -0.3598	0.0498 : 0.0498
CLTM4020253T2	router2	0.7695	0.05	—	—
CLTM4020250T2	router2	0.0286	0.04	1.5053 : -1.5053	0.0511 : 0.0511
CLTM4020211T2	router2	1.1382	0.04	0.209 : -0.209	0.0617 : 0.0617
CLTM4020191T3	router2	0.2379	0.05	—	—
CLTM4020245T3	router2	0.4799	0.05	—	—
CLTM4020242T3	router2	0.7269	0.05	—	—
CLTM4020230T3	router2	0.5104	0.04	0.8849 : -0.8849	0.0501 : 0.0501
CLTM4020231T1	Stage2E	-0.0223	0.06	1.0728 : -1.0728	0.072 : 0.072
CLTM4020222T1	Stage2E	0.5651	0.06	-0.3673 : 0.3673	0.0973 : 0.0973
CLTM4020237T1	Stage2E	-0.5004	0.08	—	—
CLTM4020177T1	Stage2E	-0.1361	0.06	0.5682 : -0.5682	0.0702 : 0.0702
CLTM4020255T1	Stage2E	-0.4564	0.08	—	—
CLTM4020192T1	Stage2E	-0.1437	0.08	—	—
CLTM4020232T2	Stage2M	1.4023	0.04	0.4136 : -0.4136	0.0545 : 0.0545
CLTM4020223T2	Stage2M	0.3923	0.03	-0.3347 : 0.3347	0.0437 : 0.0437
CLTM4020238T2	Stage2M	0.6717	0.04	—	—
CLTM4020178T2	Stage2M	-0.2292	0.03	-0.1184 : 0.1184	0.0415 : 0.0415
CLTM4020256T2	Stage2M	0.3178	0.04	—	—
CLTM4020193T2	Stage2M	1.2307	0.05	—	—
CLTM4020233T3	Stage2H	0.6119	0.07	-0.5074 : 0.5074	0.1384 : 0.1384
CLTM4020224T3	Stage2H	1.5794	0.1	1.102 : -1.102	0.127 : 0.127
CLTM4020239T3	Stage2H	1.3101	0.12	—	—
CLTM4020179T3	Stage2H	0.3418	0.08	-0.6812 : 0.6812	0.153 : 0.153
CLTM4020257T3	Stage2H	-1.0960	0.17	—	—
CLTM4020194T3	Stage2H	1.2703	0.12	—	—

Table 8.B.10 IRT Item Difficulty for Mathematics, Grade Five

Item ID	Position	<i>b</i> -value	<i>b</i> -value SE	<i>d</i> -values	<i>d</i> -values SE
CLTM5020165T1	router_all	-0.3099	0.04	–	–
CLTM5020258T1	router_all	-0.4316	0.05	–	–
CLTM5020195T1	router_all	-1.0661	0.04	0.1966 : -0.1966	0.0599 : 0.0599
CLTM5020345T1	router_all	-0.9325	0.06	–	–
CLTM5020340T1	router_all	0.2533	0.02	-1.3665 : 1.3665	0.0541 : 0.0541
CLTM5020180T1	router_all	-1.0387	0.04	–	–
CLTM5020183T1	router_all	-0.3533	0.02	0.2009 : -0.2009	0.0351 : 0.0351
CLTM5020259T2	router_all	0.7436	0.04	–	–
CLTM5020196T2	router_all	-0.5952	0.03	0.4642 : -0.4642	0.0354 : 0.0354
CLTM5020346T2	router_all	0.7226	0.04	–	–
CLTM5020405T2	router_all	-0.1153	0.03	-1.6048 : 1.6048	0.0848 : 0.0848
CLTM5020166T2	router1	0.1176	0.05	–	–
CLTM5020361T2	router1	0.3865	0.05	–	–
CLTM5020268T2	router1	0.3622	0.04	0.6335 : -0.6335	0.0494 : 0.0494
CLTM5020260T3	router1	3.2009	0.09	–	–
CLTM5020197T3	router1	-0.0979	0.03	1.3217 : -1.3217	0.0353 : 0.0353
CLTM5020347T3	router1	1.2521	0.04	–	–
CLTM5020342T3	router1	-0.1395	0.03	-0.6815 : 0.6815	0.0626 : 0.0626
CLTM5020182T3	router1	2.4431	0.09	–	–
CLTM5020185T3	router1	0.2427	0.03	0.0968 : -0.0968	0.0533 : 0.0533
CLTM5020350T3	router1	0.2920	0.05	–	–
CLTM5020354T1	router2	-1.0319	0.05	–	–
CLTM5020267T1	router2	0.3397	0.03	-4.2067 : 4.2067	0.2709 : 0.2709
CLTM5020360T1	router2	0.0937	0.05	–	–
CLTM5020341T2	router2	0.2304	0.03	-1.5335 : 1.5335	0.0794 : 0.0794
CLTM5020355T2	router2	0.8840	0.05	–	–
CLTM5020184T2	router2	0.2836	0.03	-0.651 : 0.651	0.0607 : 0.0607
CLTM5020181T2	router2	1.2086	0.06	–	–
CLTM5020356T3	router2	0.4710	0.05	–	–
CLTM5020269T3	router2	0.2819	0.04	0.6537 : -0.6537	0.047 : 0.047
CLTM5020362T3	router2	1.1635	0.06	–	–
CLTM5020339T3	router2	0.2131	0.04	0.6754 : -0.6754	0.047 : 0.047
CLTM5020357T1	Stage2E	-0.1536	0.07	0.2489 : -0.2489	0.1007 : 0.1007
CLTM5020404T1	Stage2E	-0.2442	0.1	–	–
CLTM5020351T1	Stage2E	0.3789	0.07	-0.903 : 0.903	0.1481 : 0.1481
CLTM5020213T1	Stage2E	-0.5737	0.1	–	–
CLTM5020264T1	Stage2E	0.3631	0.11	–	–
CLTM5020261T1	Stage2E	-0.0208	0.1	–	–
CLTM5020358T2	Stage2M	0.3656	0.02	-1.3408 : 1.3408	0.0613 : 0.0613
CLTM5020343T2	Stage2M	1.0386	0.04	–	–
CLTM5020352T2	Stage2M	-0.2558	0.02	-1.7724 : 1.7724	0.0716 : 0.0716
CLTM5020214T2	Stage2M	0.2314	0.04	–	–
CLTM5020265T2	Stage2M	0.4791	0.04	–	–
CLTM5020262T2	Stage2M	0.1839	0.04	–	–
CLTM5020359T3	Stage2H	0.3135	0.07	0.2524 : -0.2524	0.1014 : 0.1014
CLTM5020344T3	Stage2H	0.6741	0.1	–	–
CLTM5020353T3	Stage2H	0.8476	0.06	-5.349 : 5.349	1.0144 : 1.0144
CLTM5020215T3	Stage2H	0.8745	0.1	–	–
CLTM5020266T3	Stage2H	1.2107	0.11	–	–
CLTM5020263T3	Stage2H	1.5629	0.12	–	–

Table 8.B.11 IRT Item Difficulty for Mathematics, Grade Six

Item ID	Position	<i>b</i> -value	<i>b</i> -value SE	<i>d</i> -values	<i>d</i> -values SE
CLTM6020363T1	router_all	0.3888	0.02	-1.3633 : 1.3633	0.055 : 0.055
CLTM6020284T1	router_all	-0.5917	0.05	–	–
CLTM6020432T1	router_all	0.4933	0.03	-1.3929 : 1.3929	0.0799 : 0.0799
CLTM6020040T1	router_all	-0.6138	0.05	–	–
CLTM6020094T1	router_all	0.3004	0.03	1.1325 : -1.1325	0.0336 : 0.0336
CLTM6020290T1	router_all	0.3428	0.02	-0.6834 : 0.6834	0.0461 : 0.0461
CLTM6020320T1	router_all	-0.1093	0.03	–	–
CLTM6020285T2	router_all	-0.1424	0.04	–	–
CLTM6020433T2	router_all	0.2766	0.02	-0.7949 : 0.7949	0.0472 : 0.0472
CLTM6020041T2	router_all	0.4730	0.04	–	–
CLTM6020436T2	router_all	0.8247	0.04	-0.5762 : 0.5762	0.0635 : 0.0635
CLTM6020425T2	router1	0.2695	0.06	–	–
CLTM6020291T2	router1	0.3605	0.03	-1.0257 : 1.0257	0.0805 : 0.0805
CLTM6020321T2	router1	1.3770	0.07	–	–
CLTM6020286T3	router1	1.8976	0.05	–	–
CLTM6020434T3	router1	0.1688	0.03	-0.0913 : 0.0913	0.0433 : 0.0433
CLTM6020042T3	router1	0.8149	0.04	–	–
CLTM6020096T3	router1	0.5214	0.03	-1.2236 : 1.2236	0.0883 : 0.0883
CLTM6020200T3	router1	0.1657	0.06	–	–
CLTM6020295T3	router1	1.6469	0.08	–	–
CLTM6020365T3	router1	0.4781	0.04	-0.8981 : 0.8981	0.0766 : 0.0766
CLTM6020198T1	router2	-0.6293	0.05	–	–
CLTM6020435T1	router2	0.0538	0.03	0.6208 : -0.6208	0.0456 : 0.0456
CLTM6020293T1	router2	-0.5554	0.05	–	–
CLTM6020364T2	router2	0.2905	0.03	-0.8211 : 0.8211	0.0651 : 0.0651
CLTM6020199T2	router2	0.4279	0.06	–	–
CLTM6020095T2	router2	0.4012	0.03	-1.3862 : 1.3862	0.0885 : 0.0885
CLTM6020294T2	router2	0.7100	0.06	–	–
CLTM6020292T3	router2	0.2239	0.04	0.4305 : -0.4305	0.0551 : 0.0551
CLTM6020437T3	router2	-0.2339	0.05	1.1297 : -1.1297	0.0568 : 0.0568
CLTM6020322T3	router2	1.3042	0.06	–	–
CLTM6020426T3	router2	0.4279	0.06	–	–
CLTM6020366T1	Stage2E	0.2254	0.04	-1.1058 : 1.1058	0.0903 : 0.0903
CLTM6020037T1	Stage2E	-0.1692	0.06	–	–
CLTM6020314T1	Stage2E	0.1518	0.03	-1.139 : 1.139	0.0912 : 0.0912
CLTM6020427T1	Stage2E	-0.4709	0.06	–	–
CLTM6020287T1	Stage2E	-0.4165	0.03	-1.9934 : 1.9934	0.1129 : 0.1129
CLTM6020097T1	Stage2E	0.2410	0.06	–	–
CLTM6020367T2	Stage2M	0.8267	0.04	0.8119 : -0.8119	0.0467 : 0.0467
CLTM6020038T2	Stage2M	0.6932	0.03	0.3764 : -0.3764	0.0459 : 0.0459
CLTM6020315T2	Stage2M	0.0754	0.03	-0.3771 : 0.3771	0.0509 : 0.0509
CLTM6020428T2	Stage2M	0.6745	0.05	–	–
CLTM6020288T2	Stage2M	1.3557	0.04	-3.8201 : 3.8201	0.2721 : 0.2721
CLTM6020098T2	Stage2M	1.5780	0.05	–	–
CLTM6020368T3	Stage2H	0.9375	0.08	0.2985 : -0.2985	0.1256 : 0.1256
CLTM6020039T3	Stage2H	0.9381	0.09	0.4097 : -0.4097	0.1205 : 0.1205
CLTM6020316T3	Stage2H	-0.5908	0.15	0.2198 : -0.2198	0.1944 : 0.1944
CLTM6020429T3	Stage2H	0.4053	0.13	–	–
CLTM6020289T3	Stage2H	0.7185	0.07	-0.8338 : 0.8338	0.1599 : 0.1599
CLTM6020099T3	Stage2H	1.9169	0.14	–	–

Table 8.B.12 IRT Item Difficulty for Mathematics, Grade Seven

Item ID	Position	<i>b</i> -value	<i>b</i> -value SE	<i>d</i> -values	<i>d</i> -values SE
CLTM7020091T1	router_all	-0.5496	0.02	-2.7162 : 2.7162	0.1017 : 0.1017
CLTM7020296T1	router_all	-0.4524	0.05	–	–
CLTM7020281T1	router_all	0.1293	0.03	-1.3938 : 1.3938	0.0766 : 0.0766
CLTM7020418T1	router_all	0.0975	0.03	-0.6263 : 0.6263	0.0592 : 0.0592
CLTM7020372T1	router_all	-0.1585	0.03	0.9536 : -0.9536	0.0331 : 0.0331
CLTM7020085T1	router_all	-0.5714	0.04	–	–
CLTM7020326T1	router_all	-0.4640	0.03	-0.0025 : 0.0025	0.0365 : 0.0365
CLTM7020297T2	router_all	0.1001	0.04	–	–
CLTM7020282T2	router_all	0.3755	0.03	0.2833 : -0.2833	0.0345 : 0.0345
CLTM7020419T2	router_all	0.5025	0.03	0.2365 : -0.2365	0.0358 : 0.0358
CLTM7020330T2	router_all	0.2012	0.03	-1.2807 : 1.2807	0.0726 : 0.0726
CLTM7020373T2	router1	0.4652	0.04	0.9165 : -0.9165	0.0506 : 0.0506
CLTM7020086T2	router1	0.0366	0.05	–	–
CLTM7020327T2	router1	0.3367	0.03	-0.6853 : 0.6853	0.0647 : 0.0647
CLTM7020298T3	router1	0.3531	0.04	–	–
CLTM7020283T3	router1	0.4356	0.03	0.2754 : -0.2754	0.0366 : 0.0366
CLTM7020420T3	router1	1.1113	0.03	0.4786 : -0.4786	0.0423 : 0.0423
CLTM7020374T3	router1	0.5428	0.04	0.8108 : -0.8108	0.0508 : 0.0508
CLTM7020087T3	router1	0.7219	0.05	–	–
CLTM7020328T3	router1	0.3989	0.04	1.318 : -1.318	0.0509 : 0.0509
CLTM7020093T3	router1	0.8030	0.04	0.2477 : -0.2477	0.0546 : 0.0546
CLTM7020047T1	router2	-0.6187	0.03	-1.4685 : 1.4685	0.0846 : 0.0846
CLTM7020323T1	router2	-0.0798	0.05	–	–
CLTM7020088T1	router2	0.1092	0.03	-1.2348 : 1.2348	0.0731 : 0.0731
CLTM7020092T2	router2	-0.4922	0.03	-3.1809 : 3.1809	0.1789 : 0.1789
CLTM7020048T2	router2	-0.0505	0.03	-0.2204 : 0.2204	0.0555 : 0.0555
CLTM7020324T2	router2	0.4032	0.05	–	–
CLTM7020089T2	router2	0.1641	0.05	1.5948 : -1.5948	0.0524 : 0.0524
CLTM7020049T3	router2	0.3034	0.04	0.127 : -0.127	0.0521 : 0.0521
CLTM7020325T3	router2	1.1554	0.06	–	–
CLTM7020090T3	router2	0.5683	0.04	0.388 : -0.388	0.0535 : 0.0535
CLTM7020331T3	router2	0.5883	0.04	1.2079 : -1.2079	0.0524 : 0.0524
CLTM7020031T1	Stage2E	-0.2311	0.08	–	–
CLTM7020034T1	Stage2E	-0.5952	0.08	–	–
CLTM7020280T1	Stage2E	-0.5191	0.08	–	–
CLTM7020421T1	Stage2E	-0.4305	0.09	–	–
CLTM7020369T1	Stage2E	-0.2740	0.09	–	–
CLTM7020299T1	Stage2E	-0.5484	0.08	–	–
CLTM7020032T2	Stage2M	0.3121	0.04	–	–
CLTM7020035T2	Stage2M	0.5737	0.04	–	–
CLTM7020449T2	Stage2M	0.3619	0.04	–	–
CLTM7020422T2	Stage2M	0.6326	0.04	–	–
CLTM7020370T2	Stage2M	-0.0832	0.04	–	–
CLTM7020300T2	Stage2M	0.7072	0.04	–	–
CLTM7020033T3	Stage2H	-0.0065	0.1	–	–
CLTM7020036T3	Stage2H	1.6117	0.1	–	–
CLTM7020451T3	Stage2H	1.2129	0.09	–	–
CLTM7020423T3	Stage2H	1.0355	0.09	–	–
CLTM7020371T3	Stage2H	1.0435	0.1	–	–
CLTM7020301T3	Stage2H	0.086	0.1	–	–

Table 8.B.13 IRT Item Difficulty for Mathematics, Grade Eight

Item ID	Position	<i>b</i> -value	<i>b</i> -value SE	<i>d</i> -values	<i>d</i> -values SE
CLTM8020387T1	router_all	0.1214	0.04	–	–
CLTM8020277T1	router_all	–0.0673	0.03	–0.8654 : 0.8654	0.0646 : 0.0646
CLTM8020160T1	router_all	0.3226	0.03	–0.1772 : 0.1772	0.0537 : 0.0537
CLTM8020278T1	router_all	–0.7341	0.05	–	–
CLTM8020028T1	router_all	–0.6919	0.03	0.6295 : –0.6295	0.0379 : 0.0379
CLTM8020415T1	router_all	–0.0151	0.02	–0.9309 : 0.9309	0.0494 : 0.0494
CLTM8020391T1	router_all	–0.2619	0.02	–1.0829 : 1.0829	0.0526 : 0.0526
CLTM8020276T2	router_all	0.3909	0.03	0.4765 : –0.4765	0.0353 : 0.0353
CLTM8020046T2	router_all	1.2159	0.04	0.5057 : –0.5057	0.0442 : 0.0442
CLTM8020069T2	router_all	1.0990	0.04	–	–
CLTM8020452T2	router_all	0.3652	0.05	–	–
CLTM8020029T2	router1	–0.2310	0.04	–0.1335 : 0.1335	0.0613 : 0.0613
CLTM8020416T2	router1	0.5520	0.04	0.8617 : –0.8617	0.0526 : 0.0526
CLTM8020392T2	router1	0.7780	0.04	0.6058 : –0.6058	0.0568 : 0.0568
CLTM8020275T3	router1	0.3385	0.03	0.4437 : –0.4437	0.0381 : 0.0381
CLTM8020161T3	router1	0.8657	0.03	0.784 : –0.784	0.0413 : 0.0413
CLTM8020279T3	router1	0.1650	0.04	–	–
CLTM8020030T3	router1	0.3233	0.04	0.3319 : –0.3319	0.0533 : 0.0533
CLTM8020417T3	router1	0.7835	0.05	1.0515 : –1.0515	0.0566 : 0.0566
CLTM8020393T3	router1	1.1362	0.05	0.7897 : –0.7897	0.0619 : 0.0619
CLTM8020334T3	router1	1.5295	0.07	–	–
CLTM8020378T1	router2	–0.2610	0.03	–1.3829 : 1.3829	0.0804 : 0.0804
CLTM8020305T1	router2	0.1902	0.03	–1.1174 : 1.1174	0.0731 : 0.0731
CLTM8020079T1	router2	–0.8526	0.05	–	–
CLTM8020333T2	router2	0.6466	0.05	–	–
CLTM8020379T2	router2	1.1753	0.05	0.6156 : –0.6156	0.0672 : 0.0672
CLTM8020306T2	router2	1.0807	0.05	0.1892 : –0.1892	0.0668 : 0.0668
CLTM8020080T2	router2	0.5612	0.04	0.6959 : –0.6959	0.0557 : 0.0557
CLTM8020380T3	router2	0.9297	0.05	0.4948 : –0.4948	0.0614 : 0.0614
CLTM8020307T3	router2	0.3663	0.04	0.1804 : –0.1804	0.0563 : 0.0563
CLTM8020081T3	router2	0.6266	0.05	0.9027 : –0.9027	0.0568 : 0.0568
CLTM8020414T3	router2	1.4386	0.07	–	–
CLTM8020388T1	Stage2E	–0.1677	0.07	–	–
CLTM8020375T1	Stage2E	1.0639	0.09	–	–
CLTM8020394T1	Stage2E	0.7570	0.09	–	–
CLTM8020025T1	Stage2E	0.0096	0.07	–	–
CLTM8020302T1	Stage2E	–0.8037	0.07	–	–
CLTM8020082T1	Stage2E	0.3427	0.08	–	–
CLTM8020389T2	Stage2M	0.6425	0.04	–	–
CLTM8020376T2	Stage2M	0.0697	0.04	–	–
CLTM8020395T2	Stage2M	0.5335	0.05	–	–
CLTM8020026T2	Stage2M	0.3994	0.04	–	–
CLTM8020303T2	Stage2M	0.4798	0.04	–	–
CLTM8020083T2	Stage2M	0.3024	0.04	–	–
CLTM8020390T3	Stage2H	0.0748	0.17	–	–
CLTM8020377T3	Stage2H	0.4996	0.14	–	–
CLTM8020396T3	Stage2H	1.9410	0.16	–	–
CLTM8020027T3	Stage2H	0.5570	0.15	–	–
CLTM8020304T3	Stage2H	0.3632	0.16	–	–
CLTM8020084T3	Stage2H	–0.0129	0.16	–	–

Table 8.B.14 IRT Item Difficulty for Mathematics, Grade Eleven

Item ID	Position	<i>b</i> -value	<i>b</i> -value SE	<i>d</i> -values	<i>d</i> -values SE
CLTMH020335T1	router_all	0.1910	0.04	–	–
CLTMH020454T1	router_all	0.4073	0.03	–0.9142 : 0.9142	0.0727 : 0.0727
CLTMH020043T1	router_all	–0.5194	0.06	–	–
CLTMH020019T1	router_all	–1.1308	0.06	–	–
CLTMH020073T1	router_all	–0.4937	0.02	–3.1671 : 3.1671	0.1323 : 0.1323
CLTMH020447T1	router_all	–0.6054	0.04	–	–
CLTMH020022T1	router_all	–0.7550	0.04	–	–
CLTMH020382T2	router_all	0.5722	0.02	–1.4363 : 1.4363	0.0629 : 0.0629
CLTMH020044T2	router_all	1.1045	0.04	–	–
CLTMH020020T2	router_all	–0.5244	0.04	–	–
CLTMH020402T2	router_all	0.2105	0.04	0.5495 : –0.5495	0.0513 : 0.0513
CLTMH020074T2	router1	–1.0425	0.05	–0.0237 : 0.0237	0.0748 : 0.0748
CLTMH020400T2	router1	0.9556	0.06	–	–
CLTMH020023T2	router1	0.3349	0.06	–	–
CLTMH020383T3	router1	0.3757	0.03	1.2374 : –1.2374	0.0388 : 0.0388
CLTMH020045T3	router1	–0.1103	0.04	–	–
CLTMH020021T3	router1	2.1128	0.06	–	–
CLTMH020075T3	router1	0.0212	0.04	–4.3963 : 4.3963	0.3583 : 0.3583
CLTMH020401T3	router1	0.7886	0.06	–	–
CLTMH020024T3	router1	1.7095	0.07	–	–
CLTMH020399T3	router1	–0.1738	0.04	0.6773 : –0.6773	0.0544 : 0.0544
CLTMH020384T1	router2	0.3477	0.03	–0.9919 : 0.9919	0.0724 : 0.0724
CLTMH020076T1	router2	–0.1248	0.05	–	–
CLTMH020308T1	router2	–0.4167	0.06	–	–
CLTMH020398T2	router2	–0.6876	0.05	1.1082 : –1.1082	0.0535 : 0.0535
CLTMH020385T2	router2	0.3402	0.03	–1.5319 : 1.5319	0.0943 : 0.0943
CLTMH020077T2	router2	0.9871	0.06	–	–
CLTMH020309T2	router2	0.0989	0.06	–	–
CLTMH020386T3	router2	0.1842	0.03	–1.5498 : 1.5498	0.0948 : 0.0948
CLTMH020078T3	router2	0.9616	0.06	–	–
CLTMH020310T3	router2	0.3226	0.06	–	–
CLTMH020403T3	router2	0.9069	0.04	0.3521 : –0.3521	0.0602 : 0.0602
CLTMH020070T1	Stage2E	0.8474	0.11	–	–
CLTMH020406T1	Stage2E	–0.2973	0.05	–2.0659 : 2.0659	0.1824 : 0.1824
CLTMH020068T1	Stage2E	–0.3840	0.09	–	–
CLTMH020409T1	Stage2E	–0.4482	0.05	–2.5862 : 2.5862	0.2264 : 0.2264
CLTMH020311T1	Stage2E	–0.0560	0.09	–	–
CLTMH020272T1	Stage2E	–0.8289	0.09	–	–
CLTMH020071T2	Stage2M	0.8533	0.05	–	–
CLTMH020407T2	Stage2M	0.5353	0.03	–1.0202 : 1.0202	0.0637 : 0.0637
CLTMH020270T2	Stage2M	0.4048	0.04	–	–
CLTMH020410T2	Stage2M	0.7656	0.03	–0.4026 : 0.4026	0.0537 : 0.0537
CLTMH020312T2	Stage2M	0.9470	0.05	–	–
CLTMH020273T2	Stage2M	0.8784	0.05	–	–
CLTMH020072T3	Stage2H	0.7649	0.11	–	–
CLTMH020408T3	Stage2H	0.9346	0.07	0.1282 : –0.1282	0.112 : 0.112
CLTMH020446T3	Stage2H	1.1857	0.13	–	–
CLTMH020411T3	Stage2H	–0.0209	0.08	–2.29 : 2.29	0.2907 : 0.2907
CLTMH020313T3	Stage2H	0.6097	0.11	–	–
CLTMH020271T3	Stage2H	0.8090	0.13	–	–

Table 8.B.15 IRT Item Difficulty Summary by the Content Complexity (Tier) for ELA

Test	Tier Set	Number of Items	Mean <i>b</i> -value	SD <i>b</i> -value	Minimum <i>b</i> -value	Max <i>b</i> -value	Median <i>b</i> -value
Grade 3	Tier 1	16	-0.9821	0.4541	-1.6005	0.0304	-1.0149
	Tier 2	17	-0.3183	0.7759	-1.5381	1.3096	-0.4366
	Tier 3	17	-0.0170	0.7394	-1.4843	1.3727	0.0903
	ALL	50	-0.4283	0.7754	-1.6005	1.3727	-0.5511
Grade 4	Tier 1	16	-0.3582	0.6577	-1.5323	0.5662	-0.3147
	Tier 2	17	-0.0223	0.6443	-1.4423	1.1395	0.0825
	Tier 3	17	0.1097	0.5309	-1.2116	0.7770	0.1682
	ALL	50	-0.0849	0.6316	-1.5323	1.1395	0.0063
Grade 5	Tier 1	16	-0.4182	0.5572	-1.1968	0.7813	-0.5693
	Tier 2	17	-0.4351	0.7768	-1.9210	0.9660	-0.4316
	Tier 3	17	0.3998	0.5128	-0.3973	1.0745	0.3605
	ALL	50	-0.1458	0.7311	-1.9210	1.0745	-0.1060
Grade 6	Tier 1	16	-0.5946	0.7628	-2.0224	0.7074	-0.6703
	Tier 2	17	-0.0673	0.5570	-1.0296	0.8493	0.0805
	Tier 3	17	0.6814	0.5515	-0.3855	1.3716	0.8476
	ALL	50	0.0185	0.8102	-2.0224	1.3716	0.0800
Grade 7	Tier 1	16	-0.6227	0.6258	-1.8188	0.4484	-0.5630
	Tier 2	17	0.0505	0.4707	-0.9201	0.7529	0.1900
	Tier 3	17	0.5730	0.7471	-0.2397	2.3343	0.3793
	ALL	50	0.0127	0.7847	-1.8188	2.3343	0.1135
Grade 8	Tier 1	16	-0.5828	0.6891	-2.0646	0.6430	-0.4929
	Tier 2	17	-0.1095	0.6615	-1.4306	1.0052	-0.1268
	Tier 3	17	0.2968	0.5742	-0.7710	1.6237	0.1199
	ALL	50	-0.1228	0.7254	-2.0646	1.6237	-0.1201
Grade 11	Tier 1	16	-0.4464	0.6296	-1.4018	0.5446	-0.3146
	Tier 2	17	-0.2945	0.5785	-1.3618	0.9723	-0.3073
	Tier 3	17	0.3615	0.6245	-0.7832	1.5383	0.5185
	ALL	50	-0.1201	0.6955	-1.4018	1.5383	-0.1443

Table 8.B.16 IRT Item Difficulty Summary by the Content Complexity (Tier) for Mathematics

Test	Tier Set	Number of Items	Mean <i>b</i> -value	SD <i>b</i> -value	Minimum <i>b</i> -value	Max <i>b</i> -value	Median <i>b</i> -value
Grade 3	Tier 1	16	-0.1977	0.5348	-1.0428	0.6690	-0.3520
	Tier 2	17	0.3878	0.5175	-0.4208	1.4316	0.3698
	Tier 3	17	1.1603	0.9836	-0.0207	2.8711	0.9231
	ALL	50	0.4631	0.8967	-1.0428	2.8711	0.3085
Grade 4	Tier 1	16	-0.1101	0.3769	-0.8811	0.5651	-0.0979
	Tier 2	17	0.5991	0.4710	-0.2292	1.4023	0.6717
	Tier 3	17	0.5178	0.5880	-1.0960	1.5794	0.5025
	ALL	50	0.3445	0.5738	-1.0960	1.5794	0.3496
Grade 5	Tier 1	16	-0.2955	0.5188	-1.0661	0.3789	-0.2771
	Tier 2	17	0.3689	0.4606	-0.5952	1.2086	0.3622
	Tier 3	17	0.8710	0.8911	-0.1395	3.2009	0.6741
	ALL	50	0.3270	0.8004	-1.0661	3.2009	0.2828
Grade 6	Tier 1	16	-0.0849	0.4073	-0.6293	0.4933	-0.0278
	Tier 2	17	0.6160	0.4700	-0.1424	1.5780	0.4730
	Tier 3	17	0.6906	0.7016	-0.5908	1.9169	0.5214
	ALL	50	0.4171	0.6369	-0.6293	1.9169	0.3747
Grade 7	Tier 1	16	-0.3223	0.2680	-0.6187	0.1293	-0.4415
	Tier 2	17	0.2675	0.3019	-0.4922	0.7072	0.3367
	Tier 3	17	0.7038	0.4388	-0.0065	1.6117	0.5883
	ALL	50	0.2271	0.5409	-0.6187	1.6117	0.2523
Grade 8	Tier 1	16	-0.0655	0.5458	-0.8526	1.0639	-0.0412
	Tier 2	17	0.5918	0.3911	-0.2310	1.2159	0.5520
	Tier 3	17	0.7015	0.5477	-0.0129	1.9410	0.5570
	ALL	50	0.4188	0.5948	-0.8526	1.9410	0.3786
Grade 11	Tier 1	16	-0.2667	0.5131	-1.1308	0.8474	-0.4004
	Tier 2	17	0.3961	0.6284	-1.0425	1.1045	0.5353
	Tier 3	17	0.6695	0.6299	-0.1738	2.1128	0.7649
	ALL	50	0.2770	0.7028	-1.1308	2.1128	0.3376

Note: In Table 8.B.17 through Table 8.B.30, an expression that opens with a parenthesis and closes with a bracket indicates that a value is greater than the first number and is less than or equal to the second number. For example, “(0.5, 2]” indicates a value greater than 0.5 but less than or equal to 2.

Table 8.B.17 Distribution of IRT Item Difficulty by Stage and Tier Set—ELA, Grade Three

<i>b</i> -value	Stage 1 Tier 1	Stage 1 Tier 2	Stage 1 Tier 3	Stage 2 Tier 1	Stage 2 Tier 2	Stage 2 Tier 3
(-3.0, -2.8]	—	—	—	—	—	—
(-2.8, -2.6]	—	—	—	—	—	—
(-2.6, -2.4]	—	—	—	—	—	—
(-2.4, -2.2]	—	—	—	—	—	—
(-2.2, -2.0]	—	—	—	—	—	—
(-2.0, -1.8]	—	—	—	—	—	—
(-1.8, -1.6]	1	—	—	—	—	—
(-1.6, -1.4]	—	1	1	1	—	—
(-1.4, -1.2]	2	1	—	3	—	—
(-1.2, -1.0]	1	—	1	—	1	—
(-1.0, -0.8]	3	2	—	—	—	—
(-0.8, -0.6]	2	2	—	1	—	2
(-0.6, -0.4]	—	—	1	—	2	—
(-0.4, -0.2]	—	1	1	1	1	—
(-0.2, 0.0]	—	1	1	—	—	1
(0.0, 0.2]	1	—	3	—	1	1
(0.2, 0.4]	—	—	—	—	—	1
(0.4, 0.6]	—	—	—	—	1	—
(0.6, 0.8]	—	2	1	—	—	—
(0.8, 1.0]	—	—	2	—	—	—
(1.0, 1.2]	—	—	—	—	—	—
(1.2, 1.4]	—	1	—	—	—	1
(1.4, 1.6]	—	—	—	—	—	—
(1.6, 1.8]	—	—	—	—	—	—
(1.8, 2.0]	—	—	—	—	—	—
(2.0, 2.2]	—	—	—	—	—	—
(2.2, 2.4]	—	—	—	—	—	—
(2.4, 2.6]	—	—	—	—	—	—
(2.6, 2.8]	—	—	—	—	—	—
(2.8, 3.0]	—	—	—	—	—	—
(3.0, 3.2]	—	—	—	—	—	—
(3.2, 3.4]	—	—	—	—	—	—

Table 8.B.18 Distribution of IRT Item Difficulty by Stage and Tier Set—ELA, Grade Four

<i>b</i> -value	Stage 1 Tier 1	Stage 1 Tier 2	Stage 1 Tier 3	Stage 2 Tier 1	Stage 2 Tier 2	Stage 2 Tier 3
(-3.0, -2.8]	—	—	—	—	—	—
(-2.8, -2.6]	—	—	—	—	—	—
(-2.6, -2.4]	—	—	—	—	—	—
(-2.4, -2.2]	—	—	—	—	—	—
(-2.2, -2.0]	—	—	—	—	—	—
(-2.0, -1.8]	—	—	—	—	—	—
(-1.8, -1.6]	1	—	—	—	—	—
(-1.6, -1.4]	—	1	1	1	—	—
(-1.4, -1.2]	2	1	—	3	—	—
(-1.2, -1.0]	1	—	1	—	1	—
(-1.0, -0.8]	3	2	—	—	—	—
(-0.8, -0.6]	2	2	—	1	—	2
(-0.6, -0.4]	—	—	1	—	2	—
(-0.4, -0.2]	—	1	1	1	1	—
(-0.2, 0.0]	—	1	1	—	—	1
(0.0, 0.2]	1	—	3	—	1	1
(0.2, 0.4]	—	—	—	—	—	1
(0.4, 0.6]	—	—	—	—	1	—
(0.6, 0.8]	—	2	1	—	—	—
(0.8, 1.0]	—	—	2	—	—	—
(1.0, 1.2]	—	—	—	—	—	—
(1.2, 1.4]	—	1	—	—	—	1
(1.4, 1.6]	—	—	—	—	—	—
(1.6, 1.8]	—	—	—	—	—	—
(1.8, 2.0]	—	—	—	—	—	—
(2.0, 2.2]	—	—	—	—	—	—
(2.2, 2.4]	—	—	—	—	—	—
(2.4, 2.6]	—	—	—	—	—	—
(2.6, 2.8]	—	—	—	—	—	—
(2.8, 3.0]	—	—	—	—	—	—
(3.0, 3.2]	—	—	—	—	—	—
(3.2, 3.4]	—	—	—	—	—	—

Table 8.B.19 Distribution of IRT Item Difficulty by Stage and Tier Set—ELA, Grade Five

<i>b</i> -value	Stage 1 Tier 1	Stage 1 Tier 2	Stage 1 Tier 3	Stage 2 Tier 1	Stage 2 Tier 2	Stage 2 Tier 3
(-3.0, -2.8]	—	—	—	—	—	—
(-2.8, -2.6]	—	—	—	—	—	—
(-2.6, -2.4]	—	—	—	—	—	—
(-2.4, -2.2]	—	—	—	—	—	—
(-2.2, -2.0]	—	—	—	—	—	—
(-2.0, -1.8]	—	1	—	—	—	—
(-1.8, -1.6]	—	—	—	—	—	—
(-1.6, -1.4]	—	—	—	—	—	—
(-1.4, -1.2]	—	1	—	—	—	—
(-1.2, -1.0]	2	1	—	—	1	—
(-1.0, -0.8]	2	—	—	1	2	—
(-0.8, -0.6]	1	2	—	1	—	—
(-0.6, -0.4]	—	2	—	2	—	—
(-0.4, -0.2]	1	—	1	—	1	1
(-0.2, 0.0]	1	2	2	2	—	1
(0.0, 0.2]	1	1	—	—	—	2
(0.2, 0.4]	1	—	1	—	—	1
(0.4, 0.6]	—	—	2	—	—	—
(0.6, 0.8]	1	—	1	—	2	—
(0.8, 1.0]	—	1	1	—	—	—
(1.0, 1.2]	—	—	3	—	—	1
(1.2, 1.4]	—	—	—	—	—	—
(1.4, 1.6]	—	—	—	—	—	—
(1.6, 1.8]	—	—	—	—	—	—
(1.8, 2.0]	—	—	—	—	—	—
(2.0, 2.2]	—	—	—	—	—	—
(2.2, 2.4]	—	—	—	—	—	—
(2.4, 2.6]	—	—	—	—	—	—
(2.6, 2.8]	—	—	—	—	—	—
(2.8, 3.0]	—	—	—	—	—	—
(3.0, 3.2]	—	—	—	—	—	—
(3.2, 3.4]	—	—	—	—	—	—

Table 8.B.20 Distribution of IRT Item Difficulty by Stage and Tier Set—ELA, Grade Six

<i>b</i> -value	Stage 1 Tier 1	Stage 1 Tier 2	Stage 1 Tier 3	Stage 2 Tier 1	Stage 2 Tier 2	Stage 2 Tier 3
(-3.0, -2.8]	—	—	—	—	—	—
(-2.8, -2.6]	—	—	—	—	—	—
(-2.6, -2.4]	—	—	—	—	—	—
(-2.4, -2.2]	—	—	—	—	—	—
(-2.2, -2.0]	1	—	—	—	—	—
(-2.0, -1.8]	—	—	—	—	—	—
(-1.8, -1.6]	—	—	—	—	—	—
(-1.6, -1.4]	1	—	—	—	—	—
(-1.4, -1.2]	1	—	—	—	—	—
(-1.2, -1.0]	2	1	—	—	—	—
(-1.0, -0.8]	—	1	—	2	—	—
(-0.8, -0.6]	1	2	—	1	—	—
(-0.6, -0.4]	—	1	—	2	1	—
(-0.4, -0.2]	—	—	1	—	1	1
(-0.2, 0.0]	1	1	1	—	—	1
(0.0, 0.2]	1	2	—	—	—	—
(0.2, 0.4]	—	2	—	1	1	—
(0.4, 0.6]	—	1	2	—	2	—
(0.6, 0.8]	2	—	2	—	—	—
(0.8, 1.0]	—	—	3	—	1	—
(1.0, 1.2]	—	—	2	—	—	2
(1.2, 1.4]	—	—	—	—	—	2
(1.4, 1.6]	—	—	—	—	—	—
(1.6, 1.8]	—	—	—	—	—	—
(1.8, 2.0]	—	—	—	—	—	—
(2.0, 2.2]	—	—	—	—	—	—
(2.2, 2.4]	—	—	—	—	—	—
(2.4, 2.6]	—	—	—	—	—	—
(2.6, 2.8]	—	—	—	—	—	—
(2.8, 3.0]	—	—	—	—	—	—
(3.0, 3.2]	—	—	—	—	—	—
(3.2, 3.4]	—	—	—	—	—	—

Table 8.B.21 Distribution of IRT Item Difficulty by Stage and Tier Set—ELA, Grade Seven

<i>b</i> -value	Stage 1 Tier 1	Stage 1 Tier 2	Stage 1 Tier 3	Stage 2 Tier 1	Stage 2 Tier 2	Stage 2 Tier 3
(-3.0, -2.8]	—	—	—	—	—	—
(-2.8, -2.6]	—	—	—	—	—	—
(-2.6, -2.4]	—	—	—	—	—	—
(-2.4, -2.2]	—	—	—	—	—	—
(-2.2, -2.0]	—	—	—	—	—	—
(-2.0, -1.8]	1	—	—	—	—	—
(-1.8, -1.6]	1	—	—	—	—	—
(-1.6, -1.4]	—	—	—	—	—	—
(-1.4, -1.2]	1	—	—	—	—	—
(-1.2, -1.0]	1	—	—	—	—	—
(-1.0, -0.8]	1	—	—	1	1	—
(-0.8, -0.6]	1	1	—	—	1	—
(-0.6, -0.4]	1	—	—	2	1	—
(-0.4, -0.2]	—	—	—	1	—	1
(-0.2, 0.0]	2	—	2	1	—	1
(0.0, 0.2]	—	5	1	1	1	—
(0.2, 0.4]	—	3	2	—	2	2
(0.4, 0.6]	1	—	2	—	—	1
(0.6, 0.8]	—	2	1	—	—	—
(0.8, 1.0]	—	—	—	—	—	1
(1.0, 1.2]	—	—	—	—	—	—
(1.2, 1.4]	—	—	1	—	—	—
(1.4, 1.6]	—	—	—	—	—	—
(1.6, 1.8]	—	—	—	—	—	—
(1.8, 2.0]	—	—	—	—	—	—
(2.0, 2.2]	—	—	1	—	—	—
(2.2, 2.4]	—	—	1	—	—	—
(2.4, 2.6]	—	—	—	—	—	—
(2.6, 2.8]	—	—	—	—	—	—
(2.8, 3.0]	—	—	—	—	—	—
(3.0, 3.2]	—	—	—	—	—	—
(3.2, 3.4]	—	—	—	—	—	—
(3.4, 3.6]	—	—	—	—	—	—

Table 8.B.22 Distribution of IRT Item Difficulty by Stage and Tier Set—ELA, Grade Eight

<i>b</i> -value	Stage 1 Tier 1	Stage 1 Tier 2	Stage 1 Tier 3	Stage 2 Tier 1	Stage 2 Tier 2	Stage 2 Tier 3
(-3.0, -2.8]	—	—	—	—	—	—
(-2.8, -2.6]	—	—	—	—	—	—
(-2.6, -2.4]	—	—	—	—	—	—
(-2.4, -2.2]	—	—	—	—	—	—
(-2.2, -2.0]	1	—	—	—	—	—
(-2.0, -1.8]	—	—	—	—	—	—
(-1.8, -1.6]	—	—	—	—	—	—
(-1.6, -1.4]	—	1	—	—	—	—
(-1.4, -1.2]	2	—	—	—	—	—
(-1.2, -1.0]	1	—	—	—	—	—
(-1.0, -0.8]	1	1	—	—	1	—
(-0.8, -0.6]	1	1	1	1	—	—
(-0.6, -0.4]	2	—	—	1	—	—
(-0.4, -0.2]	—	2	1	1	—	—
(-0.2, 0.0]	1	4	2	1	1	—
(0.0, 0.2]	—	—	4	2	—	2
(0.2, 0.4]	—	—	—	—	2	—
(0.4, 0.6]	—	—	1	—	1	—
(0.6, 0.8]	1	1	1	—	—	1
(0.8, 1.0]	—	—	1	—	1	2
(1.0, 1.2]	—	1	—	—	—	—
(1.2, 1.4]	—	—	—	—	—	—
(1.4, 1.6]	—	—	—	—	—	—
(1.6, 1.8]	—	—	—	—	—	1
(1.8, 2.0]	—	—	—	—	—	—
(2.0, 2.2]	—	—	—	—	—	—
(2.2, 2.4]	—	—	—	—	—	—
(2.4, 2.6]	—	—	—	—	—	—
(2.6, 2.8]	—	—	—	—	—	—
(2.8, 3.0]	—	—	—	—	—	—
(3.0, 3.2]	—	—	—	—	—	—
(3.2, 3.4]	—	—	—	—	—	—

Table 8.B.23 Distribution of IRT Item Difficulty by Stage and Tier Set—ELA, Grade Eleven

<i>b</i> -value	Stage 1 Tier 1	Stage 1 Tier 2	Stage 1 Tier 3	Stage 2 Tier 1	Stage 2 Tier 2	Stage 2 Tier 3
(-3.0, -2.8]	—	—	—	—	—	—
(-2.8, -2.6]	—	—	—	—	—	—
(-2.6, -2.4]	—	—	—	—	—	—
(-2.4, -2.2]	—	—	—	—	—	—
(-2.2, -2.0]	—	—	—	—	—	—
(-2.0, -1.8]	—	—	—	—	—	—
(-1.8, -1.6]	—	—	—	—	—	—
(-1.6, -1.4]	1	—	—	—	—	—
(-1.4, -1.2]	3	—	—	—	1	—
(-1.2, -1.0]	—	—	—	—	—	—
(-1.0, -0.8]	1	2	—	—	1	—
(-0.8, -0.6]	—	1	1	—	—	—
(-0.6, -0.4]	—	3	—	2	—	1
(-0.4, -0.2]	1	1	—	3	1	1
(-0.2, 0.0]	2	2	1	—	1	1
(0.0, 0.2]	—	—	2	1	1	—
(0.2, 0.4]	—	1	1	—	—	—
(0.4, 0.6]	2	—	2	—	—	2
(0.6, 0.8]	—	—	1	—	1	1
(0.8, 1.0]	—	1	1	—	—	—
(1.0, 1.2]	—	—	—	—	—	—
(1.2, 1.4]	—	—	1	—	—	—
(1.4, 1.6]	—	—	1	—	—	—
(1.6, 1.8]	—	—	—	—	—	—
(1.8, 2.0]	—	—	—	—	—	—
(2.0, 2.2]	—	—	—	—	—	—
(2.2, 2.4]	—	—	—	—	—	—
(2.4, 2.6]	—	—	—	—	—	—
(2.6, 2.8]	—	—	—	—	—	—
(2.8, 3.0]	—	—	—	—	—	—
(3.0, 3.2]	—	—	—	—	—	—
(3.2, 3.4]	—	—	—	—	—	—

Table 8.B.24 Distribution of IRT Item Difficulty by Stage and Tier Set—Mathematics, Grade Three

<i>b</i> -value	Stage 1 Tier 1	Stage 1 Tier 2	Stage 1 Tier 3	Stage 2 Tier 1	Stage 2 Tier 2	Stage 2 Tier 3
(-3.0, -2.8]	—	—	—	—	—	—
(-2.8, -2.6]	—	—	—	—	—	—
(-2.6, -2.4]	—	—	—	—	—	—
(-2.4, -2.2]	—	—	—	—	—	—
(-2.2, -2.0]	—	—	—	—	—	—
(-2.0, -1.8]	—	—	—	—	—	—
(-1.8, -1.6]	—	—	—	—	—	—
(-1.6, -1.4]	—	—	—	—	—	—
(-1.4, -1.2]	—	—	—	—	—	—
(-1.2, -1.0]	1	—	—	—	—	—
(-1.0, -0.8]	1	—	—	—	—	—
(-0.8, -0.6]	—	—	—	2	—	—
(-0.6, -0.4]	1	1	—	3	—	—
(-0.4, -0.2]	1	—	—	—	1	—
(-0.2, 0.0]	—	1	1	1	—	—
(0.0, 0.2]	1	2	—	—	2	—
(0.2, 0.4]	2	2	3	—	—	1
(0.4, 0.6]	2	3	1	—	1	—
(0.6, 0.8]	1	—	1	—	1	1
(0.8, 1.0]	—	—	1	—	—	1
(1.0, 1.2]	—	2	1	—	—	1
(1.2, 1.4]	—	—	—	—	—	—
(1.4, 1.6]	—	—	—	—	1	—
(1.6, 1.8]	—	—	—	—	—	—
(1.8, 2.0]	—	—	—	—	—	1
(2.0, 2.2]	—	—	—	—	—	—
(2.2, 2.4]	—	—	1	—	—	—
(2.4, 2.6]	—	—	—	—	—	—
(2.6, 2.8]	—	—	—	—	—	1
(2.8, 3.0]	—	—	2	—	—	—
(3.0, 3.2]	—	—	—	—	—	—
(3.2, 3.4]	—	—	—	—	—	—

Table 8.B.25 Distribution of IRT Item Difficulty by Stage and Tier Set—Mathematics, Grade Four

<i>b</i> -value	Stage 1 Tier 1	Stage 1 Tier 2	Stage 1 Tier 3	Stage 2 Tier 1	Stage 2 Tier 2	Stage 2 Tier 3
(-3.0, -2.8]	—	—	—	—	—	—
(-2.8, -2.6]	—	—	—	—	—	—
(-2.6, -2.4]	—	—	—	—	—	—
(-2.4, -2.2]	—	—	—	—	—	—
(-2.2, -2.0]	—	—	—	—	—	—
(-2.0, -1.8]	—	—	—	—	—	—
(-1.8, -1.6]	—	—	—	—	—	—
(-1.6, -1.4]	—	—	—	—	—	—
(-1.4, -1.2]	—	—	—	—	—	—
(-1.2, -1.0]	—	—	—	—	—	1
(-1.0, -0.8]	1	—	—	—	—	—
(-0.8, -0.6]	1	—	—	—	—	—
(-0.6, -0.4]	—	—	—	2	—	—
(-0.4, -0.2]	1	—	—	—	1	—
(-0.2, 0.0]	2	1	1	3	—	—
(0.0, 0.2]	4	2	—	—	—	—
(0.2, 0.4]	1	1	2	—	2	1
(0.4, 0.6]	—	—	6	1	—	—
(0.6, 0.8]	—	3	2	—	1	1
(0.8, 1.0]	—	2	—	—	—	—
(1.0, 1.2]	—	2	—	—	—	—
(1.2, 1.4]	—	—	—	—	1	2
(1.4, 1.6]	—	—	—	—	1	1
(1.6, 1.8]	—	—	—	—	—	—
(1.8, 2.0]	—	—	—	—	—	—
(2.0, 2.2]	—	—	—	—	—	—
(2.2, 2.4]	—	—	—	—	—	—
(2.4, 2.6]	—	—	—	—	—	—
(2.6, 2.8]	—	—	—	—	—	—
(2.8, 3.0]	—	—	—	—	—	—
(3.0, 3.2]	—	—	—	—	—	—
(3.2, 3.4]	—	—	—	—	—	—

Table 8.B.26 Distribution of IRT Item Difficulty by Stage and Tier Set—Mathematics, Grade Five

<i>b</i> -value	Stage 1 Tier 1	Stage 1 Tier 2	Stage 1 Tier 3	Stage 2 Tier 1	Stage 2 Tier 2	Stage 2 Tier 3
(-3.0, -2.8]	—	—	—	—	—	—
(-2.8, -2.6]	—	—	—	—	—	—
(-2.6, -2.4]	—	—	—	—	—	—
(-2.4, -2.2]	—	—	—	—	—	—
(-2.2, -2.0]	—	—	—	—	—	—
(-2.0, -1.8]	—	—	—	—	—	—
(-1.8, -1.6]	—	—	—	—	—	—
(-1.6, -1.4]	—	—	—	—	—	—
(-1.4, -1.2]	—	—	—	—	—	—
(-1.2, -1.0]	3	—	—	—	—	—
(-1.0, -0.8]	1	—	—	—	—	—
(-0.8, -0.6]	—	—	—	—	—	—
(-0.6, -0.4]	1	1	—	1	—	—
(-0.4, -0.2]	2	—	—	1	1	—
(-0.2, 0.0]	—	1	2	2	—	—
(0.0, 0.2]	1	1	—	—	1	—
(0.2, 0.4]	2	4	4	2	2	1
(0.4, 0.6]	—	—	1	—	1	—
(0.6, 0.8]	—	2	—	—	—	1
(0.8, 1.0]	—	1	—	—	—	2
(1.0, 1.2]	—	—	1	—	1	—
(1.2, 1.4]	—	1	1	—	—	1
(1.4, 1.6]	—	—	—	—	—	1
(1.6, 1.8]	—	—	—	—	—	—
(1.8, 2.0]	—	—	—	—	—	—
(2.0, 2.2]	—	—	—	—	—	—
(2.2, 2.4]	—	—	—	—	—	—
(2.4, 2.6]	—	—	1	—	—	—
(2.6, 2.8]	—	—	—	—	—	—
(2.8, 3.0]	—	—	—	—	—	—
(3.0, 3.2]	—	—	—	—	—	—
(3.2, 3.4]	—	—	1	—	—	—

Table 8.B.27 Distribution of IRT Item Difficulty by Stage and Tier Set—Mathematics, Grade Six

<i>b</i> -value	Stage 1 Tier 1	Stage 1 Tier 2	Stage 1 Tier 3	Stage 2 Tier 1	Stage 2 Tier 2	Stage 2 Tier 3
(-3.0, -2.8]	—	—	—	—	—	—
(-2.8, -2.6]	—	—	—	—	—	—
(-2.6, -2.4]	—	—	—	—	—	—
(-2.4, -2.2]	—	—	—	—	—	—
(-2.2, -2.0]	—	—	—	—	—	—
(-2.0, -1.8]	—	—	—	—	—	—
(-1.8, -1.6]	—	—	—	—	—	—
(-1.6, -1.4]	—	—	—	—	—	—
(-1.4, -1.2]	—	—	—	—	—	—
(-1.2, -1.0]	—	—	—	—	—	—
(-1.0, -0.8]	—	—	—	—	—	—
(-0.8, -0.6]	2	—	—	—	—	—
(-0.6, -0.4]	2	—	—	2	—	1
(-0.4, -0.2]	—	—	1	—	—	—
(-0.2, 0.0]	1	1	—	1	—	—
(0.0, 0.2]	1	—	2	1	1	—
(0.2, 0.4]	3	4	1	2	—	—
(0.4, 0.6]	1	3	3	—	—	1
(0.6, 0.8]	—	1	—	—	2	1
(0.8, 1.0]	—	1	1	—	1	2
(1.0, 1.2]	—	—	—	—	—	—
(1.2, 1.4]	—	1	1	—	1	—
(1.4, 1.6]	—	—	—	—	1	—
(1.6, 1.8]	—	—	1	—	—	—
(1.8, 2.0]	—	—	1	—	—	1
(2.0, 2.2]	—	—	—	—	—	—
(2.2, 2.4]	—	—	—	—	—	—
(2.4, 2.6]	—	—	—	—	—	—
(2.6, 2.8]	—	—	—	—	—	—
(2.8, 3.0]	—	—	—	—	—	—
(3.0, 3.2]	—	—	—	—	—	—
(3.2, 3.4]	—	—	—	—	—	—

Table 8.B.28 Distribution of IRT Item Difficulty by Stage and Tier Set—Mathematics, Grade Seven

<i>b</i> -value	Stage 1 Tier 1	Stage 1 Tier 2	Stage 1 Tier 3	Stage 2 Tier 1	Stage 2 Tier 2	Stage 2 Tier 3
(-3.0, -2.8]	—	—	—	—	—	—
(-2.8, -2.6]	—	—	—	—	—	—
(-2.6, -2.4]	—	—	—	—	—	—
(-2.4, -2.2]	—	—	—	—	—	—
(-2.2, -2.0]	—	—	—	—	—	—
(-2.0, -1.8]	—	—	—	—	—	—
(-1.8, -1.6]	—	—	—	—	—	—
(-1.6, -1.4]	—	—	—	—	—	—
(-1.4, -1.2]	—	—	—	—	—	—
(-1.2, -1.0]	—	—	—	—	—	—
(-1.0, -0.8]	—	—	—	—	—	—
(-0.8, -0.6]	1	—	—	—	—	—
(-0.6, -0.4]	4	1	—	4	—	—
(-0.4, -0.2]	—	—	—	2	—	—
(-0.2, 0.0]	2	1	—	—	1	1
(0.0, 0.2]	3	3	—	—	—	1
(0.2, 0.4]	—	3	3	—	2	—
(0.4, 0.6]	—	3	4	—	1	—
(0.6, 0.8]	—	—	1	—	2	—
(0.8, 1.0]	—	—	1	—	—	—
(1.0, 1.2]	—	—	2	—	—	2
(1.2, 1.4]	—	—	—	—	—	1
(1.4, 1.6]	—	—	—	—	—	—
(1.6, 1.8]	—	—	—	—	—	1
(1.8, 2.0]	—	—	—	—	—	—
(2.0, 2.2]	—	—	—	—	—	—
(2.2, 2.4]	—	—	—	—	—	—
(2.4, 2.6]	—	—	—	—	—	—
(2.6, 2.8]	—	—	—	—	—	—
(2.8, 3.0]	—	—	—	—	—	—
(3.0, 3.2]	—	—	—	—	—	—
(3.2, 3.4]	—	—	—	—	—	—

Table 8.B.29 Distribution of IRT Item Difficulty by Stage and Tier Set—Mathematics, Grade Eight

<i>b</i> -value	Stage 1 Tier 1	Stage 1 Tier 2	Stage 1 Tier 3	Stage 2 Tier 1	Stage 2 Tier 2	Stage 2 Tier 3
(-3.0, -2.8]	—	—	—	—	—	—
(-2.8, -2.6]	—	—	—	—	—	—
(-2.6, -2.4]	—	—	—	—	—	—
(-2.4, -2.2]	—	—	—	—	—	—
(-2.2, -2.0]	—	—	—	—	—	—
(-2.0, -1.8]	—	—	—	—	—	—
(-1.8, -1.6]	—	—	—	—	—	—
(-1.6, -1.4]	—	—	—	—	—	—
(-1.4, -1.2]	—	—	—	—	—	—
(-1.2, -1.0]	—	—	—	—	—	—
(-1.0, -0.8]	1	—	—	1	—	—
(-0.8, -0.6]	2	—	—	—	—	—
(-0.6, -0.4]	—	—	—	—	—	—
(-0.4, -0.2]	2	1	—	—	—	—
(-0.2, 0.0]	2	—	—	1	—	1
(0.0, 0.2]	2	—	1	1	1	1
(0.2, 0.4]	1	2	3	1	2	1
(0.4, 0.6]	—	2	—	—	2	2
(0.6, 0.8]	—	2	2	1	1	—
(0.8, 1.0]	—	—	2	—	—	—
(1.0, 1.2]	—	3	1	1	—	—
(1.2, 1.4]	—	1	—	—	—	—
(1.4, 1.6]	—	—	2	—	—	—
(1.6, 1.8]	—	—	—	—	—	—
(1.8, 2.0]	—	—	—	—	—	1
(2.0, 2.2]	—	—	—	—	—	—
(2.2, 2.4]	—	—	—	—	—	—
(2.4, 2.6]	—	—	—	—	—	—
(2.6, 2.8]	—	—	—	—	—	—
(2.8, 3.0]	—	—	—	—	—	—
(3.0, 3.2]	—	—	—	—	—	—
(3.2, 3.4]	—	—	—	—	—	—

Table 8.B.30 Distribution of IRT Item Difficulty by Stage and Tier Set—Mathematics, Grade Eleven

<i>b</i> -value	Stage 1 Tier 1	Stage 1 Tier 2	Stage 1 Tier 3	Stage 2 Tier 1	Stage 2 Tier 2	Stage 2 Tier 3
(-3.0, -2.8]	—	—	—	—	—	—
(-2.8, -2.6]	—	—	—	—	—	—
(-2.6, -2.4]	—	—	—	—	—	—
(-2.4, -2.2]	—	—	—	—	—	—
(-2.2, -2.0]	—	—	—	—	—	—
(-2.0, -1.8]	—	—	—	—	—	—
(-1.8, -1.6]	—	—	—	—	—	—
(-1.6, -1.4]	—	—	—	—	—	—
(-1.4, -1.2]	—	—	—	—	—	—
(-1.2, -1.0]	1	1	—	—	—	—
(-1.0, -0.8]	—	—	—	1	—	—
(-0.8, -0.6]	2	1	—	—	—	—
(-0.6, -0.4]	3	1	—	1	—	—
(-0.4, -0.2]	—	—	—	2	—	—
(-0.2, 0.0]	1	—	2	1	—	1
(0.0, 0.2]	1	1	2	—	—	—
(0.2, 0.4]	1	3	2	—	—	—
(0.4, 0.6]	1	1	—	—	2	—
(0.6, 0.8]	—	—	1	—	1	2
(0.8, 1.0]	—	2	2	1	3	2
(1.0, 1.2]	—	1	—	—	—	1
(1.2, 1.4]	—	—	—	—	—	—
(1.4, 1.6]	—	—	—	—	—	—
(1.6, 1.8]	—	—	1	—	—	—
(1.8, 2.0]	—	—	—	—	—	—
(2.0, 2.2]	—	—	1	—	—	—
(2.2, 2.4]	—	—	—	—	—	—
(2.4, 2.6]	—	—	—	—	—	—
(2.6, 2.8]	—	—	—	—	—	—
(2.8, 3.0]	—	—	—	—	—	—
(3.0, 3.2]	—	—	—	—	—	—
(3.2, 3.4]	—	—	—	—	—	—

Appendix 8.C Omission and Completion Rates

Note: In Table 8.C.1 through Table 8.C.14, the value in the *Position* column indicates the item location in the module and version.

Table 8.C.1 Item Difficulties and Omit Rate—English Language Arts/Literacy (ELA), Grade Three

Item ID	Position	Item Type	<i>p</i> -value	IRT <i>b</i> -value	Omit Rate
CLTW3020095T1	router_all	ZoneMS Discrete	0.76	−1.60	2%
CLTR3020054T1	router1	MCSS Member	0.73	−1.22	2%
CLTR3020055T1	router1	MCSS Member	0.63	−0.66	2%
CLTW3020056T1	router1	MCMS Member	0.67	−0.63	2%
CLTR3020052T1	router_all	MCSS Member	0.76	−1.40	2%
CLTR3020051T1	router_all	MCSS Member	0.69	−0.99	3%
CLTR3020053T1	router_all	MatchSS Member	0.66	−0.80	7%
CLTW3020145T2	router_all	MatchMS Discrete	0.68	−0.88	6%
CLTW3020161T2	router_all	MatchMS Discrete	0.26	1.31	6%
CLTR3020159T2	router_all	ZoneMS Discrete	0.64	−0.89	5%
CLTR3020160T2	router1	MCMS Discrete	0.67	−0.64	5%
CLTR3020093T1	router2	MCSS Discrete	0.70	−1.04	2%
CLTR3020094T1	router2	MCSS Discrete	0.50	0.03	1%
CLTW3020096T1	router2	ZoneMS Discrete	0.63	−0.87	4%
CLTW3020146T2	router2	ZoneMS Discrete	0.71	−1.30	5%
CLTR3020147T2	router1	MCSS Member	0.58	−0.25	2%
CLTR3020148T2	router1	MCSS Member	0.38	0.70	3%
CLTW3020149T2	router1	ZoneMS Member	0.62	−0.69	3%
CLTR3020081T3	router_all	ZoneSS Member	0.75	−1.15	4%
CLTR3020080T3	router_all	MCSS Member	0.49	0.16	5%
CLTR3020082T3	router_all	MCSS Partial Credit Member	0.49	0.17	6%
CLTW3020403T3	router1	MCSS Partial Credit Member	0.33	0.82	8%
CLTR3020172T3	router1	MatchSS Discrete	0.80	−1.48	6%
CLTR3020400T3	router1	MCSS Discrete	0.56	−0.17	5%
CLTR3020401T3	router1	MCMS Discrete	0.51	0.09	4%
CLTR3020142T2	router2	MCMS Member	0.55	−0.08	2%
CLTR3020140T2	router2	ZoneMS Member	0.72	−1.54	2%
CLTR3020141T2	router2	MCSS Member	0.39	0.65	2%
CLTW3020176T3	router2	MatchMS Discrete	0.38	0.71	5%
CLTR3020014T3	router2	MCSS Member	0.61	−0.42	5%
CLTR3020013T3	router2	MCSS Member	0.57	−0.21	5%
CLTW3020015T3	router2	MCSS Partial Credit Member	0.32	0.85	7%
CLTR3020057T1	stage2E	ZoneMS Member	0.27	−0.27	31%
CLTR3020058T1	stage2E	MCSS Member	0.40	−1.37	28%
CLTR3020059T1	stage2E	MCMS Member	0.39	−1.48	30%
CLTW3020107T1	stage2E	MCSS Discrete	0.40	−1.37	30%
CLTW3020108T1	stage2E	ZoneSS Discrete	0.38	−1.27	52%
CLTR3020105T1	stage2E	MCSS Discrete	0.28	−0.78	27%
CLTR3020195T2	stage2M	MCSS Partial Credit Member	0.45	−0.30	7%
CLTR3020194T2	stage2M	MCSS Member	0.30	0.48	5%
CLTR3020193T2	stage2M	MCSS Member	0.38	0.10	4%
CLTR3020144T2	stage2M	MCMS Discrete	0.50	−0.44	5%
CLTW3020162T2	stage2M	MCSS Discrete	0.51	−0.47	5%
CLTR3020143T2	stage2M	MCSS Discrete	0.67	−1.19	4%

Item ID	Position	Item Type	p-value	IRT <i>b</i>-value	Omit Rate
CLTR3020166T3	stage2H	ZoneMS Member	0.65	-0.02	2%
CLTR3020167T3	stage2H	MCMS Member	0.83	-0.72	2%
CLTR3020168T3	stage2H	MCMS Member	0.76	0.13	2%
CLTR3020174T3	stage2H	MatchMS Discrete	0.88	-0.71	1%
CLTW3020402T3	stage2H	MCSS Discrete	0.65	0.30	1%
CLTW3020179T3	stage2H	MCSS Partial Credit Member	0.39	1.37	3%

Table 8.C.2 Item Difficulties and Omit Rate—ELA, Grade Four

Item ID	Position	Item Type	p-value	IRT b-value	Omit Rate
CLTR4020239T1	router_all	MCSS Discrete	0.79	-1.48	1%
CLTR4020434T1	router1	MCSS Member	0.46	0.15	2%
CLTR4020435T1	router1	ZoneMS Member	0.55	-0.32	5%
CLTW4020436T1	router1	MCSS Member	0.41	0.39	2%
CLTR4020256T1	router_all	MCSS Member	0.64	-0.67	2%
CLTR4020257T1	router_all	ZoneMS Member	0.79	-1.53	2%
CLTR4020258T1	router_all	MCMS Member	0.67	-0.56	3%
CLTR4020090T2	router_all	MCSS Member	0.29	1.02	4%
CLTR4020091T2	router_all	ZoneMS Member	0.54	-0.24	4%
CLTR4020092T2	router_all	MCMS Member	0.51	-0.04	4%
CLTW4020138T2	router1	MCSS Discrete	0.56	-0.32	4%
CLTR4020241T1	router2	MCSS Member	0.41	0.41	1%
CLTR4020242T1	router2	ZoneMS Member	0.72	-1.31	3%
CLTW4020243T1	router2	MCSS Member	0.38	0.57	2%
CLTW4020139T2	router2	MCSS Discrete	0.46	0.19	6%
CLTR4020116T2	router1	MCSS Member	0.65	-0.60	3%
CLTR4020117T2	router1	ZoneMS Member	0.68	-1.01	2%
CLTW4020118T2	router1	MCSS Member	0.49	0.10	3%
CLTR4020448T3	router_all	MCSS Member	0.48	0.17	4%
CLTR4020449T3	router_all	ZoneMS Member	0.71	-1.21	4%
CLTR4020450T3	router_all	MCMS Member	0.70	-0.56	4%
CLTW4020134T3	router1	MCSS Discrete	0.62	-0.47	3%
CLTR4020016T3	router1	MCSS Member	0.58	-0.29	6%
CLTR4020017T3	router1	MatchMS Member	0.35	0.50	7%
CLTW4020018T3	router1	MCMS Member	0.36	0.74	6%
CLTR4020119T2	router2	MCSS Member	0.28	1.14	4%
CLTR4020120T2	router2	ZoneMS Member	0.50	0.08	6%
CLTW4020121T2	router2	ZoneSS Member	0.46	0.29	4%
CLTW4020131T3	router2	MCSS Discrete	0.54	-0.11	4%
CLTR4020298T3	router2	MCSS Member	0.44	0.36	5%
CLTR4020299T3	router2	MatchMS Member	0.52	0.00	6%
CLTW4020300T3	router2	MCSS Member	0.40	0.55	6%
CLTR4020304T1	stage2E	MCSS Member	0.29	-0.31	29%
CLTR4020305T1	stage2E	ZoneMS Member	0.34	-0.57	37%
CLTW4020306T1	stage2E	ZoneMS Member	0.32	-0.52	37%
CLTW4020310T1	stage2E	MCSS Discrete	0.20	0.20	34%
CLTW4020240T1	stage2E	MatchMS Discrete	0.18	0.01	44%
CLTR4020308T1	stage2E	MCSS Discrete	0.27	-0.18	32%
CLTR4020087T2	stage2M	MatchMS Member	0.32	0.55	5%
CLTR4020088T2	stage2M	MCSS Member	0.40	0.16	4%
CLTW4020089T2	stage2M	MatchMS Member	0.73	-1.44	4%
CLTW4020086T2	stage2M	MCSS Partial Credit Member	0.42	-0.02	9%
CLTR4020137T2	stage2M	MCSS Discrete	0.40	0.19	5%
CLTR4020085T2	stage2M	MatchMS Discrete	0.54	-0.44	5%
CLTR4020245T3	stage2H	MCSS Member	0.69	-0.06	2%
CLTR4020244T3	stage2H	MatchMS Member	0.50	0.78	1%
CLTW4020246T3	stage2H	MCSS Partial Credit Member	0.52	0.70	4%
CLTR4020130T3	stage2H	MCSS Discrete	0.64	0.20	3%
CLTW4020135T3	stage2H	MCSS Partial Credit Member	0.71	0.10	4%
CLTR4020132T3	stage2H	ZoneMS Discrete	0.57	0.47	1%

Table 8.C.3 Item Difficulties and Omit Rate—ELA, Grade Five

Item ID	Position	Item Type	p-value	IRT b-value	Omit Rate
CLTR5020314T1	router_all	MCSS Discrete	0.66	-0.72	1%
CLTR5020452T1	router1	MCSS Member	0.59	-0.42	2%
CLTR5020453T1	router1	ZoneMS Member	0.86	-1.92	1%
CLTW5020454T1	router1	ZoneMS Member	0.66	-1.08	2%
CLTR5020318T1	router_all	MCSS Member	0.75	-1.20	2%
CLTR5020319T1	router_all	MCSS Member	0.67	-0.80	2%
CLTW5020320T1	router_all	MCSS Member	0.47	0.16	2%
CLTR5020338T2	router_all	MCSS Member	0.60	-0.43	3%
CLTR5020337T2	router_all	MCSS Member	0.51	-0.05	3%
CLTW5020339T2	router_all	ZoneMS Member	0.62	-0.62	4%
CLTR5020340T2	router1	MCSS Discrete	0.52	-0.08	3%
CLTR5020311T1	router2	MCSS Member	0.72	-1.02	1%
CLTR5020312T1	router2	MCSS Member	0.55	-0.20	1%
CLTW5020313T1	router2	MatchMS Member	0.75	-0.93	2%
CLTR5020342T2	router2	MCMS Discrete	0.50	0.01	3%
CLTR5020330T2	router1	MCSS Member	0.34	0.78	4%
CLTW5020331T2	router1	MCSS Member	0.43	0.36	3%
CLTR5020332T2	router1	MCSS Member	0.55	-0.13	3%
CLTR5020248T3	router_all	MatchMS Member	0.59	-0.15	4%
CLTR5020247T3	router_all	MCSS Member	0.61	-0.40	4%
CLTR5020249T3	router_all	MCSS Partial Credit Member	0.37	0.53	7%
CLTR5020050T3	router1	MCMS Discrete	0.53	-0.03	4%
CLTR5020044T3	router1	MCMS Member	0.30	1.02	5%
CLTR5020045T3	router1	MCSS Member	0.47	0.21	5%
CLTW5020046T3	router1	MCSS Partial Credit Member	0.26	0.99	8%
CLTR5020253T2	router2	MCSS Member	0.67	-0.65	1%
CLTR5020254T2	router2	ZoneMS Member	0.71	-1.27	1%
CLTW5020255T2	router2	MCSS Member	0.31	0.97	1%
CLTR5020073T3	router2	MCSS Discrete	0.39	0.57	3%
CLTR5020038T3	router2	MCMS Member	0.30	1.03	4%
CLTR5020039T3	router2	MCSS Member	0.36	0.72	5%
CLTW5020040T3	router2	MCSS Partial Credit Member	0.24	1.04	8%
CLTR5020327T1	stage2E	MCSS Member	0.29	-0.08	17%
CLTR5020328T1	stage2E	ZoneMS Member	0.47	-0.92	24%
CLTW5020329T1	stage2E	MCSS Member	0.28	-0.05	18%
CLTR5020316T1	stage2E	MCMS Discrete	0.34	-0.59	22%
CLTW5020317T1	stage2E	ZoneMS Discrete	0.44	-0.79	25%
CLTR5020315T1	stage2E	ZoneMS Discrete	0.41	-0.55	23%
CLTW5020343T2	stage2M	ZoneMS Discrete	0.64	-0.90	2%
CLTR5020047T2	stage2M	ZoneMS Discrete	0.67	-1.19	3%
CLTR5020346T2	stage2M	MCMS Discrete	0.57	-0.32	3%
CLTW5020347T2	stage2M	MCSS Discrete	0.30	0.76	2%
CLTR5020344T2	stage2M	MCSS Discrete	0.31	0.72	3%
CLTR5020345T2	stage2M	ZoneMS Discrete	0.63	-0.93	3%
CLTR5020041T3	stage2H	MatchSS Member	0.43	1.07	1%
CLTR5020042T3	stage2H	MCSS Member	0.73	-0.30	1%
CLTW5020043T3	stage2H	MCSS Partial Credit Member	0.62	0.36	4%
CLTW5020076T3	stage2H	MatchMS Discrete	0.69	-0.06	1%
CLTR5020341T3	stage2H	ZoneMS Discrete	0.59	0.06	1%
CLTR5020074T3	stage2H	MCMS Discrete	0.73	0.14	1%

Table 8.C.4 Item Difficulties and Omit Rate—ELA, Grade Six

Item ID	Position	Item Type	p-value	IRT b-value	Omit Rate
CLTR6020097T1	router_all	MCMS Discrete	0.87	-1.39	1%
CLTR6020113T1	router1	MCMS Member	0.71	-0.67	1%
CLTR6020115T1	router1	MCSS Member	0.37	0.62	5%
CLTR6020114T1	router1	MCSS Member	0.86	-2.02	2%
CLTR6020150T1	router_all	MCMS Member	0.81	-1.06	2%
CLTR6020151T1	router_all	MCSS Member	0.79	-1.51	2%
CLTW6020152T1	router_all	MCSS Member	0.35	0.71	4%
CLTR6020184T2	router_all	ZoneMS Member	0.46	0.22	6%
CLTW6020186T2	router_all	MCSS Member	0.46	0.21	7%
CLTR6020185T2	router_all	MCSS Member	0.63	-0.60	6%
CLTR6020204T2	router1	ZoneMS Discrete	0.70	-1.03	5%
CLTR6020063T1	router2	MCSS Member	0.72	-1.09	2%
CLTR6020064T1	router2	MatchMS Member	0.52	-0.06	2%
CLTR6020065T1	router2	MCMS Member	0.48	0.08	2%
CLTR6020205T2	router2	MCSS Discrete	0.46	0.20	6%
CLTR6020197T2	router1	MCSS Member	0.55	-0.13	3%
CLTR6020196T2	router1	ZoneMS Member	0.58	-0.46	4%
CLTW6020198T2	router1	MatchMS Member	0.50	0.08	3%
CLTW6020415T3	router_all	MatchMS Member	0.41	0.51	5%
CLTR6020413T3	router_all	ZoneMS Member	0.53	-0.05	5%
CLTR6020414T3	router_all	MCSS Member	0.29	1.10	6%
CLTW6020424T3	router1	MCSS Discrete	0.33	0.91	6%
CLTR6020404T3	router1	ZoneMS Member	0.57	-0.39	6%
CLTR6020405T3	router1	MCSS Member	0.27	1.17	6%
CLTW6020406T3	router1	MCSS Partial Credit Member	0.30	0.85	9%
CLTR6020200T2	router2	MCSS Member	0.70	-0.84	3%
CLTW6020201T2	router2	MCSS Partial Credit Member	0.38	0.60	8%
CLTR6020199T2	router2	MCSS Member	0.68	-0.74	3%
CLTW6020426T3	router2	MCSS Partial Credit Member	0.35	0.74	11%
CLTR6020398T3	router2	MCSS Member	0.41	0.52	8%
CLTW6020399T3	router2	MCSS Partial Credit Member	0.35	0.71	13%
CLTR6020397T3	router2	MCSS Member	0.32	0.93	9%
CLTR6020295T1	stage2E	MCSS Member	0.20	0.21	28%
CLTR6020296T1	stage2E	MCSS Member	0.41	-0.88	29%
CLTW6020297T1	stage2E	ZoneMS Member	0.37	-0.67	29%
CLTR6020098T1	stage2E	ZoneMS Discrete	0.32	-0.44	31%
CLTW6020104T1	stage2E	ZoneMS Discrete	0.33	-0.49	31%
CLTR6020099T1	stage2E	MCMS Discrete	0.35	-0.85	27%
CLTR6020019T2	stage2M	MCMS Member	0.28	0.85	5%
CLTR6020020T2	stage2M	MCSS Member	0.57	-0.43	7%
CLTR6020021T2	stage2M	MCMS Member	0.34	0.34	5%
CLTR6020203T2	stage2M	MatchMS Discrete	0.31	0.48	4%
CLTW6020209T2	stage2M	MCSS Partial Credit Member	0.33	0.50	10%
CLTW6020208T2	stage2M	MCSS Discrete	0.56	-0.38	5%
CLTR6020418T3	stage2H	MCMS Member	0.43	1.06	1%
CLTR6020416T3	stage2H	MCMS Member	0.38	1.37	1%
CLTR6020417T3	stage2H	ZoneMS Member	0.61	-0.03	1%
CLTR6020420T3	stage2H	ZoneMS Discrete	0.73	-0.26	1%
CLTR6020422T3	stage2H	MCSS Discrete	0.43	1.16	2%
CLTW6020425T3	stage2H	MatchMS Discrete	0.38	1.26	1%

Table 8.C.5 Item Difficulties and Omit Rate—ELA, Grade Seven

Item ID	Position	Item Type	p-value	IRT b-value	Omit Rate
CLTW7020385T1	router_all	MCSS Discrete	0.81	-1.60	2%
CLTR7020408T1	router1	MCSS Member	0.71	-0.98	2%
CLTW7020407T1	router1	ZoneMS Member	0.54	-0.17	2%
CLTR7020409T1	router1	MCSS Member	0.62	-0.57	2%
CLTR7020008T1	router_all	ZoneMS Member	0.73	-1.36	2%
CLTR7020009T1	router_all	MCSS Member	0.40	0.45	2%
CLTW7020007T1	router_all	MCSS Member	0.53	-0.11	3%
CLTR7020378T2	router_all	MCMS Member	0.40	0.33	4%
CLTR7020377T2	router_all	MCSS Member	0.34	0.75	5%
CLTR7020376T2	router_all	MCSS Member	0.49	0.03	3%
CLTW7020374T2	router1	MCSS Discrete	0.48	0.10	6%
CLTR7020411T1	router2	MCSS Member	0.84	-1.82	2%
CLTR7020410T1	router2	MCSS Member	0.64	-0.63	3%
CLTW7020412T1	router2	ZoneMS Member	0.61	-1.05	2%
CLTW7020373T2	router2	MCSS Discrete	0.47	0.13	5%
CLTR7020153T2	router1	MCSS Member	0.46	0.31	2%
CLTR7020154T2	router1	MCSS Member	0.67	-0.64	2%
CLTW7020155T2	router1	MCSS Partial Credit Member	0.45	0.35	7%
CLTR7020357T3	router_all	MCMS Member	0.49	0.16	2%
CLTW7020359T3	router_all	MCSS Member	0.54	-0.01	3%
CLTR7020358T3	router_all	MCMS Member	0.13	2.17	3%
CLTW7020366T3	router1	MCSS Discrete	0.57	-0.17	3%
CLTW7020350T3	router1	MCSS Partial Credit Member	0.43	0.42	10%
CLTR7020348T3	router1	MCSS Member	0.37	0.71	5%
CLTR7020349T3	router1	MCMS Member	0.12	2.33	5%
CLTR7020158T2	router2	MCSS Partial Credit Member	0.51	0.10	7%
CLTR7020156T2	router2	MCSS Member	0.49	0.19	2%
CLTR7020157T2	router2	MCSS Member	0.39	0.61	1%
CLTW7020367T3	router2	MCSS Discrete	0.45	0.38	2%
CLTR7020351T3	router2	MCMS Member	0.25	1.34	3%
CLTR7020352T3	router2	MCMS Member	0.46	0.30	3%
CLTW7020353T3	router2	MCSS Partial Credit Member	0.42	0.44	11%
CLTR7020010T1	stage2E	MCSS Member	0.30	-0.06	16%
CLTR7020011T1	stage2E	MCSS Member	0.27	0.12	16%
CLTR7020012T1	stage2E	MCMS Member	0.30	-0.35	19%
CLTW7020386T1	stage2E	ZoneMS Discrete	0.41	-0.46	19%
CLTR7020379T1	stage2E	ZoneMS Discrete	0.47	-0.81	20%
CLTR7020382T1	stage2E	ZoneMS Discrete	0.43	-0.56	18%
CLTR7020427T2	stage2M	ZoneMS Member	0.57	-0.50	5%
CLTW7020429T2	stage2M	MCSS Member	0.43	0.30	5%
CLTR7020428T2	stage2M	MCSS Member	0.46	0.19	3%
CLTR7020368T2	stage2M	ZoneMS Discrete	0.63	-0.74	4%
CLTW7020375T2	stage2M	MCSS Partial Credit Member	0.43	0.26	11%
CLTR7020371T2	stage2M	ZoneMS Discrete	0.67	-0.92	3%
CLTW7020356T3	stage2H	MCSS Partial Credit Member	0.63	0.30	5%
CLTR7020354T3	stage2H	ZoneMS Member	0.68	-0.11	1%
CLTR7020355T3	stage2H	MCSS Member	0.61	0.45	1%
CLTW7020361T3	stage2H	MCSS Partial Credit Member	0.63	0.30	5%
CLTR7020364T3	stage2H	ZoneMS Discrete	0.66	-0.24	1%
CLTR7020362T3	stage2H	ZoneMS Discrete	0.48	0.97	1%

Table 8.C.6 Item Difficulties and Omit Rate—ELA, Grade Eight

Item ID	Position	Item Type	p-value	IRT b-value	Omit Rate
CLTR8020446T1	router_all	ZoneMS Discrete	0.75	-1.40	2%
CLTR8020445T1	router1	MCSS Discrete	0.61	-0.48	1%
CLTR8020444T1	router1	MatchMS Discrete	0.62	-0.50	1%
CLTW8020390T1	router1	MCSS Discrete	0.87	-2.06	3%
CLTR8020394T1	router_all	ZoneMS Member	0.62	-0.89	2%
CLTR8020395T1	router_all	MCSS Member	0.74	-1.14	2%
CLTW8020396T1	router_all	ZoneMS Member	0.61	-0.75	2%
CLTR8020292T2	router_all	MCMS Member	0.52	-0.04	5%
CLTR8020293T2	router_all	MatchMS Member	0.59	-0.36	4%
CLTR8020294T2	router_all	ZoneMS Member	0.55	-0.35	4%
CLTR8020288T2	router1	ZoneMS Discrete	0.65	-0.94	5%
CLTR8020284T1	router2	MCMS Member	0.31	0.64	1%
CLTR8020282T1	router2	ZoneMS Member	0.74	-1.38	1%
CLTR8020283T1	router2	MCSS Member	0.50	-0.01	1%
CLTW8020262T2	router2	MCSS Discrete	0.29	1.01	4%
CLTR8020321T2	router1	ZoneMS Member	0.77	-1.43	2%
CLTR8020322T2	router1	MCSS Member	0.38	0.61	2%
CLTR8020323T2	router1	MCMS Member	0.59	-0.18	2%
CLTR8020269T3	router_all	MCSS Member	0.49	0.12	3%
CLTW8020270T3	router_all	MatchMS Member	0.38	0.40	3%
CLTR8020271T3	router_all	ZoneMS Member	0.51	0.01	4%
CLTW8020070T3	router1	ZoneMS Discrete	0.63	-0.77	3%
CLTR8020066T3	router1	ZoneMS Member	0.49	0.16	3%
CLTR8020068T3	router1	MCMS Member	0.52	0.03	3%
CLTR8020067T3	router1	MCSS Member	0.36	0.72	4%
CLTR8020001T2	router2	MCSS Member	0.55	-0.16	2%
CLTR8020002T2	router2	ZoneMS Member	0.60	-0.72	3%
CLTW8020003T2	router2	ZoneMS Member	0.54	-0.13	5%
CLTW8020071T3	router2	ZoneMS Discrete	0.57	-0.33	4%
CLTR8020437T3	router2	ZoneMS Discrete	0.54	-0.15	4%
CLTR8020438T3	router2	MCSS Discrete	0.32	0.88	6%
CLTR8020439T3	router2	ZoneMS Discrete	0.54	-0.14	4%
CLTR8020391T1	stage2E	MCSS Member	0.20	0.12	33%
CLTR8020392T1	stage2E	ZoneMS Member	0.20	0.13	42%
CLTR8020393T1	stage2E	MCMS Member	0.15	-0.31	37%
CLTR8020447T1	stage2E	ZoneMS Discrete	0.31	-0.43	38%
CLTW8020389T1	stage2E	ZoneMS Discrete	0.28	-0.12	36%
CLTW8020388T1	stage2E	ZoneMS Discrete	0.35	-0.75	35%
CLTR8020285T2	stage2M	MCSS Member	0.34	0.53	5%
CLTR8020286T2	stage2M	MCSS Member	0.39	0.30	4%
CLTW8020287T2	stage2M	MatchMS Member	0.28	0.82	4%
CLTW8020260T2	stage2M	MCSS Partial Credit Member	0.48	-0.12	10%
CLTR8020290T2	stage2M	MCSS Discrete	0.40	0.26	6%
CLTR8020291T2	stage2M	ZoneMS Discrete	0.63	-0.96	3%
CLTW8020062T3	stage2H	MCSS Member	0.30	1.62	2%
CLTR8020061T3	stage2H	MCSS Member	0.65	0.07	2%
CLTR8020060T3	stage2H	MCMS Member	0.53	0.61	2%
CLTR8020440T3	stage2H	ZoneMS Discrete	0.62	0.09	1%
CLTR8020072T3	stage2H	MCSS Discrete	0.48	0.81	1%
CLTW8020069T3	stage2H	MCSS Discrete	0.45	0.93	1%

Table 8.C.7 Item Difficulties and Omit Rate—ELA, Grade Eleven

Item ID	Position	Item Type	p-value	IRT b-value	Omit Rate
CLTRH020034T1	router_all	MCSS Discrete	0.77	-1.31	2%
CLTRH020227T1	router1	MCSS Member	0.79	-1.40	1%
CLTRH020228T1	router1	ZoneMS Member	0.51	-0.07	2%
CLTWH020229T1	router1	MCSS Member	0.69	-0.85	2%
CLTRH020022T1	router_all	MatchMS Member	0.39	0.48	3%
CLTRH020023T1	router_all	MatchMS Member	0.36	0.54	3%
CLTRH020024T1	router_all	MCMS Member	0.53	-0.09	4%
CLTRH020220T2	router_all	MCSS Member	0.68	-0.82	4%
CLTRH020221T2	router_all	MCSS Member	0.52	-0.08	5%
CLTWH020222T2	router_all	ZoneMS Member	0.66	-0.80	5%
CLTRH020216T2	router1	MCSS Discrete	0.62	-0.51	4%
CLTRH020230T1	router2	MCSS Member	0.58	-0.35	2%
CLTRH020231T1	router2	MCSS Member	0.78	-1.37	1%
CLTWH020232T1	router2	ZoneMS Member	0.71	-1.22	2%
CLTRH020213T2	router2	MCSS Discrete	0.45	0.23	4%
CLTRH020188T2	router1	MatchMS Member	0.58	-0.24	2%
CLTRH020189T2	router1	MCMS Member	0.69	-0.47	2%
CLTRH020187T2	router1	MCMS Member	0.31	0.97	2%
CLTRH020441T3	router_all	MCMS Member	0.21	1.54	3%
CLTRH020442T3	router_all	ZoneMS Member	0.65	-0.78	3%
CLTRH020443T3	router_all	MCMS Member	0.54	-0.02	3%
CLTRH020278T3	router1	MCSS Discrete	0.24	1.35	4%
CLTRH020266T3	router1	MCSS Member	0.39	0.56	4%
CLTWH020268T3	router1	MCSS Member	0.32	0.93	6%
CLTRH020267T3	router1	ZoneMS Member	0.52	0.01	3%
CLTRH020217T2	router2	MCSS Member	0.69	-0.77	3%
CLTRH020218T2	router2	ZoneMS Member	0.57	-0.46	3%
CLTWH020219T2	router2	MCSS Member	0.57	-0.20	3%
CLTRH020277T3	router2	ZoneMS Discrete	0.42	0.59	4%
CLTRH020279T3	router2	MCSS Member	0.49	0.15	4%
CLTRH020280T3	router2	MCSS Member	0.36	0.72	4%
CLTWH020281T3	router2	ZoneMS Member	0.42	0.35	9%
CLTRH020025T1	stage2E	ZoneMS Member	0.33	-0.23	33%
CLTRH020026T1	stage2E	ZoneMS Member	0.35	-0.22	32%
CLTRH020027T1	stage2E	MCSS Member	0.25	0.19	30%
CLTRH020233T1	stage2E	MCSS Discrete	0.37	-0.43	30%
CLTWH020236T1	stage2E	ZoneMS Discrete	0.39	-0.53	33%
CLTRH020033T1	stage2E	ZoneMS Discrete	0.35	-0.28	32%
CLTRH020191T2	stage2M	ZoneMS Member	0.65	-0.87	3%
CLTRH020190T2	stage2M	MatchMS Member	0.70	-1.36	3%
CLTRH020192T2	stage2M	MCSS Member	0.34	0.62	4%
CLTRH020214T2	stage2M	MatchMS Discrete	0.56	-0.31	3%
CLTRH020223T2	stage2M	MCSS Discrete	0.50	-0.09	4%
CLTRH020225T2	stage2M	MCSS Discrete	0.44	0.16	2%
CLTRH020272T3	stage2H	ZoneMS Member	0.54	0.52	1%
CLTRH020273T3	stage2H	ZoneMS Member	0.66	-0.09	1%
CLTWH020274T3	stage2H	MatchMS Member	0.55	0.53	1%
CLTWH020433T3	stage2H	MCSS Partial Credit Member	0.51	0.69	6%
CLTRH020430T3	stage2H	MCSS Discrete	0.73	-0.32	1%
CLTRH020276T3	stage2H	ZoneMS Discrete	0.77	-0.58	0%

Table 8.C.8 Item Difficulties and Omit Rate—Mathematics, Grade Three

Item ID	Position	Item Type	p-value	IRT b-value	Omit Rate
CLTM3020174T1	router_all	MCSS Discrete	0.59	−0.41	4%
CLTM3020010T1	router1	MCMS Discrete	0.60	−0.30	2%
CLTM3020210T1	router1	MCSS Discrete	0.68	−0.82	1%
CLTM3020201T1	router1	MCSS Discrete	0.39	0.50	5%
CLTM3020007T1	router_all	ZoneSS Discrete	0.45	0.23	3%
CLTM3020004T1	router_all	MCSS Discrete	0.73	−1.04	3%
CLTM3020171T1	router_all	MCMS Discrete	0.44	0.18	3%
CLTM3020011T2	router_all	InLineChoicelistMS Discrete	0.63	−0.42	6%
CLTM3020168T2	router_all	MCSS Discrete	0.38	0.54	5%
CLTM3020202T2	router_all	MCSS Discrete	0.53	−0.11	5%
CLTM3020204T2	router1	MCSS Discrete	0.26	1.14	5%
CLTM3020056T1	router2	ZoneSS Discrete	0.36	0.59	4%
CLTM3020013T1	router2	MCSS Discrete	0.35	0.67	3%
CLTM3020053T1	router2	MCMS Discrete	0.41	0.23	3%
CLTM3020175T2	router2	MCSS Discrete	0.39	0.49	4%
CLTM3020008T2	router1	MCSS Discrete	0.44	0.37	4%
CLTM3020005T2	router1	MCSS Discrete	0.28	1.10	3%
CLTM3020014T2	router1	MCSS Discrete	0.49	0.16	3%
CLTM3020012T3	router_all	MatchMS Discrete	0.55	−0.02	4%
CLTM3020169T3	router_all	Numeric Discrete	0.10	2.39	7%
CLTM3020203T3	router_all	MCSS Discrete	0.27	1.16	4%
CLTM3020055T3	router1	MCMS Discrete	0.47	0.20	5%
CLTM3020006T3	router1	Numeric Discrete	0.07	2.87	9%
CLTM3020173T3	router1	MCMS Discrete	0.43	0.30	5%
CLTM3020176T3	router1	MCSS Discrete	0.38	0.63	4%
CLTM3020057T2	router2	MCSS Discrete	0.52	0.02	2%
CLTM3020172T2	router2	MCMS Discrete	0.44	0.27	3%
CLTM3020054T2	router2	MCMS Discrete	0.35	0.50	3%
CLTM3020058T3	router2	Numeric Discrete	0.07	2.83	6%
CLTM3020015T3	router2	MCSS Discrete	0.45	0.30	3%
CLTM3020009T3	router2	MCSS Discrete	0.31	0.94	4%
CLTM3020205T3	router2	MCSS Discrete	0.40	0.55	4%
CLTM3020186T1	stage2E	MCSS Discrete	0.57	−0.78	13%
CLTM3020001T1	stage2E	MCMS Discrete	0.36	−0.12	14%
CLTM3020062T1	stage2E	MCMS Discrete	0.49	−0.46	15%
CLTM3020059T1	stage2E	MCSS Discrete	0.48	−0.43	19%
CLTM3020018T1	stage2E	MCSS Discrete	0.53	−0.61	14%
CLTM3020065T1	stage2E	ZoneSS Discrete	0.52	−0.59	14%
CLTM3020187T2	stage2M	MCSS Discrete	0.22	1.43	2%
CLTM3020002T2	stage2M	InLineChoicelistMS Discrete	0.41	0.57	5%
CLTM3020063T2	stage2M	MCMS Discrete	0.69	−0.37	2%
CLTM3020060T2	stage2M	MCSS Discrete	0.51	0.06	2%
CLTM3020208T2	stage2M	MCSS Discrete	0.34	0.78	2%
CLTM3020066T2	stage2M	MCSS Discrete	0.51	0.07	2%
CLTM3020188T3	stage2H	Numeric Discrete	0.14	2.70	1%
CLTM3020003T3	stage2H	MCMS Discrete	0.68	0.32	1%
CLTM3020064T3	stage2H	MCMS Discrete	0.50	0.78	1%
CLTM3020061T3	stage2H	MCSS Discrete	0.47	0.92	1%
CLTM3020209T3	stage2H	MCSS Discrete	0.27	1.84	1%
CLTM3020067T3	stage2H	MCSS Discrete	0.45	1.02	1%

Table 8.C.9 Item Difficulties and Omit Rate—Mathematics, Grade Four

Item ID	Position	Item Type	p-value	IRT b-value	Omit Rate
CLTM4020216T1	router_all	MCMS Discrete	0.38	0.34	1%
CLTM4020225T1	router1	MatchMS Discrete	0.43	0.18	3%
CLTM4020246T1	router1	MCSS Discrete	0.70	-0.88	2%
CLTM4020243T1	router1	MCSS Discrete	0.49	0.04	1%
CLTM4020252T1	router_all	MCSS Discrete	0.57	-0.28	2%
CLTM4020249T1	router_all	ZoneMS Discrete	0.45	0.19	12%
CLTM4020240T1	router_all	MCSS Discrete	0.52	-0.07	4%
CLTM4020226T2	router_all	MatchMS Discrete	0.51	-0.05	5%
CLTM4020247T2	router_all	MCSS Discrete	0.48	0.10	6%
CLTM4020244T2	router_all	MCSS Discrete	0.28	1.00	5%
CLTM4020229T2	router1	InLineChoicelistMS Discrete	0.43	0.36	12%
CLTM4020189T1	router2	MCSS Discrete	0.65	-0.64	2%
CLTM4020219T1	router2	MCSS Discrete	0.53	-0.12	2%
CLTM4020170T1	router2	MCMS Discrete	0.44	0.18	3%
CLTM4020217T2	router2	MatchMS Discrete	0.34	0.62	7%
CLTM4020190T2	router1	MCSS Discrete	0.33	0.83	2%
CLTM4020220T2	router1	MCSS Discrete	0.36	0.71	2%
CLTM4020241T2	router1	MCSS Discrete	0.32	0.90	3%
CLTM4020227T3	router_all	BarPicturegraphMS Discrete	0.47	0.20	6%
CLTM4020248T3	router_all	MCSS Discrete	0.37	0.67	3%
CLTM4020221T3	router_all	MCSS Discrete	0.41	0.50	3%
CLTM4020254T3	router1	MCSS Discrete	0.42	0.45	4%
CLTM4020251T3	router1	MCMS Discrete	0.38	0.45	4%
CLTM4020212T3	router1	ZoneMS Discrete	0.40	0.59	5%
CLTM4020218T3	router1	InLineChoicelistMS Discrete	0.54	-0.04	7%
CLTM4020253T2	router2	MCSS Discrete	0.35	0.77	3%
CLTM4020250T2	router2	ZoneMS Discrete	0.51	0.03	3%
CLTM4020211T2	router2	MatchMS Discrete	0.24	1.14	4%
CLTM4020191T3	router2	MCSS Discrete	0.47	0.24	3%
CLTM4020245T3	router2	MCSS Discrete	0.41	0.48	3%
CLTM4020242T3	router2	MCSS Discrete	0.36	0.73	3%
CLTM4020230T3	router2	ZoneMS Discrete	0.41	0.51	5%
CLTM4020231T1	stage2E	ZoneMS Discrete	0.40	-0.02	21%
CLTM4020222T1	stage2E	MatchMS Discrete	0.18	0.57	28%
CLTM4020237T1	stage2E	MCSS Discrete	0.49	-0.50	23%
CLTM4020177T1	stage2E	ZoneMS Discrete	0.40	-0.14	27%
CLTM4020255T1	stage2E	MCSS Discrete	0.48	-0.46	23%
CLTM4020192T1	stage2E	MCSS Discrete	0.40	-0.14	22%
CLTM4020232T2	stage2M	MatchMS Discrete	0.19	1.40	2%
CLTM4020223T2	stage2M	MatchMS Discrete	0.39	0.39	2%
CLTM4020238T2	stage2M	MCSS Discrete	0.36	0.67	3%
CLTM4020178T2	stage2M	InLineChoicelistMS Discrete	0.60	-0.23	5%
CLTM4020256T2	stage2M	MCSS Discrete	0.44	0.32	2%
CLTM4020193T2	stage2M	MCSS Discrete	0.25	1.23	2%
CLTM4020233T3	stage2H	MCMS Discrete	0.59	0.61	1%
CLTM4020224T3	stage2H	InLineChoicelistMS Discrete	0.36	1.58	2%
CLTM4020239T3	stage2H	MCSS Discrete	0.40	1.31	2%
CLTM4020179T3	stage2H	MatchMS Discrete	0.68	0.34	2%
CLTM4020257T3	stage2H	MCSS Discrete	0.87	-1.10	2%
CLTM4020194T3	stage2H	MCSS Discrete	0.40	1.27	2%

Table 8.C.10 Item Difficulties and Omit Rate—Mathematics, Grade Five

Item ID	Position	Item Type	p-value	IRT b-value	Omit Rate
CLTM5020165T1	router_all	MCSS Discrete	0.57	-0.31	2%
CLTM5020258T1	router1	MCSS Discrete	0.60	-0.43	3%
CLTM5020195T1	router1	ZoneMS Discrete	0.77	-1.07	1%
CLTM5020345T1	router1	MCSS Discrete	0.70	-0.93	1%
CLTM5020340T1	router_all	MCMS Discrete	0.40	0.25	1%
CLTM5020180T1	router_all	MCSS Discrete	0.73	-1.04	2%
CLTM5020183T1	router_all	ZoneMS Discrete	0.60	-0.35	4%
CLTM5020259T2	router_all	MCSS Discrete	0.33	0.74	3%
CLTM5020196T2	router_all	ZoneMS Discrete	0.65	-0.60	3%
CLTM5020346T2	router_all	MCSS Discrete	0.34	0.72	3%
CLTM5020405T2	router1	MCMS Discrete	0.54	-0.12	3%
CLTM5020354T1	router2	MCSS Discrete	0.73	-1.03	1%
CLTM5020267T1	router2	MatchMS Discrete	0.37	0.34	3%
CLTM5020360T1	router2	MCSS Discrete	0.48	0.09	2%
CLTM5020341T2	router2	MCMS Discrete	0.42	0.23	2%
CLTM5020166T2	router1	MCSS Discrete	0.48	0.12	1%
CLTM5020361T2	router1	MCSS Discrete	0.42	0.39	2%
CLTM5020268T2	router1	ZoneMS Discrete	0.42	0.36	8%
CLTM5020260T3	router_all	Numeric Discrete	0.05	3.20	6%
CLTM5020197T3	router_all	ZoneMS Discrete	0.53	-0.10	2%
CLTM5020347T3	router_all	MCSS Discrete	0.24	1.25	2%
CLTM5020342T3	router1	MatchMS Discrete	0.56	-0.14	6%
CLTM5020182T3	router1	Numeric Discrete	0.09	2.44	6%
CLTM5020185T3	router1	ZoneMS Discrete	0.44	0.24	4%
CLTM5020350T3	router1	MCSS Discrete	0.44	0.29	3%
CLTM5020355T2	router2	MCSS Discrete	0.32	0.88	2%
CLTM5020184T2	router2	MCMS Discrete	0.43	0.28	1%
CLTM5020181T2	router2	MCSS Discrete	0.25	1.21	1%
CLTM5020356T3	router2	MCSS Discrete	0.41	0.47	2%
CLTM5020269T3	router2	ZoneMS Discrete	0.45	0.28	3%
CLTM5020362T3	router2	MCSS Discrete	0.26	1.16	3%
CLTM5020339T3	router2	ZoneMS Discrete	0.47	0.21	5%
CLTM5020357T1	stage2E	ZoneMS Discrete	0.37	-0.15	28%
CLTM5020404T1	stage2E	MCSS Discrete	0.41	-0.24	24%
CLTM5020351T1	stage2E	MatchMS Discrete	0.18	0.38	34%
CLTM5020213T1	stage2E	ZoneSS Discrete	0.49	-0.57	26%
CLTM5020264T1	stage2E	MCSS Discrete	0.28	0.36	27%
CLTM5020261T1	stage2E	MCSS Discrete	0.36	-0.02	21%
CLTM5020358T2	stage2M	MCMS Discrete	0.36	0.37	2%
CLTM5020343T2	stage2M	InLineChoicelistSS Discrete	0.27	1.04	7%
CLTM5020352T2	stage2M	MCMS Discrete	0.60	-0.26	1%
CLTM5020214T2	stage2M	MCSS Discrete	0.44	0.23	3%
CLTM5020265T2	stage2M	MCSS Discrete	0.39	0.48	2%
CLTM5020262T2	stage2M	MCSS Discrete	0.46	0.18	3%
CLTM5020359T3	stage2H	ZoneMS Discrete	0.61	0.31	0%
CLTM5020344T3	stage2H	MCSS Discrete	0.51	0.67	1%
CLTM5020353T3	stage2H	MatchMS Discrete	0.44	0.85	1%
CLTM5020215T3	stage2H	Graph Discrete	0.46	0.87	3%
CLTM5020266T3	stage2H	Numeric Discrete	0.38	1.21	2%
CLTM5020263T3	stage2H	Numeric Discrete	0.31	1.56	2%

Table 8.C.11 Item Difficulties and Omit Rate—Mathematics, Grade Six

Item ID	Position	Item Type	p-value	IRT b-value	Omit Rate
CLTM6020363T1	router_all	MCMS Discrete	0.36	0.39	2%
CLTM6020284T1	router1	MCSS Discrete	0.63	-0.59	3%
CLTM6020432T1	router1	MCMS Discrete	0.32	0.49	1%
CLTM6020040T1	router1	MCSS Discrete	0.64	-0.61	2%
CLTM6020094T1	router_all	ZoneMS Discrete	0.44	0.30	3%
CLTM6020290T1	router_all	MCMS Discrete	0.38	0.34	2%
CLTM6020320T1	router_all	MCSS Discrete	0.53	-0.11	4%
CLTM6020285T2	router_all	MCSS Discrete	0.53	-0.14	4%
CLTM6020433T2	router_all	MCMS Discrete	0.40	0.28	4%
CLTM6020041T2	router_all	MCSS Discrete	0.39	0.47	4%
CLTM6020436T2	router1	ZoneMS Discrete	0.24	0.82	7%
CLTM6020198T1	router2	MCSS Discrete	0.64	-0.63	3%
CLTM6020435T1	router2	ZoneMS Discrete	0.49	0.05	1%
CLTM6020293T1	router2	ZoneSS Discrete	0.63	-0.56	3%
CLTM6020364T2	router2	MCMS Discrete	0.40	0.29	4%
CLTM6020425T2	router1	MCSS Discrete	0.48	0.27	2%
CLTM6020291T2	router1	MCMS Discrete	0.43	0.36	1%
CLTM6020321T2	router1	MCSS Discrete	0.24	1.38	2%
CLTM6020286T3	router_all	MCSS Discrete	0.16	1.90	3%
CLTM6020434T3	router_all	ZoneMS Discrete	0.50	0.17	3%
CLTM6020042T3	router_all	MCSS Discrete	0.35	0.81	3%
CLTM6020096T3	router1	MCMS Discrete	0.37	0.52	3%
CLTM6020200T3	router1	ZoneSS Discrete	0.50	0.17	5%
CLTM6020295T3	router1	Numeric Discrete	0.20	1.65	7%
CLTM6020365T3	router1	MatchSS Discrete	0.39	0.48	8%
CLTM6020199T2	router2	MCSS Discrete	0.44	0.43	2%
CLTM6020095T2	router2	MCMS Discrete	0.42	0.40	2%
CLTM6020294T2	router2	ZoneSS Discrete	0.38	0.71	2%
CLTM6020292T3	router2	MatchMS Discrete	0.49	0.22	4%
CLTM6020437T3	router2	ZoneMS Discrete	0.58	-0.23	4%
CLTM6020322T3	router2	MCSS Discrete	0.26	1.30	4%
CLTM6020426T3	router2	MCSS Discrete	0.44	0.43	4%
CLTM6020366T1	stage2E	MCMS Discrete	0.27	0.23	9%
CLTM6020037T1	stage2E	MCSS Discrete	0.44	-0.17	12%
CLTM6020314T1	stage2E	MCMS Discrete	0.29	0.15	10%
CLTM6020427T1	stage2E	MCSS Discrete	0.51	-0.47	12%
CLTM6020287T1	stage2E	MCMS Discrete	0.50	-0.42	11%
CLTM6020097T1	stage2E	ZoneMS Discrete	0.35	0.24	15%
CLTM6020367T2	stage2M	ZoneMS Discrete	0.35	0.83	2%
CLTM6020038T2	stage2M	InLineChoicelistMS Discrete	0.35	0.69	6%
CLTM6020315T2	stage2M	MatchMS Discrete	0.52	0.08	3%
CLTM6020428T2	stage2M	MatchSS Discrete	0.37	0.67	4%
CLTM6020288T2	stage2M	MatchMS Discrete	0.10	1.36	4%
CLTM6020098T2	stage2M	MatchMS Discrete	0.20	1.58	4%
CLTM6020368T3	stage2H	InLineChoicelistMS Discrete	0.50	0.94	3%
CLTM6020039T3	stage2H	InLineChoicelistMS Discrete	0.50	0.94	1%
CLTM6020316T3	stage2H	InLineChoicelistMS Discrete	0.85	-0.59	2%
CLTM6020429T3	stage2H	MCSS Discrete	0.62	0.41	1%
CLTM6020289T3	stage2H	MCMS Discrete	0.58	0.72	1%
CLTM6020099T3	stage2H	ZoneMS Discrete	0.28	1.92	2%

Table 8.C.12 Item Difficulties and Omit Rate—Mathematics, Grade Seven

Item ID	Position	Item Type	<i>p</i> -value	IRT <i>b</i> -value	Omit Rate
CLTM7020091T1	router_all	ZoneMS Discrete	0.70	−0.55	6%
CLTM7020296T1	router1	MCSS Discrete	0.60	−0.45	2%
CLTM7020281T1	router1	MCMS Discrete	0.46	0.13	1%
CLTM7020418T1	router1	MCMS Discrete	0.47	0.10	1%
CLTM7020372T1	router_all	MatchMS Discrete	0.53	−0.16	3%
CLTM7020085T1	router_all	MCSS Discrete	0.63	−0.57	4%
CLTM7020326T1	router_all	MatchMS Discrete	0.63	−0.46	3%
CLTM7020297T2	router_all	InLineChoicelistSS Discrete	0.48	0.10	7%
CLTM7020282T2	router_all	InLineChoicelistMS Discrete	0.40	0.38	7%
CLTM7020419T2	router_all	InLineChoicelistMS Discrete	0.37	0.50	9%
CLTM7020330T2	router1	ZoneMS Discrete	0.43	0.20	11%
CLTM7020047T1	router2	MCMS Discrete	0.71	−0.62	2%
CLTM7020323T1	router2	MCSS Discrete	0.52	−0.08	2%
CLTM7020088T1	router2	MCMS Discrete	0.46	0.11	1%
CLTM7020092T2	router2	ZoneMS Discrete	0.68	−0.49	8%
CLTM7020373T2	router1	InLineChoicelistMS Discrete	0.43	0.47	3%
CLTM7020086T2	router1	MCSS Discrete	0.52	0.04	3%
CLTM7020327T2	router1	MCMS Discrete	0.43	0.34	3%
CLTM7020298T3	router_all	InLineChoicelistSS Discrete	0.44	0.35	4%
CLTM7020283T3	router_all	InLineChoicelistMS Discrete	0.41	0.44	4%
CLTM7020420T3	router_all	MatchMS Discrete	0.27	1.11	5%
CLTM7020374T3	router1	MatchMS Discrete	0.41	0.54	4%
CLTM7020087T3	router1	MatchSS Discrete	0.36	0.72	5%
CLTM7020328T3	router1	ZoneMS Discrete	0.45	0.40	4%
CLTM7020093T3	router1	InLineChoicelistMS Discrete	0.32	0.80	5%
CLTM7020048T2	router2	ZoneMS Discrete	0.54	−0.05	3%
CLTM7020324T2	router2	MCSS Discrete	0.43	0.40	3%
CLTM7020089T2	router2	ZoneMS Discrete	0.49	0.16	3%
CLTM7020049T3	router2	InLineChoicelistMS Discrete	0.44	0.30	4%
CLTM7020325T3	router2	MatchSS Discrete	0.27	1.16	4%
CLTM7020090T3	router2	MatchMS Discrete	0.38	0.57	4%
CLTM7020331T3	router2	InLineChoicelistMS Discrete	0.41	0.59	5%
CLTM7020031T1	stage2E	MCSS Discrete	0.38	−0.23	24%
CLTM7020034T1	stage2E	MCSS Discrete	0.46	−0.60	27%
CLTM7020280T1	stage2E	MCSS Discrete	0.44	−0.52	21%
CLTM7020421T1	stage2E	MCSS Discrete	0.42	−0.43	27%
CLTM7020369T1	stage2E	MCSS Discrete	0.39	−0.27	24%
CLTM7020299T1	stage2E	MCSS Discrete	0.45	−0.55	26%
CLTM7020032T2	stage2M	MCSS Discrete	0.43	0.31	2%
CLTM7020035T2	stage2M	MCSS Discrete	0.37	0.57	2%
CLTM7020449T2	stage2M	MCSS Discrete	0.42	0.36	4%
CLTM7020422T2	stage2M	MCSS Discrete	0.36	0.63	4%
CLTM7020370T2	stage2M	MCSS Discrete	0.53	−0.08	3%
CLTM7020300T2	stage2M	MCSS Discrete	0.34	0.71	3%
CLTM7020033T3	stage2H	MCSS Discrete	0.70	−0.01	1%
CLTM7020036T3	stage2H	Numeric Discrete	0.33	1.61	1%
CLTM7020451T3	stage2H	MCSS Discrete	0.42	1.21	2%
CLTM7020423T3	stage2H	MCSS Discrete	0.46	1.04	2%
CLTM7020371T3	stage2H	MCSS Discrete	0.46	1.04	1%
CLTM7020301T3	stage2H	MCSS Discrete	0.68	0.09	2%

Table 8.C.13 Item Difficulties and Omit Rate—Mathematics, Grade Eight

Item ID	Position	Item Type	<i>p</i> -value	IRT <i>b</i> -value	Omit Rate
CLTM8020387T1	router_all	ZoneSS Discrete	0.47	0.12	4%
CLTM8020277T1	router1	MCMS Discrete	0.53	-0.07	2%
CLTM8020160T1	router1	ZoneMS Discrete	0.41	0.32	14%
CLTM8020278T1	router1	MCSS Discrete	0.67	-0.73	1%
CLTM8020028T1	router_all	InLineChoicelistMS Discrete	0.66	-0.69	4%
CLTM8020415T1	router_all	MCMS Discrete	0.51	-0.02	3%
CLTM8020391T1	router_all	MCMS Discrete	0.59	-0.26	2%
CLTM8020276T2	router_all	InLineChoicelistMS Discrete	0.40	0.39	5%
CLTM8020046T2	router_all	ZoneMS Discrete	0.23	1.22	12%
CLTM8020069T2	router_all	ZoneSS Discrete	0.26	1.10	5%
CLTM8020452T2	router1	ZoneSS Discrete	0.42	0.37	4%
CLTM8020378T1	router2	MCMS Discrete	0.59	-0.26	1%
CLTM8020305T1	router2	MCMS Discrete	0.42	0.19	3%
CLTM8020079T1	router2	MCSS Discrete	0.69	-0.85	2%
CLTM8020333T2	router2	MCSS Discrete	0.35	0.65	7%
CLTM8020029T2	router1	InLineChoicelistMS Discrete	0.62	-0.23	2%
CLTM8020416T2	router1	InLineChoicelistMS Discrete	0.41	0.55	2%
CLTM8020392T2	router1	InLineChoicelistMS Discrete	0.35	0.78	4%
CLTM8020275T3	router_all	MatchMS Discrete	0.44	0.34	3%
CLTM8020161T3	router_all	ZoneMS Discrete	0.34	0.87	8%
CLTM8020279T3	router_all	MCSS Discrete	0.49	0.17	4%
CLTM8020030T3	router1	InLineChoicelistMS Discrete	0.45	0.32	3%
CLTM8020417T3	router1	InLineChoicelistMS Discrete	0.37	0.78	4%
CLTM8020393T3	router1	InLineChoicelistMS Discrete	0.29	1.14	5%
CLTM8020334T3	router1	Numeric Discrete	0.21	1.53	9%
CLTM8020379T2	router2	ZoneMS Discrete	0.26	1.18	7%
CLTM8020306T2	router2	InLineChoicelistMS Discrete	0.24	1.08	4%
CLTM8020080T2	router2	InLineChoicelistMS Discrete	0.39	0.56	4%
CLTM8020380T3	router2	ZoneMS Discrete	0.30	0.93	7%
CLTM8020307T3	router2	InLineChoicelistMS Discrete	0.42	0.37	4%
CLTM8020081T3	router2	InLineChoicelistMS Discrete	0.39	0.63	6%
CLTM8020414T3	router2	MCSS Discrete	0.22	1.44	4%
CLTM8020388T1	stage2E	MCSS Discrete	0.41	-0.17	15%
CLTM8020375T1	stage2E	MatchSS Discrete	0.17	1.06	17%
CLTM8020394T1	stage2E	MatchSS Discrete	0.22	0.76	25%
CLTM8020025T1	stage2E	MCSS Discrete	0.37	0.01	16%
CLTM8020302T1	stage2E	MCSS Discrete	0.56	-0.80	18%
CLTM8020082T1	stage2E	ZoneSS Discrete	0.30	0.34	24%
CLTM8020389T2	stage2M	MCSS Discrete	0.37	0.64	2%
CLTM8020376T2	stage2M	MatchSS Discrete	0.51	0.07	3%
CLTM8020395T2	stage2M	InLineChoicelistSS Discrete	0.40	0.53	3%
CLTM8020026T2	stage2M	MCSS Discrete	0.43	0.40	2%
CLTM8020303T2	stage2M	ZoneSS Discrete	0.41	0.48	5%
CLTM8020083T2	stage2M	InLineChoicelistSS Discrete	0.45	0.30	2%
CLTM8020390T3	stage2H	Numeric Discrete	0.69	0.07	2%
CLTM8020377T3	stage2H	MatchSS Discrete	0.59	0.50	0%
CLTM8020396T3	stage2H	InLineChoicelistSS Discrete	0.27	1.94	0%
CLTM8020027T3	stage2H	MCSS Discrete	0.58	0.56	1%
CLTM8020304T3	stage2H	Numeric Discrete	0.63	0.36	3%
CLTM8020084T3	stage2H	InLineChoicelistSS Discrete	0.71	-0.01	1%

Table 8.C.14 Item Difficulties and Omit Rate—Mathematics, Grade Eleven

Item ID	Position	Item Type	p-value	IRT b-value	Omit Rate
CLTMH020335T1	router_all	MCSS Discrete	0.46	0.19	2%
CLTMH020454T1	router1	MCMS Discrete	0.37	0.41	1%
CLTMH020043T1	router1	ZoneSS Discrete	0.62	-0.52	4%
CLTMH020019T1	router1	MCSS Discrete	0.74	-1.13	1%
CLTMH020073T1	router_all	MatchMS Discrete	0.68	-0.49	4%
CLTMH020447T1	router_all	ZoneSS Discrete	0.64	-0.61	8%
CLTMH020022T1	router_all	MCSS Discrete	0.67	-0.76	3%
CLTMH020382T2	router_all	MCMS Discrete	0.30	0.57	3%
CLTMH020044T2	router_all	MCSS Discrete	0.26	1.10	5%
CLTMH020020T2	router_all	MCSS Discrete	0.62	-0.52	4%
CLTMH020402T2	router1	InLineChoicelistMS Discrete	0.45	0.21	10%
CLTMH020384T1	router2	MCMS Discrete	0.38	0.35	2%
CLTMH020076T1	router2	ZoneSS Discrete	0.53	-0.12	5%
CLTMH020308T1	router2	ZoneSS Discrete	0.59	-0.42	10%
CLTMH020398T2	router2	ZoneMS Discrete	0.63	-0.69	4%
CLTMH020074T2	router1	MatchMS Discrete	0.80	-1.04	2%
CLTMH020400T2	router1	MCSS Discrete	0.31	0.96	2%
CLTMH020023T2	router1	MCSS Discrete	0.45	0.33	3%
CLTMH020383T3	router_all	ZoneMS Discrete	0.45	0.38	2%
CLTMH020045T3	router_all	MCSS Discrete	0.55	-0.11	3%
CLTMH020021T3	router_all	Numeric Discrete	0.13	2.11	4%
CLTMH020075T3	router1	BarPicturegraphMS Discrete	0.54	0.02	8%
CLTMH020401T3	router1	ZoneSS Discrete	0.35	0.79	12%
CLTMH020024T3	router1	Numeric Discrete	0.18	1.71	5%
CLTMH020399T3	router1	MatchMS Discrete	0.57	-0.17	4%
CLTMH020385T2	router2	MCMS Discrete	0.41	0.34	2%
CLTMH020077T2	router2	ZoneSS Discrete	0.30	0.99	8%
CLTMH020309T2	router2	MCSS Discrete	0.50	0.10	2%
CLTMH020386T3	router2	MCMS Discrete	0.47	0.18	3%
CLTMH020078T3	router2	ZoneSS Discrete	0.31	0.96	8%
CLTMH020310T3	router2	Numeric Discrete	0.45	0.32	3%
CLTMH020403T3	router2	InLineChoicelistMS Discrete	0.30	0.91	9%
CLTMH020070T1	stage2E	MatchSS Discrete	0.18	0.85	21%
CLTMH020406T1	stage2E	MCMS Discrete	0.34	-0.30	18%
CLTMH020068T1	stage2E	MCSS Discrete	0.42	-0.38	17%
CLTMH020409T1	stage2E	MCMS Discrete	0.40	-0.45	20%
CLTMH020311T1	stage2E	MatchMS Discrete	0.35	-0.06	25%
CLTMH020272T1	stage2E	MCSS Discrete	0.53	-0.83	17%
CLTMH020071T2	stage2M	MatchMS Discrete	0.32	0.85	2%
CLTMH020407T2	stage2M	MCMS Discrete	0.33	0.54	2%
CLTMH020270T2	stage2M	MCSS Discrete	0.42	0.40	2%
CLTMH020410T2	stage2M	MatchMS Discrete	0.27	0.77	2%
CLTMH020312T2	stage2M	ZoneSS Discrete	0.30	0.95	4%
CLTMH020273T2	stage2M	MCSS Discrete	0.31	0.88	2%
CLTMH020072T3	stage2H	ZoneSS Discrete	0.52	0.76	4%
CLTMH020408T3	stage2H	MatchMS Discrete	0.48	0.93	2%
CLTMH020446T3	stage2H	Numeric Discrete	0.43	1.19	2%
CLTMH020411T3	stage2H	MCMS Discrete	0.81	-0.02	1%
CLTMH020313T3	stage2H	MCSS Discrete	0.56	0.61	1%
CLTMH020271T3	stage2H	Numeric Discrete	0.51	0.81	1%

Table 8.C.15 Average Number of Item Omits for Each Test Stage—ELA

Test	Form ID	Stage 1A (Items 1 through 11)	Stage 1B (Items 12 through 21)	Stage2 (6 items)
Grade 3	R1A0E	2.66	–	1.49
	R1ABE	1.49	3.34	1.72
	R1ABM	0.27	0.43	0.30
	R1ABH	0.09	0.11	0.11
	R2A0E	3.94	–	2.21
	R2ABE	1.23	3.83	2.05
	R2ABM	0.23	0.42	0.27
	R2ABH	0.07	0.10	0.12
Grade 4	R1A0E	2.21	–	1.47
	R1ABE	1.15	4.00	2.02
	R1ABM	0.17	0.43	0.34
	R1ABH	0.08	0.10	0.14
	R2A0E	2.77	–	2.17
	R2ABE	1.54	5.84	3.05
	R2ABM	0.17	0.37	0.25
	R2ABH	0.06	0.06	0.13
Grade 5	R1A0E	1.81	–	1.08
	R1ABE	0.70	2.93	1.33
	R1ABM	0.11	0.37	0.15
	R1ABH	0.03	0.11	0.06
	R2A0E	1.68	–	1.21
	R2ABE	0.41	2.11	0.92
	R2ABM	0.11	0.31	0.16
	R2ABH	0.03	0.09	0.08
Grade 6	R1A0E	2.71	–	1.80
	R1ABE	2.23	5.15	2.71
	R1ABM	0.22	0.50	0.35
	R1ABH	0.06	0.10	0.05
	R2A0E	2.35	–	1.41
	R2ABE	1.29	3.23	1.39
	R2ABM	0.17	0.67	0.33
	R2ABH	0.05	0.17	0.06
Grade 7	R1A0E	1.41	–	1.11
	R1ABE	0.53	1.94	0.91
	R1ABM	0.12	0.30	0.29
	R1ABH	0.05	0.10	0.10
	R2A0E	1.88	–	1.17
	R2ABE	0.47	1.62	0.72
	R2ABM	0.11	0.30	0.28
	R2ABH	0.05	0.11	0.14

Test	Form ID	Stage 1A (Items 1 through 11)	Stage 1B (Items 12 through 21)	Stage2 (6 items)
Grade 8	R1A0E	2.74	–	1.84
	R1ABE	1.51	3.74	2.23
	R1ABM	0.18	0.30	0.34
	R1ABH	0.05	0.04	0.09
	R2A0E	2.50	–	1.82
	R2ABE	1.06	4.30	2.47
	R2ABM	0.14	0.31	0.27
	R2ABH	0.05	0.09	0.06
Grade 11	R1A0E	1.88	–	1.22
	R1ABE	0.66	3.57	1.84
	R1ABM	0.15	0.27	0.15
	R1ABH	0.05	0.03	0.06
	R2A0E	2.03	–	1.66
	R2ABE	1.52	6.34	3.48
	R2ABM	0.14	0.30	0.20
	R2ABH	0.03	0.05	0.12

Table 8.C.16 Average Number of Item Omits for Each Test Stage—Mathematics

Test	Form ID	Stage 1A (Items 1 through 11)	Stage 1B (Items 12 through 21)	Stage 2 (6 items)
Grade 3	R1A0E	1.55	–	0.91
	R1ABE	0.66	1.89	0.89
	R1ABM	0.13	0.30	0.18
	R1ABH	0.04	0.09	0.04
	R2A0E	1.57	–	0.89
	R2ABE	0.62	1.46	0.73
	R2ABM	0.14	0.23	0.12
	R2ABH	0.06	0.03	0.02
Grade 4	R1A0E	2.04	–	1.33
	R1ABE	0.98	2.98	1.58
	R1ABM	0.16	0.17	0.15
	R1ABH	0.03	0.04	0.05
	R2A0E	2.04	–	1.50
	R2ABE	1.09	2.31	1.15
	R2ABM	0.14	0.16	0.15
	R2ABH	0.03	0.01	0.07
Grade 5	R1A0E	2.29	–	2.05
	R1ABE	0.81	2.99	1.74
	R1ABM	0.09	0.32	0.19
	R1ABH	0.02	0.08	0.08
	R2A0E	1.37	–	1.23
	R2ABE	0.74	2.26	1.47
	R2ABM	0.10	0.18	0.17
	R2ABH	0.00	0.03	0.04
Grade 6	R1A0E	0.80	–	0.56
	R1ABE	0.39	1.48	0.67
	R1ABM	0.10	0.22	0.23
	R1ABH	0.08	0.06	0.17
	R2A0E	0.87	–	0.71
	R2ABE	0.70	2.13	1.32
	R2ABM	0.10	0.22	0.21
	R2ABH	0.03	0.05	0.06
Grade 7	R1A0E	2.07	–	1.04
	R1ABE	1.47	3.39	1.54
	R1ABM	0.20	0.17	0.15
	R1ABH	0.04	0.03	0.06
	R2A0E	2.59	–	1.29
	R2ABE	1.50	3.77	1.52
	R2ABM	0.22	0.24	0.19
	R2ABH	0.07	0.05	0.09

Test	Form ID	Stage 1A (Items 1 through 11)	Stage 1B (Items 12 through 21)	Stage 2 (6 items)
Grade 8	R1A0E	1.70	–	1.03
	R1ABE	1.15	3.14	1.39
	R1ABM	0.22	0.29	0.16
	R1ABH	0.11	0.07	0.05
	R2A0E	1.74	–	1.09
	R2ABE	1.02	3.08	1.22
	R2ABM	0.14	0.27	0.13
	R2ABH	0.04	0.03	0.06
Grade 11	R1A0E	1.65	–	0.87
	R1ABE	1.11	3.44	1.22
	R1ABM	0.18	0.36	0.13
	R1ABH	0.03	0.08	0.06
	R2A0E	2.22	–	1.23
	R2ABE	0.95	2.72	1.29
	R2ABM	0.19	0.31	0.13
	R2ABH	0.05	0.11	0.14

Table 8.C.17 Total Number Answered by Student Achievement Level—ELA, Grades Three and Four

Total Number Answered	Grade Three			Grade Four		
	Level 1— Alternate	Level 2— Alternate	Level 3— Alternate	Level 1— Alternate	Level 2— Alternate	Level 3— Alternate
27	841	933	894	1,172	1,185	517
26	233	169	117	317	247	63
25	81	72	22	103	56	16
24	61	26	11	60	27	4
23	45	14	1	27	12	1
22	36	5	—	27	1	1
21	25	8	—	30	3	—
20	15	2	—	26	2	—
19	21	1	—	19	—	—
18	12	—	—	16	—	—
17	53	—	—	101	—	—
16	36	1	—	35	—	—
15	30	—	—	35	—	—
14	26	—	—	26	—	—
13	17	—	—	13	—	—
12	15	—	—	11	—	—
11	48	—	—	34	—	—
10	24	—	—	10	—	—
9	20	—	—	19	—	—
8	22	—	—	14	—	—
7	16	—	—	22	—	—
6	22	—	—	15	—	—
5	18	—	—	16	—	—
4	20	—	—	28	—	—

Table 8.C.18 Total Number Answered by Student Achievement Level—ELA, Grades Five and Six

Total Number Answered	Grade Five			Grade Six		
	Level 1— Alternate	Level 2— Alternate	Level 3— Alternate	Level 1— Alternate	Level 2— Alternate	Level 3— Alternate
27	1,098	1,488	393	905	1,491	349
26	248	182	35	232	275	33
25	118	66	6	103	84	10
24	55	21	1	61	40	2
23	20	5	—	53	33	—
22	22	2	—	41	12	—
21	14	2	—	26	5	—
20	12	1	—	13	2	—
19	15	—	—	12	1	—
18	12	—	—	18	—	—
17	156	—	—	127	—	—
16	57	—	—	43	—	—
15	28	—	—	32	—	—
14	23	—	—	22	—	—
13	16	—	—	20	—	—
12	12	—	—	16	—	—
11	26	—	—	47	—	—
10	17	—	—	24	—	—
9	8	—	—	14	—	—
8	8	—	—	13	—	—
7	10	—	—	17	—	—
6	11	—	—	21	—	—
5	10	—	—	11	—	—
4	21	—	—	35	—	—

Table 8.C.19 Total Number Answered by Student Achievement Level—ELA, Grades Seven and Eight

Total Number Answered	Grade Seven			Grade Eight		
	Level 1— Alternate	Level 2— Alternate	Level 3— Alternate	Level 1— Alternate	Level 2— Alternate	Level 3— Alternate
27	818	1,399	381	619	1,677	374
26	213	228	37	217	301	40
25	107	85	7	88	69	11
24	91	56	2	36	29	1
23	32	16	3	30	5	—
22	29	3	1	29	2	—
21	21	2	—	16	5	—
20	15	2	—	17	2	—
19	10	—	—	10	—	—
18	13	—	—	13	—	—
17	270	—	—	57	—	—
16	71	—	—	35	—	—
15	30	—	—	25	—	—
14	24	—	—	13	—	—
13	20	—	—	12	—	—
12	13	—	—	14	—	—
11	38	—	—	28	—	—
10	17	—	—	19	—	—
9	14	—	—	11	—	—
8	16	—	—	12	—	—
7	23	—	—	8	—	—
6	17	—	—	9	—	—
5	12	—	—	8	—	—
4	29	—	—	25	—	—

Table 8.C.20 Total Number Answered by Student Achievement Level—ELA, Grade Eleven

Total Number Answered	Level 1— Alternate	Level 2— Alternate	Level 3— Alternate
27	483	1,725	294
26	146	303	40
25	49	41	3
24	31	21	—
23	18	10	—
22	11	4	—
21	21	4	—
20	11	2	—
19	8	—	—
18	11	—	—
17	131	—	—
16	32	—	—
15	26	—	—
14	22	—	—
13	14	—	—
12	18	—	—
11	54	—	—
10	8	—	—
9	11	—	—
8	15	—	—
7	13	—	—
6	17	—	—
5	16	—	—
4	35	—	—

Table 8.C.21 Total Number Answered by Student Achievement Level—Mathematics, Grades Three and Four

Total Number Answered	Grade Three			Grade Four		
	Level 1—Alternate	Level 2—Alternate	Level 3—Alternate	Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
27	1,225	968	213	1,359	1,177	211
26	248	124	17	263	141	14
25	104	32	—	105	26	—
24	60	16	—	77	9	—
23	31	8	1	28	1	—
22	20	—	—	26	5	—
21	18	2	—	14	3	—
20	17	1	—	18	2	—
19	6	1	—	12	—	—
18	7	—	—	10	1	—
17	363	—	—	303	—	—
16	90	—	—	89	—	—
15	41	—	—	61	—	—
14	31	—	—	26	—	—
13	17	—	—	30	—	—
12	20	—	—	23	—	—
11	38	—	—	46	—	—
10	27	—	—	23	—	—
9	18	—	—	26	—	—
8	22	—	—	19	—	—
7	24	—	—	27	—	—
6	25	—	—	35	—	—
5	16	—	—	38	—	—
4	28	—	—	41	—	—

Table 8.C.22 Total Number Answered by Student Achievement Level—Mathematics, Grades Five and Six

Total Number Answered	Grade Five			Grade Six		
	Level 1—Alternate	Level 2—Alternate	Level 3—Alternate	Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
27	1,551	1,102	220	1,012	1,010	191
26	298	128	9	185	118	17
25	95	26	3	65	34	2
24	62	9	1	37	13	2
23	38	1	—	35	6	—
22	15	2	—	13	2	—
21	25	3	—	18	4	—
20	15	1	—	15	2	—
19	15	—	—	6	1	—
18	10	—	—	2	1	—
17	186	—	—	861	1	—
16	39	—	—	152	1	—
15	24	—	—	63	—	—
14	23	—	—	32	—	—
13	11	—	—	27	—	—
12	16	—	—	19	—	—
11	28	—	—	39	—	—
10	18	—	—	22	—	—
9	12	—	—	12	—	—
8	16	—	—	16	—	—
7	14	—	—	14	—	—
6	14	—	—	15	—	—
5	15	—	—	15	—	—
4	22	—	—	40	—	—

Table 8.C.23 Total Number Answered by Student Achievement Level—Mathematics, Grades Seven and Eight

Total Number Answered	Grade Seven			Grade Eight		
	Level 1—Alternate	Level 2—Alternate	Level 3—Alternate	Level 1—Alternate	Level 2—Alternate	Level 3—Alternate
27	1,409	1,059	251	1,156	989	185
26	265	128	17	206	112	14
25	99	26	5	67	29	6
24	46	13	2	51	13	3
23	23	5	—	37	14	1
22	17	2	—	29	6	—
21	18	4	—	24	4	1
20	16	3	—	21	1	—
19	7	1	—	9	—	—
18	17	—	—	8	—	—
17	213	1	—	336	—	—
16	68	—	—	87	1	—
15	40	—	—	51	—	—
14	34	—	—	43	1	—
13	29	—	—	40	—	—
12	28	—	—	27	—	—
11	35	—	—	55	—	—
10	35	—	—	32	—	—
9	21	—	—	23	—	—
8	23	—	—	20	—	—
7	26	—	—	20	—	—
6	33	—	—	16	—	—
5	22	—	—	20	—	—
4	35	—	—	33	—	—

Table 8.C.24 Total Number Answered by Student Achievement Level—Mathematics, Grade Eleven

Total Number Answered	Level 1— Alternate	Level 2— Alternate	Level 3— Alternate
27	1,000	987	211
26	219	154	21
25	93	44	3
24	67	10	3
23	46	6	—
22	26	7	—
21	24	7	1
20	11	1	—
19	7	—	—
18	4	—	—
17	243	1	—
16	77	—	—
15	33	—	—
14	25	—	—
13	26	—	—
12	20	—	—
11	55	—	—
10	22	—	—
9	20	—	—
8	19	—	—
7	16	—	—
6	12	—	—
5	18	—	—
4	34	—	—

Appendix 8.D Differential Item Functioning (DIF)

Note: The sample size requirements for the differential item functioning (DIF) analyses were 100 in the smaller of either the focal group or the reference group; and 400 in the combined focal and reference groups. The following focal groups did not meet the required sample size for inclusion in the DIF analyses: American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, Deaf-Blindness, Emotional Disturbance, Traumatic Brain injury, Hearing Impairment, and Visual Impairment.

Table 8.D.1 DIF for ELA, Grade Three

DIF Category	Male-Female		White-AfricanAmer		White-Asian		White-Filipino		White-Hispanic		White-TwoMore	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
C+	–	–	–	–	1	2%	–	–	–	–	–	–
B+	–	–	1	2%	1	2%	–	–	–	–	–	–
A+	33	66%	17	34%	18	36%	4	8%	21	42%	6	12%
A-	16	32%	26	52%	30	60%	3	6%	29	58%	4	8%
B-	1	2%	–	–	–	–	–	–	–	–	–	–
C-	–	–	–	–	–	–	–	–	–	–	–	–
NA	–	–	6	12%	–	–	43	86%	–	–	40	80%
Total	50	100%	50	100%	50	100%	50	100%	50	100%	50	100%

Table 8.D.2 DIF for ELA, Grade Three (Continued)

DIF Category	IntelDisab-Autism		IntelDisab-MultDisab		IntelDisab-Ortholmpair		IntelDisab-Other		IntelDisab-SpecLearn		IntelDisab-SpeechLang	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
C+	2	4%	–	–	–	–	2	4%	2	4%	1	2%
B+	–	–	–	–	1	2%	3	6%	3	6%	1	2%
A+	16	32%	8	16%	8	16%	18	36%	20	40%	18	36%
A-	27	54%	16	32%	14	28%	15	30%	13	26%	17	34%
B-	3	6%	–	–	1	2%	–	–	–	–	1	2%
C-	2	4%	–	–	–	–	–	–	–	–	–	–
NA	–	–	26	52%	26	52%	12	24%	12	24%	12	24%
Total	50	100%	50	100%	50	100%	50	100%	50	100%	50	100%

Table 8.D.3 DIF for ELA, Grade Four

DIF Category	Male-Female		White- AfricanAmer		White-Asian		White- Filipino		White- Hispanic		White- TwoMore	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
C+	–	–	–	–	–	–	–	–	–	–	–	–
B+	–	–	1	2%	1	2%	–	–	–	–	–	–
A+	24	48%	20	40%	20	40%	4	8%	23	46%	7	14%
A-	25	50%	15	30%	16	32%	6	12%	27	54%	3	6%
B-	1	2%	2	4%	1	2%	–	–	–	–	–	–
C-	–	–	–	–	–	–	–	–	–	–	–	–
NA	–	–	12	24%	12	24%	40	80%	–	–	40	80%
Total	50	100%	50	100%	50	100%	50	100%	50	100%	50	100%

Table 8.D.4 DIF for ELA, Grade Four (Continued)

DIF Category	IntelDisab- Autism		IntelDisab- MultDisab		IntelDisab- Ortholmpair		IntelDisab- Other		IntelDisab- SpecLearn		IntelDisab- SpeechLang	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
C+	2	4%	–	–	–	–	2	4%	4	8%	1	2%
B+	1	2%	–	–	–	–	4	8%	5	10%	–	–
A+	20	40%	13	26%	16	32%	20	40%	19	38%	18	36%
A-	26	52%	11	22%	8	16%	18	36%	13	26%	7	14%
B-	–	–	–	–	–	–	–	–	3	6%	–	–
C-	1	2%	–	–	–	–	–	–	–	–	1	2%
NA	–	–	26	52%	26	52%	6	12%	6	12%	23	46%
Total	50	100%	50	100%	50	100%	50	100%	50	100%	50	100%

Table 8.D.5 DIF for ELA, Grade Five

DIF Category	Male-Female		White-AfricanAmer		White-Asian		White-Filipino		White-Hispanic		White-TwoMore	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
C+	–	–	–	–	–	–	–	–	–	–	–	–
B+	–	–	1	2%	–	–	–	–	1	2%	–	–
A+	24	48%	21	42%	23	46%	7	14%	24	48%	6	12%
A-	26	52%	15	30%	21	42%	3	6%	25	50%	4	8%
B-	–	–	1	2%	–	–	–	–	–	–	–	–
C-	–	–	–	–	–	–	–	–	–	–	–	–
NA	–	–	12	24%	6	12%	40	80%	–	–	40	80%
Total	50	100%	50	100%	50	100%	50	100%	50	100%	50	100%

Table 8.D.6 DIF for ELA, Grade Five (Continued)

DIF Category	IntelDisab-Autism		IntelDisab-MultDisab		IntelDisab-Ortholmpair		IntelDisab-Other		IntelDisab-SpecLearn		IntelDisab-SpeechLang	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
C+	–	–	–	–	–	–	–	–	6	12%	–	–
B+	–	–	–	–	–	–	1	2%	6	12%	1	2%
A+	26	52%	6	12%	10	20%	18	36%	14	28%	4	8%
A-	23	46%	10	20%	14	28%	19	38%	14	28%	4	8%
B-	1	2%	1	2%	–	–	–	–	1	2%	1	2%
C-	–	–	–	–	–	–	–	–	3	6%	–	–
NA	–	–	33	66%	26	52%	12	24%	6	12%	40	80%
Total	50	100%	50	100%	50	100%	50	100%	50	100%	50	100%

Table 8.D.7 DIF for ELA, Grade Six

DIF Category	Male-Female		White- AfricanAmer		White-Asian		White- Filipino		White- Hispanic		White- TwoMore	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
	C+	–	–	–	–	–	–	–	–	–	–	–
B+	–	–	–	–	–	–	1	2%	1	2%	–	–
A+	21	42%	20	40%	23	46%	8	16%	26	52%	–	–
A-	28	56%	18	36%	20	40%	1	2%	23	46%	–	–
B-	1	2%	–	–	1	2%	–	–	–	–	–	–
C-	–	–	–	–	–	–	–	–	–	–	–	–
NA	–	–	12	24%	6	12%	40	80%	–	–	50	100%
Total	50	100%	50	100%	50	100%	50	100%	50	100%	50	100%

Table 8.D.8 DIF for ELA, Grade Six (Continued)

DIF Category	IntelDisab- Autism		IntelDisab- MultDisab		IntelDisab- Ortholmpair		IntelDisab- Other		IntelDisab- SpecLearn		IntelDisab- SpeechLang	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
	C+	1	2%	–	–	–	–	–	–	3	6%	–
B+	–	–	1	2%	1	2%	1	2%	4	8%	2	4%
A+	25	50%	10	20%	8	16%	21	42%	16	32%	3	6%
A-	23	46%	13	26%	11	22%	14	28%	20	40%	5	10%
B-	1	2%	–	–	3	6%	2	4%	1	2%	–	–
C-	–	–	–	–	1	2%	–	–	–	–	–	–
NA	–	–	26	52%	26	52%	12	24%	6	12%	40	80%
Total	50	100%	50	100%	50	100%	50	100%	50	100%	50	100%

Table 8.D.9 DIF for ELA, Grade Seven

DIF Category	Male-Female		White- AfricanAmer		White-Asian		White- Filipino		White- Hispanic		White- TwoMore	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
	C+	–	–	–	–	–	–	–	–	–	–	–
B+	–	–	–	–	1	2%	–	–	–	–	–	–
A+	29	58%	22	44%	18	36%	8	16%	25	50%	3	6%
A-	21	42%	22	44%	25	50%	12	24%	25	50%	4	8%
B-	–	–	–	–	–	–	–	–	–	–	–	–
C-	–	–	–	–	–	–	–	–	–	–	–	–
NA	–	–	6	12%	6	12%	30	60%	–	–	43	86%
Total	50	100%	50	100%	50	100%	50	100%	50	100%	50	100%

Table 8.D.10 DIF for ELA, Grade Seven (Continued)

DIF Category	IntelDisab- Autism		IntelDisab- MultDisab		IntelDisab- Ortholmpair		IntelDisab- Other		IntelDisab- SpecLearn		IntelDisab- SpeechLang	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
	C+	–	–	–	–	–	–	–	–	3	6%	–
B+	–	–	1	2%	–	–	1	2%	4	8%	1	2%
A+	26	52%	8	16%	10	20%	16	32%	15	30%	4	8%
A-	23	46%	14	28%	13	26%	7	14%	13	26%	4	8%
B-	1	2%	1	2%	1	2%	–	–	2	4%	–	–
C-	–	–	–	–	–	–	–	–	1	2%	1	2%
NA	–	–	26	52%	26	52%	26	52%	12	24%	40	80%
Total	50	100%	50	100%	50	100%	50	100%	50	100%	50	100%

Table 8.D.11 DIF for ELA, Grade Eight

DIF Category	Male-Female		White- AfricanAmer		White-Asian		White- Filipino		White- Hispanic		White- TwoMore	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
C+	–	–	–	–	–	–	–	–	–	–	–	–
B+	–	–	1	2%	–	–	–	–	–	–	–	–
A+	21	42%	17	34%	20	40%	5	10%	27	54%	–	–
A-	28	56%	20	40%	17	34%	5	10%	23	46%	–	–
B-	1	2%	–	–	1	2%	–	–	–	–	–	–
C-	–	–	–	–	–	–	–	–	–	–	–	–
NA	–	–	12	24%	12	24%	40	80%	–	–	50	100%
Total	50	100%	50	100%	50	100%	50	100%	50	100%	50	100%

Table 8.D.12 DIF for ELA, Grade Eight (Continued)

DIF Category	IntelDisab- Autism		IntelDisab- MultDisab		IntelDisab- Ortholmpair		IntelDisab- Other		IntelDisab- SpecLearn		IntelDisab- SpeechLang	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
C+	–	–	–	–	–	–	–	–	1	2%	–	–
B+	1	2%	–	–	–	–	–	–	4	8%	–	–
A+	23	46%	10	20%	7	14%	8	16%	17	34%	–	–
A-	25	50%	14	28%	17	34%	10	20%	15	30%	–	–
B-	1	2%	–	–	–	–	–	–	–	–	–	–
C-	–	–	–	–	–	–	–	–	1	2%	–	–
NA	–	–	26	52%	26	52%	32	64%	12	24%	50	100%
Total	50	100%	50	100%	50	100%	50	100%	50	100%	50	100%

Table 8.D.13 DIF for ELA, Grade Eleven

DIF Category	Male-Female		White- AfricanAmer		White-Asian		White- Filipino		White- Hispanic		White- TwoMore	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
	C+	–	–	–	–	–	–	–	–	–	–	–
B+	1	2%	1	2%	–	–	–	–	–	–	–	–
A+	26	52%	21	42%	13	26%	5	10%	24	48%	–	–
A-	23	46%	15	30%	18	36%	2	4%	26	52%	–	–
B-	–	–	1	2%	–	–	–	–	–	–	–	–
C-	–	–	–	–	–	–	–	–	–	–	–	–
NA	–	–	12	24%	19	38%	43	86%	–	–	50	100%
Total	50	100%	50	100%	50	100%	50	100%	50	100%	50	100%

Table 8.D.14 DIF for ELA, Grade Eleven (Continued)

DIF Category	IntelDisab- Autism		IntelDisab- MultDisab		IntelDisab- Ortholmpair		IntelDisab- Other		IntelDisab- SpecLearn		IntelDisab- SpeechLang	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
	C+	1	2%	–	–	–	–	–	–	5	10%	–
B+	1	2%	–	–	–	–	–	–	2	4%	–	–
A+	22	44%	7	14%	18	36%	5	10%	21	42%	–	–
A-	24	48%	15	30%	11	22%	5	10%	14	28%	–	–
B-	2	4%	2	4%	1	2%	–	–	1	2%	–	–
C-	–	–	–	–	–	–	–	–	1	2%	–	–
NA	–	–	26	52%	20	40%	40	80%	6	12%	50	100%
Total	50	100%	50	100%	50	100%	50	100%	50	100%	50	100%

Table 8.D.15 DIF for Mathematics, Grade Three

DIF Category	Male-Female		White- AfricanAmer		White-Asian		White- Filipino		White- Hispanic		White- TwoMore	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
	C+	–	–	–	–	–	–	–	–	–	–	–
B+	–	–	–	–	1	2%	–	–	–	–	–	–
A+	17	34%	25	50%	23	46%	3	6%	25	50%	8	16%
A-	27	54%	18	36%	19	38%	4	8%	19	38%	2	4%
B-	–	–	1	2%	1	2%	–	–	–	–	–	–
C-	–	–	–	–	–	–	–	–	–	–	–	–
NA	6	12%	6	12%	6	12%	43	86%	6	12%	40	80%
Total	50	100%	50	100%	50	100%	50	100%	50	100%	50	100%

Table 8.D.16 DIF for Mathematics, Grade Three (Continued)

DIF Category	IntelDisab- Autism		IntelDisab- MultDisab		IntelDisab- Ortholmpair		IntelDisab- Other		IntelDisab- SpecLearn		IntelDisab- SpeechLang	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
	C+	–	–	–	–	–	–	1	2%	6	12%	2
B+	1	2%	1	2%	–	–	2	4%	4	8%	3	6%
A+	17	34%	11	22%	9	18%	17	34%	8	16%	9	18%
A-	26	52%	9	18%	15	30%	16	32%	12	24%	13	26%
B-	–	–	–	–	–	–	1	2%	4	8%	2	4%
C-	–	–	–	–	–	–	–	–	4	8%	2	4%
NA	6	12%	29	58%	26	52%	13	26%	12	24%	19	38%
Total	50	100%	50	100%	50	100%	50	100%	50	100%	50	100%

Table 8.D.17 DIF for Mathematics, Grade Four

DIF Category	Male-Female		White-AfricanAmer		White-Asian		White-Filipino		White-Hispanic		White-TwoMore	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
	C+	–	–	–	–	–	–	–	–	–	–	–
B+	–	–	–	–	–	–	–	–	–	–	–	–
A+	25	50%	18	36%	17	34%	5	10%	26	52%	3	6%
A-	19	38%	24	48%	19	38%	2	4%	18	36%	4	8%
B-	–	–	2	4%	1	2%	–	–	–	–	–	–
C-	–	–	–	–	–	–	–	–	–	–	–	–
NA	6	12%	6	12%	13	26%	43	86%	6	12%	43	86%
Total	50	100%	50	100%	50	100%	50	100%	50	100%	50	100%

Table 8.D.18 DIF for Mathematics, Grade Four (Continued)

DIF Category	IntelDisab-Autism		IntelDisab-MultDisab		IntelDisab-Ortholmpair		IntelDisab-Other		IntelDisab-SpecLearn		IntelDisab-SpeechLang	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
	C+	–	–	–	–	–	–	1	2%	5	10%	2
B+	–	–	–	–	–	–	2	4%	6	12%	–	–
A+	20	40%	9	18%	9	18%	15	30%	9	18%	7	14%
A-	22	44%	12	24%	15	30%	20	40%	11	22%	8	16%
B-	2	4%	–	–	–	–	–	–	5	10%	3	6%
C-	–	–	–	–	–	–	–	–	2	4%	–	–
NA	6	12%	29	58%	26	52%	12	24%	12	24%	30	60%
Total	50	100%	50	100%	50	100%	50	100%	50	100%	50	100%

Table 8.D.19 DIF for Mathematics, Grade Five

DIF Category	Male-Female		White- AfricanAmer		White-Asian		White- Filipino		White- Hispanic		White- TwoMore	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
	C+	–	–	–	–	–	–	–	–	–	–	–
B+	–	–	3	6%	–	–	–	–	–	–	–	–
A+	25	50%	17	34%	18	36%	3	6%	22	44%	2	4%
A-	25	50%	23	46%	25	50%	4	8%	22	44%	5	10%
B-	–	–	–	–	1	2%	–	–	–	–	–	–
C-	–	–	1	2%	–	–	–	–	–	–	–	–
NA	–	–	6	12%	6	12%	43	86%	6	12%	43	86%
Total	50	100%	50	100%	50	100%	50	100%	50	100%	50	100%

Table 8.D.20 DIF for Mathematics, Grade Five (Continued)

DIF Category	IntelDisab- Autism		IntelDisab- MultDisab		IntelDisab- Ortholmpair		IntelDisab- Other		IntelDisab- SpecLearn		IntelDisab- SpeechLang	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
	C+	–	–	–	–	1	2%	1	2%	6	12%	–
B+	1	2%	–	–	–	–	2	4%	5	10%	1	2%
A+	22	44%	6	12%	13	26%	14	28%	10	20%	10	20%
A-	20	40%	11	22%	16	32%	21	42%	9	18%	4	8%
B-	1	2%	–	–	–	–	–	–	4	8%	–	–
C-	–	–	–	–	–	–	–	–	4	8%	1	2%
NA	6	12%	33	66%	20	40%	12	24%	12	24%	34	68%
Total	50	100%	50	100%	50	100%	50	100%	50	100%	50	100%

Table 8.D.21 DIF for Mathematics, Grade Six

DIF Category	Male-Female		White-AfricanAmer		White-Asian		White-Filipino		White-Hispanic		White-TwoMore	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
	C+	–	–	–	–	–	–	–	–	–	–	–
B+	–	–	1	2%	3	6%	–	–	1	2%	–	–
A+	22	44%	24	48%	12	24%	2	4%	24	48%	–	–
A-	22	44%	12	24%	20	40%	5	10%	19	38%	–	–
B-	–	–	–	–	1	2%	–	–	–	–	–	–
C-	–	–	–	–	1	2%	–	–	–	–	–	–
NA	6	12%	13	26%	13	26%	43	86%	6	12%	50	100%
Total	50	100%	50	100%	50	100%	50	100%	50	100%	50	100%

Table 8.D.22 DIF for Mathematics, Grade Six (Continued)

DIF Category	IntelDisab-Autism		IntelDisab-MultDisab		IntelDisab-Ortholmpair		IntelDisab-Other		IntelDisab-SpecLearn		IntelDisab-SpeechLang	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
	C+	–	–	–	–	–	–	–	–	5	10%	–
B+	2	4%	–	–	–	–	3	6%	9	18%	1	2%
A+	21	42%	8	16%	14	28%	10	20%	6	12%	5	10%
A-	21	42%	11	22%	10	20%	11	22%	12	24%	3	6%
B-	–	–	2	4%	–	–	–	–	2	4%	1	2%
C-	–	–	–	–	–	–	–	–	4	8%	–	–
NA	6	12%	29	58%	26	52%	26	52%	12	24%	40	80%
Total	50	100%	50	100%	50	100%	50	100%	50	100%	50	100%

Table 8.D.23 DIF for Mathematics, Grade Seven

DIF Category	Male-Female		White- AfricanAmer		White-Asian		White- Filipino		White- Hispanic		White- TwoMore	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
	C+	–	–	–	–	–	–	–	–	–	–	–
B+	–	–	–	–	2	4%	–	–	1	2%	–	–
A+	20	40%	19	38%	24	48%	9	18%	24	48%	3	6%
A-	28	56%	25	50%	15	30%	5	10%	25	50%	4	8%
B-	2	4%	–	–	2	4%	–	–	–	–	–	–
C-	–	–	–	–	1	2%	–	–	–	–	–	–
NA	–	–	6	12%	6	12%	36	72%	–	–	43	86%
Total	50	100%	50	100%	50	100%	50	100%	50	100%	50	100%

Table 8.D.24 DIF for Mathematics, Grade Seven (Continued)

DIF Category	IntelDisab- Autism		IntelDisab- MultDisab		IntelDisab- Ortholmpair		IntelDisab- Other		IntelDisab- SpecLearn		IntelDisab- SpeechLang	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
	C+	–	–	–	–	–	–	–	–	2	4%	–
B+	1	2%	–	–	–	–	2	4%	4	8%	–	–
A+	20	40%	16	32%	11	22%	11	22%	14	28%	7	14%
A-	23	46%	8	16%	13	26%	9	18%	14	28%	1	2%
B-	–	–	–	–	–	–	2	4%	3	6%	–	–
C-	–	–	–	–	–	–	–	–	1	2%	2	4%
NA	6	12%	26	52%	26	52%	26	52%	12	24%	40	80%
Total	50	100%	50	100%	50	100%	50	100%	50	100%	50	100%

Table 8.D.25 DIF for Mathematics, Grade Eight

DIF Category	Male-Female		White-AfricanAmer		White-Asian		White-Filipino		White-Hispanic		White-TwoMore	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
	C+	–	–	–	–	–	–	–	–	–	–	–
B+	–	–	1	2%	2	4%	–	–	–	–	–	–
A+	19	38%	21	42%	19	38%	4	8%	22	44%	–	–
A-	25	50%	22	44%	21	42%	2	4%	21	42%	–	–
B-	–	–	–	–	2	4%	1	2%	1	2%	–	–
C-	–	–	–	–	–	–	–	–	–	–	–	–
NA	6	12%	6	12%	6	12%	43	86%	6	12%	50	100%
Total	50	100%	50	100%	50	100%	50	100%	50	100%	50	100%

Table 8.D.26 DIF for Mathematics, Grade Eight (Continued)

DIF Category	IntelDisab-Autism		IntelDisab-MultDisab		IntelDisab-Ortholmpair		IntelDisab-Other		IntelDisab-SpecLearn		IntelDisab-SpeechLang	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
	C+	1	2%	–	–	–	–	–	–	5	10%	–
B+	1	2%	–	–	–	–	4	8%	2	4%	–	–
A+	17	34%	8	16%	15	30%	11	22%	13	26%	–	–
A-	25	50%	12	24%	15	30%	9	18%	14	28%	–	–
B-	–	–	–	–	–	–	–	–	1	2%	–	–
C-	–	–	1	2%	–	–	–	–	3	6%	–	–
NA	6	12%	29	58%	20	40%	26	52%	12	24%	50	100%
Total	50	100%	50	100%	50	100%	50	100%	50	100%	50	100%

Table 8.D.27 DIF for Mathematics, Grade Eleven

DIF Category	Male-Female		White- AfricanAmer		White-Asian		White- Filipino		White- Hispanic		White- TwoMore	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
	C+	–	–	–	–	1	2%	–	–	–	–	–
B+	–	–	1	2%	–	–	1	2%	–	–	–	–
A+	23	46%	27	54%	16	32%	2	4%	28	56%	–	–
A-	21	42%	15	30%	17	34%	3	6%	16	32%	–	–
B-	–	–	1	2%	3	6%	1	2%	–	–	–	–
C-	–	–	–	–	–	–	–	–	–	–	–	–
NA	6	12%	6	12%	13	26%	43	86%	6	12%	50	100%
Total	50	100%	50	100%	50	100%	50	100%	50	100%	50	100%

Table 8.D.28 DIF for Mathematics, Grade Eleven (Continued)

DIF Category	IntelDisab- Autism		IntelDisab- MultDisab		IntelDisab- Ortholmpair		IntelDisab- Other		IntelDisab- SpecLearn		IntelDisab- SpeechLang	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
	C+	–	–	–	–	–	–	1	2%	3	6%	–
B+	2	4%	–	–	–	–	1	2%	6	12%	–	–
A+	20	40%	6	12%	13	26%	4	8%	14	28%	–	–
A-	22	44%	14	28%	16	32%	3	6%	9	18%	–	–
B-	–	–	1	2%	–	–	1	2%	3	6%	–	–
C-	–	–	–	–	1	2%	–	–	3	6%	–	–
NA	6	12%	29	58%	20	40%	40	80%	12	24%	50	100%
Total	50	100%	50	100%	50	100%	50	100%	50	100%	50	100%

Appendix 8.E Reliability

Notes:

- The reliabilities are reported only for samples that comprise 11 or more examinees.
- In some cases in Appendix 8.E, score reliabilities were not estimable and are presented in the tables as hyphens.
- Results based on samples that contain 50 or fewer examinees should be interpreted with caution due to small sample sizes.

Table 8.E.1 Reliabilities and Standard Errors of Measurement (SEMs) by Gender

Content Area	Grade	Male			Female		
		N	Reliab.	Theta Score SEM	N	Reliab.	Theta Score SEM
English Language Arts/Literacy (ELA)	3	2,750	0.89	0.43	1,263	0.89	0.42
	4	2,962	0.86	0.39	1,349	0.85	0.39
	5	2,842	0.83	0.38	1,377	0.83	0.37
	6	2,856	0.85	0.38	1,387	0.84	0.42
	7	2,807	0.85	0.39	1,358	0.84	0.40
	8	2,581	0.86	0.36	1,286	0.85	0.35
	11	2,412	0.84	0.38	1,236	0.83	0.37
Mathematics	3	2,654	0.75	0.43	1,225	0.71	0.41
	4	2,953	0.78	0.42	1,336	0.78	0.40
	5	2,748	0.79	0.38	1,319	0.76	0.36
	6	2,787	0.77	0.42	1,333	0.74	0.43
	7	2,746	0.81	0.39	1,330	0.79	0.40
	8	2,531	0.77	0.43	1,260	0.75	0.44
	11	2,368	0.78	0.45	1,205	0.73	0.49

Table 8.E.2 Reliabilities and SEMs by Ethnicity

Content Area	Grade	American Indian or Alaska Native			Asian			Native Hawaiian or Other Pacific Islander		
		N	Reliab.	Theta Score SEM	N	Reliab.	Theta Score SEM	N	Reliab.	Theta Score SEM
ELA	3	31	0.85	0.38	325	0.89	0.40	13	0.92	0.42
	4	29	0.88	0.42	298	0.87	0.40	23	0.84	0.36
	5	42	0.84	0.36	267	0.82	0.40	24	0.88	0.39
	6	34	0.87	0.36	323	0.86	0.40	14	0.87	0.36
	7	27	0.86	0.40	312	0.82	0.38	19	0.84	0.38
	8	37	0.90	0.38	289	0.86	0.38	15	0.86	0.36
	11	28	0.82	0.36	270	0.83	0.37	16	0.85	0.36
Mathematics	3	28	0.50	0.85	311	0.83	0.37	12	0.71	0.34
	4	28	0.83	0.35	291	0.83	0.38	23	0.65	0.32
	5	39	0.76	0.33	259	0.80	0.35	24	0.72	0.81
	6	31	0.87	0.37	310	0.81	0.36	13	0.43	1.34
	7	26	0.82	0.32	306	0.86	0.34	19	0.87	0.35
	8	35	0.81	0.34	280	0.77	0.43	13	0.79	0.35
	11	28	0.77	0.34	264	0.76	0.55	15	0.79	0.35

Table 8.E.3 Reliabilities and SEMs by Ethnicity (Continued)

Content Area	Grade	Filipino			Hispanic or Latino			Black or African American		
		N	Reliab.	Theta Score SEM	N	Reliab.	Theta Score SEM	N	Reliab.	Theta Score SEM
ELA	3	87	0.88	0.38	2,336	0.89	0.43	288	0.90	0.41
	4	120	0.84	0.36	2,571	0.84	0.40	326	0.87	0.40
	5	114	0.79	0.36	2,458	0.83	0.37	342	0.83	0.37
	6	123	0.80	0.45	2,471	0.85	0.39	335	0.82	0.39
	7	144	0.81	0.38	2,300	0.84	0.39	340	0.86	0.39
	8	112	0.85	0.35	2,126	0.85	0.35	344	0.86	0.35
	11	113	0.83	0.36	1,918	0.83	0.38	357	0.85	0.40
Mathematics	3	81	0.77	0.35	2,267	0.74	0.43	278	0.72	0.43
	4	121	0.82	0.38	2,575	0.78	0.39	325	0.77	0.51
	5	110	0.78	0.35	2,383	0.78	0.38	327	0.77	0.35
	6	122	0.82	0.35	2,408	0.75	0.44	333	0.79	0.35
	7	144	0.74	0.55	2,249	0.81	0.39	331	0.81	0.40
	8	107	0.73	0.52	2,085	0.76	0.45	347	0.78	0.41
	11	117	0.76	0.52	1,877	0.76	0.46	346	0.78	0.46

Table 8.E.4 Reliabilities and SEMs by Ethnicity (Continued)

Content Area	Grade	White		Two or More Races			
		N	Reliab.	Theta Score SEM	N	Reliab.	Theta Score SEM
ELA	3	778	0.89	0.45	155	0.85	0.48
	4	795	0.87	0.38	149	0.88	0.38
	5	836	0.84	0.38	136	0.85	0.38
	6	839	0.86	0.36	104	0.83	0.35
	7	896	0.85	0.40	127	0.83	0.38
	8	854	0.86	0.36	90	0.85	0.35
	11	855	0.85	0.37	91	0.83	0.36
Mathematics	3	749	0.77	0.36	153	0.63	0.60
	4	781	0.77	0.44	145	0.76	0.46
	5	794	0.78	0.37	131	0.81	0.36
	6	804	0.75	0.42	99	0.79	0.34
	7	870	0.80	0.40	131	0.77	0.46
	8	836	0.77	0.42	88	0.78	0.33
	11	837	0.78	0.46	89	0.77	0.34

Table 8.E.5 Reliabilities and SEMs by English Proficiency

Content Area	Grade	English Only			Initially Fluent English Proficient		
		N	Reliab.	Theta Score SEM	N	Reliab.	Theta Score SEM
ELA	3	2,346	0.89	0.43	25	0.88	0.38
	4	2,453	0.85	0.40	44	0.88	0.39
	5	2,436	0.84	0.38	60	0.85	0.37
	6	2,460	0.85	0.39	66	0.89	0.39
	7	2,451	0.85	0.39	52	0.83	0.40
	8	2,235	0.86	0.36	70	0.87	0.35
	11	2,234	0.84	0.37	53	0.88	0.38
Mathematics	3	2,261	0.73	0.45	25	0.78	0.36
	4	2,428	0.77	0.44	46	0.83	0.41
	5	2,330	0.78	0.35	52	0.72	0.64
	6	2,381	0.74	0.43	59	0.80	0.34
	7	2,407	0.81	0.39	52	0.81	0.34
	8	2,200	0.76	0.45	65	0.82	0.35
	11	2,188	0.79	0.42	51	0.83	0.36

Table 8.E.6 Reliabilities and SEMs by English Proficiency (Continued)

Content Area	Grade	English Learner			Redesignated Fluent English Proficient		
		N	Reliab.	Theta Score SEM	N	Reliab.	Theta Score SEM
ELA	3	1,542	0.88	0.42	93	0.91	0.42
	4	1,680	0.86	0.38	129	0.85	0.37
	5	1,567	0.82	0.37	148	0.83	0.42
	6	1,478	0.84	0.39	232	0.84	0.36
	7	1,381	0.83	0.39	275	0.84	0.38
	8	1,278	0.85	0.35	280	0.85	0.37
	11	1,079	0.84	0.38	277	0.84	0.39
Mathematics	3	1,499	0.77	0.38	87	0.69	0.58
	4	1,682	0.80	0.37	129	0.76	0.47
	5	1,532	0.78	0.39	145	0.84	0.37
	6	1,451	0.79	0.40	222	0.73	0.43
	7	1,349	0.80	0.41	261	0.83	0.38
	8	1,251	0.79	0.38	270	0.72	0.54
	11	1,050	0.72	0.55	279	0.79	0.48

Table 8.E.7 Reliabilities and SEMs by English Proficiency (Continued)

Content Area	Grade	To Be Determined			English Proficiency Unknown		
		N	Reliab.	Theta Score SEM	N	Reliab.	Theta Score SEM
ELA	3	4	–	–	3	–	–
	4	2	–	–	3	–	–
	5	2	–	–	6	–	–
	6	1	–	–	6	–	–
	7	2	–	–	4	–	–
	8	1	–	–	3	–	–
	11	1	–	–	4	–	–
Mathematics	3	4	–	–	3	–	–
	4	1	–	–	3	–	–
	5	2	–	–	6	–	–
	6	2	–	–	5	–	–
	7	2	–	–	5	–	–
	8	1	–	–	4	–	–
	11	1	–	–	4	–	–

Table 8.E.8 Reliabilities and SEMs by Economic Status

Content Area	Grade	Not Economically Disadvantaged			Economically Disadvantaged		
		N	Reliab.	Theta Score SEM	N	Reliab.	Theta Score SEM
ELA	3	1,247	0.89	0.43	2,766	0.89	0.43
	4	1,288	0.85	0.40	3,023	0.85	0.39
	5	1,296	0.84	0.38	2,923	0.83	0.37
	6	1,307	0.85	0.39	2,936	0.84	0.39
	7	1,359	0.85	0.40	2,806	0.84	0.39
	8	1,242	0.86	0.36	2,625	0.85	0.35
	11	1,267	0.85	0.38	2,381	0.83	0.37
Mathematics	3	1,195	0.73	0.46	2,684	0.74	0.41
	4	1,259	0.79	0.42	3,030	0.78	0.41
	5	1,224	0.79	0.39	2,843	0.77	0.37
	6	1,260	0.73	0.47	2,860	0.78	0.40
	7	1,324	0.79	0.43	2,752	0.81	0.38
	8	1,217	0.74	0.46	2,574	0.77	0.42
	11	1,238	0.77	0.48	2,335	0.76	0.45

Table 8.E.9 Reliabilities and SEMs by Migrant Status

Content Area	Grade	Migrant			Non-Migrant		
		N	Reliab.	Theta Score SEM	N	Reliab.	Theta Score SEM
ELA	3	25	0.88	0.50	3,988	0.89	0.43
	4	51	0.85	0.40	4,260	0.85	0.39
	5	23	0.83	0.41	4,196	0.83	0.38
	6	35	0.83	0.37	4,208	0.85	0.39
	7	32	0.68	0.36	4,133	0.84	0.39
	8	20	0.62	0.33	3,847	0.86	0.36
	11	16	0.89	0.45	3,632	0.84	0.38
Mathematics	3	27	0.87	0.41	3,852	0.74	0.43
	4	52	0.85	0.35	4,237	0.78	0.41
	5	23	0.84	0.64	4,044	0.78	0.37
	6	34	0.85	0.33	4,086	0.76	0.42
	7	31	0.60	0.31	4,045	0.81	0.40
	8	21	0.83	0.34	3,770	0.76	0.43
	11	16	0.60	1.36	3,557	0.77	0.46

Table 8.E.10 Reliabilities and SEMs by Primary Disabilities

Content Area	Grade	Intellectual Disability			Hearing Impairment			Speech or Language Impairment		
		N	Reliab.	Theta Score SEM	N	Reliab.	Theta Score SEM	N	Reliab.	Theta Score SEM
ELA	3	1,313	0.88	0.39	47	0.87	0.38	218	0.84	0.43
	4	1,540	0.84	0.37	43	0.81	0.36	191	0.82	0.38
	5	1,609	0.81	0.36	45	0.82	0.36	176	0.75	0.36
	6	1,676	0.83	0.38	51	0.78	0.36	138	0.67	0.35
	7	1,700	0.83	0.39	34	0.85	0.39	121	0.73	0.36
	8	1,690	0.84	0.35	46	0.79	0.34	72	0.90	0.38
	11	1,690	0.83	0.38	43	0.87	0.38	47	0.54	0.35
Mathematics	3	1,269	0.66	0.45	46	0.84	0.38	216	0.71	0.34
	4	1,527	0.74	0.42	44	0.78	0.33	188	0.79	0.34
	5	1,560	0.73	0.38	42	0.83	0.35	176	0.68	0.33
	6	1,625	0.73	0.41	50	0.75	0.31	138	0.81	0.33
	7	1,646	0.77	0.40	34	0.69	0.31	116	0.79	0.33
	8	1,645	0.75	0.45	47	0.72	0.32	70	0.83	0.34
	11	1,667	0.73	0.53	39	0.76	0.34	45	0.64	0.33

Table 8.E.11 Reliabilities and SEMs by Primary Disabilities (Continued)

Content Area	Grade	Visual Impairment			Emotional Disturbance			Orthopedic Impairment		
		N	Reliab.	Theta Score SEM	N	Reliab.	Theta Score SEM	N	Reliab.	Theta Score SEM
ELA	3	12	0.87	0.40	20	0.87	0.49	146	0.92	0.45
	4	14	0.85	0.38	23	0.83	0.40	157	0.89	0.39
	5	20	0.86	0.37	24	0.74	0.38	164	0.85	0.42
	6	14	0.88	0.36	30	0.74	0.36	148	0.88	0.36
	7	24	0.85	0.60	30	0.87	0.41	130	0.87	0.41
	8	20	0.92	0.39	28	0.90	0.38	159	0.86	0.35
	11	22	0.77	0.35	48	0.86	0.38	181	0.86	0.38
Mathematics	3	11	0.80	0.39	20	0.60	0.34	139	0.59	0.71
	4	14	0.79	0.33	23	0.83	0.34	146	0.82	0.37
	5	18	0.84	0.37	25	0.86	0.38	149	0.8	0.35
	6	13	0.76	0.32	29	0.85	0.34	143	0.81	0.37
	7	21	0.81	0.34	31	0.76	0.32	129	0.79	0.48
	8	17	0.59	1.05	28	0.84	0.34	154	0.81	0.35
	11	18	0.84	0.36	48	0.84	0.37	169	0.77	0.35

Table 8.E.12 Reliabilities and SEMs by Primary Disabilities (Continued)

Content Area	Grade	Other Health Impairment			Specific Learning Disability			Deaf-Blindness		
		N	Reliab.	Theta Score SEM	N	Reliab.	Theta Score SEM	N	Reliab.	Theta Score SEM
ELA	3	241	0.89	0.42	306	0.71	0.62	0	–	–
	4	246	0.80	0.42	407	0.75	0.45	1	–	–
	5	233	0.84	0.38	369	0.73	0.39	1	–	–
	6	238	0.82	0.36	340	0.73	0.37	1	–	–
	7	205	0.81	0.37	315	0.77	0.37	3	–	–
	8	190	0.86	0.36	259	0.77	0.36	0	–	–
	11	140	0.80	0.36	292	0.76	0.36	3	–	–
Mathematics	3	235	0.70	0.45	306	0.75	0.37	0	–	–
	4	244	0.79	0.38	406	0.74	0.33	1	–	–
	5	229	0.74	0.43	368	0.77	0.37	1	–	–
	6	238	0.82	0.35	338	0.84	0.37	1	–	–
	7	203	0.83	0.33	313	0.78	0.33	3	–	–
	8	182	0.81	0.34	257	0.78	0.33	0	–	–
	11	138	0.81	0.36	294	0.72	0.41	2	–	–

Table 8.E.13 Reliabilities and SEMs by Primary Disabilities (Continued)

Content Area	Grade	Multiple Disabilities			Autism		
		N	Reliab.	Theta Score SEM	N	Reliab.	Theta Score SEM
ELA	3	125	0.90	0.41	1,524	0.89	0.41
	4	130	0.84	0.38	1,489	0.85	0.39
	5	107	0.83	0.46	1,409	0.83	0.38
	6	126	0.82	0.55	1,421	0.85	0.40
	7	147	0.85	0.39	1,415	0.85	0.40
	8	114	0.85	0.35	1,236	0.86	0.36
	11	126	0.85	0.45	1,019	0.84	0.37
Mathematics	3	119	0.67	0.55	1,461	0.78	0.37
	4	127	0.75	0.50	1,501	0.78	0.43
	5	97	0.83	0.41	1,342	0.79	0.37
	6	110	0.79	0.36	1,373	0.73	0.48
	7	138	0.77	0.48	1,403	0.82	0.41
	8	109	0.73	0.52	1,229	0.76	0.45
	11	118	0.83	0.39	1,006	0.80	0.43

Table 8.E.14 Reliabilities and SEMs by Primary Disabilities (Continued)

Content Area	Grade	Traumatic Brain Injury			Not Classified ¹⁴		
		N	Reliab.	Theta Score SEM	N	Reliab.	Theta Score SEM
ELA	3	15	0.90	0.40	46	0.89	0.38
	4	24	0.76	0.76	46	0.77	0.35
	5	22	0.79	0.36	40	0.82	0.36
	6	19	0.79	0.36	41	0.70	0.34
	7	19	0.87	0.39	22	0.89	0.42
	8	22	0.70	0.33	31	0.89	0.37
	11	24	0.86	0.37	13	0.83	0.78
Mathematics	3	15	0.76	0.36	42	0.76	0.37
	4	22	0.87	0.40	46	0.77	0.35
	5	22	0.84	0.37	38	0.74	0.34
	6	18	0.81	0.34	44	0.75	0.33
	7	17	0.77	0.31	22	0.87	0.38
	8	21	0.61	0.32	32	0.76	0.41
	11	23	0.80	0.35	6	0.81	0.38

¹⁴ Disability information was changed or removed after student testing.

Note: In Table 8.E.15 through Table 8.E.56, the pathway indicates the set of modules a given student received.

Pathway	Combination of Modules	Form ID
Easy	Stage 1 (as router) and Stage 2 Easy Module	R1A0E,R1ABE, R2A0E, R2ABE
Moderate	Stage 1 (as router) and Stage 2 Moderate Module	R1ABM, R2ABM
Hard	Stage 1 (as router) and Stage 2 Hard Module	R1ABH, R2ABH

Table 8.E.15 Scale Score Conversion Tables with CSEMs for ELA, Grade Three—Easy Pathway (Forms R1A0E, R1ABE, R2A0E, and R2ABE)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	SS CSEM	Theta	Theta CSEM	Scale Score	SS CSEM
0	-6.0000	2.1884	303	33	-6.0000	1.8633	303	28
1	-4.3998	1.0274	303	15	-4.7204	1.0396	303	16
2	-3.6514	0.7440	303	11	-3.9473	0.7601	303	11
3	-3.1934	0.6199	303	9	-3.4655	0.6383	303	10
4	-2.8558	0.5462	305	8	-3.1052	0.5662	303	8
5	-2.5852	0.4961	309	7	-2.8130	0.5169	306	8
6	-2.3575	0.4594	313	7	-2.5648	0.4805	310	7
7	-2.1594	0.4314	316	6	-2.3475	0.4524	313	7
8	-1.9828	0.4095	318	6	-2.1529	0.4303	316	6
9	-1.8223	0.3921	321	6	-1.9754	0.4127	318	6
10	-1.6740	0.3782	323	6	-1.8108	0.3988	321	6
11	-1.5352	0.3670	325	6	-1.6561	0.3879	323	6
12	-1.4038	0.3580	327	5	-1.5089	0.3795	325	6
13	-1.2782	0.3507	329	5	-1.3674	0.3729	327	6
14	-1.1572	0.3449	331	5	-1.2302	0.3679	330	6
15	-1.0398	0.3404	332	5	-1.0961	0.3641	332	5
16	-0.9251	0.3369	334	5	-0.9646	0.3612	334	5
17	-0.8123	0.3345	336	5	-0.8349	0.3589	335	5
18	-0.7009	0.3331	337	5	-0.7067	0.3571	337	5
19	-0.5900	0.3326	339	5	-0.5795	0.3559	339	5
20	-0.4792	0.3331	341	5	-0.4530	0.3552	341	5
21	-0.3678	0.3345	342	5	-0.3268	0.3551	343	5
22	-0.2551	0.3369	344	5	-0.2004	0.3558	345	5
23	-0.1404	0.3403	346	5	-0.0733	0.3573	347	5
24	-0.0230	0.3448	348	5	0.0554	0.3600	349	5
25	0.0978	0.3505	349	5	0.1864	0.3638	351	5
26	0.2232	0.3575	351	5	0.3207	0.3692	353	6
27	0.3541	0.3662	353	5	0.4596	0.3762	355	6
28	0.4921	0.3768	355	6	0.6045	0.3853	357	6
29	0.6390	0.3899	358	6	0.7575	0.3970	359	6
30	0.7973	0.4061	360	6	0.9209	0.4119	362	6
31	0.9705	0.4265	363	6	1.0984	0.4311	364	6
32	1.1635	0.4528	365	7	1.2949	0.4562	367	7
33	1.3841	0.4878	369	7	1.5182	0.4901	371	7
34	1.6454	0.5366	373	8	1.7813	0.5379	375	8
35	1.9714	0.6098	378	9	2.1083	0.6101	380	9
36	2.4164	0.7348	384	11	2.5530	0.7342	386	11
37	3.1510	1.0208	395	15	3.2861	1.0196	397	15
38	6.0000	4.0752	399	61	6.0000	3.8157	399	57

Table 8.E.16 Scale Score Conversion Tables with CSEMs for ELA, Grade Three—Moderate Pathway (Forms R1ABM and R2ABM)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	SS CSEM	Theta	Theta CSEM	Scale Score	SS CSEM
0	-6.0000	2.3466	303	35	-6.0000	1.9581	303	29
1	-4.2479	1.0344	303	16	-4.6088	1.0476	303	16
2	-3.4849	0.7538	303	11	-3.8187	0.7714	303	12
3	-3.0122	0.6315	303	9	-3.3192	0.6523	303	10
4	-2.6603	0.5589	308	8	-2.9407	0.5822	304	9
5	-2.3762	0.5092	312	8	-2.6300	0.5345	309	8
6	-2.1360	0.4721	316	7	-2.3634	0.4991	313	7
7	-1.9269	0.4429	319	7	-2.1282	0.4714	316	7
8	-1.7412	0.4193	322	6	-1.9166	0.4488	319	7
9	-1.5736	0.3997	324	6	-1.7236	0.4299	322	6
10	-1.4203	0.3835	327	6	-1.5456	0.4139	325	6
11	-1.2785	0.3699	329	6	-1.3800	0.4000	327	6
12	-1.1458	0.3586	331	5	-1.2247	0.3881	330	6
13	-1.0205	0.3494	333	5	-1.0780	0.3778	332	6
14	-0.9010	0.3419	334	5	-0.9385	0.3690	334	6
15	-0.7861	0.3361	336	5	-0.8050	0.3616	336	5
16	-0.6745	0.3318	338	5	-0.6764	0.3555	338	5
17	-0.5654	0.3288	340	5	-0.5517	0.3507	340	5
18	-0.4578	0.3271	341	5	-0.4300	0.3470	342	5
19	-0.3510	0.3266	343	5	-0.3104	0.3447	343	5
20	-0.2441	0.3272	344	5	-0.1919	0.3435	345	5
21	-0.1364	0.3290	346	5	-0.0739	0.3436	347	5
22	-0.0272	0.3319	348	5	0.0446	0.3450	349	5
23	0.0844	0.3361	349	5	0.1646	0.3477	350	5
24	0.1992	0.3416	351	5	0.2870	0.3519	352	5
25	0.3182	0.3485	353	5	0.4129	0.3577	354	5
26	0.4427	0.3572	355	5	0.5436	0.3653	356	5
27	0.5741	0.3679	357	6	0.6806	0.3750	358	6
28	0.7143	0.3811	359	6	0.8258	0.3873	360	6
29	0.8658	0.3975	361	6	0.9818	0.4028	363	6
30	1.0319	0.4181	363	6	1.1519	0.4226	365	6
31	1.2178	0.4447	366	7	1.3412	0.4483	368	7
32	1.4310	0.4800	369	7	1.5575	0.4828	371	7
33	1.6844	0.5291	373	8	1.8134	0.5312	375	8
34	2.0022	0.6026	378	9	2.1331	0.6040	380	9
35	2.4380	0.7283	385	11	2.5702	0.7288	387	11
36	3.1626	1.0156	395	15	3.2952	1.0155	397	15
37	6.0000	4.0712	399	61	6.0000	3.8125	399	57

Table 8.E.17 Scale Score Conversion Tables with CSEMs for ELA, Grade Three—Hard Pathway (Forms R1ABH and R2ABH)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	2.3318	303	35	-6.0000	1.9495	303	29
1	-4.2618	1.0337	303	16	-4.6189	1.0469	303	16
2	-3.5004	0.7527	303	11	-3.8304	0.7703	303	12
3	-3.0293	0.6302	303	9	-3.3328	0.6508	303	10
4	-2.6791	0.5574	308	8	-2.9563	0.5804	304	9
5	-2.3967	0.5074	312	8	-2.6477	0.5324	308	8
6	-2.1582	0.4702	316	7	-2.3834	0.4968	312	7
7	-1.9509	0.4410	319	7	-2.1505	0.4688	316	7
8	-1.7670	0.4172	321	6	-1.9415	0.4460	319	7
9	-1.6010	0.3976	324	6	-1.7511	0.4269	322	6
10	-1.4494	0.3813	326	6	-1.5757	0.4107	324	6
11	-1.3092	0.3676	328	6	-1.4127	0.3967	327	6
12	-1.1783	0.3562	330	5	-1.2601	0.3847	329	6
13	-1.0548	0.3467	332	5	-1.1160	0.3743	331	6
14	-0.9373	0.3389	334	5	-0.9793	0.3652	333	5
15	-0.8246	0.3326	336	5	-0.8487	0.3574	335	5
16	-0.7156	0.3277	337	5	-0.7233	0.3508	337	5
17	-0.6094	0.3239	339	5	-0.6021	0.3452	339	5
18	-0.5053	0.3213	340	5	-0.4845	0.3407	341	5
19	-0.4025	0.3197	342	5	-0.3695	0.3372	342	5
20	-0.3005	0.3190	343	5	-0.2567	0.3346	344	5
21	-0.1986	0.3192	345	5	-0.1452	0.3331	346	5
22	-0.0963	0.3204	347	5	-0.0344	0.3326	347	5
23	0.0070	0.3224	348	5	0.0764	0.3331	349	5
24	0.1119	0.3254	350	5	0.1879	0.3348	351	5
25	0.2192	0.3294	351	5	0.3010	0.3376	353	5
26	0.3294	0.3346	353	5	0.4163	0.3417	354	5
27	0.4435	0.3410	355	5	0.5349	0.3471	356	5
28	0.5625	0.3488	356	5	0.6578	0.3540	358	5
29	0.6875	0.3583	358	5	0.7862	0.3626	360	5
30	0.8200	0.3698	360	6	0.9216	0.3732	362	6
31	0.9618	0.3837	362	6	1.0658	0.3863	364	6
32	1.1155	0.4006	365	6	1.2212	0.4024	366	6
33	1.2844	0.4216	367	6	1.3912	0.4226	369	6
34	1.4732	0.4482	370	7	1.5806	0.4485	372	7
35	1.6894	0.4830	373	7	1.7969	0.4828	375	7
36	1.9456	0.5312	377	8	2.0526	0.5306	379	8
37	2.2649	0.6033	382	9	2.3713	0.6026	384	9
38	2.7005	0.7272	389	11	2.8060	0.7265	390	11
39	3.4218	1.0130	399	15	3.5263	1.0126	399	15
40	6.0000	3.5894	399	54	6.0000	3.4083	399	51

Table 8.E.18 Scale Score Conversion Tables with CSEMs for ELA, Grade Four—Easy Pathway (Forms R1A0E, R1ABE, R2A0E, and R2ABE)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	2.3993	403	36	-6.0000	2.4555	403	37
1	-4.2050	1.0325	403	15	-4.1530	1.0358	403	16
2	-3.4460	0.7513	403	11	-3.3880	0.7549	403	11
3	-2.9770	0.6288	403	9	-2.9140	0.6317	403	9
4	-2.6280	0.5562	406	8	-2.5620	0.5580	407	8
5	-2.3470	0.5065	410	8	-2.2800	0.5073	411	8
6	-2.1090	0.4696	413	7	-2.0420	0.4692	414	7
7	-1.9020	0.4406	416	7	-1.8360	0.4393	417	7
8	-1.7180	0.4171	419	6	-1.6540	0.4150	420	6
9	-1.5530	0.3978	422	6	-1.4900	0.3951	423	6
10	-1.4010	0.3816	424	6	-1.3400	0.3785	425	6
11	-1.2600	0.3679	426	6	-1.2020	0.3647	427	5
12	-1.1290	0.3566	428	5	-1.0730	0.3533	429	5
13	-1.0050	0.3471	430	5	-0.9520	0.3440	431	5
14	-0.8880	0.3393	432	5	-0.8360	0.3364	432	5
15	-0.7750	0.3329	433	5	-0.7250	0.3304	434	5
16	-0.6650	0.3278	435	5	-0.6170	0.3258	436	5
17	-0.5590	0.3240	437	5	-0.5120	0.3225	437	5
18	-0.4550	0.3213	438	5	-0.4090	0.3203	439	5
19	-0.3520	0.3196	440	5	-0.3060	0.3193	440	5
20	-0.2500	0.3188	441	5	-0.2040	0.3193	442	5
21	-0.1490	0.3189	443	5	-0.1020	0.3204	443	5
22	-0.0470	0.3200	444	5	0.0010	0.3225	445	5
23	0.0560	0.3220	446	5	0.1060	0.3257	447	5
24	0.1610	0.3251	447	5	0.2140	0.3300	448	5
25	0.2680	0.3292	449	5	0.3250	0.3354	450	5
26	0.3780	0.3346	451	5	0.4390	0.3422	452	5
27	0.4930	0.3416	452	5	0.5590	0.3504	453	5
28	0.6120	0.3503	454	5	0.6860	0.3604	455	5
29	0.7390	0.3612	456	5	0.8200	0.3723	457	6
30	0.8740	0.3749	458	6	0.9640	0.3867	459	6
31	1.0210	0.3921	460	6	1.1200	0.4043	462	6
32	1.1840	0.4140	463	6	1.2920	0.4259	464	6
33	1.3660	0.4419	465	7	1.4850	0.4533	467	7
34	1.5780	0.4790	469	7	1.7070	0.4891	471	7
35	1.8310	0.5298	472	8	1.9700	0.5382	475	8
36	2.1510	0.6049	477	9	2.2970	0.6110	479	9
37	2.5900	0.7311	484	11	2.7430	0.7350	486	11
38	3.3190	1.0178	495	15	3.4770	1.0197	497	15
39	6.0000	3.7573	499	56	6.0000	3.4692	499	52

**Table 8.E.19 Scale Score Conversion Tables with CSEMs for ELA, Grade Four—Moderate Pathway
(Forms R1ABM and R2ABM)**

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	2.3302	403	35	-6.0000	2.3815	403	36
1	-4.2620	1.0356	403	16	-4.2120	1.0388	403	16
2	-3.4960	0.7561	403	11	-3.4400	0.7603	403	11
3	-3.0190	0.6352	403	10	-2.9570	0.6390	403	10
4	-2.6620	0.5640	405	8	-2.5960	0.5670	406	9
5	-2.3720	0.5153	409	8	-2.3030	0.5170	410	8
6	-2.1250	0.4789	413	7	-2.0560	0.4793	414	7
7	-1.9100	0.4501	416	7	-1.8400	0.4491	417	7
8	-1.7180	0.4265	419	6	-1.6500	0.4245	420	6
9	-1.5440	0.4066	422	6	-1.4780	0.4039	423	6
10	-1.3860	0.3900	424	6	-1.3220	0.3867	425	6
11	-1.2390	0.3758	426	6	-1.1780	0.3723	427	6
12	-1.1020	0.3638	428	5	-1.0440	0.3603	429	5
13	-0.9730	0.3539	430	5	-0.9180	0.3505	431	5
14	-0.8510	0.3456	432	5	-0.7970	0.3425	433	5
15	-0.7340	0.3390	434	5	-0.6820	0.3363	435	5
16	-0.6210	0.3337	436	5	-0.5710	0.3316	436	5
17	-0.5110	0.3298	437	5	-0.4620	0.3282	438	5
18	-0.4030	0.3270	439	5	-0.3550	0.3262	440	5
19	-0.2960	0.3253	441	5	-0.2490	0.3253	441	5
20	-0.1910	0.3247	442	5	-0.1430	0.3256	443	5
21	-0.0850	0.3251	444	5	-0.0360	0.3271	444	5
22	0.0210	0.3265	445	5	0.0720	0.3298	446	5
23	0.1280	0.3290	447	5	0.1820	0.3336	448	5
24	0.2380	0.3328	449	5	0.2950	0.3388	449	5
25	0.3500	0.3378	450	5	0.4120	0.3453	451	5
26	0.4670	0.3445	452	5	0.5340	0.3533	453	5
27	0.5880	0.3530	454	5	0.6620	0.3631	455	5
28	0.7170	0.3638	456	5	0.7980	0.3750	457	6
29	0.8540	0.3773	458	6	0.9440	0.3894	459	6
30	1.0030	0.3945	460	6	1.1030	0.4069	462	6
31	1.1670	0.4163	463	6	1.2770	0.4285	464	6
32	1.3520	0.4444	465	7	1.4720	0.4558	467	7
33	1.5650	0.4813	468	7	1.6960	0.4914	470	7
34	1.8210	0.5321	472	8	1.9610	0.5403	474	8
35	2.1430	0.6070	477	9	2.2910	0.6129	479	9
36	2.5850	0.7330	484	11	2.7400	0.7368	486	11
37	3.3170	1.0193	495	15	3.4760	1.0210	497	15
38	6.0000	3.7570	499	56	6.0000	3.4689	499	52

Table 8.E.20 Scale Score Conversion Tables with CSEMs for ELA, Grade Four—Hard Pathway (Forms R1ABH and R2ABH)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	2.5110	403	38	-6.0000	2.5756	403	39
1	-4.1040	1.0379	403	16	-4.0460	1.0423	403	16
2	-3.3340	0.7586	403	11	-3.2680	0.7631	403	11
3	-2.8540	0.6367	403	10	-2.7820	0.6401	403	10
4	-2.4960	0.5641	408	8	-2.4210	0.5660	409	8
5	-2.2060	0.5138	412	8	-2.1300	0.5139	413	8
6	-1.9620	0.4761	416	7	-1.8870	0.4745	417	7
7	-1.7500	0.4461	419	7	-1.6760	0.4432	420	7
8	-1.5620	0.4216	422	6	-1.4910	0.4178	423	6
9	-1.3920	0.4013	424	6	-1.3250	0.3971	425	6
10	-1.2380	0.3844	426	6	-1.1740	0.3800	427	6
11	-1.0960	0.3704	429	6	-1.0350	0.3660	429	5
12	-0.9630	0.3587	431	5	-0.9050	0.3546	431	5
13	-0.8380	0.3491	432	5	-0.7830	0.3454	433	5
14	-0.7180	0.3411	434	5	-0.6660	0.3379	435	5
15	-0.6040	0.3348	436	5	-0.5540	0.3322	437	5
16	-0.4940	0.3298	438	5	-0.4450	0.3277	438	5
17	-0.3860	0.3259	439	5	-0.3390	0.3246	440	5
18	-0.2810	0.3230	441	5	-0.2340	0.3225	441	5
19	-0.1770	0.3211	442	5	-0.1300	0.3215	443	5
20	-0.0740	0.3201	444	5	-0.0270	0.3214	445	5
21	0.0280	0.3199	445	5	0.0770	0.3222	446	5
22	0.1310	0.3206	447	5	0.1810	0.3239	448	5
23	0.2340	0.3222	449	5	0.2870	0.3266	449	5
24	0.3390	0.3248	450	5	0.3950	0.3302	451	5
25	0.4450	0.3285	452	5	0.5050	0.3349	453	5
26	0.5550	0.3335	453	5	0.6200	0.3408	454	5
27	0.6680	0.3400	455	5	0.7380	0.3480	456	5
28	0.7870	0.3484	457	5	0.8620	0.3569	458	5
29	0.9120	0.3589	459	5	0.9940	0.3679	460	6
30	1.0450	0.3722	461	6	1.1340	0.3813	462	6
31	1.1900	0.3890	463	6	1.2860	0.3981	464	6
32	1.3500	0.4104	465	6	1.4520	0.4191	467	6
33	1.5290	0.4380	468	7	1.6390	0.4462	470	7
34	1.7370	0.4747	471	7	1.8540	0.4820	473	7
35	1.9860	0.5253	475	8	2.1100	0.5316	477	8
36	2.3000	0.6003	480	9	2.4310	0.6053	481	9
37	2.7340	0.7272	486	11	2.8700	0.7305	488	11
38	3.4580	1.0153	497	15	3.5980	1.0171	499	15
39	6.0000	3.5155	499	53	6.0000	3.2761	499	49

Table 8.E.21 Scale Score Conversion Tables with CSEMs for ELA, Grade Five—Easy Pathway (Forms R1A0E, R1ABE, R2A0E, and R2ABE)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	2.4567	503	37	-6.0000	2.6001	503	39
1	-4.1580	1.0314	503	15	-4.0360	1.0347	503	16
2	-3.4010	0.7499	503	11	-3.2750	0.7502	503	11
3	-2.9340	0.6277	503	9	-2.8100	0.6246	503	9
4	-2.5860	0.5556	506	8	-2.4680	0.5495	508	8
5	-2.3050	0.5067	510	8	-2.1940	0.4981	512	7
6	-2.0670	0.4708	514	7	-1.9650	0.4605	516	7
7	-1.8580	0.4428	517	7	-1.7670	0.4317	518	6
8	-1.6720	0.4203	520	6	-1.5900	0.4087	521	6
9	-1.5030	0.4016	522	6	-1.4310	0.3903	524	6
10	-1.3480	0.3861	525	6	-1.2840	0.3751	526	6
11	-1.2040	0.3730	527	6	-1.1480	0.3627	528	5
12	-1.0690	0.3619	529	5	-1.0200	0.3524	530	5
13	-0.9420	0.3526	531	5	-0.8990	0.3440	532	5
14	-0.8200	0.3448	533	5	-0.7830	0.3371	533	5
15	-0.7030	0.3384	534	5	-0.6710	0.3316	535	5
16	-0.5900	0.3334	536	5	-0.5630	0.3274	537	5
17	-0.4810	0.3296	538	5	-0.4570	0.3243	538	5
18	-0.3730	0.3270	539	5	-0.3520	0.3223	540	5
19	-0.2660	0.3255	541	5	-0.2480	0.3214	541	5
20	-0.1610	0.3251	543	5	-0.1450	0.3215	543	5
21	-0.0550	0.3258	544	5	-0.0410	0.3227	544	5
22	0.0520	0.3277	546	5	0.0640	0.3250	546	5
23	0.1610	0.3308	547	5	0.1700	0.3284	548	5
24	0.2710	0.3350	549	5	0.2800	0.3330	549	5
25	0.3860	0.3406	551	5	0.3930	0.3389	551	5
26	0.5040	0.3475	553	5	0.5100	0.3462	553	5
27	0.6280	0.3562	554	5	0.6330	0.3551	554	5
28	0.7580	0.3667	556	6	0.7630	0.3659	556	5
29	0.8980	0.3797	558	6	0.9010	0.3789	559	6
30	1.0480	0.3957	561	6	1.0510	0.3951	561	6
31	1.2120	0.4157	563	6	1.2150	0.4152	563	6
32	1.3960	0.4416	566	7	1.3980	0.4410	566	7
33	1.6050	0.4759	569	7	1.6070	0.4753	569	7
34	1.8540	0.5240	573	8	1.8560	0.5236	573	8
35	2.1660	0.5967	577	9	2.1670	0.5963	578	9
36	2.5940	0.7218	584	11	2.5940	0.7214	584	11
37	3.3070	1.0092	595	15	3.3070	1.0092	595	15
38	6.0000	3.8124	599	57	6.0000	3.8120	599	57

Table 8.E.22 Scale Score Conversion Tables with CSEMs for ELA, Grade Five—Moderate Pathway (Forms R1ABM and R2ABM)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	2.2080	503	33	-6.0000	2.3104	503	35
1	-4.3670	1.0396	503	16	-4.2660	1.0452	503	16
2	-3.5920	0.7630	503	11	-3.4810	0.7681	503	12
3	-3.1040	0.6446	503	10	-2.9870	0.6474	503	10
4	-2.7340	0.5756	504	9	-2.6160	0.5753	506	9
5	-2.4300	0.5291	509	8	-2.3140	0.5251	510	8
6	-2.1690	0.4946	512	7	-2.0580	0.4872	514	7
7	-1.9380	0.4671	516	7	-1.8360	0.4571	517	7
8	-1.7300	0.4441	519	7	-1.6380	0.4325	520	6
9	-1.5420	0.4245	522	6	-1.4600	0.4120	523	6
10	-1.3690	0.4073	524	6	-1.2970	0.3947	526	6
11	-1.2090	0.3922	527	6	-1.1470	0.3802	528	6
12	-1.0600	0.3789	529	6	-1.0070	0.3678	530	6
13	-0.9210	0.3675	531	6	-0.8760	0.3575	532	5
14	-0.7890	0.3576	533	5	-0.7510	0.3488	534	5
15	-0.6640	0.3494	535	5	-0.6320	0.3417	536	5
16	-0.5450	0.3427	537	5	-0.5170	0.3361	537	5
17	-0.4290	0.3375	539	5	-0.4050	0.3317	539	5
18	-0.3160	0.3337	540	5	-0.2960	0.3287	541	5
19	-0.2060	0.3312	542	5	-0.1890	0.3270	542	5
20	-0.0970	0.3301	544	5	-0.0820	0.3264	544	5
21	0.0120	0.3302	545	5	0.0250	0.3271	545	5
22	0.1220	0.3316	547	5	0.1320	0.3290	547	5
23	0.2330	0.3343	548	5	0.2420	0.3321	549	5
24	0.3460	0.3383	550	5	0.3530	0.3364	550	5
25	0.4620	0.3436	552	5	0.4680	0.3420	552	5
26	0.5830	0.3504	554	5	0.5880	0.3492	554	5
27	0.7080	0.3589	556	5	0.7130	0.3579	556	5
28	0.8410	0.3693	558	6	0.8450	0.3686	558	6
29	0.9820	0.3822	560	6	0.9850	0.3815	560	6
30	1.1340	0.3981	562	6	1.1370	0.3976	562	6
31	1.3010	0.4183	565	6	1.3030	0.4177	565	6
32	1.4860	0.4441	567	7	1.4880	0.4436	567	7
33	1.6990	0.4787	570	7	1.7000	0.4781	571	7
34	1.9500	0.5268	574	8	1.9510	0.5263	574	8
35	2.2650	0.5995	579	9	2.2660	0.5992	579	9
36	2.6960	0.7243	585	11	2.6960	0.7240	585	11
37	3.4140	1.0115	596	15	3.4140	1.0115	596	15
38	6.0000	3.6071	599	54	6.0000	3.6068	599	54

Table 8.E.23 Scale Score Conversion Tables with CSEMs for ELA, Grade Five—Hard Pathway (Forms R1ABH and R2ABH)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	2.6035	503	39	-6.0000	2.7761	503	42
1	-4.0280	1.0399	503	16	-3.8860	1.0446	503	16
2	-3.2530	0.7614	503	11	-3.1060	0.7619	503	11
3	-2.7690	0.6413	503	10	-2.6240	0.6364	506	10
4	-2.4040	0.5703	509	9	-2.2680	0.5609	511	8
5	-2.1070	0.5218	513	8	-1.9830	0.5090	515	8
6	-1.8540	0.4855	517	7	-1.7440	0.4707	519	7
7	-1.6320	0.4565	521	7	-1.5360	0.4408	522	7
8	-1.4350	0.4326	523	6	-1.3530	0.4172	525	6
9	-1.2560	0.4122	526	6	-1.1870	0.3977	527	6
10	-1.0930	0.3948	529	6	-1.0350	0.3816	529	6
11	-0.9430	0.3798	531	6	-0.8940	0.3681	532	6
12	-0.8040	0.3670	533	6	-0.7630	0.3569	534	5
13	-0.6730	0.3562	535	5	-0.6390	0.3475	535	5
14	-0.5490	0.3471	537	5	-0.5210	0.3398	537	5
15	-0.4310	0.3398	539	5	-0.4070	0.3336	539	5
16	-0.3180	0.3341	540	5	-0.2980	0.3288	541	5
17	-0.2080	0.3298	542	5	-0.1910	0.3254	542	5
18	-0.1000	0.3270	544	5	-0.0860	0.3233	544	5
19	0.0070	0.3256	545	5	0.0190	0.3224	545	5
20	0.1130	0.3255	547	5	0.1230	0.3228	547	5
21	0.2190	0.3267	548	5	0.2270	0.3244	548	5
22	0.3260	0.3292	550	5	0.3340	0.3274	550	5
23	0.4360	0.3332	552	5	0.4420	0.3317	552	5
24	0.5490	0.3386	553	5	0.5540	0.3374	553	5
25	0.6660	0.3456	555	5	0.6710	0.3447	555	5
26	0.7890	0.3545	557	5	0.7920	0.3537	557	5
27	0.9180	0.3655	559	5	0.9220	0.3650	559	5
28	1.0570	0.3792	561	6	1.0600	0.3787	561	6
29	1.2070	0.3962	563	6	1.2100	0.3958	563	6
30	1.3720	0.4175	566	6	1.3750	0.4171	566	6
31	1.5580	0.4449	568	7	1.5600	0.4444	568	7
32	1.7720	0.4811	572	7	1.7730	0.4805	572	7
33	2.0270	0.5311	575	8	2.0280	0.5307	575	8
34	2.3470	0.6055	580	9	2.3480	0.6053	580	9
35	2.7880	0.7321	587	11	2.7880	0.7319	587	11
36	3.5190	1.0195	598	15	3.5190	1.0195	598	15
37	6.0000	3.3980	599	51	6.0000	3.3978	599	51

Table 8.E.24 Scale Score Conversion Tables with CSEMs for ELA, Grade Six—Easy Pathway (Forms R1A0E, R1ABE, R2A0E, and R2ABE)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	2.5317	603	32	-6.0000	3.1259	603	39
1	-4.1100	1.0219	603	13	-3.7130	1.0039	603	13
2	-3.3740	0.7348	603	9	-3.0120	0.7118	607	9
3	-2.9300	0.6075	608	8	-2.6000	0.5834	613	7
4	-2.6080	0.5313	612	7	-2.3040	0.5082	616	6
5	-2.3540	0.4796	616	6	-2.0720	0.4587	619	6
6	-2.1420	0.4418	618	6	-1.8780	0.4236	622	5
7	-1.9600	0.4134	621	5	-1.7090	0.3978	624	5
8	-1.7980	0.3914	623	5	-1.5590	0.3785	626	5
9	-1.6520	0.3742	624	5	-1.4210	0.3637	627	5
10	-1.5170	0.3608	626	5	-1.2930	0.3522	629	4
11	-1.3900	0.3502	628	4	-1.1720	0.3434	630	4
12	-1.2700	0.3422	629	4	-1.0570	0.3366	632	4
13	-1.1550	0.3361	631	4	-0.9450	0.3313	633	4
14	-1.0440	0.3319	632	4	-0.8370	0.3274	635	4
15	-0.9350	0.3291	633	4	-0.7300	0.3246	636	4
16	-0.8270	0.3276	635	4	-0.6250	0.3226	637	4
17	-0.7200	0.3273	636	4	-0.5220	0.3214	638	4
18	-0.6120	0.3281	637	4	-0.4190	0.3208	640	4
19	-0.5040	0.3299	639	4	-0.3160	0.3208	641	4
20	-0.3940	0.3325	640	4	-0.2130	0.3214	642	4
21	-0.2820	0.3359	641	4	-0.1090	0.3226	644	4
22	-0.1680	0.3399	643	4	-0.0040	0.3244	645	4
23	-0.0510	0.3445	644	4	0.1020	0.3269	646	4
24	0.0700	0.3497	646	4	0.2100	0.3301	648	4
25	0.1940	0.3553	647	4	0.3200	0.3342	649	4
26	0.3220	0.3615	649	5	0.4340	0.3392	650	4
27	0.4560	0.3683	651	5	0.5510	0.3454	652	4
28	0.5940	0.3759	652	5	0.6730	0.3528	653	4
29	0.7390	0.3847	654	5	0.8000	0.3618	655	5
30	0.8910	0.3949	656	5	0.9350	0.3727	657	5
31	1.0520	0.4072	658	5	1.0790	0.3860	658	5
32	1.2240	0.4223	660	5	1.2350	0.4025	660	5
33	1.4100	0.4414	663	6	1.4050	0.4230	663	5
34	1.6150	0.4661	665	6	1.5940	0.4491	665	6
35	1.8480	0.4993	668	6	1.8120	0.4841	668	6
36	2.1200	0.5460	672	7	2.0690	0.5324	671	7
37	2.4550	0.6166	676	8	2.3900	0.6050	675	8
38	2.9080	0.7390	681	9	2.8280	0.7293	680	9
39	3.6470	1.0221	691	13	3.5530	1.0152	689	13
40	6.0000	3.1843	699	40	6.0000	3.3547	699	42

**Table 8.E.25 Scale Score Conversion Tables with CSEMs for ELA, Grade Six—Moderate Pathway
(Forms R1ABM and R2ABM)**

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	2.7372	603	34	-6.0000	3.5402	603	44
1	-3.9420	1.0273	603	13	-3.4680	1.0007	603	13
2	-3.1960	0.7410	605	9	-2.7730	0.7084	610	9
3	-2.7440	0.6135	611	8	-2.3640	0.5813	615	7
4	-2.4160	0.5374	615	7	-2.0700	0.5085	619	6
5	-2.1550	0.4859	618	6	-1.8360	0.4615	622	6
6	-1.9370	0.4491	621	6	-1.6380	0.4291	625	5
7	-1.7480	0.4220	623	5	-1.4640	0.4057	627	5
8	-1.5780	0.4016	625	5	-1.3070	0.3883	629	5
9	-1.4230	0.3861	627	5	-1.1610	0.3748	630	5
10	-1.2790	0.3745	629	5	-1.0250	0.3641	632	5
11	-1.1420	0.3655	631	5	-0.8950	0.3553	634	4
12	-1.0110	0.3587	632	4	-0.7720	0.3479	635	4
13	-0.8840	0.3536	634	4	-0.6530	0.3416	637	4
14	-0.7600	0.3498	636	4	-0.5380	0.3361	638	4
15	-0.6390	0.3469	637	4	-0.4270	0.3314	640	4
16	-0.5190	0.3447	639	4	-0.3180	0.3274	641	4
17	-0.4010	0.3431	640	4	-0.2120	0.3241	642	4
18	-0.2840	0.3419	641	4	-0.1080	0.3215	644	4
19	-0.1670	0.3412	643	4	-0.0050	0.3198	645	4
20	-0.0500	0.3409	644	4	0.0970	0.3188	646	4
21	0.0660	0.3410	646	4	0.1990	0.3187	647	4
22	0.1820	0.3417	647	4	0.3010	0.3196	649	4
23	0.3000	0.3432	649	4	0.4040	0.3215	650	4
24	0.4180	0.3455	650	4	0.5080	0.3244	651	4
25	0.5390	0.3488	652	4	0.6140	0.3285	653	4
26	0.6620	0.3534	653	4	0.7240	0.3339	654	4
27	0.7890	0.3595	655	4	0.8380	0.3409	655	4
28	0.9210	0.3673	657	5	0.9570	0.3496	657	4
29	1.0600	0.3773	658	5	1.0830	0.3604	659	5
30	1.2070	0.3898	660	5	1.2180	0.3738	660	5
31	1.3650	0.4057	662	5	1.3640	0.3905	662	5
32	1.5380	0.4260	664	5	1.5240	0.4115	664	5
33	1.7300	0.4521	667	6	1.7050	0.4386	666	5
34	1.9500	0.4870	669	6	1.9120	0.4742	669	6
35	2.2100	0.5354	673	7	2.1600	0.5237	672	7
36	2.5350	0.6082	677	8	2.4720	0.5975	676	7
37	2.9770	0.7323	682	9	2.9020	0.7235	681	9
38	3.7070	1.0177	691	13	3.6190	1.0114	690	13
39	6.0000	3.1007	699	39	6.0000	3.2574	699	41

Table 8.E.26 Scale Score Conversion Tables with CSEMs for ELA, Grade Six—Hard Pathway (Forms R1ABH and R2ABH)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	2.6023	603	33	-6.0000	3.2619	603	41
1	-4.0430	1.0292	603	13	-3.6090	1.0136	603	13
2	-3.2920	0.7448	604	9	-2.8910	0.7227	609	9
3	-2.8340	0.6191	610	8	-2.4640	0.5946	614	7
4	-2.4980	0.5438	614	7	-2.1560	0.5204	618	7
5	-2.2310	0.4929	617	6	-1.9110	0.4721	621	6
6	-2.0060	0.4560	620	6	-1.7040	0.4387	624	5
7	-1.8110	0.4289	622	5	-1.5220	0.4148	626	5
8	-1.6360	0.4085	625	5	-1.3580	0.3974	628	5
9	-1.4750	0.3931	627	5	-1.2050	0.3841	630	5
10	-1.3250	0.3817	628	5	-1.0610	0.3739	632	5
11	-1.1830	0.3734	630	5	-0.9250	0.3659	633	5
12	-1.0460	0.3674	632	5	-0.7930	0.3592	635	4
13	-0.9120	0.3633	634	5	-0.6660	0.3537	637	4
14	-0.7810	0.3607	635	5	-0.5420	0.3489	638	4
15	-0.6510	0.3593	637	4	-0.4220	0.3448	640	4
16	-0.5230	0.3587	638	4	-0.3040	0.3413	641	4
17	-0.3940	0.3585	640	4	-0.1890	0.3383	643	4
18	-0.2650	0.3587	642	4	-0.0750	0.3359	644	4
19	-0.1360	0.3590	643	4	0.0370	0.3342	645	4
20	-0.0070	0.3592	645	4	0.1480	0.3330	647	4
21	0.1220	0.3593	647	4	0.2590	0.3326	648	4
22	0.2510	0.3594	648	4	0.3700	0.3328	650	4
23	0.3800	0.3596	650	4	0.4810	0.3338	651	4
24	0.5100	0.3600	651	4	0.5930	0.3355	652	4
25	0.6400	0.3609	653	5	0.7070	0.3382	654	4
26	0.7710	0.3627	655	5	0.8220	0.3418	655	4
27	0.9030	0.3655	656	5	0.9410	0.3465	657	4
28	1.0390	0.3697	658	5	1.0630	0.3526	658	4
29	1.1770	0.3756	660	5	1.1900	0.3603	660	5
30	1.3210	0.3837	662	5	1.3230	0.3700	662	5
31	1.4730	0.3946	663	5	1.4650	0.3824	663	5
32	1.6340	0.4089	665	5	1.6170	0.3980	665	5
33	1.8090	0.4278	668	5	1.7830	0.4180	667	5
34	2.0030	0.4530	670	6	1.9690	0.4441	670	6
35	2.2230	0.4870	673	6	2.1810	0.4790	672	6
36	2.4830	0.5349	676	7	2.4340	0.5280	675	7
37	2.8060	0.6072	680	8	2.7500	0.6013	679	8
38	3.2480	0.7317	686	9	3.1840	0.7268	685	9
39	3.9760	1.0171	695	13	3.9060	1.0141	694	13
40	6.0000	2.7145	699	34	6.0000	2.8178	699	35

Table 8.E.27 Scale Score Conversion Tables with CSEMs for ELA, Grade Seven—Easy Pathway (Forms R1A0E, R1ABE, R2A0E, and R2ABE)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	2.7179	703	41	-6.0000	2.2884	703	34
1	-3.9440	1.0364	703	16	-4.2650	1.0603	703	16
2	-3.1780	0.7560	703	11	-3.4520	0.7837	703	12
3	-2.7020	0.6336	704	10	-2.9370	0.6621	703	10
4	-2.3480	0.5614	710	8	-2.5480	0.5888	707	9
5	-2.0610	0.5120	714	8	-2.2320	0.5381	712	8
6	-1.8170	0.4753	718	7	-1.9630	0.4997	716	7
7	-1.6050	0.4468	721	7	-1.7280	0.4690	719	7
8	-1.4160	0.4238	724	6	-1.5200	0.4437	722	7
9	-1.2440	0.4048	726	6	-1.3330	0.4226	725	6
10	-1.0870	0.3890	729	6	-1.1620	0.4045	728	6
11	-0.9410	0.3758	731	6	-1.0040	0.3892	730	6
12	-0.8040	0.3647	733	5	-0.8580	0.3763	732	6
13	-0.6740	0.3556	735	5	-0.7200	0.3655	734	5
14	-0.5500	0.3481	737	5	-0.5900	0.3566	736	5
15	-0.4310	0.3423	739	5	-0.4650	0.3495	738	5
16	-0.3150	0.3378	740	5	-0.3450	0.3439	740	5
17	-0.2020	0.3347	742	5	-0.2280	0.3398	742	5
18	-0.0910	0.3328	744	5	-0.1140	0.3371	743	5
19	0.0200	0.3322	745	5	0.0000	0.3357	745	5
20	0.1300	0.3328	747	5	0.1120	0.3357	747	5
21	0.2420	0.3347	749	5	0.2250	0.3369	748	5
22	0.3550	0.3380	750	5	0.3400	0.3396	750	5
23	0.4710	0.3427	752	5	0.4570	0.3437	752	5
24	0.5900	0.3489	754	5	0.5770	0.3494	754	5
25	0.7150	0.3569	756	5	0.7010	0.3567	756	5
26	0.8460	0.3670	758	6	0.8320	0.3661	757	5
27	0.9850	0.3793	760	6	0.9700	0.3777	760	6
28	1.1350	0.3946	762	6	1.1180	0.3921	762	6
29	1.2980	0.4134	764	6	1.2790	0.4099	764	6
30	1.4780	0.4367	767	7	1.4560	0.4320	767	6
31	1.6820	0.4662	770	7	1.6550	0.4602	770	7
32	1.9170	0.5044	774	8	1.8830	0.4968	773	7
33	2.1970	0.5561	778	8	2.1540	0.5468	777	8
34	2.5470	0.6313	783	9	2.4930	0.6208	782	9
35	3.0210	0.7563	790	11	2.9520	0.7453	789	11
36	3.7910	1.0390	799	16	3.7030	1.0291	799	15
37	6.0000	2.9218	799	44	6.0000	3.0757	799	46

Table 8.E.28 Scale Score Conversion Tables with CSEMs for ELA, Grade Seven—Moderate Pathway (Forms R1ABM and R2ABM)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	2.5365	703	38	-6.0000	2.1769	703	33
1	-4.0790	1.0417	703	16	-4.3740	1.0582	703	16
2	-3.3000	0.7644	703	11	-3.5630	0.7847	703	12
3	-2.8110	0.6451	703	10	-3.0430	0.6668	703	10
4	-2.4410	0.5748	708	9	-2.6460	0.5974	705	9
5	-2.1390	0.5270	713	8	-2.3180	0.5499	710	8
6	-1.8800	0.4913	717	7	-2.0360	0.5140	714	8
7	-1.6520	0.4631	720	7	-1.7860	0.4850	718	7
8	-1.4480	0.4402	723	7	-1.5630	0.4608	722	7
9	-1.2630	0.4210	726	6	-1.3600	0.4398	725	7
10	-1.0930	0.4047	729	6	-1.1740	0.4215	727	6
11	-0.9350	0.3907	731	6	-1.0030	0.4055	730	6
12	-0.7870	0.3788	733	6	-0.8450	0.3917	732	6
13	-0.6470	0.3686	735	6	-0.6960	0.3796	735	6
14	-0.5140	0.3600	737	5	-0.5560	0.3694	737	6
15	-0.3870	0.3529	739	5	-0.4220	0.3608	739	5
16	-0.2650	0.3472	741	5	-0.2950	0.3538	741	5
17	-0.1450	0.3429	743	5	-0.1710	0.3484	742	5
18	-0.0290	0.3400	745	5	-0.0510	0.3444	744	5
19	0.0860	0.3383	746	5	0.0660	0.3419	746	5
20	0.2010	0.3381	748	5	0.1830	0.3408	748	5
21	0.3150	0.3391	750	5	0.2990	0.3412	749	5
22	0.4310	0.3417	751	5	0.4160	0.3431	751	5
23	0.5490	0.3457	753	5	0.5350	0.3465	753	5
24	0.6710	0.3514	755	5	0.6570	0.3516	755	5
25	0.7970	0.3589	757	5	0.7830	0.3585	757	5
26	0.9290	0.3685	759	6	0.9150	0.3674	759	6
27	1.0690	0.3804	761	6	1.0540	0.3786	761	6
28	1.2200	0.3953	763	6	1.2030	0.3926	763	6
29	1.3830	0.4136	766	6	1.3640	0.4100	765	6
30	1.5640	0.4365	768	7	1.5400	0.4316	768	6
31	1.7670	0.4654	772	7	1.7390	0.4594	771	7
32	2.0000	0.5028	775	8	1.9660	0.4956	774	7
33	2.2780	0.5538	779	8	2.2360	0.5453	779	8
34	2.6260	0.6286	784	9	2.5720	0.6187	784	9
35	3.0960	0.7533	791	11	3.0290	0.7432	790	11
36	3.8600	1.0360	799	16	3.7770	1.0275	799	15
37	6.0000	2.8323	799	42	6.0000	2.9718	799	45

Table 8.E.29 Scale Score Conversion Tables with CSEMs for ELA, Grade Seven—Hard Pathway (Forms R1ABH and R2ABH)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	2.8093	703	42	-6.0000	2.3421	703	35
1	-3.8700	1.0401	703	16	-4.2090	1.0659	703	16
2	-3.0960	0.7605	703	11	-3.3850	0.7908	703	12
3	-2.6140	0.6387	706	10	-2.8590	0.6695	703	10
4	-2.2530	0.5665	711	8	-2.4610	0.5965	708	9
5	-1.9610	0.5175	716	8	-2.1360	0.5457	713	8
6	-1.7120	0.4813	719	7	-1.8590	0.5072	717	8
7	-1.4940	0.4532	723	7	-1.6170	0.4766	721	7
8	-1.2990	0.4306	726	6	-1.4020	0.4515	724	7
9	-1.1210	0.4120	728	6	-1.2080	0.4304	727	6
10	-0.9580	0.3966	731	6	-1.0300	0.4125	730	6
11	-0.8060	0.3836	733	6	-0.8660	0.3972	732	6
12	-0.6630	0.3726	735	6	-0.7140	0.3843	734	6
13	-0.5270	0.3634	737	5	-0.5700	0.3733	736	6
14	-0.3980	0.3559	739	5	-0.4340	0.3642	738	5
15	-0.2730	0.3498	741	5	-0.3040	0.3567	740	5
16	-0.1530	0.3452	743	5	-0.1790	0.3508	742	5
17	-0.0350	0.3418	744	5	-0.0570	0.3464	744	5
18	0.0820	0.3398	746	5	0.0620	0.3435	746	5
19	0.1970	0.3391	748	5	0.1790	0.3420	748	5
20	0.3120	0.3397	750	5	0.2960	0.3418	749	5
21	0.4280	0.3416	751	5	0.4130	0.3431	751	5
22	0.5460	0.3448	753	5	0.5320	0.3458	753	5
23	0.6660	0.3496	755	5	0.6530	0.3499	755	5
24	0.7910	0.3559	757	5	0.7770	0.3556	757	5
25	0.9200	0.3638	759	5	0.9070	0.3630	759	5
26	1.0560	0.3737	761	6	1.0420	0.3722	761	6
27	1.2010	0.3859	763	6	1.1840	0.3836	763	6
28	1.3550	0.4006	765	6	1.3370	0.3976	765	6
29	1.5230	0.4186	768	6	1.5020	0.4148	768	6
30	1.7070	0.4408	771	7	1.6830	0.4362	770	7
31	1.9140	0.4688	774	7	1.8850	0.4632	773	7
32	2.1510	0.5052	777	8	2.1150	0.4985	777	7
33	2.4300	0.5545	781	8	2.3880	0.5473	781	8
34	2.7770	0.6274	787	9	2.7260	0.6197	786	9
35	3.2450	0.7507	794	11	3.1830	0.7430	793	11
36	4.0030	1.0324	799	15	3.9290	1.0262	799	15
37	6.0000	2.6476	799	40	6.0000	2.7605	799	41

Table 8.E.30 Scale Score Conversion Tables with CSEMs for ELA, Grade Eight—Easy Pathway (Forms R1A0E, R1ABE, R2A0E, and R2ABE)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	1.8580	803	23	-6.0000	1.9085	803	24
1	-4.7350	1.0299	803	13	-4.6780	1.0317	803	13
2	-3.9800	0.7498	803	9	-3.9190	0.7518	803	9
3	-3.5110	0.6295	804	8	-3.4480	0.6318	804	8
4	-3.1600	0.5599	808	7	-3.0940	0.5620	809	7
5	-2.8730	0.5134	812	6	-2.8050	0.5154	812	6
6	-2.6270	0.4798	815	6	-2.5570	0.4815	816	6
7	-2.4090	0.4538	817	6	-2.3380	0.4554	818	6
8	-2.2130	0.4329	820	5	-2.1400	0.4343	821	5
9	-2.0330	0.4153	822	5	-1.9590	0.4168	823	5
10	-1.8670	0.4001	824	5	-1.7910	0.4019	825	5
11	-1.7120	0.3867	826	5	-1.6350	0.3889	827	5
12	-1.5670	0.3747	828	5	-1.4880	0.3773	829	5
13	-1.4310	0.3638	830	5	-1.3500	0.3670	831	5
14	-1.3020	0.3539	831	4	-1.2180	0.3576	832	4
15	-1.1800	0.3448	833	4	-1.0930	0.3492	834	4
16	-1.0640	0.3366	834	4	-0.9740	0.3417	835	4
17	-0.9530	0.3292	836	4	-0.8590	0.3350	837	4
18	-0.8470	0.3226	837	4	-0.7490	0.3290	838	4
19	-0.7440	0.3167	838	4	-0.6430	0.3238	839	4
20	-0.6460	0.3117	839	4	-0.5390	0.3194	841	4
21	-0.5500	0.3075	841	4	-0.4380	0.3156	842	4
22	-0.4560	0.3040	842	4	-0.3400	0.3126	843	4
23	-0.3640	0.3014	843	4	-0.2430	0.3103	844	4
24	-0.2740	0.2996	844	4	-0.1470	0.3086	846	4
25	-0.1850	0.2985	845	4	-0.0520	0.3076	847	4
26	-0.0960	0.2983	846	4	0.0430	0.3074	848	4
27	-0.0070	0.2988	847	4	0.1380	0.3078	849	4
28	0.0830	0.3002	849	4	0.2330	0.3090	850	4
29	0.1740	0.3025	850	4	0.3290	0.3110	852	4
30	0.2670	0.3058	851	4	0.4260	0.3138	853	4
31	0.3610	0.3100	852	4	0.5260	0.3175	854	4
32	0.4590	0.3155	853	4	0.6280	0.3223	855	4
33	0.5610	0.3221	855	4	0.7340	0.3282	857	4
34	0.6670	0.3302	856	4	0.8440	0.3354	858	4
35	0.7800	0.3400	857	4	0.9600	0.3441	860	4
36	0.8990	0.3515	859	4	1.0820	0.3545	861	4
37	1.0280	0.3653	860	5	1.2120	0.3670	863	5
38	1.1670	0.3817	862	5	1.3520	0.3820	864	5
39	1.3200	0.4014	864	5	1.5050	0.4002	866	5
40	1.4910	0.4253	866	5	1.6740	0.4225	868	5
41	1.6840	0.4547	869	6	1.8640	0.4505	871	6
42	1.9080	0.4924	871	6	2.0830	0.4868	874	6
43	2.1750	0.5430	875	7	2.3440	0.5364	877	7
44	2.5090	0.6169	879	8	2.6700	0.6098	881	8
45	2.9630	0.7411	885	9	3.1150	0.7343	886	9
46	3.7070	1.0251	894	13	3.8480	1.0195	896	13
47	6.0000	3.0831	899	39	6.0000	2.8882	899	36

Table 8.E.31 Scale Score Conversion Tables with CSEMs for ELA, Grade Eight—Moderate Pathway (Forms R1ABM and R2ABM)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	SS CSEM	Theta	Theta CSEM	Scale Score	SS CSEM
0	-6.0000	1.8686	803	23	-6.0000	1.9201	803	24
1	-4.7210	1.0326	803	13	-4.6620	1.0343	803	13
2	-3.9600	0.7540	803	9	-3.8970	0.7565	803	9
3	-3.4850	0.6353	804	8	-3.4180	0.6380	805	8
4	-3.1260	0.5671	808	7	-3.0560	0.5699	809	7
5	-2.8300	0.5220	812	7	-2.7570	0.5247	813	7
6	-2.5750	0.4896	815	6	-2.4990	0.4922	816	6
7	-2.3480	0.4647	818	6	-2.2700	0.4673	819	6
8	-2.1410	0.4446	821	6	-2.0610	0.4471	822	6
9	-1.9510	0.4276	823	5	-1.8680	0.4303	824	5
10	-1.7740	0.4127	825	5	-1.6890	0.4158	826	5
11	-1.6090	0.3994	827	5	-1.5220	0.4030	828	5
12	-1.4550	0.3873	829	5	-1.3640	0.3915	830	5
13	-1.3090	0.3761	831	5	-1.2140	0.3811	832	5
14	-1.1710	0.3658	833	5	-1.0730	0.3716	834	5
15	-1.0410	0.3564	834	4	-0.9380	0.3630	836	5
16	-0.9170	0.3478	836	4	-0.8090	0.3552	837	4
17	-0.7980	0.3401	838	4	-0.6850	0.3481	839	4
18	-0.6850	0.3334	839	4	-0.5660	0.3419	840	4
19	-0.5760	0.3275	840	4	-0.4510	0.3364	842	4
20	-0.4700	0.3226	842	4	-0.3390	0.3316	843	4
21	-0.3670	0.3186	843	4	-0.2310	0.3277	845	4
22	-0.2670	0.3156	844	4	-0.1240	0.3246	846	4
23	-0.1680	0.3135	845	4	-0.0200	0.3223	847	4
24	-0.0700	0.3124	847	4	0.0840	0.3209	849	4
25	0.0280	0.3123	848	4	0.1870	0.3203	850	4
26	0.1260	0.3132	849	4	0.2900	0.3208	851	4
27	0.2240	0.3152	850	4	0.3930	0.3222	852	4
28	0.3250	0.3183	852	4	0.4980	0.3247	854	4
29	0.4270	0.3226	853	4	0.6040	0.3283	855	4
30	0.5330	0.3283	854	4	0.7140	0.3333	856	4
31	0.6440	0.3356	856	4	0.8270	0.3396	858	4
32	0.7590	0.3444	857	4	0.9450	0.3476	859	4
33	0.8820	0.3554	859	4	1.0690	0.3573	861	4
34	1.0130	0.3685	860	5	1.2010	0.3692	863	5
35	1.1540	0.3843	862	5	1.3430	0.3838	864	5
36	1.3090	0.4034	864	5	1.4970	0.4015	866	5
37	1.4810	0.4267	866	5	1.6670	0.4235	868	5
38	1.6760	0.4559	868	6	1.8580	0.4512	871	6
39	1.9000	0.4930	871	6	2.0770	0.4872	873	6
40	2.1680	0.5434	875	7	2.3380	0.5366	877	7
41	2.5020	0.6170	879	8	2.6640	0.6098	881	8
42	2.9560	0.7410	884	9	3.1090	0.7342	886	9
43	3.7000	1.0249	894	13	3.8420	1.0193	896	13
44	6.0000	3.0934	899	39	6.0000	2.8966	899	36

Table 8.E.32 Scale Score Conversion Tables with CSEMs for ELA, Grade Eight—Hard Pathway (Forms R1ABH and R2ABH)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	1.9330	803	24	-6.0000	1.9901	803	25
1	-4.6490	1.0346	803	13	-4.5860	1.0368	803	13
2	-3.8830	0.7566	803	9	-3.8160	0.7595	803	9
3	-3.4040	0.6384	805	8	-3.3330	0.6416	806	8
4	-3.0410	0.5705	809	7	-2.9660	0.5735	810	7
5	-2.7420	0.5256	813	7	-2.6640	0.5286	814	7
6	-2.4830	0.4932	816	6	-2.4020	0.4960	817	6
7	-2.2520	0.4682	819	6	-2.1680	0.4709	820	6
8	-2.0420	0.4479	822	6	-1.9560	0.4508	823	6
9	-1.8490	0.4308	824	5	-1.7600	0.4339	826	5
10	-1.6700	0.4157	827	5	-1.5780	0.4194	828	5
11	-1.5030	0.4022	829	5	-1.4080	0.4067	830	5
12	-1.3460	0.3898	831	5	-1.2470	0.3952	832	5
13	-1.1980	0.3785	833	5	-1.0950	0.3848	834	5
14	-1.0590	0.3682	834	5	-0.9500	0.3754	836	5
15	-0.9270	0.3588	836	4	-0.8120	0.3668	837	5
16	-0.8010	0.3503	837	4	-0.6810	0.3591	839	4
17	-0.6810	0.3429	839	4	-0.5540	0.3521	841	4
18	-0.5650	0.3365	840	4	-0.4320	0.3460	842	4
19	-0.4540	0.3311	842	4	-0.3140	0.3406	844	4
20	-0.3460	0.3268	843	4	-0.2000	0.3362	845	4
21	-0.2400	0.3235	845	4	-0.0880	0.3326	846	4
22	-0.1360	0.3212	846	4	0.0220	0.3299	848	4
23	-0.0330	0.3200	847	4	0.1300	0.3282	849	4
24	0.0690	0.3199	848	4	0.2380	0.3274	850	4
25	0.1720	0.3209	850	4	0.3450	0.3277	852	4
26	0.2760	0.3231	851	4	0.4530	0.3290	853	4
27	0.3810	0.3265	852	4	0.5620	0.3314	855	4
28	0.4890	0.3311	854	4	0.6730	0.3351	856	4
29	0.6010	0.3372	855	4	0.7870	0.3401	857	4
30	0.7170	0.3448	856	4	0.9050	0.3465	859	4
31	0.8390	0.3541	858	4	1.0280	0.3546	860	4
32	0.9690	0.3653	860	5	1.1570	0.3643	862	5
33	1.1070	0.3786	861	5	1.2940	0.3762	864	5
34	1.2560	0.3944	863	5	1.4410	0.3906	866	5
35	1.4190	0.4133	865	5	1.6000	0.4080	868	5
36	1.5990	0.4361	867	5	1.7760	0.4297	870	5
37	1.8020	0.4643	870	6	1.9720	0.4568	872	6
38	2.0340	0.5004	873	6	2.1960	0.4922	875	6
39	2.3080	0.5492	876	7	2.4620	0.5409	878	7
40	2.6490	0.6214	881	8	2.7930	0.6133	882	8
41	3.1070	0.7437	886	9	3.2420	0.7369	888	9
42	3.8550	1.0264	896	13	3.9780	1.0210	897	13
43	6.0000	2.8635	899	36	6.0000	2.7053	899	34

Table 8.E.33 Scale Score Conversion Tables with CSEMs for ELA, Grade Eleven—Easy Pathway (Forms R1A0E, R1ABE, R2A0E, and R2ABE)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	2.6853	903	34	-6.0000	2.4072	903	30
1	-3.9880	1.0239	903	13	-4.2010	1.0308	903	13
2	-3.2460	0.7404	907	9	-3.4450	0.7497	904	9
3	-2.7920	0.6171	913	8	-2.9770	0.6279	910	8
4	-2.4570	0.5446	917	7	-2.6290	0.5567	915	7
5	-2.1880	0.4957	920	6	-2.3460	0.5085	918	6
6	-1.9600	0.4598	923	6	-2.1060	0.4734	921	6
7	-1.7610	0.4320	925	5	-1.8950	0.4463	924	6
8	-1.5840	0.4099	928	5	-1.7050	0.4243	926	5
9	-1.4240	0.3917	930	5	-1.5330	0.4064	928	5
10	-1.2760	0.3765	932	5	-1.3740	0.3912	930	5
11	-1.1390	0.3638	933	5	-1.2260	0.3782	932	5
12	-1.0110	0.3532	935	4	-1.0870	0.3670	934	5
13	-0.8890	0.3441	936	4	-0.9560	0.3574	936	4
14	-0.7730	0.3367	938	4	-0.8310	0.3491	937	4
15	-0.6620	0.3306	939	4	-0.7120	0.3421	939	4
16	-0.5540	0.3258	941	4	-0.5960	0.3361	940	4
17	-0.4490	0.3221	942	4	-0.4850	0.3313	941	4
18	-0.3460	0.3196	943	4	-0.3770	0.3276	943	4
19	-0.2450	0.3181	944	4	-0.2700	0.3249	944	4
20	-0.1430	0.3177	946	4	-0.1650	0.3232	945	4
21	-0.0420	0.3182	947	4	-0.0610	0.3226	947	4
22	0.0590	0.3198	948	4	0.0440	0.3231	948	4
23	0.1630	0.3225	950	4	0.1480	0.3246	949	4
24	0.2680	0.3263	951	4	0.2550	0.3273	951	4
25	0.3760	0.3311	952	4	0.3630	0.3312	952	4
26	0.4880	0.3372	954	4	0.4750	0.3364	953	4
27	0.6040	0.3446	955	4	0.5900	0.3429	955	4
28	0.7260	0.3534	957	4	0.7100	0.3511	956	4
29	0.8540	0.3639	958	5	0.8370	0.3610	958	5
30	0.9910	0.3763	960	5	0.9720	0.3731	960	5
31	1.1380	0.3911	962	5	1.1170	0.3879	961	5
32	1.2980	0.4089	964	5	1.2740	0.4058	963	5
33	1.4750	0.4308	966	5	1.4470	0.4279	966	5
34	1.6720	0.4582	968	6	1.6420	0.4559	968	6
35	1.8980	0.4938	971	6	1.8670	0.4925	971	6
36	2.1650	0.5425	975	7	2.1330	0.5423	974	7
37	2.4980	0.6150	979	8	2.4670	0.6161	978	8
38	2.9490	0.7385	984	9	2.9200	0.7406	984	9
39	3.6880	1.0223	994	13	3.6630	1.0250	993	13
40	6.0000	3.1188	999	39	6.0000	3.1504	999	39

Table 8.E.34 Scale Score Conversion Tables with CSEMs for ELA, Grade Eleven—Moderate Pathway (Forms R1ABM and R2ABM)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	2.4034	903	30	-6.0000	2.1979	903	27
1	-4.1910	1.0399	903	13	-4.3770	1.0398	903	13
2	-3.4180	0.7599	905	9	-3.6020	0.7616	903	10
3	-2.9370	0.6376	911	8	-3.1170	0.6421	909	8
4	-2.5780	0.5652	915	7	-2.7510	0.5721	913	7
5	-2.2870	0.5155	919	6	-2.4510	0.5248	917	7
6	-2.0400	0.4786	922	6	-2.1940	0.4899	920	6
7	-1.8250	0.4497	925	6	-1.9680	0.4626	923	6
8	-1.6330	0.4261	927	5	-1.7640	0.4403	925	6
9	-1.4600	0.4065	929	5	-1.5780	0.4216	928	5
10	-1.3020	0.3901	931	5	-1.4070	0.4055	930	5
11	-1.1550	0.3760	933	5	-1.2480	0.3916	932	5
12	-1.0180	0.3642	935	5	-1.1000	0.3794	934	5
13	-0.8890	0.3542	936	4	-0.9600	0.3688	936	5
14	-0.7660	0.3458	938	4	-0.8270	0.3595	937	4
15	-0.6490	0.3391	939	4	-0.7010	0.3516	939	4
16	-0.5360	0.3338	941	4	-0.5790	0.3449	940	4
17	-0.4260	0.3298	942	4	-0.4620	0.3395	942	4
18	-0.3180	0.3270	944	4	-0.3480	0.3354	943	4
19	-0.2110	0.3254	945	4	-0.2370	0.3324	945	4
20	-0.1060	0.3251	946	4	-0.1270	0.3306	946	4
21	0.0000	0.3259	948	4	-0.0180	0.3301	947	4
22	0.1070	0.3278	949	4	0.0910	0.3307	949	4
23	0.2160	0.3310	950	4	0.2010	0.3326	950	4
24	0.3270	0.3353	952	4	0.3130	0.3359	951	4
25	0.4410	0.3409	953	4	0.4280	0.3405	953	4
26	0.5600	0.3480	955	4	0.5460	0.3466	954	4
27	0.6840	0.3565	956	4	0.6680	0.3543	956	4
28	0.8140	0.3667	958	5	0.7970	0.3639	957	5
29	0.9530	0.3789	959	5	0.9340	0.3757	959	5
30	1.1030	0.3936	961	5	1.0810	0.3901	961	5
31	1.2640	0.4111	963	5	1.2400	0.4078	963	5
32	1.4420	0.4328	966	5	1.4150	0.4298	965	5
33	1.6410	0.4600	968	6	1.6110	0.4576	968	6
34	1.8690	0.4955	971	6	1.8370	0.4940	970	6
35	2.1380	0.5441	974	7	2.1060	0.5439	974	7
36	2.4730	0.6165	978	8	2.4400	0.6173	978	8
37	2.9250	0.7395	984	9	2.8950	0.7417	984	9
38	3.6660	1.0232	993	13	3.6400	1.0259	993	13
39	6.0000	3.1515	999	39	6.0000	3.1840	999	40

Table 8.E.35 Scale Score Conversion Tables with CSEMs for ELA, Grade Eleven—Hard Pathway (Forms R1ABH and R2ABH)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	2.7526	903	34	-6.0000	2.4553	903	31
1	-3.9350	1.0260	903	13	-4.1570	1.0329	903	13
2	-3.1890	0.7433	908	9	-3.3960	0.7528	905	9
3	-2.7310	0.6203	913	8	-2.9240	0.6318	911	8
4	-2.3920	0.5480	918	7	-2.5710	0.5610	915	7
5	-2.1190	0.4990	921	6	-2.2840	0.5132	919	6
6	-1.8880	0.4631	924	6	-2.0380	0.4780	922	6
7	-1.6870	0.4353	926	5	-1.8230	0.4508	925	6
8	-1.5070	0.4128	929	5	-1.6300	0.4289	927	5
9	-1.3440	0.3944	931	5	-1.4540	0.4106	929	5
10	-1.1950	0.3791	933	5	-1.2910	0.3950	931	5
11	-1.0560	0.3662	934	5	-1.1400	0.3817	933	5
12	-0.9260	0.3554	936	4	-0.9990	0.3702	935	5
13	-0.8030	0.3463	937	4	-0.8660	0.3602	937	5
14	-0.6850	0.3389	939	4	-0.7390	0.3517	938	4
15	-0.5720	0.3329	940	4	-0.6180	0.3444	940	4
16	-0.4630	0.3282	942	4	-0.5010	0.3384	941	4
17	-0.3560	0.3248	943	4	-0.3880	0.3335	943	4
18	-0.2520	0.3225	944	4	-0.2780	0.3298	944	4
19	-0.1480	0.3212	946	4	-0.1700	0.3272	945	4
20	-0.0450	0.3211	947	4	-0.0640	0.3258	947	4
21	0.0580	0.3219	948	4	0.0420	0.3253	948	4
22	0.1630	0.3238	950	4	0.1480	0.3260	949	4
23	0.2680	0.3266	951	4	0.2550	0.3278	951	4
24	0.3760	0.3305	952	4	0.3640	0.3307	952	4
25	0.4870	0.3355	954	4	0.4740	0.3348	953	4
26	0.6020	0.3416	955	4	0.5880	0.3401	955	4
27	0.7210	0.3489	957	4	0.7060	0.3468	956	4
28	0.8460	0.3576	958	4	0.8300	0.3551	958	4
29	0.9780	0.3679	960	5	0.9590	0.3651	959	5
30	1.1180	0.3801	961	5	1.0970	0.3771	961	5
31	1.2680	0.3945	963	5	1.2450	0.3917	963	5
32	1.4300	0.4119	965	5	1.4050	0.4094	965	5
33	1.6080	0.4333	968	5	1.5820	0.4314	967	5
34	1.8080	0.4603	970	6	1.7800	0.4591	970	6
35	2.0360	0.4956	973	6	2.0070	0.4952	973	6
36	2.3050	0.5440	976	7	2.2760	0.5445	976	7
37	2.6390	0.6162	980	8	2.6110	0.6175	980	8
38	3.0910	0.7393	986	9	3.0660	0.7415	986	9
39	3.8310	1.0228	995	13	3.8100	1.0253	995	13
40	6.0000	2.9044	999	36	6.0000	2.9298	999	37

Table 8.E.36 Scale Score Conversion Tables with CSEMs for Mathematics, Grade Three—Easy Pathway (Forms R1A0E, R1ABE, R2A0E, and R2ABE)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	4.1935	303	79	-6.0000	4.3367	303	81
1	-3.1140	1.0085	303	19	-3.0470	1.0088	303	19
2	-2.4050	0.7167	303	13	-2.3380	0.7170	303	13
3	-1.9870	0.5869	304	11	-1.9190	0.5871	305	11
4	-1.6890	0.5099	310	10	-1.6210	0.5102	311	10
5	-1.4560	0.4579	314	9	-1.3870	0.4583	315	9
6	-1.2630	0.4204	318	8	-1.1940	0.4210	319	8
7	-1.0990	0.3925	321	7	-1.0290	0.3931	322	7
8	-0.9530	0.3708	323	7	-0.8830	0.3717	325	7
9	-0.8220	0.3541	326	7	-0.7510	0.3550	327	7
10	-0.7010	0.3409	328	6	-0.6300	0.3419	329	6
11	-0.5890	0.3306	330	6	-0.5160	0.3315	332	6
12	-0.4820	0.3226	332	6	-0.4090	0.3235	334	6
13	-0.3800	0.3166	334	6	-0.3060	0.3174	336	6
14	-0.2810	0.3124	336	6	-0.2070	0.3131	337	6
15	-0.1840	0.3096	338	6	-0.1100	0.3102	339	6
16	-0.0890	0.3083	340	6	-0.0140	0.3086	341	6
17	0.0060	0.3084	341	6	0.0810	0.3084	343	6
18	0.1020	0.3099	343	6	0.1760	0.3096	345	6
19	0.1990	0.3128	345	6	0.2730	0.3120	346	6
20	0.2980	0.3171	347	6	0.3720	0.3160	348	6
21	0.4010	0.3232	349	6	0.4730	0.3214	350	6
22	0.5080	0.3310	351	6	0.5790	0.3285	352	6
23	0.6200	0.3408	353	6	0.6900	0.3377	354	6
24	0.7410	0.3532	355	7	0.8080	0.3491	356	7
25	0.8710	0.3685	358	7	0.9340	0.3633	359	7
26	1.0140	0.3873	360	7	1.0730	0.3810	361	7
27	1.1720	0.4102	363	8	1.2260	0.4028	364	8
28	1.3520	0.4387	367	8	1.3990	0.4302	368	8
29	1.5600	0.4743	371	9	1.5990	0.4648	371	9
30	1.8070	0.5195	375	10	1.8360	0.5094	376	10
31	2.1070	0.5783	381	11	2.1260	0.5686	381	11
32	2.4880	0.6600	388	12	2.4950	0.6512	388	12
33	3.0060	0.7888	398	15	3.0020	0.7821	398	15
34	3.8320	1.0684	399	20	3.8190	1.0647	399	20
35	6.0000	2.7964	399	52	6.0000	2.8226	399	53

Table 8.E.37 Scale Score Conversion Tables with CSEMs for Mathematics, Grade Three—Moderate Pathway (Forms R1ABM and R2ABM)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	4.5202	303	85	-6.0000	4.7010	303	88
1	-2.9700	1.0056	303	19	-2.8920	1.0049	303	19
2	-2.2670	0.7130	303	13	-2.1900	0.7126	303	13
3	-1.8530	0.5832	307	11	-1.7770	0.5831	308	11
4	-1.5590	0.5068	312	10	-1.4820	0.5068	314	10
5	-1.3280	0.4557	316	9	-1.2520	0.4561	318	9
6	-1.1370	0.4192	320	8	-1.0600	0.4196	321	8
7	-0.9730	0.3922	323	7	-0.8960	0.3928	325	7
8	-0.8270	0.3715	326	7	-0.7500	0.3722	327	7
9	-0.6950	0.3557	328	7	-0.6170	0.3562	330	7
10	-0.5730	0.3434	331	6	-0.4950	0.3439	332	6
11	-0.4590	0.3340	333	6	-0.3800	0.3343	334	6
12	-0.3490	0.3268	335	6	-0.2710	0.3270	336	6
13	-0.2440	0.3217	337	6	-0.1650	0.3216	338	6
14	-0.1420	0.3183	339	6	-0.0630	0.3179	340	6
15	-0.0410	0.3165	341	6	0.0370	0.3157	342	6
16	0.0590	0.3161	342	6	0.1370	0.3149	344	6
17	0.1590	0.3172	344	6	0.2360	0.3155	346	6
18	0.2610	0.3197	346	6	0.3360	0.3175	348	6
19	0.3640	0.3237	348	6	0.4380	0.3209	350	6
20	0.4710	0.3292	350	6	0.5430	0.3257	351	6
21	0.5810	0.3363	352	6	0.6510	0.3321	354	6
22	0.6980	0.3453	354	6	0.7640	0.3403	356	6
23	0.8200	0.3561	357	7	0.8830	0.3503	358	7
24	0.9520	0.3693	359	7	1.0100	0.3626	360	7
25	1.0940	0.3850	362	7	1.1470	0.3776	363	7
26	1.2500	0.4037	365	8	1.2960	0.3955	366	7
27	1.4220	0.4258	368	8	1.4610	0.4171	369	8
28	1.6140	0.4522	372	8	1.6460	0.4434	372	8
29	1.8330	0.4842	376	9	1.8570	0.4757	376	9
30	2.0870	0.5243	380	10	2.1030	0.5164	381	10
31	2.3890	0.5768	386	11	2.3970	0.5699	386	11
32	2.7640	0.6516	393	12	2.7640	0.6459	393	12
33	3.2650	0.7746	399	15	3.2590	0.7706	399	14
34	4.0630	1.0528	399	20	4.0510	1.0503	399	20
35	6.0000	2.5330	399	47	6.0000	2.5525	399	48

Table 8.E.38 Scale Score Conversion Tables with CSEMs for Mathematics, Grade Three—Hard Pathway (Forms R1ABH and R2ABH)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	4.9407	303	93	-6.0000	5.1797	303	97
1	-2.7910	1.0058	303	19	-2.6980	1.0050	303	19
2	-2.0880	0.7122	303	13	-1.9960	0.7114	304	13
3	-1.6760	0.5822	310	11	-1.5850	0.5815	312	11
4	-1.3820	0.5055	315	9	-1.2920	0.5049	317	9
5	-1.1530	0.4546	320	9	-1.0640	0.4541	321	9
6	-0.9630	0.4183	323	8	-0.8740	0.4174	325	8
7	-0.7990	0.3913	326	7	-0.7110	0.3902	328	7
8	-0.6540	0.3708	329	7	-0.5670	0.3694	331	7
9	-0.5230	0.3551	331	7	-0.4370	0.3534	333	7
10	-0.4010	0.3427	334	6	-0.3160	0.3407	335	6
11	-0.2870	0.3333	336	6	-0.2040	0.3310	337	6
12	-0.1780	0.3261	338	6	-0.0970	0.3236	339	6
13	-0.0740	0.3209	340	6	0.0060	0.3181	341	6
14	0.0280	0.3174	342	6	0.1060	0.3144	343	6
15	0.1280	0.3155	344	6	0.2040	0.3122	345	6
16	0.2280	0.3151	346	6	0.3020	0.3114	347	6
17	0.3270	0.3160	347	6	0.3990	0.3121	349	6
18	0.4280	0.3184	349	6	0.4970	0.3141	351	6
19	0.5310	0.3222	351	6	0.5970	0.3176	352	6
20	0.6360	0.3275	353	6	0.6990	0.3226	354	6
21	0.7460	0.3346	355	6	0.8050	0.3291	356	6
22	0.8610	0.3434	357	6	0.9160	0.3375	358	6
23	0.9820	0.3542	360	7	1.0340	0.3480	361	7
24	1.1120	0.3673	362	7	1.1600	0.3609	363	7
25	1.2530	0.3833	365	7	1.2950	0.3764	366	7
26	1.4080	0.4026	368	8	1.4440	0.3953	368	7
27	1.5790	0.4256	371	8	1.6090	0.4181	371	8
28	1.7720	0.4534	375	9	1.7960	0.4460	375	8
29	1.9930	0.4871	379	9	2.0100	0.4799	379	9
30	2.2500	0.5287	383	10	2.2610	0.5223	384	10
31	2.5580	0.5823	389	11	2.5620	0.5768	389	11
32	2.9400	0.6571	396	12	2.9370	0.6526	396	12
33	3.4480	0.7787	399	15	3.4410	0.7758	399	15
34	4.2510	1.0544	399	20	4.2400	1.0528	399	20
35	6.0000	2.3138	399	43	6.0000	2.3286	399	44

Table 8.E.39 Scale Score Conversion Tables with CSEMs for Mathematics, Grade Four—Easy Pathway (Forms R1A0E, R1ABE, R2A0E, and R2ABE)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	3.7469	403	70	-6.0000	3.5990	403	67
1	-3.3310	1.0150	403	19	-3.4040	1.0196	403	19
2	-2.6070	0.7283	403	14	-2.6710	0.7340	403	14
3	-2.1710	0.6027	403	11	-2.2270	0.6093	403	11
4	-1.8530	0.5286	407	10	-1.9020	0.5358	406	10
5	-1.6010	0.4787	411	9	-1.6420	0.4861	411	9
6	-1.3890	0.4420	415	8	-1.4230	0.4497	415	8
7	-1.2060	0.4140	419	8	-1.2340	0.4220	418	8
8	-1.0440	0.3917	422	7	-1.0650	0.3998	421	7
9	-0.8980	0.3737	424	7	-0.9120	0.3819	424	7
10	-0.7640	0.3588	427	7	-0.7720	0.3671	427	7
11	-0.6390	0.3464	429	6	-0.6420	0.3549	429	7
12	-0.5230	0.3361	431	6	-0.5190	0.3446	432	6
13	-0.4130	0.3276	434	6	-0.4040	0.3361	434	6
14	-0.3080	0.3205	436	6	-0.2930	0.3290	436	6
15	-0.2070	0.3148	437	6	-0.1870	0.3233	438	6
16	-0.1090	0.3102	439	6	-0.0840	0.3188	440	6
17	-0.0140	0.3068	441	6	0.0170	0.3153	442	6
18	0.0790	0.3045	443	6	0.1160	0.3129	443	6
19	0.1720	0.3032	445	6	0.2130	0.3115	445	6
20	0.2640	0.3029	446	6	0.3100	0.3111	447	6
21	0.3560	0.3036	448	6	0.4070	0.3117	449	6
22	0.4480	0.3054	450	6	0.5050	0.3132	451	6
23	0.5430	0.3082	451	6	0.6040	0.3158	453	6
24	0.6390	0.3122	453	6	0.7050	0.3195	455	6
25	0.7380	0.3174	455	6	0.8080	0.3244	456	6
26	0.8410	0.3240	457	6	0.9160	0.3306	458	6
27	0.9480	0.3321	459	6	1.0270	0.3382	461	6
28	1.0620	0.3421	461	6	1.1450	0.3476	463	7
29	1.1830	0.3542	463	7	1.2700	0.3591	465	7
30	1.3140	0.3690	466	7	1.4040	0.3731	468	7
31	1.4570	0.3872	469	7	1.5490	0.3902	470	7
32	1.6150	0.4095	472	8	1.7100	0.4116	473	8
33	1.7940	0.4379	475	8	1.8910	0.4390	477	8
34	2.0020	0.4749	479	9	2.0990	0.4749	481	9
35	2.2520	0.5258	484	10	2.3470	0.5243	485	10
36	2.5660	0.6004	489	11	2.6600	0.5983	491	11
37	3.0000	0.7268	498	14	3.0900	0.7239	499	14
38	3.7220	1.0143	499	19	3.8080	1.0116	499	19
39	6.0000	3.0855	499	58	6.0000	2.9633	499	56

Table 8.E.40 Scale Score Conversion Tables with CSEMs for Mathematics, Grade Four—Moderate Pathway (Forms R1ABM and R2ABM)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	4.2303	403	79	-6.0000	4.0208	403	75
1	-3.0970	1.0094	403	19	-3.1840	1.0175	403	19
2	-2.3840	0.7203	403	14	-2.4560	0.7298	403	14
3	-1.9600	0.5935	405	11	-2.0190	0.6033	403	11
4	-1.6530	0.5184	410	10	-1.7010	0.5282	409	10
5	-1.4110	0.4678	415	9	-1.4490	0.4774	414	9
6	-1.2100	0.4311	419	8	-1.2390	0.4405	418	8
7	-1.0360	0.4031	422	8	-1.0580	0.4124	421	8
8	-0.8820	0.3811	425	7	-0.8970	0.3903	424	7
9	-0.7440	0.3636	427	7	-0.7510	0.3725	427	7
10	-0.6170	0.3493	430	7	-0.6180	0.3581	430	7
11	-0.4990	0.3377	432	6	-0.4940	0.3464	432	6
12	-0.3880	0.3281	434	6	-0.3770	0.3367	434	6
13	-0.2830	0.3204	436	6	-0.2670	0.3289	436	6
14	-0.1820	0.3142	438	6	-0.1600	0.3226	438	6
15	-0.0850	0.3094	440	6	-0.0580	0.3177	440	6
16	0.0100	0.3057	441	6	0.0420	0.3140	442	6
17	0.1020	0.3032	443	6	0.1400	0.3113	444	6
18	0.1940	0.3018	445	6	0.2360	0.3098	446	6
19	0.2850	0.3013	447	6	0.3320	0.3092	448	6
20	0.3760	0.3019	448	6	0.4280	0.3095	449	6
21	0.4670	0.3034	450	6	0.5240	0.3108	451	6
22	0.5600	0.3060	452	6	0.6210	0.3131	453	6
23	0.6550	0.3096	454	6	0.7200	0.3163	455	6
24	0.7520	0.3143	455	6	0.8220	0.3207	457	6
25	0.8530	0.3203	457	6	0.9260	0.3260	459	6
26	0.9580	0.3275	459	6	1.0350	0.3327	461	6
27	1.0680	0.3362	461	6	1.1480	0.3408	463	6
28	1.1850	0.3467	464	7	1.2680	0.3505	465	7
29	1.3090	0.3591	466	7	1.3950	0.3621	467	7
30	1.4440	0.3742	468	7	1.5310	0.3761	470	7
31	1.5900	0.3922	471	7	1.6790	0.3933	473	7
32	1.7530	0.4144	474	8	1.8420	0.4145	476	8
33	1.9360	0.4423	478	8	2.0240	0.4414	479	8
34	2.1480	0.4787	482	9	2.2350	0.4770	483	9
35	2.4000	0.5283	486	10	2.4850	0.5260	488	10
36	2.7170	0.6020	492	11	2.7990	0.5992	494	11
37	3.1520	0.7272	499	14	3.2310	0.7246	499	14
38	3.8740	1.0138	499	19	3.9480	1.0114	499	19
39	6.0000	2.8625	499	54	6.0000	2.7641	499	52

Table 8.E.41 Scale Score Conversion Tables with CSEMs for Mathematics, Grade Four—Hard Pathway (Forms R1ABH and R2ABH)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	4.1136	403	77	-6.0000	3.9203	403	74
1	-3.1410	1.0159	403	19	-3.2260	1.0226	403	19
2	-2.4160	0.7284	403	14	-2.4880	0.7368	403	14
3	-1.9810	0.6019	404	11	-2.0410	0.6111	403	11
4	-1.6650	0.5268	410	10	-1.7140	0.5363	409	10
5	-1.4140	0.4755	415	9	-1.4540	0.4854	414	9
6	-1.2060	0.4381	419	8	-1.2370	0.4480	418	8
7	-1.0270	0.4094	422	8	-1.0490	0.4191	422	8
8	-0.8690	0.3866	425	7	-0.8830	0.3962	425	7
9	-0.7260	0.3681	428	7	-0.7340	0.3777	428	7
10	-0.5960	0.3531	430	7	-0.5970	0.3625	430	7
11	-0.4760	0.3408	432	6	-0.4700	0.3499	432	7
12	-0.3630	0.3307	434	6	-0.3510	0.3396	435	6
13	-0.2570	0.3224	436	6	-0.2390	0.3311	437	6
14	-0.1550	0.3157	438	6	-0.1310	0.3242	439	6
15	-0.0570	0.3105	440	6	-0.0280	0.3188	441	6
16	0.0380	0.3065	442	6	0.0720	0.3146	443	6
17	0.1310	0.3037	444	6	0.1700	0.3116	444	6
18	0.2230	0.3020	445	6	0.2670	0.3097	446	6
19	0.3140	0.3014	447	6	0.3630	0.3089	448	6
20	0.4050	0.3018	449	6	0.4580	0.3091	450	6
21	0.4970	0.3033	451	6	0.5540	0.3104	452	6
22	0.5900	0.3059	452	6	0.6510	0.3127	454	6
23	0.6840	0.3096	454	6	0.7500	0.3160	455	6
24	0.7820	0.3145	456	6	0.8510	0.3205	457	6
25	0.8830	0.3207	458	6	0.9560	0.3263	459	6
26	0.9880	0.3283	460	6	1.0650	0.3334	461	6
27	1.0990	0.3376	462	6	1.1790	0.3421	463	6
28	1.2160	0.3487	464	7	1.3000	0.3525	466	7
29	1.3430	0.3621	466	7	1.4280	0.3650	468	7
30	1.4800	0.3782	469	7	1.5670	0.3802	471	7
31	1.6300	0.3977	472	7	1.7190	0.3987	474	7
32	1.7980	0.4216	475	8	1.8870	0.4214	477	8
33	1.9880	0.4513	479	8	2.0760	0.4500	480	8
34	2.2090	0.4898	483	9	2.2950	0.4873	484	9
35	2.4740	0.5417	488	10	2.5570	0.5382	489	10
36	2.8070	0.6172	494	12	2.8860	0.6132	495	11
37	3.2630	0.7436	499	14	3.3360	0.7391	499	14
38	4.0120	1.0288	499	19	4.0790	1.0253	499	19
39	6.0000	2.6416	499	50	6.0000	2.5637	499	48

Table 8.E.42 Scale Score Conversion Tables with CSEMs for Mathematics, Grade Five—Easy Pathway (Forms R1A0E, R1ABE, R2A0E, and R2ABE)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	3.4583	503	65	-6.0000	3.6863	503	69
1	-3.4960	1.0125	503	19	-3.3560	1.0191	503	19
2	-2.7770	0.7257	503	14	-2.6240	0.7333	503	14
3	-2.3440	0.6003	503	11	-2.1810	0.6080	503	11
4	-2.0290	0.5268	503	10	-1.8580	0.5341	506	10
5	-1.7780	0.4776	508	9	-1.6000	0.4838	511	9
6	-1.5670	0.4418	512	8	-1.3840	0.4470	515	8
7	-1.3840	0.4146	515	8	-1.1970	0.4185	519	8
8	-1.2210	0.3932	518	7	-1.0310	0.3958	522	7
9	-1.0730	0.3759	521	7	-0.8820	0.3774	525	7
10	-0.9370	0.3618	524	7	-0.7450	0.3621	527	7
11	-0.8110	0.3502	526	7	-0.6180	0.3493	530	7
12	-0.6910	0.3406	528	6	-0.5000	0.3387	532	6
13	-0.5780	0.3328	530	6	-0.3880	0.3299	534	6
14	-0.4690	0.3265	533	6	-0.2820	0.3226	536	6
15	-0.3640	0.3216	534	6	-0.1800	0.3168	538	6
16	-0.2620	0.3179	536	6	-0.0810	0.3123	540	6
17	-0.1620	0.3154	538	6	0.0160	0.3090	542	6
18	-0.0630	0.3141	540	6	0.1110	0.3070	543	6
19	0.0360	0.3139	542	6	0.2050	0.3062	545	6
20	0.1350	0.3148	544	6	0.2990	0.3065	547	6
21	0.2350	0.3169	546	6	0.3930	0.3081	549	6
22	0.3360	0.3203	548	6	0.4890	0.3110	550	6
23	0.4400	0.3249	550	6	0.5870	0.3153	552	6
24	0.5480	0.3311	552	6	0.6880	0.3211	554	6
25	0.6600	0.3389	554	6	0.7940	0.3285	556	6
26	0.7780	0.3487	556	7	0.9050	0.3379	558	6
27	0.9040	0.3607	558	7	1.0230	0.3494	560	7
28	1.0390	0.3752	561	7	1.1500	0.3635	563	7
29	1.1870	0.3932	564	7	1.2880	0.3807	565	7
30	1.3500	0.4150	567	8	1.4410	0.4017	568	8
31	1.5340	0.4422	570	8	1.6130	0.4277	572	8
32	1.7440	0.4760	574	9	1.8090	0.4602	575	9
33	1.9910	0.5195	579	10	2.0400	0.5022	580	9
34	2.2910	0.5775	584	11	2.3210	0.5589	585	10
35	2.6710	0.6594	591	12	2.6780	0.6405	592	12
36	3.1890	0.7901	599	15	3.1710	0.7737	599	15
37	4.0200	1.0725	599	20	3.9780	1.0628	599	20
38	6.0000	2.5461	599	48	6.0000	2.6126	599	49

Table 8.E.43 Scale Score Conversion Tables with CSEMs for Mathematics, Grade Five—Moderate Pathway (Forms R1ABM and R2ABM)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	3.6528	503	68	-6.0000	3.9247	503	74
1	-3.3880	1.0118	503	19	-3.2300	1.0189	503	19
2	-2.6700	0.7238	503	14	-2.5000	0.7316	503	14
3	-2.2400	0.5977	503	11	-2.0600	0.6043	503	11
4	-1.9280	0.5235	505	10	-1.7420	0.5287	509	10
5	-1.6810	0.4736	510	9	-1.4900	0.4769	513	9
6	-1.4740	0.4371	514	8	-1.2810	0.4389	517	8
7	-1.2950	0.4092	517	8	-1.1010	0.4097	521	8
8	-1.1370	0.3873	520	7	-0.9430	0.3866	524	7
9	-0.9940	0.3697	523	7	-0.8010	0.3681	526	7
10	-0.8620	0.3553	525	7	-0.6710	0.3529	529	7
11	-0.7400	0.3436	527	6	-0.5510	0.3405	531	6
12	-0.6250	0.3341	530	6	-0.4380	0.3304	533	6
13	-0.5160	0.3265	532	6	-0.3320	0.3222	535	6
14	-0.4120	0.3205	534	6	-0.2300	0.3156	537	6
15	-0.3100	0.3159	535	6	-0.1320	0.3105	539	6
16	-0.2120	0.3127	537	6	-0.0370	0.3068	541	6
17	-0.1140	0.3106	539	6	0.0570	0.3042	542	6
18	-0.0180	0.3098	541	6	0.1490	0.3029	544	6
19	0.0780	0.3101	543	6	0.2410	0.3027	546	6
20	0.1750	0.3116	545	6	0.3330	0.3037	548	6
21	0.2720	0.3142	546	6	0.4250	0.3059	549	6
22	0.3720	0.3181	548	6	0.5200	0.3094	551	6
23	0.4750	0.3233	550	6	0.6170	0.3142	553	6
24	0.5820	0.3301	552	6	0.7180	0.3205	555	6
25	0.6940	0.3385	554	6	0.8230	0.3284	557	6
26	0.8120	0.3488	557	7	0.9340	0.3382	559	6
27	0.9380	0.3613	559	7	1.0530	0.3503	561	7
28	1.0740	0.3765	561	7	1.1810	0.3648	563	7
29	1.2230	0.3948	564	7	1.3200	0.3823	566	7
30	1.3870	0.4169	567	8	1.4740	0.4035	569	8
31	1.5720	0.4441	571	8	1.6480	0.4297	572	8
32	1.7850	0.4780	575	9	1.8460	0.4622	576	9
33	2.0340	0.5211	579	10	2.0790	0.5040	580	9
34	2.3340	0.5779	585	11	2.3610	0.5600	586	11
35	2.7140	0.6585	592	12	2.7190	0.6408	592	12
36	3.2310	0.7881	599	15	3.2110	0.7726	599	14
37	4.0570	1.0698	599	20	4.0150	1.0605	599	20
38	6.0000	2.5079	599	47	6.0000	2.5714	599	48

Table 8.E.44 Scale Score Conversion Tables with CSEMs for Mathematics, Grade Five—Hard Pathway (Forms R1ABH and R2ABH)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	3.6916	503	69	-6.0000	3.9730	503	74
1	-3.3630	1.0137	503	19	-3.2000	1.0221	503	19
2	-2.6410	0.7271	503	14	-2.4630	0.7366	503	14
3	-2.2060	0.6022	503	11	-2.0160	0.6109	504	11
4	-1.8890	0.5291	506	10	-1.6890	0.5363	510	10
5	-1.6350	0.4798	511	9	-1.4290	0.4854	515	9
6	-1.4220	0.4443	515	8	-1.2120	0.4480	519	8
7	-1.2370	0.4172	518	8	-1.0240	0.4190	522	8
8	-1.0720	0.3959	521	7	-0.8580	0.3958	525	7
9	-0.9220	0.3788	524	7	-0.7090	0.3770	528	7
10	-0.7840	0.3649	527	7	-0.5730	0.3616	531	7
11	-0.6550	0.3535	529	7	-0.4470	0.3488	533	7
12	-0.5330	0.3443	531	6	-0.3290	0.3382	535	6
13	-0.4170	0.3368	533	6	-0.2170	0.3295	537	6
14	-0.3060	0.3309	536	6	-0.1110	0.3225	539	6
15	-0.1980	0.3264	538	6	-0.0090	0.3170	541	6
16	-0.0920	0.3231	540	6	0.0900	0.3129	543	6
17	0.0120	0.3210	542	6	0.1870	0.3100	545	6
18	0.1150	0.3200	543	6	0.2830	0.3084	547	6
19	0.2170	0.3200	545	6	0.3780	0.3079	548	6
20	0.3200	0.3211	547	6	0.4730	0.3086	550	6
21	0.4240	0.3232	549	6	0.5690	0.3105	552	6
22	0.5290	0.3264	551	6	0.6660	0.3136	554	6
23	0.6370	0.3308	553	6	0.7660	0.3180	556	6
24	0.7480	0.3365	555	6	0.8690	0.3239	558	6
25	0.8640	0.3437	558	6	0.9760	0.3312	560	6
26	0.9850	0.3527	560	7	1.0890	0.3405	562	6
27	1.1140	0.3640	562	7	1.2090	0.3518	564	7
28	1.2510	0.3777	565	7	1.3380	0.3657	566	7
29	1.4000	0.3946	568	7	1.4770	0.3824	569	7
30	1.5640	0.4156	571	8	1.6320	0.4031	572	8
31	1.7480	0.4416	574	8	1.8040	0.4284	575	8
32	1.9570	0.4741	578	9	2.0010	0.4603	579	9
33	2.2010	0.5158	583	10	2.2320	0.5013	583	9
34	2.4960	0.5713	588	11	2.5110	0.5564	588	10
35	2.8660	0.6500	595	12	2.8630	0.6356	595	12
36	3.3690	0.7779	599	15	3.3480	0.7660	599	14
37	4.1770	1.0598	599	20	4.1380	1.0525	599	20
38	6.0000	2.3860	599	45	6.0000	2.4404	599	46

Table 8.E.45 Scale Score Conversion Tables with CSEMs for Mathematics, Grade Six—Easy Pathway (Forms R1A0E, R1ABE, R2A0E, and R2ABE)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	4.6768	603	88	-6.0000	4.0449	603	76
1	-2.9030	1.0047	603	19	-3.1790	1.0135	603	19
2	-2.2020	0.7118	603	13	-2.4600	0.7236	603	14
3	-1.7900	0.5810	608	11	-2.0320	0.5948	603	11
4	-1.4990	0.5036	613	9	-1.7250	0.5180	609	10
5	-1.2720	0.4513	617	8	-1.4840	0.4655	613	9
6	-1.0850	0.4133	621	8	-1.2850	0.4270	617	8
7	-0.9270	0.3848	624	7	-1.1160	0.3979	620	7
8	-0.7870	0.3624	627	7	-0.9670	0.3748	623	7
9	-0.6620	0.3445	629	6	-0.8330	0.3562	626	7
10	-0.5490	0.3302	631	6	-0.7120	0.3412	628	6
11	-0.4430	0.3184	633	6	-0.5990	0.3288	630	6
12	-0.3450	0.3087	635	6	-0.4950	0.3187	632	6
13	-0.2520	0.3007	637	6	-0.3960	0.3103	634	6
14	-0.1640	0.2943	638	6	-0.3020	0.3034	636	6
15	-0.0790	0.2890	640	5	-0.2110	0.2978	637	6
16	0.0040	0.2848	641	5	-0.1240	0.2934	639	6
17	0.0840	0.2817	643	5	-0.0390	0.2901	641	5
18	0.1630	0.2794	644	5	0.0450	0.2877	642	5
19	0.2400	0.2781	646	5	0.1270	0.2863	644	5
20	0.3180	0.2776	647	5	0.2090	0.2858	645	5
21	0.3950	0.2780	649	5	0.2910	0.2862	647	5
22	0.4720	0.2792	650	5	0.3730	0.2875	648	5
23	0.5510	0.2814	652	5	0.4570	0.2898	650	5
24	0.6310	0.2846	653	5	0.5410	0.2931	651	5
25	0.7130	0.2888	655	5	0.6290	0.2976	653	6
26	0.7980	0.2942	656	6	0.7190	0.3033	655	6
27	0.8870	0.3010	658	6	0.8130	0.3104	657	6
28	0.9800	0.3094	660	6	0.9120	0.3191	658	6
29	1.0790	0.3196	662	6	1.0180	0.3299	660	6
30	1.1850	0.3321	664	6	1.1310	0.3428	663	6
31	1.3000	0.3474	666	7	1.2540	0.3586	665	7
32	1.4280	0.3665	668	7	1.3890	0.3779	667	7
33	1.5710	0.3902	671	7	1.5410	0.4019	670	8
34	1.7350	0.4205	674	8	1.7140	0.4320	673	8
35	1.9280	0.4602	677	9	1.9180	0.4713	677	9
36	2.1640	0.5143	682	10	2.1650	0.5244	682	10
37	2.4690	0.5937	688	11	2.4790	0.6016	688	11
38	2.8970	0.7250	696	14	2.9160	0.7302	696	14
39	3.6200	1.0168	699	19	3.6450	1.0187	699	19
40	6.0000	3.2357	699	61	6.0000	3.1916	699	60

Table 8.E.46 Scale Score Conversion Tables with CSEMs for Mathematics, Grade Six—Moderate Pathway (Forms R1ABM and R2ABM)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	4.8443	603	91	-6.0000	4.1518	603	78
1	-2.8240	1.0101	603	19	-3.1200	1.0176	603	19
2	-2.1120	0.7188	603	13	-2.3920	0.7295	603	14
3	-1.6910	0.5893	610	11	-1.9560	0.6024	605	11
4	-1.3900	0.5119	615	10	-1.6390	0.5262	611	10
5	-1.1550	0.4592	620	9	-1.3900	0.4744	615	9
6	-0.9620	0.4208	623	8	-1.1830	0.4363	619	8
7	-0.7970	0.3914	626	7	-1.0060	0.4069	622	8
8	-0.6530	0.3684	629	7	-0.8500	0.3836	625	7
9	-0.5240	0.3500	631	7	-0.7100	0.3647	628	7
10	-0.4070	0.3350	634	6	-0.5830	0.3493	630	7
11	-0.2990	0.3227	636	6	-0.4650	0.3365	633	6
12	-0.1980	0.3127	638	6	-0.3550	0.3259	635	6
13	-0.1030	0.3044	639	6	-0.2520	0.3173	637	6
14	-0.0120	0.2977	641	6	-0.1530	0.3101	638	6
15	0.0750	0.2923	643	5	-0.0590	0.3044	640	6
16	0.1590	0.2881	644	5	0.0320	0.2998	642	6
17	0.2410	0.2849	646	5	0.1210	0.2964	644	6
18	0.3220	0.2827	647	5	0.2080	0.2939	645	6
19	0.4010	0.2813	649	5	0.2940	0.2924	647	5
20	0.4800	0.2809	650	5	0.3800	0.2918	648	5
21	0.5590	0.2812	652	5	0.4650	0.2921	650	5
22	0.6390	0.2823	653	5	0.5510	0.2932	652	5
23	0.7190	0.2843	655	5	0.6370	0.2951	653	6
24	0.8010	0.2871	656	5	0.7250	0.2979	655	6
25	0.8840	0.2908	658	5	0.8150	0.3016	657	6
26	0.9700	0.2955	659	6	0.9070	0.3062	658	6
27	1.0590	0.3012	661	6	1.0030	0.3119	660	6
28	1.1520	0.3082	663	6	1.1020	0.3187	662	6
29	1.2500	0.3165	665	6	1.2060	0.3268	664	6
30	1.3530	0.3265	667	6	1.3160	0.3365	666	6
31	1.4630	0.3385	669	6	1.4340	0.3482	668	7
32	1.5830	0.3532	671	7	1.5600	0.3624	671	7
33	1.7140	0.3713	673	7	1.6980	0.3800	673	7
34	1.8600	0.3939	676	7	1.8500	0.4019	676	8
35	2.0270	0.4229	679	8	2.0230	0.4301	679	8
36	2.2220	0.4612	683	9	2.2240	0.4675	683	9
37	2.4580	0.5137	687	10	2.4660	0.5190	688	10
38	2.7610	0.5913	693	11	2.7740	0.5953	693	11
39	3.1850	0.7211	699	14	3.2020	0.7236	699	14
40	3.9010	1.0123	699	19	3.9210	1.0133	699	19
41	6.0000	2.8260	699	53	6.0000	2.7965	699	52

Table 8.E.47 Scale Score Conversion Tables with CSEMs for Mathematics, Grade Six—Hard Pathway (Forms R1ABH and R2ABH)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	4.6681	603	88	-6.0000	4.0392	603	76
1	-2.9020	1.0087	603	19	-3.1790	1.0153	603	19
2	-2.1910	0.7187	603	13	-2.4550	0.7277	603	14
3	-1.7690	0.5908	608	11	-2.0200	0.6011	603	11
4	-1.4660	0.5149	614	10	-1.7050	0.5262	609	10
5	-1.2280	0.4633	618	9	-1.4550	0.4752	614	9
6	-1.0310	0.4254	622	8	-1.2470	0.4379	618	8
7	-0.8620	0.3962	625	7	-1.0680	0.4091	621	8
8	-0.7150	0.3732	628	7	-0.9100	0.3862	624	7
9	-0.5820	0.3544	630	7	-0.7680	0.3675	627	7
10	-0.4620	0.3391	633	6	-0.6390	0.3521	629	7
11	-0.3510	0.3264	635	6	-0.5190	0.3392	632	6
12	-0.2480	0.3158	637	6	-0.4080	0.3285	634	6
13	-0.1510	0.3071	638	6	-0.3030	0.3195	636	6
14	-0.0590	0.2999	640	6	-0.2030	0.3120	637	6
15	0.0290	0.2940	642	6	-0.1080	0.3059	639	6
16	0.1140	0.2893	643	5	-0.0160	0.3010	641	6
17	0.1970	0.2857	645	5	0.0740	0.2971	643	6
18	0.2780	0.2831	647	5	0.1610	0.2943	644	6
19	0.3570	0.2814	648	5	0.2470	0.2924	646	5
20	0.4360	0.2806	649	5	0.3330	0.2914	648	5
21	0.5150	0.2807	651	5	0.4170	0.2913	649	5
22	0.5940	0.2816	652	5	0.5030	0.2922	651	5
23	0.6740	0.2835	654	5	0.5890	0.2940	652	6
24	0.7550	0.2862	655	5	0.6760	0.2967	654	6
25	0.8380	0.2900	657	5	0.7650	0.3005	656	6
26	0.9240	0.2949	659	6	0.8570	0.3054	657	6
27	1.0130	0.3010	660	6	0.9520	0.3114	659	6
28	1.1050	0.3084	662	6	1.0510	0.3188	661	6
29	1.2030	0.3174	664	6	1.1560	0.3279	663	6
30	1.3080	0.3284	666	6	1.2670	0.3387	665	6
31	1.4200	0.3415	668	6	1.3860	0.3516	667	7
32	1.5420	0.3574	670	7	1.5150	0.3672	670	7
33	1.6760	0.3766	673	7	1.6570	0.3862	672	7
34	1.8270	0.4006	676	8	1.8150	0.4095	675	8
35	2.0000	0.4308	679	8	1.9940	0.4387	679	8
36	2.2020	0.4698	683	9	2.2030	0.4767	683	9
37	2.4470	0.5226	687	10	2.4550	0.5283	687	10
38	2.7600	0.5999	693	11	2.7730	0.6038	693	11
39	3.1940	0.7283	699	14	3.2110	0.7305	699	14
40	3.9200	1.0171	699	19	3.9400	1.0180	699	19
41	6.0000	2.7895	699	52	6.0000	2.7611	699	52

Table 8.E.48 Scale Score Conversion Tables with CSEMs for Mathematics, Grade Seven—Easy Pathway (Forms R1A0E, R1ABE, R2A0E, and R2ABE)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	3.6317	703	68	-6.0000	3.5673	703	67
1	-3.4010	1.0108	703	19	-3.4410	1.0082	703	19
2	-2.6860	0.7217	703	14	-2.7320	0.7168	703	13
3	-2.2600	0.5944	703	11	-2.3130	0.5876	703	11
4	-1.9520	0.5188	705	10	-2.0140	0.5108	704	10
5	-1.7100	0.4678	709	9	-1.7800	0.4589	708	9
6	-1.5090	0.4307	713	8	-1.5870	0.4212	712	8
7	-1.3360	0.4023	716	8	-1.4220	0.3927	715	7
8	-1.1830	0.3800	719	7	-1.2760	0.3704	717	7
9	-1.0450	0.3621	722	7	-1.1460	0.3530	720	7
10	-0.9190	0.3475	724	7	-1.0260	0.3389	722	6
11	-0.8030	0.3357	726	6	-0.9150	0.3277	724	6
12	-0.6930	0.3258	728	6	-0.8110	0.3187	726	6
13	-0.5900	0.3178	730	6	-0.7110	0.3114	728	6
14	-0.4910	0.3111	732	6	-0.6160	0.3058	730	6
15	-0.3960	0.3057	734	6	-0.5240	0.3015	731	6
16	-0.3040	0.3013	736	6	-0.4340	0.2982	733	6
17	-0.2140	0.2979	737	6	-0.3460	0.2960	735	6
18	-0.1260	0.2953	739	6	-0.2580	0.2947	736	6
19	-0.0390	0.2936	741	6	-0.1720	0.2942	738	6
20	0.0470	0.2926	742	5	-0.0850	0.2944	740	6
21	0.1320	0.2924	744	5	0.0020	0.2954	741	6
22	0.2180	0.2930	745	5	0.0900	0.2970	743	6
23	0.3040	0.2944	747	6	0.1790	0.2994	745	6
24	0.3920	0.2966	749	6	0.2690	0.3025	746	6
25	0.4810	0.2996	750	6	0.3620	0.3064	748	6
26	0.5720	0.3035	752	6	0.4570	0.3110	750	6
27	0.6650	0.3084	754	6	0.5560	0.3166	752	6
28	0.7620	0.3144	756	6	0.6580	0.3232	754	6
29	0.8630	0.3217	757	6	0.7650	0.3309	756	6
30	0.9700	0.3304	759	6	0.8780	0.3400	758	6
31	1.0820	0.3407	762	6	0.9970	0.3506	760	7
32	1.2030	0.3532	764	7	1.1240	0.3632	762	7
33	1.3330	0.3681	766	7	1.2620	0.3782	765	7
34	1.4750	0.3862	769	7	1.4110	0.3963	768	7
35	1.6320	0.4084	772	8	1.5770	0.4186	771	8
36	1.8110	0.4367	775	8	1.7640	0.4467	774	8
37	2.0170	0.4733	779	9	1.9800	0.4833	778	9
38	2.2650	0.5238	784	10	2.2370	0.5333	783	10
39	2.5770	0.5983	790	11	2.5600	0.6073	789	11
40	3.0080	0.7247	798	14	3.0020	0.7327	798	14
41	3.7270	1.0127	799	19	3.7340	1.0191	799	19
42	6.0000	3.0831	799	58	6.0000	3.0567	799	57

Table 8.E.49 Scale Score Conversion Tables with CSEMs for Mathematics, Grade Seven—Moderate Pathway (Forms R1ABM and R2ABM)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	3.9837	703	75	-6.0000	3.8991	703	73
1	-3.2220	1.0071	703	19	-3.2700	1.0037	703	19
2	-2.5140	0.7161	703	13	-2.5700	0.7101	703	13
3	-2.0960	0.5879	703	11	-2.1610	0.5800	703	11
4	-1.7960	0.5120	708	10	-1.8700	0.5029	706	9
5	-1.5600	0.4607	712	9	-1.6440	0.4513	710	8
6	-1.3650	0.4236	716	8	-1.4570	0.4141	714	8
7	-1.1980	0.3957	719	7	-1.2970	0.3863	717	7
8	-1.0500	0.3738	722	7	-1.1560	0.3649	720	7
9	-0.9170	0.3565	724	7	-1.0290	0.3482	722	7
10	-0.7950	0.3425	726	6	-0.9130	0.3351	724	6
11	-0.6810	0.3311	729	6	-0.8040	0.3246	726	6
12	-0.5750	0.3218	731	6	-0.7010	0.3163	728	6
13	-0.4740	0.3141	732	6	-0.6030	0.3098	730	6
14	-0.3770	0.3079	734	6	-0.5090	0.3048	732	6
15	-0.2840	0.3028	736	6	-0.4170	0.3010	733	6
16	-0.1930	0.2988	738	6	-0.3270	0.2982	735	6
17	-0.1050	0.2958	739	6	-0.2390	0.2964	737	6
18	-0.0180	0.2936	741	6	-0.1510	0.2954	738	6
19	0.0680	0.2922	743	5	-0.0640	0.2952	740	6
20	0.1530	0.2916	744	5	0.0230	0.2957	742	6
21	0.2380	0.2917	746	5	0.1110	0.2969	743	6
22	0.3240	0.2926	747	5	0.2000	0.2987	745	6
23	0.4100	0.2943	749	6	0.2900	0.3012	747	6
24	0.4970	0.2968	751	6	0.3820	0.3044	748	6
25	0.5860	0.3001	752	6	0.4760	0.3083	750	6
26	0.6770	0.3043	754	6	0.5720	0.3130	752	6
27	0.7720	0.3095	756	6	0.6720	0.3186	754	6
28	0.8690	0.3157	758	6	0.7760	0.3251	756	6
29	0.9710	0.3231	760	6	0.8840	0.3328	758	6
30	1.0790	0.3320	762	6	0.9970	0.3417	760	6
31	1.1920	0.3424	764	6	1.1180	0.3522	762	7
32	1.3140	0.3549	766	7	1.2460	0.3646	765	7
33	1.4450	0.3698	768	7	1.3850	0.3795	767	7
34	1.5890	0.3879	771	7	1.5360	0.3974	770	7
35	1.7480	0.4101	774	8	1.7020	0.4193	773	8
36	1.9270	0.4380	777	8	1.8890	0.4470	777	8
37	2.1350	0.4746	781	9	2.1050	0.4832	781	9
38	2.3830	0.5246	786	10	2.3620	0.5328	786	10
39	2.6970	0.5990	792	11	2.6850	0.6067	792	11
40	3.1280	0.7249	799	14	3.1260	0.7318	799	14
41	3.8470	1.0124	799	19	3.8550	1.0178	799	19
42	6.0000	2.9038	799	54	6.0000	2.8817	799	54

Table 8.E.50 Scale Score Conversion Tables with CSEMs for Mathematics, Grade Seven—Hard Pathway (Forms R1ABH and R2ABH)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	4.0617	703	76	-6.0000	3.9722	703	74
1	-3.1830	1.0069	703	19	-3.2330	1.0032	703	19
2	-2.4760	0.7160	703	13	-2.5340	0.7094	703	13
3	-2.0580	0.5876	703	11	-2.1260	0.5792	703	11
4	-1.7580	0.5115	708	10	-1.8360	0.5021	707	9
5	-1.5230	0.4604	713	9	-1.6100	0.4505	711	8
6	-1.3280	0.4234	716	8	-1.4240	0.4136	715	8
7	-1.1610	0.3956	720	7	-1.2650	0.3861	718	7
8	-1.0130	0.3739	722	7	-1.1240	0.3650	720	7
9	-0.8800	0.3568	725	7	-0.9970	0.3486	723	7
10	-0.7570	0.3429	727	6	-0.8800	0.3357	725	6
11	-0.6440	0.3317	729	6	-0.7700	0.3254	727	6
12	-0.5370	0.3226	731	6	-0.6670	0.3175	729	6
13	-0.4350	0.3150	733	6	-0.5680	0.3112	731	6
14	-0.3380	0.3090	735	6	-0.4730	0.3064	732	6
15	-0.2440	0.3041	737	6	-0.3800	0.3029	734	6
16	-0.1520	0.3003	738	6	-0.2890	0.3004	736	6
17	-0.0630	0.2974	740	6	-0.1990	0.2989	738	6
18	0.0250	0.2955	742	6	-0.1100	0.2981	739	6
19	0.1120	0.2943	743	6	-0.0210	0.2982	741	6
20	0.1980	0.2939	745	6	0.0680	0.2989	743	6
21	0.2850	0.2943	747	6	0.1580	0.3003	744	6
22	0.3720	0.2955	748	6	0.2490	0.3024	746	6
23	0.4600	0.2974	750	6	0.3410	0.3052	748	6
24	0.5490	0.3001	752	6	0.4350	0.3086	749	6
25	0.6400	0.3037	753	6	0.5320	0.3128	751	6
26	0.7340	0.3082	755	6	0.6310	0.3177	753	6
27	0.8310	0.3137	757	6	0.7340	0.3235	755	6
28	0.9310	0.3202	759	6	0.8410	0.3303	757	6
29	1.0360	0.3279	761	6	0.9530	0.3381	759	6
30	1.1470	0.3371	763	6	1.0700	0.3472	761	7
31	1.2640	0.3478	765	7	1.1940	0.3579	764	7
32	1.3890	0.3604	767	7	1.3270	0.3704	766	7
33	1.5250	0.3755	770	7	1.4700	0.3853	769	7
34	1.6730	0.3937	773	7	1.6250	0.4032	772	8
35	1.8360	0.4159	776	8	1.7960	0.4250	775	8
36	2.0210	0.4440	779	8	1.9890	0.4527	779	8
37	2.2340	0.4804	783	9	2.2100	0.4886	783	9
38	2.4880	0.5302	788	10	2.4720	0.5377	788	10
39	2.8080	0.6042	794	11	2.7990	0.6107	794	11
40	3.2450	0.7293	799	14	3.2450	0.7350	799	14
41	3.9710	1.0159	799	19	3.9790	1.0200	799	19
42	6.0000	2.7245	799	51	6.0000	2.7062	799	51

Table 8.E.51 Scale Score Conversion Tables with CSEMs for Mathematics, Grade Eight—Easy Pathway (Forms R1A0E, R1ABE, R2A0E, and R2ABE)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	3.9070	803	73	-6.0000	4.0433	803	76
1	-3.2570	1.0092	803	19	-3.1860	1.0099	803	19
2	-2.5450	0.7200	803	14	-2.4730	0.7207	803	14
3	-2.1210	0.5927	803	11	-2.0480	0.5929	803	11
4	-1.8150	0.5175	807	10	-1.7420	0.5171	809	10
5	-1.5740	0.4667	812	9	-1.5020	0.4660	813	9
6	-1.3740	0.4299	816	8	-1.3020	0.4288	817	8
7	-1.2010	0.4018	819	8	-1.1310	0.4006	820	8
8	-1.0480	0.3799	822	7	-0.9790	0.3785	823	7
9	-0.9110	0.3625	824	7	-0.8420	0.3610	826	7
10	-0.7840	0.3483	827	7	-0.7170	0.3469	828	7
11	-0.6670	0.3369	829	6	-0.6010	0.3356	830	6
12	-0.5570	0.3276	831	6	-0.4910	0.3264	832	6
13	-0.4520	0.3201	833	6	-0.3870	0.3190	834	6
14	-0.3510	0.3141	835	6	-0.2870	0.3132	836	6
15	-0.2540	0.3094	837	6	-0.1900	0.3086	838	6
16	-0.1600	0.3059	838	6	-0.0960	0.3052	840	6
17	-0.0670	0.3034	840	6	-0.0040	0.3029	841	6
18	0.0250	0.3018	842	6	0.0880	0.3014	843	6
19	0.1160	0.3012	843	6	0.1780	0.3007	845	6
20	0.2070	0.3013	845	6	0.2690	0.3009	846	6
21	0.2980	0.3022	847	6	0.3600	0.3017	848	6
22	0.3900	0.3039	849	6	0.4510	0.3033	850	6
23	0.4830	0.3063	850	6	0.5440	0.3055	852	6
24	0.5780	0.3095	852	6	0.6380	0.3085	853	6
25	0.6750	0.3135	854	6	0.7340	0.3121	855	6
26	0.7740	0.3182	856	6	0.8330	0.3165	857	6
27	0.8780	0.3239	858	6	0.9350	0.3218	859	6
28	0.9850	0.3305	860	6	1.0410	0.3280	861	6
29	1.0960	0.3382	862	6	1.1510	0.3351	863	6
30	1.2140	0.3472	864	7	1.2660	0.3435	865	6
31	1.3380	0.3577	866	7	1.3870	0.3534	867	7
32	1.4700	0.3699	869	7	1.5160	0.3651	870	7
33	1.6130	0.3846	872	7	1.6550	0.3792	872	7
34	1.7670	0.4021	874	8	1.8050	0.3962	875	7
35	1.9380	0.4237	878	8	1.9700	0.4173	878	8
36	2.1290	0.4509	881	8	2.1550	0.4441	882	8
37	2.3480	0.4864	885	9	2.3680	0.4795	886	9
38	2.6070	0.5351	890	10	2.6210	0.5284	890	10
39	2.9320	0.6080	896	11	2.9380	0.6015	896	11
40	3.3740	0.7322	899	14	3.3720	0.7265	899	14
41	4.1030	1.0174	899	19	4.0930	1.0133	899	19
42	6.0000	2.5490	899	48	6.0000	2.5703	899	48

Table 8.E.52 Scale Score Conversion Tables with CSEMs for Mathematics, Grade Eight—Moderate Pathway (Forms R1ABM and R2ABM)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	4.0495	803	76	-6.0000	4.2018	803	79
1	-3.1900	1.0068	803	19	-3.1150	1.0074	803	19
2	-2.4830	0.7169	803	13	-2.4070	0.7170	803	13
3	-2.0630	0.5892	803	11	-1.9870	0.5887	804	11
4	-1.7610	0.5138	808	10	-1.6860	0.5129	810	10
5	-1.5240	0.4632	813	9	-1.4500	0.4619	814	9
6	-1.3260	0.4264	816	8	-1.2540	0.4249	818	8
7	-1.1560	0.3985	820	7	-1.0850	0.3968	821	7
8	-1.0060	0.3768	822	7	-0.9360	0.3751	824	7
9	-0.8710	0.3596	825	7	-0.8020	0.3579	826	7
10	-0.7460	0.3457	827	6	-0.6790	0.3441	829	6
11	-0.6310	0.3345	829	6	-0.5640	0.3329	831	6
12	-0.5220	0.3254	832	6	-0.4570	0.3241	833	6
13	-0.4180	0.3180	833	6	-0.3540	0.3169	835	6
14	-0.3190	0.3123	835	6	-0.2550	0.3112	837	6
15	-0.2230	0.3077	837	6	-0.1600	0.3069	838	6
16	-0.1290	0.3043	839	6	-0.0660	0.3036	840	6
17	-0.0370	0.3020	841	6	0.0250	0.3013	842	6
18	0.0530	0.3005	842	6	0.1150	0.2999	843	6
19	0.1430	0.2999	844	6	0.2050	0.2994	845	6
20	0.2340	0.3001	846	6	0.2950	0.2995	847	6
21	0.3240	0.3011	847	6	0.3850	0.3004	849	6
22	0.4150	0.3027	849	6	0.4760	0.3020	850	6
23	0.5070	0.3052	851	6	0.5680	0.3043	852	6
24	0.6020	0.3084	853	6	0.6610	0.3072	854	6
25	0.6980	0.3123	854	6	0.7570	0.3109	855	6
26	0.7970	0.3171	856	6	0.8550	0.3153	857	6
27	0.8990	0.3227	858	6	0.9560	0.3205	859	6
28	1.0060	0.3293	860	6	1.0610	0.3267	861	6
29	1.1170	0.3370	862	6	1.1700	0.3338	863	6
30	1.2330	0.3459	864	6	1.2840	0.3422	865	6
31	1.3570	0.3564	867	7	1.4040	0.3521	868	7
32	1.4880	0.3686	869	7	1.5330	0.3639	870	7
33	1.6290	0.3832	872	7	1.6700	0.3779	873	7
34	1.7830	0.4008	875	8	1.8190	0.3949	875	7
35	1.9520	0.4223	878	8	1.9840	0.4162	879	8
36	2.1420	0.4496	881	8	2.1680	0.4431	882	8
37	2.3600	0.4852	886	9	2.3800	0.4785	886	9
38	2.6180	0.5340	890	10	2.6320	0.5276	891	10
39	2.9410	0.6069	896	11	2.9470	0.6006	897	11
40	3.3820	0.7313	899	14	3.3800	0.7256	899	14
41	4.1100	1.0167	899	19	4.1000	1.0126	899	19
42	6.0000	2.5407	899	48	6.0000	2.5618	899	48

Table 8.E.53 Scale Score Conversion Tables with CSEMs for Mathematics, Grade Eight—Hard Pathway (Forms R1ABH and R2ABH)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	4.0589	803	76	-6.0000	4.2124	803	79
1	-3.1850	1.0070	803	19	-3.1090	1.0075	803	19
2	-2.4770	0.7171	803	13	-2.4010	0.7174	803	13
3	-2.0570	0.5895	803	11	-1.9810	0.5892	804	11
4	-1.7550	0.5143	808	10	-1.6790	0.5133	810	10
5	-1.5170	0.4636	813	9	-1.4420	0.4622	814	9
6	-1.3190	0.4268	817	8	-1.2460	0.4253	818	8
7	-1.1490	0.3991	820	7	-1.0770	0.3973	821	7
8	-0.9980	0.3773	823	7	-0.9280	0.3756	824	7
9	-0.8620	0.3601	825	7	-0.7930	0.3584	826	7
10	-0.7380	0.3464	827	6	-0.6700	0.3447	829	6
11	-0.6220	0.3352	830	6	-0.5550	0.3337	831	6
12	-0.5120	0.3262	832	6	-0.4460	0.3248	833	6
13	-0.4080	0.3189	834	6	-0.3430	0.3178	835	6
14	-0.3080	0.3132	836	6	-0.2440	0.3122	837	6
15	-0.2120	0.3088	837	6	-0.1480	0.3080	839	6
16	-0.1170	0.3055	839	6	-0.0540	0.3048	840	6
17	-0.0250	0.3033	841	6	0.0380	0.3026	842	6
18	0.0670	0.3019	843	6	0.1300	0.3013	844	6
19	0.1580	0.3014	844	6	0.2200	0.3009	845	6
20	0.2490	0.3018	846	6	0.3110	0.3012	847	6
21	0.3400	0.3029	848	6	0.4020	0.3022	849	6
22	0.4330	0.3047	849	6	0.4940	0.3039	851	6
23	0.5260	0.3073	851	6	0.5870	0.3063	852	6
24	0.6220	0.3106	853	6	0.6820	0.3094	854	6
25	0.7200	0.3148	855	6	0.7790	0.3132	856	6
26	0.8200	0.3196	857	6	0.8780	0.3177	858	6
27	0.9240	0.3254	859	6	0.9810	0.3230	860	6
28	1.0330	0.3322	861	6	1.0870	0.3293	862	6
29	1.1460	0.3401	863	6	1.1980	0.3366	864	6
30	1.2640	0.3491	865	7	1.3150	0.3452	866	6
31	1.3900	0.3597	867	7	1.4370	0.3552	868	7
32	1.5240	0.3721	870	7	1.5680	0.3671	871	7
33	1.6680	0.3868	873	7	1.7070	0.3812	873	7
34	1.8240	0.4044	876	8	1.8590	0.3984	876	7
35	1.9970	0.4261	879	8	2.0270	0.4198	879	8
36	2.1900	0.4533	882	8	2.2140	0.4467	883	8
37	2.4110	0.4888	887	9	2.4290	0.4822	887	9
38	2.6730	0.5376	891	10	2.6850	0.5313	892	10
39	3.0000	0.6102	898	11	3.0050	0.6044	898	11
40	3.4450	0.7342	899	14	3.4420	0.7290	899	14
41	4.1780	1.0192	899	19	4.1670	1.0152	899	19
42	6.0000	2.4537	899	46	6.0000	2.4727	899	46

Table 8.E.54 Scale Score Conversion Tables with CSEMs for Mathematics, Grade Eleven—Easy Pathway (Forms R1A0E, R1ABE, R2A0E, and R2ABE)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	3.7111	903	70	-6.0000	3.7895	903	71
1	-3.3620	1.0085	903	19	-3.2960	1.0209	903	19
2	-2.6510	0.7188	903	13	-2.5640	0.7313	903	14
3	-2.2290	0.5916	903	11	-2.1260	0.6016	903	11
4	-1.9240	0.5162	905	10	-1.8120	0.5236	907	10
5	-1.6840	0.4655	910	9	-1.5660	0.4702	912	9
6	-1.4850	0.4289	913	8	-1.3640	0.4315	916	8
7	-1.3130	0.4011	917	8	-1.1900	0.4020	919	8
8	-1.1610	0.3794	920	7	-1.0380	0.3793	922	7
9	-1.0230	0.3623	922	7	-0.9010	0.3615	924	7
10	-0.8970	0.3487	924	7	-0.7750	0.3475	927	7
11	-0.7790	0.3379	927	6	-0.6580	0.3364	929	6
12	-0.6680	0.3294	929	6	-0.5480	0.3277	931	6
13	-0.5620	0.3228	931	6	-0.4430	0.3210	933	6
14	-0.4590	0.3179	933	6	-0.3410	0.3158	935	6
15	-0.3590	0.3144	935	6	-0.2430	0.3121	937	6
16	-0.2610	0.3122	936	6	-0.1460	0.3096	939	6
17	-0.1640	0.3113	938	6	-0.0510	0.3082	940	6
18	-0.0670	0.3114	940	6	0.0440	0.3078	942	6
19	0.0310	0.3126	942	6	0.1390	0.3084	944	6
20	0.1290	0.3149	944	6	0.2350	0.3100	946	6
21	0.2290	0.3183	946	6	0.3320	0.3127	948	6
22	0.3320	0.3229	948	6	0.4310	0.3166	949	6
23	0.4380	0.3287	950	6	0.5330	0.3217	951	6
24	0.5490	0.3360	952	6	0.6380	0.3282	953	6
25	0.6650	0.3450	954	6	0.7490	0.3365	955	6
26	0.7880	0.3559	956	7	0.8650	0.3466	958	6
27	0.9190	0.3691	959	7	0.9900	0.3592	960	7
28	1.0610	0.3852	961	7	1.1240	0.3746	962	7
29	1.2170	0.4050	964	8	1.2720	0.3937	965	7
30	1.3910	0.4294	967	8	1.4360	0.4174	968	8
31	1.5880	0.4599	971	9	1.6230	0.4475	972	8
32	1.8180	0.4992	975	9	1.8400	0.4863	976	9
33	2.0930	0.5516	981	10	2.1020	0.5390	981	10
34	2.4380	0.6272	987	12	2.4330	0.6154	987	12
35	2.9070	0.7523	996	14	2.8870	0.7425	995	14
36	3.6690	1.0348	999	19	3.6350	1.0283	999	19
37	6.0000	3.1132	999	58	6.0000	3.1823	999	60

Table 8.E.55 Scale Score Conversion Tables with CSEMs for Mathematics, Grade Eleven—Moderate Pathway (Forms R1ABM and R2ABM)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	3.9251	903	74	-6.0000	4.0182	903	75
1	-3.2450	1.0113	903	19	-3.1660	1.0266	903	19
2	-2.5280	0.7235	903	14	-2.4220	0.7390	903	14
3	-2.0980	0.5978	903	11	-1.9740	0.6107	904	11
4	-1.7860	0.5244	908	10	-1.6490	0.5332	910	10
5	-1.5370	0.4750	912	9	-1.3930	0.4801	915	9
6	-1.3290	0.4394	916	8	-1.1820	0.4416	919	8
7	-1.1480	0.4125	920	8	-1.0000	0.4122	923	8
8	-0.9860	0.3913	923	7	-0.8390	0.3892	926	7
9	-0.8400	0.3746	926	7	-0.6950	0.3711	928	7
10	-0.7040	0.3611	928	7	-0.5630	0.3565	931	7
11	-0.5780	0.3502	930	7	-0.4400	0.3446	933	6
12	-0.4580	0.3413	933	6	-0.3240	0.3349	935	6
13	-0.3440	0.3341	935	6	-0.2150	0.3271	937	6
14	-0.2350	0.3285	937	6	-0.1100	0.3208	939	6
15	-0.1280	0.3240	939	6	-0.0080	0.3159	941	6
16	-0.0240	0.3207	941	6	0.0900	0.3122	943	6
17	0.0780	0.3186	943	6	0.1870	0.3097	945	6
18	0.1790	0.3174	945	6	0.2820	0.3083	947	6
19	0.2800	0.3173	947	6	0.3770	0.3080	948	6
20	0.3810	0.3183	948	6	0.4720	0.3089	950	6
21	0.4830	0.3204	950	6	0.5680	0.3109	952	6
22	0.5860	0.3236	952	6	0.6660	0.3142	954	6
23	0.6930	0.3283	954	6	0.7660	0.3189	956	6
24	0.8030	0.3344	956	6	0.8700	0.3251	958	6
25	0.9170	0.3422	958	6	0.9780	0.3329	960	6
26	1.0370	0.3520	961	7	1.0920	0.3427	962	6
27	1.1660	0.3642	963	7	1.2140	0.3550	964	7
28	1.3040	0.3793	966	7	1.3450	0.3699	967	7
29	1.4550	0.3980	969	7	1.4890	0.3885	969	7
30	1.6220	0.4211	972	8	1.6490	0.4116	972	8
31	1.8120	0.4506	975	8	1.8300	0.4409	976	8
32	2.0320	0.4887	979	9	2.0420	0.4792	980	9
33	2.2950	0.5403	984	10	2.2960	0.5312	984	10
34	2.6270	0.6157	991	12	2.6170	0.6071	990	11
35	3.0810	0.7416	999	14	3.0600	0.7343	999	14
36	3.8270	1.0268	999	19	3.7960	1.0218	999	19
37	6.0000	2.9008	999	54	6.0000	2.9564	999	55

Table 8.E.56 Scale Score Conversion Tables with CSEMs for Mathematics, Grade Eleven—Hard Pathway (Forms R1ABH and R2ABH)

Raw Score	Stage 1 Version 1				Stage 1 Version 2			
	Theta	Theta CSEM	Scale Score	Scale Score CSEM	Theta	Theta CSEM	Scale Score	Scale Score CSEM
0	-6.0000	3.9328	903	74	-6.0000	4.0264	903	75
1	-3.2430	1.0104	903	19	-3.1640	1.0256	903	19
2	-2.5280	0.7220	903	14	-2.4230	0.7372	903	14
3	-2.1010	0.5960	903	11	-1.9770	0.6078	904	11
4	-1.7910	0.5219	908	10	-1.6560	0.5298	910	10
5	-1.5450	0.4721	912	9	-1.4040	0.4764	915	9
6	-1.3390	0.4360	916	8	-1.1960	0.4375	919	8
7	-1.1610	0.4087	920	8	-1.0170	0.4079	922	8
8	-1.0030	0.3874	922	7	-0.8600	0.3850	925	7
9	-0.8590	0.3705	925	7	-0.7190	0.3670	928	7
10	-0.7270	0.3569	928	7	-0.5900	0.3527	930	7
11	-0.6040	0.3460	930	6	-0.4690	0.3411	933	6
12	-0.4870	0.3373	932	6	-0.3560	0.3319	935	6
13	-0.3750	0.3304	934	6	-0.2490	0.3246	937	6
14	-0.2680	0.3251	936	6	-0.1450	0.3189	939	6
15	-0.1640	0.3212	938	6	-0.0450	0.3146	940	6
16	-0.0610	0.3186	940	6	0.0530	0.3117	942	6
17	0.0400	0.3172	942	6	0.1500	0.3099	944	6
18	0.1400	0.3169	944	6	0.2460	0.3092	946	6
19	0.2410	0.3178	946	6	0.3420	0.3097	948	6
20	0.3430	0.3197	948	6	0.4380	0.3113	950	6
21	0.4460	0.3228	950	6	0.5360	0.3141	951	6
22	0.5520	0.3271	952	6	0.6360	0.3181	953	6
23	0.6600	0.3327	954	6	0.7390	0.3235	955	6
24	0.7740	0.3398	956	6	0.8460	0.3303	957	6
25	0.8920	0.3484	958	7	0.9570	0.3387	959	6
26	1.0170	0.3589	960	7	1.0760	0.3491	961	7
27	1.1500	0.3716	963	7	1.2020	0.3616	964	7
28	1.2940	0.3870	966	7	1.3380	0.3769	966	7
29	1.4510	0.4057	969	8	1.4870	0.3955	969	7
30	1.6250	0.4287	972	8	1.6530	0.4185	972	8
31	1.8210	0.4575	975	9	1.8400	0.4474	976	8
32	2.0470	0.4947	980	9	2.0570	0.4850	980	9
33	2.3170	0.5452	985	10	2.3160	0.5359	985	10
34	2.6530	0.6190	991	12	2.6430	0.6109	991	11
35	3.1110	0.7437	999	14	3.0900	0.7368	999	14
36	3.8580	1.0271	999	19	3.8280	1.0227	999	19
37	6.0000	2.8545	999	54	6.0000	2.9075	999	55

Table 8.E.57 Decision Accuracy and Decision Consistency—ELA, Grade Three

	Scale Score	Level1— Alternate	Level2— Alternate	Level3— Alternate	Category Total
Decision Accuracy	303–344	0.38	0.05	0.00	0.43
	345–359	0.05	0.20	0.05	0.31
	360–399	0.00	0.04	0.23	0.26
Average	Estimated Proportion Correctly Classified: Total = 0.81				
Decision Consistency	303–344	0.36	0.07	0.00	0.43
	345–359	0.07	0.16	0.07	0.31
	360–399	0.00	0.05	0.21	0.26
Form	Estimated Proportion Consistently Classified: Total = 0.74				

Table 8.E.58 Decision Accuracy and Decision Consistency—ELA, Grade Four

	Scale Score	Level1— Alternate	Level2— Alternate	Level3— Alternate	Category Total
Decision Accuracy	403–444	0.43	0.07	0.01	0.50
	445–459	0.05	0.26	0.04	0.36
	460–499	0.00	0.04	0.10	0.14
Average	Estimated Proportion Correctly Classified: Total = 0.79				
Decision Consistency	403–444	0.41	0.09	0.01	0.50
	445–459	0.08	0.21	0.07	0.36
	460–499	0.00	0.04	0.10	0.14
Form	Estimated Proportion Consistently Classified: Total = 0.71				

Table 8.E.59 Decision Accuracy and Decision Consistency—ELA, Grade Five

	Scale Score	Level1— Alternate	Level2— Alternate	Level3— Alternate	Category Total
Decision Accuracy	503–544	0.40	0.08	0.00	0.48
	545–559	0.05	0.32	0.04	0.42
	560–599	0.00	0.05	0.05	0.10
Average	Estimated Proportion Correctly Classified: Total = 0.77				
Decision Consistency	503–544	0.38	0.09	0.01	0.48
	545–559	0.08	0.26	0.07	0.42
	560–599	0.00	0.05	0.05	0.10
Form	Estimated Proportion Consistently Classified: Total = 0.69				

Table 8.E.60 Decision Accuracy and Decision Consistency—ELA, Grade Six

	Scale Score	Level1— Alternate	Level2— Alternate	Level3— Alternate	Category Total
Decision Accuracy	603–644	0.37	0.07	0.00	0.45
	645–659	0.04	0.40	0.01	0.46
	660–699	0.00	0.07	0.02	0.09
Average	Estimated Proportion Correctly Classified: Total = 0.80				
Decision Consistency	603–644	0.36	0.08	0.01	0.45
	645–659	0.07	0.33	0.06	0.46
	660–699	0.00	0.06	0.03	0.09
Form	Estimated Proportion Consistently Classified: Total = 0.72				

Table 8.E.61 Decision Accuracy and Decision Consistency—ELA, Grade Seven

	Scale Score	Level1— Alternate	Level2— Alternate	Level3— Alternate	Category Total
Decision Accuracy	703–744	0.43	0.04	0.00	0.47
	745–759	0.10	0.28	0.05	0.43
	760–799	0.00	0.03	0.08	0.10
Average	Estimated Proportion Correctly Classified: Total = 0.79				
Decision Consistency	703–744	0.40	0.06	0.00	0.47
	745–759	0.12	0.24	0.07	0.43
	760–799	0.00	0.03	0.08	0.10
Form	Estimated Proportion Consistently Classified: Total = 0.71				

Table 8.E.62 Decision Accuracy and Decision Consistency—ELA, Grade Eight

	Scale Score	Level1— Alternate	Level2— Alternate	Level3— Alternate	Category Total
Decision Accuracy	803–844	0.32	0.03	0.00	0.35
	845–859	0.09	0.40	0.05	0.54
	860–899	0.00	0.03	0.08	0.11
Average	Estimated Proportion Correctly Classified: Total = 0.80				
Decision Consistency	803–844	0.30	0.05	0.00	0.35
	845–859	0.12	0.35	0.07	0.54
	860–899	0.00	0.03	0.08	0.11
Form	Estimated Proportion Consistently Classified: Total = 0.73				

Table 8.E.63 Decision Accuracy and Decision Consistency—ELA, Grade Eleven

	Scale Score	Level1— Alternate	Level2— Alternate	Level3— Alternate	Category Total
Decision Accuracy	903–944	0.31	0.02	0.00	0.33
	945–959	0.11	0.41	0.05	0.58
	960–999	0.00	0.03	0.06	0.09
Average	Estimated Proportion Correctly Classified: Total = 0.79				
Decision Consistency	903–944	0.29	0.04	0.00	0.33
	945–959	0.14	0.36	0.08	0.58
	960–999	0.00	0.03	0.06	0.09
Form	Estimated Proportion Consistently Classified: Total = 0.71				

Table 8.E.64 Decision Accuracy and Decision Consistency—Mathematics, Grade Three

	Scale Score	Level1— Alternate	Level2— Alternate	Level3— Alternate	Category Total
Decision Accuracy	303–344	0.54	0.09	0.01	0.64
	345–359	0.07	0.21	0.02	0.30
	360–399	0.00	0.04	0.02	0.06
Average	Estimated Proportion Correctly Classified: Total = 0.77				
Decision Consistency	303–344	0.51	0.11	0.02	0.64
	345–359	0.10	0.16	0.04	0.30
	360–399	0.00	0.03	0.03	0.06
Form	Estimated Proportion Consistently Classified: Total = 0.69				

Table 8.E.65 Decision Accuracy and Decision Consistency—Mathematics, Grade Four

	Scale Score	Level1— Alternate	Level2— Alternate	Level3— Alternate	Category Total
Decision Accuracy	403–444	0.57	0.06	0.00	0.63
	445–459	0.09	0.19	0.03	0.32
All-forms Average	460–499	0.00	0.02	0.03	0.05
Estimated Proportion Correctly Classified: Total = 0.80					
Decision Consistency	403–444	0.54	0.09	0.00	0.63
	445–459	0.11	0.16	0.06	0.32
Alternate Form	460–499	0.00	0.02	0.04	0.05
Estimated Proportion Consistently Classified: Total = 0.73					

Table 8.E.66 Decision Accuracy and Decision Consistency—Mathematics, Grade Five

	Scale Score	Level1— Alternate	Level2— Alternate	Level3— Alternate	Category Total
Decision Accuracy	503–544	0.54	0.09	0.01	0.63
	545–559	0.06	0.24	0.01	0.31
All-forms Average	560–599	0.00	0.04	0.02	0.06
Estimated Proportion Correctly Classified: Total = 0.79					
Decision Consistency	503–544	0.51	0.11	0.01	0.63
	545–559	0.09	0.18	0.04	0.31
Alternate Form	560–599	0.00	0.03	0.02	0.06
Estimated Proportion Consistently Classified: Total = 0.71					

Table 8.E.67 Decision Accuracy and Decision Consistency—Mathematics, Grade Six

	Scale Score	Level1— Alternate	Level2— Alternate	Level3— Alternate	Category Total
Decision Accuracy	603–644	0.57	0.08	0.00	0.66
	645–659	0.07	0.19	0.02	0.29
All-forms Average	660–699	0.00	0.03	0.02	0.05
Estimated Proportion Correctly Classified: Total = 0.78					
Decision Consistency	603–644	0.54	0.10	0.01	0.66
	645–659	0.10	0.15	0.05	0.29
Alternate Form	660–699	0.00	0.03	0.02	0.05
Estimated Proportion Consistently Classified: Total = 0.71					

Table 8.E.68 Decision Accuracy and Decision Consistency—Mathematics, Grade Seven

	Scale Score	Level1— Alternate	Level2— Alternate	Level3— Alternate	Category Total
Decision Accuracy	703–744	0.53	0.09	0.01	0.63
	745–759	0.06	0.22	0.03	0.30
All-forms Average	760–799	0.00	0.03	0.03	0.07
Estimated Proportion Correctly Classified: Total = 0.79					
Decision Consistency	703–744	0.51	0.10	0.02	0.63
	745–759	0.08	0.17	0.06	0.30
Alternate Form	760–799	0.00	0.03	0.04	0.07
Estimated Proportion Consistently Classified: Total = 0.71					

Table 8.E.69 Decision Accuracy and Decision Consistency—Mathematics, Grade Eight

	Scale Score	Level1— Alternate	Level2— Alternate	Level3— Alternate	Category Total
Decision Accuracy	803–844	0.58	0.06	0.00	0.64
	845–859	0.09	0.18	0.03	0.31
All-forms Average	860–899	0.00	0.02	0.03	0.06
Estimated Proportion Correctly Classified: Total = 0.79					
Decision Consistency Alternate Form	803–844	0.54	0.09	0.00	0.64
	845–859	0.11	0.14	0.05	0.31
	860–899	0.00	0.02	0.04	0.06
Estimated Proportion Consistently Classified: Total = 0.72					

Table 8.E.70 Decision Accuracy and Decision Consistency—Mathematics, Grade Eleven

	Scale Score	Level1— Alternate	Level2— Alternate	Level3— Alternate	Category Total
Decision Accuracy	903–944	0.51	0.09	0.00	0.59
	945–959	0.07	0.24	0.03	0.34
All-forms Average	960–999	0.00	0.06	0.01	0.07
Estimated Proportion Correctly Classified: Total = 0.75					
Decision Consistency Alternate Form	903–944	0.48	0.10	0.01	0.59
	945–959	0.11	0.17	0.06	0.34
	960–999	0.00	0.04	0.03	0.07
Estimated Proportion Consistently Classified: Total = 0.68					

Appendix 8.F Validity Analyses

Notes:

- Pathway Easy includes R1A0E, R1ABE, R2A0E, and R2ABE.
- Pathway Moderate includes R1ABM and R2ABM.
- Pathway Hard includes R1ABH and R2ABH.

Table 8.F.1 Total Testing Time (In Minutes) at Each Pathway, English Language Arts/Literacy (ELA)

Grade	Pathways	Descriptive Statistics					Percentile Points						
		N	Mean	SD	Min	Max	1	10	25	50	75	90	99
3	Easy	430	13.30	10.90	0.77	82.98	1.70	3.35	6.10	10.14	16.86	26.99	53.83
	Moderate	1,950	23.96	13.22	1.26	191.02	3.88	10.30	15.31	21.68	29.71	39.67	68.36
	Hard	1,633	34.46	15.39	2.05	179.01	8.88	18.73	24.16	31.87	41.85	53.22	87.71
4	Easy	392	10.61	9.16	0.64	67.53	0.90	2.73	4.69	8.02	12.75	22.90	44.19
	Moderate	2,449	20.95	13.41	1.92	159.10	3.34	8.06	11.76	17.93	26.62	37.40	65.63
	Hard	1,470	27.39	16.17	1.73	207.69	6.21	12.01	15.97	23.41	34.85	47.54	81.69
5	Easy	537	12.31	10.16	0.47	98.97	1.00	3.06	5.50	9.13	16.90	25.38	46.17
	Moderate	2,560	23.19	12.37	0.91	135.29	3.55	10.20	15.08	21.00	28.72	38.14	66.65
	Hard	1,122	27.93	14.07	3.19	129.64	7.69	14.31	18.62	25.14	33.90	44.32	81.53
6	Easy	468	12.99	12.10	0.42	120.14	0.48	2.45	4.99	9.79	16.58	27.85	52.29
	Moderate	2,485	26.92	16.81	0.99	192.06	3.58	9.18	15.38	23.71	34.72	48.30	81.36
	Hard	1,290	32.57	17.20	1.97	181.32	8.15	15.90	21.23	29.63	40.32	51.37	86.41
7	Easy	804	12.23	9.81	0.58	94.61	1.13	2.87	5.90	10.03	15.35	24.34	46.50
	Moderate	2,578	26.57	14.60	1.38	118.14	3.91	10.54	16.94	24.65	33.53	43.65	77.97
	Hard	783	29.73	14.08	3.40	167.84	7.60	15.58	20.60	27.30	35.68	45.89	76.13
8	Easy	291	10.02	8.91	0.62	57.55	0.66	2.25	3.83	7.33	13.05	21.56	47.06
	Moderate	2,451	24.54	14.22	1.28	148.26	2.92	8.50	14.61	22.93	31.26	41.44	72.84
	Hard	1,125	36.39	15.31	1.93	142.84	7.95	20.43	26.81	34.28	43.69	54.74	93.63
11	Easy	431	15.26	13.68	0.54	118.96	0.80	2.58	6.16	11.35	20.85	30.95	60.69
	Moderate	2,319	32.42	19.69	1.05	281.41	3.61	10.96	19.71	29.74	41.63	54.50	102.38
	Hard	898	42.51	19.79	4.25	166.10	10.09	22.04	29.15	39.15	51.99	65.37	110.81

Table 8.F.2 Total Testing Time (In Minutes) at Each Pathway, Mathematics

Grade	Pathways	Descriptive Statistics					Percentile Points						
		N	Mean	SD	Min	Max	1	10	25	50	75	90	99
3	Easy	1,106	12.44	9.21	0.75	142.22	1.41	4.51	7.06	10.50	15.62	21.75	45.14
	Moderate	2,394	18.85	9.88	1.41	113.90	4.92	10.26	12.83	16.57	22.30	29.78	54.75
	Hard	379	24.20	12.24	2.28	99.22	6.76	12.38	16.58	21.44	29.23	38.67	66.90
4	Easy	972	11.99	12.69	0.62	284.77	1.38	3.73	6.41	9.76	14.73	20.57	44.29
	Moderate	2,991	20.87	10.29	1.74	162.31	4.31	10.79	14.39	18.94	25.20	32.79	55.49
	Hard	326	26.92	12.65	5.46	109.95	8.16	15.17	19.06	24.52	31.18	40.62	71.98
5	Easy	536	11.54	8.65	0.67	61.12	1.20	3.26	5.64	9.38	14.80	22.53	42.86
	Moderate	3,074	20.34	11.08	1.45	121.29	4.10	10.21	13.68	18.14	24.55	32.23	61.55
	Hard	457	27.73	13.32	6.34	161.06	9.03	14.85	19.56	25.02	33.55	41.57	64.88
6	Easy	1,513	11.71	7.63	0.28	59.73	1.08	3.86	6.84	10.20	14.89	20.52	39.19
	Moderate	2,305	22.37	11.88	1.77	155.54	4.44	10.56	14.59	20.15	27.96	37.10	58.23
	Hard	302	31.05	15.23	2.29	153.33	8.53	17.40	21.20	27.83	37.38	47.77	83.48
7	Easy	741	13.46	10.90	0.21	69.37	0.86	3.46	6.02	10.74	17.32	25.66	57.65
	Moderate	2,808	26.45	13.93	2.12	141.63	5.34	12.11	17.19	23.98	32.66	43.13	74.54
	Hard	527	37.17	16.54	3.45	154.57	8.48	19.80	25.92	34.20	45.30	58.55	87.95
8	Easy	932	13.41	9.60	0.40	76.98	1.48	4.22	7.27	11.25	16.95	24.23	47.44
	Moderate	2,637	27.30	13.81	2.01	140.00	4.87	12.70	18.22	25.05	33.97	43.49	74.09
	Hard	222	39.12	19.86	4.96	158.67	5.69	20.93	27.24	35.12	47.69	60.88	113.99
11	Easy	711	11.43	8.35	0.38	60.66	1.06	3.48	6.45	9.28	14.36	20.27	41.28
	Moderate	2,483	21.91	12.38	1.67	123.81	3.56	9.69	13.92	19.54	27.25	36.02	67.35
	Hard	379	27.16	13.99	4.74	107.91	6.30	13.27	18.33	23.91	31.96	43.55	83.40

Table 8.F.3 Total Testing Time (In Minutes) at Each Quartile Group, ELA

Grade	Student Performance Percentile	Scale Score Range	Descriptive Statistics					Percentile Points						
			N	Mean	SD	Min	Max	1	10	25	50	75	90	99
3	Q 1	303–334	872	17.82	13.98	0.77	191.02	1.82	4.82	8.12	14.96	23.23	33.82	61.03
	Q 2	336–347	1,133	24.07	12.78	1.44	100.93	3.92	10.63	15.51	22.02	29.94	39.44	69.31
	Q 3	348–358	963	29.45	13.2	3.87	93.72	7.32	14.3	20.4	27.55	36.6	46.82	68.17
	Q 4	360–399	1,045	35.94	16.15	2.05	179.01	9.86	19.6	25.27	32.92	42.96	54.31	90.79
4	Q 1	403–435	890	15.93	13.91	0.64	159.1	1.06	3.64	6.89	12.04	20.89	32.89	65.63
	Q 2	436–443	1,085	20.62	13.09	2.06	109.94	3.89	7.86	11.3	17.46	26.51	37.44	66.31
	Q 3	444–452	1,133	22.94	13.26	2.96	131.61	5.25	10.14	13.69	20.19	28.53	38.84	64.09
	Q 4	453–499	1,203	27.57	16.41	1.73	207.69	6.28	12.09	16.08	23.7	35.24	47.86	81.69
5	Q 1	503–536	920	15.24	11.19	0.47	72.2	1.34	3.92	6.78	13.06	20.2	29.97	55.33
	Q 2	537–544	1,097	22.86	12.27	0.91	111.94	3.42	10.06	15.06	20.68	28.4	37.09	64.5
	Q 3	545–552	1,132	25.09	13.27	2.64	135.29	5.96	12.34	17.09	22.46	30.43	40.84	70.15
	Q 4	553–598	1,070	27.85	13.43	3.19	121.18	8.1	14.42	18.76	25.23	33.85	44.07	76.96
6	Q 1	603–638	1,057	18.29	14.83	0.42	120.14	1.12	4.05	7.67	14.26	24.89	36.8	69.3
	Q 2	639–645	942	26.38	17.12	1.65	192.06	3.28	9.75	15.96	22.91	32.5	46.38	81.36
	Q 3	646–652	1,041	30.18	16.73	2.23	134.04	5.13	12.07	18.92	27.35	38.43	51.17	87.33
	Q 4	653–694	1,203	32.74	17.15	1.97	181.32	8.18	15.92	21.47	29.93	40.5	51.84	84.26
7	Q 1	703–736	958	13.56	11.14	0.58	94.61	1.14	3.14	6.08	10.55	16.98	28.57	54.62
	Q 2	737–744	985	23.68	13.89	1.38	115.65	3.43	8.73	14.28	21.19	30.46	40.12	76.6
	Q 3	745–751	1,087	28.47	14.58	2.61	118.14	5.03	13.47	18.92	26.03	35.02	46.54	79.47
	Q 4	753–799	1,135	30.27	14.1	3.4	167.84	7.8	16.19	21.12	27.73	36.14	46.44	77.97
8	Q 1	803–841	854	16.13	13.33	0.62	100	1.19	3.25	6.52	12.74	21.95	31.75	65.32
	Q 2	842–847	1,040	24.64	13.18	1.85	95.56	3.45	9.08	15.25	23.23	31.16	41.58	64.03
	Q 3	848–853	888	28.71	14.88	1.66	148.26	4.84	12.83	19.77	26.9	35.11	44.92	83.02
	Q 4	854–886	1,085	36.05	15.28	1.93	142.84	7.5	20.22	26.5	33.78	43.2	53.92	93.63
11	Q 1	903–941	816	20.88	17.16	0.54	127.69	1.25	4.16	8.31	16.81	28.91	42.15	78.2
	Q 2	942–947	972	30.34	19.34	1.05	189.43	3.22	9.5	18.14	27.42	38.99	51.3	102.38
	Q 3	948–952	807	36.41	19.97	1.63	281.41	5.95	16.99	23.89	33.33	45.4	58.03	112.94
	Q 4	953–986	1,053	41.82	19.62	3.37	166.1	9.34	21.97	28.73	38.85	51.01	64.61	107.76

Table 8.F.4 Total Testing Time (In Minutes) at Each Quartile Group, Mathematics

Grade	Student Performance Percentile	Scale Score Range	Descriptive Statistics					Percentile Points						
			N	Mean	SD	Min	Max	1	10	25	50	75	90	99
3	Q 1	303–331	874	11.09	8.29	0.75	142.22	1.28	3.99	6.46	9.28	13.97	19.41	42.75
	Q 2	332–340	976	17.2	10	1.41	113.9	3.44	8.49	11.39	14.79	20.51	27.5	55.48
	Q 3	341–346	891	18.9	10.25	2.81	111.22	5.3	10.64	13.09	16.48	21.83	29.01	60.83
	Q 4	348–399	1,138	21.73	10.46	2.28	105.43	7.45	11.69	15.05	19.26	25.98	34.15	56.26
4	Q 1	403–432	1,057	12.38	12.53	0.62	284.77	1.39	3.74	6.53	10.21	15.46	21.29	44.29
	Q 2	434–440	1,003	19.33	10.01	2.22	162.31	4.13	9.79	13.14	17.68	23.87	30.47	50.15
	Q 3	441–447	1,066	21.06	10.29	2.18	124.51	5.1	11.2	14.76	19.14	24.73	32.7	55.99
	Q 4	448–499	1,163	24.01	11.14	4.48	109.95	8.3	12.96	16.78	21.92	28.49	37.03	61.7
5	Q 1	503–533	942	13.87	9.74	0.67	73.31	1.49	4.11	7.4	11.97	17.5	25.41	51.25
	Q 2	534–540	882	18.47	9.43	1.7	109.22	4.47	9.2	12.45	16.43	22.5	29.89	55.1
	Q 3	541–547	1,141	21.44	11.5	1.45	121.29	4.57	11.56	14.58	19.15	25.46	32.93	65.42
	Q 4	548–599	1,102	25.02	12.71	4.29	161.06	8.13	13.46	17.03	22.29	29.72	39.48	68.99
6	Q 1	603–628	1,021	10.6	7	0.28	52.46	0.83	3.28	6.06	9.31	13.21	18.95	37.17
	Q 2	629–640	1,015	16.89	10.37	0.68	93.62	2.77	6.47	10.08	14.72	20.87	28.94	55.22
	Q 3	641–646	893	21.12	11.05	2.26	155.54	4.59	10.19	14.07	18.99	26.35	34.08	54.92
	Q 4	647–699	1,191	26.73	13.39	2.29	153.33	6.53	13.82	18	24.42	32.41	41.77	74.68
7	Q 1	703–732	973	15.51	12.9	0.21	137.74	0.93	3.87	6.96	12.36	19.78	30.14	61.02
	Q 2	733–740	985	24.08	12.48	2.25	109.24	5.32	10.77	15.7	21.99	29.64	39.19	61.05
	Q 3	741–747	1,016	27.07	14.08	2.53	141.63	5.86	13.01	17.86	24.07	32.56	44.44	76.54
	Q 4	748–799	1,102	34.05	15.36	3.45	154.57	8.48	17.81	23.93	31.44	41.61	52.58	82.06
8	Q 1	803–832	910	13.24	9.47	0.4	76.98	1.48	4.21	7.09	11.06	16.78	24.12	47.09
	Q 2	833–840	884	23.69	12.29	2.01	106.54	3.66	10.29	15.5	21.47	29.87	38.81	65.63
	Q 3	841–846	847	27.26	13.44	2.92	107.89	5.72	12.7	18.32	24.81	33.72	43.54	73.74
	Q 4	847–899	1,150	32.27	16.13	2.67	158.67	5.75	16.18	22.08	29.61	39.47	49.99	91.34
11	Q 1	903–931	814	12.5	9.99	0.38	90.99	1.21	3.7	6.74	10.16	15.25	22.79	54.89
	Q 2	933–939	787	19.82	11.46	1.67	91.1	2.89	7.75	12	17.52	24.61	32.82	59.65
	Q 3	941–947	972	22.02	12.71	1.71	123.81	3.84	10.39	13.71	19.29	27.12	35.63	70.03
	Q 4	948–999	1,000	25.65	12.72	3.35	107.91	6.31	13.16	17.39	23.39	30.56	40.98	71.36

Notes for Table 8.F.5 through Table 8.F.11:

- Numbers in **bold** font are the sample sizes to calculate the correlations.
- R denotes the correlation coefficient.

Table 8.F.5 Content Correlation for Subgroup Gender

Grade	Content Area	Male		Female	
		Students	R and Sample Size	Students	R and Sample Size
3	ELA	2,750	0.66	1,263	0.64
	Mathematics	2,654	2607	1,225	1,213
4	ELA	2,962	0.63	1,349	0.59
	Mathematics	2,953	2868	1,336	1,298
5	ELA	2,842	0.56	1,377	0.52
	Mathematics	2,748	2711	1,319	1,300
6	ELA	2,856	0.52	1,387	0.5
	Mathematics	2,787	2732	1,333	1,313
7	ELA	2,807	0.57	1,358	0.54
	Mathematics	2,746	2688	1,330	1,295
8	ELA	2,581	0.59	1,286	0.59
	Mathematics	2,531	2469	1,260	1,237
11	ELA	2,412	0.6	1,236	0.58
	Mathematics	2,368	2322	1,205	1,183

Table 8.F.6 Content Correlation for Subgroup Ethnicity

Grade	Content Area	American Indian or Alaska Native		Asian		Native Hawaiian or Other Pacific Islander		Filipino	
		Students	R and Sample Size	Students	R and Sample Size	Students	R and Sample Size	Students	R and Sample Size
3	ELA	31	0.39	325	0.65	13	0.6	87	0.56
	Mathematics	28	28	311	305	12	12	81	80
4	ELA	29	0.72	298	0.62	23	0.79	120	0.69
	Mathematics	28	28	291	275	23	23	121	117
5	ELA	42	0.6	267	0.49	24	0.81	114	0.56
	Mathematics	39	39	259	255	24	23	110	107
6	ELA	34	0.61	323	0.48	14	0.62	123	0.53
	Mathematics	31	31	310	301	13	13	122	121
7	ELA	27	0.68	312	0.6	19	0.6	144	0.57
	Mathematics	26	26	306	296	19	19	144	139
8	ELA	37	0.5	289	0.59	15	0.62	112	0.62
	Mathematics	35	35	280	273	13	13	107	103
11	ELA	28	0.49	270	0.54	16	0.87	113	0.63
	Mathematics	28	28	264	260	15	15	117	110

Table 8.F.7 Content Correlation for Subgroup Ethnicity (Continued)

Grade	Content Area	Hispanic or Latino		Black or African American		White		Two or More Races	
		Students	R and Sample Size	Students	R and Sample Size	Students	R and Sample Size	Students	R and Sample Size
3	ELA	2,336	0.66	288	0.65	778	0.67	155	0.62
	Mathematics	2,267	2,229	278	275	749	740	153	151
4	ELA	2,571	0.61	326	0.62	795	0.6	149	0.64
	Mathematics	2,575	2,506	325	312	781	761	145	144
5	ELA	2,458	0.54	342	0.52	836	0.55	136	0.67
	Mathematics	2,383	2,349	327	325	794	784	131	129
6	ELA	2,471	0.51	335	0.46	839	0.54	104	0.38
	Mathematics	2,408	2,370	333	322	804	789	99	98
7	ELA	2,300	0.56	340	0.54	896	0.58	127	0.52
	Mathematics	2,249	2,203	331	324	870	853	131	123
8	ELA	2,126	0.59	344	0.59	854	0.6	90	0.61
	Mathematics	2,085	2,039	347	337	836	820	88	86
11	ELA	1,918	0.58	357	0.67	855	0.6	91	0.65
	Mathematics	1,877	1,838	346	344	837	823	89	87

Table 8.F.8 Content Correlation for Subgroup English Proficiency

Grade	Content Area	Initially Fluent English		Initially Fluent English Proficient		English Learner		Reclassified Fluent English Proficient	
		English Only	R and Sample Size	Students	R and Sample Size	Students	R and Sample Size	Students	R and Sample Size
3	ELA	2,346	0.65	25	0.74	1,542	0.64	93	0.75
	Mathematics	2,261	2,226	25	25	1,499	1,477	87	85
4	ELA	2,453	0.61	44	0.63	1,680	0.62	129	0.68
	Mathematics	2,428	2,357	46	43	1,682	1,635	129	127
5	ELA	2,436	0.54	60	0.62	1,567	0.55	148	0.6
	Mathematics	2,330	2,299	52	51	1,532	1,511	145	142
6	ELA	2,460	0.52	66	0.6	1,478	0.5	232	0.46
	Mathematics	2,381	2,338	59	58	1,451	1,423	222	220
7	ELA	2,451	0.55	52	0.72	1,381	0.59	275	0.54
	Mathematics	2,407	2,352	52	49	1,349	1,320	261	256
8	ELA	2,235	0.59	70	0.71	1,278	0.58	280	0.62
	Mathematics	2,200	2,147	65	63	1,251	1,229	270	263
11	ELA	2,234	0.61	53	0.59	1,079	0.57	277	0.59
	Mathematics	2,188	2,150	51	49	1,050	1,031	279	270

Table 8.F.9 Content Correlation for Subgroup English Proficiency (Continued)

Grade	Content Area	To Be Determined		English Proficiency Unknown	
		Students	R and Sample Size	Students	R and Sample Size
3	ELA	4	–	3	–
	Mathematics	4	4	3	3
4	ELA	2	–	3	–
	Mathematics	1	1	3	3
5	ELA	2	–	6	–
	Mathematics	2	2	6	6
6	ELA	1	–	6	–
	Mathematics	2	1	5	5
7	ELA	2	–	4	–
	Mathematics	2	2	5	4
8	ELA	1	–	3	–
	Mathematics	1	1	4	3
11	ELA	1	–	4	–
	Mathematics	1	1	4	4

Table 8.F.10 Content Correlation for Subgroup Economic Status

Grade	Content Area	Not Economically Disadvantaged		Economically Disadvantaged	
		Students	R and Sample Size	Students	R and Sample Size
3	ELA	1,247	0.65	2,766	0.65
	Mathematics	1,195	1,172	2,684	2,648
4	ELA	1,288	0.6	3,023	0.62
	Mathematics	1,259	1,218	3,030	2,948
5	ELA	1,296	0.51	2,923	0.56
	Mathematics	1,224	1,203	2,843	2,808
6	ELA	1,307	0.49	2,936	0.51
	Mathematics	1,260	1,227	2,860	2,818
7	ELA	1,359	0.56	2,806	0.56
	Mathematics	1,324	1,283	2,752	2,700
8	ELA	1,242	0.6	2,625	0.58
	Mathematics	1,217	1,182	2,574	2,524
11	ELA	1,267	0.61	2,381	0.59
	Mathematics	1,238	1,212	2,335	2,293

Table 8.F.11 Content Correlation for Subgroup Migrant Status

Grade	Content Area	Migrant		Non-Migrant	
		Students	R and Sample Size	Students	R and Sample Size
3	ELA	25	0.76	3,988	0.65
	Mathematics	27	25	3,852	3,795
4	ELA	51	0.73	4,260	0.61
	Mathematics	52	51	4,237	4,115
5	ELA	23	0.78	4,196	0.54
	Mathematics	23	23	4,044	3,988
6	ELA	35	0.66	4,208	0.51
	Mathematics	34	34	4,086	4,011
7	ELA	32	0.63	4,133	0.56
	Mathematics	31	31	4,045	3,952
8	ELA	20	0.1	3,847	0.59
	Mathematics	21	20	3,770	3,686
11	ELA	16	0.81	3,632	0.6
	Mathematics	16	16	3,557	3,489

Appendix 8.G Survey of Student Characteristics Study

Educational Testing Service (ETS) conducted a research study to investigate how the Survey of Student Characteristics (SSC), consisting of test examiners' (teachers' or paraprofessionals') ratings of students on several factors, could be used to refine the routing of students between stages in the multistage California Alternate Assessment (CAA).

8.G.1. Goals of the Research Study

The results of the SSC were evaluated outside of the testing session to determine whether test examiners' judgments of student skill levels can be used to improve or refine the routing process that assigns each student to a Stage 2 item set of appropriate difficulty. ETS evaluated whether test examiner ratings on the survey can help make test routing decisions more accurate than those decisions made through test performance alone. If this is the case, ETS would investigate the SSC for operational use as part of the routing algorithm when the shorter routing test is used in 2016–17.

The ultimate goal of the study was to provide a recommendation to the California Department of Education (CDE) about whether the SSC can be used to make CAA router decisions.

8.G.2. About the California Alternate Assessment (CAA) Survey of Student Characteristics (SSC)

8.G.2.1 Purpose of the SSC

During the 2015–16 California Assessment of Student Performance and Progress (CAASPP) administration, the SSC was administered to students by test examiners along with the CAAs. The SSC elicited information from test examiners regarding each individual student's skills as reflected in the CAA performance-level descriptors (PLDs). PLDs describe what students at each achievement level within a grade know and are able to do. They are used to distinguish between achievement levels and help in the interpretation of the cut scores. They also define the standards as they apply to cut scores and give standardized meaning to scores or score ranges.

In addition, the SSC asked selected questions from the Learner Characteristics Inventory (LCI) and asked two questions about the student's chosen response mode. The LCI questions included in the SSC are based on those developed by the National Alternate Assessment Center to gather data on characteristics of students taking alternate assessments based on alternate achievement standards (AA-AAS). The data collected from the LCI are designed to support the identification of patterns across grades and years and to provide validity evidence regarding the population and the use of the AA-AAS in the population. More details about the LCI can be found in a validity evaluation report conducted by the National Center and State Collaborative (NCSC; Towles-Reeves et al., 2012).

Responses to the 2015–16 SSC were used to explore improved routing and scoring decisions for the 2016–17 administration. The additional questions based on PLDs were intended to provide a more detailed picture of grade-based content area proficiency, as observed by the test examiner, than does the LCI, which focuses more on the characteristics of disability types as well as the individual student's disability and level of engagement.

8.G.2.2 Function of the SSC within CAA Administration

The 2015–16 CAAs included a 21-item routing test with several possible outcomes for continuing the online assessment. However, there were two paths that were *not* explored for outcomes in the routing process:

1. The student did not engage in the first few items and the test examiner stopped the test.
2. The student did not perform adequately on the first 11 items of the routing test, which caused the student to be routed directly to the easy item set in Stage 2.

The 2015–16 multistage test (MST) design provided each student who took the full routing test with at least six items at each of the three tiers of difficulty. The student was assigned to a Stage 2 test of an easy, moderate, or hard level of difficulty based on his or her performance on the routing test.

While the CAA itself is intended to provide a valid score, the MST format provides a vehicle for maximizing the fit of the test content to each individual student and for producing a score that best represents each student’s proficiency. One way to enhance a test given in a multistage format is to strengthen the routing algorithm to ensure that the best information possible is used when assigning a second-stage, targeted item set. The routing test should provide useful information about student proficiency levels as a standalone measure.

Routing information may be supplemented with information external to the test (e.g., test examiner judgments in this survey) with the aim of improving the match of student-to-item difficulty by providing additional differentiation. The survey items used in 2015–16 testing specifically were designed to differentiate across skill levels and, when included in a composite with the routing score, to support routing to items with better target difficulty for students on the boundaries of the difficulty tiers. Whether the supplemental information is suitably beneficial is the focus of this study.

Note that the results of the survey are not intended to be used to determine whether students should take the Smarter Balanced Summative Assessments or CAAs, nor were they intended for use in scoring students directly. However, a range of content skills were included to help distinguish between levels of proficiency in order to route students appropriately and to provide students with an assessment that yields a score that represents their performance to the best extent possible.

8.G.2.3 Survey Format

Because ETS’s goal was to be able to inform routing, and, therefore, to distinguish between levels of skill, the SSC questions reflect what might be thought of as change points: skills that distinguish between levels of performance as described in the PLDs.

The content of the SSC evolved from the NCSC content PLDs. After consultation with ETS Assessment Development and program staff, the SSC version eventually included more of the recently developed, high-level, policy PLD language that would be adopted by the CDE.

Test examiners were asked to answer a standard set of 11 questions derived from the LCI developed by the NCSC—two response-mode questions per content area, and three content PLD questions per content area per student, with the response-mode question subject-specific and the content PLD questions, subject- and grade-specific. The 21-question survey was brief and manageable; while all questions captured important and actionable information about student characteristics, only the six content PLD questions, which focused on grade-level-specific skills, were to be potentially used in routing.

The first two content PLD questions in English language arts/literacy (ELA) and all content PLD questions in mathematics asked the test examiner to specify the level of understanding his or her student demonstrates on a list of skills. The third ELA content PLD question had a different structure in order to best capture test examiner ratings of aspects of writing.

8.G.2.4 Survey Results

The study showed that combining the system-generated routing score and the test examiner-generated SSC score did not significantly improve the way students were routed through the CAAs. Therefore, ETS's focus for this research study shall be on reporting how test examiners responded to the SSC questions and how they characterized their students, with only a brief focus on routing analyses.

8.G.3. Test Examiner Responses to the SSC Questions

There are 21 SSC questions that are common across grades three through eight and grade eleven with the exception of the content PLD questions (referred to alternatively as PLD questions in this document), which describe particular skills and are specific to each grade. Table 8.G.1 summarizes the types of SSC questions and the analyses to be described. These include analyses of the frequencies of test examiner ratings as well as the summary statistics of test performance for students receiving each of these ratings.

Table 8.G.1 Analyses by SSC Question

SSC Q#	SSC Question		Univariate	Analysis					
	Type	Content		By LCI #1	By LCI #3	By LCI #9	By LCI #10	By LCI #11	
1	LCI	Expressive Communication	X						
2	LCI	Communication System	X						
3	LCI	Receptive Language	X						
4	LCI	Vision	X						
5	LCI	Hearing	X						
6	LCI	Motor	X						
7	LCI	Social Engagement	X						
8	LCI	Health Issues/Attendance	X						
9	LCI	Reading	X						
10	LCI	Language of Instruction	X						
11	LCI	Mathematics	X						
12	Response	ELA Response Entry	X						
13	Response	ELA Response Mode	X						
14–16	PLD	ELA PLD		X	X	X	X		
17	Response	Mathematics Response Entry	X						
18	Response	Mathematics Response Mode	X						
19–21	PLD	Mathematics PLD		X	X		X	X	

Note: X indicates an analysis that was conducted.

The 21 SSC questions can be categorized into three parts consisting of different question types for the purposes of discussing results: the first part comprises LCI questions about student characteristics (Questions 1–8 and Question 10, listed in subsection 8.G.2.1); the second comprises response-entry modes used by students and/or their test examiners (Questions 12, 13, 17, and 18, listed in subsection 8.G.2.2); and the third comprises responses to LCI questions about reading and mathematics performance as well as content

PLD questions in each content area (Questions 9, 11, 14–16, and 19–21, listed in subsection 8.G.2.3). Tables are provided when results differ across grades. In all tables, test examiners not responding to the question are included in the percentage omitting (Omits row).

8.G.3.1 LCI Questions about Student Characteristics

1. Expressive Communication (Select the one that best describes your student.)

Percentages of students at each level of expressive communication were similar across grades. The majority of students in each grade used symbolic communication, while about a quarter of the students used intentional communication. Approximately 15 percent of students did not communicate at either of these levels. The percentages of students rated at each level and for each grade are shown in Table 8.G.2.

Table 8.G.2 Test Examiner Responses to SSC Question 1, Expressive Communication

Letter	Option Text	Grade						
		3	4	5	6	7	8	11
A	Uses symbolic language to communicate: Student uses verbal or written words, signs, braille, or language-based augmentative systems to request, initiate, and respond to questions, describe things or events, and express refusal.	57.9	60.3	62.5	62.0	62.9	62.9	65.6
B	Uses intentional communication, but not at a symbolic language level: Student uses understandable communication through such modes as gestures, pictures, objects/textures, points, etc., to clearly express a variety of intentions.	25.0	23.7	23.0	22.5	21.8	22.3	19.9
C	Student communicates primarily through cries, facial expressions, change in muscle tone, etc., but no clear use of objects/textures, regularized gestures, pictures, signs, etc., to communicate.	14.7	13.9	12.2	13.3	13.3	12.3	11.6
D	Other	2.0	1.8	1.9	1.8	1.6	2.2	2.5
Omits:		0.3	0.4	0.5	0.3	0.4	0.2	0.4

2. System of Communication. The question asked was “Does this student use an assistive/augmentative communication system in addition to or in place of oral speech?” with the following possible responses:

- Yes, an iPad
- Yes, a Go Talk
- Yes, a Tobii Dynavox
- Yes, a Tobii PCEye Go
- Yes, a PRC Eco
- Yes, a PRC Saltillo NOVA Chat
- Yes, something other than listed
- No

Test examiners overwhelmingly chose Option H, that no communication system was used. Of the systems that were used (fewer than 10 percent each), the greatest

numbers of students used an iPad (Option A) or something other than what was listed (Option G). Only one slight change across grades was noted at grade four, where the predominant system changed from “Other” to iPad. However, these changes were reasonably minor.

3. **Receptive Language (Select the one that best describes your student.)** Most test examiners chose Options A or B, representing the most independent levels of receptive language. Responses to Option A overtook Option B by grade five. Results are reported in Table 8.G.3.

Table 8.G.3 Test Examiner Responses to SSC Question 3, Receptive Language

Letter	Text	Grade						
		3	4	5	6	7	8	11
A	Independently follows 1–2 step directions presented through words (e.g., words may be spoken, signed, printed, or any combination) and does NOT need additional cues.	39.0	41.3	45.7	46.1	47.4	49.2	52.2
B	Requires additional cues (e.g., gestures, pictures, objects, or demonstrations/models) to follow 1–2 step directions.	45.9	45.3	41.1	40.4	39.4	38.2	35.7
C	Alerts to sensory input from another person (auditory, visual, touch, movement) BUT requires actual physical assistance to follow simple directions.	11.2	9.7	9.3	9.4	9.3	8.7	7.9
D	Uncertain response to sensory stimuli (e.g., sound/voice; sight/gesture; touch; movement; smell).	3.6	3.3	3.4	3.7	3.5	3.7	3.8
Omits:		0.3	0.4	0.5	0.3	0.4	0.2	0.4

4. **Visual Acuity.** Test examiners were asked to choose among four levels of vision:
- Vision within normal limits
 - Corrected vision within normal limits
 - Low vision; uses vision for some activities of daily living
 - No functional use of vision for activities of daily living, or unable to determine functional use of vision

Test examiners overwhelmingly indicated that student vision was within normal limits (Option A) for over 70 percent of students, or corrected to within normal limits (Option B) for approximately 20 percent of students. There was little variation across grades.

5. **Level of Hearing.** Five possible options were offered:
- Hearing within normal limits
 - Corrected hearing loss within normal limits
 - Hearing loss aided, but still with a significant loss
 - Profound loss, even with aids
 - Unable to determine functional use of hearing

Test examiners overwhelmingly indicated that students had hearing within normal limits (over 90 percent), with the other four options each representing fewer than 5 percent of students. There was little variation across grades.

6. **Level of Motor Skills.** This question had four possible options:
 - a. No significant motor dysfunction that requires adaptations
 - b. Requires adaptations to support motor functioning (e.g., walker, adapted utensils, and/or keyboard)
 - c. Uses wheelchair, positioning equipment, and/or assistive devices for most activities
 - d. Needs personal assistance for most/all motor activities

Again, test examiners primarily responded that students had no significant motor dysfunction that requires adaptations (Option A), with the other three options each representing approximately five percent of students. There was little variation across grades.

7. **Level of Social Engagement.** Approximately 40 to 50 percent of students across grades were reported to initiate and sustain social interactions, approximately 30 percent of students were reported to respond with social interaction while not initiating or sustaining it, and approximately 10 to 15 percent of students were reported to be aware of others, with only about 5 percent reported to respond inappropriately and 2 percent described as not alerting to others.
8. **Health Issues and Attendance.** Across grades, more than 80 percent of students were reported to attend at least 90 percent of school days. Approximately 10 percent of students were reported to attend about 50 percent of school days, with absences primarily due to health issues. All other percentages for options were negligible.
9. **Language of Instruction.** Nearly all students across grades—greater than 96 percent—were reported as having English as their language of instruction, as opposed to Spanish; American Sign Language (ASL) or another system of manual communication; Picture Exchange System (PECS) or a similar format; or another language of instruction.

8.G.3.2 LCI Questions about Response Entry and Mode

In Questions 12 and 17, test examiners were asked a yes or no question about whether the student would use a mouse, touchscreen, and/or a computer keyboard to enter responses directly for the ELA and mathematics tests, respectively. As can be seen in Table 8.G.4, responses were reported to be entered directly by students in approximate equal percentages across the two content area assessments, increasing across grades.

Table 8.G.4 Percentages of Students in Each Grade Whose Test Examiner Noted Would Enter Responses Directly for ELA and Mathematics

Grade	ELA	Mathematics
3	55.8	54.2
4	57.5	56.6
5	59.4	58.6
6	62.6	61.7
7	64.5	63.9
8	63.9	63.7
11	72.9	71.4

For students who would not be entering responses directly, test examiners also were asked in SSC Questions 13 (ELA) and 18 (mathematics) how students would primarily communicate their responses to their test examiner so that the test examiner could enter responses for them. For each student, multiple selections were allowed from the following list of response modes:

- Student will provide a verbal response.
- Student will use gestures or point to indicate a response.
- Student will use the accommodation of print-on-demand and will respond (check, circle, fill-in, etc.) on paper.
- Student will use an assistive/augmentative communication device.
- Student will use eye gaze.
- Other

Combinations of responses varied considerably and are too numerous to list. However, for both content areas, the three most frequent responses were that students used verbal responses, gestures, or pointing, or a combination of the two. These options greatly exceeded all others, representing more than 78 percent of students in each grade and content area. Table 8.G.5 displays the percentages of students in each grade using those response modes for ELA.

Table 8.G.5 Percentages of Students Using the Most Frequent Three Response Modes for ELA

Letter	Response	Grade						
		3	4	5	6	7	8	11
A	Student will provide a verbal response.	31.91	36.73	37.24	37.75	42.64	42.77	51.26
B	Student will use gestures or point to indicate a response.	25.73	22.65	21.72	20.46	18.11	19.31	19.32
A, B	Combination of A and B.	21.14	19.36	21.11	20.35	18.06	17.58	10.12

Table 8.G.6 displays the percentages of students in each grade using those response modes for mathematics.

Table 8.G.6 Percentages of Students Using the Most Frequent Three Response Modes for Mathematics

Letter	Response Text	Grade						
		3	4	5	6	7	8	11
A	Student will provide a verbal response.	30.71	35.96	36.60	36.90	41.36	42.19	50.45
B	Student will use gestures or point to indicate a response.	25.61	22.63	21.75	20.37	18.19	18.72	18.67
A, B	Combination of A and B.	21.84	20.02	21.11	20.50	18.50	17.93	10.49

8.G.3.3 LCI and PLD Questions Regarding ELA

8.G.3.3.1 Reading Level

Across grades, 40 to 45 percent of students could read basic sight words, simple sentences, directions, bullets, and/or lists in print or braille. Reading levels increased across grades, with test examiners responding that more students were able to perform at the higher level of fluent reading, demonstrating basic (literal) understanding from paragraphs/short passages with narrative/informational texts in print or braille; and reporting that fewer students performed at the lower levels of observable awareness of text/braille, that their student was unable to follow directions, make letter distinctions, or tell a story from the pictures that is not linked to the text. Table 8.G.7 shows all percentages of test examiner responses.

Table 8.G.7 Test Examiner Responses to Reading Level

Letter	Response Text	Grade						
		3	4	5	6	7	8	11
A	Reads fluently with basic (literal) understanding from paragraphs/short passages with narrative/informational texts in print or braille.	7.41	10.02	13.82	15.95	19.90	20.68	24.74
B	Reads basic sight words, simple sentences, directions, bullets, and/or lists in print or braille.	40.49	43.61	42.81	43.81	43.14	42.96	42.48
C	Aware of text/braille, follows directionality, makes letter distinctions, or tells a story from the pictures that is not linked to the text.	29.65	25.77	24.35	21.22	18.11	19.20	15.66
D	No observable awareness of print or braille.	22.12	20.23	18.55	18.68	18.44	16.91	16.72
Omits:		0.32	0.38	0.47	0.33	0.41	0.25	0.39

8.G.3.3.2 ELA PLDs

Test examiners rated each student using three SSC items per content area related to overall performance on a set of PLDs. For ELA, these are survey Questions 14, 15, and 16, which are listed in Table 8.G.8 for all administered grades. The PLDs chosen for each question were intended to capture varying levels of student performance, allowing test examiners to give a holistic rating of performance for each subject. For Questions 14 and 15, test examiners were asked to specify how well the student is consistently able to perform most of the listed tasks.

For Questions 14 and 15, test examiners responded using one of the following options based on California policy-level PLDs (with the associated score in parentheses):

- Understanding (3): Students at this level are actively working with adapted grade-level content that focuses on the essential knowledge and skills and may need occasional prompts and assistance to complete tasks and activities.

- Foundational understanding (2): Students at this level are actively working with adapted grade-level content that focuses on the essential knowledge and skills and may frequently need supports to complete tasks and activities.
- Limited understanding (1): Students at this level demonstrate limited understanding of adapted grade-level content that focuses on much of the basic knowledge and skills, even with extensive supports.
- Student does not display any level of understanding of these skills consistently (0).

For Question 16, test examiners were asked to specify which statement best describes the student’s ability with respect to writing. The scores associated with each option are as follows:

- High (3)
- Moderate (2)
- Low (1)
- Student does not display consistent proficiency on any of these aspects of writing. (0)

Note that the options for Question 16 in Table 8.G.8 differ across grades with respect to how each of these categories is defined, relating each to associated grade-specific PLDs.

Table 8.G.8 Prompts for PLDs (Questions 14 and 15) and Response Options (Question 16) for ELA

ELA PLD Prompts			
Grade	14. Please indicate how well your student is consistently able to perform most of the following tasks.	15. Please indicate how well your student is consistently able to perform most of the following tasks.	16. Please specify which statement best describes the student’s ability with respect to writing.
3	<ul style="list-style-type: none"> • Determine the central idea and supporting details in literary text • Determine the main idea and identify supporting details in informational text • Determine the main idea of visually presented information • Identify the purpose of text features in informational text • Use information from charts, graphs, diagrams, or timelines in informational text to answer questions • Use context to identify the meaning of multiple meaning words 	<ul style="list-style-type: none"> • Use details from a literary text to answer specific questions • Describe the relationship between characters and character and setting in literary text 	<ul style="list-style-type: none"> a. High: Can identify a text feature (e.g., captions, graphs, or diagrams) to present information in explanatory text. b. Moderate: Can identify elements of a narrative text to include beginning, middle, and end. Can identify the category related to a set of facts. c. Low: Can identify a statement related to an everyday topic. d. Student does not display consistent proficiency on any of these aspects of writing.

ELA PLD Prompts			
Grade	14. Please indicate how well your student is consistently able to perform most of the following tasks.	15. Please indicate how well your student is consistently able to perform most of the following tasks.	16. Please specify which statement best describes the student’s ability with respect to writing.
4	<ul style="list-style-type: none"> • Determine the theme of literary text and identify supportive details • Determine the main idea of informational text • Use information from charts, graphs, diagrams, or timelines in informational text to answer questions • Use general academic words 	<ul style="list-style-type: none"> • Use details from a literary text to answer specific questions • Describe character traits using text-based details in literary text • Use context to identify the meaning of multiple meaning words 	<ul style="list-style-type: none"> a. High: Can identify a text feature (e.g., headings, charts, or diagrams) to present information in explanatory text. b. Moderate: Can identify elements of a narrative text to include beginning, middle, and end. c. Low: Can identify the concluding sentence in a short explanatory text. d. Student does not display consistent proficiency on any of these aspects of writing.
5	<ul style="list-style-type: none"> • Compare characters, settings, and events in literary text • Determine the main idea and identify supporting details in informational text • Use details from the text to support an author’s point in informational text • Compare and contrast how information and events are presented in two informational texts • Use context to identify the meaning of multiple meaning words 	<ul style="list-style-type: none"> • Summarize a literary text from beginning to end • Use details from a literary text to answer specific questions 	<ul style="list-style-type: none"> a. High: Can support an explanatory text topic with relevant information. b. Moderate: Can identify elements of a narrative text to include beginning, middle, and end. Can identify a sentence that is organized for a text structure such as comparison/contrast. c. Low: Can identify the category related to a set of common nouns. d. Student does not display consistent proficiency on any of these aspects of writing.
6	<ul style="list-style-type: none"> • Summarize a literary text from beginning to end without including personal opinions • Support inferences about characters using details in literary text • Use details from the text to elaborate a key idea in informational text 	<ul style="list-style-type: none"> • Use details from a literary text to answer specific questions • Use context to identify the meaning of multiple meaning words 	<ul style="list-style-type: none"> a. High: Can identify transition words and phrases to convey a sequence of events in narrative text. b. Moderate: Can identify elements of an explanatory text to include introduction, body, and conclusion. Can identify the next event in a brief narrative. c. Low: Can identify an everyday order of events. d. Student does not display consistent proficiency on any of these aspects of writing.

ELA PLD Prompts			
Grade	14. Please indicate how well your student is consistently able to perform most of the following tasks.	15. Please indicate how well your student is consistently able to perform most of the following tasks.	16. Please specify which statement best describes the student's ability with respect to writing.
7	<ul style="list-style-type: none"> • Use evidence from the text to support an author's claim in informational text • Identify and/or explain relationships between individuals or events in informational text • Use context to identify the meaning of words and/or phrases 	<ul style="list-style-type: none"> • Use details to support themes from literary text • Use details to support inferences from literary text 	<ul style="list-style-type: none"> a. High: Can identify a sentence that provides a conclusion in narrative text. b. Moderate: Can identify elements of an explanatory text to include introduction, body, and conclusion. Can identify the next event in a brief narrative. c. Low: Can identify a graphic that includes an event as described in a text. d. Student does not display consistent proficiency on any of these aspects of writing.
8	<ul style="list-style-type: none"> • Use details to support a conclusion from informational text • Identify an argument the author makes in informational text • Examine parts of two informational texts to identify where the texts disagree on matters of fact or interpretation • Use domain-specific words or phrases accurately 	<ul style="list-style-type: none"> • Analyze the development of a theme including the relationship between a character and an event in literary text • Use context to identify the meaning of grade-level words and phrases 	<ul style="list-style-type: none"> a. High: Can identify relevant information to support a claim. b. Moderate: Can identify elements of an explanatory text to include introduction, body, and conclusion. Can identify an idea relevant to a claim. c. Low: Can identify a writer's opinion. d. Student does not display consistent proficiency on any of these aspects of writing.
11	<ul style="list-style-type: none"> • Use details to support a summary of literary text • Identify a conclusion from an informational text • Identify key details that support the development of a central idea of an informational text • Use details presented in two informational texts to answer a question • Explain why an author uses specific word choices within texts 	<ul style="list-style-type: none"> • Evaluate how the author's use of specific details in literary text contributes to the text • Determine an author's point of view about a topic in informational text • Use context to identify the meaning of grade-level phrases 	<ul style="list-style-type: none"> a. High: Can identify relevant information to address a given topic and support the purpose of a text. b. Moderate: Can identify elements of an argument to include introduction, claim, evidence, and conclusion. Can identify how to group information for a specific text structure. c. Low: Can identify information which is unrelated to a given topic. d. Student does not display consistent proficiency on any of these aspects of writing.

The rating score for the ELA content area is a sum of the ratings on Questions 14–16 and is referred to specifically as a PLD score. With each PLD rating given on a scale of 0 to 3 as described previously, the score on all three PLD questions in each subject ranged from 0–9. Keeping this score range in mind, the results in Table 8.G.9—shown as the mean, standard deviation (SD), median, minimum, and maximum of observed scores—demonstrate that there was little differentiation in test examiner ratings across students and that most students were rated, on average, as not displaying a consistent level of understanding of the listed skills. Test examiner ratings were most consistently at the lowest possible level (rating=0). This could indicate that the students truly possessed low levels of ELA skills in general or that the skills selected for rating in this research study were at too high of a level for this group of students.

Table 8.G.9 ELA PLD Scores (Average)

Grade	N	Mean	SD	Median	Minimum Score	Maximum Score
3	5,016	0.69	0.71	0.67	0	3
4	5,227	0.65	0.70	0.67	0	3
5	5,153	0.75	0.72	0.67	0	3
6	4,888	0.74	0.71	0.67	0	3
7	5,162	0.81	0.75	1.00	0	3
8	4,805	0.73	0.75	0.67	0	3
11	4,216	0.91	0.83	1.00	0	3

ELA PLD scores were also examined in the context of responses to the LCI questions related to expressive communication, receptive language, language of instruction, and reading level, as shown in Table 8.G.1 on page 393. Summary statistics (sample sizes, means, and SDs) are reported for ELA PLD scores by response option for each of the aforementioned LCI questions.

8.G.3.3.3 Expressive Communication

Table 8.G.10 and Table 8.G.11 display summary statistics of PLD scores by level of expressive communication for grades three through six and for grades seven, eight, and eleven, respectively. PLD scores were higher for higher levels of expressive communication across grades.

Table 8.G.10 Average ELA PLD Score for Levels of Expressive Communication in Grades Three through Six

Option	Grade											
	3			4			5			6		
	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD
Symbolic language	2,904	2.91	2.10	3,132	2.75	2.14	3,220	3.05	2.11	2,978	3.02	2.07
Intentional communication	1,257	1.21	1.59	1,247	1.03	1.49	1,183	1.19	1.52	1,122	1.35	1.65
Primarily unregularized physical communication	737	0.23	0.78	736	0.16	0.62	628	0.26	0.84	684	0.28	0.80
Other	102	2.02	2.34	92	1.90	2.29	98	2.23	2.26	87	1.99	2.15

Table 8.G.11 Average ELA PLD Score for Levels of Expressive Communication in Grades Seven, Eight, and Eleven

Option	Grade								
	7			8			11		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
Symbolic language	3,248	3.27	2.17	3,023	2.96	2.26	2,748	3.51	2.38
Intentional communication	1,124	1.41	1.67	1,071	1.18	1.57	851	1.56	1.95
Primarily unregularized physical communication	685	0.26	0.86	593	0.24	0.75	496	0.37	1.01
Other	84	2.00	2.52	106	2.06	2.71	104	2.78	2.85

8.G.3.3.4 Receptive Communication

Table 8.G.12 and Table 8.G.13 display summary statistics of PLD scores by level of receptive communication for grades three through six and for grades seven, eight, and eleven, respectively. PLD scores were higher for higher levels of receptive communication across grades.

Table 8.G.12 Average ELA PLD Score for Levels of Receptive Communication in Grades Three through Six

Option	Grade											
	3			4			5			6		
	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD
Primarily independent	1,955	3.31	2.15	2,141	3.03	2.24	2,354	3.37	2.16	2,186	3.36	2.09
Requires additional cues	2,305	1.60	1.74	2,378	1.51	1.73	2,120	1.67	1.71	2,011	1.66	1.71
Requires physical assistance	559	0.31	0.84	513	0.21	0.70	478	0.25	0.78	483	0.37	0.93
Uncertain response	181	0.03	0.20	175	0.05	0.26	177	0.11	0.58	191	0.08	0.54

Table 8.G.13 Average ELA PLD Score for Levels of Receptive Communication in Grades Seven, Eight, and Eleven

Option	Grade								
	7			8			11		
	N	Mean	STD	N	Mean	STD	N	Mean	STD
Primarily independent	2,448	3.57	2.21	2,363	3.33	2.31	2,178	3.89	2.42
Requires additional cues	2,032	1.78	1.79	1,834	1.40	1.64	1,518	1.81	1.89
Requires physical assistance	479	0.37	1.06	419	0.26	0.72	337	0.51	1.33
Uncertain response	182	0.05	0.46	177	0.08	0.39	166	0.35	1.11

8.G.3.3.5 Language of Instruction

Table 8.G.14 and Table 8.G.15 display summary statistics of PLD scores by language of instruction for grades three through six and for grades seven, eight, and eleven, respectively. In general, the highest average PLD scores were obtained by students who used English, ASL, and then Spanish, followed by PECS and Other across grades. However, in grade seven, students using ASL had the highest average ratings; in grade eight, students using Spanish received the highest average ratings; and in grade eleven, students using Spanish had the second-highest average ratings. It should be noted that the standard deviations attached to these average ratings are large and may not indicate true group differences; further, the sample sizes for some groups are small and preclude drawing strong conclusions.

Table 8.G.14 Average ELA PLD Score by Language of Instruction in Grades Three through Six

Option	Grade											
	3			4			5			6		
	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD
English	4,858	2.11	2.12	5,073	1.98	2.12	4,998	2.30	2.16	4,715	2.27	2.13
Spanish	7	0.57	1.13	10	1.10	1.73	5	0.60	0.89	17	1.59	1.91
ASL	36	2.03	1.87	55	1.78	2.08	45	1.98	2.16	51	2.18	1.65
PECS	78	0.27	0.83	57	0.33	0.89	74	0.55	1.42	70	0.59	1.22
Other	21	0.24	0.77	12	0.17	0.58	7	0.71	1.89	18	0.44	1.34

Table 8.G.15 Average ELA PLD Score by Language of Instruction in Grades Seven, Eight, and Eleven

Option	Grade								
	7			8			11		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
English	4,996	2.48	2.25	4,667	2.23	2.25	4,053	2.78	2.47
Spanish	11	1.00	2.72	7	3.29	1.70	16	2.19	2.86
ASL	39	3.18	2.02	53	2.32	2.41	48	2.13	2.05
PECS	71	0.34	0.91	48	0.46	1.01	67	0.61	1.55
Other	24	0.00	0.00	18	0.00	0.00	15	0.80	2.24

8.G.3.3.6 Reading

Table 8.G.16 and Table 8.G.17 display summary statistics of PLD scores by level of reading for grades three through six and for grades seven, eight, and eleven, respectively. PLD scores were higher for higher levels of reading across grades.

Table 8.G.16 Average ELA PLD Score for Levels of Reading in Grades Three through Six

Option	Grade											
	3			4			5			6		
	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD
Fluent with basic literal understanding	372	4.88	2.16	520	4.91	2.02	712	4.91	1.91	735	4.75	1.98
Basic sight words	2,032	2.95	1.95	2,261	2.61	1.93	2,206	2.84	1.81	2,124	2.74	1.74
Basic awareness	1,488	1.56	1.59	1,352	1.17	1.39	1,255	1.34	1.49	1,055	1.36	1.46
No awareness of print or braille	1,108	0.19	0.67	1,074	0.16	0.57	956	0.19	0.67	957	0.15	0.51

Table 8.G.17 Average ELA PLD Score for Levels of Reading in Grades Seven, Eight, and Eleven

Option	Grade								
	7			8			11		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
Fluent with basic literal understanding	1,027	4.76	2.07	993	4.44	2.28	1,030	5.18	2.20
Basic sight words	2,227	2.76	1.86	2,065	2.48	1.91	1,785	2.87	1.94
Basic awareness	935	1.42	1.52	922	0.98	1.28	666	1.25	1.50
No awareness of print or braille	952	0.18	0.61	813	0.18	0.60	718	0.22	0.74

8.G.3.4 LCI and PLD Questions Regarding Mathematics

8.G.3.4.1 Mathematics Level

Unlike the LCI question on reading level, the LCI question on mathematics level had several trends, as shown in Table 8.G.18. The majority of students were categorized as either being able to do computational procedures with or without a calculator (B), or being able to count with 1:1 correspondence to at least 10 and/or make numbered sets of items (C). The percentages of students in the top two categories increased across grades, whereas the percentages of students in the bottom three categories decreased across grades.

Table 8.G.18 Test Examiner Ratings for Mathematics Level

Letter	Response	Grade						
	Text	3	4	5	6	7	8	11
A	Applies computational procedures to solve real-life or routine word problems from a variety of contexts	2.3	3.3	4.0	4.5	5.7	6.3	9.1
B	Does computational procedures with or without a calculator.	27.7	33.5	38.9	42.0	46.0	47.7	47.3
C	Counts with 1:1 correspondence to at least 10, and/or makes numbered sets of items.	36.7	32.4	29.0	26.6	22.6	21.1	21.2
D	Counts by rote to 5.	14.6	12.6	12.4	10.0	9.0	9.4	7.6
E	No observable awareness or use of numbers.	18.5	17.8	15.2	16.5	16.3	15.3	14.4
Omits:		0.3	0.4	0.5	0.3	0.4	0.2	0.4

8.G.3.4.2 Mathematics PLDs

For mathematics, survey items 19, 20, and 21 corresponded to PLD questions. For all three questions for all administered grades, which are listed in Table 8.G.19, test examiners were asked to specify how well the student is consistently able to perform most of the listed tasks.

Table 8.G.19 Prompts and PLDs for Mathematics

Grade	Mathematics PLD Prompts		
	19. Please indicate how well your student is consistently able to perform most of the following tasks.	20. Please indicate how well your student is consistently able to perform most of the following tasks.	21. Please indicate how well your student is consistently able to perform most of the following tasks.
3	<ul style="list-style-type: none"> Solve addition and subtraction word problems Solve multiplication equations in which both numbers are equal to or less than five Identify multiplication patterns 	<ul style="list-style-type: none"> Check the correctness of an answer in the context of a scenario Match fraction models to unit fractions 	<ul style="list-style-type: none"> Identify geometric figures which are divided into equal parts Identify growing number patterns Identify a representation of the area of a triangle
4	<ul style="list-style-type: none"> Show division of objects into equal groups Round numbers to nearest 10, 100, or 1000 Compute the perimeter of a rectangle 	<ul style="list-style-type: none"> Solve multiplication word problems Compare two fractions with different denominators Sort a set of 2-dimensional shapes Transfer data to a graph 	<ul style="list-style-type: none"> Identify equivalent fractions Identify a given attribute of a shape

Mathematics PLD Prompts			
Grade	19. Please indicate how well your student is consistently able to perform most of the following tasks.	20. Please indicate how well your student is consistently able to perform most of the following tasks.	21. Please indicate how well your student is consistently able to perform most of the following tasks.
5	<ul style="list-style-type: none"> • Perform operations with decimals • Identify place values to the hundredths place • Convert standard measurements 	<ul style="list-style-type: none"> • Solve multiplication and division word problems • Solve word problems involving fractions • Locate a given point on a coordinate plane when given an ordered pair • Convert between minutes and hours • Make quantitative comparisons between data sets shown as line graphs 	<ul style="list-style-type: none"> • Compare the values of two products based upon multipliers • Round decimals to nearest whole number
6	<ul style="list-style-type: none"> • Solve real-world measurement problems involving unit rates • Identify the median or the equation needed to determine the mean of a set of data 	<ul style="list-style-type: none"> • Identify positive and negative values on a number line • Solve word problems with expressions including variables • Compute the area of a parallelogram 	<ul style="list-style-type: none"> • Perform one-step operations with two decimal numbers • Solve word problems using a percent
7	<ul style="list-style-type: none"> • Find the surface area of three-dimensional right prism • Match a given ratio to a model 	<ul style="list-style-type: none"> • Solve division problems with positive/negative whole numbers • Solve word problems involving ratios • Identify proportional relationships between quantities represented in a table • Compute the area of a circle 	<ul style="list-style-type: none"> • Solve multiplication problems with positive/negative whole numbers • Interpret graphs to qualitatively contrast data sets
8	<ul style="list-style-type: none"> • Identify the solution to an equation which contains a variable • Interpret data presented in graphs to identify associations between variables 	<ul style="list-style-type: none"> • Locate approximate placement of an irrational number on a number line • Solve a linear equation which contains a variable • Identify the relationship shown on a linear graph • Plot provided data on a graph 	<ul style="list-style-type: none"> • Identify congruent figures • Use properties of similarity to identify similar figures • Interpret data tables to identify the relationship between variables
11	<ul style="list-style-type: none"> • Complete the formula for the area of a figure • Identify the hypotenuse of a right triangle • Identify the model that represents a square number 	<ul style="list-style-type: none"> • Identify mathematical expressions including variables that represent word problems • Solve real-world measurement problems that require unit conversions • Construct two similar right triangles when a scale factor is given 	<ul style="list-style-type: none"> • Identify the linear representation of a provided real-world situation • Use an equation or a linear graphical representation to solve a word problem

Mathematics PLD Prompts			
Grade	19. Please indicate how well your student is consistently able to perform most of the following tasks.	20. Please indicate how well your student is consistently able to perform most of the following tasks.	21. Please indicate how well your student is consistently able to perform most of the following tasks.
		<ul style="list-style-type: none"> • Make predictions from data tables and graphs to solve problems • Use a histogram to represent data • Calculate the mean and median of a set of data 	

Test examiners responded using one of the following options based on California policy-level PLDs (with the associated score in parentheses):

- Understanding (3): Students at this level are actively working with adapted grade-level content that focuses on the essential knowledge and skills and may need occasional prompts and assistance to complete tasks and activities.
- Foundational understanding (2): Students at this level are actively working with adapted grade-level content that focuses on the essential knowledge and skills and may frequently need supports to complete tasks and activities.
- Limited understanding (1): Students at this level demonstrate limited understanding of adapted grade-level content that focuses on much of the basic knowledge and skills, even with extensive supports.
- Student does not display any level of understanding of these skills consistently (0).

The rating score (PLD score) for the mathematics content area is a sum of the ratings on Questions 19–21. As with ELA, the scale for each mathematics PLD question was 0 to 3, and the score on all three PLD questions in each subject ranged from 0–9. Keeping this score range in mind, the results in Table 8.G.20—shown as the mean, SD, median, minimum, and maximum of observed scores—demonstrate that there was little differentiation in test examiner ratings across students and that most students were rated, on average, as not displaying a consistent level of understanding of the listed skills. Test examiner ratings were most consistently at the lowest possible level (0). This could indicate that the students truly possessed low levels of mathematics skills or that the skills selected for rating in this research study were at too high of a level for this group of students. Note that the mathematics scores were lower, on average, than those for ELA.

Table 8.G.20 Mathematics PLD Scores (Average)

Grade	N	Mean	SD	Median	Minimum Score	Maximum Score
3	5,018	0.50	0.66	0	0	3
4	5,319	0.40	0.62	0	0	3
5	5,152	0.40	0.62	0	0	3
6	5,163	0.45	0.64	0	0	3

Grade	N	Mean	SD	Median	Minimum Score	Maximum Score
7	5,162	0.46	0.67	0	0	3
8	4,807	0.54	0.71	0	0	3
11	4,316	0.59	0.79	0	0	3

Mathematics PLD scores were also examined in the context of responses to the LCI questions related to expressive communication, receptive language, language of instruction, and mathematics level, as shown in Table 8.G.1 on page 393. Summary statistics (sample sizes, means, and SDs) are reported for mathematics PLD scores by response option for each of the aforementioned LCI questions.

8.G.3.4.3 Expressive Communication

Table 8.G.21 and Table 8.G.22 display summary statistics of PLD scores by level of expressive communication for grades three through six and for grades seven, eight, and eleven, respectively. PLD scores were higher for higher levels of expressive communication across grades.

Table 8.G.21 Average Mathematics PLD Score for Levels of Expressive Communication in Grades Three through Six

Option	Grade											
	3			4			5			6		
	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD
Symbolic language	2,904	2.12	2.15	3,208	1.66	2.05	3,219	1.63	2.06	3,201	1.79	2.08
Intentional communication	1,257	0.85	1.48	1,259	0.65	1.36	1,183	0.64	1.33	1,161	0.82	1.48
Primarily unregularized physical communication	739	0.18	0.75	738	0.14	0.61	628	0.17	0.72	689	0.19	0.69
Other	102	1.42	2.06	94	1.20	1.83	98	1.10	1.53	95	1.54	1.98

Table 8.G.22 Average Mathematics PLD Score for Levels of Expressive Communication in Grades Seven, Eight, and Eleven

Option	Grade								
	7			8			11		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
Symbolic language	3,248	1.85	2.18	3,025	2.15	2.25	2,832	2.24	2.51
Intentional communication	1,124	0.80	1.54	1,071	0.92	1.56	860	1.07	1.88
Primarily unregularized physical communication	685	0.12	0.65	593	0.22	0.79	499	0.29	0.91
Other	84	1.14	2.01	106	1.54	2.45	108	2.06	2.77

8.G.3.4.4 Receptive Communication

Table 8.G.23 and Table 8.G.24 display summary statistics of PLD scores by level of receptive communication for grades three through six and for grades seven, eight, and eleven, respectively. PLD scores were higher for higher levels of receptive communication across grades.

Table 8.G.23 Average Mathematics PLD Score for Levels of Receptive Communication in Grades Three through Six

Option	Grade											
	3			4			5			6		
	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD
Primarily independent	1,955	2.43	2.26	2,198	1.89	2.19	2,353	1.88	2.16	2,382	2.05	2.16
Requires additional cues	2,305	1.13	1.65	2,411	0.88	1.50	2,120	0.81	1.47	2,086	0.93	1.55
Requires physical assistance	560	0.24	0.84	515	0.12	0.52	478	0.13	0.61	487	0.22	0.80
Uncertain response	182	0.02	0.22	175	0.01	0.15	177	0.08	0.56	191	0.11	0.60

Table 8.G.24 Average Mathematics PLD Score for Levels of Receptive Communication in Grades Seven, Eight, and Eleven

Option	Grade								
	7			8			11		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
Primarily independent	2,448	2.07	2.30	2,364	2.43	2.36	2,251	2.54	2.65
Requires additional cues	2,032	0.94	1.57	1,835	1.05	1.59	1,543	1.13	1.77
Requires physical assistance	479	0.20	0.89	419	0.24	0.80	339	0.40	1.23
Uncertain response	182	0.07	0.49	177	0.12	0.58	166	0.25	1.01

8.G.3.4.5 Language of Instruction

Table 8.G.25 and Table 8.G.26 display summary statistics of PLD scores by language of instruction for grades three through six and for grades seven, eight, and eleven, respectively. As was the case for ELA, in general, the highest average PLD scores were obtained by students who used English, ASL, and then Spanish, followed by PECS and Other across grades. However, in mathematics, the average scores for the top three groups were similar and the order varied across grades. It should be noted that the standard deviations attached to these average ratings are large and may not indicate true group differences; further, the sample sizes for some groups are small and preclude drawing strong conclusions.

Table 8.G.25 Average Mathematics PLD Score by Language of Instruction in Grades Three through Six

Option	Grade											
	3			4			5			6		
	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD
English	4,859	1.53	2.01	5,161	1.21	1.86	4,997	1.23	1.88	4,988	1.37	1.92
Spanish	7	0.57	1.13	11	0.36	0.92	5	0.40	0.89	17	1.00	1.77
ASL	36	1.78	1.99	57	1.19	1.90	45	1.20	1.93	53	1.47	2.04
PECS	79	0.25	0.78	58	0.38	1.07	74	0.32	1.11	70	0.41	1.11
Other	21	0.14	0.65	12	0.33	0.89	7	0.14	0.38	18	0.50	1.54

Table 8.G.26 Average Mathematics PLD Score by Language of Instruction in Grades Seven, Eight, and Eleven

Option	Grade								
	7			8			11		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
English	4,996	1.40	2.02	4,669	1.64	2.12	4,149	1.81	2.39
Spanish	11	0.82	2.71	7	1.86	2.27	16	1.94	2.54
ASL	39	1.67	2.39	53	1.79	2.60	51	1.41	1.93
PECS	71	0.24	0.93	48	0.17	0.63	68	0.41	1.28
Other	24	0.00	0.00	18	0.00	0.00	15	0.40	1.06

8.G.3.4.6 Mathematics

Table 8.G.27 and Table 8.G.28 display summary statistics of PLD scores by level of mathematics for grades three through six and grades seven, eight, and eleven, respectively. PLD scores were higher for higher levels of mathematics across grades.

Table 8.G.27 Average Mathematics PLD Score for Levels of Mathematics in Grades Three through Six

Option	Grade											
	3			4			5			6		
	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD
Applies computational procedures	113	5.58	2.52	175	4.60	2.50	207	4.19	2.47	234	4.41	2.64
Does computational procedures	1,388	2.90	2.11	1,781	2.15	2.09	2,005	2.01	2.04	2,169	2.07	1.99
Counts 1:1 to 10	1,841	1.30	1.60	1,724	0.85	1.37	1,496	0.72	1.33	1,374	0.86	1.38
Counts by rote to 5	732	0.51	1.07	672	0.28	0.81	637	0.30	0.91	517	0.36	0.94
No observable awareness	928	0.09	0.53	947	0.07	0.42	783	0.06	0.40	852	0.09	0.45

Table 8.G.28 Average Mathematics PLD Score for Levels of Mathematics in Grades Seven, Eight, and Eleven

Option	Grade								
	7			8			11		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
Applies computational procedures	295	4.13	2.87	303	4.59	2.76	393	5.01	2.83
Does computational procedures	2,372	2.00	2.08	2,292	2.28	2.09	2,042	2.20	2.30
Counts 1:1 to 10	1,167	0.76	1.34	1,012	0.89	1.38	915	1.04	1.62
Counts by rote to 5	464	0.38	1.02	451	0.41	0.99	329	0.43	1.15
No observable awareness	843	0.08	0.44	737	0.12	0.61	620	0.11	0.66

8.G.4. Exploring the Use of Test Examiner Ratings to Refine Routing

One of the main goals of administering the SSC to test examiners during 2015–16 CAA administration was to determine whether test examiner ratings could be incorporated to refine the routing process when moving students from the first to second stages of the test.

8.G.4.1 Research Study Plan

The original router analyses plan incorporated the test examiner ratings from the SSC in several stages and would examine the data in the following ways:

1. **Determine the relationship of PLD scores to performance on the test.** ETS evaluated regression models to determine whether the router alone, the PLD score alone, or a combination of the two best predicted performance on the test. Because the 2016–17 router was proposed to be much shorter (9 items at the time) than the 2015–16 router (21 items) for which data exist, the plan was to form a pseudorouter consisting of 9 items from the 2015–16 router and to examine the regression of the full 21-item router on the pseudorouter, PLD score, and both. Were this successful, ETS would form multiple pseudorouters to ensure that the success was not based on just the chosen items. These subsequent analyses would also entail cross-validating results, which was possible because there were two parallel 21-item routers used in the 2015–16 operational testing.
2. **Determine which of several possible weightings of the router and the PLD score most strongly relate to performance on the test.** ETS computed correlations of composite scores of the PLD score (S) and the student response check (SRC) score and the PLD score and R (the router score) with overall performance and omits. The six composite score weightings considered are: 0.1, 0.25, 0.4, and 0.5 for S (e.g., Composite $1=0.1*S + 0.9*R$); 0 (R only); and 1 (S only).

After generating the research study plan, and after analyzing the operational data, there was a concern that too many students might require an earlier exit from the test than was allowed by the routing mechanism. See subsection 4.2.4.1 *Routing Rules for Early Exit* on page 47 for more information about early exits.

During 2015–16 operational testing, a student could:

1. fail to orient to the test examiner in the first 4 items (the student response check [SRC]),
2. respond to the first 11 items of the router and score low enough to immediately be routed to the easy level of Stage 2 (skipping the remaining 10 router items), or
3. respond to all 21 items and be routed to an easy, moderate, or hard item set at the second stage, based on his or her router score.

The CDE requested additional analyses to examine the correlation of composite scores as outlined in the second router analysis above (SRC combined with PLD score, or pseudorouter combined with PLD score) for all students and for low-performing students. Further, the correlation of the number of omits with each of those factors for those groups of students were also analyzed. Note that all results reported here make use of only one pseudorouter per content area and grade of the many 9-item subsets that could be formed from each 21-item router.

Overall, test examiner ratings of students on their own have a low to moderate correlation to student performance on the CAAs. For the lowest-performing students, the relationship is substantially weaker. Additionally, across the board, the strength of the relationship between test examiner ratings and item-omitting behavior is extremely weak. (Note that this correlation is not a goal of the SSC; test examiners were not asked to consider whether their students would omit items or complete the assessment.)

8.G.4.2 Study Results

Although test examiner ratings of students in isolation are not highly predictive of test performance and item-omitting behavior, incorporating them with other information could increase their predictive power (i.e., generate a higher correlation).

The correlations are higher for composites based on the router score versus the SRC score for all students and the lowest-performing students. The RCOMP scores tend to yield correlations that are at or near the levels observed with the router scores for both ELA and mathematics for all students as well as for the lowest-performing students.

Table 8.G.29 (ELA) and Table 8.G.29 (mathematics) summarize the correlations between SRC- and router-based composite scores (SCOMP and RCOMP) with student performance for the six weighting scenarios.

Table 8.G.29 Correlations between SCOMP and RCOMP with CAA Performance by SSC-Weighting Levels for ELA

		ELA					
Grade	SSC Weight	All Students			Lowest-Performing Students		
		SCOMP	RCOMP	Difference	SCOMP	RCOMP	Difference
3	0.00	0.78	0.90	0.11	0.51	0.84	0.32
	0.10	0.80	0.90	0.10	0.51	0.83	0.33
	0.25	0.79	0.90	0.10	0.46	0.80	0.34
	0.40	0.76	0.88	0.13	0.38	0.72	0.33
	0.50	0.72	0.86	0.14	0.32	0.62	0.31
	1.00	0.50	0.50	0.00	0.07	0.07	0.00
4	0.00	0.78	0.87	0.09	0.61	0.89	0.28
	0.10	0.79	0.87	0.09	0.63	0.89	0.26
	0.25	0.79	0.87	0.09	0.63	0.87	0.25
	0.40	0.75	0.85	0.10	0.56	0.80	0.24
	0.50	0.71	0.83	0.12	0.49	0.72	0.23
	1.00	0.44	0.44	0.00	0.18	0.18	0.00
5	0.00	0.78	0.86	0.07	0.70	0.91	0.20
	0.10	0.79	0.86	0.07	0.72	0.91	0.19
	0.25	0.77	0.85	0.08	0.71	0.89	0.18
	0.40	0.73	0.82	0.10	0.66	0.84	0.18
	0.50	0.68	0.79	0.11	0.60	0.78	0.18
	1.00	0.42	0.42	0.00	0.29	0.29	0.00
6	0.00	0.75	0.87	0.12	0.39	0.74	0.35
	0.10	0.76	0.87	0.11	0.39	0.74	0.34
	0.25	0.76	0.87	0.11	0.39	0.72	0.33
	0.40	0.73	0.85	0.12	0.37	0.66	0.29
	0.50	0.70	0.83	0.13	0.34	0.60	0.26
	1.00	0.48	0.48	0.00	0.11	0.11	0.00

		ELA					
Grade	SSC Weight	All Students			Lowest-Performing Students		
		SCOMP	RCOMP	Difference	SCOMP	RCOMP	Difference
7	0.00	0.74	0.85	0.11	0.60	0.86	0.26
	0.10	0.76	0.85	0.09	0.62	0.86	0.24
	0.25	0.75	0.84	0.10	0.60	0.84	0.24
	0.40	0.70	0.82	0.12	0.52	0.76	0.24
	0.50	0.66	0.79	0.13	0.46	0.68	0.22
	1.00	0.43	0.43	0.00	0.25	0.25	0.00
8	0.00	0.74	0.88	0.14	0.69	0.86	0.17
	0.10	0.76	0.88	0.12	0.69	0.86	0.16
	0.25	0.76	0.88	0.12	0.66	0.84	0.17
	0.40	0.70	0.85	0.15	0.59	0.77	0.19
	0.50	0.64	0.82	0.17	0.51	0.70	0.18
	1.00	0.36	0.36	0.00	0.19	0.19	0.00
11	0.00	0.66	0.84	0.18	0.57	0.84	0.26
	0.10	0.68	0.84	0.16	0.58	0.84	0.26
	0.25	0.66	0.83	0.17	0.54	0.80	0.26
	0.40	0.60	0.80	0.19	0.47	0.71	0.24
	0.50	0.56	0.76	0.20	0.41	0.62	0.20
	1.00	0.39	0.39	0.00	0.22	0.22	0.00

Table 8.G.30 Correlations between SCOMP and RCOMP with CAA Performance by SSC-Weighting Levels for Mathematics

		Mathematics					
Grade	SSC Weight	All Students			Lowest-Performing Students		
		SCOMP	RCOMP	Difference	SCOMP	RCOMP	Difference
3	0.00	0.67	0.83	0.15	0.51	0.81	0.29
	0.10	0.69	0.83	0.14	0.51	0.80	0.29
	0.25	0.68	0.82	0.13	0.49	0.77	0.29
	0.40	0.65	0.79	0.14	0.42	0.69	0.28
	0.50	0.61	0.76	0.15	0.35	0.61	0.25
	1.00	0.39	0.39	0.00	0.08	0.08	0.00
4	0.00	0.55	0.78	0.23	0.52	0.83	0.32
	0.10	0.57	0.78	0.21	0.54	0.83	0.30
	0.25	0.57	0.77	0.20	0.54	0.81	0.27
	0.40	0.53	0.75	0.22	0.50	0.75	0.25
	0.50	0.48	0.71	0.23	0.45	0.67	0.23
	1.00	0.28	0.28	0.00	0.18	0.18	0.00
5	0.00	0.67	0.82	0.15	0.59	0.83	0.23
	0.10	0.68	0.82	0.15	0.58	0.82	0.23
	0.25	0.66	0.82	0.16	0.54	0.78	0.24
	0.40	0.60	0.78	0.19	0.46	0.70	0.24
	0.50	0.55	0.74	0.20	0.38	0.62	0.24
	1.00	0.28	0.28	0.00	0.03	0.03	0.00

		Mathematics					
Grade	SSC Weight	All Students			Lowest-Performing Students		
		SCOMP	RCOMP	Difference	SCOMP	RCOMP	Difference
6	0.00	0.60	0.78	0.18	0.50	0.75	0.24
	0.10	0.61	0.78	0.18	0.51	0.75	0.24
	0.25	0.58	0.78	0.19	0.48	0.71	0.23
	0.40	0.52	0.75	0.22	0.42	0.63	0.21
	0.50	0.47	0.70	0.24	0.37	0.55	0.18
	1.00	0.23	0.23	0.00	0.15	0.15	0.00
7	0.00	0.71	0.83	0.12	0.58	0.82	0.23
	0.10	0.71	0.83	0.12	0.59	0.82	0.23
	0.25	0.70	0.83	0.13	0.57	0.79	0.23
	0.40	0.65	0.80	0.16	0.50	0.72	0.22
	0.50	0.59	0.77	0.18	0.45	0.65	0.20
	1.00	0.29	0.29	0.00	0.21	0.21	0.00
8	0.00	0.74	0.84	0.10	0.57	0.81	0.24
	0.10	0.74	0.84	0.10	0.58	0.81	0.23
	0.25	0.73	0.83	0.10	0.57	0.79	0.22
	0.40	0.68	0.81	0.12	0.51	0.73	0.22
	0.50	0.63	0.77	0.14	0.45	0.66	0.21
	1.00	0.29	0.29	0.00	0.17	0.17	0.00
11	0.00	0.68	0.81	0.13	0.52	0.75	0.24
	0.10	0.68	0.82	0.13	0.53	0.76	0.23
	0.25	0.65	0.80	0.16	0.50	0.72	0.22
	0.40	0.57	0.76	0.19	0.43	0.64	0.21
	0.50	0.52	0.72	0.20	0.38	0.56	0.18
	1.00	0.30	0.30	0.00	0.19	0.19	0.00

Table 8.G.31 (ELA) and Table 8.G.32 (mathematics) summarize the correlations between SRC- and router-based composite scores (SCOMP and RCOMP) with the number of omits (NOMITS) for the six weighting scenarios.

Correlations are higher for composites based on the router score versus the SRC score for all students and the lowest-performing students. The RCOMP scores tend to yield correlations that are at or near the levels observed with the router scores for both ELA and mathematics for all students as well as for the lowest-performing students.

Table 8.G.31 Correlations between SCOMP and RCOMP with NOMITS by SSC-Weighting Levels for ELA

Grade	SSC Weight	ELA					
		All Students			Lowest Performing Students		
		SCOMP	RCOMP	Difference	SCOMP	RCOMP	Difference
3	0.00	-0.47	-0.55	-0.08	-0.29	-0.70	-0.41
	0.10	-0.47	-0.54	-0.07	-0.29	-0.70	-0.41
	0.25	-0.46	-0.54	-0.08	-0.28	-0.68	-0.40
	0.40	-0.42	-0.52	-0.10	-0.23	-0.61	-0.37
	0.50	-0.39	-0.50	-0.11	-0.20	-0.53	-0.33
	1.00	-0.24	-0.24	0.00	-0.06	-0.06	0.00
4	0.00	-0.48	-0.53	-0.05	-0.49	-0.79	-0.30
	0.10	-0.48	-0.53	-0.05	-0.51	-0.79	-0.28
	0.25	-0.47	-0.52	-0.06	-0.51	-0.77	-0.27
	0.40	-0.43	-0.50	-0.07	-0.46	-0.71	-0.25
	0.50	-0.40	-0.48	-0.08	-0.41	-0.64	-0.24
	1.00	-0.21	-0.21	0.00	-0.17	-0.17	0.00
5	0.00	-0.50	-0.56	-0.06	-0.50	-0.81	-0.31
	0.10	-0.50	-0.56	-0.06	-0.52	-0.82	-0.29
	0.25	-0.48	-0.55	-0.07	-0.54	-0.81	-0.27
	0.40	-0.45	-0.53	-0.08	-0.53	-0.78	-0.24
	0.50	-0.41	-0.50	-0.09	-0.50	-0.73	-0.22
	1.00	-0.24	-0.24	0.00	-0.31	-0.31	0.00
6	0.00	-0.40	-0.55	-0.15	0.13	-0.31	-0.44
	0.10	-0.41	-0.55	-0.14	0.12	-0.31	-0.43
	0.25	-0.41	-0.54	-0.13	0.10	-0.31	-0.41
	0.40	-0.40	-0.52	-0.13	0.06	-0.30	-0.36
	0.50	-0.38	-0.50	-0.12	0.03	-0.28	-0.31
	1.00	-0.27	-0.27	0.00	-0.09	-0.09	0.00
7	0.00	-0.46	-0.53	-0.07	-0.44	-0.77	-0.33
	0.10	-0.47	-0.53	-0.06	-0.47	-0.78	-0.31
	0.25	-0.46	-0.53	-0.06	-0.48	-0.77	-0.29
	0.40	-0.43	-0.51	-0.08	-0.44	-0.70	-0.27
	0.50	-0.41	-0.49	-0.08	-0.40	-0.64	-0.23
	1.00	-0.26	-0.26	0.00	-0.26	-0.26	0.00
8	0.00	-0.50	-0.59	-0.09	-0.58	-0.75	-0.17
	0.10	-0.51	-0.59	-0.08	-0.59	-0.75	-0.16
	0.25	-0.49	-0.58	-0.08	-0.58	-0.74	-0.16
	0.40	-0.45	-0.55	-0.11	-0.52	-0.69	-0.17
	0.50	-0.40	-0.53	-0.12	-0.47	-0.64	-0.17
	1.00	-0.21	-0.21	0.00	-0.21	-0.21	0.00
11	0.00	-0.36	-0.48	-0.11	-0.39	-0.75	-0.35
	0.10	-0.36	-0.47	-0.11	-0.40	-0.75	-0.34
	0.25	-0.34	-0.46	-0.12	-0.38	-0.70	-0.32
	0.40	-0.30	-0.43	-0.13	-0.33	-0.61	-0.28
	0.50	-0.27	-0.40	-0.13	-0.29	-0.52	-0.23
	1.00	-0.17	-0.17	0.00	-0.16	-0.16	0.00

Table 8.G.32 Correlations between SCOMP and RCOMP with NOMITS by SSC-Weighting Levels for Mathematics

Grade	Mathematics						
	SSC Weight	All Students			Lowest Performing Students		
		SCOMP	RCOMP	Difference	SCOMP	RCOMP	Difference
3	0.00	-0.33	-0.46	-0.13	-0.29	-0.68	-0.39
	0.10	-0.33	-0.46	-0.13	-0.30	-0.68	-0.38
	0.25	-0.32	-0.44	-0.12	-0.29	-0.65	-0.37
	0.40	-0.30	-0.42	-0.12	-0.25	-0.59	-0.33
	0.50	-0.28	-0.40	-0.12	-0.22	-0.52	-0.29
	1.00	-0.16	-0.16	0.00	-0.07	-0.07	0.00
4	0.00	-0.35	-0.51	-0.17	-0.43	-0.69	-0.26
	0.10	-0.36	-0.51	-0.15	-0.45	-0.69	-0.24
	0.25	-0.36	-0.50	-0.15	-0.47	-0.69	-0.22
	0.40	-0.33	-0.48	-0.16	-0.45	-0.64	-0.19
	0.50	-0.30	-0.46	-0.16	-0.41	-0.59	-0.18
	1.00	-0.16	-0.16	0.00	-0.19	-0.19	0.00
5	0.00	-0.49	-0.55	-0.06	-0.51	-0.77	-0.26
	0.10	-0.48	-0.54	-0.06	-0.50	-0.76	-0.26
	0.25	-0.45	-0.53	-0.08	-0.45	-0.72	-0.27
	0.40	-0.39	-0.50	-0.11	-0.37	-0.64	-0.27
	0.50	-0.34	-0.46	-0.12	-0.31	-0.56	-0.25
	1.00	-0.12	-0.12	0.00	0.00	0.00	0.00
6	0.00	-0.41	-0.37	0.04	-0.52	-0.62	-0.11
	0.10	-0.41	-0.38	0.04	-0.52	-0.63	-0.11
	0.25	-0.39	-0.38	0.02	-0.49	-0.61	-0.11
	0.40	-0.35	-0.37	-0.02	-0.43	-0.54	-0.11
	0.50	-0.31	-0.36	-0.04	-0.38	-0.48	-0.10
	1.00	-0.15	-0.15	0.00	-0.15	-0.15	0.00
7	0.00	-0.40	-0.47	-0.08	-0.37	-0.64	-0.27
	0.10	-0.40	-0.47	-0.07	-0.39	-0.65	-0.26
	0.25	-0.39	-0.47	-0.08	-0.39	-0.64	-0.25
	0.40	-0.36	-0.46	-0.10	-0.37	-0.59	-0.22
	0.50	-0.33	-0.44	-0.11	-0.34	-0.54	-0.20
	1.00	-0.16	-0.16	0.00	-0.21	-0.21	0.00
8	0.00	-0.39	-0.48	-0.09	-0.40	-0.70	-0.30
	0.10	-0.40	-0.48	-0.09	-0.41	-0.70	-0.29
	0.25	-0.39	-0.48	-0.09	-0.42	-0.69	-0.27
	0.40	-0.36	-0.46	-0.10	-0.39	-0.64	-0.25
	0.50	-0.33	-0.43	-0.10	-0.35	-0.58	-0.23
	1.00	-0.15	-0.15	0.00	-0.16	-0.16	0.00
11	0.00	-0.43	-0.43	0.00	-0.48	-0.61	-0.13
	0.10	-0.41	-0.43	-0.02	-0.48	-0.60	-0.13
	0.25	-0.37	-0.41	-0.05	-0.44	-0.57	-0.14
	0.40	-0.30	-0.38	-0.08	-0.36	-0.50	-0.14
	0.50	-0.26	-0.35	-0.09	-0.31	-0.43	-0.13
	1.00	-0.11	-0.11	0.00	-0.13	-0.13	0.00

8.G.4.3 Analyses

Regression analyses were also run to examine the improvement in predicting test performance when including the SSC score in addition to just using the router. Consistent with the correlations just reported, improvements in model fit are incremental, at best, across grades and in both subject areas.

Had the initial analyses demonstrated that incorporating the SSC improves routing, ETS would have conducted several other types of analyses to explore the variability, robustness, and sensitivity of using those composite scores. However, a preliminary review of the results (correlations with performance, regression models) ruled out the possibility of incorporating this version of the SSC in routing, precluding the need for further investigation into its statistical quality. The planned analyses that were not completed include:

1. Multilevel regression to capture both student-level variation (as in the multiple regression analyses previously described) and test examiner–level variation (to take into account clustering that may happen when test examiners provide ratings to a group of students, potentially leading to ratings that are more similar within individual test examiners than across groups of test examiners). These analyses would have been important when interpreting the significance of predictors (i.e., had the PLD score or composite been shown to be significantly stronger than just the router in determining the final score), because clustering can cause standard error estimates to be underestimated, leading to falsely inflated significance levels.
2. Regression analyses using varying pseudorouters (instead of the one per grade and content area analyzed for the purposes of the aforementioned preliminary analyses) to evaluate sensitivity to the router items and cross-validation across data sets. Cross-validation would have been possible because two parallel routers were administered at each grade and in each content area and would have involved taking the model chosen from the analysis of one router data set and applying it to the independent router data set to examine prediction errors.
3. Analyses to evaluate the sensitivity of the routing to the weighting of the router and the PLD score, and to determine optimal weighting of those components. The router is the default routing mechanism and serves as the exemplar, so the composite should not result in routing decisions that are discrepant (i.e., differing by more than one tier of difficulty).

8.G.5. Conclusion

Utilizing test examiner ratings from the PLDs obtained from the SSC, along with student performance on the SRC or router, provided little to no improvement in terms of correlation with overall test performance. Although incorporating test examiner input through the SSC increases validity with this stakeholder group, the limited measurement benefit may not warrant the time commitment required to administer the survey for each tested student. As a result, based on the recommendation by ETS, it was decided by the CDE that the SSC in its current form would not be administered operationally, nor would it factor into routing or early test exit decisions. Improvements to the survey (i.e., better alignment to students' actual performance) might yield higher correlations with test performance, which would increase the survey's overall utility.

8.G.6. References in the Appendix

Towles-Reeves, E., Kearns, J, Flowers, C., Hart, L., Kerbel, A., Kleinert, H., Quenemoen, R., & Thurlow, M. (2012). *Learner characteristics inventory project report (A product of the NCSC validity evaluation)*. Minneapolis, MN: University of Minnesota, National Center and State Collaborative.

Chapter 9: Quality Control Procedures

The California Department of Education (CDE) and Educational Testing Service (ETS) implemented rigorous quality control procedures throughout the test development, administration, scoring, analyses, and reporting processes. As part of this effort, ETS staff worked with its Office of Professional Standards Compliance, which publishes and maintains the *ETS Standards for Quality and Fairness* (ETS, 2014). These *Standards* support the goal of delivering technically sound, fair, and useful products and services; and assisting the public and auditors evaluate those products and services. Quality control procedures are outlined in this chapter.

9.1. Quality Control of Item Development

ETS strives to provide the best standards-based items for the California Alternate Assessments (CAAs) for English language arts/literacy (ELA) and mathematics. Items developed for the CAA undergo an extensive item review process. The item writers hired to develop CAA items were first trained in ETS policies on sensitivity, bias, and accessibility to ensure that the items allow the widest possible range of students to demonstrate their content knowledge.

Once a written item is accepted for authoring—that is, once it has been entered into ETS’s item bank and formatted for use in an assessment—ETS employs a series of internal and external reviews. These reviews use established criteria and specifications to judge the quality of item content and to ensure that each item measures what it is intended to measure. These reviews also examine the overall quality of the test items before presentation to the CDE and item reviewers. Finally, a group of California educators review the items for accessibility, bias/sensitivity, and content prior to their administration to students. The details on quality control of item development are described in subsection 3.2 *Item Review Process*, which starts on page 37.

9.2. Quality Control of Test Assembly and Delivery

The assembly of all test forms must conform to blueprints that represent a set of constraints and specifications. There are separate specifications for the English language arts/literacy (ELA) and mathematics assessments (CDE, 2015a [ELA] and 2015b [mathematics]). These blueprints are critical to the formation of valid assessments.

ETS conduct multiple levels of quality assurance checks on each constructed test form to ensure it meets the blueprint requirements as well as other form-building specifications. Both ETS assessment development and psychometric staff review and sign off on the accuracy of forms before the test forms are put into production for administration. Detailed information related to test assembly can be found in subsection 4.3. *Test Production Process* on page 48.

9.2.1. Quality Control of Test Assignment

Test assignment for the California Assessment of Student Performance and Progress (CAASPP) assessments, including the CAAs, is controlled by the Test Operations Management System (TOMS) using student demographic information received from the California Longitudinal Pupil Achievement Data System (CALPADS) (CDE, 2016). The two systems are kept in sync during the testing window. Students in eligible grades were assigned to the Smarter Balanced assessments by default. For students eligible for the

CAAs, local educational agencies (LEAs) logged on to TOMS and assigned students to take the alternate assessment, which automatically unassigned those students from taking Smarter Balanced Summative Assessments.

The quality of test assignment for the CAAs is monitored and controlled through several strategies. TOMS enforces preconditions for eligibility for the CAAs by permitting assignment only for students with an Individuals with Disabilities Education Act (IDEA)¹⁵ indicator of “Yes” in TOMS. This indicator is set to “Yes” when the CALPADS *Education Program* field (Field 3.13) is equal to 144 (Special Education) and the primary disability code (CALPADS Field 3.21) is not set to blank.

Additionally, TOMS prevents the prohibited “mixing and matching” of assessments. For example, a student assigned to take the alternate assessment was automatically registered for the California Alternate Performance Assessment for Science in the appropriate grade, to reflect the shared eligibility requirements for these assessments. TOMS blocked any changing of this assignment to prohibited tests such as the California Standards Test for Science or the California Modified Assessment for Science.

9.2.2. Quality Control of Test Administration

The quality of test administration for the CAAs, and all of CAASPP, is monitored and controlled through several strategies. A fully staffed support center, the California Technical Assistance Center (CaTAC), supports all LEAs in the administration of CAASPP assessments. In addition to providing guidance and answering questions, CaTAC regularly conducts outreach campaigns on particular administration topics to ensure all LEAs understand correct test administration procedures. CaTAC is guided by a core group of district outreach staff that manage communications to LEAs, regional and Web-based trainings, and a Web site, <http://www.caaspp.org/>, that houses a full range of manuals, videos, and other instructional and support materials.

The quality of test administration is further managed through comprehensive rules and guidelines for maintaining the security and standardization of CAASPP assessments, including the CAA. LEAs receive training on these topics and are provided tools for reporting security incidents and resolving testing discrepancies for specific testing sessions.

The ETS Office of Testing Integrity (OTI) reinforces the quality control procedures for test administration, providing quality assurance services for all testing programs managed by ETS. The detailed procedures OTI developed and applied in quality control are described in subsection 5.2.1. *ETS’s Office of Testing Integrity (OTI)* on page 61.

9.2.3. Quality Control of Machine Scoring Procedures

Quality control procedures are employed by American Institutes for Research (AIR), the CAASPP subcontractor responsible for providing the test delivery system (TDS) and scoring machine-scorable items, to ensure valid item-level scoring for the CAA. AIR psychometric staff members independently review all CAA ELA and mathematics test forms by taking sample tests. Responses to the test forms are compared with the answer keys for each form to confirm the accuracy of scoring keys. Score outcomes are contemplated above and below each of the routing thresholds to ensure that the appropriate test stage was assigned in each instance, according to the score thresholds approved by the CDE. The scores for all applicable items are recorded prior to the routing action. A final comparison of the test map

¹⁵ The Individuals with Disabilities Education Act is the primary federal program that authorizes state and local aid for special education and related services for children with disabilities.

to each online form as configured in the user acceptance test environment ensures that no changes to the form were introduced prior to operational deployment.

A real-time, quality-monitoring component was built into the TDS. After a test is administered to a student, the TDS passes the resulting data to the Quality Assurance (QA) system. QA conducts a series of data integrity checks, ensuring, for example, that the record for each test contains information for each item, keys for multiple-choice items, score points in each item, and the total number of operational items, and that the test record contains no data from items that have been invalidated.

Data pass directly from the Quality Monitoring System (QMS) to the Database of Record (DoR), which serves as the repository for all test information, and from which all test information for reporting is pulled and transmitted to ETS in a predetermined results format.

9.3. Quality Control of Test Materials

9.3.1. Developing Assessments

9.3.1.1. Online Assessments

The steps taken to develop and ensure the quality of the online assessments are described in *5.2.2 Test Delivery*, which starts on page 62.

9.3.1.2. Test Administration Manuals

ETS staff consult with internal subject matter experts and conduct validation checks to verify that test instruction manuals accurately match the test materials and testing processes. Copy editors and content editors review each document for spelling, grammar, accuracy, and adherence to CDE style. Each document must be approved by the CDE before it can be published to the CAASPP Portal at <http://www.caaspp.org/>. Only nonsecure documents are posted to this Web site. Secure materials, such as the *CAA Directions for Administration*, are made available to designated LEA staff through TOMS, which requires a secure log on.

The manuals used in the administration of the CAA are listed in subsection *5.4.4 Instructions for Test Examiners*, which starts on page 69.

9.3.2. Processing Test Materials

Online tests are submitted by test examiners and transmitted from AIR to ETS each day. The AIR and ETS systems check for the completeness of the student record and stop records that are identified as having an error. For example, the system will identify a test module that is missing a content registration ID, a unique identifier that matches the student's opportunity in the final scoring.

9.4. Quality Control of Psychometric Processes

9.4.1. Development of Scoring Specifications

ETS scoring specifications for the CAA are completed, approved, and checked well in advance of the receipt of student response data. These specifications contain detailed scoring procedures, routing rules, and the procedures for determining whether a student has attempted a test and whether that student's response data should be included in the statistical analyses and calculations for computing summary data.

9.4.2. Development of Scoring Procedures

ETS's enterprise score key management system (eSKM) utilizes scoring procedures specified by psychometricians and provides scoring services. Following scoring, a series of quality control checks are carried out by ETS psychometricians to ensure the accuracy of each score.

9.4.2.1. Enterprise Score Key Management System (eSKM) Processing

Prior to the test administration, ETS Assessment Development staff review and verify the keys and scoring rubrics for each item. Then, these keys and rubrics are provided to AIR for implementation. After AIR finishes machine-scoring, those scores and responses are delivered to ETS. AIR quality control of machine-scoring is described in subsection *9.2.3 Quality Control of Machine Scoring Procedures*.

ETS's Centralized Repository Distribution System and Enterprise Service Bus departments collect and parse .xml files that contain student response data from AIR. ETS's eSKM system collects and calculates individual students' overall scores (i.e., total raw scores) and generates student scores in the approved statistical extract format. These data extracts are sent to ETS's Data Quality Services for data validation. Following successful validation, the student response statistical extracts are made available to the psychometricians.

ETS developed two parallel scoring systems to produce and verify overall students' scores: the eSKM scoring system receives the individual students' item scores and item responses from AIR and calculates individual student scores for ETS's reporting systems; the Statistical and Data Analysis team also computes individual student scores based on item scores delivered by AIR. The scores from the two sources are then compared for internal quality control. Any differences in the scores are discussed and resolved. All scores must comply with the ETS scoring specifications and the parallel scoring process to ensure the quality and accuracy of scoring, and to support the transfer of scores into the database of the student records scoring system, TOMS.

9.4.2.2. Psychometric Processing

Psychometricians verify the eSKM scoring by comparing the parallel scoring programs and conducting extensive analyses including item analyses, differential item functioning, and item calibration.

The psychometric analyses conducted at ETS undergo comprehensive quality checks by a team of psychometricians and data analysts. Detailed checklists are developed by members of the team for each of the statistical procedures performed on each CAA. Classical item analyses are performed which include a check of scoring keys for multiple choice items and scoring logic. Items that are flagged for questionable statistical attributes are sent to Assessment Development staff for their review; their comments are reviewed by the psychometricians before items are approved for inclusion in calibration. During the calibration process, checks are made to ascertain that the version of the software and control files are established accurately. Checks are also made on the number of items, number of examinees with valid scores, item response theory (IRT) item difficulty estimates, standard errors for the item difficulty estimates, and the match of selected statistics to the results on the same statistics obtained during preliminary item analyses. Two psychometricians conduct the parallel calibration process and compare the results to check its accuracy. Psychometricians also perform detailed reviews of statistics to investigate whether the IRT model used fits the data. In addition, the results of the calibration procedures are reviewed by a psychometric manager.

Once raw-to-scale score conversion tables for each form are generated, the psychometricians carry out quality control checks on each scoring table. Scoring tables are checked to verify:

- All possible raw scores for each form are included in the tables;
- The lowest obtainable scale score (LOSS), LOSS+1, and highest obtainable scale score (HOSS) for each grade respectively; and
- The threshold score for the performance levels are correctly identified.

After all quality control steps are completed and any differences are resolved, one final inspection of scoring tables is made prior uploading the tables to eSKM for score reporting.

9.5. Quality Control of Reporting

To ensure the quality of CAA test results for both individual student and summary reports, four general areas are evaluated:

1. Comparison of report formats with input sources from the CDE-approved samples;
2. Validation of the report data through quality control checks performed by ETS's Data Quality Services and Resolutions teams, as well as running of all the student score reports through ETS's patented Quality Control Integrator software;
3. Evaluation of the production of all printed reports by verifying the print quality, comparing number of report copies, sequence of report order, and offset characteristics to the CDE requirements; and
4. Proofreading of the pilot and production reports by the CDE and ETS prior to any LEA mailings.

All reports are required to include a single, accurate LEA code, a charter school number (if applicable), a school district name, and a school name. All elements conform to the CDE's official county/district/school (CDS) code and naming records. From the start of processing through scoring and reporting, the CDS Master File is used to verify and confirm accurate codes and names. The CDE provides a revised LEA Master File to ETS throughout the year as updates become available.

After the reports are validated against the CDE's requirements, a set of reports representing all possible grades, content areas, and reporting outcomes is provided to the CDE and ETS for review and approval. The sample paper reports, representing the way they are expected to look in production are sent to the CDE and ETS for review and approval after a thorough examination.

Upon the CDE's approval of the sample set of reports generated, ETS proceeds with report production. All reports for all LEAs administering CAAs during the 2015–16 CAASPP administration are produced and distributed as one batch.

9.5.1. Exclusion of Student Scores from Summary Reports

ETS provides reporting specifications to the CDE that document when to exclude student scores from summary reports. These specifications include the logic for handling submitted tests and answer documents that, for example, indicate the student tested but responded to no items, was absent, was not tested due to parent/guardian request, or did not complete the test due to illness. The methods for handling other anomalies are also covered in the

specifications. These anomalies are described in more detail in the subsection 7.3.2 *Special Cases* on page 89.

9.5.2. End-to-End Testing for Operational Administration

ETS conducts end-to-end testing prior to the start of the test administration. The purpose of this testing is to verify that all systems, processes, and resources are ready for the operational administration. ETS employs a number of strategies to verify ongoing systems performance, including monitoring of system availability and online system usage. Time is allotted for user acceptance testing to confirm that the systems meet requirements and to make identified corrections before final deployment. To accomplish system acceptance and sign off, ETS deploys systems to a staging area, which mirrors the final production environment, for operational and user acceptance testing. Final approval by the CDE triggers the final deployment of the system.

References

- California Department of Education. (2015a). *California Alternate Assessments blueprint for English language arts*. Sacramento, CA: California Department of Education. Retrieved from <http://www.cde.ca.gov/ta/tg/ca/documents/caa15elablueprts.doc>
- California Department of Education. (2015b). *California Alternate Assessments blueprint for mathematics*. Sacramento, CA: California Department of Education. Retrieved from <http://www.cde.ca.gov/ta/tg/ca/documents/caa15mathblueprts.doc>
- California Department of Education. (2016). *Test Operations Management System: Student test registration guide, 2015–16 administration*. Sacramento, CA: California Department of Education. Retrieved from <http://www.caaspp.org/rsc/pdfs/CAASPP.student-test-registration-guide.2016.pdf>
- Educational Testing Service. (2014). *ETS standards for quality and fairness*. Princeton, NJ: Educational Testing Service. Retrieved from <https://www.ets.org/s/about/pdf/standards.pdf>