California Department of Education
Assessment Development and Administration Division

California Alternate Assessments
Technical Report
2014–15 Administration

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Educational Testing Service

Contract No. 5417

Table of Contents

Chapter 1: Introduction 1
Overview 1
Intended Population 1
Testing Window and Times 2
Overview of the Final Report 2

Chapter 2: Item Development 3
Overview 3
Assessment Design 4
Item Development Plan 4
Item Types 4
Test Assembly and Administration 6

Chapter 3: Summary Statistics for the 2014–15 Administration 7
Overview 7
Qualitative Observations 7
Learner Characteristic Inventory (LCI) 7
Student Response Check (SRC) 10
Samples Used for the Analyses 12
Item-Level Statistics 14
Classical Item Analyses 14
Item Difficulty 14
Item Discrimination 15
Distractor Analysis 16
Differential Item Functioning (DIF) Analyses 18

Chapter 4: Discussion and Implications 22
Summary of Findings 22
Observations of Administration 22
Learner Characteristics Inventory (LCI) 22
Student Response Check (SRC) 22
Classical Item Analyses 22
Item Response Theory (IRT) Analyses 24
Implications 25

References 26

Appendix A. Item Development Plans for English Language Arts and Mathematics 27

Appendix B: 2014–15 CAA Administration Observation Reports 49
English Language Arts 49
Testing Environment/Administration 49
Mathematics 50
Directions for Administration (DFAs) 50
Testing Environment/Administration 50

Appendix C: Learning Characteristic Inventory 51

Appendix D: Student Response Check by Grade 57

Appendix E: Demographic Information 59

Appendix F: Classical Analyses: Item Statistics 61

Appendix G: Differential Item Functioning 73

Tables

Table 2.1 Item Types for the 2014–15 CAAs 4
Table 3.1 Summary of LCI for All Students 8
Table 3.2 Summary of Student Response Check and Test Completion Status 11
Table 3.3 Summary of Student Communication Modes 12
Table 3.4. Sample Status 12
Table 3.5. Subgroup Definitions 13
Table 3.6 Item Difficulty and Item-Total Correlation 17
Table 3.7 DIF Flags Based on the ETS DIF Classification Scheme 20
Table 3.8 Subgroup Classification for DIF Analyses 21
Table 4.1 Summary of the Classical Item Statistics by Item Type for ELA 22
Table 4.2 Summary of the Classical Item Statistics for Mathematics 23
Table 4.3 Tiered Item Status 25
Table A.1 Item Development Plans by Grade—English Language Arts 27
Table A.2 Item Development Plans by Grade—Mathematics 40
Table C.1 LCI Summary—English Language Arts 51
Table C.2 LCI Summary—Mathematics 54
Table D.1 Student Response Check Outcome and Test Completion Status by Grade 57
Table E.1 Demographic Information—English Language Arts 59
Table E.2 Demographic Information—Mathematics 60
Table F.1 Item Statistics: ELA, Grade Three 61
Table F.2 Item Statistics: ELA, Grade Four 62
Table F.3 Item Statistics: ELA, Grade Five 62
Table F.4 Item Statistics: ELA, Grade Six 63
Table F.5 Item Statistics: ELA, Grade Seven 64
Table F.6 Item Statistics: ELA, Grade Eight 64
Table F.7 Item Statistics: ELA, Grade Eleven 65
Table F.8 Item Statistics: Mathematics, Grade Three 66
Table F.9 Item Statistics: Mathematics, Grade Four 67
Table F.10 Item Statistics: Mathematics, Grade Five 68
Table F.11 Item Statistics: Mathematics, Grade Six 69
Table F.12 Item Statistics: Mathematics, Grade Seven 70
Table F.13 Item Statistics: Mathematics, Grade Eight 71
Table F.14 Item Statistics: Mathematics, Grade Eleven 72
Table G.1 Items Exhibiting Significant DIF by Subgroup—English Language Arts 73
Table G.2 Items Exhibiting Significant DIF by Subgroup—Mathematics 74

Figures

Figure 2.1 Item development plan 3

Acronyms and Initialisms Used in the *CAA Technical Report*

AA-AAS	Alternate Achievement Standards
AIS	average item score
AU	autism
CAAs	California Alternate Assessments
CAASPP	California Assessment of Student Performance and Progress
CCCs	core content connectors
CCSS	Common Core State Standards
CDE	California Department of Education
CR	constructed response
DFA	*Directions for Administration*
DIF	differential item functioning
ELA	English language arts
ETS	Educational Testing Service
ID	intellectual disability
IDP	Item Development Plan
IEP	individualized education program
IRT	item response theory
LCI	Learner Characteristics Inventory
LEA	local educational agency
MC	multiple choice
MH	Mantel-Haenszel
MS	multiple select
OHI	other health impairment
SD	standard deviation
SLD	specific learning disability
SLI	speech or language impairment
SMD	standardized mean difference
SR	selected response
SRC	student response check
SS	single select
ZN	zone

Chapter 1: Introduction

Overview

The California Alternate Assessments (CAAs) are based on alternate achievement standards (AA-AAS) aligned with the Common Core State Standards (CCSS) for students with significant cognitive disabilities. The goal of the alternate assessment is to ensure that students with significant cognitive disabilities achieve increasingly higher academic outcomes and leave high school ready for post-secondary options. The alternate assessments are part of the California Assessment of Student Performance and Progress (CAASPP) System.

The goal of the CAASPP System is to provide assessments that can assist teachers, administrators, students and parents/guardians with a better understanding of college and career readiness. Further, the system supports this objective by promoting high-quality teaching and learning through the use of a variety of assessment approaches and item types. The assessments, where applicable and valid, produce scores that can be aggregated and disaggregated for the purposes of federal and state accountability. As a component of the CAASPP System, overall responsibility for CAASPP expansion activities, including the development, management, and administration of the CAAs to every eligible student in California, were assigned to Educational Testing Service (ETS), the CAASPP contractor, with oversight from the California Department of Education (CDE).

ETS administered the new CAAs for the first time in spring 2015 for English language arts (ELA) and mathematics during the 2014–15 California Assessment of Student Performance and Progress (CAASPP) administration to all students in grades three through eight and grade eleven with a significant cognitive disability. A goal of this first year of testing was to try out new computer-enabled items that had not yet been presented to this student population in California.

CAAs rely on online, computer-based technology for registration and test administration. Test items were aligned with the CCSS and were based on the Core Content Connectors (CCCs) that were developed with three tiers of complexity. The 2014–15 CAAs consisted of approximately 15 items in each content area and were anticipated to take 45 to 60 minutes per content area. The tests are not aligned with the CAA test blueprint because the State Board of Education adopted the blueprints after the 2014–15 items and forms were developed.

The first year of CAA testing examined the performance of test items and did not yield any individual score reports. The purpose of this technical report is to summarize the procedures and findings of the 2014–15 CAA analyses.

Intended Population

The CAAs for English language arts (ELA) and mathematics were administered to students in grades three through eight and grade eleven whose individualized education program teams had determined that the student's cognitive disabilities prevented him or her from taking the online CAASPP Smarter Balanced Summative Assessments. This population of students has, in previous years, been assigned to take the California Alternate Performance Assessment for ELA and mathematics.

Parents had the option to submit a request to have their child exempted from taking the CAAs (or any or all parts of the tests within the CAASPP System).

Testing Window and Times

The CAAs were administered between April 15 and June 10, 2015.

The CAA tests were untimed. This assessment was administered individually and the testing time varied from one student to another, based on factors such as the student's response time and attention span.

Overview of the Final Report

This report describes the characteristics of the CAAs administered in April through June 2015 and summarizes the findings in the following additional chapters:

- Chapter 2 presents the assessment design, item types, and item development specifications that were used. Tables that contain the Item Development Plan for the ELA and mathematics assessments are included in Appendix A.
- Chapter 3 summarizes the results of the 2014–15 test administration. It includes qualitative observations and the results of quantitative analyses. Tables that provide more detailed information in support of the analyses in Chapter 3 are included in appendixes B through G at the end of the document.
- Chapter 4 highlights the findings and implications for future administrations.

Each chapter contains summary tables within the body of the text.

Chapter 2: Item Development

Overview

Educational Testing Service (ETS) developed approximately 15 items per grade in English language arts (ELA) and mathematics for grades three through eight and grade eleven for the first year of the California Alternate Assessments (CAA). The items were designed to be engaging for the target student population and represented a variety of item types. Some items required a test examiner to apply a rubric to evaluate the student's response during test administration; in some instances, the teacher needed to actually click on or otherwise select the response indicated by the student via eye gaze, gesture, or other means. Other items were completed by students independently.

The majority of the items were written to stimuli (e.g., graphic, text, passage, video, and audio) as tiered item sets. The tiers, or levels, are Tier 1 (low complexity), Tier 2 (medium complexity), and Tier 3 (high complexity). A few items were written as untiered, meaning the item may be a discrete item or tied to a stimulus but only written to one level. Figure 2.1 below demonstrates the tiered and untiered approach for the ELA and mathematics assessments.

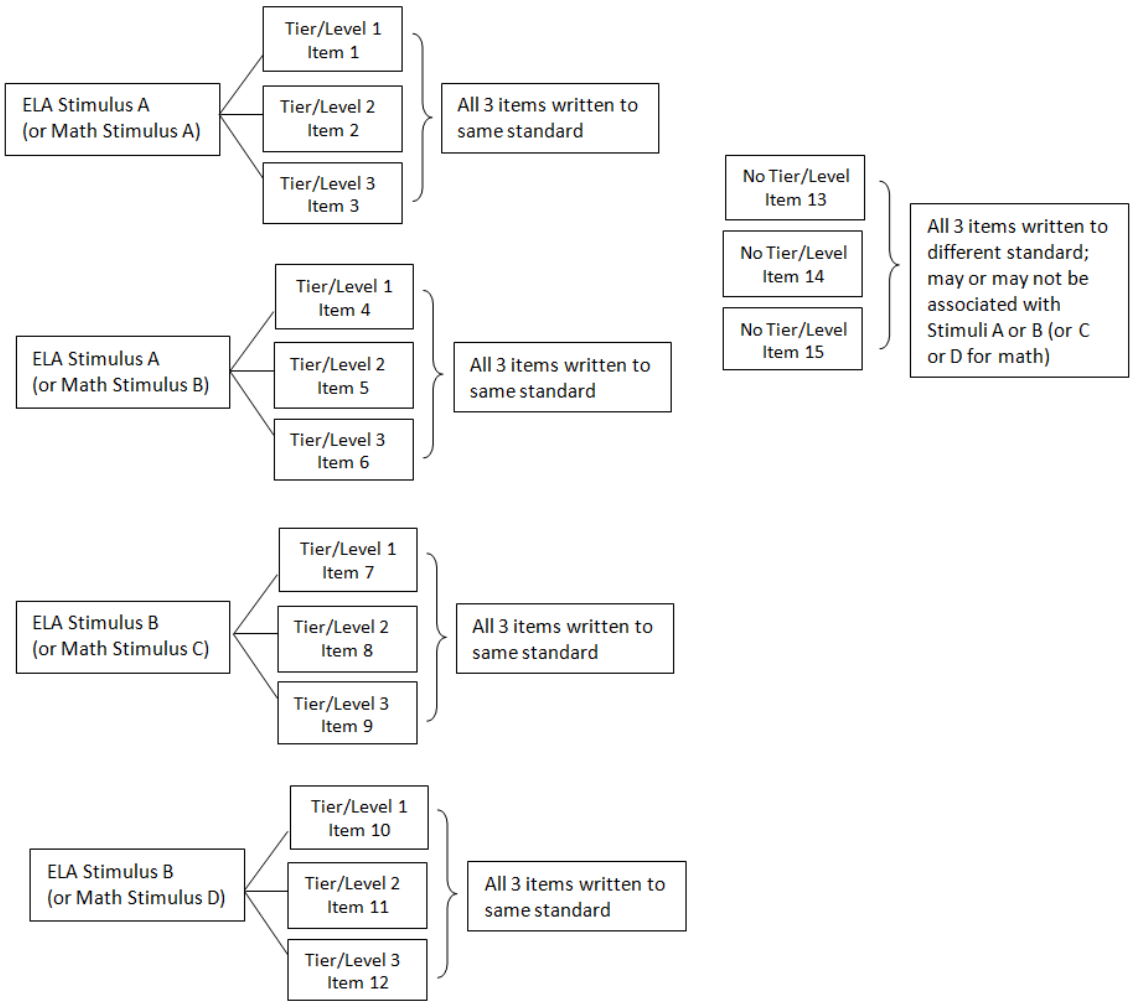

Figure 2.1 Item development plan

Assessment Design

The CAAs are structured to require one-on-one administration by a test examiner and may require items be read to the student. Students who are able may select responses using a mouse, touchscreen, or other supported input device. In some cases during test administration, students needed to use other modes of communication to indicate responses to the test examiner. The test examiner entered these responses into the testing device for the student.

Item Development Plan

Table A.1 on page 27 shows the target number of ELA items to be developed by standard for 2014–15 testing; Table A.2 on page 40 shows the target number of items for mathematics. The 2015 Item Development Plan (IDP) for ELA was based on passage development. Once passages were reviewed, revisions to the IDP were required to accommodate CCC standards that can be supported by finalized passage content.

Item Types

ETS intended to use a variety of technology-enabled item types that required the student, or the test examiner on behalf of the student, to respond to a question in ways different from typical selected-response items. In addition to technology-enabled items, constructed response (CR) items were also used in the assessment. They were items which required students to type in a text box or read out loud. Assessment developers considered the standard being assessed as well as the cognitive complexity to target when selecting the item type to use.

The following technology-enhanced item types were included in the 2014–15 CAAs. All item types were designed to be machine scorable, except for a small subset of CR items scored by the test examiner using provided rubrics. Table 2.1 provides a detailed description of the technology enhanced items used.

- Multiple choice (MC) (single select and multiple select)
- Inline choice list (Single select and multiple select)
- Fraction
- Numeric
- Zone (single select and multiple select)
- Bar graph (single select and multiple select)
- Grid single select
- Match (single select and multiple select)

Table 2.1 Item Types for the 2014–15 CAAs

Item Type/ Response Type		Description
MC	Multiple choice single select	Item that 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	Item that generally consists of a stem and list of choices; test taker can select one or more choices to respond. May also include a stimulus.
MC	Inline choice list single select	The stem contains a single blank, and the test taker must fill the blank by selecting a choice from its corresponding choice list.

Item Type/ Response Type		Description
MC	Inline choice list multiple select	The stem contains two or more blanks, and test taker must fill each blank by selecting a choice from the corresponding choice lists.
Short 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 *	Test taker responds by marking a single cell in a table grid.
Hot Spot	Zones single select *	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 *	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: • Target Table—text-based sources with targets arranged in table structure • Target Passage—text-based sources with targets arranged in paragraphs of text • Target Positions—text-based sources with targets arranged on top of an image • 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 and then the target area, and the source snaps to the target area. There are four main varieties: 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 These varieties allow for following scenarios: • 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.

Item Type/ Response Type		Description
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		

ETS incorporated the following media into item stimuli. In each case, the media were used if a Core Content Connector (CCC) made it necessary to present the item content in one of the following modes.

- Video—no more than 30 seconds and no more than 10 total videos
- Audio—no more than 30 seconds and no more than 15 total audio files
- Animation—no more than 30 seconds and no more than 10 total animations

No items were developed that require human scoring by ETS. All technology-enabled items were machine scored. For constructed-response items, item-specific rubrics were also developed and included in the *Directions for Administration* 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 test administration.

Test Assembly and Administration

The CAAs were made available to all eligible students with significant cognitive disabilities in grades three through eight and grade eleven. There were three forms in each content area and grade containing the same items but ordered differently to vary the order in which different students received the items. Item orders within item sets were the same but the item sets were ordered differently among the three forms. ETS administered all three forms to the target student population per grade and content area; therefore, there was no student sampling. Tiered and untiered items associated with the same stimulus were administered as a set.

The 2014–15 CAAs consisted of approximately 15 items in each content area. These tests are not aligned with the CAA test blueprint. ETS provided the California Department of Education (CDE) with an opportunity to preview items before the start of testing.

The CAAs were available online only. No paper, large-print, or braille versions of the 2014–15 CAAs were produced.

ETS estimates that the time it takes a test examiner to read the tiered items to the student and then for the student to respond can vary by a few minutes. The length of the stimulus and the speed at which a student responds to different item types can vary. The estimated duration for 2014–15 testing was 45 to 60 minutes per content area, but it was expected some students may need more time. Test examiners were instructed to administer the tests in sessions appropriate in length for each student within the specified testing window.

ETS also developed instructions for test administration and necessary ancillary documentation consisting of a nonsecure *CAA Field Test Administration Manual* and secure, grade-specific *Directions for Administration* for the assessments. Both were provided electronically, but test examiners were given the option of printing documents as needed. These documents were submitted to the CDE for review and approval.

Chapter 3: Summary Statistics for the 2014–15 Administration

Overview

This chapter includes both qualitative observations and results from quantitative analyses for the 2014–15 California Alternate Assessments (CAAs) administration. Educational Testing Service (ETS) conducted qualitative observations of the 2014–15 administration in selected local educational agencies (LEAs) in northern and southern California. Specifically, the following topics are summarized in this chapter:

1. qualitative observations findings,
2. optional Learner Characteristic Inventory (LCI) results,
3. Student Response Checks (SRC) results completed by the test examiners,
4. characteristics of the student samples used in the statistical analyses, and
5. item level statistics obtained including classical item analyses and differential item functioning (DIF) results.

Qualitative Observations

Observations for the English language arts (ELA) administrations were completed in Riverside, Encinitas, and Chula Vista unified school districts. Observations for the mathematics administrations were completed in the Butte County Office of Education, Sacramento City, and San Juan Unified school districts. For both subject areas, the classrooms observed were self-contained and where the student disabilities ranged from mild to moderate to severe.

For both sets of observations, issues related to the *Directions for Administration (DFA)* emerged. Test examiners appeared to not be aware of the importance of the *DFA* and did not understand that the *DFA* is an integral part of the test administration. Various nonstandardized test administration practices were observed when both the ELA and mathematics assessments were given. Administering the online test alone, without the support of the *DFA*, undermined the standardized nature of the test administrations. Detailed observation notes are presented in Appendix B. Appropriate measures are being taken for subsequent CAA administration years to emphasize the critical nature of the *DFA*.

Learner Characteristic Inventory (LCI)

For the 2014–15 administration, an optional LCI was available within the CAA online testing interface for each student. The LCI questions were to be answered by the CAA test examiner before the start of ELA and mathematics testing for each student. Responses were based on the test examiner's familiarity with that student. The information collected was designed to help test developers improve future assessment development.

For the 2014–15 CAAs, ten learner characteristics were assessed:

1. Expressive communication profile
2. Augmentative and alternative communication use
3. Receptive communication profile
4. Vision

5. Hearing
6. Motor function
7. Engagement
8. Health issues/Attendance
9. Reading proficiency
10. Mathematics proficiency

The LCI was optional and was completed by the CAA test examiners. Appendix C presents frequency counts for each content and grade and shows fairly consistent response rates. In general, approximately 60 percent of student test records included LCI responses for either ELA or mathematics. Table 3.1 shows a summary of the LCI response rates for all students.

Table 3.1 Summary of LCI for All Students

	ELA		Mathematics	
LCI	**N**	**%**	**N**	**%**
Expressive Communication (check the one that best describes this student)				
o 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.	11,898	46%	11,667	47%
o 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.	3,651	14%	3,470	14%
o 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.	766	3%	599	2%
No responses	9,286	36%	9,016	36%
Does this student use an augmentative communication system in addition to or in place of oral speech?				
o Yes	2,374	9%	2,184	9%
o No	13,909	54%	13,518	55%
No responses	9,318	36%	9,050	37%
Receptive Language (check the one that best describes this student)				
o 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.	8,607	34%	8,453	34%
o Requires additional cues (e.g., gestures, pictures, objects, or demonstrations/models) to follow 1–2 step directions.	6,728	26%	6,475	26%
o Alerts to sensory input from another person (auditory, visual, touch, movement) BUT requires actual physical assistance to follow simple directions.	758	3%	642	3%
o Uncertain response to sensory stimuli (e.g., sound/voice; sight/gesture; touch; movement; smell).	169	1%	108	0%
No responses	9,339	36%	9,074	37%

LCI	ELA N	ELA %	Mathematics N	Mathematics %
Vision (check the one that best describes this student)				
o Vision within normal limits.	12,198	48%	11,792	48%
o Corrected vision within normal limits.	3,452	13%	3,363	14%
o Low vision; uses vision for some activities of daily living.	475	2%	426	2%
o No functional use of vision for activities of daily living, or unable to determine functional use of vision.	151	1%	109	0%
No responses	9,325	36%	9,062	37%
Hearing (check the one that best describes this student)				
o Hearing within normal limits.	15,446	60%	14,915	60%
o Corrected hearing loss within normal limits.	289	1%	288	1%
o Hearing loss aided, but still with a significant loss.	239	1%	234	1%
o Profound loss, even with aids.	132	1%	132	1%
o Unable to determine functional use of hearing.	176	1%	126	1%
No responses	9,319	36%	9,057	37%
Motor (check the one that best describes this student)				
o No significant motor dysfunction that requires adaptations.	14,632	57%	14,244	58%
o Requires adaptations to support motor functioning (e.g., walker, adapted utensils, and/or keyboard).	848	3%	788	3%
o Uses wheelchair, positioning equipment, and/or assistive devices for most activities.	420	2%	376	2%
o Needs personal assistance for most/all motor activities.	365	1%	275	1%
No responses	9,336	36%	9,069	37%
Engagement (check the one that best describes this student)				
o Initiates and sustains social interactions.	9,291	36%	9,112	37%
o Responds with social interaction, but does not initiate or sustain social interactions.	5,807	23%	5,539	22%
o Alerts to others.	1,000	4%	888	4%
o Does not alert to others.	173	1%	146	1%
No responses	9,330	36%	9,067	37%
Health Issues/Attendance (check the one that best describes this student)				
o Attends at least 90% of school days.	14,339	56%	13,857	56%
o Attends approximately 75% of school days; absences primarily due to health issues.	1,573	6%	1,494	6%
o Attends approximately 50% or less of school days; absences primarily due to health issues.	163	1%	151	1%
o Receives Homebound Instruction due to health issues.	23	0%	23	0%
o Highly irregular attendance or homebound instruction due to issues other than health.	178	1%	167	1%
No responses	9,325	36%	9,060	37%

LCI	ELA		Mathematics	
	N	%	N	%
Reading (check the one that best describes this student)				
o Reads fluently with basic (literal) understanding from paragraphs/short passages with narrative/informational texts in print or braille.	3,189	12%	3,162	13%
o Reads basic sight words, simple sentences, directions, bullets, and/or lists in print or braille.	8,017	31%	7,894	32%
o Aware of text/braille, follows directionality, makes letter distinctions, or tells a story from the pictures that is not linked to the text.	3,732	15%	3,551	14%
o No observable awareness of print or braille.	1,316	5%	1,068	4%
No responses	9,347	37%	9,077	37%
Mathematics (check the one that best describes this student)				
o Applies computational procedures to solve real-life or routine word problems from a variety of contexts.	1,089	4%	1,079	4%
o Does computational procedures with or without a calculator.	7,778	30%	7,693	31%
o Counts with 1:1 correspondence to at least 10, and/or makes numbered sets of items.	4,571	18%	4,435	18%
o Counts by rote to 5.	1,713	7%	1,592	6%
o No observable awareness or use of numbers.	1,109	4%	878	4%
No responses	9,341	36%	9,075	37%

Student Response Check (SRC)

CAA test examiners administered an SRC to each student at the beginning of testing. The purpose of the SRC was to document that the student had a consistent and observable way to communicate his or her response to the test items, using the intended response mode(s).

The SRC appeared on the test delivery system right after launching either the ELA or mathematics assessment. An SRC was only required at the beginning of the first CAA content area administered to each student. Once completed in one content area, the SRC did not necessarily need to be repeated in the second content area. There were three possible outcomes from the SRC:

1. The student demonstrates an observable, consistent response. Note that the answer to the item does not have to be correct, only that it demonstrates that the student is oriented to the item choices.
2. The student demonstrates an observable, but inconsistent, response.
3. The student does not demonstrate any observable responses.

If the outcome was “1,” the test examiner administered the entire assessment. If the outcome was “2,” the test examiner administered the first four ELA or mathematics items. If a consistent, observable response was elicited for any of these four items, the entire assessment was administered. If the outcome was “3,” the test examiner was instructed not to administer the assessment.

In the second part of the SRC check, test examiners were asked to select communication modes for their students from the following list:

A. Student will use a mouse or a computer keyboard

B. Student will provide a verbal response

C. Student will use a touch screen, gestures, or points to indicate a response
D. Student will use the print-on-demand accommodation and will circle responses on paper
E. Student will use an augmentative and/or alternate communication device
F. Student will use eye gaze
G. Other

Table 3.2 shows SRC outcome and test completion status for all students. Overall, 61 percent of students demonstrated observable consistent response on SRC and the test examiner administered the entire assessment. 22 percent of students demonstrated an observable, but inconsistent, response, and 15 percent of student did not demonstrate any observable response on the SRC. Although the SRC outcome indicated that students did not demonstrate any observable responses on the SRC (*N*=4,690), 23 percent and 19 percent of students were able to complete the ELA or mathematics tests respectively. These results confirmed the qualitative observation findings that *DFAs* were not followed consistently by test examiners during the test administration.

Appendix D presents the results of the SRC summarized by grades. It shows that grade three students had a lower rate of demonstrating observable consistent response than other grade levels.

Table 3.2 Summary of Student Response Check and Test Completion Status

Response Check	N Response	Pct N Total	ELA complete	ELA incomplete	ELA not tested	Math complete	Math incomplete	Math Not Tested
1. The student demonstrates an observable, consistent response.	18,995	61%	99%	0%	0%	97%	1%	1%
2. The student demonstrates an observable, but inconsistent, response.	6,873	22%	83%	10%	6%	78%	9%	11%
3. The student does not demonstrate any observable responses.	4,690	15%	23%	5%	71%	19%	3%	68%
No SRC administered	680	2%	16%	1%	81%	15%	1%	63%
Total	**31,238**	**100%**	**82%**	**3%**	**14%**	**79%**	**3%**	**14%**

Table 3.3 presents the communication mode for students who completed either ELA or mathematics assessments. In general, most students are reported to be using three major modes of communication: mouse or keyboard, verbal response, or touch screen/gesture/ pointer, or the combination of the three major modes.

Table 3.3 Summary of Student Communication Modes

Communication Mode	ELA Complete N	ELA Complete %	Mathematics Complete N	Mathematics Complete %
Student will use a mouse or a computer keyboard	7,898	31%	7,735	31%
Student will provide a verbal response	5,105	20%	4,919	20%
Student will use a touch screen, gestures, or points to indicate a response	3,862	15%	3,589	14%
Student will use a mouse or a computer keyboard/Student will provide a verbal response	1,815	7%	1,778	7%
Student will provide a verbal response/Student will use a touch screen, gestures, or points to indicate a response	2,475	10%	2,410	10%
Student will use a mouse or a computer keyboard/Student will provide a verbal response/Student will use a touch screen, gestures, or points to indicate a response	2,189	9%	2,153	9%
Other possible combinations	2,257	9%	2,168	9%
Total	**25,601**	**100%**	**24,752**	**100%**

Samples Used for the Analyses

The CAAs were delivered to all eligible students with significant cognitive disabilities in grades three through eight and grade eleven. ETS administered all items to the target student population per grade and content area. Therefore, there were no student sampling.

Table 3.4 includes the number of students taking each test. The "Incomplete" column in the table presents the number of student who demonstrated an observable, but inconsistent, response. These students responded to less than the first four items and stopped the test. The "Complete" column presents the number of students who demonstrated a consistent and an observable response and responded to more than four items. Note that analyses in this report were performed using only test takers with complete responses for all items.

Table 3.4. Sample Status

	ELA					Mathematics				
	Incomplete *		Complete		Total	Incomplete *		Complete		Total
Grade 3	111	3%	3,840	97%	3,951	153	4%	3,666	96%	3,819
Grade 4	130	3%	3,843	97%	3,973	136	3%	3,788	97%	3,924
Grade 5	134	3%	3,841	97%	3,975	138	4%	3,697	96%	3,835
Grade 6	204	5%	3,718	95%	3,922	158	4%	3,637	96%	3,795
Grade 7	197	5%	3,560	95%	3,757	135	4%	3,431	96%	3,566
Grade 8	193	5%	3,515	95%	3,708	108	3%	3,444	97%	3,552
Grade 11	73	2%	3,284	98%	3,357	92	3%	3,089	97%	3,181

* Incomplete: The test examiner did not administer the assessment after the first four ELA or mathematics items as a result of the SRC.

The demographic information of CAA test takers is provided in Table E.1 and Table E.2. Table 3.5 provides definitions of the demographic groups included in the tables.

Table 3.5. Subgroup Definitions

Subgroup	Definition
Gender	• Male • Female
Ethnicity	• African American • American Indian or Alaska Native • Asian – Asian Indian – Cambodian – Chinese – Hmong – Japanese – Korean – Laotian – Vietnamese – Other Asian • Hispanic or Latino • Pacific Islander – Guamanian – Native Hawaiian – Samoan – Tahitian – Other Pacific Islander • Filipino • White (not Hispanic)
English-language Fluency	• English only • Initially fluent English proficient • English learner • Reclassified fluent English proficient • To Be Determine
Economic Status	• Not economically disadvantaged • Economically disadvantaged
Primary Disability	• Intellectual disability • Hearing impairment • Speech or language impairment • Visual impairment • Emotional disturbance • Orthopedic impairment • Other health impairment • Specific learning impairment • Deaf-blindness • Multiple group • Autism • Traumatic brain injury

Item-Level Statistics

Item-level statistics obtained for the CAAs administered during the 2014–15 administration are reported in this section. Statistics presented below are divided into three subsections in the following order:

1. Classical item analyses for the whole assessment
2. Classical item analyses by item types
3. DIF analyses

A description of each of these sets of analyses follows in this section. Data supporting these analyses can be found in the following the appendixes:

1. Appendix F on page 61 presents classical item analyses including *p*-value/average item score (AIS), item-total correlation coefficient, and associated flags. In addition, the mean, minimum, and maximum *p*-value and item-total correlation for each item are presented in Table 3.6 on page 17.
2. Appendix G on page 73 presents the results of the DIF analyses applied to all items for which sufficient student samples were available. In this appendix, items flagged for significant DIF are listed. Also provided are the distributions of items across DIF categories.

Classical Item Analyses

Classical item analyses are used to evaluate the performance of all items with respect to item difficulty, item discrimination, and student raw score performance on key-based selected response (SR) items and rule-based machine-scored items (constructed response, or CR) items.

The following statistics and associated flagging rules were used to identify items that were not performing as expected:

Item Difficulty

The percent of maximum possible score is computed for each item as an indicator of item difficulty with a range of 0.0 to 1.0. A relatively higher value indicates an easier item. An item difficulty of 1.0 indicates that all students received a perfect score on the item. An average item score of 0.0 for an item indicates that no students answered the item correctly or received partial credit for the item in the case of polytomous or CR items.

For dichotomous items and SR items, the percent of maximum possible score is simply equivalent to the percentage of students who answered the item correctly. The formula for *p*-value for selected response is

$$p\text{–}value_{SR} = \frac{\sum X_{ic}}{N_i}, \tag{3.1}$$

where,

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

N_i is the total number of students observed for item i.

A polytomous item is an item that is scored with more than two ordered categories, such as the scores from the ELA CR item. For polytomous items, the *p*-value is defined as

$$p\text{–}value_{CR} = \frac{\sum X_{ij}}{N_i \times Max(X_i)}, \quad (3.2)$$

where

X_{ij} is the score assigned for a given CR item *i* and X_i is the score levels associated with the item *i*.

Another interpretation is that item difficulty for constructed-response items is the mean score for the item (AIS) divided by the maximum number of score points. For example, for a 3-point polytomous item with scores ranging from a low score of zero to three (as the maximum) and the observed mean score was 2.1, the observed percent of maximum can be calculated as 2.1/3 = 0.70, or 70 percent. In this example 70 percent of the maximum score points were obtained on average by students on this hypothetical CR item. When a dichotomous CR item is used, the maximum possible score is one by definition and defaults to the selected-response *p*-value.

Item Discrimination

Item discrimination evaluates how well an item distinguishes between low and high ability students, and generally is referred to as "item-total correlation." The expectation is that high ability students will outperform low ability students on a good discriminating item. The item discrimination statistic is calculated as the correlation coefficient between the item score and total score. A relatively high item-total correlation coefficient value is desired, as it indicates that students with higher scores on the overall test tended to perform better. In general, item-total correlation ranges from –1.0 (for a perfect negative relationship) to 1.0 (for a perfect positive relationship). However, a negative item-total correlation typically signifies a problem with the item, as the higher-ability students generally are getting the item wrong or a low score and the lower-ability students are getting the item right or are assigned a higher score level.

Some coefficients used in computing item-total correlations are the point-biserial and polyserial correlation coefficient. The point-biserial correlation is used for dichotomous items; the polyserial correlation is used for polytomous items. The point-biserial correlation coefficient is a special case of the Pearson correlation coefficient used for dichotomous items. The point-biserial correlation is computed using

$$r_{ptbis} = \frac{(\overline{X}_+ - \overline{X}_-)}{s_{tot}}\sqrt{pq} \quad (3.3)$$

where,

$\overline{X}_+$ is the mean criterion score of examinees answering the item correctly,

$\overline{X}_-$ is the mean criterion score of the examinees answering the item incorrectly,

s_{tot} is the standard deviation of the criterion score,

p is the proportion of examinees answering the item correctly, and

q equals (1 – *p*).

The polyserial correlation measures the relationship between a polytomous item and the criterion score. Polyserial correlations are based on a polyserial regression model (Olsson, 1979; Drasgow, 1988), which assumes that performance on an item is determined by the

examinee's position on an underlying latent variable that is normally distributed at a given criterion score level. Based on this approach, the polyserial correlation can be estimated as

$$r_{polyreg} = \frac{\beta s_{tot}}{\sqrt{\beta^2 s_{tot}^2 + 1}} \quad (3.4)$$

where,

s_{tot} is the standard deviation of the students' total scores; (criterion score) and

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

β is a regression coefficient (slope) for predicting the continuous version of a binary item score onto the continuous version of the total score. There are as many regressions as there are boundaries between scores with all sharing a common slope, β. For a polytomously scored 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 is sometimes referred to as a discrimination index because it is an indicator of the degree to which students who do well on the total test also do well on a given item. An item is considered discriminating if high-ability students tend to receive higher scores and low-ability students tend to receive lower scores on the item.

The biserial correlation could have been chosen for dichotomous items, but the point-biserial and its interpretation is more familiar to many users.

Distractor Analysis

For each SR item, distractor analyses were conducted. The quality of distractors is an important component of an item's overall quality. Distractors should be clearly incorrect, but at the same time plausible and attractive to lower-ability students. The following distractor analyses were conducted to evaluate the quality of distractors.

- The percentage of students at each response option is calculated. For the key (i.e., the correct answer), this percentage is the item difficulty value. If the percentage of students who selected a distractor is greater than the percentage of students who selected a key, the item should be examined to determine if it has been incorrectly keyed or double-keyed.
- The point-biserial correlation is calculated for each response option. While the key should have a positive point-biserial correlation with the criterion score, the distractors should exhibit negative point-biserial correlations (i.e., lower ability students would likely choose the distractors, while the higher ability students would not).

For each constructed-response item, the following statistics were evaluated.

- The percentage of students at each score level is calculated. If there were very few students at certain score levels, this might suggest that some score categories need to be collapsed or that the scoring rubric needs adjustment.
- The item-test correlation is computed using the polyserial correlation.

Items with negative or extremely low correlations can indicate serious problems with the item itself or can indicate that students have not been taught the content.

A descriptive summary of the classical item statistics for the overall test are presented in Table 3.6.

The item-by-item values are presented in Table F.1 through Table F.14. Some items were flagged for unusual statistics; these flags are shown in the tables. Although the flag definition appears in the heading of each table, the flags are displayed in the body of the tables only where applicable for the specific CAA presented. The flag classifications are as follows:

- Difficulty flags
  - A: Low average item score (less than .33 for MC, .30 for CR)
  - H: High average item score (greater than .95 for MC, .80 for CR)
- Discrimination flag

  R: Item-total correlation less than .20
- Omit/nonresponse flag
  - O: Omit/nonresponse rates greater than 5 percent for MC, greater than 15 percent for CR

Table 3.6 Item Difficulty and Item-Total Correlation

				Mean		Minimum		Maximum	
Content Area	Grade	No. of items	No. of Examinees	Difficulty	Item-total Corr.	Difficulty	Item-total Corr.	Difficulty	Item-total Corr.
ELA	3	15	3,840	0.57	0.55	0.32	0.32	0.87	0.80
	4	14	* 2,498	0.55	0.54	0.10	0.38	0.88	0.75
	5	15	3,841	0.47	0.50	0.18	0.17	0.78	0.76
	6	14	3,718	0.41	0.48	0.20	0.28	0.83	0.61
	7	16	3,560	0.44	0.50	0.21	0.29	0.72	0.77
	8	15	3,515	0.36	0.44	0.12	0.11	0.82	0.75
	11	15	3,284	0.35	0.53	0.04	0.23	0.70	0.78
Math	3	15	3,666	0.43	0.48	0.10	0.23	0.63	0.74
	4	15	3,788	0.37	0.46	0.08	0.06	0.66	0.76
	5	15	3,697	0.35	0.52	0.02	0.22	0.70	0.73
	6	15	3,637	0.42	0.49	0.10	0.28	0.67	0.71
	7	15	3,431	0.36	0.51	0.10	0.25	0.59	0.75
	8	15	3,444	0.49	0.47	0.21	0.23	0.83	0.74
	11	15	3,089	0.40	0.47	0.13	0.30	0.67	0.73

*Results for version 3 in the CAA for ELA (Grade 4) were excluded because of an item mis-sequencing issue.

Differential Item Functioning (DIF) Analyses

Analyses of DIF can provide evidence of the degree to which an item score interpretation or use is valid for individuals who differ in their demographic characteristics.

DIF analyses were performed on all items for which sufficient student samples were available. The sample size requirements for the DIF analyses were 100 in the focal group and 400 in the combined focal and reference groups. These sample sizes were based on standard operating procedures with respect to DIF analyses at ETS.

The DIF analyses for multiple choice items utilized the Mantel-Haenszel (MH) DIF statistic (Mantel & Haenszel, 1959; Holland & Thayer, 1985). This statistic is based on the estimate of constant odds ratio and is described as the following:

The α_{MH} is the constant odds ratio taken from Dorans and Holland (1993, equation 7) and computed as the following:

$$\alpha_{MH} = \frac{\left(\sum_m R_{rm} \frac{W_{fm}}{N_{tm}}\right)}{\left(\sum_m R_{fm} \frac{W_{rm}}{N_{tm}}\right)} \tag{3.5}$$

$$MH\ D\text{-}DIF = -2.35 \ln[\alpha_{MH}] \tag{3.6}$$

where,

R = number right,

W = number wrong,

N = total in:

fm = focal group at ability m,

rm = reference group at ability m, and

tm = total group at ability m.

Items analyzed for DIF at ETS are classified into one of three categories: A, B, or C. Category A contains items with negligible DIF. Category B contains items with slight to moderate DIF. Category C contains items with moderate to large values of DIF.

The definitions of the categories based on evaluations of the item-level MH D-DIF statistics are as follows:

DIF Category	Definition
A (negligible)	• 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)	• 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-.”

DIF Category	Definition
C (large)	• 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-."

DIF analyses of the polytomously scored CAA items are completed using two procedures. The first is the Mantel-Haenszel (MH) ordinal procedure, which is based on the Mantel procedure (Mantel, 1963; Mantel & Haenszel, 1959). The MH ordinal procedure compares the proportion of examinees in the reference and focal groups obtaining each item score after matching the examinees on their total test score. As with dichotomously scored items, the common odds ratio is estimated across the matched score groups. The resulting estimate is interpreted as the relative likelihood of obtaining a given item score for members of two groups that are matched on ability.

As such, the common odds ratio provides an estimated effect size; a value of one indicates equal odds and thus no DIF (Dorans & Holland, 1993). The corresponding statistical test is H_0: $\alpha = 1$, where α is a common odds ratio assumed equal for all matched score categories $s = 1$ to S. Values of less than one indicate DIF in favor of the focal group; a value of one indicates the null condition; and a value greater than one indicates DIF in favor of the reference group. The associated ($MH\chi^2$) is distributed as a Chi-square random variable with one degree of freedom.

The $MH\chi^2$ Mantel Chi-square statistic is used in conjunction with a second procedure, the standardization procedure (Dorans & Schmitt, 1993). This procedure produces a DIF statistic based on the standardized mean difference (SMD) in average item scores between members of two groups that have been matched on their overall test score. The SMD compares the item means of the two studied groups after adjusting for differences in the distribution of members across the values of the matching variable (total test score).

The standardized mean difference is computed as the following:

$$SMD = \sum_m w_m \left(E_{fm} - E_{rm} \right) / \sum_m w_m \tag{3.7}$$

where,

$w_m / \sum w_m$ is the weighting factor at score level m supplied by the standardization group to weight differences in item performance between a focal group (E_{fm}) and a reference group (E_{rm}) (Doran & Kulick, 2006).

A negative SMD value means that, conditional on the matching variable, the focal group has a lower mean item score than the reference group. In contrast, a positive SMD value means that, conditional on the matching variable, the reference group has a lower mean item score than the focal group. The SMD is divided by the standard deviation (SD) of the total group item score in its original metric to produce an effect-size measure of differential performance.

Items analyzed for DIF at ETS are classified into one of three categories: A, B, or C. Category A contains items with negligible DIF. Category B contains items with slight to moderate DIF. Category C contains items with moderate to large values of DIF.

The ETS classification system assigns items to one of the three DIF categories on the basis of a combination of statistical significance of the Mantel Chi-square statistic and the magnitude of the SMD effect-size:

DIF Category	Definition
A (negligible)	• The Mantel Chi-square statistic is not statistically significant (at the 0.05 level) or |SMD/SD| < 0.17.
B (moderate)	• The Mantel Chi-square statistic is statistically significant (at the 0.05 level) and 0.17 ≤ |SMD/SD| < 0.25.
C (large)	• The Mantel Chi-square statistic is statistically significant (at the 0.05 level) and |SMD/SD| > 0.25.

In addition, the categories identify which group is being given an advantage; categories are displayed in Table 3.7. The categories have been used by all ETS testing programs for more than 20 years.

Table 3.7 DIF Flags Based on the ETS DIF Classification Scheme

Flag	Descriptor
A–	Negligible favoring members of the reference group
B–	Moderate favoring members of the reference group
C–	Large favoring members of the reference group
A+	Negligible favoring members of the focal group
B+	Moderate favoring members of the focal group
C+	Large favoring members of the focal group

Category C contains items with large values of DIF. As shown in Table 3.7, items classified as C+ tend to be easier for members of the focal group than for members of the reference group with comparable total scores. Items classified as C– tend to be more difficult for members of the focal group than for members of the reference group whose total scores on the test are like those of the focal group.

The results of the DIF analyses are presented in Appendix G, which starts on page 73. Test developers are instructed to avoid selecting items flagged as having shown DIF that disadvantages a focal group (C-DIF) for future operational test forms unless their inclusion is deemed essential to meeting test-content specifications.

Table 3.8 lists specific subgroups that were used for DIF analyses for the 2014–15 CAA administration.

Table 3.8 Subgroup Classification for DIF Analyses

DIF Type	Reference Group	Focal Group
Gender	Male	Female
Race/Ethnicity	White	• African American • American Indian • Asian • Combined Asian Group (Asian/Pacific Islander/Filipino) • Filipino • Hispanic/Latin American • Pacific Islander
Disability	Intellectual Disability (ID)	• Autism (AU) • Deaf-blindness (DB) • Emotional disturbance (EMN) • Hearing impairment (HI) • Multiple disabilities (MD) • Orthopedic impairment (OI) • Other health impairment (OHI) • Specific learning disability (SLD) • Speech or language impairment (SLI) • Traumatic brain injury (TBI) • Visual impairment (VI)

Chapter 4: Discussion and Implications

Summary of Findings

Observations of Administration

Test examiners appeared not to be aware of the importance of the *Directions for Administration (DFA) for the California Alternate Assessments (CAA)* and did not understand that the *DFA* is an integral part of test administration. Various nonstandardized test administration practices were observed in both English language arts (ELA) and mathematics test administrations. Administering the online test alone without the support of the *DFA* is insufficient in administering a standardized test. Educational Testing Service (ETS) is taking appropriate measures to emphasize the critical nature of the *DFA* for subsequent CAA administration years.

Learner Characteristics Inventory (LCI)

An optional LCI was available within the CAA online testing interface for each student. The LCI questions were expected to be answered by the CAA test examiner before the start of testing for either ELA or mathematics. As the summary in Chapter 3 shows, the response rate of the LCI is above 60 percent across the grades. Approximately 30 percent of students could read basic sight words, simple sentences, directions, bullets, and/or lists in print or braille for ELA. Also, a similar percentage of the students could perform computational procedures with or without a calculator.

Student Response Check (SRC)

Overall, 61 percent of students demonstrated observable consistent response on the SRC and the test examiner would administer entire assessment. 22 percent of students demonstrated an observable, but inconsistent, response, and 15 percent of student did not demonstrate any observable response on the student response check (SRC). Although the SRC outcome indicated that students did not demonstrate any observable responses on the SRC, 23 percent and 19 percent of students were able to complete the ELA or mathematics assessments respectively in Table 3.2. It confirmed the qualitative observation findings that test examiners did not follow the *DFA* consistently during test administration.

Classical Item Analyses

Approximately 15 items in the various computer-enabled item types for each content area were delivered to each student. A descriptive summary of the classical item statistics by item type is presented in Table 4.1 (ELA) and Table 4.2 (mathematics). Drag-and-drop and hotspot items tended to be more difficult than other item types for ELA, whereas short constructed response items tended to be harder for mathematics.

Table 4.1 Summary of the Classical Item Statistics by Item Type for ELA

			Mean		Minimum		Maximum	
Item Type	No. of Items	No. of Examinees	*P*-value	Biserial	*P*-value	Biserial	*P*-value	Biserial
Grade 3								
Drag & Drop	3	3,840	0.55	0.69	0.32	0.63	0.78	0.77
MC	9	3,840	0.61	0.44	0.33	0.32	0.87	0.56
Short CR	2	3,840	0.48	0.80	0.47	0.79	0.49	0.80
Hotspots	1	3,840	0.44	0.68	0.44	0.68	0.44	0.68

Item Type	No. of Items	No. of Examinees	Mean *P*-value	Mean Biserial	Minimum *P*-value	Minimum Biserial	Maximum *P*-value	Maximum Biserial
Grade 4								
Drag & Drop	1	2,498	0.22	0.71	0.22	0.71	0.22	0.71
MC	12	2,498	0.57	0.51	0.10	0.38	0.88	0.75
Short CR	–	–	–	–	–	–	–	–
Hotspots	1	2,498	0.54	0.73	0.54	0.73	0.54	0.73
Grade 5								
Drag & Drop	1	3,841	0.23	0.67	0.23	0.67	0.23	0.67
MC	13	3,841	0.50	0.48	0.18	0.17	0.78	0.76
Short CR	–	–	–	–	–	–	–	–
Hotspots	1	3,841	0.30	0.60	0.30	0.60	0.30	0.60
Grade 6								
Drag & Drop	3	3,718	0.41	0.56	0.24	0.49	0.57	0.61
MC	9	3,718	0.44	0.43	0.30	0.28	0.83	0.56
Short CR	–	–	–	–	–	–	–	–
Hotspots	2	3,718	0.27	0.56	0.20	0.52	0.33	0.60
Grade 7								
Drag & Drop	–	–	–	–	–	–	–	–
MC	14	3,560	0.47	0.46	0.21	0.29	0.72	0.59
Short CR	2	3,560	0.24	0.76	0.23	0.75	0.26	0.77
Hotspots	–	–	–	–	–	–	–	–
Grade 8								
Drag & Drop	1	3,515	0.12	0.63	0.12	0.63	0.12	0.63
MC	11	3,515	0.42	0.39	0.21	0.11	0.82	0.60
Short CR	1	3,515	0.39	0.75	0.39	0.75	0.39	0.75
Hotspots	2	3,515	0.15	0.50	0.15	0.42	0.16	0.58
Grade 11								
Drag & Drop	2	3,284	0.10	0.59	0.04	0.51	0.17	0.67
MC	8	3,284	0.38	0.44	0.06	0.23	0.66	0.62
Short CR	2	3,284	0.43	0.78	0.42	0.77	0.43	0.78
Hotspots	3	3,284	0.36	0.58	0.13	0.43	0.70	0.66

Table 4.2 Summary of the Classical Item Statistics for Mathematics

Item Type	No. of Items	No. of Examinees	Mean *P*-value	Mean Biserial	Minimum *P*-value	Minimum Biserial	Maximum *P*-value	Maximum Biserial
Grade 3								
Drag & Drop	3	3,666	0.58	0.68	0.48	0.64	0.63	0.70
MC	9	3,666	0.45	0.33	0.24	0.23	0.63	0.45
Short CR	3	3,666	0.22	0.72	0.10	0.70	0.47	0.74
Hotspots	–	–	–	–	–	–	–	–
Grade 4								
Drag & Drop	1	3,788	0.28	0.54	0.28	0.54	0.28	0.54
MC	10	3,788	0.49	0.41	0.24	0.06	0.66	0.55
Short CR	3	3,788	0.11	0.61	0.10	0.47	0.13	0.76
Hotspots	1	3,788	0.08	0.43	0.08	0.43	0.08	0.43

			Mean		Minimum		Maximum	
Item Type	No. of Items	No. of Examinees	*P*-value	Biserial	*P*-value	Biserial	*P*-value	Biserial
Grade 5								
Drag & Drop	–	–	–	–	–	–	–	–
MC	6	3,697	0.45	0.29	0.33	0.22	0.68	0.37
Short CR	5	3,697	0.09	0.64	0.02	0.55	0.26	0.70
Hotspots	4	3,697	0.51	0.70	0.29	0.65	0.70	0.73
Grade 6								
Drag & Drop	2	3,637	0.40	0.44	0.32	0.30	0.48	0.58
MC	9	3,637	0.46	0.44	0.14	0.28	0.67	0.69
Short CR	2	3,637	0.19	0.69	0.10	0.67	0.29	0.71
Hotspots	2	3,637	0.51	0.57	0.45	0.56	0.56	0.59
Grade 7								
Drag & Drop	3	3,431	0.47	0.66	0.29	0.60	0.59	0.71
MC	7	3,431	0.40	0.35	0.14	0.25	0.53	0.41
Short CR	3	3,431	0.14	0.66	0.10	0.51	0.21	0.75
Hotspots	2	3,431	0.43	0.59	0.43	0.58	0.43	0.60
Grade 8								
Drag & Drop	–	–	–	–	–	–	–	–
MC	10	3,444	0.58	0.41	0.33	0.23	0.83	0.55
Short CR	1	3,444	0.21	0.74	0.21	0.74	0.21	0.74
Hotspots	4	3,444	0.36	0.53	0.32	0.43	0.47	0.69
Grade 11								
Drag & Drop	2	3,089	0.34	0.72	0.31	0.70	0.36	0.73
MC	12	3,089	0.41	0.42	0.13	0.30	0.67	0.54
Short CR	–	–	–	–	–	–	–	–
Hotspots	1	3,089	0.36	0.57	0.36	0.57	0.36	0.57

Item Response Theory (IRT) Analyses

Preliminary item response theory (IRT) statistics are helpful when item and ability estimates are used to inform item and test development. However, IRT analyses were not conducted for 2014–15 CAA administration for the following reasons:

- The purpose of the first CAA administration was to try out different item types rather than to measure students' proficiency. The 2014–15 CAA administration was not built to a specific test blueprint. Therefore, the interpretation of the construct, represented by the IRT ability estimate, is not clear.
- The tiered items did not perform as expected. Specifically, item difficulties did not have an ordinal relationship across the three tiers—for example, Tier 1 items were not always the easiest amongst the three tiers.
- Among the tiered item sets, the Table 4.3 shows up to 75 percent of the item sets—three out of four—did not perform as expected at a given grade and content area. This substantial loss of items is likely to contribute to IRT calibration problems.

Table 4.3 Tiered Item Status

	English Language Arts		Mathematics	
Grade	Number of Tiered Item Sets Administered	Number of Tiered Item Sets Performing as Expected	Number of Tiered Item Sets Administered	Number of Tiered Item Sets Performing as Expected
3	4	1	3	2
4	2	1	3	2
5	4	1	3	3
6	1	0	3	1
7	5	3	3	2
8	4	1	2	1
11	4	1	3	1

In summary, ETS cannot take full advantage of IRT equal-interval scale for a valid comparison among students with the 2014–15 data, because the 2014–15 CAAs were developed without a clear test blueprint, and the purpose was not to measure student performance. Furthermore, IRT calibration cannot resolve issues related to items and the data as mentioned previously. IRT calibration cannot provide the additional information that classical item analyses could.

Implications

Results obtained from the 2014–15 administration provide ETS with actionable items for supporting the spring 2015–16 operational administration. These include:

- Provide statewide training that allows test examiners sufficient time to understand the critical role of the *DFA* for CAA testing.
- Streamline manuals and supporting materials such as the training videos.
- Develop a training test with a variety of item types that allows students to become more familiar with utilizing the technology and technology-enhanced items.
- Update item writing guidelines to inform how the new tiered items will be developed for the 2015–16 administration.

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Appendix A. Item Development Plans for English Language Arts and Mathematics

Table A.1 Item Development Plans by Grade—English Language Arts

Common Core State Standard	Core Content Connector	Essential Understandings	Qty of Items to Develop
ELA Grade 3			
	Reading		
3.RL.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.	3.RL.h1 Answer questions related to the relationship between characters , setting, events, or conflicts (e.g., characters and events, characters and conflicts, setting and conflicts).	Identify a character, setting, event, or conflict.	3 *tiered items*
3.RL.2 Recount stories, including fables, folktales, and myths from diverse cultures; determine central message, lesson, or moral and explain how it is conveyed through key details in text. 3.SL.2 Determine the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.	3.RL.k2 Determine the central message, lesson, moral, and key details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.	Identify the topic of a text or information presented in diverse media.	3 *tiered items*
3.RI.7 Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).	3.RI.h4 Use illustrations (e.g., maps, photographs, diagrams, timelines) in informational texts to answer questions.	Identify an illustration in text.	1
3.RI.2 Determine the main idea of a text; recount the key details and explain how they support the main idea. 3.SL.2 Determine the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.	3.RI.i2 Determine the main idea of text read, read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.	Identify the topic of a text or information presented in diverse media.	3 *tiered items*

Common Core State Standard	Core Content Connector	Essential Understandings	Qty of Items to Develop
3.L.4 Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 3 reading and content, choosing flexibly from an array of strategies. 3.L.4a Use sentence-level context as a clue to the meaning of the word or phrase.	3.RWL.i2 Use sentence context as a clue to the meaning of a new word, phrase, or multiple meaning word.	Recall the meaning of frequently used nouns.	1
3.RF.4 Read with sufficient accuracy and fluency to support comprehension. 3.RF.4b Read on-level prose and poetry orally with accuracy, appropriate rate, and expression on successive readings.	3.RWL.h2 Identify grade level words with accuracy.	Identify frequently used nouns.	3 *tiered items*
Writing			
W.3.2 Write informative/ explanatory texts to examine a topic and convey ideas and information clearly. W.3.2a Introduce a topic and group related information together; include illustrations when useful to aiding comprehension.	3.WI.p1 Include text features (e.g., numbers, labels, diagrams, charts, graphics) to enhance clarity and meaning.	Identify different types of text features found in informational text.	
W.3.8 Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.	3.WI.l4 Sort evidence (e.g., graphic organizer) collected from print and/or digital sources into provided categories.	Identify information from print and digital sources on given topics (e.g., pictures of animals).	1
W.3.4 With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose.	3.WL.o1 With guidance and support from adults, produce a clear, coherent, permanent product that is appropriate to the specific task, purpose (e.g., to entertain), or audience.	Given a specific purpose, produce a permanent product (e.g., select text appropriate to the purpose, identify descriptive sentences, and select a concluding statement).	
		ELA Grade 3 Subtotal	**15**

Common Core State Standard	Core Content Connector	Essential Understandings	Qty of Items to Develop
ELA Grade 4			
Reading			
4.RL 1 Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.	4.RL.i2 Refer to details and examples in a text when explaining what the text says explicitly.	Recall a detail in a text.	3 *tiered items*
4.RL.3 Describe in depth a character, setting, or event in a story or drama, drawing on specific details in the text (e.g., a characters thoughts, words, or actions).	4.RL.I1 Describe character traits (e.g., actions, deeds, dialogue, description, motivation, interactions); use details from text to support description.	Identify a character in text.	3 *tiered items*
4.RI.2 Determine the main idea of a text and explain how it is supported by key details; summarize the text.	4.RI.i3 Determine the main idea of an informational text.	Identify the topic of a text.	
4.RI.7 Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.	4.RI.I1 Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.	Locate information within a simplified chart, map or graph.	3 *tiered items*
4.L.4 Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 4 reading and content, choosing flexibly from an array of strategies. 4.L.4a Use context (e.g., definitions, examples, or restatements in text) as a clue to the meaning of the word or phrase.	4.RWL.i2 Use context as a clue to determine the meaning of unknown words, multiple meaning words, or words showing shades of meaning.	Understand that words can have more than one meaning.	
4.RF.3 Know and apply grade-level phonics and word analysis skills in decoding words. 4.RF.3a Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multisyllabic words in context and out of context.	4.RWL.h2 Identify grade level words with accuracy and on successive attempts.	Identify frequently used words (e.g., EDL 2 or 3).	1

Common Core State Standard	Core Content Connector	Essential Understandings	Qty of Items to Develop
	Writing		
W.4.2 Write informative/ explanatory texts to examine a topic and convey ideas and information clearly. W.4.2a Introduce a topic clearly and group related information in paragraphs and sections; including formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.	4.WI.p1 Include formatting (e.g., headings, bulleted information), illustrations, and multimedia when useful to convey information about the topic.	Identify a concluding sentence that signals a close of a paragraph (e.g., In conclusion…, As a result..., Finally…).	1
W.4.2 Write informative/ explanatory texts to examine a topic and convey ideas and information clearly. W.4.2e Provide a concluding statement or section related to the information or explanation presented.	4.WI.q1 Provide a concluding statement or section to support the information presented.	Identify the purpose of using different formats, illustrations, or multimedia (e.g., bullets are used for listing items).	3 *tiered items*
W.4.4 Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience.	4.WL.o1 Produce a clear coherent permanent that is appropriate to the specific task, purpose (e.g. to entertain), or audience.	Given a specific purpose, produce a permanent product (e.g., select text appropriate to the purpose, identify descriptive sentences, and select a concluding statement).	1
		ELA Grade 4 Subtotal	**15**
ELA Grade 5			
	Reading		
5.RL.1 Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.	5.RL.b1 Refer to details and examples in a text when explaining what the text says explicitly.	Recall details in a text.	1
5.RL.2 Determine a theme of a story, drama, or poem from details in the text, including how characters in a story or drama respond to challenges or how the speaker in a poem reflects upon a topic; summarize the text.	5.RL.c2 Summarize a text from beginning to end in a few sentences.	Identify what happens in the beginning of a story.	
5RL.3 Compare and contrast two or more characters, settings, or events in a story or drama, drawing on specific details in the text (e.g., how characters interact).	5.RL.d1 Compare characters, settings, events within a story; provide or identify specific details in the text to support the comparison.	Identify characters, setting and events in a story.	3 *tiered items*

Common Core State Standard	Core Content Connector	Essential Understandings	Qty of Items to Develop
5.RI.2 Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.	5.RI.c4 Determine the main idea, and identify key details to support the main idea.	Identify the topic of text.	1
5.RI.8 Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s).	5.RI.e2 Explain how an author uses reasons and evidence to support particular points in a text.	Identify main/key ideas/points in a text.	3 *tiered items*
5.L.4 Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 5 reading and content, choosing flexibly from an array of strategies. 5.L.4a Use context (e.g., cause/effect relationships and comparisons in text) as a clue to the meaning of the word or phrase.	5.RWL.a2 Use context to determine the meaning of unknown or multiple meaning words or phrases.	Identify multiple meaning words (e.g., EDL 3 or 4).	3 *tiered items*
Writing			
W.5.2 Write informative/ explanatory texts to examine a topic and convey ideas and information clearly. W.5.2a Introduce a topic clearly, provide a general observation and focus, and group related information logically; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.	5.WI.b3 Organize ideas, concepts, and information (using definition, classification, comparison/contrast, and cause/effect).	Identify relationship of set of items in various categories (definition, classification, compare/contrast, cause/effect).	1
W.5.2 Write informative/ explanatory texts to examine a topic and convey ideas and information clearly. W.5.2b Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.	5.WI.d1 Support a topic with relevant facts, definitions, concrete details, quotations, or other information and examples.	Identify facts and details related to a specified topic.	3 *tiered items*

Common Core State Standard	Core Content Connector	Essential Understandings	Qty of Items to Develop
W.5.4 Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience.	5.WL.h1 Produce a clear coherent permanent product that is appropriate to the specific task, purpose (e.g. to entertain), or audience.	Given a specific purpose, produce a permanent product (e.g., select text appropriate to the purpose, identify descriptive sentences, and select a concluding statement).	
		ELA Grade 5 Subtotal	**15**
ELA Grade 6			
	Reading		
6.RL.1 Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	6.RL.b2 Refer to details and examples in a text when explaining what the text says explicitly.	Recall details in a text.	1
6.RL.2 Determine a theme or central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.	6.RL.c3 Summarize a text from beginning to end in a few sentences without including personal opinions.	Identify what happens in the beginning and ending of a story.	3 *tiered items*
6.RI.7 Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.	6.RI.b4 Summarize information gained from a variety of sources including media or texts. (Requires paired passage.)	Identify a topic from a single source.	3 *tiered items*
6.RI.3 Analyze in detail how a key individual, event, or idea is introduced, illustrated, and elaborated in a text (e.g., through examples or anecdotes).	6.RI.g4 Determine how key individuals, events, or ideas are elaborated or expanded on in a text.	Identify a description of an event or individual in a text.	3 *tiered items*
6.RI.8 Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not.	6.RI.g6 Evaluate the claim or argument; determine if it is supported by evidence.	Identify a fact from the text.	

Common Core State Standard	Core Content Connector	Essential Understandings	Qty of Items to Develop
6.L.4 Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 6 reading and content, choosing flexibly from an array of strategies. 6.L.4a Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of the word or phrase.	6.RWL.a1 Use context to determine the meaning of unknown or multiple meaning words or phrases.	Identify multiple meaning words (e.g., EDL 4 or 5).	3 *tiered items*
Writing			
W.6.3 Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences. W.6.3a Engage and orient the reader by establishing a context and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically.	6.WL.c1 Organize ideas and events so that they unfold naturally.	Identify the order of events given a short passage/text (e.g., sequence a set of events from an adapted chapter).	
W.6.3 Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences. W.6.3c Use a variety of transition words, phrases, and clauses to convey sequence and signal shifts from one time frame or setting to another.	6.WL.c3 Use a variety of transition words, phrases, and clauses to convey sequence and signal shifts from one time frame or setting to another.	Match transition words, phrases, and clauses within a text.	1
W.6.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	6.WI.h2 Produce a clear coherent permanent product that is appropriate to the specific task (e.g., topic), purpose (e.g., to inform), and audience (e.g., reader).	Given a specific purpose, produce a permanent product (e.g., select text appropriate to the purpose, identify descriptive sentences, and select a concluding statement).	1
		ELA Grade 6 Subtotal	**15**

Common Core State Standard	Core Content Connector	Essential Understandings	Qty of Items to Develop
ELA Grade 7			
	Reading		
7.RL.1 Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	7.RL.i2 Use two or more pieces of textual evidence to support inferences, conclusions, or summaries of text.	Make an inference from a literary text.	3 *tiered items*
7.RL.2 Determine a theme or central idea of a text and analyze its development over the course of the text; provide an objective summary of the text.	7.RL.j1 Analyze the development of the theme or central idea over the course of the text.	Identify the theme or central idea of the text.	1
7.RI.1 Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	7.RI.j1 Use two or more pieces of evidence to support inferences, conclusions, or summaries of text.	Identify a conclusion from an informational text.	1
7.RI.3 Analyze the interactions between individuals, events, and ideas in a text (e.g., how ideas influence individuals or events, or how individuals influence ideas or events).	7.RI.j5 Analyze the interactions between individuals, events, and ideas in a text (e.g., how ideas influence individuals or events, or how individuals influence ideas or events).	Identify the relationship between people, events, or ideas in a text.	3 *tiered items*
7.RI.8 Trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims.	7.RI.k4 Evaluate the claim or argument to determine if they are supported by evidence.	Identify a claim from the text.	
7.L.4 Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 7 reading and content, choosing flexibly from an array of strategies. 7.L.4a Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of the word or phrase.	7.RWL.g1 Use context as a clue to determine the meaning of a grade appropriate word or phrase.	Use context as a clue to determine the meaning of a word (e.g., EDL grade 5 or 6).	3 *tiered items*

Common Core State Standard	Core Content Connector	Essential Understandings	Qty of Items to Develop
Writing			
W.7.3 Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences. W.7.3d Use precise words and phrases, relevant descriptive details, and sensory language to capture the action and convey experiences and events.	7.WL.I1 Use precise words and phrases, relevant descriptive details, and sensory language to capture the action and convey experiences and events.	Identify a visual image to match provided text.	1
W.7.3 Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences. W.7.3e Provide a conclusion that follows from and reflects on the narrated experiences or events.	7.WL.o1 Select or provide a conclusion that follows from the narrated experiences or events.	Provide a conclusion (concluding sentence, paragraph or extended ending) that follows from the narrated experiences or events.	3 *tiered items*
W.7.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	7.WI.o1 Produce a clear coherent permanent product that is appropriate to the specific task (e.g., topic), purpose (e.g., to inform), and audience (e.g., reader).	Given a specific purpose, produce a permanent product (e.g., select text appropriate to the purpose, identify descriptive sentences, and select a concluding statement).	
		ELA Grade 7 Subtotal	**15**
ELA Grade 8			
Reading			
8.RL.1 Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.	8.RL.i2 Use two or more pieces of evidence to support inferences, conclusions, or summaries of text.	Make an inference from a literary text	3 *tiered items*
8.RL.2 Determine a theme or central idea of a text and analyze its development over the course of the text, including its relationship to the characters, setting, and plot; provide an objective summary of the text.	8.RL.j2 Analyze the development of the theme or central idea over the course of the text including its relationship to the characters, setting and plot.	Identify the theme or central idea of the text.	1

Common Core State Standard	Core Content Connector	Essential Understandings	Qty of Items to Develop
8.RI.1 Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.	8.RI.j1 Use two or more pieces of evidence to support inferences, conclusions, or summaries of text.	Make an inference from an informational text.	
8.RI.5 Analyze in detail the structure of a specific paragraph in a text, including the role of particular sentences in developing and refining a key concept.	8.RI.k2 Determine how the information in each section contributes to the whole or to the development of ideas.	Identify supporting key details/key information within a paragraph.	3 *tiered items*
8.RI.8 Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced.	8.RI.k4 Identify an argument or claim that the author makes.	Identify a fact from the text.	
8.L.4 Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 8 reading and content, choosing flexibly from an array of strategies. 8.L.4a Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of the word or phrase.	8.RWL.g1 Use context as a clue to the meaning of a grade-appropriate word or phrase.	Use context as a clue to determine the meaning of a word (e.g., EDL grade 6 or 7).	3 *tiered items*
Writing			
W.8.1 Write arguments to support claims with clear reasons and relevant evidence. W.8.1a Introduce claim(s), acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically.	8.WP.k2 Create an organizational structure in which ideas are logically grouped to support the writer's claims.	Given a writer's claims, identify the writer's perspective on the topic (e.g., pro or con).	1

Common Core State Standard	Core Content Connector	Essential Understandings	Qty of Items to Develop
W.8.8 Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.	8.WP.j1 Gather relevant information (e.g., highlight in text, quote or paraphrase from text or discussion) from print and or digital sources.	Identify sources of information relevant to the topic (e.g., print and/or digital).	3 *tiered items*
W.8.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	8.WI.o1 Produce a clear coherent permanent product that is appropriate to the specific task (e.g., topic), purpose (e.g., to inform), and audience (e.g., reader).	Given a specific purpose, produce a permanent product (e.g., select text appropriate to the purpose, identify descriptive sentences, and select a concluding statement).	1
		Grade 8 Subtotal	**15**
ELA Grade 11			
	Reading		
11-12.RL.1 Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.	1112.RL.b1 Use two or more pieces of evidence to support inferences, conclusions, or summaries of the plot, purpose or theme within a text.	Identify a summary of the plot of a literary text.	1
11-12.RL5 Analyze how an author‘s choices concerning how to structure specific parts of a text (e.g., the choice of where to begin or end a story, the choice to provide a comedic or tragic resolution) contribute to its overall structure and meaning.	1112.RL.d1 Analyze how an author’s choices concerning how to structure specific parts of a text (e.g., the choice of where to begin or end a story, the choice to provide a comedic or tragic resolution) contribute to its overall structure and meaning.	Identify elements of a story’s plot (e.g., exposition, rising action, climax, falling action, resolution).	3 *tiered items*
11-12.RI.1 Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.	1112.RI.b1 Use two or more pieces of evidence to support inferences, conclusions, or summaries or text.	Identify a conclusion from an informational text.	

Common Core State Standard	Core Content Connector	Essential Understandings	Qty of Items to Develop
11-12.RI.2 Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text.	1112.RI.b5 Determine how key details support the development of the central idea of a text.	Identify the central idea or key detail of a text.	1
11-12.RI.7 Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.	1112.RI.e1 Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem. (Requires paired passage.)	Locate information within a text related to a given topic.	3 *tiered items*
11-12.L.4 Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 11-12 reading and content, choosing flexibly from an array of strategies. 11-12.L.4a Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.	1112.RWL.b1 Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position in a sentence) as a clue to the meaning of a word or phrase.	Use context as a clue to determine the meaning of a word in text (e.g., EDL grade 8 or 9).	
Writing			
W.11-12.2 Write informative/ explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content. W.11-12.2a Introduce a topic; organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.	1112.WI.b2 Create an organizational structure for writing that groups information logically (e.g., cause/effect, compare/contrast, descriptions and examples) to support paragraph focus.	Identify information that doesn't belong in a paragraph based on an organizational structure (e.g., examples, descriptions, cause/effect, compare/contrast).	3 *tiered items*

Common Core State Standard	Core Content Connector	Essential Understandings	Qty of Items to Develop
W.11-12.2 Write informative/ explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content. W.11-12.2b Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.	1112.WI.b4 Select the facts, extended definitions, concrete details, quotations, or other information and examples that are most relevant to the focus and appropriate for the audience.	Match details, facts, or examples to a topic.	1
W.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	1112.WP.f1 Produce a clear coherent permanent product that is appropriate to the specific task, purpose (to persuade), and audience.	Given a specific purpose, produce a permanent product (e.g., select text appropriate to the purpose, identify descriptive sentences, and select a concluding statement).	3 *tiered items*
		ELA Grade 11 Subtotal	**15**
		GRAND TOTAL ALL ELA ITEMS	**105**

Table A.2 Item Development Plans by Grade—Mathematics

Common Core State Standard	Core Content Connector	Essential Understandings	Qty of Items to Develop
Mathematics Grade 3			
3.OA.A.1 Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. *For example, describe a context in which a total number of objects can be expressed as 5 × 7.*	**3.NO.2d3** Solve multiplication problems with neither number greater than 5.	Create an array of sets (e.g., 3 rows of 2).	3 *tiered items*
3.OA.D.9 Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends*.	**3.PRF.2d1** Identify multiplication patterns in a real world setting.	Concrete understanding of a pattern as a set that repeats regularly or grows according to a rule; Ability to identify a pattern that grows (able to show a pattern) (shapes, symbols, objects).	3 *tiered items*
3.NBT.A.2 Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.	**3.NO.2c1** Solve multi-step addition and subtraction problems up to 100.	Combine (+) or decompose (-) with concrete objects; use counting to get the answers.	2
3.NF.A.1 Understand a fraction 1/*b* as the quantity formed by 1 part when *a* whole is partitioned into *b* equal parts; understand a fraction *a*/*b* as the quantity formed by a parts of size 1/*b*.	**3.NO.1l3** Identify the fraction that matches the representation (rectangles and circles; halves, fourths, and thirds, eighths).	Identify part and whole when item is divided. Count the number of the parts selected (3 of the 4 parts; have fraction present but not required to read ¾).	3 *tiered items*
3.MD.B.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. *For example, draw a bar graph in which each square in the bar graph might represent 5 pets*.	**3.DPS.1g1** Collect data, organize into picture or bar graph.	Organize data into a graph using objects (may have number symbols).	3 *tiered items*

Common Core State Standard	Core Content Connector	Essential Understandings	Qty of Items to Develop
3.G.A.2 Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape.*	**3.GM.1i1** Partition rectangles into equal parts with equal area.	Concept of equal parts; Partitioning with concrete objects; Find the rectangle that is the same or match two congruent rectangles.	1
		Mathematics Grade 3 Subtotal	**15**
Mathematics Grade 4			
4.OA.A.1 Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.	**4.NO.2d7** Determine how many objects go into each group when given the total number of objects and groups where the number in each group or number of groups is not > 10.	Create an array of objects given a specific number of rows and the total number, place one object in each group/row at a time.	3 *tiered items*
4.NBT.A.3 Use place value understanding to round multi-digit whole numbers to any place.	**4.NO.1j5** Use place value to round to any place (i.e., ones, tens, hundreds, thousands).	Identify ones, tens, hundreds in bundled sets – Similar/different with concrete representations (i.e., is this set of manipulatives (8 tens) closer to this set (a hundred) or this set (a ten)?).	3 *tiered items*
4.NF.A.1 Explain why a fraction *a*/*b* is equivalent to a fraction (*n* × *a*)/(*n* × *b*) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.	**4.NO.1m1** Determine equivalent fractions.	Equivalency: what is and what is not equivalent; this may begin with numbers/sets of objects: e.g., 3=3 or two fraction representations that are identical (two pies showing 2/3).	3
4.MD.A.3 Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*	**4.ME.1g2** Solve word problems using perimeter and area where changes occur to the dimensions of a rectilinear figure.	Identify the perimeter; Identify the area; Show each when size of figure changes.	3 *tiered items*

Common Core State Standard	Core Content Connector	Essential Understandings	Qty of Items to Develop
4.G.A.2 Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.	**4GM.1h2** Classify two-dimensional shapes based on attributes (# of angles).	Identify attributes within a 2-dimensional figure (e.g., rectangles have sides – student identifies sides of rectangle – and angles – student identifies angles in rectangle).	3 *tiered items*
		Mathematics Grade 4 Subtotal	**15**
Mathematics Grade 5			
5.OA.B.3 Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. *For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so*.	**5.PRF.2b1** Generate or select a comparison between two graphs from a similar situation.	Compare two pieces of information provided in a single display.	3 *tiered items*
5.NBT.A.3a Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000).	**5.NO.1b1** Read, write, or select a decimal to the hundredths place.	Recognize part whole using materials divided into tenths – Count tenths to determine how many (e.g., 4 tenths) (.4 have the decimal present but not required to read).	3 *tiered items*

Common Core State Standard	Core Content Connector	Essential Understandings	Qty of Items to Develop
5.NF.A.2 Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. *For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2*.	**5.NO.2c2** Solve word problems involving the addition, subtraction, multiplication or division of fractions.	Identify what to do with the parts when given the key word (using the fractional parts).	3 *tiered items*
5.MD.A.1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.	**5.ME.2a1** Solve problems involving conversions of standard measurement units when finding area, volume, time-lapse, or mass.	Identify what measures time (clock used to measure time; calendar used to measure days); identify past/present (for lapsed time).	3 *tiered items*
5.G.A.1 Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).	**5.GM.1c3** Use ordered pairs to graph given points.	Identify the x- and y-axis; or concept of intersection.	3
		Mathematics Grade 5 Subtotal	**15**

Common Core State Standard	Core Content Connector	Essential Understandings	Qty of Items to Develop
Mathematics Grade 6			
6.RP.A.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."*	**6.PRF.1c1** Describe the ratio relationship between two quantities for a given situation.	Match/identify a simple ratio (1:X) to the relationship between two quantities.	3 *tiered items*
6.NS.C.6a Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., –(–3) = 3, and that 0 is its own opposite.	**6.NO.1d2** Locate positive and negative numbers on a number line.	Recognize how values/numbers lie on either side of zero.	3 *tiered items*
6.EE.B.7 Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.	**6.NO.2a6** Solve problems or word problems using up to three digit numbers and any of the four operations.	Decompose (÷) with concrete objects; use counting to get the answer.	3
6.G.A.1 Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.	**6.GM.1d1** Find the area of quadrilaterals.	Use manipulatives to measure the area of a rectangle (e.g., tiling).	3 *tiered items*
6.SP.A.2 Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.	**6.DPS.1d3** Select statement that matches mean, mode, and spread of data for 1 measure of central tendency for given data set.	Identify the highest and lowest value in a data set given a number line and matching symbols; Identify the representation (Plastic snap cubes, wiki sticks) of the mode; Use concrete materials to produce the mean (leveled plastic snap cubes).	3 *tiered items*
		Mathematics Grade 6 Subtotal	**15**

Common Core State Standard	Core Content Connector	Essential Understandings	Qty of Items to Develop
Mathematics Grade 7			
7.RP.A.3 Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.	**7.NO.2f6** Solve word problems involving ratios.	Show rate when asked; Show proportion when asked; Select a set for the ratio given (Maria stamps three letters every minute which we write as 3:1. Show me the letters she stamps in a minute).	3 *tiered items*
7.NS.A.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.	**7.NO.2i1** Solve multiplication problems with positive/negative numbers.	Create an array of objects for the mathematical equation and match answer symbol (+ or -) following multiplication rules for an equation.	3
7.EE.B.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.	**7.PRF.1g2** Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and in-equalities to solve problems by reasoning about the quantities.	Record/replace a variable in an equation with a fact from a story on a graphic organizer.	3 *tiered items*
7.G.B.6 Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.	**7.GM.1h2** Find the surface area of three-dimensional figures using nets of rectangles or triangles.	Demonstrate the concept of the surface area of a rectangular prism; Fill rectangular prism.	3 *tiered items*
7.SP.B.4 Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. *For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book*.	**7.DPS.1k1** Analyze graphs to determine or select appropriate comparative inferences about two samples or populations.	Understand basic information from simple graphs (e.g., interpret a bar graph using the understanding that the taller column on a graph has a higher frequency, the shorter column on a graph has a lower frequency).	3 *tiered items*
		Mathematics Grade 8 Subtotal	**15**

Common Core State Standard	Core Content Connector	Essential Understandings	Qty of Items to Develop
Mathematics Grade 8			
8.NS.A.2 Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2). *For example, by truncating the decimal expansion of $\sqrt{2}$, show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations*.	**8.NO.1k3** Use approximations of irrational numbers to locate them on a number line.	Recognize how values/numbers can lie between whole number values on a number line.	3 *tiered items*
8.F.B.5 Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	**8.PRF.1f2** Describe or select the relationship between the two quantities given a line graph of the situation.	Use a graph to recognize the quantity in two sets, without counting, to determine which is relatively larger.	3
8.G.A.4 Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.	**8.ME.1e1** Describe the changes in surface area, area, and volume when the figure is changed in some way (e.g., scale drawings).	Recognize how the space inside a figure increases when the sides are lengthened.	3 *tiered items*
8.SP.A.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	**8.DPS.1h1** Graph bivariate data using scatter plots and identify possible associations between the variable.	Locate points on the x-axis and y-axis of an adapted grid (not necessarily numeric).	3 *tiered items*

Common Core State Standard	Core Content Connector	Essential Understandings	Qty of Items to Develop
8.EE.B.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.	**8.PRF.1e2** Represent proportional relationships on a line graph.	Recognize a positive relationship between two variables.	3 *tiered items*
		Mathematics Grade 8 Subtotal	**15**
Mathematics Grade 11			
HSN-RN.A.2 Rewrite expressions involving radicals and rational exponents using the properties of exponents.	**HS.NO.1a1** Simplify expressions that include exponents.	Create an array with a number multiplied by itself (Show me 3 rows of 3).	3 *tiered items*
HSN-Q.A.1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.	**H.ME.1a2** Solve real world problems involving units of measurement.	Ability to solve real world measurement problems that require interpretation and use of a table.	2
HSA-CED.A.1 Create equations and inequalities in one variable and use them to solve problems. *Include equations arising from linear and quadratic functions, and simple rational and exponential functions*.	**H.PRF.2b1** Translate a real-world problem into a one-variable linear equation.	Match an equation with one variable to the real world context.	3 *tiered items*
HSF-LE.A.3 Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.	**H.PRF. 2c1** Make predictions based on a given model (for example, a weather model, data for athletes over years).	Extend a graph when provided a relationship and two choices.	3 *tiered items*
HSS-ID.A.1 Represent data with plots on the real number line (dot plots, histograms, and box plots).	**H.DPS.1b1** Complete a graph given the data, using dot plots, histograms, or box plots.	Make a connection between categories in a data table to the appropriate axis of a graph.	3 *tiered items*

Common Core State Standard	Core Content Connector	Essential Understandings	Qty of Items to Develop
HSG-SRT.A.2 Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.	**H.GM.1b1** Use definitions to demonstrate congruency and similarity in figures.	Identify the right angle within a given triangle; Identify sides and/or hypotenuse of a right triangle.	1
		Mathematics Grade 11 Subtotal	**15**
		GRAND TOTAL ALL MATHEMATICS ITEMS	**105**

Appendix B: 2014–15 CAA Administration Observation Reports

Educational Testing Service visited selected testing sites during the 2014–15 administration to observe, first hand, administration of the California Alternate Assessments.

English Language Arts

The type of classrooms observed were self-contained and ranged from mild to moderate to severe cognitive disabilities. Observations were completed in Riverside, Encinitas, and Chula Vista school districts.

Directions for Administration (DFAs)

- It was evident that, at the time of the observation, one of the three test examiners had read through the *Directions for Administration (DFA)* and had already completed some administrations.
- One test examiner was not aware of the *DFA* and had already administered an assessment without the *DFA* prior to the observation.
- The third test examiner had not administered the assessment or read the test examiner's manual prior to testing.

Testing Environment/Administration

- All three test examiners created an environment with only the test examiner, the student, and the observer. The test examiners would notify the students that they would be taking a test in either mathematics or reading. In all classrooms observed, only one content was administered at a time; the text examiner would administer the other content at a later time.
- In all cases, the test examiner set up the testing platform while the student was seated and waiting to begin. In some cases, logging on or navigating to the proper Web site took some time, but there were no major technology issues. In cases where a student had already taken mathematics or reading assessments, the test examiner did not administer the student response check (SRC) again but would fill in the responses, as they were the same for both content areas.
- The testing time per session for either mathematics or reading ranged between 20 to 45 minutes. Most students completed the entire content area assessment in one session. However, some students with shorter attention spans or higher frustration levels were only able to answer between two to four questions before they had to stop and return at a later time.
- During testing, navigation of the assessment also varied. Some students were able to navigate with verbal cues from the test examiner. Other students responded using eye gaze, a communication device, nodding, pointing, or some other means. One test examiner used a projector to increase the visibility of the assessment for a student with a visual impairment. In all cases, either a desktop or laptop computer were used. **No tablets were during the administrations observed.** *DFAs* were also printed out. The students' understanding of the test content ranged from low to moderate to high.
- Test examiners recommended more than one or two items in the SRC in order to obtain consistency from each student. They also recommended graphic support within the

SRC. Adding a transition in the *DFA* between the SRC and the actual assessment was suggested. Some test examiners did not realize until further into the assessment that they were actually in the test.

- All test examiners expressed positive feedback regarding the administration of an online assessment vs. a paper-based assessment.

Mathematics

The type of classrooms observed were self-contained and ranged from mild to moderate to severe cognitive disabilities. Observations were completed in the Butte County Office of Education, Sacramento City and San Juan Unified school districts.

Directions for Administration (DFAs)

- In all but one site, there seemed to be confusion about whether the practice test was the actual test and also where to find the *DFA*.
- In all but one site, test examiners were not able to find the *DFA* although the day the site was observed was not the first day of testing. Upon asking how they had administered the test without instructions, teachers assured that they "kind of read the question to the student and waited" for an answer.

Testing Environment/Administration

- As stated previously, the use of the *DFAs* was sporadic. The administration of the test was nonstandard; testing was paused a couple of times and not reattempted. Few test examiners realized they could restate a question.
- Many were confused by the first three response type questions. A few test examiners said the student was so confused by the first two or three questions that they ended the session there.
- Some students were tested on a device they were not accustomed to using (laptop vs. desktop).
- Some students were given the option to refuse the test while others were forced to go through every item.
- Several times it was noted that these students have never seen the information being tested.
- Several teachers voiced concerns about the difficulty level of the questions. Their concerns were with the appropriateness of the standards to this population.
- Several teachers voiced concerns about the confusing nature of the Web site and trying to locate *DFAs*.
- There were many concerns about the situation where a student had been entered into the Test Operations Management System, where students were assigned tests; but when the test examiner went to administer the assessment, it was unavailable until the student was re-entered into the system by school district personnel.
- Nearly every teacher noted the confusing nature of the response items at the beginning of the test.
- The innovative item types were of concern as well since these students do not have full-time access to the technology upon which they were tested. A few test examiners informed the ETS representative that, although tablets and laptops were available in the school, they were not available to or used by this population.

Appendix C: Learning Characteristic Inventory

Table C.1 LCI Summary—English Language Arts

Questionnaire	Grade 3 (%)	Grade 4 (%)	Grade 5 (%)	Grade 6 (%)	Grade 7 (%)	Grade 8 (%)	Grade 11 (%)
Q1: Expressive Communication (check the one that best describes this student)							
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.	43.7	45.0	45.2	48.8	46.5	47.8	48.8
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.	18.1	15.2	14.8	13.2	13.9	12.8	11.3
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.	3.7	2.5	3.1	2.4	3.3	2.5	3.7
NO RESPONSES	34.6	37.3	36.9	35.6	36.4	37.0	36.2
Q2: Does this student use an augmentative communication system in addition to or in place of oral speech?							
A. Yes	10.4	8.9	10.5	8.8	9.5	8.7	8.0
B. No	54.7	53.6	52.4	55.7	54.1	54.3	55.9
NO RESPONSES	34.9	37.6	37.2	35.6	36.4	37.0	36.2
Q3: Receptive Language (check the one that best describes this student)							
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.	28.8	29.7	32.6	35.1	35.0	37.0	38.3
B. Requires additional cues (e.g., gestures, pictures, objects, or demonstrations/models) to follow 1–2 step directions.	31.3	29.5	26.5	26.1	24.8	23.1	21.6
C. Alerts to sensory input from another person (auditory, visual, touch, movement) BUT requires actual physical assistance to follow simple directions.	4.0	2.8	3.3	2.5	2.8	2.2	3.2
D. Uncertain response to sensory stimuli (e.g., sound/voice; sight/gesture; touch; movement; smell).	0.8	0.5	0.5	0.6	0.9	0.6	0.8
NO RESPONSES	35.1	37.5	37.2	35.7	36.5	37.2	36.2

Questionnaire	Grade 3 (%)	Grade 4 (%)	Grade 5 (%)	Grade 6 (%)	Grade 7 (%)	Grade 8 (%)	Grade 11 (%)
Q4: Vision (check the one that best describes this student)							
A. Vision within normal limits.	49.9	48.1	47.8	49.3	47.1	46.0	44.9
B. Corrected vision within normal limits.	12.4	12.4	13.0	12.4	13.9	14.9	15.9
C. Low vision; uses vision for some activities of daily living.	2.3	1.6	1.6	1.9	1.8	1.7	2.2
D. No functional use of vision for activities of daily living, or unable to determine functional use of vision.	0.6	0.4	0.3	0.7	0.8	0.5	0.9
NO RESPONSES	34.8	37.6	37.2	35.8	36.4	36.9	36.2
Q5: Hearing (check the one that best describes this student)							
A. Hearing within normal limits.	61.7	59.7	59.7	61.5	60.0	59.8	60.0
B. Corrected hearing loss within normal limits.	1.2	0.9	1.3	1.0	1.0	1.4	1.1
C. Hearing loss aided, but still with a significant loss.	0.9	1.0	0.9	1.0	0.9	1.0	0.9
D. Profound loss, even with aids.	0.4	0.5	0.3	0.3	0.7	0.4	0.9
E. Unable to determine functional use of hearing.	0.8	0.5	0.6	0.5	1.1	0.5	0.9
NO RESPONSES	34.9	37.5	37.2	35.8	36.4	36.9	36.2
Q6: Motor (check the one that best describes this student)							
A. No significant motor dysfunction that requires adaptations.	58.2	56.7	56.3	57.9	56.9	57.0	57.2
B. Requires adaptations to support motor functioning (e.g., walker, adapted utensils, and/or keyboard).	3.8	3.2	3.4	3.6	3.0	2.9	3.1
C. Uses wheelchair, positioning equipment, and/or assistive devices for most activities.	1.6	1.5	1.7	1.5	1.8	1.9	1.5
D. Needs personal assistance for most/all motor activities.	1.6	1.0	1.4	1.2	1.9	1.1	2.0
NO RESPONSES	34.9	37.6	37.2	35.8	36.5	37.0	36.3
Q7: Engagement (check the one that best describes this student)							
A. Initiates and sustains social interactions.	33.6	34.7	35.5	36.2	36.3	38.2	40.2
B. Responds with social interaction, but does not initiate or sustain social interactions.	25.8	23.8	22.4	24.1	22.1	20.9	19.0
C. Alerts to others.	4.8	3.4	4.1	3.3	4.4	3.4	3.8
D. Does not alert to others.	0.9	0.6	0.7	0.7	0.7	0.5	0.6
NO RESPONSES	34.9	37.6	37.3	35.6	36.4	36.9	36.5

Questionnaire	Grade 3 (%)	Grade 4 (%)	Grade 5 (%)	Grade 6 (%)	Grade 7 (%)	Grade 8 (%)	Grade 11 (%)
Q8: Health Issues/Attendance (check the one that best describes this student)							
A. Attends at least 90% of school days.	56.0	54.5	55.3	57.0	56.9	56.7	55.8
B. Attends approximately 75% of school days; absences primarily due to health issues.	7.5	6.7	6.0	6.3	5.5	5.0	5.9
C. Attends approximately 50% or less of school days; absences primarily due to health issues.	0.8	0.7	0.5	0.3	0.5	0.6	1.1
D. Receives Homebound Instruction due to health issues.	0.1	0.1	0.1	0.1	0.1	0.1	0.0
E. Highly irregular attendance or homebound instruction due to issues other than health.	0.7	0.4	0.8	0.7	0.7	0.6	0.9
NO RESPONSES	34.9	37.5	37.3	35.7	36.4	37.0	36.3
Q9: Reading (check the one that best describes this student)							
A. Reads fluently with basic (literal) understanding from paragraphs/short passages with narrative/informational texts in print or braille.	5.0	8.0	10.2	13.8	14.2	17.1	20.6
B. Reads basic sight words, simple sentences, directions, bullets, and/or lists in print or braille.	31.3	32.1	31.6	33.4	31.8	31.4	27.1
C. Aware of text/braille, follows directionality, makes letter distinctions, or tells a story from the pictures that is not linked to the text.	21.4	17.3	15.2	13.4	12.7	10.5	10.5
D. No observable awareness of print or braille.	7.4	4.8	5.6	3.7	4.9	4.0	5.6
NO RESPONSES	35.0	37.7	37.4	35.8	36.4	37.0	36.3
Q10: Mathematics (check the one that best describes this student)							
A. Applies computational procedures to solve real-life or routine word problems from a variety of contexts.	1.8	2.5	3.1	4.3	4.5	6.6	7.8
B. Does computational procedures with or without a calculator.	21.5	25.6	28.4	33.9	34.2	36.1	34.6
C. Counts with 1:1 correspondence to at least 10, and/or makes numbered sets of items.	25.3	22.6	19.6	17.1	14.9	11.9	11.9
D. Counts by rote to 5.	10.8	7.6	7.1	5.9	5.5	4.6	4.8
E. No observable awareness or use of numbers.	5.6	4.1	4.6	3.0	4.4	3.7	4.7
NO RESPONSES	35.1	37.6	37.3	35.8	36.4	37.1	36.2

Table C.2 LCI Summary—Mathematics

Questionnaire	Grade 3 (%)	Grade 4 (%)	Grade 5 (%)	Grade 6 (%)	Grade 7 (%)	Grade 8 (%)	Grade 11 (%)
Q1: Expressive Communication (check the one that best describes this student)							
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.	44.6	44.9	46.6	48.7	47.4	48.5	49.8
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.	17.5	15.4	14.3	13.2	13.8	12.4	10.7
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.	2.8	2.4	2.2	2.3	2.2	2.4	2.7
NO RESPONSES	35.1	37.3	36.8	35.8	36.6	36.7	36.7
Q2: Does this student use an augmentative communication system in addition to or in place of oral speech?							
A. Yes	9.7	8.8	9.6	8.6	9.1	8.3	7.4
B. No	54.8	53.7	53.2	55.7	54.4	54.9	55.9
NO REPONSES	35.5	37.6	37.1	35.7	36.5	36.8	36.7
Q3: Receptive Language (check the one that best describes this student)							
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.	29.4	29.8	33.6	35.1	35.9	37.5	39.0
B. Requires additional cues (e.g., gestures, pictures, objects, or demonstrations/models) to follow 1–2 step directions.	31.1	29.4	26.2	26.0	25.0	23.0	21.3
C. Alerts to sensory input from another person (auditory, visual, touch, movement) BUT requires actual physical assistance to follow simple directions.	3.3	2.9	2.7	2.5	2.2	2.1	2.5
D. Uncertain response to sensory stimuli (e.g., sound/voice; sight/gesture; touch; movement; smell).	0.5	0.4	0.3	0.6	0.4	0.5	0.4
NO RESPONSES	35.8	37.5	37.2	35.9	36.6	36.9	36.7
Q4: Vision (check the one that best describes this student)							
A. Vision within normal limits.	49.8	48.3	48.0	48.9	47.2	46.1	44.6
B. Corrected vision within normal limits.	12.4	12.2	13.0	12.6	14.1	15.2	16.2
C. Low vision; uses vision for some activities of daily living.	2.0	1.5	1.5	2.0	1.6	1.6	1.9
D. No functional use of vision for activities of daily living, or unable to determine functional use of vision.	0.4	0.4	0.3	0.6	0.6	0.4	0.5
NO RESPONSES	35.5	37.6	37.2	36.0	36.6	36.7	36.8

Questionnaire	Grade 3 (%)	Grade 4 (%)	Grade 5 (%)	Grade 6 (%)	Grade 7 (%)	Grade 8 (%)	Grade 11 (%)
Q5: Hearing (check the one that best describes this student)							
A. Hearing within normal limits.	61.2	59.6	59.7	61.2	60.2	60.0	59.8
B. Corrected hearing loss within normal limits.	1.3	0.9	1.4	1.0	1.0	1.5	1.1
C. Hearing loss aided, but still with a significant loss.	0.9	1.0	0.9	1.0	0.9	1.0	1.0
D. Profound loss, even with aids.	0.4	0.5	0.4	0.4	0.7	0.4	1.0
E. Unable to determine functional use of hearing.	0.6	0.4	0.5	0.5	0.7	0.5	0.4
NO RESPONSES	35.6	37.6	37.1	36.0	36.5	36.6	36.8
Q6: Motor (check the one that best describes this student)							
A. No significant motor dysfunction that requires adaptations.	58.3	56.9	56.9	57.9	57.6	57.6	57.6
B. Requires adaptations to support motor functioning (e.g., walker, adapted utensils, and/or keyboard).	3.7	3.1	3.3	3.6	3.0	2.9	2.7
C. Uses wheelchair, positioning equipment, and/or assistive devices for most activities.	1.4	1.5	1.5	1.4	1.7	1.8	1.5
D. Needs personal assistance for most/all motor activities.	1.1	0.9	1.1	1.1	1.2	1.0	1.5
NO RESPONSES	35.5	37.6	37.2	36.0	36.6	36.7	36.8
Q7: Engagement (check the one that best describes this student)							
A. Initiates and sustains social interactions.	34.1	34.8	36.3	36.3	37.1	38.8	41.2
B. Responds with social interaction, but does not initiate or sustain social interactions.	25.6	23.5	22.3	23.7	22.1	20.6	18.1
C. Alerts to others.	4.0	3.6	3.6	3.4	3.7	3.5	3.3
D. Does not alert to others.	0.8	0.6	0.6	0.8	0.5	0.5	0.4
NO RESPONSES	35.5	37.6	37.3	35.8	36.5	36.7	37.0
Q8: Health Issues/Attendance (check the one that best describes this student)							
A. Attends at least 90% of school days.	55.8	54.4	55.3	56.9	57.0	57.1	55.5
B. Attends approximately 75% of school days; absences primarily due to health issues.	7.1	6.9	5.9	6.1	5.3	5.0	5.7
C. Attends approximately 50% or less of school days; absences primarily due to health issues.	0.8	0.6	0.6	0.3	0.4	0.6	1.1
D. Receives Homebound Instruction due to health issues.	0.1	0.1	0.1	0.1	0.2	0.1	
E. Highly irregular attendance or homebound instruction due to issues other than health.	0.7	0.5	0.8	0.7	0.7	0.5	0.9
NO RESPONSES	35.5	37.5	37.3	35.9	36.5	36.7	36.8

Questionnaire	Grade 3 (%)	Grade 4 (%)	Grade 5 (%)	Grade 6 (%)	Grade 7 (%)	Grade 8 (%)	Grade 11 (%)
Q9: Reading (check the one that best describes this student)							
A. Reads fluently with basic (literal) understanding from paragraphs/short passages with narrative/informational texts in print or braille.	5.2	8.0	10.7	14.0	14.7	17.5	21.4
B. Reads basic sight words, simple sentences, directions, bullets, and/or lists in print or braille.	32.1	32.4	32.3	33.6	32.8	31.9	27.5
C. Aware of text/braille, follows directionality, makes letter distinctions, or tells a story from the pictures that is not linked to the text.	21.0	17.2	15.2	13.1	12.6	10.3	9.8
D. No observable awareness of print or braille.	6.1	4.7	4.5	3.4	3.4	3.5	4.4
NO RESPONSES	35.6	37.7	37.3	35.9	36.5	36.8	36.9
Q10: Mathematics (check the one that best describes this student)							
A. Applies computational procedures to solve real-life or routine word problems from a variety of contexts.	1.9	2.5	3.3	4.3	4.6	6.7	8.1
B. Does computational procedures with or without a calculator.	22.3	25.7	29.1	34.4	35.2	36.8	35.6
C. Counts with 1:1 correspondence to at least 10, and/or makes numbered sets of items.	25.5	22.6	19.8	17.1	15.2	11.9	11.6
D. Counts by rote to 5.	10.2	7.7	6.9	5.6	5.5	4.3	4.2
E. No observable awareness or use of numbers.	4.4	3.9	3.7	2.7	3.0	3.3	3.8
NO RESPONSES	35.7	37.6	37.3	35.9	36.5	36.9	36.7

Appendix D: Student Response Check by Grade

Table D.1 Student Response Check Outcome and Test Completion Status by Grade

		Overall		ELA						Mathematics					
Grade	Outcome	N	%	Complete N	Complete %	Incomplete N	Incomplete %	Not Tested N	Not tested %	Complete N	Complete %	Incomplete N	Incomplete %	Not Tested N	Not tested %
3	The student demonstrates an observable, consistent response.	2,635	56%	2,608	68%	5	5%	13	2%	2,564	70%	30	20%	16	2%
3	The student demonstrates an observable, but inconsistent, response.	1,135	24%	997	26%	80	72%	51	7%	900	25%	93	61%	119	16%
3	The student does not demonstrate any observable responses.	828	18%	216	6%	25	23%	578	78%	183	5%	29	19%	521	72%
3	No SRC	121	3%	19	0%	1	1%	101	14%	19	1%	1	1%	72	10%
	Grade 3 Total	**4,719**	**100%**	**3,840**	**100%**	**111**	**100%**	**743**	**100%**	**3,666**	**100%**	**153**	**100%**	**728**	**100%**
4	The student demonstrates an observable, consistent response.	2,815	59%	2,779	72%	10	8%	14	2%	2,729	72%	24	18%	25	4%
4	The student demonstrates an observable, but inconsistent, response.	1,098	23%	918	24%	94	72%	80	11%	903	24%	84	62%	84	13%
4	The student does not demonstrate any observable responses.	733	15%	132	3%	25	19%	573	76%	142	4%	27	20%	479	74%
4	No SRC	98	2%	14	0%	1	1%	83	11%	14	0%	1	1%	59	9%
	Grace 4 Total	**4,744**	**100%**	**3,843**	**100%**	**130**	**100%**	**750**	**100%**	**3,788**	**100%**	**136**	**100%**	**647**	**100%**
5	The student demonstrates an observable, consistent response.	2,814	60%	2,777	72%	7	5%	15	2%	2,738	74%	21	15%	24	3%
5	The student demonstrates an observable, but inconsistent, response.	1,096	23%	915	24%	99	74%	80	12%	841	23%	93	67%	135	20%
5	The student does not demonstrate any observable responses.	672	14%	133	3%	27	20%	504	74%	103	3%	23	17%	465	67%
5	No SRC	105	2%	16	0%	1	1%	86	13%	15	0%	1	1%	66	10%
	Grade 5 Total	**4,687**	**100%**	**3,841**	**100%**	**134**	**100%**	**685**	**100%**	**3,697**	**100%**	**138**	**100%**	**690**	**100%**

		Overall		ELA						Mathematics					
Grade	Outcome	N	%	Complete N	Complete %	Incomplete N	Incomplete %	Not Tested N	Not tested %	Complete N	Complete %	Incomplete N	Incomplete %	Not Tested N	Not tested %
6	The student demonstrates an observable, consistent response.	2,891	62%	2,849	77%	22	11%	11	1%	2,805	77%	21	13%	32	4%
6	The student demonstrates an observable, but inconsistent, response.	967	21%	720	19%	152	75%	88	12%	695	19%	113	72%	124	17%
6	The student does not demonstrate any observable responses.	742	16%	129	3%	29	14%	578	77%	120	3%	24	15%	518	71%
6	No SRC	96	2%	20	1%	1	0%	72	10%	17	0%		0%	58	8%
	Grade 6 Total	**4,696**	**100%**	**3,718**	**100%**	**204**	**100%**	**749**	**100%**	**3,637**	**100%**	**158**	**100%**	**732**	**100%**
7	The student demonstrates an observable, consistent response.	2,681	62%	2,642	74%	15	8%	4	1%	2,607	76%	17	13%	24	4%
7	The student demonstrates an observable, but inconsistent, response.	962	22%	768	22%	138	70%	46	8%	721	21%	97	72%	107	16%
7	The student does not demonstrate any observable responses.	609	14%	140	4%	43	22%	415	76%	93	3%	19	14%	453	69%
7	No SRC	96	2%	10	0%	1	1%	84	15%	10	0%	2	1%	72	11%
	Grade 7 Total	**4,348**	**100%**	**3,560**	**100%**	**197**	**100%**	**549**	**100%**	**3,431**	**100%**	**135**	**100%**	**656**	**100%**
8	The student demonstrates an observable, consistent response.	2,703	63%	2,665	76%	14	7%	14	3%	2,638	77%	10	9%	20	3%
8	The student demonstrates an observable, but inconsistent, response.	886	21%	721	21%	105	54%	52	10%	691	20%	81	75%	94	16%
8	The student does not demonstrate any observable responses.	622	15%	118	3%	72	37%	428	79%	103	3%	16	15%	435	74%
8	No SRC	69	2%	11	0%	2	1%	51	9%	12	0%	1	1%	41	7%
	Grade 8 Total	**4,280**	**100%**	**3,515**	**100%**	**193**	**100%**	**545**	**100%**	**3,444**	**100%**	**108**	**100%**	**590**	**100%**
11	The student demonstrates an observable, consistent response.	2,456	65%	2,426	74%	11	15%	7	2%	2359	76%	19	21%	24	5%
11	The student demonstrates an observable, but inconsistent, response.	729	19%	649	20%	43	59%	31	8%	584	19%	59	64%	65	14%
11	The student does not demonstrate any observable responses.	484	13%	190	6%	19	26%	269	71%	129	4%	13	14%	304	67%
11	No SRC	95	3%	19	1%		0%	73	19%	17	1%	1	1%	59	13%
	Grade 11 Total	**3,764**	**100%**	**3,284**	**100%**	**73**	**100%**	**380**	**100%**	**3,089**	**100%**	**92**	**100%**	**452**	**100%**

Appendix E: Demographic Information

Table E.1 Demographic Information—English Language Arts

	Grade 3		Grade 4		Grade 5		Grade 6		Grade 7		Grade 8		Grade 11	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
All	3,840	100	3,843	100	3,841	100	3,718	100	3,560	100	3,515	100	3,284	100
Female	1,181	31	1,234	32	1,241	32	1,191	32	1,179	33	1,209	34	1,147	35
Male	2,659	69	2,609	68	2,600	68	2,527	68	2,381	67	2,306	66	2,137	65
American Indian	26	0.7	34	0.9	28	0.7	33	0.9	37	1	34	1	35	1.1
Asian American	281	7.3	244	6.3	267	7	275	7.4	266	7.5	272	7.7	255	7.8
African American	302	7.9	305	7.9	317	8.3	290	7.8	323	9.1	320	9.1	316	9.6
Filipino	130	3.4	126	3.3	143	3.7	160	4.3	127	3.6	153	4.4	138	4.2
Hispanic	2,215	58	2,170	57	2,175	57	2,035	55	1,898	53	1,893	54	1,626	50
Pacific Islander	23	0.6	20	0.5	14	0.4	15	0.4	10	0.3	19	0.5	18	0.5
White	741	19	828	22	790	21	799	22	802	23	738	21	809	25
Two or more	122	3.2	116	3	107	2.8	111	3	97	2.7	86	2.4	87	2.6
English Learner	1,494	39	1,451	38	1,353	35	1,237	33	1,181	33	1,139	32	953	29
English only	2,214	58	2,246	58	2,261	59	2,206	59	2,083	59	2,051	58	2,014	61
Initially-Fluent English Proficient	40	1	38	1	58	1.5	55	1.5	58	1.6	65	1.8	57	1.7
Reclassified-Fluent English Proficient	82	2.1	102	2.7	161	4.2	217	5.8	233	6.5	248	7.1	257	7.8
TBD	1	0	1	0	3	0.1	–	–	1	0	1	0	1	0
English Proficient Unknown	9	0.2	5	0.1	5	0.1	3	0.1	4	0.1	11	0.3	2	0.1
Autism	1,353	35	1,301	34	1,257	33	1,229	33	1,093	31	1,114	32	842	26
Deaf-blindness	1	0	2	0.1	1	0	2	0.1	1	0	–	–	–	–
Emotional disturbance	10	0.3	18	0.5	20	0.5	16	0.4	23	0.6	18	0.5	25	0.8
Hearing impairment	34	0.9	43	1.1	49	1.3	35	0.9	31	0.9	41	1.2	52	1.6
Intellectual disability	1,268	33	1,371	36	1,425	37	1,439	39	1,484	42	1,464	42	1,480	45
Multiple disabilities	113	2.9	83	2.2	118	3.1	117	3.1	107	3	104	3	127	3.9
Other hearing impairment	237	6.2	191	5	233	6.1	184	4.9	164	4.6	145	4.1	145	4.4
Orthopedic impairment	168	4.4	156	4.1	165	4.3	135	3.6	167	4.7	160	4.6	160	4.9
Specific learning disability	249	6.5	286	7.4	243	6.3	250	6.7	214	6	203	5.8	270	8.2
Speech or language impairment	208	5.4	189	4.9	166	4.3	113	3	79	2.2	85	2.4	50	1.5
Traumatic brain injury	22	0.6	18	0.5	21	0.5	15	0.4	20	0.6	25	0.7	30	0.9
Visual Impairment	15	0.4	25	0.7	12	0.3	20	0.5	22	0.6	20	0.6	27	0.8
Unknown	162	4.2	160	4.2	131	3.4	163	4.4	155	4.4	136	3.9	76	2.3
Not Economically Disadvantaged	1,266	33	1,261	33	1,307	34	1,299	35	1,196	34	1,198	34	1,273	39
Economically Disadvantaged	2,574	67	2,582	67	2,534	66	2,419	65	2,364	66	2,317	66	2,011	61

Table E.2 Demographic Information—Mathematics

	Grade 3		Grade 4		Grade 5		Grade 6		Grade 7		Grade 8		Grade 11	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
All	3,666	100	3,788	100	3,697	100	3,637	100	3,431	100	3,444	100	3,089	100
Female	1,131	30.9	1,222	32.3	1,193	32.3	1,170	32.2	1,150	33.5	1,184	34.4	1,079	34.9
Male	2,535	69.1	2,566	67.7	2,504	67.7	2,467	67.8	2,281	66.5	2,260	65.6	2,010	65.1
American Indian	25	0.7	32	0.8	28	0.8	31	0.9	35	1	34	1	34	1.1
Asian American	270	7.4	247	6.5	248	6.7	270	7.4	253	7.4	264	7.7	237	7.7
African American	282	7.7	303	8	314	8.5	288	7.9	312	9.1	322	9.3	299	9.7
Filipino	125	3.4	125	3.3	132	3.6	159	4.4	119	3.5	149	4.3	132	4.3
Hispanic	2,119	57.8	2,143	56.6	2,108	57	1,986	54.6	1,846	53.8	1,859	54	1,534	49.7
Pacific Islander	20	0.5	22	0.6	13	0.4	15	0.4	10	0.3	20	0.6	16	0.5
White	705	19.2	799	21.1	749	20.3	777	21.4	762	22.2	712	20.7	757	24.5
Two or more	120	3.3	117	3.1	105	2.8	111	3.1	94	2.7	84	2.4	80	2.6
English Learner	1,426	38.9	1,437	37.9	1,317	35.6	1,216	33.4	1,160	33.8	1,114	32.3	896	29
English only	2,113	57.6	2,213	58.4	2,168	58.6	2,156	59.3	1,989	58	2,006	58.2	1,898	61.4
Initially-Fluent English Proficient	37	1	37	1	50	1.4	53	1.5	58	1.7	66	1.9	47	1.5
Reclassified-Fluent English Proficient	80	2.2	96	2.5	155	4.2	209	5.7	222	6.5	245	7.1	245	7.9
TBD	1	0	–	–	2	0.1	–	–	–	–	2	0.1	1	0
English Proficient Unknown	9	0.2	5	0.1	5	0.1	3	0.1	2	0.1	11	0.3	2	0.1
Autism	1,304	35.6	1,299	34.3	1,200	32.5	1,209	33.2	1,059	30.9	1,092	31.7	796	25.8
Deaf-blindness	1	0	2	0.1	1	0	2	0.1	1	0	–	–	–	–
Emotional disturbance	10	0.3	18	0.5	20	0.5	15	0.4	23	0.7	19	0.6	25	0.8
Hearing impairment	36	1	42	1.1	49	1.3	37	1	32	0.9	41	1.2	50	1.6
Intellectual disability	1,193	32.5	1,341	35.4	1,375	37.2	1,399	38.5	1,439	41.9	1,441	41.8	1,396	45.2
Multiple disabilities	96	2.6	75	2	108	2.9	111	3.1	90	2.6	95	2.8	107	3.5
Other hearing impairment	233	6.4	190	5	229	6.2	180	4.9	159	4.6	143	4.2	134	4.3
Orthopedic impairment	152	4.1	150	4	146	3.9	132	3.6	147	4.3	151	4.4	148	4.8
Specific learning disability	248	6.8	284	7.5	240	6.5	244	6.7	213	6.2	199	5.8	264	8.5
Speech or language impairment	207	5.6	188	5	167	4.5	117	3.2	78	2.3	84	2.4	46	1.5
Traumatic brain injury	22	0.6	18	0.5	21	0.6	15	0.4	21	0.6	24	0.7	27	0.9
Visual Impairment	11	0.3	24	0.6	12	0.3	17	0.5	19	0.6	20	0.6	25	0.8
Unknown	153	4.2	157	4.1	129	3.5	159	4.4	150	4.4	135	3.9	71	2.3
Not Economically Disadvantaged	1,195	32.6	1,242	32.8	1,238	33.5	1,274	35	1,121	32.7	1,163	33.8	1,187	38.4
Economically Disadvantaged	2,471	67.4	2,546	67.2	2,459	66.5	2,363	65	2,310	67.3	2,281	66.2	1,902	61.6

Appendix F: Classical Analyses: Item Statistics

Note: Flag values are as follows:

A = low average item score/ low p-value

R = low correlation with criterion score

O = high percent of omits/not responding

P = any distractor with positive correlation

Table F.1 Item Statistics: ELA, Grade Three

Item ID	Item Type	Response types	*P*-value AIS	Item-total corr.	Flag	Omit	Response A/ score point 0	Response B/ score point 1	Response C/ score point 2
CLTR30029T1	MC	MCSS	0.87	0.41		2.6	87.4	10.0	0.0
CLTR30030T2	MC	MCSS	0.67	0.40		2.4	16.1	14.7	66.7
CLTR30031T3	MC	MCSS	0.47	0.32		5.0	24.4	23.4	47.2
CLTR30032T1	Drag & Drop	Match-MS	0.78	0.77		3.4	18.5	78.1	
CLTR30033T2	Short CR	MCSS	0.49	0.79		5.1	34.4	23.5	37.0
CLTR30034T3	Short CR	MCSS	0.47	0.80		4.5	36.6	22.9	36.0
CLTR30035	MC	MCSS	0.62	0.54		4.8	16.8	61.7	16.7
CLTR30114T1	MC	MCSS	0.47	0.40		4.2	49.2	46.6	0.0
CLTR30115T2	MC	MCSS	0.67	0.56		4.0	14.7	14.0	67.3
CLTR30116T3	MC	MCSS	0.33	0.44	O	5.2	23.4	33.4	38.1
CLTR30117T1	MC	MCSS	0.81	0.45		4.4	80.6	15.0	0.0
CLTR30118T2	Zone	ZNSS	0.44	0.68		4.6	51.8	43.6	
CLTR30119T3	MC	MCSS	0.55	0.41	O	5.9	21.3	17.9	54.9
CLTR30120	Drag & Drop	Match-SS	0.55	0.63		14.5	30.9	54.6	
CLTW30020	Drag & Drop	Match-MS	0.32	0.67		7.9	59.6	32.5	

Legend:

CR	constructed response	SS	single select
MC	multiple choice	ZN	zone
MS	multiple select		

Table F.2 Item Statistics: ELA, Grade Four

Item ID	Item Type	Response Types	*P*-value AIS	Item-total corr.	Flag	Omit	Response A/ score point 0	Response B/ score point 1	Response C/ score point 2
CLTR40008T1	MC	MCSS	0.88	0.40		2.7	87.8	9.5	0.0
CLTR40009T2	MC	MCSS	0.67	0.48		2.2	11.9	19.1	66.7
CLTR40010T3	MC	MCSS	0.27	0.39	O	5.0	31.1	27.4	36.4
CLTR40011	MC	MCSS	0.56	0.47		4.5	39.0	56.4	0.0
CLTR40012T1	MC	MCSS	0.65	0.46		3.9	31.4	64.7	0.0
CLTR40013T2	MC	MCMS	0.27	0.69		4.2	68.7	27.1	
CLTR40014T3	MC	MCSS	0.69	0.55	O	6.3	13.7	11.2	68.7
CLTR40067T1	MC	MCSS	0.85	0.38		2.7	85.4	11.9	0.0
CLTR40068T1	MC	MCSS	0.67	0.53		3.8	17.4	11.3	67.5
CLTR40070T2	MC	MCMS	0.60	0.75		3.4	36.7	60.0	
CLTR40071T2	Zone	ZNSS	0.54	0.73		3.8	42.1	54.0	
CLTR40072T2	Drop & Drag	Match-MS	0.22	0.71	A	7.4	70.9	21.8	
CLTW40022	MC	MCMS	0.10	0.46	A	9.2	81.2	9.6	
CLTW40069T1	MC	MCSS	0.66	0.57		2.4	16.0	66.3	15.4

Table F.3 Item Statistics: ELA, Grade Five

Item ID	Item Type	Response Types	*P*-value AIS	Item-total corr.	Flag	Omit	Response A/ score point 0	Response B/ score point 1	Response C/ score point 2
CLTR50050T1	MC	MCSS	0.23	0.17	D A R	3.0	74.4	22.6	0.0
CLTR50051T2	MC	MCSS	0.56	0.50		2.9	25.3	15.5	56.4
CLTR50052T3	MC	MCSS	0.38	0.28	O	5.3	36.3	20.4	38.0
CLTR50053T1	MC	MCSS	0.57	0.60		3.2	16.3	56.9	23.6
CLTR50054T2	MC	MCSS	0.56	0.56		3.3	56.5	22.6	17.6
CLTR50055T3	MC	MCSS	0.52	0.29	P O	6.0	19.9	22.1	52.0
CLTR50056	MC	MCSS	0.67	0.60		3.1	14.8	66.9	15.1
CLTR50060	Zone	ZNMS	0.30	0.60		14.6	55.6	29.8	
CLTR50061T1	MC	MCSS	0.46	0.44		3.6	50.0	46.4	0.0
CLTR50062T2	MC	MCSS	0.62	0.64		2.8	14.6	61.5	21.1
CLTR50063T3	MC	MCMS	0.18	0.76	A	4.5	77.9	17.7	
CLTR50064T1	MC	MCSS	0.78	0.41		3.6	78.4	17.9	0.0
CLTR50065T2	MC	MCSS	0.59	0.53		2.8	20.0	58.6	18.5
CLTR50066T3	MC	MCSS	0.34	0.45	O	5.2	24.3	33.5	36.9
CLTW50021	Drag & Drop	Match-MS	0.23	0.67	A	8.1	68.8	23.1	

Legend:

CR	constructed response	SS	single select
MC	multiple choice	ZN	zone
MS	multiple select		

Table F.4 Item Statistics: ELA, Grade Six

Item ID	Item Type	Response Types	*P*-value AIS	Item-total corr.	Flag	Omit	Response A/ score point 0	Response B/ score point 1	Response C/ score point 2
CLTR60024T1	Drag & Drop	Match-SS	0.43	0.57		3.3	54.0	42.8	
CLTR60025T2	MC	MCSS	0.39	0.54		3.2	31.5	38.9	26.3
CLTR60026T3	MC	MCSS	0.43	0.33		3.7	30.3	23.3	42.6
CLTR60027	MC	MCSS	0.32	0.42		2.7	26.0	32.3	38.9
CLTR60112	MC	MCMS	0.34	0.54		1.9	63.7	34.5	
CLTR60113	MC	MCSS	0.35	0.44		3.2	22.2	34.6	40.0
CLTR60121T1	MC	MCSS	0.83	0.28		1.7	82.8	15.5	0.0
CLTR60122T1	MC	MCSS	0.55	0.48		2.2	25.8	55.5	16.6
CLTR60123T1	Zone	ZNMS	0.33	0.60		3.4	63.1	33.4	
CLTR60125T2	MC	MCSS	0.49	0.56		3.6	18.8	49.1	28.6
CLTR60126T2	MC	MCSS	0.30	0.30		2.9	43.9	29.8	23.3
CLTW60018	Zone	ZNMS	0.20	0.52	A O	23.3	57.0	19.7	
CLTW60023	Drag & Drop	Match-MS	0.24	0.49	A	4.3	72.2	23.5	
CLTW60124T2	Drag & Drop	Match-MS	0.57	0.61		3.3	39.6	57.1	

Legend:

CR	constructed response	SS	single select
MC	multiple choice	ZN	zone
MS	multiple select		

Table F.5 Item Statistics: ELA, Grade Seven

Item ID	Item Type	Response Types	*P*-value AIS	Item-total corr.	Flag	Omit	Response A/ score point 0	Response B/ score point 1	Response C/ score point 2
CLTR70073	MC	MCSS	0.47	0.49		4.3	25.0	46.7	24.0
CLTR70074T1	MC	MCSS	0.34	0.29		4.6	36.7	24.8	33.9
CLTR70075T2	MC	MCSS	0.63	0.54		4.5	62.7	12.2	20.6
CLTR70076T3	MC	MCMS	0.21	0.47	A	5.4	73.9	20.7	
CLTR70077T1	MC	MCSS	0.72	0.59		4.2	13.0	11.2	71.6
CLTR70078T2	MC	MCMS	0.42	0.56		4.3	53.9	41.7	
CLTR70079T3	Short CR	MCSS	0.23	0.75	A	3.1	58.7	30.8	7.4
CLTR70087T1	MC	MCSS	0.47	0.49		4.8	47.3	20.0	27.9
CLTR70088T2	MC	MCSS	0.31	0.37	O	5.2	38.0	30.6	26.2
CLTR70089T3	MC	MCSS	0.48	0.36	O	5.2	27.1	20.2	47.5
CLTR70091T1	MC	MCSS	0.35	0.31	P	5.0	26.3	35.4	33.4
CLTR70092T2	MC	MCSS	0.68	0.48		3.8	14.7	13.5	67.9
CLTR70093T3	MC	MCSS	0.50	0.42		3.7	23.4	22.9	50.1
CLTW70015T1	MC	MCSS	0.44	0.41		4.4	28.7	43.6	23.3
CLTW70016T2	MC	MCSS	0.58	0.58		4.7	19.4	58.0	17.9
CLTW70017T3	Short CR	MCSS	0.34	0.39	O	5.5	17.8	34.3	42.3

Table F.6 Item Statistics: ELA, Grade Eight

Item ID	Item Type	Response Types	*P*-value AIS	Item-total corr.	Flag	Omit	Response A/ score point 0	Response B/ score point 1	Response C/ score point 2
CLTR80001T1	MC	MCSS	0.64	0.32		2.8	64.4	32.8	0.0
CLTR80002T2	Zone	ZNMS	0.15	0.58	A O	19.9	65.4	14.7	
CLTR80003T3	Short CR	MCSS	0.39	0.75		4.1	44.9	23.8	27.3
CLTR80004T1	MC	MCSS	0.68	0.50		2.6	19.3	10.3	67.8
CLTR80005T2	MC	MCSS	0.28	0.11	P R	2.7	28.3	16.4	52.6
CLTR80006T3	Zone	ZNMS	0.16	0.42	A O	15.4	68.8	15.8	
CLTR80007	MC	MCSS	0.82	0.29		2.3	82.0	15.7	0.0
CLTR80036T1	MC	MCSS	0.37	0.50		2.8	48.6	36.8	11.7
CLTR80037T3	MC	MCMS	0.24	0.60	A	6.5	69.4	24.0	
CLTR80038T2	MC	MCMS	0.21	0.59	A	4.4	74.7	21.0	
CLTR80039T1	MC	MCSS	0.37	0.42		3.1	39.4	36.9	20.5
CLTR80040T2	MC	MCSS	0.32	0.28	O	5.1	41.5	21.8	31.6
CLTR80041T3	MC	MCSS	0.44	0.40		4.5	24.8	26.2	44.5
CLTR80042	MC	MCSS	0.26	0.28		4.0	40.5	25.6	29.9
CLTW80028	Drag & Drop	Match-MS	0.12	0.63	A	6.1	81.8	12.1	

Legend:

CR	constructed response	SS	single select
MC	multiple choice	ZN	zone
MS	multiple select		

Table F.7 Item Statistics: ELA, Grade Eleven

Item ID	Item Type	Response Types	*P*-value AIS	Item-total corr.	Flag	Omit	Response A/ score point 0	Response B/ score point 1	Response C/ score point 2
CLTRH0080T1	MC	MCSS	0.39	0.31		4.3	39.4	38.5	17.7
CLTRH0081T2	MC	MCMS	0.06	0.50	A	4.5	89.6	5.8	
CLTRH0082T3	Short CR	MCSS	0.43	0.78		3.8	35.5	34.7	26.0
CLTRH0083T1	MC	MCSS	0.25	0.23	P A	4.4	15.6	24.6	55.4
CLTRH0084T2	MC	MCMS	0.37	0.62		4.3	59.2	36.5	
CLTRH0085T3	Zone	ZNMS	0.13	0.43	A	6.3	80.5	13.3	
CLTRH0086	Short CR	MCSS	0.42	0.77		3.6	30.8	47.7	17.8
CLTRH0101T1	MC	MCSS	0.66	0.58		4.3	66.0	22.2	7.6
CLTRH0102T2	Zone	ZNSS	0.70	0.66		10.8	19.6	69.6	
CLTRH0103T3	Zone	ZNMS	0.25	0.65	A O	44.9	30.4	24.7	
CLTRH0104T1	MC	MCSS	0.44	0.43		3.7	52.0	44.3	0.0
CLTRH0105T2	MC	MCSS	0.35	0.30	O	6.4	35.4	19.4	38.8
CLTRH0106T3	Drag & Drop	Match-MS	0.04	0.51	A	8.1	87.9	4.0	
CLTRH0107	MC	MCSS	0.53	0.52	O	5.1	18.3	23.4	53.2
CLTWH0108	Drag & Drop	Match-MS	0.17	0.67	A	7.7	75.7	16.6	

Legend:

CR	constructed response	SS	single select
MC	multiple choice	ZN	zone
MS	multiple select		

Table F.8 Item Statistics: Mathematics, Grade Three

Item ID	Item Type	Response Types	*P*-value AIS	Item-total corr.	Flag	Omit	Response A/ score point 0	Response B/ score point 1	Response C/ score point 2
CLTM30007	Short CR	Numeric	0.47	0.70		6.2	46.3	47.4	
CLTM30012	Drag & Drop	Match-SS	0.63	0.64		4.0	33.4	62.6	
CLTM30013	Drag & Drop	Match-SS	0.48	0.70		10.0	41.7	48.3	
CLTM30014	Drag & Drop	Match-SS	0.63	0.70		9.1	27.9	63.1	
CLTM30016	MC	MCSS	0.24	0.31	A O	5.2	28.6	23.6	42.6
CLTM30023	MC	MCSS	0.39	0.28		3.8	36.7	20.6	38.9
CLTM30039T1	MC	MCSS	0.63	0.30		2.1	62.7	35.2	0.0
CLTM30040T2	MC	MCSS	0.33	0.23		3.4	44.1	19.5	33.0
CLTM30041T3	Short CR	Numeric	0.10	0.72	A	7.0	82.8	10.2	
CLTM30051T1	MC	MCSS	0.55	0.35		2.9	41.7	55.3	0.0
CLTM30095T1	MC	MCSS	0.60	0.30		2.9	59.9	37.2	0.0
CLTM30096T2	MC	MCSS	0.39	0.41		3.7	25.5	31.5	39.3
CLTM30097T3	Short CR	Numeric	0.10	0.74	A	6.9	83.5	9.6	
CLTM30104T2	MC	MCSS	0.46	0.45		3.4	29.2	45.9	21.5
CLTM30105T3	MC	MCSS	0.47	0.32		3.7	47.4	17.1	31.9

Legend:

CR	constructed response	SS	single select
MC	multiple choice	ZN	zone
MS	multiple select		

Table F.9 Item Statistics: Mathematics, Grade Four

Item ID	Item Type	Response Types	*P*-value AIS	Item-total corr.	Flag	Omit	Response A/ score point 0	Response B/ score point 1	Response C/ score point 2
CLTM40004	MC	MCSS	0.48	0.55		2.2	13.4	36.7	47.7
CLTM40005	Drag & Drop	Match-SS	0.28	0.54		7.4	64.9	27.7	
CLTM40006	Short CR	Numeric	0.10	0.61	A	7.9	82.3	9.8	
CLTM40007	Hot Spot	ZNMS	0.08	0.43	A	9.1	83.3	7.6	
CLTM40017	MC	MCSS	0.47	0.53		1.0	20.4	31.5	47.1
CLTM40021	MC	MCSS	0.24	0.06	P A R O	5.5	23.7	33.9	36.9
CLTM40030T1	MC	MCSS	0.66	0.52		2.0	32.0	66.0	0.0
CLTM40031T2	MC	MCSS	0.54	0.53		2.3	19.1	54.5	24.1
CLTM40032T3	MC	MCSS	0.36	0.25	P	4.7	46.0	13.5	35.8
CLTM40045T1	MC	MCSS	0.56	0.42		2.2	41.5	56.3	0.0
CLTM40046T3	Short CR	Numeric	0.11	0.47	A	7.2	82.0	10.8	
CLTM40047T2	MC	MCSS	0.45	0.52		5.0	25.3	44.7	25.0
CLTM40119T1	MC	MCSS	0.65	0.34		3.0	65.2	31.9	0.0
CLTM40120T2	MC	MCSS	0.44	0.42	O	5.7	44.4	23.0	26.9

Legend:

CR	constructed response	SS	single select
MC	multiple choice	ZN	zone
MS	multiple select		

Table F.10 Item Statistics: Mathematics, Grade Five

Item ID	Item Type	Response Types	*P*-value AIS	Item-total corr.	Flag	Omit	Response A/ score point 0	Response B/ score point 1	Response C/ score point 2
CLTM50010	MC	MCSS	0.68	0.34		1.9	67.8	30.3	0.0
CLTM50013	Hot Spot	ZNSS	0.47	0.69		10.6	42.7	46.7	
CLTM50014	Hot Spot	ZNMS	0.29	0.73		11.1	59.9	29.0	
CLTM50015	Short CR	Graph	0.08	0.63	A	14.1	77.8	8.1	
CLTM50033T1	Hot Spot	ZNSS	0.70	0.65		5.0	24.6	70.4	
CLTM50034T2	MC	MCSS	0.33	0.37	O	5.7	31.0	29.9	33.3
CLTM50035T3	Short CR	Numeric	0.06	0.66	A	9.3	84.9	5.9	
CLTM50042T1	MC	MCSS	0.46	0.25		4.8	49.1	46.1	0.0
CLTM50043T2	MC	MCSS	0.35	0.22		4.9	34.6	24.7	35.7
CLTM50044T3	Short CR	Numeric	0.02	0.70	A	8.2	89.9	2.0	
CLTM50114	Hot Spot	ZNSS	0.57	0.71		13.5	29.9	56.7	
CLTM50115	Short CR	Numeric	0.26	0.55		6.2	67.5	26.3	
CLTM50116T1	MC	MCSS	0.50	0.37	O	6.4	43.3	50.3	0.0
CLTM50117T2	MC	MCSS	0.38	0.22		4.3	38.2	28.1	29.3
CLTM50118T3	Short CR	Numeric	0.04	0.64	A	8.0	87.7	4.3	

Legend:

CR	constructed response	SS	single select
MC	multiple choice	ZN	zone
MS	multiple select		

Table F.11 Item Statistics: Mathematics, Grade Six

Item ID	Item Type	Response Types	*P*-value AIS	Item-total corr.	Flag	Omit	Response A/ score point 0	Response B/ score point 1	Response C/ score point 2
CLTM60007	Short CR	Numeric	0.29	0.67		5.0	66.0	29.0	
CLTM60013	Hot Spot	ZNSS	0.56	0.59		3.6	40.7	55.7	
CLTM60014	Drag & Drop	Match-SS	0.32	0.30		4.3	63.2	32.4	
CLTM60015	MC	Grid-MS	0.25	0.40	A	4.0	71.4	24.7	
CLTM60053	MC	MCSS	0.44	0.50		3.4	20.8	44.5	31.3
CLTM60055	MC	MCSS	0.29	0.32		2.3	19.1	28.9	49.7
CLTM60083T1	MC	MCSS	0.67	0.41		4.8	67.4	27.8	0.0
CLTM60084T2	MC	MCSS	0.48	0.28		3.7	20.8	27.7	47.8
CLTM60085T3	Short CR	Numeric	0.10	0.71	A	6.0	84.3	9.7	
CLTM60086T1	MC	MCSS	0.57	0.43		2.1	57.4	40.4	0.0
CLTM60087T2	Hot Spot	ZNSS	0.45	0.56		5.3	49.3	45.4	
CLTM60088T3	Drag & Drop	Match-SS	0.48	0.58		6.8	45.7	47.5	
CLTM60089T1	MC	Inline Choice List-SS	0.63	0.65		4.1	32.9	63.0	
CLTM60090T2	MC	Inline Choice List-MS	0.65	0.69		4.1	31.1	64.9	
CLTM60091T3	MC	Inline Choice List-MS	0.14	0.31	A	5.1	81.2	13.8	

Legend:

CR	constructed response	SS	single select
MC	multiple choice	ZN	zone
MS	multiple select		

Table F.12 Item Statistics: Mathematics, Grade Seven

Item ID	Item Type	Response Types	*P*-value AIS	Item-total corr.	Flag	Omit	Response A/ score point 0	Response B/ score point 1	Response C/ score point 2
CLTM70004	MC	MCSS	0.49	0.39		1.9	28.8	48.8	20.5
CLTM70007	Drag & Drop	Match-SS	0.59	0.60		6.9	34.4	58.7	
CLTM70008	Drag & Drop	Match-SS	0.52	0.71		5.9	42.4	51.6	
CLTM70009	Drag & Drop	Match-MS	0.29	0.68		7.0	63.5	29.4	
CLTM70020	MC	Inline Choice List-MS	0.14	0.38	A	5.4	80.9	13.7	
CLTM70036T2	Hot Spot	ZNSS	0.43	0.58		5.3	52.1	42.6	
CLTM70037T1	MC	MCSS	0.44	0.41		3.6	52.1	44.3	0.0
CLTM70038T3	Short CR	Numeric	0.10	0.75	A	5.4	85.0	9.5	
CLTM70068T1	MC	MCSS	0.53	0.27		2.0	45.1	52.8	0.0
CLTM70069T2	MC	MCSS	0.43	0.40		3.9	28.4	24.3	43.4
CLTM70070T3	MC	MCSS	0.36	0.25		4.1	36.4	29.8	29.7
CLTM70079	Short CR	Numeric	0.10	0.71	A	5.5	84.5	10.0	
CLTM70127T1	Hot Spot	ZNSS	0.43	0.60		14.7	42.6	42.6	
CLTM70128T2	MC	MCSS	0.41	0.39		2.4	22.5	34.1	41.0
CLTM70129T3	Short CR	Numeric	0.21	0.51	A	5.3	73.4	21.3	

Legend:

CR	constructed response	SS	single select
MC	multiple choice	ZN	zone
MS	multiple select		

Table F.13 Item Statistics: Mathematics, Grade Eight

Item ID	Item Type	Response Types	*P*-value AIS	Item-total corr.	Flag	Omit	Response A/ score point 0	Response B/ score point 1	Response C/ score point 2
CLTM80004	MC	MCSS	0.76	0.46		1.9	21.7	76.4	0.0
CLTM80007	MC	MCSS	0.67	0.40		3.3	67.2	29.4	0.0
CLTM80008	MC	MCSS	0.57	0.42		3.0	22.3	17.3	57.4
CLTM80009	Short CR	Numeric	0.21	0.74	A	7.7	71.0	21.3	
CLTM80071T1	MC	MCSS	0.51	0.42	O	5.2	50.8	18.3	25.7
CLTM80072T2	MC	MCSS	0.66	0.50		3.0	18.4	12.8	65.7
CLTM80073T3	MC	MCSS	0.53	0.54		3.7	13.4	52.9	30.1
CLTM80075	Hot Spot	ZNSS	0.32	0.48		8.6	59.4	32.0	
CLTM80076	MC	MCSS	0.33	0.23	P	4.0	33.0	35.8	27.2
CLTM80080	Hot Spot	ZNMS	0.32	0.69		7.3	60.7	32.0	
CLTM80122T2	Hot Spot	ZNSS	0.47	0.52		5.5	47.5	47.0	
CLTM80123T3	Hot Spot	ZNSS	0.33	0.43		5.8	60.8	33.4	
CLTM80124T2	MC	MCSS	0.55	0.55		3.6	22.6	54.7	19.0
CLTM80125T3	MC	MCSS	0.35	0.28		3.7	32.6	28.7	35.0
CLTM80126T1	MC	MCSS	0.83	0.33		1.8	83.3	14.9	0.0

Legend:

CR	constructed response	SS	single select
MC	multiple choice	ZN	zone
MS	multiple select		

Table F.14 Item Statistics: Mathematics, Grade Eleven

Item ID	Item Type	Response Types	*P*-value AIS	Item-total corr.	Flag	Omit	Response A/ score point 0	Response B/ score point 1	Response C/ score point 2
CLTMH0004	MC	MCSS	0.34	0.43		2.4	48.9	33.6	15.2
CLTMH0006	MC	MCSS	0.56	0.46		2.5	41.6	55.9	0.0
CLTMH0007	Drag & Drop	Match-MS	0.36	0.70		6.3	57.4	36.2	
CLTMH0008	Drag & Drop	Match-MS	0.31	0.73		7.3	61.9	30.8	
CLTMH0064	MC	Grid	0.13	0.54	A	3.2	83.4	13.3	
CLTMH0078	MC	MCSS	0.47	0.37		2.3	15.2	35.4	47.1
CLTMH0130T1	Hot Spot	ZNSS	0.36	0.57		12.5	51.8	35.6	
CLTMH0131T2	MC	MCSS	0.46	0.50	O	6.9	31.0	16.5	45.6
CLTMH0132T3	MC	MCSS	0.43	0.50	O	7.2	17.0	42.8	33.0
CLTMH0133T1	MC	MCSS	0.49	0.38		1.4	49.2	49.4	0.0
CLTMH0134T2	MC	MCSS	0.32	0.34		3.0	38.5	26.8	31.8
CLTMH0135T3	MC	MCSS	0.31	0.33		2.8	36.4	30.5	30.3
CLTMH0136T1	MC	MCSS	0.67	0.30		1.9	67.4	30.8	0.0
CLTMH0137T2	MC	MCSS	0.43	0.50		2.4	33.4	21.1	43.1
CLTMH0138T3	MC	MCSS	0.36	0.33		2.3	36.3	25.9	35.5

Legend:

CR	constructed response	SS	single select
MC	multiple choice	ZN	zone
MS	multiple select		

Appendix G: Differential Item Functioning

Table G.1 Items Exhibiting Significant DIF by Subgroup—English Language Arts

Grade	Item ID	N Focal	N Reference	MHDIF	SMD	Comparison	In Favor Of
3	CLTR30118T2	249	1,268		0.13	ID – SLD	C+
3	CLTR30034T3	130	741		0.27	White – Filipino	C+
3	CLTR30033T2	1,353	1,268		0.24	ID – AU	C+
3	CLTR30034T3	1,353	1,268		0.35	ID – AU	C+
3	CLTR30119T3	1,353	1,268	–1.56		ID – AU	C–
4	CLTR40071T2	183	912		0.13	ID – SLD	C+
4	CLTR40011	127	912	–2.19		ID – SLI	C–
5	CLTR50056	243	1,425	2.63		ID – SLD	C+
5	CLTR50054T2	243	1,425	2.20		ID – SLD	C+
5	CLTR50055T3	243	1,425	–2.85		ID – SLD	C-
5	CLTR50062T2	243	1,425	3.38		ID – SLD	C+
5	CLTR50063T3	243	1,425		0.21	ID – SLD	C+
5	CLTR50062T2	166	1,425	2.41		ID – SLI	C+
5	CLTR50063T3	166	1,425		0.10	ID – SLI	C+
6	CLTR60026T3	113	1,439	–1.90		ID – SLI	C–
8	CLTR80003T3	203	1,464		0.22	ID – SLD	C+
8	CLTR80004T1	203	1,464	2.33		ID – SLD	C+
8	CLTR80006T3	203	1,464		–0.10	ID – SLD	C–
11	CLTRH0101T1	270	1,480	2.02		ID – SLD	C+
11	CLTRH0084T2	270	1,480		–0.14	ID – SLD	C–

Legend:

AU	autism	SLD	specific learning disability
ID	intellectual disability	SLI	speech or language impairment
OHI	other health impairment		

Table G.2 Items Exhibiting Significant DIF by Subgroup—Mathematics

Grade	Item ID	N Focal	N Reference	MHDIF	SMD	Comparison	In Favor Of
3	CLTM30013	248	1,193		0.15	ID – SLD	C+
3	CLTM30007	248	1,193		0.13	ID – SLD	C+
3	CLTM30095T1	248	1,193	–2.04		ID – SLD	C–
3	CLTM30097T3	248	1,193		0.10	ID – SLD	C+
3	CLTM30023	248	1,193	–1.84		ID – SLD	C–
3	CLTM30040T2	248	1,193	–3.02		ID – SLD	C–
3	CLTM30041T3	248	1,193		0.11	ID – SLD	C+
3	CLTM30097T3	207	1,193		0.12	ID – SLI	C+
3	CLTM30023	207	1,193	–1.79		ID – SLI	C–
3	CLTM30040T2	207	1,193	–1.81		ID – SLI	C–
3	CLTM30041T3	207	1,193		0.09	ID – SLI	C+
3	CLTM30097T3	1,304	1,193		0.07	ID – AU	C+
4	CLTM40007	284	1,341		-0.09	ID – SLD	C–
4	CLTM40031T2	284	1,341	1.92		ID – SLD	C+
4	CLTM40032T3	284	1,341	–1.84		ID – SLD	C–
4	CLTM40017	284	1,341	2.09		ID – SLD	C+
4	CLTM40021	284	1,341	–4.29		ID – SLD	C–
5	CLTM50114	229	1,375		0.14	ID – OHI	C+
5	CLTM50014	240	1,375		0.17	ID – SLD	C+
5	CLTM50118T3	240	1,375		0.05	ID– SLD	C+
5	CLTM50114	240	1,375		0.17	ID – SLD	C+
5	CLTM50042T1	240	1,375	–2.18		ID – SLD	C–
5	CLTM50043T2	240	1,375	–1.68		ID – SLD	C–
5	CLTM50013	167	1,375		0.14	ID – SLI	C+
5	CLTM50117T2	167	1,375	–2.06		ID – SLI	C–
5	CLTM50114	167	1,375		0.17	ID – SLI	C+
6	CLTM60053	244	1,399	2.84		ID – SLD	C+
6	CLTM60085T3	244	1,399		0.08	ID – SLD	C+
6	CLTM60091T3	244	1,399		–0.09	ID – SLD	C–
6	CLTM60015	117	1,399		–0.15	ID – SLD	C–
6	CLTM60085T3	117	1,399		0.06	ID – SLD	C+
6	CLTM60091T3	117	1,399		–0.09	ID – SLI	C–
6	CLTM60013	159	777		–0.13	White – Filipino	C–
7	CLTM70127T1	159	1,439		0.140	ID – OHI	C+
7	CLTM70037T1	213	1,439	–1.77		ID – SLD	C-
7	CLTM70038T3	213	1,439		0.08	ID – SLD	C+
8	CLTM80080	199	1,441		0.20	ID -- SLD	C+

Legend:

AU	autism	SLD	specific learning disability
ID	intellectual disability	SLI	speech or language impairment
OHI	other health impairment		