California Department of Education
Standards and Assessment Division

California Modified Assessment
Technical Report
Spring 2008 Administration

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Educational Testing Service

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Tables

Acronyms and Initialisms Used in the *California Modified Assessment Technical Report*

AIS	average item score
ARP	Assessment Review Panel
API	Academic Performance Index
Aprenda 3	La prueba de logros en español, Tercera edición
AYP	adequate yearly progress
CAHSEE	California High School Exit Examination
CAPA	California Alternate Performance Assessment
CAT/6 Survey	California Achievement Tests, Sixth Edition Survey
CDE	California Department of Education
CI	confidence interval
CMA	California Modified Assessment
CSEM	conditional standard error of measurement
CSTs	California Standards Tests
CTB/McGraw Hill	California Testing Bureau/McGraw Hill
DIF	differential item functioning
DPLT	designated primary language test
ELA	English–language arts
EM	expectation maximization
ETS	Educational Testing Service
FTP	file transfer protocol
GENASYS	Generalized Analysis System
IEP	individualized education program
IRT	item response theory
MH DIF	Mantel-Haenszel DIF
NCLB	No Child Left Behind Act of 2001
NSLP	National School Lunch Program
OTI	Office of Testing Integrity
p-value	item proportion correct
PSAA	Public School Accountability Act
Pt-Rbis	point-biserial correlations
RACF	Random Access Control Facility
SBE	State Board of Education
SD	standard deviation
SEM	standard error of measurement
SMD	standardized mean difference
SPAR	Statewide Pupil Assessment Review
STAR	Standardized Testing and Reporting
STS	Standards-based Tests in Spanish

Chapter 1: Introduction

Background

In 1997 and 1998, the California State Board of Education (SBE) adopted rigorous content standards in four major content areas: English–language arts (ELA), mathematics, history–social science, and science. These standards were designed to guide instruction and learning for all students in the state and to bring California students to world-class levels of achievement.

In order to measure and evaluate student achievement of the content standards, the state instituted the Standardized Testing and Reporting (STAR) Program. This Program, administered annually, was authorized in 1997 by state law (Senate Bill 376). Senate Bill 1448, approved by the Legislature and the Governor in August 2004, reauthorized the STAR Program through January 1, 2011, in grades three through eleven. STAR Program testing in grade two has also been extended to the 2011 school year (spring 2011 administration) after Senate Bill 80 was passed in September 2007.

The primary goal of the STAR Program is to help measure how well students are mastering these content standards. During its 2008 administration, the STAR Program had six components:

- California Standards Tests (CSTs), produced for California public schools
- California Achievement Tests, Sixth Edition Survey (CAT/6 Survey), given in grades three and seven and published by CTB/McGraw-Hill
- California Modified Assessment (CMA), an assessment of students' achievement of California's content standards for English–language arts, mathematics, and science, developed for students with disabilities who meet the CMA eligibility criteria approved by the SBE (In 2008, the CMA was administered to students in grades three, four, and five.)
- California Alternate Performance Assessment (CAPA), produced for students with significant cognitive disabilities who are not able to take the CSTs, the CMA, or the CAT/6 Survey
- Standards-based Tests in Spanish (STS), an assessment of students' achievement of California's content standards, given to Spanish-speaking English learners and administered as the STAR Program's designated primary language test (DPLT) (In 2008, the STS was administered to students in grades two through seven.)
- Aprenda: La prueba de logros en español, Tercera edición (Aprenda 3), given in grades eight and eleven and published by Harcourt Assessment Inc. (The STS replaced the Aprenda 3 as the DPLT in grades two through seven.)

Education Code Section 60602: Legislative Intent

The results for tests within the STAR Program are used for three primary purposes, described as follows (excerpted from California *Education Code* Section 60602, http://www.leginfo.ca.gov/cgi-bin/displaycode?section=edc&group=60001-61000&file=60600-60603):

"60602. (a) (1) First and foremost, provide information on the academic status and progress of individual pupils to those pupils, their parents, and their teachers. This information should be designed to assist in the improvement of teaching and learning in California public classrooms. The Legislature recognizes that, in addition to statewide assessments that will occur as specified in this chapter, school districts will conduct additional ongoing pupil diagnostic assessment and provide information regarding pupil performance based on those assessments on a regular basis to parents or guardians and schools. The legislature further recognizes that local diagnostic assessment is a primary mechanism through which academic strengths and weaknesses are identified."

"60602. (a) (4) Provide information to pupils, parents or guardians, teachers, schools, and school districts on a timely basis so that the information can be used to further the development of the pupil and to improve the educational program."

"60602. (c) It is the intent of the Legislature that parents, classroom teachers, other educators, governing board members of school districts, and the public be involved, in an active and ongoing basis, in the design and implementation of the statewide pupil assessment program and the development of assessment instruments."

"60602. (d) It is the intent of the Legislature, insofar as is practically feasible and following the completion of annual testing, that the content, test structure, and test items in the assessments that are part of the Standardized Testing and Reporting Program become open and transparent to teachers, parents, and pupils, to assist all the stakeholders in working together to demonstrate improvement in pupil academic achievement. A planned change in annual test content, format, or design, should be made available to educators and the public well before the beginning of the school year in which the change will be implemented."

In addition, STAR Program assessments are used to provide data for state and federal accountability purposes.

California Modified Assessment

Target Population

For students who receive special education services, the decision to administer the CMA is made by their individualized education program (IEP) team. In addition, to be eligible to take the CMA the student must have scored in a performance level of below basic or far below basic on a previously administered CST. The California Modified Assessments are administered to students in ELA and mathematics in grades three, four, and five, and in science at grade five.

Parents may submit written requests to have their children exempted from taking any of the tests within the STAR Program. Only students with written parent requests may be exempted from taking the tests.

The total number of students with scorable CMAs in the P1 data[1] was 39,731.

Test Description

The CMA is an alternate assessment for students with disabilities who have an IEP and meet the eligibility criteria proposed by the CDE and adopted by the SBE.

The CMA was developed in response to the U.S. Department of Education final regulations under the No Child Left Behind Act of 2001 (NCLB) and the Individuals with Disabilities Act that provided flexibility to states "to more appropriately measure the achievement of certain students with disabilities" (U.S. Department of Education 2007). The regulations allow states to develop an alternate assessment based on modified academic achievement standards. These modified academic achievement standards are required to be "challenging for eligible students and measure a student's mastery of grade-level content, but are less difficult than grade-level achievement standards" (U.S. Department of Education 2007).

The CMAs are designed to show how well cognitively impaired students are doing with respect to California's content standards. These modifed content standards, approved by the SBE, describe what students should know and be able to do at each grade level.

All CMA assessments contain 48 multiple-choice operational items that are the same a set of nine items being field-tested that are not the same across forms.[2] Each multiple-choice item has three options. The number of forms administered for each test is given in Table 6.2. The field-test items do

[1] The P1 file contains data for the schools from which answer documents were received by ETS Statistical Analysis by approximately July 31, 2008.

[2] A form was counted as a field-test form if it contained one or more field-test items. A version of a test is one that has the same operational form of the test with different field-test item sets. These are considered different *forms* of the same test.

not count toward students' scores. For the spring 2008 administration, results of the CMA were reported in terms of percent correct.

The CMA tests are administered at different times of the year, depending on the progression of the school year within each particular district. Specifically, schools must administer the CMA tests within a 21-day window, which begins ten days before and ends ten days after the day on which 85 percent of the instructional year is completed. The CDE guidelines of testing times within which most students would be expected to finish the CMAs by test and grade level can be found in Table 1.1.

Table 1.1 2008 CMA Item and Time Chart

California Modified Assessment	Grade 3		Grade 4		Grade 5	
	Total No. of Items	Time in Minutes	Total No. of Items	Time in Minutes	Total No. of Items	Time in Minutes
English–Language Arts	**57**	**180**	**57**	**135**	**57**	**135**
Part 1		45		45		45
Part 2		45		45		45
Part 3		45		45		45
Part 4		45		–		–
Mathematics	**57**	**180**	**57**	**105**	**57**	**105**
Part 1		35		35		35
Part 2		35		35		35
Part 3		35		35		35
Part 4		35		–		–
Science	–		–		**57**	**120**
Part 1		–		–		40
Part 2		–		–		40
Part 3		–		–		40

Overview of the Technical Report

This technical report contains seven additional chapters, as follows:

- Chapter 2 describes the procedures followed to develop valid CMA items and to construct the CMA test forms for 2008. In addition, characteristics of the constructed 2008 test forms are presented in Chapter 2.
- Chapter 3 describes the scaling procedures that were used.
- Chapter 4 details the procedures designed to support validity of the CMA.
- Chapter 5 describes the kinds of score reports that are produced after each administration of the CMA. It also summarizes the test-level analyses performed on scores obtained during the spring 2008 administration of the tests.
- Chapter 6 discusses the descriptive statistics at the item level for the operational and field-test items. Summaries of classical item analysis statistics, Rasch difficulty estimates, and evaluations of the Rasch model-data fit are included in Chapter 6.
- Chapter 7 highlights the importance of maintaining fairness for various CMA subgroups. Chapter 7 summarizes demographic differences in performance, analyzing differential item functioning. Chapter 7 also includes a section describing procedures that were followed by Educational Testing Service (ETS) to ensure test security.
- Chapter 8 summarizes the reliability analyses, including test reliability and accuracy.

Each chapter contains summary tables in the body of the text. In addition, extended appendixes that report technical data for the 2008 CMA forms are listed at the end of the relevant chapters.

Reference

No Child Left Behind Act of 2001, 20 *U.S.C.* 6301 et seq. (2001).

U.S. Department of Education 2007, April. *Measuring the achievement of students with disabilities*. Retrieved April 8, 2009, from http://www.ed.gov/parents/needs/speced/twopercent.pdf.

Chapter 2: CMA Development Procedures

The CMA is constructed to measure students' achievement of the California content standards as well as to meet psychometric criteria for assessment development, such as test difficulty and reliability. For 2008, the psychometric criteria are evaluated using statistics from field testing in fall 2007.

Test Assembly Procedures

One of the first steps in the development of a standardized test is the creation of the test blueprint. As with the other components of the STAR Program, the CMA test blueprints were proposed by ETS, reviewed and recommended by the respective Assessment Review Panels (ARPs), reviewed and approved by the CDE, and presented to the SBE for adoption.

The California content standards were used as the basis for choosing test items. Additional technical targets (for example, equal item difficulty and discrimination across test forms) for test construction are also established. The goal of maintaining parallel forms to the greatest extent possible is so that in future operational administrations (beyond the base year of 2008 for grades three, four, and five), comparability with past forms may be examined.

Test Specifications

Statistical Specifications

Due to limited CMA information available prior to the 2008 spring operational administration, information from the CSTs was used in conjunction with results from CMA field-test to develop the statistical specifications. The CMA specific specification will be generated for 2009 tasks.

The primary statistical targets used for CMA test assembly in 2008 were the *p*-value, the *b*-value, and the point-biserial correlation. The point-biserial correlation is a measure of how well the items discriminate among test takers who know more on the test from those who know less and is related to the overall reliability of the test. When using the Rasch model, the target information function made it possible to choose items to produce a test that had the desired precision of measurement at all ability levels. The target mean and standard deviation of item *b*-values consistent with the information curves were also provided to test development staff to help with the test construction process.

These specifications were developed from the analyses of field-test forms administered in fall 2007; the target values and ranges for the specifications are presented in Table 2.1. The minimum target value for an item point-biserial is set at 0.20 for each test. This value approximates a biserial correlation of 0.30. The target *b*-value range approximated an average *p*-value of 0.60. Some variation in the target *b-value* is seen across grades because the *p*-value is population-specific. The minimum percent-correct value (*p*-value) was set at chance level, or 0.33. The maximum *p*-value was set at 0.90 for each test. The chance level was determined by the number of options available. In this case, there were three options; thus, the probability of getting the item correct by guessing was one out of three possible, or 0.33.

Table 2.1 Target Statistical Specifications for the CMA

Subject	Grade	Target Mean b	Target SD b	Min *p*-value	Max *p*-value	Mean Point Biserial	Min Point Biserial
English–Language Arts	**3**	–0.44	0.50	0.33	0.90	0.42–0.48	0.20
	4	–0.57	0.50	0.33	0.90	0.42–0.48	0.20
	5	–0.42	0.50	0.33	0.90	0.42–0.48	0.20
Mathematics	**3**	–0.44	0.50	0.33	0.90	0.42–0.48	0.20
	4	–0.58	0.50	0.33	0.90	0.42–0.48	0.20
	5	–0.44	0.50	0.33	0.90	0.42–0.48	0.20
Science	**5**	–0.44	0.50	0.33	0.90	0.42–0.48	0.20

Content Specifications

ETS developed all CMA test items to conform to the SBE-approved California content standards and the test blueprints. The blueprints for the CMA can be found linked on the CDE Web page at http://www.cde.ca.gov/ta/tg/sr/cmablueprints.asp.

Item Development

ETS followed the approved Item Utilization Plan found in the STAR contract to guide the development of the quantity of items for each subject area and maintains item specifications for each CMA. This plan includes strategies for continued coverage of all appropriate standards for all tests in each content area and at each grade level. Item specification documents include the constructs to be measured and the California content standards included in the test blueprints. Those specifications help ensure that the CMA consistently matches the content standards from year to year. The item specifications also provide specific and important guidance to item writers and ensure that items are consistent in approach and written to measure students' achievement of the standards. The item specifications describe the general characteristics of the items for each content standard, indicate item types or content to be avoided, and define the content limits for the items. In summary, the specifications include the following:

- A statement of the strand or topic for the standard
- A full statement of the academic content standard, as found in each CMA blueprint
- The expected cognitive level(s) of items written for the standard (Acquire, Integrate, or Extend), as defined by ETS and approved by the CDE
- The construct(s) appropriately measured by the standard
- A description of the kinds of stems appropriate for multiple-choice items for the standard
- A description of the kinds of distracters appropriate for multiple-choice items for the standard
- A description of specific kinds of items to be avoided, if any (such as ELA items about insignificant details)
- A description of appropriate stimuli (such as charts, tables, graphs, or other artwork) for mathematics and science items
- The content limits for the standard (such as one or two variables, maximum place values of numbers) for mathematics and science items
- A description of appropriate reading passages (if applicable) for ELA items

According to the NCLB, universally designed assessments are those that are "designed from the beginning to be accessible and valid with respect to the widest possible range of students, including students with disabilities and students with limited English proficiency" (NCLB, 34 *CFR*, Part 200.2[b][2]). ETS followed the principles of universal design in developing items and reading passages for the CMA.

Item Review Process

The items selected for each CMA undergo an extensive item review process that was designed to provide all California students with the best standards-based tests possible. The following sections describe the extensive reviews all items undergo.

Internal Reviews

After the items have been written, ETS employs a series of internal reviews. The reviews establish the criteria used to judge the content validity of an item, making sure that each item is measuring what it is intended to measure. The internal reviews also examine the overall quality of the test items before they are prepared for presentation to the CDE and the Assessment Review Panels (ARPs). Because of the complexities involved in producing defensible items for high-stakes programs such as the STAR Program, it is essential that many experienced individuals review each item before it is brought to the CDE, the ARPs, and, later, the Statewide Pupil Assessment Review (SPAR) panels.

The ETS review process for the CMA includes the following:

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

Throughout this multistep item review process, the lead content-area assessment specialists and development team members continually evaluate the relevance of the information being assessed, its connection to the California content standards, its match to the test and item specifications, and its appropriateness to the population being assessed. Items that are only peripherally related to the test and item specifications, that do not measure core outcomes reflected in the California content standards, or that are not developmentally appropriate are eliminated early in this rigorous review process.

1. Internal Content Review

Test items and materials undergo two reviews from the content-area assessment specialists. These assessment specialists make sure that the test items and related materials are in compliance with ETS's written guidelines for clarity, style, accuracy, and appropriateness for California students, as well as in compliance with the approved item specifications. Assessment specialists review each item on the basis of the following criteria:

- Relevance of each item as the item relates to the purpose of the test
- Match of each item to the item specifications, including cognitive level
- Match of each item to the principles of quality item development
- Match of each item to the identified standard
- Difficulty of the item
- Accuracy of the content of the item
- Readability of the item or passage
- Grade-level appropriateness of the item
- Appropriateness of any artwork, graphs, figures, or other illustrations

The assessment specialists also check all items to ensure that a given item is of a type appropriate to the outcome it is intended to measure. The reviewers accept the item as written, suggest revisions, or recommend that the item be discarded. These steps occur prior to CDE review.

2. Internal Editorial Review

After the content area assessment specialists review each item, a group of specially trained editors review each item in preparation for review by the CDE and the ARPs. The editors check questions

for clarity, correctness of language, appropriateness of language for the grade level assessed, adherence to the style guidelines, and conformity with accepted item-writing practices.

3. Internal Sensitivity Review

ETS assessment specialists who are specially trained to identify and eliminate questions that contain content or wording that could be construed to be offensive to or biased against members of specific ethnic, racial, or gender groups conduct the next level of review. These trained staff members review every item before it was prepared for CDE and ARP review. In addition, the review process promoted a general awareness of and responsiveness to the following:

- Cultural diversity
- Diversity of background, cultural tradition, and viewpoints to be found in the test-taking populations
- Changing roles and attitudes toward various groups
- Role of language in setting and changing attitudes toward various groups
- Contributions of diverse groups (including ethnic and minority groups, individuals with disabilities, and women) to the history and culture of the United States and the achievements of individuals within these groups

Assessment Review Panels (ARPs)

ETS is responsible for working with ARPs as items are developed for the CMA. The ARPs are advisory panels to the CDE and ETS on areas related to item development for the CMA. The ARPs are responsible for reviewing all newly developed items for alignment to the California content standards. The ARPs reviewed the items for accuracy of content, clarity of phrasing, and quality. ETS provided the ARPs with the opportunity to review the items with the applicable field-test statistics and to make recommendations for the use of items in subsequent test forms. The ARPs, in their examination of test items, could raise concerns related to age/grade appropriateness and gender, racial/ethnic, or socioeconomic bias.

ARP Meetings for Review of CMA Items

The ETS content area assessment specialists facilitated the CMA ARP meetings. Each meeting began with a brief training session on how to review items. ETS provided this training, which consisted of the following topics:

- Overview of the purpose and scope of the CMA
- Overview of the CMA test design specifications and blueprints
- Analysis of the CMA item specifications
- Overview of criteria for evaluating multiple-choice test items and for reviewing constructed-response writing items
- Review and evaluation of items for bias and sensitivity issues

The criteria for evaluating multiple-choice items and constructed-response writing items included:

- Overall technical quality
- Match to the California content standards
- Match to the construct being assessed by the standard
- Difficulty range
- Clarity
- Correctness of the answer
- Plausibility of the distracters
- Bias and sensitivity factors

Criteria also included more global issues, including—for ELA—the appropriateness, difficulty, and readability of reading passages. The ARPs also were trained on how to make recommendations for revising items. Guidelines for reviewing items were provided by ETS and approved by the CDE. The set of guidelines for reviewing items is summarized below:

Does the item:

- Have one and only one clearly correct answer?
- Measure the content standard?
- Match the test item specifications?
- Align with the construct being measured?
- Test worthwhile concepts or information?
- Reflect good and current teaching practices?
- Have a stem that gives the student a full sense of what the item is asking?
- Avoid unnecessary wordiness?
- Use response options that relate to the stem in the same way?
- Use response options that are plausible and have reasonable misconceptions and errors?
- Avoid having one response option that is markedly different from the others?
- Avoid clues to students, such as absolutes or words repeated in both the stem and options?
- Reflect content that is free of bias against any person or group?

Is the stimulus (if any) for the item:

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

As the first step of the item review process, ARP members reviewed a set of items independently and recorded their individual comments. The next step in the review process was for the group to discuss each item. The content-area assessment specialists facilitated the discussion and recorded all recommendations. Those recommendations were recorded in a master item-review binder. Item review binders and other item evaluation materials also served to identify potential bias and sensitivity factors that the ARP considered as a part of its item reviews.

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

Statewide Pupil Assessment Review (SPAR) Panel

The SPAR panel is responsible for reviewing all questions to be field-tested for use in future operational assessments of students in California public schools, grades two through eleven. At the SPAR panel meetings, all new items are presented in binders for review. The SPAR panel representatives ensure that the test items conform to the requirements of *Education Code* Section 60614. If the SPAR panel recommends the rejection of specific items, the items are not included in the field-test sample. For the SPAR panel meeting, the item development coordinator or an ETS content specialist is available by phone to respond to any questions during the course of the meeting.

Future Item Development

ETS has developed an Item Utilization Plan for the development of items for the CMA over the next five years. This plan includes strategies for continued coverage of all appropriate standards for all tests in each content area and at each grade level.

Reference

No Child Left Behind Act of 2001, 20 *U.S.C.* 6301 et seq. (2001).

Chapter 3: CMA Scaling Procedures

Because 2008 was the initial year for the operational administration of CMA, the operational scale had not been developed. Scale scores were not available for the spring 2008 operational administration because the scale requires that the proficiency standards be established first.

Scale scores will be available for grades three, four, and five for the 2009 spring operational administration.

Test Construction and Review

Each CMA form contains some items that are the same across forms, referred to as common items. In addition to the common items, the test contains embedded field-test items that are included in one or more forms, but not all.

Post-Administration Item Calibration

ETS uses a computer system called the Generalized Analysis System (GENASYS) for the IRT item calibration work. As a part of this system, a proprietary version of the PARSCALE computer program (Muraki and Bock 1995) is used to calibrate the CMA items using the one-parameter logistic (Rasch) model. Research at ETS has suggested that PARSCALE calibrations done in this manner produce results that are virtually identical to results based on WINSTEPS (Way, Kubiak, Henderson, and Julian 2002). The procedures described below are applied to all CMAs.

Calibration

The item response theory (IRT) model used to calibrate the CMA test is the 1-parameter Rasch model, in which all items are assumed to be equally discriminating. For the item calibrations, the PARSCALE program is constrained by setting a common discrimination value for all items equal to 1.0 / 1.7 (or 0.588) and by setting the lower asymptote for all multiple-choice items to zero. The resulting estimation is equivalent to the Rasch model for multiple-choice items. The Rasch model is given by the formula:

$$P\left(Y_{ni}=1\right)=\frac{e^{(\beta_n-\delta_i)}}{1+e^{(\beta_n-\delta_i)}} \tag{3.1}$$

where,

$P(Y_{pi} = 1)$ is the probability of a correct response

β_n is the ability of the person *n*

δ_i is the difficulty of the of item *i*

This procedure is in keeping with similar scaling procedures carried out using the WINSTEPS program (Linacre 2000). All items are calibrated for each test.

The PARSCALE calibrations are run in two stages, following procedures used for other ETS testing programs. In the first stage, estimation imposes normal constraints on the updated prior ability distribution. The estimates resulting from this first stage are used as starting values for a second PARSCALE run, in which the prior distribution is updated after each expectation maximization (EM) cycle with no constraints. For both stages, the metric of the scale is controlled by the constant discrimination parameters. The item parameters produced by the PARSCALE runs are shown in Appendix 6.B in Table 6.B.1 through Table 6.B.3 by subject and grade.

References

Linacre, J.M. 2000. *WINSTEPS: Rasch measurement* (Version 3.23). Chicago, IL: MESA Press.

Muraki, E. and R. D. Bock 1995. *PARSCALE: Parameter Scaling of Rating Data* (Version 2.2). Chicago, IL: Scientific Software, Inc.

Way, W. D.; A. T. Kubiak; D. Henderson; and M. W. Julian 2002, April. "Accuracy and Stability of Calibrations for Mixed-Item-Format Tests Using the 1-Parameter and Generalized Partial Credit Models." Paper presented at the annual meeting of the National Council on Measurement in Education, New Orleans, LA.

Chapter 4: Content Validity

This chapter summarizes evidence supporting the content validity of the California Modified Assessment. The content validity evidence is based on the spring 2008 test assembly process.

Validity Evidence Based on Test Content

CMA items are developed to align with content standards that are representative of the broader content domains: English–language arts, mathematics, and science. Thus, the content-related evidence of validity concerns the extent to which the test items represent these specified content standards.

A variety of steps are taken in the course of item development and adoption to maximize the content validity of the CMA assessment. Items are developed by writers who have subject-area expertise and receive additional training from ETS. After development, these items are reviewed by ETS internal content-area experts. Using their expert knowledge, ETS staff reviews each item to evaluate the correspondence between the item's content and the standard that the item is written to measure. Item edits are made when necessary to improve this correspondence. Members of the ARP who have expertise in the subject area conduct a parallel review.

For these reviews, ETS senior content staff also worked directly with CDE content consultants. The CDE content consultants have extensive experience in K–12 assessments, particularly in their subject of expertise, and many are former teachers. At a minimum, each CDE content consultant holds a bachelor's degree; most have an advanced degree in their area of expertise. All ETS content and test development staff have extensive experience with K–12 assessments, experience in teaching students with a broad range of abilities, and an understanding of the California content standards. At a minimum, each holds a bachelor's degree; most ARP members have an advanced degree in their area of expertise.

Detailed information on the item and content evaluation process can also be found in Chapter 2.

CMA Assessment Review Panel

After the CMA items were written by ETS-trained item writers, a series of reviews, including reviews by ETS content assessment specialists and the external ARPs, are conducted to ensure that each item is measuring the appropriate California content standard and is matched to the item specifications.

In addition to the thorough content reviews completed by ETS content-area experts and the CDE content consultants, all CMA items are reviewed by a content-area ARP. The ARPs are advisory panels to the CDE and ETS on areas related to item development for the CMA.

Purpose

As described in Chapter 2, ETS is responsible for working with ARPs as items are developed for the CMA tests. The ARPs are responsible for reviewing all newly developed items for alignment to the California content standards. The ARPs also review the items for accuracy of item content, clarity of phrasing, and item quality. ETS provides the ARPs with the opportunity to review the items with the applicable field-test statistics and to make recommendations for the use of items in the subsequent test forms. The ARPs may raise concerns in their examination of test items related to age/grade appropriateness and to gender, racial/ethnic, and socioeconomic bias.

Because the ARPs are responsible for reviewing the newly developed items for alignment to the California content standards, they determine whether the items are:

- Measuring the California standards as appropriate for the CMA testing population
- Free from bias
- Interesting and appropriate to students tested at any particular grade/course level

Composition

The ARPs are composed of current and former teachers, resource specialists, administrators, curricular experts, and other education professionals. Current school staff members must meet minimum qualifications to serve on the CMA ARPs, including the following:

- Three or more years of general teaching experience in grades kindergarten through grade twelve and in the content areas (English–language arts, mathematics, or science)
- Possession of a bachelor's or higher degree in a grade or subject area related to English–language arts, mathematics, or science
- Knowledge and experience with the California content standards for English–language arts, mathematics, or science

School administrators, district/county content/program specialists, or university educators serving on the CMA ARPs must meet similar qualifications:

- Three or more years of experience as a school administrator, district/county content/program specialist, or university instructor in a grade-specific area or area related to English–language arts, mathematics, or science
- Possession of a bachelor's or higher degree in a grade-specific or subject area related to English–language arts, mathematics, or science
- Knowledge of and experience with the California content standards in English–language arts, mathematics, or science

Every effort is made to ensure that ARP committees include representation of gender and of the geographic regions and ethnic groups in California. Efforts are also made to ensure representation by members with experience serving California's diverse special education population.

Current ARP members were recruited through an application process. Recommendations were solicited from school districts and county offices of education as well as from CDE and SBE staff. Applications were received and reviewed throughout the year. They were reviewed by the ETS assessment directors, who confirmed that the applicant's qualifications met the specified criteria. Applicants who met the criteria were forwarded to CDE and SBE staff for review and final approval. Upon approval, the applicant was notified that he or she had been selected to serve on the ARP committee.

Currently, there are no term limits for ARP members. While most members participate in the ARP meetings for only one test within the STAR Program, some members serve on more than one panel to encourage consistency among the STAR testing programs. ETS and the CDE review the ARP membership annually for active participation. Members who have not attended a meeting within the last two years are notified that their invitation to participate may be withdrawn due to lack of attendance at meetings.

Table 4.1, on the next page, presents the 2008 CMA ARP member qualifications. Some members are included in more than one category.

Table 4.1 CMA ARP Member Qualifications, by Subject and Total

	ELA	Math	Science	Grand Total
Total	**25**	**12**	**13**	**50**
Occupation (Members may teach multiple levels.)				
Teacher or Program Specialist, Elementary/Middle School	16	6	6	28
Teacher or Program Specialist, High School	3	5	4	12
Teacher or Program Specialist, K–12	4	1	1	6
University Personnel	1	0	1	2
Other District Personnel (e.g., Director of Special Services, etc.)	1	0	1	2
Highest Degree Earned				
Bachelor's Degree	14	3	5	22
Master's Degree	9	8	6	23
Doctorate	2	1	2	5
Credential (Members may hold multiple credentials.)				
Elementary Teaching (Multiple Subjects)	16	8	4	28
Secondary Teaching (Single Subject)	3	2	5	10
Special Education	10	7	5	22
Reading Specialist	1	0	0	1
English Learner (CLAD, BCLAD)	6	5	1	12
Administrative	7	1	2	12
Other	2	0	0	2
None (teaching at university level)	0	0	0	0

CMA Item Writers

The items selected for each CMA test are written by special panels of item writers with expertise in the California content standards. Applicants for item writing are screened by senior ETS content staff. Only those with strong content and teaching backgrounds are approved for inclusion in the training. Thus, the participants are particularly experienced in writing to the standards assessed on the CMA. All item writers must meet the following minimum qualifications:

- Bachelor's degree in the relevant content area or in the field of Education with special focus on a particular content area of interest; an advanced degree in the relevant content area is desirable
- Three or more years of general education teaching experience in the content areas (English–language arts, mathematics, or science); teaching experience in California, when possible
- Knowledge about the abilities of the students taking these tests
- Knowledge and experience with California content standards in English–language arts, mathematics, science

Item writer training was conducted over two days in Long Beach, California, in July 2008 at which participants attended a general CMA item development training session and then were given specific subject-area training. An effort was made to evenly distribute the participants across the three CMA content areas. After viewing multiple examples of previously written CMA items, participants were given item writing assignments. ETS facilitators provided feedback and peer review methods were employed to ensure the quality of the items.

Additional information about the item writing process is described in Chapter 2.

Chapter 5: Score Reports

This chapter describes analyses of the spring 2008 CMA tests and score reporting procedures. The sample used for analyses in this chapter is the P1 data. The P1 data is that which was received by July 31, 2008.

Because 2008 was the initial year for the operational administration of CMA, the operational scale had not been developed. Scale scores were not available for the spring 2008 operational administration because the scale requires that the proficiency standards be established first.

Scale scores will be available for grades three, four, and five for the 2009 spring operational administration.

Descriptions of Scores

Raw Score

For all of the CMA tests, the raw score is the total number of points a student obtains on the 48 operational items in the test, where each correct answer is equivalent to one point. Thus, the maximum score possible for all tests is 48. Student scores are reported as percent correct out of a possible 48 points.

Score Distributions and Summary Statistics

The distribution at each raw score point for each subject and grade of CMA is presented in Table 5.A.1 in Appendix 5.A.

The descriptive information for the CMAs includes the number of items on each test, the number of examinees taking each CMA, and the corresponding raw score means, and standard deviations. These are presented in Table 5.1.

Table 5.1 Raw Score Mean and Standard Deviation

				Raw Score	
Test	**Grade**	**No. of Items**	**No. of Examinees**	**Mean**	**St. Dev.**
English–Language Arts	**3**	48	10,750	27.80	8.87
	4	48	13,513	24.84	7.77
	5	48	12,896	27.35	7.62
Mathematics	**3**	48	8,953	29.01	8.95
	4	48	11,381	26.00	7.08
	5	48	11,743	27.22	7.77
Science	**5**	48	12,134	28.26	7.40

Score Reporting

Purposes of Score Reporting

The tests that make up the STAR Program provide results and score summaries that are reported for different purposes. The four major purposes are:

1. Communicating with parents and guardians
2. Informing decisions needed to support student achievement
3. Evaluating school programs
4. Providing data for state and federal school accountability programs

Score Report Applications

STAR Program results provide parents and guardians with information about their children's progress. The results are a tool for increasing communication and collaboration between parents,

guardians, and teachers. Along with teacher report cards and information from school and classroom tests, the STAR Student Reports can be used by parents and guardians to talk with teachers about ways to improve their children's achievement of the California content standards. Any discrepancies between performance reported on report cards and the scores reported on the STAR Student Report should also be discussed.

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

STAR Program results help school districts and schools identify strengths and weaknesses in their instructional programs. Each year, school districts and school staffs examine STAR Program test results at each grade level and in each subject tested. Their findings are used to help determine:

- Instructional areas that can be improved for better student achievement
- The extent to which students are learning the academic standards
- Teaching strategies that can be developed to address the needs of students
- Decisions about how to use funds to ensure that students achieve the standards

The results from the STAR Program are used for state and federal accountability programs to monitor each school's progress toward achieving established goals. STAR Program results are used to calculate each school's Academic Performance Index (API). The API is a major component of California's Public School Accountability Act (PSAA) and is used to rank the academic performance of schools, compare schools with similar characteristics (such as size and ethnic makeup), identify low-performing and high-priority schools, and set yearly targets for academic growth.

STAR Program results also are used to comply with federal NCLB legislation that requires all schools to meet specific academic goals. The progress of each school toward achieving these goals is provided annually in an adequate yearly progress (AYP) report. The information that forms the basis for AYP participation rate and percent proficient calculations comes from assessment results of the STAR Program and the California High School Exit Examination (CAHSEE).

Contents of Score Report

The individual STAR Student Reports provide results for each CMA test taken by the student. Results are reported as percent correct for each test.

In addition to individual student reports, several other reports were provided to different groups of stakeholders. A description of those reports is provided in Appendix 5.B.

Reference

California Department of Education 2008, "2008 STAR CST-CAT/6 Survey, CAPA, and STS Printed Reports," http://www.startest.org/pdfs/STAR.reports.2008.pdf.

Appendix 5.A—Raw Score Distribution Tables

Table 5.A.1 Distribution of CMA Raw Scores

Raw Score	English–Language Arts			Mathematics			Science
	Grade 3	Grade 4	Grade 5	Grade 3	Grade 4	Grade 5	Grade 5
48	3	2	1	8	2	5	0
47	14	4	2	27	0	5	4
46	35	7	7	65	5	32	8
45	73	15	32	99	12	65	25
44	121	37	51	130	22	71	44
43	186	64	87	181	38	118	70
42	199	90	120	207	71	116	116
41	220	124	180	261	75	164	183
40	285	161	245	251	131	184	226
39	313	206	281	304	133	245	324
38	330	228	323	340	208	259	354
37	360	272	340	317	232	302	416
36	406	290	402	317	250	357	463
35	368	315	465	347	289	375	487
34	402	364	511	339	362	424	554
33	331	378	525	331	390	445	565
32	377	398	530	305	411	445	563
31	379	414	575	312	449	493	604
30	417	473	557	315	512	453	558
29	352	511	573	291	509	504	560
28	371	490	557	286	568	500	575
27	332	481	547	298	557	477	547
26	359	526	527	296	610	492	493
25	319	549	559	275	579	546	498
24	319	565	570	261	547	536	506
23	364	621	598	299	640	518	451
22	373	661	537	284	523	491	442
21	373	723	498	281	524	517	408
20	388	706	469	276	473	487	413
19	383	675	457	276	497	422	337
18	374	589	374	286	414	387	311
17	375	596	343	270	342	382	264
16	323	502	323	218	297	299	222
15	288	478	241	173	226	203	183
14	218	350	169	153	171	169	132
13	168	250	122	98	108	106	91
12	110	158	82	72	83	73	68
11	66	117	49	55	67	42	29

	English–Language Arts			Mathematics			Science
Raw Score	**Grade 3**	**Grade 4**	**Grade 5**	**Grade 3**	**Grade 4**	**Grade 5**	**Grade 5**
10	42	67	32	19	28	15	19
9	15	32	20	19	17	7	13
8	14	11	8	6	5	9	5
7	3	9	4	3	2	2	1
6	1	1	3	0	1	0	2
5	1	2	0	0	0	1	0
4	0	0	0	1	1	0	0
3	0	0	0	0	0	0	0
2	0	0	0	1	0	0	0
1	0	1	0	0	0	0	0

Appendix 5.B—Types of Score Reports Tables

Table 5.B.1 Score Reports Reflecting CMA Results

2008 STAR CMA PRINTED REPORTS	
DESCRIPTION	**DISTRIBUTION**
The CMA Student Report	
This report provides parents/guardians and teachers with the student's percent correct results, presented in tables and graphs, and shows percent correct by each CMA content area taken by the student.	This report includes individual student results and is not distributed beyond parents/guardians and the student's school. Two color copies of this report are provided for each student: One is for the student's current teacher, and one is to be distributed to parents/ guardians by the district.
Student Record Label	
These reports are printed on adhesive labels to be affixed to the student's permanent school records. Each pupil shall have an individual record of accomplishment; that includes STAR testing results (see California *Education Code* Section 60607(a)). Significant information includes percent correct within each subject area tested.	This report includes individual student results and is not distributed beyond the student's school.
Student Master List	
This report is an alphabetical roster of individual student results. It mainly includes the percent correct within each subject area tested.	This report provides administrators and teachers with a quick reference to all students' results within each grade or within each grade and year-round schedule at a school. This report includes individual student results and is not distributed beyond the student's school.
Student Master List Summary	
This report summarizes student results at the school, district, county, and state level for each grade. It does *not* include any individual student information. The following data are summarized by subject: • Number of students enrolled • Number and percent of students tested • Number and percent of valid scores • Number tested with scores • Percent correct • Mean percent correct	This report is a resource for evaluators, researchers, teachers, parents/guardians, community members, and administrators. One copy is sent to the school and one to the district. This report is also produced for districts, counties, and the state. ***Note:*** The data on this report may be shared with parents/guardians, community members, and the media only if the data are for 11 or more students.

2008 STAR CMA PRINTED REPORTS	
DESCRIPTION	**DISTRIBUTION**
Subgroup Summary	
This set of reports disaggregates and reports results by the following subgroups: • All students • Disability status • Economic status • Gender • English proficiency • Primary ethnicity These reports contain no individual student-identifying information and are aggregated at the school, district, county, and state level. For each subgroup within a report, and for the total number of students, the following are included: • Total number tested in the subgroup • Percent tested in subgroup as a percent of all students tested • Number and percent of valid scores • Number tested who received scores • Percent correct for each subject	This report is a resource for evaluators, researchers, teachers, parents/guardians, community members, and administrators. One copy is sent to the school and one copy to the district. This report is also produced for districts, counties, and the state. ***Note:*** The data on this report may be shared with parents/guardians, community members, and the media only if the data are for 11 or more students.

Chapter 6: Item-Level Descriptive Statistics

This chapter provides statistics obtained for this assessment at the item level and information about the students who participated in the spring 2008 CMA administration. This includes items for ELA and mathematics in grades three, four, and five and science in grade five. The statistics presented include classical and IRT results.

The chapter is divided into three sections that cover the following:

1. Student participation, presented in Table 6.1
2. Classical item-level analyses, including the average item score (AIS) and polyserial correlations for each operational item (These statistics are presented in the tables in Appendix 6.A.)
3. Summaries of Rasch model item difficulty statistics (*b*-values) for operational and field-test items (Appendix 6.B) and summaries of item classifications based on the fit of the data to the Rasch model (Table 6.5)

Participation

Table 6.1 summarizes information about participation and the test forms in the item analyses for the CMA from the P1 data (received by July 31, 2008), including the numbers of operational items and the number of students taking the operational items. The last two columns in Table 6.2 show the number of students taking the field-test items. The CMAs include nine field-test items that are not included in the operational test scores. Different sets of items are presented in each form (version) for the various CMAs. Therefore, the last two columns show a range in sample size, from smallest number of students administered any test version to largest number administered any version.

Table 6.1 CMA Participation Summary—Common Items

Subject	Grade	No. of Common Operational Items	Total Content Area Sample	Percent of Total Assessments (P1)
English–Language Arts	3	48	10,750	13.21
	4	48	13,513	16.61
	5	48	12,896	15.85
Mathematics	3	48	8,953	11.00
	4	48	11,381	13.99
	5	48	11,743	14.43
Science	5	48	12,134	14.92

Table 6.2 CMA Participation Summary

Subject	Grade	No. of Forms	No. of Field-test items	Fewest Examinees per Field-test Form	Most Examinees per Field-test Form
English–Language Arts	3	6	9	1,198	4,620
	4	5	9	2,079	2,742
	5	6	9	1,944	3,974
Mathematics	3	6	9	994	3,846
	4	5	9	1,772	2,281
	5	6	9	1,757	1,818
Science	5	6	9	1,833	1,914

As described in Chapter 1, various CMA analyses were conducted at different times in the testing process and involved different proportions of the full CMA data. The item-level IRT information presented in this chapter is based on the P1 data file.

Item Analyses

Statistics calculated for the items in the CMA operational and field test analyses are described as follows:

- ***P*-Value:** For dichotomously scored tasks, this statistic indicates the average score earned on the item. Desired values generally fall within the range of 33 percent to 90 percent of the maximum item score of one. Occasionally, items that fall outside this range can be justified for inclusion in an item bank or a test form based upon the quality and educational importance of the task content or to better measure students with very high or low achievement.
- **Point-Biserial (Pt-bis) correlation of the item score with the total test score:** The point-biserial correlation is a special case of the Pearson product-moment correlation used to measure the relationship between two variables, one dichotomous and one continuously measured; in this case, the item score (right/wrong) and the total test score. The formula for the Pearson product-moment correlation is:

$$R_{it} = \frac{Cov(i,t)}{\sigma_{xi}\sigma_t} \quad (6.1)$$

where,

$Cov(i,t)$ is the Covariance between an item i and total score t

σ_{xi} is the standard deviation for an item i

σ_t is the standard deviation for t

Tasks 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. Based on the range of point-biserials produced in field test analyses, an indicator of poor discrimination was set to 0.20.

Table 6.3 provides summary statistics for each operational test.

Table 6.3 *P*-value and Point-Biserial Descriptive Statistics

				Mean		Median		Std. Dev.	
Subject	**Grade**	**No. Items**	**No. examinees**	***P*-value**	**Pt-bis**	***P*-value**	**Pt-bis**	***P*-value**	**Pt-bis**
English–Language Arts	3	48	10,750	0.53	0.30	0.53	0.32	0.13	0.15
	4	48	13,513	0.49	0.27	0.48	0.30	0.11	0.13
	5	48	12,896	0.53	0.26	0.51	0.30	0.14	0.14
Mathematics	3	48	8,953	0.55	0.31	0.56	0.36	0.14	0.15
	4	48	11,381	0.50	0.25	0.47	0.28	0.15	0.13
	5	48	11,743	0.48	0.25	0.47	0.28	0.17	0.16
Science	5	48	12,134	0.53	0.24	0.52	0.27	0.17	0.15

The tables in Appendix 6.A present the *p*-values and point-biserial correlations for all items in the spring 2008 administration. These include both operational and field-test items.

Differential Item Functioning (DIF) analyses were also performed on all operational and field-test items for which sufficient student samples were available. Those results are presented in Chapter 7.

IRT Analyses

Summaries of IRT b-values

The summary of IRT *b*-values for all items tested in the spring 2008 administration is presented in Table 6.4.

Table 6.4 IRT *b*-value Summary Statistics—All items

Test	Number of items	Mean *b*-value	Standard Deviation	Minimum	Maximum
ELA Grade 3	101	–0.09	0.62	–1.56	1.50
ELA Grade 4	93	0.04	0.50	–1.14	1.24
ELA Grade 5	97	–0.11	0.68	–2.01	1.84
Mathematics Grade 3	102	–0.18	0.73	–1.67	2.21
Mathematics Grade 4	93	0.01	0.71	–2.42	1.48
Mathematics Grade 5	102	0.10	0.85	–3.03	1.85
Science Grade 5	102	–0.12	0.81	–2.02	2.05

Table 6.5 presents the same summary information for the operational items included in the spring 2008 administration.

Table 6.5 IRT b-value Summary Statistics—Common Items

Test	Item Type	Number of items	Mean *b*-value	Standard Deviation	Minimum	Maximum
ELA Grade 3	Operational	48	–0.34	0.57	–1.56	1.50
ELA Grade 4	Operational	48	–0.08	0.51	–1.14	1.11
ELA Grade 5	Operational	48	–0.33	0.72	–2.01	1.07
Mathematics Grade 3	Operational	48	–0.45	0.72	–1.67	2.21
Mathematics Grade 4	Operational	48	–0.21	0.75	–2.42	0.94
Mathematics Grade 5	Operational	48	–0.33	0.77	–3.03	1.14
Science Grade 5	Operational	48	–0.41	0.70	–2.02	0.70

The tables in Appendix 6.B present IRT *b*-values for each item tested in the spring 2008 administration.

When tests are constructed, it is important to have a wide range of *b*-values. Table 6.6 shows the distribution of *b*-values for the items in the CMAs.

Table 6.6 Distribution of IRT *b*-values for All Items

	English–Language Arts			Mathematics			Science
IRT b-value	**Grade 3**	**Grade 4**	**Grade 5**	**Grade 3**	**Grade 4**	**Grade 5**	**Grade 5**
>=3.5	0	0	0	0	0	0	0
3.0 – < 3.5	0	0	0	0	0	0	0
2.5 – < 3.0	0	0	0	0	0	0	0
2.0 – < 2.5	0	0	0	2	0	0	1
1.5 – < 2.0	0	0	1	0	0	5	0
1.0 – < 1.5	5	3	1	2	3	10	5
0.5 – < 1.0	13	16	12	17	21	18	17
0.0 – < 0.5	26	34	30	20	29	26	26
–0.5 – < 0.0	30	25	28	20	22	19	21
–1.0 – < –0.5	22	14	15	27	9	17	15
–1.5 – < –1.0	4	1	7	13	6	4	11
–2.0 – < –1.5	1	0	2	1	2	1	5
–2.5 – < –2.0	0	0	1	0	1	0	1
–3.0 – < –2.5	0	0	0	0	0	1	0
–3.5 – < –3.0	0	0	0	0	0	1	0
< –3.5	0	0	0	0	0	0	0
Total	101	93	97	102	93	102	102

IRT Model-Data Fit Analyses

Because the Rasch model is used in scaling the CMA, an important part of IRT item analyses is the assessment of model-data fit. ETS statisticians classified operational and field-test items for the CMA into discrete categories on the basis of an evaluation of how well each item was fit by the Rasch model. The flagging procedure has categories of A, B, C, D, and F that are assigned on the basis of an evaluation of graphical model-data fit information. Descriptors for each category are provided below. As an illustration, the IRT item characteristic curves and empirical data (item-ability regressions) for five items field-tested in 2005 are shown in Figure 6.1. These five items represent the various rating categories. The item number in the calibration and ETS identification number for each item ("accession number") are listed next to each item as well as the corresponding rating categories.

Flag A (Item 236, CSV23487)

- Good fit of theoretical curve to empirical data along the entire ability range, may have some small divergence at the extremes
- Small Chi-square value relative to the other items in the calibration with similar sample sizes

Flag B (Item 061, CSV22589)

- Theoretical curve within error range across most of ability range, may have some small divergence at the extremes
- Acceptable Chi-square value relative to the other items in the calibration with similar sample sizes

Flag C (Item 165, CSV20282)

- Theoretical curve within error range at some regions and slightly outside of error range at remaining regions of ability range

- Moderate Chi-square value relative to the other items in the calibration with similar sample sizes
- Often applies to items that appear to be functioning well but are not well fit by the Rasch model

Flag D (Item 113, CSV20317)

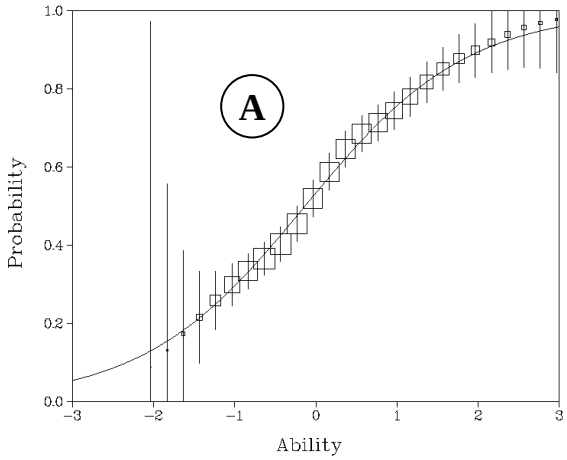
- Theoretical curve outside of error range at some regions across ability range
- Large Chi-square value relative to the other items in the calibration with similar sample sizes

Flag F (Item 184, CSV20311)

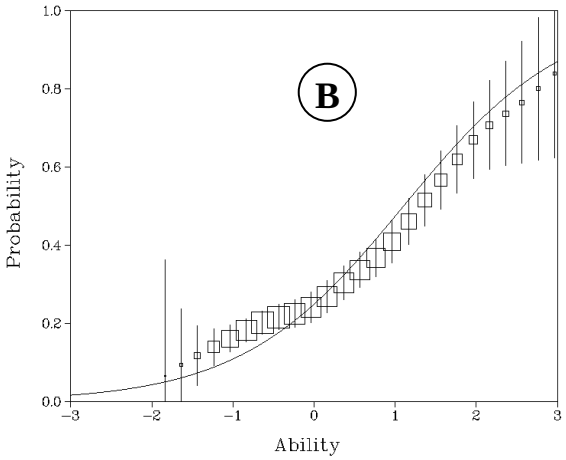
- Theoretical curve outside of error range at most regions across ability range
- Probability of answering item correctly may be higher at lower ability than higher ability (U-shaped empirical curve)

In general, items with flagging categories of A, B, or C are all considered acceptable. Ratings of D are considered questionable—test developers are asked to avoid these items if possible and to carefully review them if they must be used. Test developers are instructed to avoid using items rated F for operational test assembly without a review by a psychometrician.

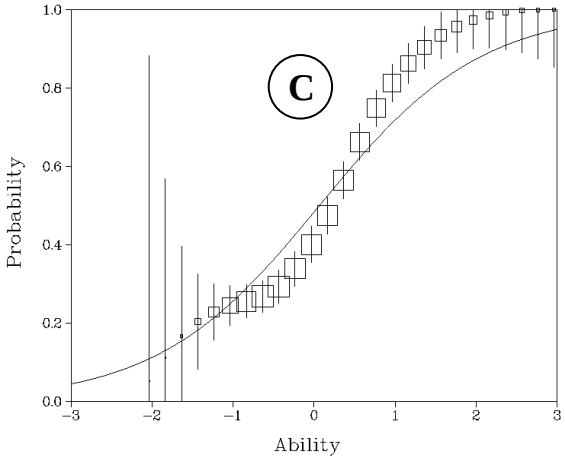
Figure 6.1: Model Fit Category Examples—Items from the 2005 History–Social Science Grade 10 Field-Test Calibration



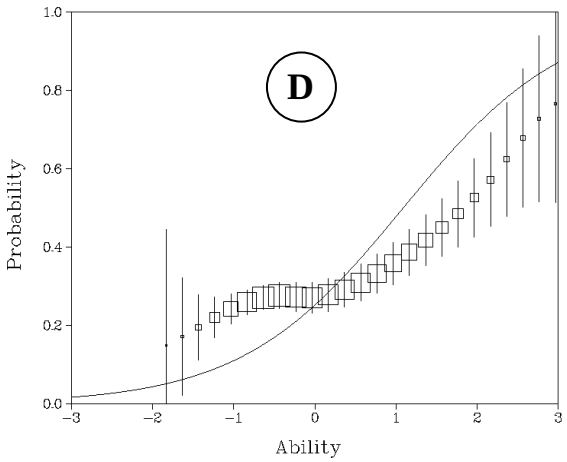
Version 30, Seq 29 (#236) CSV23487 4-Choice P+ = 0.563
a = 0.588 F, b = -0.135, c = 0.000 F, CHI = 5.41, N = 5,912



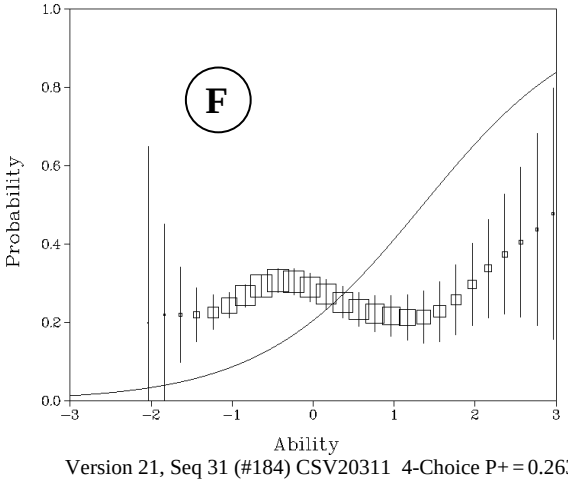
Version 1, Seq 28 (#61) CSV22589 4 Choice P+ = 0.307
a = 0.588 F, b = 1.104, c = 0.000 F, CHI = 66.70, N = 6,348



Version 18, Seq 30 (#165) CSV20282 4-Choice P+ = 0.523
a = 0.588 F, b = 0.066, c = 0.000 F, CHI = 208.99, N = 6,183



Version 9, Seq 32 (#113) CSV20317 4-Choice P+ = 0.314
a = 0.588 F, b = 1.089, c = 0.000 F, CHI = 361.31, N = 6,047



Version 21, Seq 31 (#184) CSV20311 4-Choice P+ = 0.263
a = 0.588 F, b = 1.356, c = 0.000 F, CHI = 1027.57, N = 6,277

Table 6.7, on the next page, displays the distribution of items across model-data fit categories for each subject and grade. This includes total number in each category as well as rounded percent of total.

Table 6.7 Item Classifications for Model-Data Fit

Test	Grade 3			Grade 4			Grade 5		
	Fit Category	No. of Items	Percent of Total Items	Fit Category	No. of Items	Percent of Total Items	Fit Category	No. of Items	Percent of Total Items
English–Language Arts	A	28	28%	A	33	36%	A	28	29%
	B	20	20%	B	21	23%	B	17	18%
	C	36	36%	C	27	29%	C	34	35%
	D	9	9%	D	7	8%	D	9	9%
	F	8	8%	F	5	5%	F	9	9%
Mathematics	A	25	25%	A	27	29%	A	28	28%
	B	26	26%	B	28	30%	B	19	19%
	C	34	33%	C	32	34%	C	38	37%
	D	6	6%	D	6	7%	D	4	4%
	F	11	11%	F	0	0.0%	F	13	13%
Science	–	–	–	–	–	–	A	27	27%
	–	–	–	–	–	–	B	21	21%
	–	–	–	–	–	–	C	32	31%
	–	–	–	–	–	–	D	10	10%
	–	–	–	–	–	–	F	12	12%

Some of the items in the spring 2008 administration were flagged for unusual statistics. Table 6.C.1 in Appendix 6.C presents a listing of all items flagged during the item-level analyses. The flags include the following:

Difficulty flags:

A: Low *p*-value (below .33)

H: High *p*-value (above .90)

Discrimination flag:

R: Point-biserial correlation less than .20

Omit/nonresponse/flag:

O: Omit/Nonresponse rates greater than 20 percent

IRT model-data fit

R: Item in Fit Category D

X: item in Fit Category F

Appendix 6.A—Item Statistics Tables

Table 6.A.1 2008 CMA Item p-values and Point-Biserials: English–Language Arts

Item *p*-value and Point-Biserial for English–Language Arts						
	Grade 3		Grade 4		Grade 5	
Items	*p*-value	Pt-bis	*p*-value	Pt-bis	*p*-value	Pt-bis
1	0.45	0.26	0.70	0.36	0.66	0.43
2	0.27	–0.04	0.48	0.25	0.87	0.35
3	0.64	0.48	0.27	–0.03	0.70	0.43
4	0.57	0.48	0.61	0.39	0.77	0.47
5	0.49	0.37	0.45	0.24	0.61	0.25
6	0.45	0.35	0.41	0.26	0.86	0.43
7	0.46	0.25	0.32	0.11	0.78	0.41
8	0.53	0.30	0.64	0.47	0.46	0.17
9	0.43	0.26	0.63	0.35	0.40	0.22
10	0.42	0.39	0.45	0.18	0.39	0.00
11	0.52	0.31	0.48	0.25	0.49	0.15
12	0.41	0.25	0.71	0.38	0.54	0.22
13	0.64	0.15	0.67	0.45	0.60	0.21
14	0.61	0.40	0.45	0.31	0.66	0.45
15	0.52	0.47	0.54	0.39	0.72	0.46
16	0.70	0.34	0.51	0.34	0.51	0.35
17	0.48	0.34	0.60	0.44	0.50	0.32
18	0.56	0.42	0.47	0.38	0.75	0.36
19	0.53	0.42	0.46	0.29	0.44	0.31
20	0.74	0.38	0.46	0.30	0.29	–0.08
21	0.68	0.39	0.40	0.28	0.43	0.00
22	0.68	0.33	0.41	0.22	0.56	0.34
23	0.60	0.49	0.47	0.35	0.63	0.40
24	0.54	0.28	0.37	0.23	0.66	0.37
25	0.26	0.03	0.56	0.38	0.58	0.36
26	0.47	0.25	0.65	0.34	0.37	0.22
27	0.35	0.02	0.53	0.34	0.41	0.19
28	0.64	0.44	0.56	0.45	0.54	0.24
29	0.66	0.55	0.46	0.35	0.54	0.40
30	0.49	0.20	0.47	0.36	0.72	0.42
31	0.45	0.32	0.37	0.25	0.47	0.30
32	0.52	0.33	0.61	0.32	0.55	0.29
33	0.61	0.37	0.37	0.16	0.32	–0.05
34	0.57	0.35	0.70	0.40	0.60	0.34
35	0.22	0.22	0.52	0.40	0.53	0.28
36	0.71	0.45	0.51	0.40	0.84	0.45

Item *p*-value and Point-Biserial for English–Language Arts						
	Grade 3		Grade 4		Grade 5	
Items	***p*-value**	**Pt-bis**	***p*-value**	**Pt-bis**	***p*-value**	**Pt-bis**
37	0.59	0.43	0.74	0.46	0.79	0.37
38	0.62	0.51	0.61	0.39	0.57	0.32
39	0.43	0.19	0.55	0.39	0.36	0.19
40	0.66	0.37	0.60	0.41	0.40	0.12
41	0.71	0.55	0.47	0.32	0.28	0.04
42	0.43	0.22	0.65	0.45	0.57	0.37
43	0.66	0.50	0.65	0.42	0.73	0.45
44	0.61	0.39	0.35	0.13	0.55	0.29
45	0.58	0.45	0.27	0.18	0.51	0.35
46	0.66	0.40	0.47	0.36	0.45	0.33
47	0.66	0.43	0.33	0.19	0.41	0.29
48	0.74	0.42	0.52	0.36	0.57	0.34
49	0.49	0.38	0.56	0.43	0.69	0.43
50	0.68	0.49	0.64	0.36	0.66	0.44
51	0.77	0.52	0.49	0.29	0.51	0.31
52	0.66	0.49	0.55	0.30	0.43	0.36
53	0.80	0.47	0.41	0.19	0.49	0.27
54	0.61	0.37	0.39	0.16	0.39	0.32
55	0.36	0.18	0.49	0.28	0.56	0.44
56	0.56	0.42	0.47	0.10	0.54	0.34
57	0.51	0.44	0.48	0.33	0.52	0.32
58	0.29	–0.06	0.34	0.03	0.47	0.31
59	0.50	0.24	0.37	0.10	0.45	0.21
60	0.54	0.12	0.55	0.33	0.55	0.34
61	0.37	0.00	0.39	0.07	0.64	0.39
62	0.42	0.14	0.35	0.03	0.38	0.02
63	0.37	0.00	0.50	0.38	0.68	0.34
64	0.70	0.36	0.38	0.11	0.63	0.26
65	0.43	0.03	0.36	0.14	0.79	0.38
66	0.37	0.16	0.44	0.10	0.68	0.36
67	0.34	–0.13	0.44	0.25	0.42	0.11
68	0.61	0.27	0.43	0.15	0.42	0.19
69	0.46	0.20	0.57	0.40	0.42	0.15
70	0.46	0.16	0.40	0.21	0.37	0.10
71	0.60	0.21	0.43	0.20	0.51	0.29
72	0.67	0.43	0.36	–0.05	0.48	0.30
73	0.56	0.29	0.50	0.29	0.52	0.25
74	0.30	0.03	0.48	0.23	0.45	0.14

Item *p*-value and Point-Biserial for English–Language Arts						
	Grade 3		Grade 4		Grade 5	
Items	***p*-value**	**Pt-bis**	***p*-value**	**Pt-bis**	***p*-value**	**Pt-bis**
75	0.36	0.14	0.52	0.07	0.55	0.26
76	0.57	0.46	0.62	0.30	0.16	–0.06
77	0.47	0.36	0.24	–0.05	0.63	0.41
78	0.56	0.15	0.51	0.33	0.62	0.30
79	0.53	0.29	0.60	0.31	0.30	0.09
80	0.62	0.28	0.71	0.37	0.42	0.00
81	0.46	0.11	0.52	0.36	0.50	0.31
82	0.60	0.40	0.47	0.27	0.39	0.15
83	0.55	0.19	0.50	0.28	0.42	0.20
84	0.74	0.46	0.38	0.03	0.58	0.38
85	0.40	0.11	0.65	0.29	0.57	0.36
86	0.38	0.08	0.51	0.34	0.51	0.38
87	0.62	0.45	0.47	0.30	0.36	0.07
88	0.53	0.27	0.36	0.10	0.47	0.12
89	0.54	0.34	0.47	0.22	0.31	0.08
90	0.64	0.46	0.42	0.21	0.66	0.33
91	0.59	0.37	0.35	0.00	0.41	0.08
92	0.30	0.11	0.55	0.32	0.50	0.24
93	0.32	0.14	0.53	0.31	0.44	0.14
94	0.45	0.25	–	–	0.40	0.03
95	0.57	0.31	–	–	0.38	0.09
96	0.65	0.54	–	–	0.37	0.17
97	0.42	0.21	–	–	0.42	0.05
98	0.33	0.13	–	–	–	–
99	0.30	0.22	–	–	–	–
100	0.49	0.21	–	–	–	–
101	0.48	0.28	–	–	–	–

Table 6.A.2 2008 CMA Item *p*-values and Point-Biserials: Mathematics

Item *p*-value and Point-Biserial for Mathematics						
	Grade 3		Grade 4		Grade 5	
Items	*p*-value	Pt-bis	*p*-value	Pt-bis	*p*-value	Pt-bis
1	0.14	0.02	0.75	0.46	0.45	0.34
2	0.35	0.26	0.82	0.35	0.43	0.20
3	0.61	0.55	0.79	0.41	0.42	0.41
4	0.59	0.33	0.91	0.35	0.39	0.23
5	0.49	0.18	0.43	0.32	0.45	0.13
6	0.57	0.45	0.41	0.30	0.65	0.46
7	0.65	0.45	0.46	0.26	0.94	0.20
8	0.59	0.36	0.61	0.41	0.48	0.27
9	0.36	0.13	0.33	0.05	0.58	0.34
10	0.77	0.47	0.41	0.25	0.66	0.47
11	0.65	0.46	0.37	0.22	0.55	0.35
12	0.63	0.40	0.79	0.42	0.70	0.32
13	0.77	0.36	0.47	0.43	0.69	0.48
14	0.55	0.45	0.38	0.28	0.68	0.41
15	0.59	0.35	0.54	0.33	0.47	0.26
16	0.56	0.45	0.58	0.44	0.50	0.36
17	0.64	0.45	0.43	0.23	0.51	0.36
18	0.53	0.43	0.63	0.28	0.41	0.28
19	0.45	0.39	0.42	0.33	0.47	0.23
20	0.52	0.31	0.64	0.43	0.38	0.16
21	0.65	0.47	0.57	0.34	0.45	0.31
22	0.64	0.42	0.78	0.36	0.77	0.37
23	0.53	0.29	0.30	0.11	0.22	0.19
24	0.68	0.46	0.37	0.14	0.52	0.26
25	0.71	0.30	0.84	0.32	0.92	0.35
26	0.73	0.46	0.38	0.14	0.62	0.30
27	0.73	0.45	0.47	0.29	0.63	0.38
28	0.51	0.18	0.63	0.37	0.34	0.22
29	0.57	0.34	0.36	0.19	0.48	0.41
30	0.77	0.37	0.57	0.39	0.61	0.44
31	0.70	0.38	0.59	0.40	0.16	0.01
32	0.67	0.48	0.51	0.29	0.53	0.24
33	0.75	0.44	0.56	0.38	0.20	–0.26
34	0.54	0.40	0.29	0.07	0.27	0.18
35	0.47	0.37	0.54	0.45	0.62	0.42
36	0.57	0.46	0.59	0.35	0.45	0.21
37	0.74	0.50	0.21	–0.04	0.25	0.11

Item *p*-value and Point-Biserial for Mathematics						
	Grade 3		Grade 4		Grade 5	
Items	***p*-value**	**Pt-bis**	***p*-value**	**Pt-bis**	***p*-value**	**Pt-bis**
38	0.73	0.43	0.36	0.13	0.72	0.31
39	0.64	0.24	0.42	0.25	0.71	0.46
40	0.82	0.46	0.51	0.22	0.26	–0.01
41	0.66	0.36	0.51	0.28	0.53	0.39
42	0.40	0.23	0.43	0.33	0.80	0.37
43	0.70	0.45	0.69	0.36	0.55	0.19
44	0.71	0.47	0.54	0.31	0.69	0.40
45	0.73	0.46	0.57	0.40	0.56	0.26
46	0.75	0.41	0.44	0.19	0.61	0.44
47	0.37	0.27	0.37	0.30	0.65	0.43
48	0.69	0.48	0.51	0.40	0.63	0.37
49	0.44	0.41	0.50	0.23	0.44	0.29
50	0.68	0.42	0.78	0.34	0.63	0.44
51	0.72	0.48	0.50	0.31	0.45	0.25
52	0.63	0.47	0.61	0.32	0.58	0.40
53	0.39	0.31	0.44	0.03	0.57	0.46
54	0.56	0.52	0.60	0.23	0.56	0.23
55	0.33	0.09	0.41	0.15	0.76	0.31
56	0.40	0.03	0.59	0.29	0.47	0.34
57	0.55	0.23	0.51	0.39	0.61	0.38
58	0.38	0.19	0.65	0.36	0.43	0.28
59	0.52	0.35	0.72	0.34	0.48	0.23
60	0.15	–0.21	0.56	0.22	0.47	0.35
61	0.45	0.17	0.71	0.41	0.22	–0.07
62	0.63	0.16	0.71	0.41	0.33	0.02
63	0.43	0.31	0.70	0.27	0.51	0.38
64	0.58	0.28	0.39	0.16	0.42	0.38
65	0.51	0.34	0.47	0.27	0.66	0.49
66	0.44	0.24	0.48	0.27	0.33	0.09
67	0.41	0.11	0.47	0.31	0.36	0.07
68	0.50	0.29	0.34	0.12	0.23	0.17
69	0.38	0.16	0.30	0.24	0.45	0.36
70	0.39	0.00	0.34	0.15	0.50	0.09
71	0.49	0.13	0.50	0.19	0.39	0.22
72	0.67	0.37	0.46	0.06	0.19	0.06
73	0.64	0.43	0.43	0.27	0.36	0.27
74	0.66	0.44	0.34	0.01	0.75	0.34
75	0.40	0.31	0.46	0.34	0.44	0.25

Item *p*-value and Point-Biserial for Mathematics						
	Grade 3		Grade 4		Grade 5	
Items	***p*-value**	**Pt-bis**	***p*-value**	**Pt-bis**	***p*-value**	**Pt-bis**
76	0.62	0.40	0.42	0.28	0.35	0.12
77	0.44	0.16	0.26	0.05	0.36	0.31
78	0.40	0.09	0.34	0.07	0.54	0.22
79	0.50	0.16	0.38	0.10	0.25	–0.03
80	0.72	0.36	0.26	0.00	0.49	0.25
81	0.37	0.12	0.40	0.16	0.22	–0.09
82	0.58	0.42	0.37	0.15	0.38	0.17
83	0.50	0.45	0.35	0.05	0.44	0.20
84	0.34	0.24	0.41	0.19	0.56	0.35
85	0.51	0.42	0.30	–0.04	0.36	0.15
86	0.31	0.07	0.55	0.18	0.19	0.02
87	0.32	0.21	0.34	0.20	0.44	0.12
88	0.42	0.25	0.31	0.07	0.63	0.31
89	0.50	0.18	0.46	0.18	0.33	0.13
90	0.37	0.12	0.62	0.36	0.32	–0.07
91	0.68	0.44	0.45	0.08	0.36	0.13
92	0.45	0.17	0.43	0.09	0.66	0.35
93	0.64	0.39	0.56	0.31	0.54	0.35
94	0.49	0.14	–	–	0.65	0.38
95	0.44	0.13	–	–	0.18	–0.13
96	0.65	0.23	–	–	0.24	–0.22
97	0.31	0.12	–	–	0.38	0.12
98	0.66	0.50	–	–	0.28	–0.04
99	0.68	0.24	–	–	0.59	0.35
100	0.73	0.42	–	–	0.44	0.34
101	0.31	–0.03	–	–	0.35	0.29
102	0.45	0.18	–	–	0.36	0.10

Table 6.A.3 2008 CMA Item *p*-values and Point-Biserials: Science

Item *p*-value and Point-Biserial for Science		
	Grade 5	
Items	*p*-value	Pt-bis
1	0.37	0.13
2	0.57	0.38
3	0.42	0.28
4	0.65	0.33
5	0.87	0.34
6	0.79	0.36
7	0.43	0.23
8	0.70	0.43
9	0.47	0.21
10	0.79	0.32
11	0.56	0.38
12	0.53	0.41
13	0.83	0.42
14	0.75	0.47
15	0.73	0.45
16	0.51	0.36
17	0.66	0.47
18	0.60	0.40
19	0.43	0.24
20	0.32	–0.01
21	0.75	0.46
22	0.54	0.40
23	0.63	0.36
24	0.48	0.20
25	0.73	0.32
26	0.34	0.08
27	0.48	0.32
28	0.62	0.42
29	0.36	0.13
30	0.61	0.28
31	0.13	–0.08
32	0.62	0.39
33	0.33	0.10
34	0.42	0.13
35	0.53	0.33
36	0.55	0.40
37	0.45	0.15

Item *p*-value and Point-Biserial for Science		
	Grade 5	
Items	***p*-value**	**Pt-bis**
38	0.38	0.02
39	0.50	0.31
40	0.39	0.19
41	0.55	0.18
42	0.50	0.37
43	0.35	0.18
44	0.68	0.38
45	0.50	0.29
46	0.50	0.22
47	0.35	0.01
48	0.28	0.03
49	0.41	0.24
50	0.67	0.35
51	0.29	–0.11
52	0.40	0.14
53	0.31	0.10
54	0.44	0.26
55	0.40	0.15
56	0.53	0.30
57	0.32	0.01
58	0.48	0.25
59	0.44	0.11
60	0.81	0.43
61	0.67	0.40
62	0.44	0.16
63	0.63	0.33
64	0.59	0.43
65	0.32	–0.11
66	0.45	0.25
67	0.60	0.20
68	0.48	0.09
69	0.31	0.03
70	0.39	0.16
71	0.44	0.10
72	0.52	0.26
73	0.84	0.25
74	0.78	0.45
75	0.85	0.39

Item *p*-value and Point-Biserial for Science		
	Grade 5	
Items	***p*-value**	**Pt-bis**
76	0.62	0.41
77	0.72	0.43
78	0.42	0.06
79	0.54	0.26
80	0.53	0.29
81	0.67	0.30
82	0.30	–0.02
83	0.70	0.42
84	0.46	0.05
85	0.55	0.25
86	0.23	–0.04
87	0.60	0.27
88	0.72	0.43
89	0.40	0.29
90	0.44	0.18
91	0.77	0.39
92	0.78	0.36
93	0.23	–0.04
94	0.66	0.38
95	0.61	0.26
96	0.37	0.05
97	0.64	0.29
98	0.82	0.43
99	0.47	0.14
100	0.63	0.32
101	0.27	–0.07
102	0.30	0.04

Appendix 6.B— Rasch Difficulty Tables

Table 6.B.1 CMA Item Difficulty: English–Language Arts

Item *b*-values for English–Language Arts			
Test	**Grade 3**	**Grade 4**	**Grade 5**
Items	***b*-value**	***b*-value**	***b*-value**
1	–0.63	–0.70	–1.83
2	–0.82	–0.13	–1.46
3	–0.47	–0.66	0.27
4	–1.56	–0.49	–0.86
5	0.01	–0.03	–0.62
6	–0.72	–1.14	0.17
7	–0.99	–0.27	–0.27
8	0.38	0.12	–0.14
9	0.39	–0.10	–0.07
10	–0.38	0.79	0.27
11	–0.53	1.11	–0.03
12	–0.97	0.03	0.42
13	–0.73	–0.61	–0.28
14	–0.84	–0.91	–0.21
15	–1.14	–0.26	–0.29
16	0.07	–0.48	–1.06
17	–0.73	–0.10	1.07
18	–0.49	0.61	0.48
19	–0.71	0.15	0.68
20	–0.33	0.58	–0.31
21	1.50	0.17	–0.01
22	–0.50	–0.68	–0.72
23	0.07	–0.21	0.34
24	–0.03	0.13	0.50
25	–0.72	0.72	0.05
26	0.29	–0.43	–0.73
27	–0.30	0.21	–1.00
28	–0.49	–0.46	0.00
29	–0.63	–0.79	–1.21
30	0.15	0.13	0.03
31	–0.94	–0.63	–0.70
32	–0.06	–0.97	–2.01
33	–0.22	–0.17	–0.59
34	–0.03	0.08	–1.01
35	0.38	0.20	–1.97
36	0.41	–0.59	–0.15

Item *b*-values for English–Language Arts			
Test	**Grade 3**	**Grade 4**	**Grade 5**
Items	***b*-value**	***b*-value**	***b*-value**
37	0.49	0.83	–1.36
38	–1.18	–0.05	0.30
39	0.26	0.47	–0.89
40	–0.09	0.18	–0.35
41	–0.30	0.18	0.59
42	–0.61	0.40	–0.14
43	0.11	0.13	0.46
44	–0.08	0.58	0.17
45	–0.73	0.40	–1.29
46	–0.26	–0.24	0.43
47	–1.35	–0.51	–0.19
48	–0.41	–0.20	–0.24
49	–0.33	0.13	0.85
50	–0.16	1.24	–0.44
51	0.19	0.64	–0.20
52	0.21	–0.04	0.40
53	0.72	0.12	–0.11
54	1.01	–0.65	–0.70
55	0.52	0.54	–0.02
56	–0.25	0.38	0.67
57	0.20	0.71	0.14
58	0.65	–0.45	0.50
59	–0.62	0.01	–0.30
60	–0.52	0.15	0.18
61	0.41	0.69	0.98
62	0.98	–0.22	0.34
63	0.82	–0.11	0.35
64	0.08	0.39	–0.38
65	0.11	0.09	–0.01
66	0.03	0.23	0.90
67	–0.14	–0.96	0.51
68	–0.50	–0.09	0.37
69	0.63	–0.31	0.60
70	0.20	0.46	0.47
71	–1.11	0.32	0.56
72	–0.18	0.02	0.30
73	–0.23	0.66	0.01
74	–0.44	0.16	–0.05

Item *b*-values for English–Language Arts			
Test	**Grade 3**	**Grade 4**	**Grade 5**
Items	***b*-value**	***b*-value**	***b*-value**
75	1.16	0.50	–0.47
76	–0.79	–0.55	0.40
77	–0.17	–0.09	–0.20
78	0.23	–0.21	1.84
79	–0.44	0.57	0.93
80	–0.34	0.48	–0.53
81	0.87	0.67	–0.56
82	0.98	–0.01	0.22
83	0.68	0.06	0.06
84	–0.74	0.10	0.57
85	–0.10	–0.04	0.36
86	1.22	0.10	0.62
87	0.39	0.25	–0.79
88	0.41	0.24	–0.79
89	0.63	0.61	–0.15
90	0.67	0.31	0.32
91	–0.88	0.55	–1.38
92	1.07	1.06	0.37
93	–0.73	–0.93	–0.03
94	0.68	–	–0.57
95	–0.48	–	0.12
96	0.79	–	–0.42
97	–0.47	–	–0.69
98	0.21	–	–
99	0.18	–	–
100	0.25	–	–
101	–0.18	–	–

Table 6.B.2 CMA Item Difficulty: Mathematics

Item *b*-values for Mathematics			
Test	**Grade 3**	**Grade 4**	**Grade 5**
Items	***b*-value**	***b*-value**	***b*-value**
1	–1.67	–2.42	–3.03
2	–0.24	–1.37	–1.32
3	–1.10	–1.41	–0.97
4	–1.17	–1.18	–0.85
5	–0.26	–1.34	–0.54
6	–0.62	–0.33	–2.58
7	–0.68	–0.29	–0.34
8	0.31	–0.16	–0.12
9	–0.75	0.16	0.53
10	–0.06	0.54	–0.29
11	0.22	0.58	0.34
12	0.80	0.58	–0.23
13	–0.03	–0.18	0.37
14	0.58	0.61	–0.47
15	–0.28	0.34	0.26
16	2.21	0.01	–0.20
17	–0.36	–0.04	–0.32
18	–0.11	–0.29	0.11
19	–0.63	–0.85	–1.01
20	–0.16	–0.63	–0.48
21	–0.55	–1.41	–1.53
22	–0.38	–1.60	–0.83
23	–0.45	–0.55	–0.72
24	–1.23	0.30	–1.24
25	–1.11	–0.16	0.18
26	–1.36	–0.27	–0.47
27	–0.72	0.17	1.14
28	0.57	0.94	0.15
29	0.74	0.40	–0.23
30	–1.02	0.33	–0.66
31	–0.64	–0.38	0.02
32	–0.95	0.62	–0.87
33	–1.33	–0.48	0.33
34	–1.23	–1.77	–0.55
35	–0.81	–0.46	0.27
36	–0.92	–0.31	–0.01
37	–0.56	0.37	0.77

Item *b*-values for Mathematics			
Test	**Grade 3**	**Grade 4**	**Grade 5**
Items	***b*-value**	***b*-value**	***b*-value**
38	0.68	0.39	0.44
39	–0.08	0.79	0.25
40	–0.68	0.62	0.17
41	–0.96	0.31	–0.58
42	–1.08	–0.04	–0.59
43	–1.10	–0.56	0.58
44	–0.83	0.02	–0.74
45	–0.89	0.53	0.23
46	0.35	–0.02	–0.04
47	–0.25	0.12	–0.59
48	–1.04	–0.37	0.37
49	0.65	0.71	0.64
50	0.10	–1.01	1.65
51	0.87	–0.44	1.85
52	0.05	0.54	1.24
53	0.53	0.88	–0.12
54	0.08	0.33	–0.93
55	0.01	0.23	0.72
56	0.50	0.66	–0.40
57	0.30	–0.52	0.65
58	–0.68	0.30	0.00
59	–0.05	–0.66	–0.08
60	0.51	0.02	0.10
61	–0.39	0.16	0.31
62	–0.62	1.13	–0.27
63	–0.35	0.73	0.13
64	–1.38	1.16	0.28
65	–0.03	0.41	1.42
66	0.31	0.20	–0.73
67	0.44	0.29	1.44
68	–0.56	–0.94	1.28
69	1.04	0.11	–1.18
70	0.85	0.96	0.28
71	–0.99	0.18	0.29
72	–0.14	1.48	0.68
73	1.01	–0.02	0.28
74	–0.23	0.59	0.67
75	–0.78	–0.20	0.06

Item *b*-values for Mathematics			
Test	**Grade 3**	**Grade 4**	**Grade 5**
Items	***b*-value**	***b*-value**	***b*-value**
76	0.01	0.47	–0.68
77	2.06	–0.96	0.61
78	0.64	0.74	1.59
79	0.90	0.74	0.54
80	0.38	0.94	1.04
81	0.29	0.19	0.81
82	–0.86	0.69	0.76
83	0.63	0.91	1.38
84	–0.37	0.29	–0.20
85	–0.57	–0.91	0.23
86	–0.72	–0.26	0.24
87	0.09	0.33	–0.16
88	–0.73	0.11	1.30
89	0.53	–0.04	0.56
90	0.29	0.46	1.36
91	0.05	0.38	0.78
92	–0.68	–0.42	0.65
93	–0.52	–0.25	–0.67
94	0.55	–	0.51
95	0.03	–	1.17
96	–0.02	–	–0.26
97	0.29	–	1.68
98	–0.76	–	0.68
99	0.62	–	1.56
100	–1.10	–	–0.56
101	0.95	–	0.17
102	0.30	–	0.83

Table 6.B.3 CMA Item Difficulty: Science

Item *b*-values for Science	
Test Items	**Grade 5**
	***b*-value**
1	–1.76
2	–0.68
3	0.38
4	–1.39
5	0.18
6	0.61
7	–0.92
8	–0.39
9	0.28
10	–1.40
11	–2.02
12	0.37
13	0.36
14	–0.26
15	–0.46
16	–1.43
17	–0.83
18	–0.74
19	0.13
20	0.41
21	–1.02
22	–1.69
23	–0.50
24	–1.58
25	–0.55
26	0.47
27	–0.11
28	–0.51
29	0.30
30	–0.24
31	–0.11
32	–1.18
33	–0.52
34	–0.15
35	0.11
36	–0.12
37	0.04

Item *b*-values for Science	
Test Items	**Grade 5**
	***b*-value**
38	0.00
39	–0.40
40	–0.75
41	0.70
42	0.51
43	0.02
44	–1.17
45	–0.18
46	–1.08
47	0.26
48	–0.72
49	2.05
50	0.97
51	0.33
52	0.05
53	1.01
54	–0.55
55	–0.61
56	1.33
57	–0.74
58	0.27
59	–0.08
60	0.20
61	–0.01
62	1.01
63	0.23
64	0.64
65	–1.05
66	0.83
67	–0.18
68	–0.68
69	–0.09
70	0.50
71	–1.64
72	0.74
73	0.13
74	–0.12
75	–1.31

Item *b*-values for Science	
Test Items	**Grade 5**
	***b*-value**
76	–0.87
77	–1.02
78	0.29
79	–0.43
80	0.15
81	0.95
82	0.90
83	0.76
84	–1.35
85	–0.56
86	–0.46
87	1.35
88	–1.83
89	0.84
90	0.89
91	0.36
92	0.36
93	–0.20
94	1.11
95	–0.43
96	0.47
97	0.13
98	0.50
99	0.79
100	0.61
101	0.56
102	0.84

Appendix 6.C— Flagged Item Tables

Table 6.C.1 2008 CMA Flagged Items

*** IA flag values are as follows:** • **A** = low average item score • **R** = low correlation with criterion • **D** = more choosing distractor over key			**‡ IRT fit values are as follows:** • **D** = review item • **F** = do not use item			
Test	**Item Type**	**Accession Num**	**IA Flags ***	**AIS**	**Pt. Biserial**	**IRT Fit ‡**
ELA Grade 3	Field Test	VC325388	RAD	0.27	–0.04	F
ELA Grade 3	Operational	VC325560	R	0.64	0.15	D
ELA Grade 3	Field Test	VC326595	RAD	0.26	0.03	D
ELA Grade 3	Field Test	VC326649	R	0.35	0.02	F
ELA Grade 3	Operational	VC326723	AD	0.22	0.22	–
ELA Grade 3	Operational	VC326729	R	0.43	0.19	–
ELA Grade 3	Field Test	VC326968	R	0.36	0.18	–
ELA Grade 3	Field Test	VC401873	RAD	0.29	–0.06	F
ELA Grade 3	Field Test	VC401875	R	0.54	0.12	D
ELA Grade 3	Field Test	VC401876	RD	0.37	0.00	F
ELA Grade 3	Field Test	VC401877	R	0.42	0.14	–
ELA Grade 3	Field Test	VC401878	RD	0.37	0.00	F
ELA Grade 3	Field Test	VC401880	R	0.43	0.03	F
ELA Grade 3	Field Test	VC401881	R	0.37	0.16	–
ELA Grade 3	Field Test	VC401882	RD	0.34	–0.13	F
ELA Grade 3	Field Test	VC401885	R	0.46	0.16	–
ELA Grade 3	Field Test	VC401889	RA	0.30	0.03	F
ELA Grade 3	Field Test	VC401890	R	0.36	0.14	–
ELA Grade 3	Field Test	VC401893	R	0.56	0.15	–
ELA Grade 3	Field Test	VC401896	R	0.46	0.11	–
ELA Grade 3	Field Test	VC401898	R	0.55	0.19	–
ELA Grade 3	Field Test	VC401900	R	0.40	0.11	–
ELA Grade 3	Field Test	VC401901	R	0.38	0.08	D
ELA Grade 3	Field Test	VC401907	RAD	0.30	0.11	D
ELA Grade 3	Field Test	VC401908	RAD	0.32	0.14	–
ELA Grade 3	Field Test	VC401913	R	0.33	0.13	–
ELA Grade 3	Field Test	VC401914	A	0.30	0.22	–
ELA Grade 3	Operational	VC326713	–	0.66	0.55	D
ELA Grade 3	Operational	VC326734	–	0.71	0.55	D
ELA Grade 3	Operational	VC326876	–	0.77	0.52	D
ELA Grade 3	Field Test	VC401911	–	0.65	0.54	D
ELA Grade 4	Field Test	VC325414	RAD	0.27	–0.03	F
ELA Grade 4	Operational	VC325571	RAD	0.32	0.11	D
ELA Grade 4	Operational	VC325575	R	0.45	0.18	–
ELA Grade 4	Operational	VC326846	R	0.37	0.16	–
ELA Grade 4	Operational	VC327034	R	0.35	0.13	D
ELA Grade 4	Operational	VC327038	RA	0.27	0.18	–

*** IA flag values are as follows:** • **A** = low average item score • **R** = low correlation with criterion • **D** = more choosing distractor over key			**‡ IRT fit values are as follows:** • **D** = review item • **F** = do not use item			
Test	**Item Type**	**Accession Num**	**IA Flags ***	**AIS**	**Pt. Biserial**	**IRT Fit ‡**
ELA Grade 4	Operational	VC327041	RA	0.33	0.19	–
ELA Grade 4	Field Test	VC401917	R	0.41	0.19	–
ELA Grade 4	Field Test	VC401918	R	0.39	0.16	–
ELA Grade 4	Field Test	VC401920	R	0.47	0.10	–
ELA Grade 4	Field Test	VC401922	RD	0.34	0.03	D
ELA Grade 4	Field Test	VC401923	R	0.37	0.10	–
ELA Grade 4	Field Test	VC401925	R	0.39	0.07	D
ELA Grade 4	Field Test	VC401926	RD	0.35	0.03	D
ELA Grade 4	Field Test	VC401928	R	0.38	0.11	–
ELA Grade 4	Field Test	VC401929	R	0.36	0.14	–
ELA Grade 4	Field Test	VC401930	R	0.44	0.10	–
ELA Grade 4	Field Test	VC401932	R	0.43	0.15	–
ELA Grade 4	Field Test	VC401936	RD	0.36	–0.05	F
ELA Grade 4	Field Test	VC401939	R	0.52	0.07	D
ELA Grade 4	Field Test	VC401941	RAD	0.24	–0.05	F
ELA Grade 4	Field Test	VC401948	R	0.38	0.03	F
ELA Grade 4	Field Test	VC401952	R	0.36	0.10	–
ELA Grade 4	Field Test	VC401955	RD	0.35	0.00	F
ELA Grade 4	Operational	VC326863	–	0.74	0.46	D
ELA Grade 5	Field Test	VC325486	R	0.46	0.17	–
ELA Grade 5	Field Test	VC325496	RD	0.39	0.00	F
ELA Grade 5	Field Test	VC325501	R	0.49	0.15	–
ELA Grade 5	Field Test	VC325590	RAD	0.29	–0.08	F
ELA Grade 5	Field Test	VC325591	R	0.43	0.00	F
ELA Grade 5	Operational	VC325661	R	0.41	0.19	–
ELA Grade 5	Field Test	VC326620	RAD	0.32	–0.05	F
ELA Grade 5	Operational	VC326762	R	0.36	0.19	–
ELA Grade 5	Operational	VC326765	R	0.40	0.12	D
ELA Grade 5	Operational	VC326766	RAD	0.28	0.04	F
ELA Grade 5	Field Test	VC401958	R	0.38	0.02	F
ELA Grade 5	Field Test	VC401963	R	0.42	0.11	–
ELA Grade 5	Field Test	VC401964	R	0.42	0.19	–
ELA Grade 5	Field Test	VC401965	R	0.42	0.15	–
ELA Grade 5	Field Test	VC401966	RD	0.37	0.10	D
ELA Grade 5	Field Test	VC401970	R	0.45	0.14	–
ELA Grade 5	Field Test	VC401972	RAD	0.16	–0.06	F
ELA Grade 5	Field Test	VC401975	RAD	0.30	0.09	D
ELA Grade 5	Field Test	VC401976	R	0.42	0.00	F
ELA Grade 5	Field Test	VC401978	R	0.39	0.15	–

*** IA flag values are as follows:** • **A** = low average item score • **R** = low correlation with criterion • **D** = more choosing distractor over key			**‡ IRT fit values are as follows:** • **D** = review item • **F** = do not use item			
Test	**Item Type**	**Accession Num**	**IA Flags ***	**AIS**	**Pt. Biserial**	**IRT Fit ‡**
ELA Grade 5	Field Test	VC401983	RD	0.36	0.07	–
ELA Grade 5	Field Test	VC401984	R	0.47	0.12	–
ELA Grade 5	Field Test	VC401985	RA	0.31	0.08	–
ELA Grade 5	Field Test	VC401987	R	0.41	0.08	D
ELA Grade 5	Field Test	VC401989	R	0.44	0.14	–
ELA Grade 5	Field Test	VC401990	R	0.40	0.03	F
ELA Grade 5	Field Test	VC401991	R	0.38	0.09	D
ELA Grade 5	Field Test	VC401992	R	0.37	0.17	–
ELA Grade 5	Field Test	VC401993	RD	0.42	0.05	D
ELA Grade 5	Operational	VC325472	–	0.77	0.47	D
ELA Grade 5	Operational	VC325477	–	0.86	0.43	D
ELA Grade 5	Operational	VC326635	–	0.84	0.45	D
Mathematics Grade 3	Operational	VC325709	RAD	0.14	0.02	F
Mathematics Grade 3	Field Test	VC325733	R	0.49	0.18	–
Mathematics Grade 3	Operational	VC325768	R	0.36	0.13	F
Mathematics Grade 3	Field Test	VC326061	R	0.51	0.18	–
Mathematics Grade 3	Field Test	VC401994	R	0.33	0.09	F
Mathematics Grade 3	Field Test	VC401995	R	0.40	0.03	F
Mathematics Grade 3	Field Test	VC401997	R	0.38	0.19	F
Mathematics Grade 3	Field Test	VC401999	RAD	0.15	–0.21	F
Mathematics Grade 3	Field Test	VC402000	R	0.45	0.17	F
Mathematics Grade 3	Field Test	VC402001	R	0.63	0.16	–
Mathematics Grade 3	Field Test	VC402006	R	0.41	0.11	D
Mathematics Grade 3	Field Test	VC402008	R	0.38	0.16	–
Mathematics Grade 3	Field Test	VC402009	R	0.39	0.00	F
Mathematics Grade 3	Field Test	VC402010	R	0.49	0.13	D
Mathematics Grade 3	Field Test	VC402016	R	0.44	0.16	–
Mathematics Grade 3	Field Test	VC402017	R	0.40	0.09	F
Mathematics Grade 3	Field Test	VC402018	R	0.50	0.16	F
Mathematics Grade 3	Field Test	VC402020	R	0.37	0.12	D
Mathematics Grade 3	Field Test	VC402025	RA	0.31	0.07	D
Mathematics Grade 3	Field Test	VC402026	A	0.32	0.21	–
Mathematics Grade 3	Field Test	VC402028	R	0.50	0.18	–
Mathematics Grade 3	Field Test	VC402029	R	0.37	0.12	D
Mathematics Grade 3	Field Test	VC402031	R	0.45	0.17	–
Mathematics Grade 3	Field Test	VC402033	R	0.49	0.14	–
Mathematics Grade 3	Field Test	VC402034	R	0.44	0.13	D
Mathematics Grade 3	Field Test	VC402036	RA	0.31	0.12	–
Mathematics Grade 3	Field Test	VC402040	RAD	0.31	–0.03	F

*** IA flag values are as follows:** • **A** = low average item score • **R** = low correlation with criterion • **D** = more choosing distractor over key			**‡ IRT fit values are as follows:** • **D** = review item • **F** = do not use item			
Test	**Item Type**	**Accession Num**	**IA Flags ***	**AIS**	**Pt. Biserial**	**IRT Fit ‡**
Mathematics Grade 3	Field Test	VC402041	R	0.45	0.18	–
Mathematics Grade 4	Operational	VC325820	RAD	0.33	0.05	D
Mathematics Grade 4	Operational	VC325871	RAD	0.30	0.11	–
Mathematics Grade 4	Operational	VC325878	R	0.37	0.14	–
Mathematics Grade 4	Operational	VC325902	R	0.38	0.14	–
Mathematics Grade 4	Operational	VC326105	R	0.36	0.19	–
Mathematics Grade 4	Field Test	VC326155	RA	0.29	0.07	–
Mathematics Grade 4	Field Test	VC326163	RAD	0.21	–0.04	D
Mathematics Grade 4	Operational	VC326165	RD	0.36	0.13	–
Mathematics Grade 4	Field Test	VC326191	R	0.44	0.19	–
Mathematics Grade 4	Field Test	VC402042	R	0.44	0.03	D
Mathematics Grade 4	Field Test	VC402044	R	0.41	0.15	–
Mathematics Grade 4	Field Test	VC402053	R	0.39	0.16	–
Mathematics Grade 4	Field Test	VC402057	R	0.34	0.12	–
Mathematics Grade 4	Field Test	VC402058	A	0.30	0.24	–
Mathematics Grade 4	Field Test	VC402059	R	0.34	0.15	–
Mathematics Grade 4	Field Test	VC402060	R	0.50	0.19	–
Mathematics Grade 4	Field Test	VC402061	R	0.46	0.06	–
Mathematics Grade 4	Field Test	VC402063	RD	0.34	0.01	D
Mathematics Grade 4	Field Test	VC402066	RAD	0.26	0.05	–
Mathematics Grade 4	Field Test	VC402067	R	0.34	0.07	–
Mathematics Grade 4	Field Test	VC402068	R	0.38	0.10	–
Mathematics Grade 4	Field Test	VC402069	RAD	0.26	0.00	D
Mathematics Grade 4	Field Test	VC402070	R	0.40	0.16	–
Mathematics Grade 4	Field Test	VC402071	R	0.37	0.15	–
Mathematics Grade 4	Field Test	VC402072	R	0.35	0.05	–
Mathematics Grade 4	Field Test	VC402073	R	0.41	0.19	–
Mathematics Grade 4	Field Test	VC402074	RAD	0.30	–0.04	D
Mathematics Grade 4	Field Test	VC402075	R	0.55	0.18	–
Mathematics Grade 4	Field Test	VC402077	RA	0.31	0.07	–
Mathematics Grade 4	Field Test	VC402078	R	0.46	0.18	–
Mathematics Grade 4	Field Test	VC402080	R	0.45	0.08	–
Mathematics Grade 4	Field Test	VC402081	R	0.43	0.09	–
Mathematics Grade 5	Operational	VC325909	R	0.43	0.20	–
Mathematics Grade 5	Field Test	VC325915	R	0.45	0.13	–
Mathematics Grade 5	Operational	VC326003	R	0.38	0.16	–
Mathematics Grade 5	Field Test	VC326017	RAD	0.22	0.19	–
Mathematics Grade 5	Field Test	VC326137	RAD	0.16	0.01	F
Mathematics Grade 5	Field Test	VC326144	RAD	0.20	–0.26	F

*** IA flag values are as follows:** • **A** = low average item score • **R** = low correlation with criterion • **D** = more choosing distractor over key			**‡ IRT fit values are as follows:** • **D** = review item • **F** = do not use item			
Test	**Item Type**	**Accession Num**	**IA Flags ***	**AIS**	**Pt. Biserial**	**IRT Fit ‡**
Mathematics Grade 5	Operational	VC326145	RA	0.27	0.18	–
Mathematics Grade 5	Field Test	VC326211	RAD	0.25	0.11	–
Mathematics Grade 5	Field Test	VC326227	RAD	0.26	–0.01	F
Mathematics Grade 5	Operational	VC326241	R	0.55	0.19	–
Mathematics Grade 5	Field Test	VC326401	RAD	0.22	–0.07	F
Mathematics Grade 5	Field Test	VC326415	RD	0.33	0.02	F
Mathematics Grade 5	Field Test	VC402083	RA	0.33	0.09	–
Mathematics Grade 5	Field Test	VC402084	R	0.36	0.07	D
Mathematics Grade 5	Field Test	VC402085	RAD	0.23	0.17	–
Mathematics Grade 5	Field Test	VC402087	R	0.50	0.09	D
Mathematics Grade 5	Field Test	VC402089	RAD	0.19	0.06	F
Mathematics Grade 5	Field Test	VC402093	R	0.35	0.12	–
Mathematics Grade 5	Field Test	VC402096	RAD	0.25	–0.03	F
Mathematics Grade 5	Field Test	VC402098	RAD	0.22	–0.09	F
Mathematics Grade 5	Field Test	VC402099	R	0.38	0.17	–
Mathematics Grade 5	Field Test	VC402100	R	0.44	0.20	–
Mathematics Grade 5	Field Test	VC402102	R	0.36	0.15	–
Mathematics Grade 5	Field Test	VC402103	RAD	0.19	0.02	F
Mathematics Grade 5	Field Test	VC402104	R	0.44	0.12	D
Mathematics Grade 5	Field Test	VC402106	R	0.33	0.13	–
Mathematics Grade 5	Field Test	VC402107	RAD	0.32	–0.07	F
Mathematics Grade 5	Field Test	VC402108	R	0.36	0.13	–
Mathematics Grade 5	Field Test	VC402112	RAD	0.18	–0.13	F
Mathematics Grade 5	Field Test	VC402113	RAD	0.24	–0.22	F
Mathematics Grade 5	Field Test	VC402114	R	0.38	0.12	–
Mathematics Grade 5	Field Test	VC402115	RAD	0.28	–0.04	F
Mathematics Grade 5	Field Test	VC402119	R	0.36	0.10	–
Mathematics Grade 5	Field Test	VC325916	–	0.65	0.46	D
Science Grade 5	Operational	VC327103	R	0.37	0.13	–
Science Grade 5	Field Test	VC327183	RAD	0.32	–0.01	F
Science Grade 5	Field Test	VC327207	R	0.34	0.08	D
Science Grade 5	Field Test	VC327216	R	0.36	0.13	–
Science Grade 5	Field Test	VC327223	RAD	0.13	–0.08	F
Science Grade 5	Field Test	VC327232	R	0.33	0.10	–
Science Grade 5	Operational	VC327239	R	0.42	0.13	–
Science Grade 5	Operational	VC327256	R	0.45	0.15	–
Science Grade 5	Field Test	VC327257	R	0.38	0.02	F
Science Grade 5	Operational	VC327262	R	0.39	0.19	–
Science Grade 5	Field Test	VC327265	R	0.55	0.18	–

*** IA flag values are as follows:** • **A** = low average item score • **R** = low correlation with criterion • **D** = more choosing distractor over key			**‡ IRT fit values are as follows:** • **D** = review item • **F** = do not use item			
Test	**Item Type**	**Accession Num**	**IA Flags ***	**AIS**	**Pt. Biserial**	**IRT Fit ‡**
Science Grade 5	Operational	VC327285	R	0.35	0.18	–
Science Grade 5	Field Test	VC327299	R	0.35	0.01	F
Science Grade 5	Field Test	VC327300	RAD	0.28	0.03	D
Science Grade 5	Field Test	VC327313	RAD	0.29	–0.11	F
Science Grade 5	Operational	VC327319	R	0.40	0.14	–
Science Grade 5	Field Test	VC327321	RA	0.31	0.10	–
Science Grade 5	Field Test	VC327325	R	0.40	0.15	–
Science Grade 5	Field Test	VC327332	RA	0.32	0.01	F
Science Grade 5	Field Test	VC327337	R	0.44	0.11	–
Science Grade 5	Operational	VC327354	R	0.44	0.16	–
Science Grade 5	Field Test	VC327360	RAD	0.32	–0.11	F
Science Grade 5	Field Test	VC327372	R	0.48	0.09	–
Science Grade 5	Field Test	VC327373	RAD	0.31	0.03	D
Science Grade 5	Field Test	VC327375	R	0.39	0.16	–
Science Grade 5	Field Test	VC327376	R	0.44	0.10	–
Science Grade 5	Field Test	VC327401	R	0.42	0.06	F
Science Grade 5	Field Test	VC402120	RAD	0.30	–0.02	F
Science Grade 5	Field Test	VC402122	R	0.46	0.05	D
Science Grade 5	Field Test	VC402124	RAD	0.23	–0.04	F
Science Grade 5	Field Test	VC402128	R	0.44	0.18	–
Science Grade 5	Field Test	VC402131	RAD	0.23	–0.04	F
Science Grade 5	Field Test	VC402134	RD	0.37	0.05	D
Science Grade 5	Field Test	VC402137	R	0.47	0.14	–
Science Grade 5	Field Test	VC402139	RAD	0.27	–0.07	F
Science Grade 5	Field Test	VC402140	RAD	0.30	0.04	D
Science Grade 5	Field Test	VC327395	–	0.85	0.39	D
Science Grade 5	Field Test	VC402136	–	0.82	0.43	D
Science Grade 5	Field Test	VC402121	–	0.70	0.42	D
Science Grade 5	Field Test	VC402126	–	0.72	0.43	D

Chapter 7: Test Fairness

In order to evaluate equity among various subpopulations, comprehensive analyses are conducted after test administration. This chapter summarizes the subgroup analyses performed. Because test security is crucial in the sustenance of a fair test, the chapter also briefly describes procedures for ensuring test security.

Demographic Distributions

Table 7.1 presents a listing of the various subgroups included in the demographic analyses. The major subgroups include gender, English-language fluency, ethnicity, and primary disability.

Table 7.1 Subgroup Classifications

Subgroup	Definition
Gender	• Male • Female
English Language Fluency	• English-Language Fluency • Initially Fluent English Proficient • English Learner • Reclassified Fluent English Proficient
Ethnicity	• African American • American Indian or Alaska Native • Asian • Filipino • Hispanic or Latino • Pacific Islander • White (not Hispanic)
Primary Disability	• Autism • Deaf-Blindness • Deafness • Emotional Disturbance • Established Medical Disability • Hard of Hearing • Mental Retardation • Multiple Disabilities • Orthopedic Impairment • Other Health Impairment • Specific Learning Disability • Speech or Language Impairment • Traumatic Brain Injury • Visual Impairment

Table 7.2, on the next page, presents the subgroup sample size and percent of total sample for each disability classification examined in the CMA analyses.

Note that the statistics in these tables may differ slightly from the statewide statistics reported on the CDE Web site because the P1 data file was used for the analyses in this chapter.

Table 7.2 Disability Distributions Across All Levels

	English–Language Arts						Mathematics						Science	
	Grade 3		Grade 4		Grade 5		Grade 3		Grade 4		Grade 5		Grade 5	
	Freq	Pct	Freq	Pct	Freq	Pct	Freq	Pct	Freq	Pct	Freq	Pct	Freq	Pct
Mental Retardation	223	2.07	295	2.18	362	2.81	224	2.50	292	2.57	364	3.10	349	2.88
Hard of Hearing	105	0.98	117	0.87	104	0.81	90	1.01	99	0.87	82	0.70	90	0.74
Deafness	51	0.47	73	0.54	77	0.60	42	0.47	62	0.54	68	0.58	73	0.60
Speech or Language Impairment	2,503	23.28	2,534	18.75	1,790	13.88	2,095	23.40	2,042	17.94	1,615	13.75	1,704	14.04
Visual Impairment	34	0.32	27	0.20	38	0.29	30	0.34	22	0.19	35	0.30	34	0.28
Emotional Disturbance	156	1.45	235	1.74	223	1.73	151	1.69	220	1.93	251	2.14	229	1.89
Orthopedic Impairment	90	0.84	85	0.63	113	0.88	92	1.03	85	0.75	123	1.05	115	0.95
Other Health Impairment	656	6.10	878	6.50	799	6.20	573	6.40	778	6.84	795	6.77	781	6.44
Autism	497	4.62	584	4.32	399	3.09	470	5.25	545	4.79	397	3.38	401	3.30
Deaf-Blindness	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Multiple Disabilities	30	0.28	59	0.44	49	0.38	26	0.29	49	0.43	42	0.36	44	0.36
Specific Learning Disability	5,052	47.00	7,521	55.66	8,044	62.38	4,066	45.41	6,236	54.79	7,122	60.65	7,474	61.60
Traumatic Brain Injury	20	0.19	31	0.23	29	0.22	16	0.18	29	0.25	28	0.24	28	0.23

Differential Item Function (DIF) Analyses

DIF analyses measure differences in item performance between different demographic groups of students who have similar overall test performance.

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

Table 7.3 through Table 7.5 include the number of students tested in ELA, mathematics, and science with valid scores, mean raw score and the standard deviation of the raw score for each of the demographic-based subgroups with sufficient sample size for the differential item functioning analysis.

Table 7.3 DIF Demographic Summary for English–Language Arts

	ELA Grade 3			ELA Grade 4			ELA Grade 5		
	Number Tested	**Mean Score**	**SD Score**	**Number Tested**	**Mean Score**	**SD Score**	**Number Tested**	**Mean Score**	**SD Score**
All Valid Scores	10,750	27.80	8.87	13,513	24.84	7.77	12,896	27.35	7.62
Female	3,421	28.28	8.76	4,409	25.27	7.70	4,314	27.90	7.55
Male	7,262	27.58	8.91	9,095	24.63	7.80	8,569	27.08	7.63
Unknown	67	26.49	9.53	9	21.22	7.68	13	23.69	9.39
African American	1,150	27.19	8.89	1,463	24.56	7.93	1,514	26.84	7.59
American Indian	122	28.16	9.52	172	24.92	7.41	150	27.61	7.57
Asian American	348	29.38	8.09	434	24.75	7.32	424	27.33	7.29
Filipino	130	30.05	8.36	158	26.53	6.92	141	28.48	6.67
Hispanic	6,077	26.81	8.67	8,030	24.08	7.52	7,884	26.77	7.45
Pacific Islander	71	29.56	9.25	84	26.48	7.21	75	28.53	7.22
White	2,377	30.11	8.92	3,045	26.83	8.12	2,612	29.23	7.88
Unknown	475	28.13	9.21	127	25.21	7.89	96	28.99	8.27
English Only	5,983	28.78	8.99	7,696	25.77	7.97	6,892	28.17	7.75
Initially Fluent English Proficient	220	28.15	9.09	312	26.24	7.62	234	27.88	7.65
English Learner	4,104	26.36	8.47	5,383	23.43	7.26	5,617	26.33	7.31
Reclassified Fluent English Proficient	39	28.15	9.15	79	25.29	8.13	98	28.13	7.34
Unknown	404	27.59	8.99	43	23.26	8.14	55	24.69	8.48
Specific Learning Disability	5,052	27.40	8.78	7,521	24.53	7.69	8,044	27.49	7.55
Speech or Language Impairment	2,503	28.59	8.79	2,534	25.57	7.53	1,790	27.84	7.31
Other Health Impairment	656	29.11	9.16	878	26.45	8.30	799	28.39	8.02
Other Disabilities	2,364	27.50	8.97	2,560	24.47	7.98	2,244	26.10	7.78
Unknown	175	27.09	9.06	20	24.00	6.42	19	24.84	8.37

Table 7.4 DIF Demographic Summary for Mathematics

	Mathematics Grade 3			Mathematics Grade 4			Mathematics Grade 5		
	Number Tested	**Mean Score**	**SD Score**	**Number Tested**	**Mean Score**	**SD Score**	**Number Tested**	**Mean Score**	**SD Score**
All Valid Scores	8,953	29.01	8.95	11,381	26.00	7.08	11,743	27.22	7.77
Female	2,995	28.87	8.86	3,883	26.06	6.93	4,106	27.60	7.68
Male	5,903	29.08	8.99	7,491	25.97	7.16	7,624	27.02	7.81
Unknown	55	28.87	9.68	7	22.86	12.02	13	24.23	7.66
African American	1,048	27.25	8.93	1,341	24.93	7.19	1,480	25.95	7.71
American Indian	109	29.60	8.46	142	25.76	7.12	150	27.78	7.78
Asian American	289	30.80	9.09	344	26.40	7.31	352	28.03	8.01
Filipino	116	31.13	8.80	130	27.48	7.42	134	27.72	8.14
Hispanic	5,046	28.65	8.90	6,752	25.81	6.88	7,015	27.08	7.63
Pacific Islander	59	29.41	9.66	74	26.49	6.67	60	28.83	6.92
White	1,875	30.41	8.84	2,481	26.96	7.38	2,460	28.17	8.02
Unknown	411	29.37	9.04	117	26.30	7.34	92	26.77	8.14
English Only	4,999	29.23	9.00	6,502	26.14	7.22	6,458	27.33	7.90
Initially Fluent English Proficient	175	30.91	8.92	240	27.42	6.68	220	27.99	7.61
English Learner	3,397	28.49	8.87	4,524	25.73	6.90	4,919	27.04	7.60
Reclassified Fluent English Proficient	25	31.24	8.23	74	26.72	6.46	88	28.84	7.81
Unknown	357	29.68	8.94	41	23.56	6.69	58	24.14	7.00
Specific Learning Disability	4,066	28.96	8.74	6,236	26.19	6.88	7,122	27.55	7.60
Speech or Language Impairment	2,095	29.99	9.01	2,042	26.54	7.23	1,615	27.73	7.79
Other Health Impairment	573	28.95	8.92	778	25.94	7.09	795	27.05	7.87
Other Disabilities	2,066	28.04	9.21	2,305	25.05	7.41	2,192	25.83	8.08
Unknown	153	29.94	9.05	20	25.00	7.06	19	23.42	6.69

Table 7.5 DIF Demographic Summary for Science

	Science Grade 5		
	Number Tested	**Mean Score**	**SD Score**
All Valid Scores	12,134	28.26	7.40
Female	4,093	27.59	7.12
Male	8,028	28.61	7.52
Unknown	13	26.15	6.71
African American	1,423	26.83	7.31
American Indian	142	30.79	7.12
Asian American	407	27.82	7.02
Filipino	143	28.66	7.33
Hispanic	7,302	27.64	7.19
Pacific Islander	66	28.85	8.13
White	2,553	30.71	7.53
Unknown	98	29.60	7.60
English Only	6,587	29.15	7.52
Initially Fluent English Proficient	230	29.57	7.53
English Learner	5,161	27.08	7.07
Reclassified Fluent English Proficient	102	29.02	7.10
Unknown	54	25.98	8.01
Specific Learning Disability	7,474	28.63	7.37
Speech or Language Impairment	1,704	28.32	6.89
Other Health Impairment	781	28.90	7.46
Other Disabilities	2,159	26.71	7.68
Unknown	16	28.31	7.46

The DIF analyses utilizes the Mantel-Haenszel (MH) DIF statistic (Mantel and Haenszel 1959; Holland and Thayer 1985) (see equation 7.2.). This MH DIF statistic is based on the estimate of constant odds ratio, represented as α_{MH} .

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

$$\alpha_{MH} = \frac{\left(\sum_m R_{rm} \frac{W_{fm}}{N_{tm}} \right)}{\left(\sum_m R_{fm} \frac{W_{rm}}{N_{tm}} \right)} \qquad (7.1)$$

The Mantel-Haenszel statistic is computed as:

$$MH\ \ D\text{-}DIF\ = -2.35\ \ln [\ \alpha_{MH}\ ] \qquad (7.2)$$

where,

R = number right,
W = number wrong,
N = total in:
$_{fm}$ = focal group at ability level m,
$_{rm}$ = reference group at ability level m, and
$_{tm}$ = total group at ability level m.

The common odds ratio is estimated across all categories of matched examinee ability. The resulting estimate is interpreted as the relative likelihood of a given item score for members of two groups when matched on ability. As such, the common odds ratio provides an estimated effect size where a value of unity indicates equal odds, and thus no DIF (Dorans and 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 less than unity indicate DIF in favor of the focal group, a value of unity 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 1 degree of freedom.

The Mantel-Haenszel chi-square statistic is used in conjunction with a second procedure, the standardization procedure (Dorans and Schmitt 1993). This procedure produces a DIF statistic based on the standardized mean difference (SMD) in average item scores between members of two groups who 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:

$$SMD = \sum_m w_m \left(E_{fm} - E_{rm} \right) / \sum_m w_m \quad (7.3)$$

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 the focal group (E_{fm}) and the reference group (E_{rm}) (Dorans and 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. These categories have been used by all ETS testing programs for more than 13 years. 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 is as follows:

- *A items or negligible DIF:* The Mantel chi-square statistic is not statistically significant (at the 0.05 level) or $|SMD/SD| < 0.17$.
- *B items or intermediate DIF:* The Mantel chi-square statistic is statistically significant (at the 0.05 level) and $0.17 \leq |SMD/SD| < 0.25$
- *C items or large DIF:* The Mantel chi-square statistic is statistically significant (at the 0.05 level) and $|SMD/SD| \geq 0.25$.

Items in category C are of greatest concern because they have moderate to large values of DIF.

Additionally, the classifications are divided into separate groupings as determined by which group is advantaged. These are displayed in Table 7.6.

Table 7.6 DIF Flags Based on the ETS DIF Classification Scheme

Flag	Descriptor
A-	Low DIF favoring members of the reference group
B-	Moderate DIF favoring members of the reference group
C-	High DIF favoring members of the reference group
A+	Low DIF favoring members of the focal group
B+	Moderate DIF favoring members of the focal group
C+	High DIF favoring members of the focal group

Test developers have been instructed to avoid selecting field-test items flagged as having shown DIF that disadvantage a group (C-DIF) for future operational test forms unless their inclusion is deemed essential to meeting test-content specifications.

As shown in Table 7.6, 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.

Following standard ETS procedure, items classified in Category C were sent for review by test development staff and/or content review committees to consider any identifiable characteristics that may have contributed to the differential item functioning. These items might be revised for additional field testing or removed from the item pool.

The total number of items in each DIF classification for each content area is shown in Table 7.7. Detailed distributions of the DIF classifications for each subgroup within subject and grades are presented in the tables in Appendix 7.A.

Table 7.7 DIF Category Distributions

DIF category	English–Language Arts						Mathematics						Science	
	Grade 3		Grade 4		Grade 5		Grade 3		Grade 4		Grade 5		Grade 5	
	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.
C-	0	0	0	0	0	0	0	0	0	0	1	1	0	0
B-	2	2	0	0	0	0	2	2	0	0	1	1	1	1
A-	57	56	41	44	49	51	49	48	43	46	52	51	52	51
A+	42	42	52	56	46	47	50	49	50	54	48	47	48	47
B+	0	0	0	0	2	2	1	1	0	0	0	0	1	1
C+	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**101**	**100**	**93**	**100**	**97**	**100**	**102**	**100**	**93**	**100**	**102**	**100**	**102**	**100**

There was one field-test item that displayed significant (C-) DIF. It is shown in Table 7.8.

Table 7.8 Field-Test Item Exhibiting Significant DIF

Test	Item Number	Item Seq. No.	Male–Female	White–Hispanic	White–African-American	English Only–English Learner
MTHEGR05	CMM20267	60	C-	B-	B-	A-

Test Security and Confidentiality

All tests within the STAR Program are secure documents. For the 2008 administration, every person having access to test materials must maintain the security and confidentiality of the tests. ETS's Code of Ethics requires that all test information, including tangible materials (such as test booklets), confidential files, processes, and activities are kept secure. ETS has systems in place that maintain tight security for test questions and test results as well as student data. To ensure security for all the tests that ETS develops or handles, ETS maintains an Office of Testing Integrity (OTI) that provides quality assurance and resides in the ETS Legal Department. The Quality Assurance division publishes and maintains *ETS Standards for Quality and Fairness,* which supports OTI's goals and activities. The purposes of the *ETS Standards for Quality and Fairness* are to help ETS design, develop, and deliver technically sound, fair, and useful products and services, and to help the public and auditors evaluate those products and services.

The OTI's mission is to:

- Prevent and minimize any testing security violations that can impact the fairness of testing.
- Prevent and investigate any security breach.
- Report on security activities.

OTI helps prevent misconduct on the part of test takers and administrators, detect potential misconduct through empirically established indicators, and resolve situations in a fair and balanced way that reflects the laws and professional standards governing the integrity of testing.

Test Development

During the test development process, ETS staff members consistently follow these established security procedures:

- Only authorized individuals have access to test content during any step in the development, review, and data analysis processes.
- Test developers keep all hardcopy test content, computer disk copies, art, film, proofs, and plates in locked storage when not in use.
- ETS shreds working copies of secure content as soon as they are no longer needed for the development process.
- Test developers take further security measures whenever they share items outside of ETS, including using registered, secure mail and express delivery and tracking records of the sending and receipt of any test materials.

Item Review by ARPs

ETS enforces security measures at ARP meetings to protect the integrity of meeting materials using these guidelines:

- Individuals who participate in the ARPs must sign the confidentiality agreement.
- Meeting materials are strictly managed before, during, and after the review meetings.
- Meeting participants are supervised at all times during the meetings.
- The use of electronic devices in the meeting rooms is strictly prohibited.

Item Bank

Once the ARP review is complete, the items are placed in the item bank along with their corresponding review information. ETS then delivers the items to the CDE via a delivery of the STAR electronic item bank. Subsequent updates to items are based on field-test and operational use of the items. However, only the latest version of the item is in the bank at any time, along with the administration data from every administration that had included the item. Security of the electronic

item banking system is of critical importance. The measures that ETS took for ensuring the security of electronic files include the following:

- Electronic forms of test content, documentation, and item banks are backed up electronically, with the backups kept offsite, to prevent loss from a system breakdown or a natural disaster.
- The off-site backup files are kept in secure storage with access limited to authorized personnel only.
- To prevent unauthorized electronic access to the item bank, state-of-the-art network security measures are used.

ETS routinely maintains many secure electronic systems for both internal and external access. The current electronic item banking application includes a login/password system to authorize access to the database or designated portions of the database. In addition, only users authorized to access the specific SQL database will be able to use the electronic item banking system. A designated administrator at the CDE and at ETS authorize the users.

Transfer of Forms and Items to the CDE

ETS shares a file transfer protocol (FTP) site with the CDE. FTP is a standard method for exclusive routing of files. It is a password-protected server that only authorized users may access. On that site, ETS posts Word, PDF, and other document files for the CDE to review. ETS sends an e-mail to the CDE to notify CDE staff that files were posted. Item data are always transmitted in an encrypted format to the FTP site, never via e-mail.

Firewall

A firewall is software that prevents entry to files, e-mail, and other organization-specific programs by unauthorized users or computers. All ETS data exchange and internal e-mail remain within the ETS firewall at all ETS locations, from Princeton, New Jersey, to San Antonio, Texas, to Sacramento, California. The CDE has and will continue to view and approve ETS-developed applications such as those on the STAR Management System at ETS's Sacramento office, because the applications remain behind ETS's firewall before release. No hacker has ever broken into ETS's firewall.

Printing

After items and test forms are approved, the files, on a CD, are sent for printing via a secure courier system, such as Federal Express. According to established procedures, OTI pre-approves all printing vendors before they begin work on secured confidential and proprietary test material. The printing vendor is required to submit a completed ETS Printing Plan and Typesetting Facility Security Plan that documents security procedures, access to test materials, work in progress, personnel procedures, and access to the facilities by the employees and visitors. After reviewing the completed plan, members of the OTI visit the printing vendor to conduct an on-site inspection. The secured printing vendor packs and ships printed test booklets to Pearson Educational Measurement for packaging and distribution in a precise manner with tight boxes that prevent opening.

Test Administration

Pearson receives testing materials from printers, packages them, and sends them to districts. After testing, districts return materials to Pearson for scoring. During each of these stages, Pearson takes extraordinary measures to protect testing materials. Pearson's customized Oracle business application verifies that inventory controls are in place from receipt of materials to packaging. The reputable carriers used by Pearson provide specialized handling and delivery service that maintain test security and meet the CMA program schedule. The carriers provide inside delivery directly to the district STAR coordinators or authorized recipients of the assessment materials.

Test Delivery

Test security requires accounting for all secure materials before, during, and after each test administration. The district STAR coordinators are, therefore, required to keep all test materials in central locked storage except during actual test administration times. It is the responsibility of the Test site coordinators to accounting for and returns all secure materials to the district coordinator, who is responsible for returning them to the STAR Scoring and Processing Centers. More specifically:

- District STAR coordinators must sign and submit a "STAR Test (including field tests) Security Agreement for District and Test Site Coordinators" form to the STAR Technical Assistance Center before ETS may ship any testing materials to the district.
- Test site coordinators must sign and submit a "STAR Test (including field tests) Security Agreement for District and Test Site Coordinators" form to the district STAR coordinator before any testing materials may delivered to the school/test site.
- Anyone requesting access to the test materials must sign and submit a "STAR Test (including field tests) Security Affidavit for Test Examiners, Proctors, Scribes, and Any Other Person Having Access to STAR Tests" form to the test site coordinator before receiving access to any testing materials.

It is the responsibility of each person participating in the STAR Program to report immediately any violation or suspected violation of test security or confidentiality. The test site coordinator is responsible for immediately reporting any security violation to the district STAR coordinator. The district STAR coordinator must contact the CDE immediately and is asked to follow up with a written explanation of the violation or suspected violation.

Any irregularities in test security may result in invalidation of student test results.

Processing and Scoring

An environment that promotes the security of the test prompts, student responses, data, and employees is of utmost concern to Pearson throughout the project of processing and scoring. Pearson requires the following standard safeguards for security at their sites:

- There is controlled access to the facility.
- No test materials leave the facility during the project without the permission of a person or persons designated by the CDE.
- All scoring personnel must sign a nondisclosure and confidentiality form in which they agree not to use or divulge any information concerning tests, scoring guides, or individual student responses.
- All staff are required to wear Pearson identification badges at all times in Pearson facilities.
- No recording or photographic equipment is allowed in the scoring area without the consent of the CDE.

The completed and scored answer documents are then stored in secure warehouses. The only time they were touched then is if there is a dispute of a score. For example, school districts and parents might have requested rescoring of a student's test. In such a case, a grade three test booklet or grade four or five answer document is removed from storage, copied, and sent securely to the ETS facility in Concord, California, for hand scoring, after which the copy is destroyed. No school or district personnel are allowed to look at the completed answer documents unless necessary for the purpose of transcription or to investigate irregular cases.

All answer documents and test booklets are destroyed after October 31 of each year.

Transfer of Scores via Secure Data Exchange

After scoring is completed, Pearson sends files to ETS and follows secure data exchange procedures. Pearson provides overall security for assessment materials through its limited-access facilities and through its secure data processing capabilities. Pearson enforces stringent procedures to prevent unauthorized attempts to access their facilities. Entrances are monitored by security personnel and a computerized badge-reading system is used. Upon entering the facilities, all Pearson employees are required to display their identification badge, which that must be worn at all times while in the facility. Visitors are required to sign in and out, are assigned a visitor badge, and are escorted by Pearson personnel while at the facility. Access to the Data Center is further controlled by the computerized badge-reading system that allows entrance only to employees who possess the proper authorization.

Data, electronic files, test files, programs (source and object) and all associated tables and parameters are maintained in secure network libraries for all systems developed and maintained in a client-server environment. Only authorized software development employees are given access as needed for development, testing, and implementation, each of which is done in a strictly controlled Configuration Management environment.

For mainframe processes, Pearson uses Random Access Control Facility (RACF) to limit and control access to all data files (test and production), source code, object code, databases, and tables. RACF controls who is authorized to alter, update, or even read the files. All attempts to access files on the mainframe by unauthorized users are logged and monitored. In addition, Pearson uses ChangeMan, a mainframe configuration management tool, to control versions of the software and data files. ChangeMan provides another level of security, combined with RACF, to place the correct tested version of code into production. Unapproved changes are not implemented without prior review and approval.

ETS and Pearson have implemented procedures and systems to provide the efficient coordination of secure data exchange, including the established, secure, FTP site that is used for secure data transfers between ETS and Pearson. These well-established procedures provide the timely, efficient, and secure transfer of data. Access to the STAR data files is limited to appropriate personnel who have direct project responsibilities.

Statistical Analysis

ETS systems loads the Pearson files in a database. The Data Quality Services area at ETS extracts the data from the database and performs quality control procedures before passing files to the ETS Statistical Analysis group. The Statistical Analysis group then keeps the files on secure servers and adheres to the ETS Code of Ethics to prevent any unauthorized access.

Reporting and Posting Results

After statistical analysis has been completed for student results, the files flow in three directions. First, paper reports, some with individual student results and others with summary results, are produced. Second, encrypted files of summary results are sent to the CDE via FTP. Any summary results for fewer than eleven students are not reported. Third, the statistics from the results are also entered into the ETS item bank in San Antonio.

Student Confidentiality

To meet NCLB and state requirements, school districts must collect demographic data about students, such as ethnicity, parent education, disabilities, whether the student qualifies for the National School Lunch Program (NSLP), and so forth. In addition, students may reveal other information about themselves through the essays they write. ETS takes precautions to prevent any of this information becoming public or being used other than for testing purposes. Such measures are applicable to all documents in which these data may appear, including in Pre-ID files and reports.

Test Results

ETS also has security measures for files and reports that show students' scores and performance levels. ETS is committed to safeguarding this information from unauthorized access, disclosure, modification, or destruction. ETS has strict information security policies in place to protect the confidentiality of ETS and client data. Access by ETS staff to production databases is very limited. User IDs for production systems must be person-specific or for systems use only.

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

ETS has many facilities and procedures that protect computer files. Facilities, policies, software, and procedures such as firewalls, intrusion detection, and virus control are in place to provide for physical security, data security, and disaster recovery. Comprehensive disaster recovery facilities are available and tested regularly at the SunGard installation in Philadelphia, Pennsylvania. ETS routinely sends backup data cartridges and files for critical software, applications, and documentation to an off-site storage facility for safekeeping to permit continued operation in the case of a disaster.

Access to the ETS Computer Processing Center is controlled through the use of employee and visitor identification badges. The Center is secured by doors that can be unlocked only by the badges of personnel who have functional responsibilities within its secure perimeter. Authorized personnel accompany visitors to the Data Center at all times. Extensive smoke detection and alarm systems as well as a pre-action fire-control system are in use at the Center.

ETS protects the test results of individual student in both electronic files and on paper reports during:

- Scoring
- Transfer of scores via secure data exchange
- Reporting
- Erasure marks
- Internet postings
- Storage

In addition to protecting the confidentiality of testing materials, ETS's Code of Ethics further prohibits ETS employees from financial misuse, conflicts of interest, and unauthorized appropriation of ETS's property and resources. Specific rules were also given to ETS employees and their immediate families who may take an ETS-contracted test, such as a STAR exam. The ETS Office of Testing Integrity verifies that these standards are followed throughout the organization, including conducting periodic on-site security audits of departments, and preparing followup reports containing recommendations for improvement.

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Appendix 7.A: DIF Classification Distribution Tables

Table 7.A.1 DIF Classifications for English–Language Arts Grade Three Operational Items

DIF category	M-F		W-AmI		W-Asn		W-PacI		W-Fil		W-ComA		W-His		W-AfrA		E-ELnr		Total	
	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.
C-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B-	1	2	1	2	0	0	0	0	0	0	2	4	0	0	0	0	0	0	4	8
A-	22	46	23	48	24	50	0	0	0	0	23	48	20	42	22	46	21	44	16	33
A+	25	52	23	48	22	46	0	0	0	0	21	44	28	58	26	54	27	56	24	50
B+	0	0	1	2	2	4	0	0	0	0	2	4	0	0	0	0	0	0	4	8
C+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Small N	0	0	0	0	0	0	48	100	48	100	0	0	0	0	0	0	0	0	0	0
TOTAL	48	100	48	100	48	100	48	100	48	100	48	100	48	100	48	100	48	100	48	100

Table 7.A.2 DIF Classifications for English–Language Arts Grade Four Operational Items

DIF category	M-F		W-AmI		W-Asn		W-PacI		W-Fil		W-ComA		W-His		W-AfrA		E-ELnr		Total	
	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.
C-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B-	0	0	0	0	0	0	0	0	4	8	0	0	0	0	0	0	0	0	4	8
A-	26	54	24	50	25	52	0	0	17	35	26	54	23	48	25	52	23	48	18	38
A+	22	46	24	50	22	46	0	0	25	52	21	44	25	52	23	48	25	52	23	48
B+	0	0	0	0	0	0	0	0	2	4	1	2	0	0	0	0	0	0	2	4
C+	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	1	2
Small N	0	0	0	0	0	0	48	100	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	48	100	48	100	48	100	48	100	48	100	48	100	48	100	48	100	48	100	48	100

Table 7.A.3 DIF Classifications for English–Language Arts Grade Five Operational Items

DIF category	M-F		W-AmI		W-Asn		W-PacI		W-Fil		W-ComA		W-His		W-AfrA		E-ELnr		Total	
	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.
C-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B-	0	0	0	0	2	4	0	0	0	0	1	2	0	0	1	2	0	0	3	6
A-	26	54	24	50	23	48	0	0	0	0	22	46	25	52	22	46	21	44	22	46
A+	21	44	24	50	19	40	0	0	0	0	22	46	23	48	25	52	27	56	17	35
B+	1	2	0	0	4	8	0	0	0	0	3	6	0	0	0	0	0	0	6	13
C+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Small N	0	0	0	0	0	0	48	100	48	100	0	0	0	0	0	0	0	0	0	0
TOTAL	48	100	48	100	48	100	48	100	48	100	48	100	48	100	48	100	48	100	48	100

Table 7.A.4 DIF Classifications for Mathematics Grade Three Operational Items

DIF category	M-F		W-AmI		W-Asn		W-PacI		W-Fil		W-ComA		W-His		W-AfrA		E-ELnr		Total	
	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.
C-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B-	0	0	0	0	2	4	0	0	0	0	2	4	0	0	0	0	0	0	2	4
A-	23	48	24	50	21	44	0	0	0	0	23	48	25	52	26	54	20	42	22	46
A+	25	52	21	44	24	50	0	0	0	0	20	42	23	48	22	46	28	58	17	35
B+	0	0	3	6	1	2	0	0	0	0	3	6	0	0	0	0	0	0	7	15
C+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Small N	0	0	0	0	0	0	48	100	48	100	0	0	0	0	0	0	0	0	0	0
TOTAL	48	100	48	100	48	100	48	100	48	100	48	100	48	100	48	100	48	100	48	100

Table 7.A.5 DIF Classifications for Mathematics Grade Four Operational Items

DIF category	M-F		W-AmI		W-Asn		W-PacI		W-Fil		W-ComA		W-His		W-AfrA		E-ELnr		Total	
	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.
C-	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	1	2
B-	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0
A-	22	46	24	50	24	50	0	0	0	0	21	44	21	44	27	56	22	46	23	48
A+	26	54	23	48	21	44	0	0	0	0	25	52	27	56	21	44	26	54	20	42
B+	0	0	1	2	2	4	0	0	0	0	1	2	0	0	0	0	0	0	4	8
C+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Small N	0	0	0	0	0	0	48	100	48	100	0	0	0	0	0	0	0	0	0	0
TOTAL	48	100	48	100	48	100	48	100	48	100	48	100	48	100	48	100	48	100	48	100

Table 7.A.6 DIF Classifications for Mathematics Grade Five Operational Items

DIF category	M-F		W-AmI		W-Asn		W-PacI		W-Fil		W-ComA		W-His		W-AfrA		E-ELnr		Total	
	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.
C-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B-	0	0	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4
A-	21	44	23	48	19	40	0	0	0	0	21	44	22	46	26	54	22	46	20	42
A+	27	56	21	44	29	60	0	0	0	0	27	56	26	54	22	46	26	54	24	50
B+	0	0	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4
C+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Small N	0	0	0	0	0	0	48	100	48	100	0	0	0	0	0	0	0	0	0	0
TOTAL	48	100	48	100	48	100	48	100	48	100	48	100	48	100	48	100	48	100	48	100

Table 7.A.7 DIF Classifications for Science Grade Five Operational Items

DIF category	M-F		W-AmI		W-Asn		W-PacI		W-Fil		W-ComA		W-His		W-AfrA		E-ELnr		Total	
	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.
C-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B-	0	0	3	6	5	10	0	0	0	0	1	2	0	0	0	0	0	0	8	17
A-	23	48	18	38	15	31	0	0	0	0	20	42	23	48	24	50	21	44	13	27
A+	25	52	27	56	27	56	0	0	0	0	25	52	25	52	24	50	27	56	25	52
B+	0	0	0	0	1	2	0	0	0	0	2	4	0	0	0	0	0	0	2	4
C+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Small N	0	0	0	0	0	0	48	100	48	100	0	0	0	0	0	0	0	0	0	0
TOTAL	48	100	48	100	48	100	48	100	48	100	48	100	48	100	48	100	48	100	48	100

Table 7.A.8 DIF Classifications for English–Language Arts Grade Three Field-Test Items

DIF category	M-F		W-AmI		W-Asn		W-PacI		W-Fil		W-ComA		W-His		W-AfrA		E-ELnr		Total	
	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.
C-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B-	1	2	0	0	0	0	0	0	0	0	1	2	0	0	0	0	1	2	3	6
A-	35	66	0	0	0	0	0	0	0	0	5	9	28	53	12	23	38	72	30	57
A+	17	32	0	0	0	0	0	0	0	0	3	6	25	47	7	13	14	26	20	38
B+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Small N	0	0	53	100	53	100	53	100	53	100	44	83	0	0	34	64	0	0	0	0
TOTAL	53	100	53	100	53	100	53	100	53	100	53	100	53	100	53	100	53	100	53	100

Table 7.A.9 DIF Classifications for English–Language Arts Grade Four Field-Test Items

DIF category	M-F		W-AmI		W-Asn		W-PacI		W-Fil		W-ComA		W-His		W-AfrA		E-ELnr		Total	
	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.
C-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A-	15	33	0	0	0	0	0	0	0	0	0	0	21	47	29	64	24	53	19	42
A+	30	67	0	0	0	0	0	0	0	0	0	0	24	53	16	36	21	47	26	58
B+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Small N	0	0	45	100	45	100	45	100	45	100	45	100	0	0	0	0	0	0	0	0
TOTAL	45	100	45	100	45	100	45	100	45	100	45	100	45	100	45	100	45	100	45	100

Table 7.A.10 DIF Classifications for English–Language Arts Grade Five Field-Test Items

DIF category	M-F		W-AmI		W-Asn		W-PacI		W-Fil		W-ComA		W-His		W-AfrA		E-ELnr		Total	
	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.
C-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B-	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	0	0	1	2
A-	23	47	0	0	0	0	0	0	0	0	0	0	26	53	29	59	26	53	28	57
A+	25	51	0	0	0	0	0	0	0	0	0	0	22	45	19	39	23	47	19	39
B+	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
C+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Small N	0	0	49	100	49	100	49	100	49	100	49	100	0	0	0	0	0	0	0	0
TOTAL	49	100	49	100	49	100	49	100	49	100	49	100	49	100	49	100	49	100	49	100

Table 7.A.11 Classifications for Mathematics Grade Three Field-Test Items

DIF category	M-F		W-AmI		W-Asn		W-PacI		W-Fil		W-ComA		W-His		W-AfrA		E-ELnr		Total	
	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.
C-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B-	2	4	0	0	0	0	0	0	0	0	0	0	3	6	0	0	1	2	6	11
A-	26	48	0	0	0	0	0	0	0	0	6	11	29	54	8	15	29	54	30	56
A+	25	46	0	0	0	0	0	0	0	0	3	6	21	39	1	2	24	44	16	30
B+	1	2	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	2	4
C+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Small N	0	0	54	100	54	100	54	100	54	100	45	83	0	0	45	83	0	0	0	0
TOTAL	54	100	54	100	54	100	54	100	54	100	54	100	54	100	54	100	54	100	54	100

Table 7.A.12 DIF Classifications for Mathematics Grade Four Field-Test Items

DIF category	M-F		W-AmI		W-Asn		W-PacI		W-Fil		W-ComA		W-His		W-AfrA		E-ELnr		Total	
	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.
C-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B-	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	1	2
A-	21	47	0	0	0	0	0	0	0	0	0	0	22	49	25	56	26	58	27	60
A+	24	53	0	0	0	0	0	0	0	0	0	0	22	49	19	42	19	42	16	36
B+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	1	2
C+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Small N	0	0	45	100	45	100	45	100	45	100	45	100	0	0	0	0	0	0	0	0
TOTAL	45	100	45	100	45	100	45	100	45	100	45	100	45	100	45	100	45	100	45	100

Table 7.A.13 DIF Classifications for Mathematics Grade Five Field-Test Items

DIF category	M-F		W-AmI		W-Asn		W-PacI		W-Fil		W-ComA		W-His		W-AfrA		E-ELnr		Total	
	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.
C-	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
B-	1	2	0	0	0	0	0	0	0	0	0	0	1	2	3	6	0	0	3	6
A-	31	57	0	0	0	0	0	0	0	0	0	0	28	52	25	46	29	54	31	57
A+	21	39	0	0	0	0	0	0	0	0	0	0	25	46	24	44	25	46	17	31
B+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	0	0	2	4
C+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Small N	0	0	54	100	54	100	54	100	54	100	54	100	0	0	0	0	0	0	0	0
TOTAL	54	100	54	100	54	100	54	100	54	100	54	100	54	100	54	100	54	100	54	100

Table 7.A.14 DIF Classifications for Science Grade Five Field-Test Items

DIF category	M-F		W-AmI		W-Asn		W-PacI		W-Fil		W-ComA		W-His		W-AfrA		E-ELnr		Total	
	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.
C-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B-	1	2	0	0	0	0	0	0	0	0	0	0	1	2	1	2	0	0	2	4
A-	29	54	0	0	0	0	0	0	0	0	0	0	30	56	33	61	26	48	30	56
A+	23	43	0	0	0	0	0	0	0	0	0	0	23	43	19	35	28	52	20	37
B+	1	2	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	2	4
C+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Small N	0	0	54	100	54	100	54	100	54	100	54	100	0	0	0	0	0	0	0	0
TOTAL	54	100	54	100	54	100	54	100	54	100	54	100	54	100	54	100	54	100	54	100

Appendix 7.B: 2008 Test Variations and Accommodations

Table 7.B.1 Matrix of Test Variations and Accommodations

Test Variation (1) / Accommodation (2)		Provision
A.	Test administration directions that are simplified or clarified (does not apply to test questions)	All
	Test students in a small group setting	All
	Test individual student separately, provided that a test examiner directly supervises the student	1
	Visual magnifying equipment	1
	Audio amplification equipment	1
	Noise buffers (e.g., individual carrel or study enclosure)	1
	Special lighting or acoustics; special or adaptive furniture	1
	Colored overlay, mask, or other means to maintain visual attention	1
	Manually Coded English or American Sign Language to present directions for administration (does not apply to test questions)	1
	Student marks in test booklet (other than responses) including highlighting	All (For grade 3 marks must be removed to avoid scanning interference or transcribe)
B. Student marks responses in test booklet and responses are transferred to a scorable answer document by an employee of the school, district, or nonpublic school		2
C. Responses dictated (orally, or in Manually Coded English or American Sign Language) to a scribe for selected-response items (multiple-choice questions)		2
D. Word processing software with spell and grammar check tools turned off for the essay responses (writing portion of the test)		Not Applicable
E. Essay responses dictated orally or in Manually Coded English to a scribe, audio recorder, or speech-to-text converter and the student provides all spelling and language conventions		2
F. Assistive device that does not interfere with the independent work of the student on the multiple-choice and/or essay responses (writing portion of the test)		2
G. Braille transcriptions provided by the test contractor		Not Available
H. Large-print versions Test items enlarged if font larger than required on large-print versions		2
I. Extra time on a test within a testing day		All
J. Test over more than one day for a test or test part to be administered in a single sitting		2
K. Supervised breaks within a section of the test		2
L. Administration of the test at the most beneficial time of day to the student		2

Test Variation (1) / Accommodation (2)	Provision
M. Test administered at home or in hospital by a test examiner	2
N. Dictionary	†
O. Manually Coded English or American Sign Language to present test questions	2 (Math and Science) / 2 (ELA)
P. Audio presentation (CD)	Not available
Q. Calculator on the mathematics or science tests	2 (Grade 5)
	† (Grades 3–4)
R. Arithmetic table or formulas (not provided) on the mathematics or science tests	Not Applicable
S. Math manipulatives on the mathematics or science tests	2
T. Word processing software with spell and grammar check tools enabled on the essay responses writing portion of test	Not Applicable
U. Essay responses dictated orally, in Manually Coded English, or in American Sign Language to a scribe [audio recorder, or speech-to-text converter] (scribe provides spelling, grammar, and language conventions)	Not Applicable
V. Assistive device that interferes with the independent work of the student on the multiple-choice and/or essay responses	†
X. Unlisted Accommodation	Check with CDE
Z. Test questions and/or answer options read aloud to student	2
AA. Reading passages read aloud to student	†

Legend:

All: All students may be provided these test variations:

Test Variation (1): Students may have these testing variations if regularly used in the classroom.

Accommodation (2): Eligible students shall be permitted to take the examination/test with **accommodations** if specified in the eligible student's IEP plan or Section 504 Plan for use on the examination, standardized testing, or for use during classroom instruction and assessment.

† The CMA is a modified test. If the IEP team feels further modifications are necessary, the IEP team should consider that the student participate in the STAR Program by taking the CSTs.

Table 7.B.2 Matrix of Test Variations for English Learners

Test Variation	Provision
A. Hear the test directions printed in the test administration manual translated into the student's primary language. Ask clarifying questions about the test directions in the student's primary language.	Variation Allowed
B. Additional supervised breaks within a testing day or following each section (STAR) within a test part, provided that the test section is completed within a testing day. A test section is identified by a "STOP" at the end of it.	Variation Allowed
C. ELs may have the opportunity to be tested separately with other ELs provided that the student is directly supervised by an employee of the school who has signed the test security affidavit and the student has been provided such a flexible setting as part of his/her regular instruction or assessment.	Variation Allowed
D. Access to translation glossaries/word lists (English-to-primary-language). Glossaries/word lists shall not include definitions or formulas.	Variation Allowed (Math, science, history–social science)

Appendix 7.C—Accommodation Summary Tables

Table 7.C.1 Accommodation Summary for English–Language Arts, Grade Three

Accommodation Summary for English–Language Arts, Grade Three		
All Tested	**Grade 3**	**Pct. of Total**
B: Marked in test booklet	74	0.69%
C: Dictated responses to a scribe	20	0.19%
F: Used non-interfering assistive device	23	0.21%
H: Used large-print test	48	0.45%
J: Tested over more than one day	25	0.23%
K: Had supervised breaks	46	0.43%
L: Most beneficial time of day	1,164	10.83%
M: Administered at home or in a hospital	552	5.13%
O: Examiner presented with MCE or ASL	9	0.08%
X: Used an unlisted accommodation	19	0.18%
Y: Leave blank	335	3.12%
Z: Examiner read test questions aloud	68	0.63%
Option circle marked; option not applicable	29	0.27%
Accommodation is in Section 504 Plan	1	0.01%
Accommodation is in IEP	1,381	12.85%
English Learner Test Variation A	33	0.31%
English Learner Test Variation B	47	0.44%
English Learner Test Variation C	60	0.56%
Any Accommodation or EL Variation	1,867	17.37%
No Accommodation or EL Variation	8,883	82.63%
Disability Not Specified	**Grade 3**	**Pct. of Total**
B: Marked in test booklet	9	0.68%
C: Dictated responses to a scribe	2	0.15%
F: Used non-interfering assistive device	1	0.08%
H: Used large-print test	4	0.30%
J: Tested over more than one day	18	1.35%
K: Had supervised breaks	4	0.30%
L: Most beneficial time of day	148	11.11%
M: Administered at home or in a hospital	48	3.60%
O: Examiner presented with MCE or ASL	9	0.68%
X: Used an unlisted accommodation	17	1.28%
Y: Leave blank	22	1.65%
Z: Examiner read test questions aloud	43	3.23%
Option circle marked; option not applicable	0	0.00%

Accommodation Summary for English–Language Arts, Grade Three		
Accommodation is in Section 504 Plan	1	0.08%
Accommodation is in IEP	206	15.47%
English Learner Test Variation A	4	0.30%
English Learner Test Variation B	7	0.53%
English Learner Test Variation C	9	0.68%
Any Accommodation or EL Variation	265	19.89%
No Accommodation or EL Variation	1,067	80.11%
Students with Disability Identified	**Grade 3**	**Pct. of Total**
B: Marked in test booklet	65	0.69%
C: Dictated responses to a scribe	18	0.19%
F: Used non-interfering assistive device	22	0.23%
H: Used large-print test	44	0.47%
J: Tested over more than one day	7	0.07%
K: Had supervised breaks	42	0.45%
L: Most beneficial time of day	1,016	10.79%
M: Administered at home or in a hospital	504	5.35%
O: Examiner presented with MCE or ASL	0	0.00%
X: Used an unlisted accommodation	2	0.02%
Y: Leave blank	313	3.32%
Z: Examiner read test questions aloud	25	0.27%
Option circle marked; option not applicable	29	0.31%
Accommodation is in Section 504 Plan	0	0.00%
Accommodation is in IEP	1,175	12.48%
English Learner Test Variation A	29	0.31%
English Learner Test Variation B	40	0.42%
English Learner Test Variation C	51	0.54%
Any Accommodation or EL Variation	1,602	17.01%
No Accommodation or EL Variation	7,816	82.99%
English-Only Students	**Grade 3**	**Pct. of Total**
B: Marked in test booklet	43	0.72%
C: Dictated responses to a scribe	15	0.25%
F: Used non-interfering assistive device	15	0.25%
H: Used large-print test	31	0.52%
J: Tested over more than one day	2	0.03%
K: Had supervised breaks	27	0.45%
L: Most beneficial time of day	655	10.95%
M: Administered at home or in a hospital	331	5.53%
O: Examiner presented with MCE or ASL	0	0.00%
X: Used an unlisted accommodation	1	0.02%

Accommodation Summary for English–Language Arts, Grade Three		
Y: Leave blank	201	3.36%
Z: Examiner read test questions aloud	14	0.23%
Option circle marked; option not applicable	24	0.40%
Accommodation is in Section 504 Plan	0	0.00%
Accommodation is in IEP	778	13.00%
English Learner Test Variation A	11	0.18%
English Learner Test Variation B	9	0.15%
English Learner Test Variation C	10	0.17%
Any Accommodation or EL Variation	1,029	17.20%
No Accommodation or EL Variation	4,954	82.80%
Initially-Fluent English Proficient (I-FEP) Students	**Grade 3**	**Pct. of Total**
B: Marked in test booklet	1	0.45%
C: Dictated responses to a scribe	1	0.45%
F: Used non-interfering assistive device	0	0.00%
H: Used large-print test	1	0.45%
J: Tested over more than one day	0	0.00%
K: Had supervised breaks	2	0.91%
L: Most beneficial time of day	23	10.45%
M: Administered at home or in a hospital	9	4.09%
O: Examiner presented with MCE or ASL	0	0.00%
X: Used an unlisted accommodation	0	0.00%
Y: Leave blank	9	4.09%
Z: Examiner read test questions aloud	0	0.00%
Option circle marked; option not applicable	0	0.00%
Accommodation is in Section 504 Plan	0	0.00%
Accommodation is in IEP	24	10.91%
English Learner Test Variation A	0	0.00%
English Learner Test Variation B	0	0.00%
English Learner Test Variation C	0	0.00%
Any Accommodation or EL Variation	31	14.09%
No Accommodation or EL Variation	189	85.91%
English Learner (EL) Students	**Grade 3**	**Pct. of Total**
B: Marked in test booklet	24	0.58%
C: Dictated responses to a scribe	3	0.07%
F: Used non-interfering assistive device	7	0.17%
H: Used large-print test	14	0.34%
J: Tested over more than one day	5	0.12%
K: Had supervised breaks	17	0.41%
L: Most beneficial time of day	445	10.84%

Accommodation Summary for English–Language Arts, Grade Three		
M: Administered at home or in a hospital	206	5.02%
O: Examiner presented with MCE or ASL	0	0.00%
X: Used an unlisted accommodation	1	0.02%
Y: Leave blank	120	2.92%
Z: Examiner read test questions aloud	17	0.41%
Option circle marked; option not applicable	5	0.12%
Accommodation is in Section 504 Plan	1	0.02%
Accommodation is in IEP	483	11.77%
English Learner Test Variation A	21	0.51%
English Learner Test Variation B	36	0.88%
English Learner Test Variation C	47	1.15%
Any Accommodation or EL Variation	698	17.01%
No Accommodation or EL Variation	3,406	82.99%
Reclassified-Fluent English Proficient (R-FEP) Students	**Grade 3**	**Pct. of Total**
B: Marked in test booklet	1	2.56%
C: Dictated responses to a scribe	0	0.00%
F: Used non-interfering assistive device	0	0.00%
H: Used large-print test	1	2.56%
J: Tested over more than one day	0	0.00%
K: Had supervised breaks	0	0.00%
L: Most beneficial time of day	3	7.69%
M: Administered at home or in a hospital	2	5.13%
O: Examiner presented with MCE or ASL	0	0.00%
X: Used an unlisted accommodation	0	0.00%
Y: Leave blank	3	7.69%
Z: Examiner read test questions aloud	0	0.00%
Option circle marked; option not applicable	0	0.00%
Accommodation is in Section 504 Plan	0	0.00%
Accommodation is in IEP	3	7.69%
English Learner Test Variation A	0	0.00%
English Learner Test Variation B	0	0.00%
English Learner Test Variation C	0	0.00%
Any Accommodation or EL Variation	6	15.38%
No Accommodation or EL Variation	33	84.62%

Table 7.C.2 Accommodation Summary for English–Language Arts, Grade Four

Accommodation Summary for English–Language Arts, Grade Four		
All Tested	**Grade 4**	**Pct. of Total**
B: Marked in test booklet	398	2.95%
C: Dictated responses to a scribe	20	0.15%
F: Used non-interfering assistive device	24	0.18%
H: Used large-print test	44	0.33%
J: Tested over more than one day	558	4.13%
K: Had supervised breaks	47	0.35%
L: Most beneficial time of day	765	5.66%
M: Administered at home or in a hospital	6	0.04%
O: Examiner presented with MCE or ASL	24	0.18%
X: Used an unlisted accommodation	458	3.39%
Y: Leave blank	33	0.24%
Z: Examiner read test questions aloud	1,609	11.91%
Option circle marked; option not applicable	6	0.04%
Accommodation is in Section 504 Plan	1	0.01%
Accommodation is in IEP	2,857	21.14%
English Learner Test Variation A	24	0.18%
English Learner Test Variation B	31	0.23%
English Learner Test Variation C	26	0.19%
Any Accommodation or EL Variation	3,186	23.58%
No Accommodation or EL Variation	10,327	76.42%
Disability Not Specified	**Grade 4**	**Pct. of Total**
B: Marked in test booklet	12	1.12%
C: Dictated responses to a scribe	1	0.09%
F: Used non-interfering assistive device	0	0.00%
H: Used large-print test	4	0.37%
J: Tested over more than one day	37	3.45%
K: Had supervised breaks	2	0.19%
L: Most beneficial time of day	48	4.48%
M: Administered at home or in a hospital	0	0.00%
O: Examiner presented with MCE or ASL	2	0.19%
X: Used an unlisted accommodation	41	3.83%
Y: Leave blank	5	0.47%
Z: Examiner read test questions aloud	101	9.43%
Option circle marked; option not applicable	0	0.00%
Accommodation is in Section 504 Plan	0	0.00%
Accommodation is in IEP	184	17.18%

Accommodation Summary for English–Language Arts, Grade Four		
English Learner Test Variation A	2	0.19%
English Learner Test Variation B	6	0.56%
English Learner Test Variation C	5	0.47%
Any Accommodation or EL Variation	215	20.07%
No Accommodation or EL Variation	856	79.93%
Students with Disability Identified	**Grade 4**	**Pct. of Total**
B: Marked in test booklet	386	3.10%
C: Dictated responses to a scribe	19	0.15%
F: Used non-interfering assistive device	24	0.19%
H: Used large-print test	40	0.32%
J: Tested over more than one day	521	4.19%
K: Had supervised breaks	45	0.36%
L: Most beneficial time of day	717	5.76%
M: Administered at home or in a hospital	6	0.05%
O: Examiner presented with MCE or ASL	22	0.18%
X: Used an unlisted accommodation	417	3.35%
Y: Leave blank	28	0.23%
Z: Examiner read test questions aloud	1,508	12.12%
Option circle marked; option not applicable	6	0.05%
Accommodation is in Section 504 Plan	1	0.01%
Accommodation is in IEP	2,673	21.48%
English Learner Test Variation A	22	0.18%
English Learner Test Variation B	25	0.20%
English Learner Test Variation C	21	0.17%
Any Accommodation or EL Variation	2,971	23.88%
No Accommodation or EL Variation	9,471	76.12%
English-Only Students	**Grade 4**	**Pct. of Total**
B: Marked in test booklet	251	3.26%
C: Dictated responses to a scribe	15	0.19%
F: Used non-interfering assistive device	12	0.16%
H: Used large-print test	27	0.35%
J: Tested over more than one day	299	3.89%
K: Had supervised breaks	26	0.34%
L: Most beneficial time of day	455	5.91%
M: Administered at home or in a hospital	4	0.05%
O: Examiner presented with MCE or ASL	18	0.23%
X: Used an unlisted accommodation	271	3.52%

Accommodation Summary for English–Language Arts, Grade Four		
Y: Leave blank	18	0.23%
Z: Examiner read test questions aloud	886	11.51%
Option circle marked; option not applicable	2	0.03%
Accommodation is in Section 504 Plan	1	0.01%
Accommodation is in IEP	1,631	21.19%
English Learner Test Variation A	5	0.06%
English Learner Test Variation B	4	0.05%
English Learner Test Variation C	5	0.06%
Any Accommodation or EL Variation	1,814	23.57%
No Accommodation or EL Variation	5,882	76.43%
Initially-Fluent English Proficient (I-FEP) Students	**Grade 4**	**Pct. of Total**
B: Marked in test booklet	9	2.88%
C: Dictated responses to a scribe	1	0.32%
F: Used non-interfering assistive device	2	0.64%
H: Used large-print test	1	0.32%
J: Tested over more than one day	18	5.77%
K: Had supervised breaks	3	0.96%
L: Most beneficial time of day	21	6.73%
M: Administered at home or in a hospital	0	0.00%
O: Examiner presented with MCE or ASL	2	0.64%
X: Used an unlisted accommodation	14	4.49%
Y: Leave blank	1	0.32%
Z: Examiner read test questions aloud	28	8.97%
Option circle marked; option not applicable	0	0.00%
Accommodation is in Section 504 Plan	0	0.00%
Accommodation is in IEP	68	21.79%
English Learner Test Variation A	1	0.32%
English Learner Test Variation B	0	0.00%
English Learner Test Variation C	0	0.00%
Any Accommodation or EL Variation	73	23.40%
No Accommodation or EL Variation	239	76.60%
English Learner (EL) Students	**Grade 4**	**Pct. of Total**
B: Marked in test booklet	132	2.45%
C: Dictated responses to a scribe	4	0.07%
F: Used non-interfering assistive device	9	0.17%
H: Used large-print test	15	0.28%
J: Tested over more than one day	235	4.37%
K: Had supervised breaks	18	0.33%
L: Most beneficial time of day	280	5.20%

Accommodation Summary for English–Language Arts, Grade Four		
M: Administered at home or in a hospital	2	0.04%
O: Examiner presented with MCE or ASL	4	0.07%
X: Used an unlisted accommodation	168	3.12%
Y: Leave blank	13	0.24%
Z: Examiner read test questions aloud	677	12.58%
Option circle marked; option not applicable	4	0.07%
Accommodation is in Section 504 Plan	0	0.00%
Accommodation is in IEP	1,127	20.94%
English Learner Test Variation A	18	0.33%
English Learner Test Variation B	27	0.50%
English Learner Test Variation C	21	0.39%
Any Accommodation or EL Variation	1,263	23.46%
No Accommodation or EL Variation	4,120	76.54%
Reclassified-Fluent English Proficient (R-FEP) Students	**Grade 4**	**Pct. of Total**
B: Marked in test booklet	5	6.33%
C: Dictated responses to a scribe	0	0.00%
F: Used non-interfering assistive device	0	0.00%
H: Used large-print test	0	0.00%
J: Tested over more than one day	4	5.06%
K: Had supervised breaks	0	0.00%
L: Most beneficial time of day	7	8.86%
M: Administered at home or in a hospital	0	0.00%
O: Examiner presented with MCE or ASL	0	0.00%
X: Used an unlisted accommodation	2	2.53%
Y: Leave blank	1	1.27%
Z: Examiner read test questions aloud	12	15.19%
Option circle marked; option not applicable	0	0.00%
Accommodation is in Section 504 Plan	0	0.00%
Accommodation is in IEP	19	24.05%
English Learner Test Variation A	0	0.00%
English Learner Test Variation B	0	0.00%
English Learner Test Variation C	0	0.00%
Any Accommodation or EL Variation	24	30.38%
No Accommodation or EL Variation	55	69.62%

Table 7.C.3 Accommodation Summary for English–Language Arts, Grade Five

Accommodation Summary for English–Language Arts, Grade Five		
All Tested	**Grade 5**	**Pct. of Total**
B: Marked in test booklet	334	2.59%
C: Dictated responses to a scribe	24	0.19%
F: Used non-interfering assistive device	33	0.26%
H: Used large-print test	43	0.33%
J: Tested over more than one day	503	3.90%
K: Had supervised breaks	36	0.28%
L: Most beneficial time of day	764	5.92%
M: Administered at home or in a hospital	6	0.05%
O: Examiner presented with MCE or ASL	31	0.24%
X: Used an unlisted accommodation	428	3.32%
Y: Leave blank	26	0.20%
Z: Examiner read test questions aloud	1,346	10.44%
Option circle marked; option not applicable	0	0.00%
Accommodation is in Section 504 Plan	1	0.01%
Accommodation is in IEP	2,467	19.13%
English Learner Test Variation A	23	0.18%
English Learner Test Variation B	16	0.12%
English Learner Test Variation C	12	0.09%
Any Accommodation or EL Variation	2,763	21.43%
No Accommodation or EL Variation	10,133	78.57%
Disability Not Specified	**Grade 5**	**Pct. of Total**
B: Marked in test booklet	19	2.19%
C: Dictated responses to a scribe	0	0.00%
F: Used non-interfering assistive device	6	0.69%
H: Used large-print test	0	0.00%
J: Tested over more than one day	32	3.69%
K: Had supervised breaks	4	0.46%
L: Most beneficial time of day	39	4.50%
M: Administered at home or in a hospital	0	0.00%
O: Examiner presented with MCE or ASL	1	0.12%
X: Used an unlisted accommodation	24	2.77%
Y: Leave blank	1	0.12%
Z: Examiner read test questions aloud	80	9.23%
Option circle marked; option not applicable	0	0.00%
Accommodation is in Section 504 Plan	0	0.00%
Accommodation is in IEP	143	16.49%

Accommodation Summary for English–Language Arts, Grade Five		
English Learner Test Variation A	0	0.00%
English Learner Test Variation B	3	0.35%
English Learner Test Variation C	2	0.23%
Any Accommodation or EL Variation	164	18.92%
No Accommodation or EL Variation	703	81.08%
Students with Disability Identified	**Grade 5**	**Pct. of Total**
B: Marked in test booklet	315	2.62%
C: Dictated responses to a scribe	24	0.20%
F: Used non-interfering assistive device	27	0.22%
H: Used large-print test	43	0.36%
J: Tested over more than one day	471	3.92%
K: Had supervised breaks	32	0.27%
L: Most beneficial time of day	725	6.03%
M: Administered at home or in a hospital	6	0.05%
O: Examiner presented with MCE or ASL	30	0.25%
X: Used an unlisted accommodation	404	3.36%
Y: Leave blank	25	0.21%
Z: Examiner read test questions aloud	1,266	10.52%
Option circle marked; option not applicable	0	0.00%
Accommodation is in Section 504 Plan	1	0.01%
Accommodation is in IEP	2,324	19.32%
English Learner Test Variation A	23	0.19%
English Learner Test Variation B	13	0.11%
English Learner Test Variation C	10	0.08%
Any Accommodation or EL Variation	2,599	21.61%
No Accommodation or EL Variation	9,430	78.39%
English-Only Students	**Grade 5**	**Pct. of Total**
B: Marked in test booklet	198	2.87%
C: Dictated responses to a scribe	14	0.20%
F: Used non-interfering assistive device	19	0.28%
H: Used large-print test	24	0.35%
J: Tested over more than one day	251	3.64%
K: Had supervised breaks	19	0.28%
L: Most beneficial time of day	420	6.09%
M: Administered at home or in a hospital	2	0.03%
O: Examiner presented with MCE or ASL	25	0.36%
X: Used an unlisted accommodation	220	3.19%

Accommodation Summary for English–Language Arts, Grade Five		
Y: Leave blank	16	0.23%
Z: Examiner read test questions aloud	723	10.49%
Option circle marked; option not applicable	0	0.00%
Accommodation is in Section 504 Plan	0	0.00%
Accommodation is in IEP	1,362	19.76%
English Learner Test Variation A	6	0.09%
English Learner Test Variation B	2	0.03%
English Learner Test Variation C	0	0.00%
Any Accommodation or EL Variation	1,518	22.03%
No Accommodation or EL Variation	5,374	77.97%
Initially-Fluent English Proficient (I-FEP) Students	**Grade 5**	**Pct. of Total**
B: Marked in test booklet	6	2.56%
C: Dictated responses to a scribe	0	0.00%
F: Used non-interfering assistive device	1	0.43%
H: Used large-print test	2	0.85%
J: Tested over more than one day	17	7.26%
K: Had supervised breaks	0	0.00%
L: Most beneficial time of day	19	8.12%
M: Administered at home or in a hospital	0	0.00%
O: Examiner presented with MCE or ASL	1	0.43%
X: Used an unlisted accommodation	7	2.99%
Y: Leave blank	0	0.00%
Z: Examiner read test questions aloud	22	9.40%
Option circle marked; option not applicable	0	0.00%
Accommodation is in Section 504 Plan	0	0.00%
Accommodation is in IEP	49	20.94%
English Learner Test Variation A	0	0.00%
English Learner Test Variation B	0	0.00%
English Learner Test Variation C	0	0.00%
Any Accommodation or EL Variation	53	22.65%
No Accommodation or EL Variation	181	77.35%
English Learner (EL) Students	**Grade 5**	**Pct. of Total**
B: Marked in test booklet	123	2.19%
C: Dictated responses to a scribe	10	0.18%
F: Used non-interfering assistive device	13	0.23%
H: Used large-print test	17	0.30%
J: Tested over more than one day	232	4.13%
K: Had supervised breaks	16	0.28%
L: Most beneficial time of day	309	5.50%

Accommodation Summary for English–Language Arts, Grade Five		
M: Administered at home or in a hospital	4	0.07%
O: Examiner presented with MCE or ASL	5	0.09%
X: Used an unlisted accommodation	195	3.47%
Y: Leave blank	7	0.12%
Z: Examiner read test questions aloud	584	10.40%
Option circle marked; option not applicable	0	0.00%
Accommodation is in Section 504 Plan	1	0.02%
Accommodation is in IEP	1,025	18.25%
English Learner Test Variation A	17	0.30%
English Learner Test Variation B	14	0.25%
English Learner Test Variation C	12	0.21%
Any Accommodation or EL Variation	1,156	20.58%
No Accommodation or EL Variation	4,461	79.42%
Reclassified-Fluent English Proficient (R-FEP) Students	**Grade 5**	**Pct. of Total**
B: Marked in test booklet	6	6.12%
C: Dictated responses to a scribe	0	0.00%
F: Used non-interfering assistive device	0	0.00%
H: Used large-print test	0	0.00%
J: Tested over more than one day	2	2.04%
K: Had supervised breaks	0	0.00%
L: Most beneficial time of day	10	10.20%
M: Administered at home or in a hospital	0	0.00%
O: Examiner presented with MCE or ASL	0	0.00%
X: Used an unlisted accommodation	4	4.08%
Y: Leave blank	3	3.06%
Z: Examiner read test questions aloud	10	10.20%
Option circle marked; option not applicable	0	0.00%
Accommodation is in Section 504 Plan	0	0.00%
Accommodation is in IEP	19	19.39%
English Learner Test Variation A	0	0.00%
English Learner Test Variation B	0	0.00%
English Learner Test Variation C	0	0.00%
Any Accommodation or EL Variation	23	23.47%
No Accommodation or EL Variation	75	76.53%

Table 7.C.4 Accommodation Summary for Mathematics, Grade Three

Accommodation Summary for Mathematics, Grade Three		
All Tested	**Grade 3**	**Pct. of Total**
B: Marked in test booklet	59	0.66%
C: Dictated responses to a scribe	23	0.26%
F: Used non-interfering assistive device	15	0.17%
H: Used large-print test	41	0.46%
J: Tested over more than one day	23	0.26%
K: Had supervised breaks	9	0.10%
L: Most beneficial time of day	877	9.80%
M: Administered at home or in a hospital	456	5.09%
O: Examiner presented with MCE or ASL	8	0.09%
S: Used math manipulatives	20	0.22%
X: Used an unlisted accommodation	17	0.19%
Y: Leave blank	287	3.21%
Z: Examiner read test questions aloud	111	1.24%
Option circle marked; option not applicable	62	0.69%
Accommodation is in Section 504 Plan	1	0.01%
Accommodation is in IEP	1,173	13.10%
English Learner Test Variation A	29	0.32%
English Learner Test Variation B	36	0.40%
English Learner Test Variation C	44	0.49%
English Learner Test Variation D	8	0.09%
Any Accommodation or EL Variation	1,580	17.65%
No Accommodation or EL Variation	7,373	82.35%
Disability Not Specified	**Grade 3**	**Pct. of Total**
B: Marked in test booklet	8	0.74%
C: Dictated responses to a scribe	1	0.09%
F: Used non-interfering assistive device	0	0.00%
H: Used large-print test	4	0.37%
J: Tested over more than one day	15	1.39%
K: Had supervised breaks	0	0.00%
L: Most beneficial time of day	109	10.12%
M: Administered at home or in a hospital	38	3.53%
O: Examiner presented with MCE or ASL	8	0.74%
S: Used math manipulatives	2	0.19%
X: Used an unlisted accommodation	16	1.49%
Y: Leave blank	16	1.49%
Z: Examiner read test questions aloud	80	7.43%
Option circle marked; option not applicable	3	0.28%

Accommodation Summary for Mathematics, Grade Three		
Accommodation is in Section 504 Plan	1	0.09%
Accommodation is in IEP	208	19.31%
English Learner Test Variation A	4	0.37%
English Learner Test Variation B	6	0.56%
English Learner Test Variation C	7	0.65%
English Learner Test Variation D	2	0.19%
Any Accommodation or EL Variation	252	23.40%
No Accommodation or EL Variation	825	76.60%
Students with Disability Identified	**Grade 3**	**Pct. of Total**
B: Marked in test booklet	51	0.65%
C: Dictated responses to a scribe	22	0.28%
F: Used non-interfering assistive device	15	0.19%
H: Used large-print test	37	0.47%
J: Tested over more than one day	8	0.10%
K: Had supervised breaks	9	0.11%
L: Most beneficial time of day	768	9.75%
M: Administered at home or in a hospital	418	5.31%
O: Examiner presented with MCE or ASL	0	0.00%
S: Used math manipulatives	18	0.23%
X: Used an unlisted accommodation	1	0.01%
Y: Leave blank	271	3.44%
Z: Examiner read test questions aloud	31	0.39%
Option circle marked; option not applicable	59	0.75%
Accommodation is in Section 504 Plan	0	0.00%
Accommodation is in IEP	965	12.25%
English Learner Test Variation A	25	0.32%
English Learner Test Variation B	30	0.38%
English Learner Test Variation C	37	0.47%
English Learner Test Variation D	6	0.08%
Any Accommodation or EL Variation	1,328	16.86%
No Accommodation or EL Variation	6,548	83.14%
English-Only Students	**Grade 3**	**Pct. of Total**
B: Marked in test booklet	33	0.66%
C: Dictated responses to a scribe	18	0.36%
F: Used non-interfering assistive device	10	0.20%
H: Used large-print test	26	0.52%
J: Tested over more than one day	3	0.06%
K: Had supervised breaks	6	0.12%
L: Most beneficial time of day	501	10.02%

Accommodation Summary for Mathematics, Grade Three		
M: Administered at home or in a hospital	271	5.42%
O: Examiner presented with MCE or ASL	0	0.00%
S: Used math manipulatives	7	0.14%
X: Used an unlisted accommodation	0	0.00%
Y: Leave blank	185	3.70%
Z: Examiner read test questions aloud	18	0.36%
Option circle marked; option not applicable	41	0.82%
Accommodation is in Section 504 Plan	0	0.00%
Accommodation is in IEP	646	12.92%
English Learner Test Variation A	9	0.18%
English Learner Test Variation B	6	0.12%
English Learner Test Variation C	8	0.16%
English Learner Test Variation D	5	0.10%
Any Accommodation or EL Variation	859	17.18%
No Accommodation or EL Variation	4,140	82.82%
Initially-Fluent English Proficient (I-FEP) Students	**Grade 3**	**Pct. of Total**
B: Marked in test booklet	1	0.57%
C: Dictated responses to a scribe	1	0.57%
F: Used non-interfering assistive device	0	0.00%
H: Used large-print test	1	0.57%
J: Tested over more than one day	0	0.00%
K: Had supervised breaks	0	0.00%
L: Most beneficial time of day	14	8.00%
M: Administered at home or in a hospital	5	2.86%
O: Examiner presented with MCE or ASL	0	0.00%
S: Used math manipulatives	1	0.57%
X: Used an unlisted accommodation	0	0.00%
Y: Leave blank	6	3.43%
Z: Examiner read test questions aloud	0	0.00%
Option circle marked; option not applicable	2	1.14%
Accommodation is in Section 504 Plan	0	0.00%
Accommodation is in IEP	17	9.71%
English Learner Test Variation A	0	0.00%
English Learner Test Variation B	0	0.00%
English Learner Test Variation C	0	0.00%
English Learner Test Variation D	0	0.00%
Any Accommodation or EL Variation	22	12.57%
No Accommodation or EL Variation	153	87.43%

Accommodation Summary for Mathematics, Grade Three		
English Learner (EL) Students	**Grade 3**	**Pct. of Total**
B: Marked in test booklet	19	0.56%
C: Dictated responses to a scribe	3	0.09%
F: Used non-interfering assistive device	5	0.15%
H: Used large-print test	12	0.35%
J: Tested over more than one day	5	0.15%
K: Had supervised breaks	3	0.09%
L: Most beneficial time of day	326	9.60%
M: Administered at home or in a hospital	173	5.09%
O: Examiner presented with MCE or ASL	0	0.00%
S: Used math manipulatives	10	0.29%
X: Used an unlisted accommodation	1	0.03%
Y: Leave blank	92	2.71%
Z: Examiner read test questions aloud	18	0.53%
Option circle marked; option not applicable	17	0.50%
Accommodation is in Section 504 Plan	1	0.03%
Accommodation is in IEP	388	11.42%
English Learner Test Variation A	19	0.56%
English Learner Test Variation B	28	0.82%
English Learner Test Variation C	33	0.97%
English Learner Test Variation D	3	0.09%
Any Accommodation or EL Variation	563	16.57%
No Accommodation or EL Variation	2,834	83.43%
Reclassified-Fluent English Proficient (R-FEP) Students	**Grade 3**	**Pct. of Total**
B: Marked in test booklet	1	4.00%
C: Dictated responses to a scribe	0	0.00%
F: Used non-interfering assistive device	0	0.00%
H: Used large-print test	1	4.00%
J: Tested over more than one day	0	0.00%
K: Had supervised breaks	0	0.00%
L: Most beneficial time of day	2	8.00%
M: Administered at home or in a hospital	2	8.00%
O: Examiner presented with MCE or ASL	0	0.00%
S: Used math manipulatives	0	0.00%
X: Used an unlisted accommodation	0	0.00%
Y: Leave blank	3	12.00%
Z: Examiner read test questions aloud	0	0.00%
Option circle marked; option not applicable	0	0.00%

Accommodation Summary for Mathematics, Grade Three		
Accommodation is in Section 504 Plan	0	0.00%
Accommodation is in IEP	3	12.00%
English Learner Test Variation A	0	0.00%
English Learner Test Variation B	0	0.00%
English Learner Test Variation C	0	0.00%
English Learner Test Variation D	0	0.00%
Any Accommodation or EL Variation	5	20.00%
No Accommodation or EL Variation	20	80.00%

Table 7.C.5 Accommodation Summary for Mathematics, Grade Four

Accommodation Summary for Mathematics, Grade Four		
All Tested	**Grade 4**	**Pct. of Total**
B: Marked in test booklet	331	2.91%
C: Dictated responses to a scribe	18	0.16%
F: Used non-interfering assistive device	16	0.14%
H: Used large-print test	34	0.30%
J: Tested over more than one day	478	4.20%
K: Had supervised breaks	36	0.32%
L: Most beneficial time of day	647	5.68%
M: Administered at home or in a hospital	7	0.06%
O: Examiner presented with MCE or ASL	29	0.25%
S: Used math manipulatives	62	0.54%
X: Used an unlisted accommodation	402	3.53%
Y: Leave blank	22	0.19%
Z: Examiner read test questions aloud	2,512	22.07%
Option circle marked; option not applicable	53	0.47%
Accommodation is in Section 504 Plan	1	0.01%
Accommodation is in IEP	3,267	28.71%
English Learner Test Variation A	16	0.14%
English Learner Test Variation B	28	0.25%
English Learner Test Variation C	25	0.22%
English Learner Test Variation D	2	0.02%
Any Accommodation or EL Variation	3,609	31.71%
No Accommodation or EL Variation	7,772	68.29%
Disability Not Specified	**Grade 4**	**Pct. of Total**
B: Marked in test booklet	11	1.20%
C: Dictated responses to a scribe	1	0.11%
F: Used non-interfering assistive device	0	0.00%
H: Used large-print test	2	0.22%
J: Tested over more than one day	29	3.16%
K: Had supervised breaks	2	0.22%
L: Most beneficial time of day	39	4.24%
M: Administered at home or in a hospital	0	0.00%
O: Examiner presented with MCE or ASL	1	0.11%
S: Used math manipulatives	4	0.44%
X: Used an unlisted accommodation	37	4.03%
Y: Leave blank	4	0.44%
Z: Examiner read test questions aloud	177	19.26%
Option circle marked; option not applicable	3	0.33%

Accommodation Summary for Mathematics, Grade Four		
Accommodation is in Section 504 Plan	0	0.00%
Accommodation is in IEP	232	25.24%
English Learner Test Variation A	2	0.22%
English Learner Test Variation B	6	0.65%
English Learner Test Variation C	3	0.33%
English Learner Test Variation D	1	0.11%
Any Accommodation or EL Variation	260	28.29%
No Accommodation or EL Variation	659	71.71%
Students with Disability Identified	**Grade 4**	**Pct. of Total**
B: Marked in test booklet	320	3.06%
C: Dictated responses to a scribe	17	0.16%
F: Used non-interfering assistive device	16	0.15%
H: Used large-print test	32	0.31%
J: Tested over more than one day	449	4.29%
K: Had supervised breaks	34	0.32%
L: Most beneficial time of day	608	5.81%
M: Administered at home or in a hospital	7	0.07%
O: Examiner presented with MCE or ASL	28	0.27%
S: Used math manipulatives	58	0.55%
X: Used an unlisted accommodation	365	3.49%
Y: Leave blank	18	0.17%
Z: Examiner read test questions aloud	2,335	22.32%
Option circle marked; option not applicable	50	0.48%
Accommodation is in Section 504 Plan	1	0.01%
Accommodation is in IEP	3,035	29.01%
English Learner Test Variation A	14	0.13%
English Learner Test Variation B	22	0.21%
English Learner Test Variation C	22	0.21%
English Learner Test Variation D	1	0.01%
Any Accommodation or EL Variation	3,349	32.01%
No Accommodation or EL Variation	7,113	67.99%
English-Only Students	**Grade 4**	**Pct. of Total**
B: Marked in test booklet	212	3.26%
C: Dictated responses to a scribe	14	0.22%
F: Used non-interfering assistive device	8	0.12%
H: Used large-print test	20	0.31%
J: Tested over more than one day	251	3.86%
K: Had supervised breaks	21	0.32%
L: Most beneficial time of day	390	6.00%

Accommodation Summary for Mathematics, Grade Four		
M: Administered at home or in a hospital	4	0.06%
O: Examiner presented with MCE or ASL	21	0.32%
S: Used math manipulatives	32	0.49%
X: Used an unlisted accommodation	233	3.58%
Y: Leave blank	16	0.25%
Z: Examiner read test questions aloud	1,386	21.32%
Option circle marked; option not applicable	23	0.35%
Accommodation is in Section 504 Plan	1	0.02%
Accommodation is in IEP	1,855	28.53%
English Learner Test Variation A	3	0.05%
English Learner Test Variation B	4	0.06%
English Learner Test Variation C	4	0.06%
English Learner Test Variation D	2	0.03%
Any Accommodation or EL Variation	2,053	31.57%
No Accommodation or EL Variation	4,449	68.43%
Initially-Fluent English Proficient (I-FEP) Students	**Grade 4**	**Pct. of Total**
B: Marked in test booklet	7	2.92%
C: Dictated responses to a scribe	1	0.42%
F: Used non-interfering assistive device	2	0.83%
H: Used large-print test	1	0.42%
J: Tested over more than one day	16	6.67%
K: Had supervised breaks	2	0.83%
L: Most beneficial time of day	18	7.50%
M: Administered at home or in a hospital	0	0.00%
O: Examiner presented with MCE or ASL	2	0.83%
S: Used math manipulatives	3	1.25%
X: Used an unlisted accommodation	12	5.00%
Y: Leave blank	0	0.00%
Z: Examiner read test questions aloud	52	21.67%
Option circle marked; option not applicable	0	0.00%
Accommodation is in Section 504 Plan	0	0.00%
Accommodation is in IEP	77	32.08%
English Learner Test Variation A	1	0.42%
English Learner Test Variation B	0	0.00%
English Learner Test Variation C	0	0.00%
English Learner Test Variation D	0	0.00%
Any Accommodation or EL Variation	81	33.75%
No Accommodation or EL Variation	159	66.25%

Accommodation Summary for Mathematics, Grade Four		
English Learner (EL) Students	**Grade 4**	**Pct. of Total**
B: Marked in test booklet	107	2.37%
C: Dictated responses to a scribe	3	0.07%
F: Used non-interfering assistive device	5	0.11%
H: Used large-print test	12	0.27%
J: Tested over more than one day	210	4.64%
K: Had supervised breaks	13	0.29%
L: Most beneficial time of day	235	5.19%
M: Administered at home or in a hospital	3	0.07%
O: Examiner presented with MCE or ASL	5	0.11%
S: Used math manipulatives	25	0.55%
X: Used an unlisted accommodation	151	3.34%
Y: Leave blank	6	0.13%
Z: Examiner read test questions aloud	1,044	23.08%
Option circle marked; option not applicable	30	0.66%
Accommodation is in Section 504 Plan	0	0.00%
Accommodation is in IEP	1,301	28.76%
English Learner Test Variation A	12	0.27%
English Learner Test Variation B	24	0.53%
English Learner Test Variation C	21	0.46%
English Learner Test Variation D	0	0.00%
Any Accommodation or EL Variation	1,437	31.76%
No Accommodation or EL Variation	3,087	68.24%
Reclassified-Fluent English Proficient (R-FEP) Students	**Grade 4**	**Pct. of Total**
B: Marked in test booklet	4	5.41%
C: Dictated responses to a scribe	0	0.00%
F: Used non-interfering assistive device	0	0.00%
H: Used large-print test	0	0.00%
J: Tested over more than one day	0	0.00%
K: Had supervised breaks	0	0.00%
L: Most beneficial time of day	3	4.05%
M: Administered at home or in a hospital	0	0.00%
O: Examiner presented with MCE or ASL	0	0.00%
S: Used math manipulatives	2	2.70%
X: Used an unlisted accommodation	3	4.05%
Y: Leave blank	0	0.00%
Z: Examiner read test questions aloud	24	32.43%
Option circle marked; option not applicable	0	0.00%

Accommodation Summary for Mathematics, Grade Four		
Accommodation is in Section 504 Plan	0	0.00%
Accommodation is in IEP	23	31.08%
English Learner Test Variation A	0	0.00%
English Learner Test Variation B	0	0.00%
English Learner Test Variation C	0	0.00%
English Learner Test Variation D	0	0.00%
Any Accommodation or EL Variation	27	36.49%
No Accommodation or EL Variation	47	63.51%

Table 7.C.6 Accommodation Summary for Mathematics, Grade Five

Accommodation Summary for Mathematics, Grade Five		
All Tested	**Grade 5**	**Pct. of Total**
B: Marked in test booklet	300	2.55%
C: Dictated responses to a scribe	21	0.18%
F: Used non-interfering assistive device	33	0.28%
H: Used large-print test	39	0.33%
J: Tested over more than one day	478	4.07%
K: Had supervised breaks	29	0.25%
L: Most beneficial time of day	681	5.80%
M: Administered at home or in a hospital	6	0.05%
O: Examiner presented with MCE or ASL	43	0.37%
Q: Used a calculator	702	5.98%
S: Used math manipulatives	53	0.45%
X: Used an unlisted accommodation	406	3.46%
Y: Leave blank	16	0.14%
Z: Examiner read test questions aloud	2,337	19.90%
Option circle marked; option not applicable	46	0.39%
Accommodation is in Section 504 Plan	2	0.02%
Accommodation is in IEP	3,277	27.91%
English Learner Test Variation A	19	0.16%
English Learner Test Variation B	14	0.12%
English Learner Test Variation C	10	0.09%
English Learner Test Variation D	3	0.03%
Any Accommodation or EL Variation	3,643	31.02%
No Accommodation or EL Variation	8,100	68.98%
Disability Not Specified	**Grade 5**	**Pct. of Total**
B: Marked in test booklet	20	2.44%
C: Dictated responses to a scribe	0	0.00%
F: Used non-interfering assistive device	8	0.98%
H: Used large-print test	0	0.00%
J: Tested over more than one day	26	3.17%
K: Had supervised breaks	4	0.49%
L: Most beneficial time of day	30	3.66%
M: Administered at home or in a hospital	0	0.00%
O: Examiner presented with MCE or ASL	1	0.12%
Q: Used a calculator	36	4.40%
S: Used math manipulatives	5	0.61%

Accommodation Summary for Mathematics, Grade Five		
X: Used an unlisted accommodation	22	2.69%
Y: Leave blank	1	0.12%
Z: Examiner read test questions aloud	151	18.44%
Option circle marked; option not applicable	1	0.12%
Accommodation is in Section 504 Plan	0	0.00%
Accommodation is in IEP	199	24.30%
English Learner Test Variation A	0	0.00%
English Learner Test Variation B	3	0.37%
English Learner Test Variation C	2	0.24%
English Learner Test Variation D	2	0.24%
Any Accommodation or EL Variation	227	27.72%
No Accommodation or EL Variation	592	72.28%
Students with Disability Identified	**Grade 5**	**Pct. of Total**
B: Marked in test booklet	280	2.56%
C: Dictated responses to a scribe	21	0.19%
F: Used non-interfering assistive device	25	0.23%
H: Used large-print test	39	0.36%
J: Tested over more than one day	452	4.14%
K: Had supervised breaks	25	0.23%
L: Most beneficial time of day	651	5.96%
M: Administered at home or in a hospital	6	0.05%
O: Examiner presented with MCE or ASL	42	0.38%
Q: Used a calculator	666	6.10%
S: Used math manipulatives	48	0.44%
X: Used an unlisted accommodation	384	3.52%
Y: Leave blank	15	0.14%
Z: Examiner read test questions aloud	2,186	20.01%
Option circle marked; option not applicable	45	0.41%
Accommodation is in Section 504 Plan	2	0.02%
Accommodation is in IEP	3,078	28.18%
English Learner Test Variation A	19	0.17%
English Learner Test Variation B	11	0.10%
English Learner Test Variation C	8	0.07%
English Learner Test Variation D	1	0.01%
Any Accommodation or EL Variation	3,416	31.27%
No Accommodation or EL Variation	7,508	68.73%

Accommodation Summary for Mathematics, Grade Five		
English-Only Students	**Grade 5**	**Pct. of Total**
B: Marked in test booklet	183	2.83%
C: Dictated responses to a scribe	13	0.20%
F: Used non-interfering assistive device	21	0.33%
H: Used large-print test	22	0.34%
J: Tested over more than one day	243	3.76%
K: Had supervised breaks	14	0.22%
L: Most beneficial time of day	382	5.92%
M: Administered at home or in a hospital	2	0.03%
O: Examiner presented with MCE or ASL	29	0.45%
Q: Used a calculator	377	5.84%
S: Used math manipulatives	25	0.39%
X: Used an unlisted accommodation	214	3.31%
Y: Leave blank	12	0.19%
Z: Examiner read test questions aloud	1,240	19.20%
Option circle marked; option not applicable	39	0.60%
Accommodation is in Section 504 Plan	1	0.02%
Accommodation is in IEP	1,807	27.98%
English Learner Test Variation A	4	0.06%
English Learner Test Variation B	0	0.00%
English Learner Test Variation C	0	0.00%
English Learner Test Variation D	0	0.00%
Any Accommodation or EL Variation	2,007	31.08%
No Accommodation or EL Variation	4,451	68.92%
Initially-Fluent English Proficient (I-FEP) Students	**Grade 5**	**Pct. of Total**
B: Marked in test booklet	8	3.64%
C: Dictated responses to a scribe	0	0.00%
F: Used non-interfering assistive device	1	0.45%
H: Used large-print test	2	0.91%
J: Tested over more than one day	15	6.82%
K: Had supervised breaks	0	0.00%
L: Most beneficial time of day	14	6.36%
M: Administered at home or in a hospital	0	0.00%
O: Examiner presented with MCE or ASL	2	0.91%
Q: Used a calculator	9	4.09%
S: Used math manipulatives	1	0.45%
X: Used an unlisted accommodation	2	0.91%

Accommodation Summary for Mathematics, Grade Five		
Y: Leave blank	0	0.00%
Z: Examiner read test questions aloud	39	17.73%
Option circle marked; option not applicable	1	0.45%
Accommodation is in Section 504 Plan	0	0.00%
Accommodation is in IEP	64	29.09%
English Learner Test Variation A	0	0.00%
English Learner Test Variation B	0	0.00%
English Learner Test Variation C	0	0.00%
English Learner Test Variation D	0	0.00%
Any Accommodation or EL Variation	68	30.91%
No Accommodation or EL Variation	152	69.09%
English Learner (EL) Students	**Grade 5**	**Pct. of Total**
B: Marked in test booklet	103	2.09%
C: Dictated responses to a scribe	8	0.16%
F: Used non-interfering assistive device	11	0.22%
H: Used large-print test	15	0.30%
J: Tested over more than one day	216	4.39%
K: Had supervised breaks	14	0.28%
L: Most beneficial time of day	273	5.55%
M: Administered at home or in a hospital	4	0.08%
O: Examiner presented with MCE or ASL	12	0.24%
Q: Used a calculator	304	6.18%
S: Used math manipulatives	24	0.49%
X: Used an unlisted accommodation	186	3.78%
Y: Leave blank	4	0.08%
Z: Examiner read test questions aloud	1,031	20.96%
Option circle marked; option not applicable	6	0.12%
Accommodation is in Section 504 Plan	1	0.02%
Accommodation is in IEP	1,367	27.79%
English Learner Test Variation A	15	0.30%
English Learner Test Variation B	14	0.28%
English Learner Test Variation C	10	0.20%
English Learner Test Variation D	3	0.06%
Any Accommodation or EL Variation	1,524	30.98%
No Accommodation or EL Variation	3,395	69.02%

Accommodation Summary for Mathematics, Grade Five		
Reclassified-Fluent English Proficient (R-FEP) Students	**Grade 5**	**Pct. of Total**
B: Marked in test booklet	5	5.68%
C: Dictated responses to a scribe	0	0.00%
F: Used non-interfering assistive device	0	0.00%
H: Used large-print test	0	0.00%
J: Tested over more than one day	2	2.27%
K: Had supervised breaks	0	0.00%
L: Most beneficial time of day	8	9.09%
M: Administered at home or in a hospital	0	0.00%
O: Examiner presented with MCE or ASL	0	0.00%
Q: Used a calculator	9	10.23%
S: Used math manipulatives	3	3.41%
X: Used an unlisted accommodation	2	2.27%
Y: Leave blank	0	0.00%
Z: Examiner read test questions aloud	18	20.45%
Option circle marked; option not applicable	0	0.00%
Accommodation is in Section 504 Plan	0	0.00%
Accommodation is in IEP	24	27.27%
English Learner Test Variation A	0	0.00%
English Learner Test Variation B	0	0.00%
English Learner Test Variation C	0	0.00%
English Learner Test Variation D	0	0.00%
Any Accommodation or EL Variation	28	31.82%
No Accommodation or EL Variation	60	68.18%

Table 7.C.7 Accommodation Summary for Science, Grade Five

Accommodation Summary for Science, Grade Five		
All Tested	**Grade 5**	**Pct. of Total**
B: Marked in test booklet	303	2.50%
C: Dictated responses to a scribe	24	0.20%
F: Used non-interfering assistive device	26	0.21%
H: Used large-print test	37	0.30%
J: Tested over more than one day	429	3.54%
K: Had supervised breaks	29	0.24%
L: Most beneficial time of day	649	5.35%
M: Administered at home or in a hospital	5	0.04%
O: Examiner presented with MCE or ASL	50	0.41%
Q: Used a calculator	136	1.12%
S: Used math manipulatives	18	0.15%
X: Used an unlisted accommodation	413	3.40%
Y: Leave blank	20	0.16%
Z: Examiner read test questions aloud	2,571	21.19%
Option circle marked; option not applicable	32	0.26%
Accommodation is in Section 504 Plan	1	0.01%
Accommodation is in IEP	3,307	27.25%
English Learner Test Variation A	13	0.11%
English Learner Test Variation B	16	0.13%
English Learner Test Variation C	13	0.11%
English Learner Test Variation D	1	0.01%
Any Accommodation or EL Variation	3,624	29.87%
No Accommodation or EL Variation	8,510	70.13%
Disability Not Specified	**Grade 5**	**Pct. of Total**
B: Marked in test booklet	18	2.22%
C: Dictated responses to a scribe	0	0.00%
F: Used non-interfering assistive device	6	0.74%
H: Used large-print test	0	0.00%
J: Tested over more than one day	18	2.22%
K: Had supervised breaks	4	0.49%
L: Most beneficial time of day	32	3.95%
M: Administered at home or in a hospital	0	0.00%
O: Examiner presented with MCE or ASL	1	0.12%
Q: Used a calculator	6	0.74%
S: Used math manipulatives	1	0.12%

Accommodation Summary for Science, Grade Five		
X: Used an unlisted accommodation	22	2.72%
Y: Leave blank	1	0.12%
Z: Examiner read test questions aloud	143	17.65%
Option circle marked; option not applicable	1	0.12%
Accommodation is in Section 504 Plan	0	0.00%
Accommodation is in IEP	180	22.22%
English Learner Test Variation A	0	0.00%
English Learner Test Variation B	3	0.37%
English Learner Test Variation C	2	0.25%
English Learner Test Variation D	0	0.00%
Any Accommodation or EL Variation	204	25.19%
No Accommodation or EL Variation	606	74.81%
Students with Disability Identified	**Grade 5**	**Pct. of Total**
B: Marked in test booklet	285	2.52%
C: Dictated responses to a scribe	24	0.21%
F: Used non-interfering assistive device	20	0.18%
H: Used large-print test	37	0.33%
J: Tested over more than one day	411	3.63%
K: Had supervised breaks	25	0.22%
L: Most beneficial time of day	617	5.45%
M: Administered at home or in a hospital	5	0.04%
O: Examiner presented with MCE or ASL	49	0.43%
Q: Used a calculator	130	1.15%
S: Used math manipulatives	17	0.15%
X: Used an unlisted accommodation	391	3.45%
Y: Leave blank	19	0.17%
Z: Examiner read test questions aloud	2,428	21.44%
Option circle marked; option not applicable	31	0.27%
Accommodation is in Section 504 Plan	1	0.01%
Accommodation is in IEP	3,127	27.61%
English Learner Test Variation A	13	0.11%
English Learner Test Variation B	13	0.11%
English Learner Test Variation C	11	0.10%
English Learner Test Variation D	1	0.01%
Any Accommodation or EL Variation	3,420	30.20%
No Accommodation or EL Variation	7,904	69.80%

Accommodation Summary for Science, Grade Five		
English-Only Students	**Grade 5**	**Pct. of Total**
B: Marked in test booklet	182	2.76%
C: Dictated responses to a scribe	13	0.20%
F: Used non-interfering assistive device	15	0.23%
H: Used large-print test	20	0.30%
J: Tested over more than one day	208	3.16%
K: Had supervised breaks	15	0.23%
L: Most beneficial time of day	351	5.33%
M: Administered at home or in a hospital	2	0.03%
O: Examiner presented with MCE or ASL	34	0.52%
Q: Used a calculator	80	1.21%
S: Used math manipulatives	7	0.11%
X: Used an unlisted accommodation	216	3.28%
Y: Leave blank	14	0.21%
Z: Examiner read test questions aloud	1,348	20.46%
Option circle marked; option not applicable	25	0.38%
Accommodation is in Section 504 Plan	0	0.00%
Accommodation is in IEP	1,789	27.16%
English Learner Test Variation A	0	0.00%
English Learner Test Variation B	1	0.02%
English Learner Test Variation C	0	0.00%
English Learner Test Variation D	0	0.00%
Any Accommodation or EL Variation	1,957	29.71%
No Accommodation or EL Variation	4,630	70.29%
Initially-Fluent English Proficient (I-FEP) Students	**Grade 5**	**Pct. of Total**
B: Marked in test booklet	9	3.91%
C: Dictated responses to a scribe	0	0.00%
F: Used non-interfering assistive device	1	0.43%
H: Used large-print test	3	1.30%
J: Tested over more than one day	14	6.09%
K: Had supervised breaks	0	0.00%
L: Most beneficial time of day	15	6.52%
M: Administered at home or in a hospital	0	0.00%
O: Examiner presented with MCE or ASL	2	0.87%
Q: Used a calculator	2	0.87%
S: Used math manipulatives	0	0.00%

Accommodation Summary for Science, Grade Five		
X: Used an unlisted accommodation	5	2.17%
Y: Leave blank	0	0.00%
Z: Examiner read test questions aloud	43	18.70%
Option circle marked; option not applicable	2	0.87%
Accommodation is in Section 504 Plan	0	0.00%
Accommodation is in IEP	68	29.57%
English Learner Test Variation A	0	0.00%
English Learner Test Variation B	0	0.00%
English Learner Test Variation C	0	0.00%
English Learner Test Variation D	0	0.00%
Any Accommodation or EL Variation	72	31.30%
No Accommodation or EL Variation	158	68.70%
English Learner (EL) Students	**Grade 5**	**Pct. of Total**
B: Marked in test booklet	105	2.03%
C: Dictated responses to a scribe	11	0.21%
F: Used non-interfering assistive device	10	0.19%
H: Used large-print test	14	0.27%
J: Tested over more than one day	204	3.95%
K: Had supervised breaks	13	0.25%
L: Most beneficial time of day	267	5.17%
M: Administered at home or in a hospital	3	0.06%
O: Examiner presented with MCE or ASL	14	0.27%
Q: Used a calculator	52	1.01%
S: Used math manipulatives	11	0.21%
X: Used an unlisted accommodation	187	3.62%
Y: Leave blank	5	0.10%
Z: Examiner read test questions aloud	1,148	22.24%
Option circle marked; option not applicable	5	0.10%
Accommodation is in Section 504 Plan	1	0.02%
Accommodation is in IEP	1,407	27.26%
English Learner Test Variation A	13	0.25%
English Learner Test Variation B	15	0.29%
English Learner Test Variation C	13	0.25%
English Learner Test Variation D	1	0.02%
Any Accommodation or EL Variation	1,546	29.96%
No Accommodation or EL Variation	3,615	70.04%

Accommodation Summary for Science, Grade Five		
Reclassified-Fluent English Proficient (R-FEP) Students	**Grade 5**	**Pct. of Total**
B: Marked in test booklet	6	5.88%
C: Dictated responses to a scribe	0	0.00%
F: Used non-interfering assistive device	0	0.00%
H: Used large-print test	0	0.00%
J: Tested over more than one day	1	0.98%
K: Had supervised breaks	0	0.00%
L: Most beneficial time of day	10	9.80%
M: Administered at home or in a hospital	0	0.00%
O: Examiner presented with MCE or ASL	0	0.00%
Q: Used a calculator	2	1.96%
S: Used math manipulatives	0	0.00%
X: Used an unlisted accommodation	3	2.94%
Y: Leave blank	1	0.98%
Z: Examiner read test questions aloud	21	20.59%
Option circle marked; option not applicable	0	0.00%
Accommodation is in Section 504 Plan	0	0.00%
Accommodation is in IEP	26	25.49%
English Learner Test Variation A	0	0.00%
English Learner Test Variation B	0	0.00%
English Learner Test Variation C	0	0.00%
English Learner Test Variation D	0	0.00%
Any Accommodation or EL Variation	31	30.39%
No Accommodation or EL Variation	71	69.61%

Chapter 8: Reliability

This chapter summarizes the evidence of reliability for the California Modified Assessments for the spring 2008 administration.

Reliability

Reliability focuses on the extent to which differences in test scores reflect true differences in the knowledge, ability, or skill being tested rather than fluctuations due to chance or random factors. The variance in the distributions of test scores—essentially, the differences among individuals—is partly due to real differences in the knowledge, skill, or ability being tested (true score variance) and partly due to random unsystematic errors in the measurement process (error variance). The number used to describe reliability is an estimate of the proportion of the total variance that is true score variance. Several different ways of estimating this proportion exist. The estimates of reliability reported here are internal-consistency measures, which are derived from an analysis of the consistency of the performance of individuals on items within a test (internal-consistency reliability). Therefore, they apply only to the test form being analyzed. They do not take into account form-to-form variation due to lack of parallelism, nor are they responsive to day-to-day variation due, for example, to state of health or testing environment.

Reliability coefficients may range from 0 to 1. The higher the reliability coefficient for a set of scores, the more likely individuals would be to obtain very similar scores if they were retested. The formula for the internal consistency reliability is measured by coefficiency alpha (Cronbach 1951) and is reported below:

$$\alpha = \frac{n}{n-1}\left[1 - \frac{\sum_{i=1}^{n}\sigma_i^2}{\sigma_t^2}\right] \quad (8.1)$$

where,

n is the number of items,

σ_i^2 is the variance of scores on the i-th item, and

σ_t^2 is the variance of the total score

Standard Error of Measurement

The standard error of measurement provides a measure of score instability in the score metric. The SEM is computed as follows:

$$\sigma_e = \sigma_t\sqrt{1-\alpha} \quad (8.2)$$

where,

α is the reliability estimated using the formula 8.1 above, and

σ_t is the standard deviation of the total raw scores.

SEM is particularly useful in determining the confidence interval (CI) that captures an examinee's true score. Assuming that measurement error is normally distributed, it can be said that upon infinite replications of the testing occasion, approximately 95 percent of the CIs with ±1.96 SEM around the observed score would contain an examinee's true score (Crocker and Algina 1986). For example, if an examinee's observed score on a given test equals 15 points, and the SEM equals 1.92, one can be 95 percent confident that the examinee's true score lies between 11 and 19 points (15 ± 3.76 rounded to the nearest integer).

The reliability analyses were conducted for all valid cases of the P1 examinee population with valid scores (approximately 99.8 percent of the data that was used for the August 15 reporting).

Table 8.1 presents the number of items and examinees upon which those analyses were performed, the results of the reliability estimates, and the mean standard deviation and standard errors of measurement (SEMs) for each of the seven operational CMAs.

Table 8.1 Reliabilities and SEMs for the CMA

Test	Grade	No. of Items	No. of Examines	Reliab.	Raw Score		
					Mean	Std. Dev.	SEM
English-Language Arts	**3**	48	10,750	0.88	27.80	8.87	3.11
	4	48	13,513	0.83	24.84	7.77	3.22
	5	48	12,896	0.83	27.35	7.62	3.13
Mathematics	**3**	48	8,953	0.89	29.01	8.95	3.02
	4	48	11,381	0.80	26.00	7.08	3.16
	5	48	11,743	0.84	27.22	7.77	3.13
Science	**5**	48	12,134	0.82	28.26	7.40	3.12

References

Crocker, L. and J. Algina 1986. *Introduction to Classical and Modern Test Theory*. New York: Holt.

Cronbach, L.J. 1951. Coefficient Alpha and the Internal Structure of Tests. *Psychometrika*, 16: 292–334.

Appendix 8.A—Score Conversions Based on 2008 Standard Setting

In fall 2008, a CMA standard setting was conducted to establish performance-level cut scores for grades three, four, and five in ELA and mathematics and for grade five in science. These cut scores will be implemented for the spring 2009 operational administration. For the purpose of creating impact data, data from the spring 2008 operational administration were used.

The tables in Appendix 8.A show the raw-score-to-scale-score conversions, the CSEMs, and percent of students at each performance level. The information shown is the result of applying the cut scores and performance levels from the fall 2008 standard setting to the data from the spring 2008 operational administration of CMA.

Table 8.A.1 Score Conversions: English–Language Arts Grade Three—Standard Setting, 2008

Raw Score	Scale Score	CSEM	Performance Level	% Students at Performance Level
48	600	94		
47	562	73		
46	510	52		
45	479	43		
44	456	38	**Advanced**	**10.6%**
43	437	34		
42	422	32		
41	409	30		
40	397	28		
39	386	27		
38	376	26		
37	367	25	**Proficient**	**16.5%**
36	358	25		
35	350	24		
34	342	23		
33	335	23		
32	327	23		
31	320	22	**Basic**	**24.5%**
30	313	22		
29	307	22		
28	300	22		
27	293	22		
26	287	21		
25	281	21		
24	274	21		
23	268	21		
22	261	21	**Below Basic**	**36.8%**
21	255	22		
20	248	22		
19	242	22		
18	235	22		
17	228	22		
16	221	23		
15	214	23		
14	207	23		
13	199	24		
12	191	24		
11	182	25		
10	173	26		
9	163	27		
8	152	28	**Far Below Basic**	**11.6%**
7	150	29		
6	150	29		
5	150	29		
4	150	29		
3	150	29		
2	150	29		
1	150	29		
0	150	29		

Table 8.A.2 Score Conversions: English–Language Arts Grade Four—Standard Setting, 2008

Raw Score	Scale Score	CSEM	Performance Level	% Students at Performance Level
48	600	67		
47	600	67		
46	600	67		
45	560	55		
44	531	49		
43	508	44		
42	488	41	**Advanced**	**11.1%**
41	471	38		
40	456	36		
39	443	35		
38	430	33		
37	418	32		
36	407	31		
35	397	31		
34	387	30		
33	377	29	**Proficient**	**17.3%**
32	368	29		
31	359	29		
30	350	28		
29	341	28		
28	333	28		
27	325	28	**Basic**	**23.1%**
26	316	28		
25	308	27		
24	300	27		
23	292	27		
22	284	28		
21	275	28		
20	267	28	**Below Basic**	**33.8%**
19	259	28		
18	250	28		
17	241	29		
16	232	29		
15	223	29		
14	213	30		
13	203	31		
12	193	31		
11	182	32		
10	170	33		
9	158	35		
8	150	36	**Far Below Basic**	**14.6%**
7	150	36		
6	150	36		
5	150	36		
4	150	36		
3	150	36		
2	150	36		
1	150	36		
0	150	36		

Table 8.A.3 Score Conversions: English–Language Arts Grade Five—Standard Setting, 2008

Raw Score	Scale Score	CSEM	Performance Level	% Students at Performance Level
48	600	77		
47	600	77		
46	558	62		
45	521	51		
44	494	45		
43	472	41	**Advanced**	**10.3%**
42	454	38		
41	439	35		
40	424	34		
39	412	32		
38	400	31		
37	389	30		
36	378	29		
35	369	29	**Proficient**	**17.4%**
34	359	28		
33	350	28		
32	341	27		
31	333	27		
30	324	26	**Basic**	**25.9%**
29	316	26		
28	308	26		
27	300	26		
26	292	26		
25	284	26		
24	276	26		
23	268	26		
22	261	26	**Below Basic**	**38.2%**
21	253	26		
20	244	26		
19	236	26		
18	228	27		
17	219	27		
16	211	27		
15	202	28		
14	192	28		
13	183	29		
12	172	30		
11	162	31		
10	150	32		
9	150	32		
8	150	32	**Far Below Basic**	**8.2%**
7	150	32		
6	150	32		
5	150	32		
4	150	32		
3	150	32		
2	150	32		
1	150	32		
0	150	32		

Table 8.A.4 Score Conversions: Mathematics Grade Three—Standard Setting, 2008

Raw Score	Scale Score	CSEM	Performance Level	% Students at Performance Level
48	600	91		
47	562	71		
46	511	51		
45	479	42	**Advanced**	**8.0%**
44	456	37		
43	438	34		
42	423	31		
41	409	29		
40	397	28		
39	386	27		
38	376	26	**Proficient**	**23.9%**
37	367	25		
36	358	24		
35	350	24		
34	342	23		
33	335	23		
32	327	22		
31	320	22	**Basic**	**24.3%**
30	313	22		
29	307	21		
28	300	21		
27	294	21		
26	287	21		
25	281	21		
24	274	21		
23	268	21		
22	262	21	**Below Basic**	**34.6%**
21	255	21		
20	249	21		
19	243	21		
18	236	21		
17	229	22		
16	222	22		
15	215	22		
14	208	23		
13	200	23		
12	193	24		
11	184	24		
10	175	25		
9	166	26		
8	156	27	**Far Below Basic**	**9.1%**
7	150	28		
6	150	28		
5	150	28		
4	150	28		
3	150	28		
2	150	28		
1	150	28		
0	150	28		

Table 8.A.5 Score Conversions: Mathematics Grade Four—Standard Setting, 2008

Raw Score	Scale Score	CSEM	Performance Level	% Students at Performance Level
48	600	65		
47	600	65		
46	600	65		
45	594	63		
44	561	56		
43	534	51	**Advanced**	**8.2%**
42	512	47		
41	492	44		
40	475	42		
39	459	40		
38	444	39		
37	430	37		
36	417	36		
35	405	36		
34	393	35		
33	382	34	**Proficient**	**23.4%**
32	371	34		
31	360	33		
30	350	33		
29	340	33		
28	330	32		
27	320	32	**Basic**	**24.8%**
26	310	32		
25	300	32		
24	290	32		
23	280	32		
22	270	32		
21	260	33	**Below Basic**	**34.8%**
20	250	33		
19	240	33		
18	229	33		
17	219	34		
16	208	34		
15	196	35		
14	185	36		
13	172	36		
12	159	37		
11	150	38		
10	150	38		
9	150	38		
8	150	38	**Far Below Basic**	**8.8%**
7	150	38		
6	150	38		
5	150	38		
4	150	38		
3	150	38		
2	150	38		
1	150	38		
0	150	38		

Table 8.A.6 Score Conversions: Mathematics Grade Five—Standard Setting, 2008

Raw Score	Scale Score	CSEM	Performance Level	% Students at Performance Level
48	600	73		
47	600	73		
46	571	63		
45	533	52		
44	506	46	**Advanced**	**8.6%**
43	484	42		
42	465	38		
41	449	36		
40	435	34		
39	422	33		
38	410	32		
37	399	31		
36	388	30		
35	378	29	**Proficient**	**22.2%**
34	368	29		
33	359	28		
32	350	28		
31	341	27		
30	333	27		
29	324	27	**Basic**	**24.9%**
28	316	27		
27	308	26		
26	300	26		
25	292	26		
24	284	26		
23	276	26		
22	268	26		
21	260	27	**Below Basic**	**36.5%**
20	251	27		
19	243	27		
18	235	27		
17	226	28		
16	217	28		
15	208	29		
14	198	29		
13	188	30		
12	177	31		
11	166	32		
10	154	33		
9	150	33		
8	150	33	**Far Below Basic**	**7.9%**
7	150	33		
6	150	33		
5	150	33		
4	150	33		
3	150	33		
2	150	33		
1	150	33		
0	150	33		

Table 8.A.7 Score Conversions: Science Grade Five—Standard Setting, 2008

Raw Score	Scale Score	CSEM	Performance Level	% Students at Performance Level
48	600	79		
47	594	76		
46	540	54		
45	508	45		
44	484	39		
43	465	36	**Advanced**	**11.2%**
42	449	33		
41	435	31		
40	423	30		
39	412	28		
38	401	27		
37	392	26		
36	383	26		
35	374	25	**Proficient**	**25.1%**
34	366	25		
33	358	24		
32	350	24		
31	342	23		
30	335	23		
29	328	23		
28	321	23	**Basic**	**31.6%**
27	314	23		
26	307	23		
25	300	23		
24	293	23		
23	286	23		
22	279	23		
21	272	23	**Below Basic**	**25.8%**
20	265	23		
19	258	23		
18	251	23		
17	243	24		
16	236	24		
15	228	24		
14	220	25		
13	211	25		
12	202	26		
11	193	27		
10	183	28		
9	172	29		
8	161	30	**Far Below Basic**	**6.3%**
7	150	31		
6	150	31		
5	150	31		
4	150	31		
3	150	31		
2	150	31		
1	150	31		
0	150	31		