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Assessment and Accountability Division

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Educational Testing Service

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Acronyms and Initialisms Used in the *CAPA Technical Report*

1PPC	1-parameter partial credit
ADA	Americans with Disabilities Act
AIS	average task (item) score
API	Academic Performance Index
ARP	Assessment Review Panel
AYP	adequate yearly progress
CAPA	California Alternate Performance Assessment
CCR	*California Code of Regulations*
CDE	California Department of Education
CDS	County-District-School
CI	confidence interval
CMA	California Modified Assessment
CSEMs	conditional standard errors of measurement
CSTs	California Standards Tests
DIF	Differential Task (Item) Functioning
DPLT	designated primary language test
DQS	Data Quality Services
EC	Education Code
EM	expectation maximization
ESEA	Elementary and Secondary Education Act
ETS	Educational Testing Service
GENASYS	Generalized Analysis System
HumRRo	Human Resource Research Organization
ICC	task (item) characteristic curve
IEP	individualized education program
IRF	item response functions
IRT	task (item) response theory
IT	Information Technology
LEA	local educational agency
MH	Mantel-Haenszel
NPS	nonpublic, nonsectarian school
NSLP	National School Lunch Program
PSAA	Public School Accountability Act
RACF	Random Access Control Facility
SBE	State Board of Education
SD	standard deviation
SEM	standard error of measurement
SFTP	secure file transfer protocol
SGID	School and Grade Identification sheet
SMD	standardized mean difference
SPAR	Statewide Pupil Assessment Review
STAR	Standardized Testing and Reporting
STAR TAC	STAR Technical Assistance Center
STS	Standards-based Tests in Spanish
WRMSD	weighted root-mean-square differences

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 are designed to provide state-level input into instruction curricula and serve as a foundation for the state's school accountability programs.

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).

During its 2010 administration, the STAR Program had four components:

- California Standards Tests (CSTs), produced for California public schools to assess the California content standards for ELA, mathematics, history-social science and science in grades two through eleven
- California Modified Assessment (CMA), an assessment of students' achievement of California's content standards for ELA, mathematics, and science, developed for students with individualized education programs (IEPs) who meet the CMA eligibility criteria approved by the SBE[1]
- California Alternate Performance Assessment (CAPA), produced for students with an IEP and who have significant cognitive disabilities and are not able to take the CSTs with accommodations and/or modifications or the CMA with accommodations
- Standards-based Tests in Spanish (STS), an assessment of students' achievement of California's content standards for Spanish-speaking English learners that is administered as the STAR Program's designated primary language test (DPLT)[2]

Test Purpose

The CAPA is designed to show how well students with significant cognitive disabilities are performing with respect to California's content standards for ELA and mathematics in grades two through eleven and the content standards for science in grades five, eight, and ten. These standards describe what students should know and be able to do at each grade level. IEP teams determine on a student-by-student basis whether a student takes the CST/CMA or the CAPA.

CAPA results are used in the school and district Academic Performance Index (API) calculations. In addition, CAPA results in grades two through eight and grade ten for ELA and mathematics are used in determining adequate yearly progress (AYP), which applies toward meeting the requirement of the federal Elementary and Secondary Education Act (ESEA) that all students score at the proficient level or above by 2014.

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[1] In 2010, the CMA was administered in ELA in grades three through nine, in grade-level mathematics in grades three through seven, in end-of-course (EOC) Algebra I in grades seven through eleven, and in science in grades five, eight, and ten.

[2] In 2010, the STS was administered in reading/language arts (RLA) in grades two through eleven, in grade-level mathematics in grades two through seven, and in EOC Algebra I in grades seven through eleven and EOC Geometry in grades eight through eleven.

Test Content

Students in grades two through eleven who take the CAPA are administered one of the five levels of the CAPA ELA and mathematics tests. In addition, students in grades five, eight, and ten take a grade-level science test.

The five levels of the CAPA are as follows:

- Level I, for students who are in grades two through eleven with the most significant cognitive disabilities
- Level II, for students who are in grades two and three
- Level III, for students who are in grades four and five
- Level IV, for students who are in grades six through eight
- Level V, for students who are in grades nine through eleven

Table 1.1 below displays the tests administered in 2010 by grade and content area.

Table 1.1 Description of the CAPA Assessment Levels

Test Level	I	II	III	IV	V
Grades	2–11	2 and 3	4 and 5	6–8	9–11
Content Area	ELA	ELA	ELA	ELA	ELA
	Mathematics	Mathematics	Mathematics	Mathematics	Mathematics
	Science Grades 5, 8, and 10 only	–	Science Grade 5 only	Science Grade 8 only	Science Grade 10 only

Intended Population

All students enrolled in grades two through eleven in California public schools on the day testing begins are required to take the CSTs, the CMA (available for students in grades three through eleven), or the CAPA. This requirement includes English learners regardless of the length of time they have been in U.S. schools or their fluency in English, as well as students with disabilities who receive special education services.

Students with significant cognitive disabilities and an IEP take the CAPA when they are unable to take the CSTs with or without accommodations and/or modifications or the CMA with accommodations. Participation in the CAPA and eligibility for Level I or the grade-assigned CAPA level are determined by a student's IEP team. Only students whose parents/guardians have submitted written requests to exempt them from STAR Program testing do not take the tests. Parents may submit a written request to have their child exempted from taking any or all parts of the test (California *Education Code [EC]* Section 60615).

Intended Use and Purpose of Test Scores

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

"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.

Testing Window

The CAPA tests are administered at different times, depending on the progression of the school year within each particular school district. Specifically, schools must administer the CSTs, CMA, CAPA, and STS tests within a 21-day window, which begins 10 days before and ends 10 days after the day on which 85 percent of the instructional year is completed. The CAPA tests are untimed. This assessment is administered individually, and the testing time varies from one student to another, based on factors such as the student's response time and attention span. A student may be tested with the CAPA over as many days as required within the school district's testing window (California *Code of Regulations [CCR], Title 5,* Education, Division 1, Chapter 2, Subchapter 3.75, Article 2, § 855; in the California Department of Education (CDE) Web document at http://www.cde.ca.gov/ta/tg/sr/starregs0207cln.doc).

Significant STAR Developments in 2010

Changes to the STAR Contract as Required by Legislated Budget Expenditure Activities

In September 2009, the SBE and the CDE approved amendments to the STAR contract in order to meet legislative budgetary requirements under the Assembly Bill 1 of the 2009–10 Fourth Extraordinary Session (ABX4 1) (Chapter 1, Statutes of 2009) and Bill 1 of the 2009–10 Third Extraordinary Session (SBX3 1) (Chapter 1, Statutes of 2009), Section (SEC) 12.42 to maximize contract savings during the California budget crisis. As part of the contract amendments, the following changes were made for the 2010 test administration that impacted the CAPA:

- **Reduction in the number of reviews by Assessment Review Panels (ARPs)—**As part of the contract amendment, formal ARP meetings for data reviews, differential item function (DIF) reviews, and forms reviews were eliminated. The ARP meetings for new item reviews continued to be held.
- **Elimination of updates and the distribution of the administration videos and DVDs—**The annual updates to the test administration and CAPA training videos were eliminated. The production and distribution of the DVDs containing these videos were also eliminated. The training videos produced for the 2009 administration were made available to district STAR coordinators and test administrators on the STAR Web site at http://www.startest.org. Documents listing test administration updates for the 2010 administration were also made available on that Web site. District STAR coordinators and test administrators had the option to view the videos directly from the Web site or download the videos to their local computers.
- **Reduction in the number of Pre-Test, CAPA Train-the-Trainer, and Post-Test Training Workshops—**The overall number of Pre-Test and CAPA Train-the-Trainer Workshops was reduced from 11 workshops in 2009 to 3 workshops in 2010. One Pre-Test Workshop was held in Northern California (Sacramento County) and another was held in Southern California (Ventura County), and a third was conducted via Webcast. The archive of the Webcast was made available for later viewing on the San Diego County Office of Education Web site. The number of Post-Test Workshops was reduced from five in-person workshops to one Webcast. There appeared to be no significant negative impact from the reduction of the workshops on the test administration process.
- **Reduction in the weight of paper used to print test materials—**The weight of the paper used to print the nonscannable test booklets, manuals, and *CAPA Examiner Manuals* were reduced to a lighter weight, which reduced paper and shipping costs. There appeared to be no impact to the test administration process.
- **Elimination of the security audits—**The activities to train auditors and conduct site visits before, during, and after testing to randomly selected school districts were eliminated. Reviews of testing irregularities were conducted by the CDE. ETS continued to conduct investigations of security breaches at the CDE's direction.
- **Elimination of the mark discrimination analysis—**The mark discrimination analysis was eliminated beginning with the 2009 administration.
- **Elimination of the language translations for the Student Report Interpretation Guides—**The translation of the CST, CMA, and CAPA Student Report Interpretation Guides into other languages was subsumed by the CDE Clearinghouse for Multilingual Documents. Translations of the guides are available on the California Department of Education (CDE) Web site, at http://www.cde.ca.gov/ta/tg/sr/resources.asp.

Limitations of the Assessment

Score Interpretation

A school district may use CAPA results to help make decisions about student placement promotion, retention, or other considerations related to student achievement. However, it is important to remember that a single test can provide only limited information. Other relevant information should be considered as well. It is advisable for parents to evaluate their child's strengths and weaknesses in the relevant topics by reviewing classroom work and progress reports in addition to the child's CAPA results (CDE, 2009). It is important to note that

student scores in a content area contain measurement error and could vary if students were retested.

Out-of-Level Testing

Testing below a student's grade is not allowed in CSTs or any test in the STAR Program; all students are required to take the test for the grade in which they are enrolled. Districts are advised to review all IEPs to ensure that any provision for testing below a student's grade level has been removed.

Score Comparison

When comparing results for the CAPA, the user is limited to score comparisons within the same content area and CAPA level within or across test years. For example, it is appropriate to compare scores obtained on the 2009 CAPA Level II (Mathematics) test with those obtained on the 2010 CAPA Level II (Mathematics) test. Similarly, it is appropriate to compare scores obtained on the 2009 CAPA Level IV (ELA) test with those obtained on the CAPA Level IV (ELA) test administered in 2010. It is not appropriate to compare scores obtained on Levels II and IV of the ELA or mathematics tests, nor is it appropriate to compare ELA scores with mathematics scores. Since new score scales and cut scores were used for the 2009 CAPA tests, results from tests administered after 2009 cannot meaningfully be compared to results obtained in previous years.

Verify CAPA Test Level

Most students eligible for the CAPA take the assessment level that corresponds with their current school grade, but some students with complex and profound disabilities take the Level I assessment. CAPA levels are listed in Table 1.2, below.

The decision to place a student in CAPA Level I must be made by the IEP team. Although it is possible that a student will take the CAPA Level I throughout his or her grade two through grade eleven education, the IEP team must reevaluate this decision each year. The decision to move a student from Level I to his or her grade-assigned CAPA level should be made on the basis of both the student's CAPA performance from the previous year and on classroom assessments.

Table 1.2 CAPA Levels

CAPA Level	Grade Range	Content Areas	Age Ranges for Ungraded Programs
I	2–11	ELA, mathematics, science	7–16
II	2 & 3	ELA, mathematics	7 & 8
III	4 & 5	ELA, mathematics, science	9 & 10
IV	6–8	ELA, mathematics, science	11–13
V	9–11	ELA, mathematics, science	14–16

Groups and Organizations Groups Involved in Test Development

State Board of Education

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

The SBE is responsible for assuring the compliance with programs that meet the requirement of the federal ESEA and the state's Public School Accountability Act (PSAA)

and for reporting results in terms of the AYP and API, which measure the academic performance and growth of schools on a variety of academic measures.

California Department of Education

The CDE oversees the California public school system, which is responsible for the education of more than 7,000,000 children and young adults in more than 9,000 schools. The CDE's mission is to provide leadership, assistance, oversight, and resources so that every child in California has access to a competent and effective educational system. As part of its mission to promote district and school accountability for improving student achievement as defined by the SBE, the CDE oversees the development and administration of the STAR Program.

Contractors

Educational Testing Service

The CDE and the SBE contract with Educational Testing Service (ETS) to develop and administer the STAR Program. As the prime contractor, ETS has overall responsibility for working with the CDE to implement and maintain an effective assessment system and to coordinate the work of ETS and its subcontractor Pearson. Activities directly conducted by ETS include the following:

- Overall management of the program activities;
- Development of all test items;
- Construction and production of test booklets and related test materials;
- Support and training provided to counties, school districts, and independently testing charter schools;
- Implementation and maintenance of the STAR Management System for orders of materials and pre-identification services; and
- Completion of all psychometric activities.

Pearson

ETS also monitors and manages the work of Pearson, subcontractor to ETS for the STAR Program. Activities conducted by Pearson include the following:

- Production of all scannable test materials;
- Packaging, distribution, and collection of testing materials to school districts and independently testing charter schools;
- Scanning and scoring of all responses, including performance scoring of the writing responses; and
- Production of all score reports and data files of test results.

Overview of the Technical Report

This technical report addresses the characteristics of the CAPA administered in spring 2010. The technical report contains nine additional chapters as follows:

- Chapter 2 presents a conceptual overview of processes involved in a testing cycle for the CAPA. This includes test construction, test administration, generation of test scores, and dissemination of score reports. Information about the distributions of scores aggregated by subgroups based on demographics and the use of special services is also included in this chapter.

- Chapter 3 describes the procedures followed during the development of valid CAPA tasks; the chapter explains the process of field-testing new items and the review of tasks by contractors and content experts.
- Chapter 4 details the content and psychometric criteria applicable to the construction of CAPA for 2010.
- Chapter 5 presents the processes involved in the actual administration of the 2010 CAPA with an emphasis on efforts made to ensure standardization of the tests. It also includes a detailed section that describes the procedures that were followed by ETS to ensure test security.
- Chapter 6 describes the standard-setting process conducted to establish new cut scores.
- Chapter 7 details the types of scores and score reports that are produced at the end of each administration of the CAPA.
- Chapter 8 summarizes the results of the task (item)-level analyses performed during the spring 2010 administration of the tests. These include the classical item analyses, the reliability analyses that include assessments of test reliability and the consistency and accuracy of the CAPA proficiency-level classifications, and the procedures designed to endure the validity of CAPA score uses and interpretations. Also discussed in this chapter are the item response theory (IRT) and model-fit analyses, as well as documentation of the equating along with CAPA conversion tables. Finally, the chapter summarizes the results of analyses investigating the differential item functioning (DIF) for the CAPA.
- Chapter 9 highlights the importance of controlling and maintaining the quality of the CAPA.
- Chapter 10 presents historical comparisons of various task (item)- and test-level results for the year 2010 and for the 2009 base year.

Each chapter contains summary tables in the body of the text. However, extended appendixes that give more detailed information are provided at the end of the relevant chapters.

Reference

California Department of Education. (2009). *Interpreting 2009 STAR program test results*. Sacramento, CA. http://www.cde.ca.gov/ta/tg/sr/documents/star09intrprslt.pdf.

Chapter 2: An Overview of CAPA Processes

This chapter provides an overview of the processes involved in a typical test development and administration cycle for the CAPA. Also described are the specifications maintained by ETS to carry out each of those processes. The chapter is organized to provide a brief description of each process followed by a summary of the associated specifications. More details about the specifications and the analyses associated with each process are described in other chapters that are referenced in the sections that follow.

Task Development

Task Formats

Each CAPA task involves a prompt that asks a student to perform a task or a series of tasks. Each CAPA task consists of the Task Preparation, the Cue/Direction, and the Scoring Rubrics. The rubrics define the rules for scoring a student's response to each task.

Task Development Specifications

The CAPA tasks are developed to measure California content standards and designed to conform to principles of task writing defined by ETS (ETS, 2002). ETS maintains task development specifications for each CAPA and has developed an item utilization plan to guide the development of the tasks for each content area. Task writing emphasis is determined in consultation with the CDE.

The task specifications describe the characteristics of the tasks that should be written to measure each content standard. The task specifications help ensure that the tasks in the CAPA measure the content standards in the same way. To do this, the task specifications provide detailed information to task writers that are developing tasks for the CAPA.

The tasks selected for each CAPA test undergo an extensive review process that is designed to provide the best standards-based tests possible. Details about the task development specifications, the task review process, and the item utilization plan are presented in Chapter 3, starting on page 17.

Item Banking

The newly developed tasks are field tested to obtain information about task performance and to obtain statistics that can be used to assemble operational forms. Once tasks have been field tested, ETS prepares the tasks and the associated statistics for review by the content experts. The tasks are then placed in the item bank along with their corresponding review information. Tasks that are accepted by the content experts are updated to a "field-test ready" status; tasks that are rejected are updated to a "rejected before use" status. ETS then delivers the tasks to the CDE by means of a delivery of the California electronic item bank. Subsequent updates to task content and statistics are based on field-test and operational use of the tasks. However, only the latest content of the task is retained in the bank at any time, along with the administration data from every administration that has included the task.

Further details on item banking are presented on page 25 in Chapter 3.

Task Refresh Rate

Previously, the item utilization plan assumed that each year, 50 percent of tasks on an operational form would be refreshed (replaced); these tasks remained in the item bank for future use.

Beginning in 2010, the item utilization plan was modified to reflect changes in the task development process; the task refresh rate was reduced from 50 percent to 35 percent. This change reduced the overall test development activities for the CAPA without impacting the test form comparability or the future viability of the item pool.

Test Assembly

Test Length

Each CAPA consists of twelve tasks, including eight operational tasks and four field-test tasks. The number of tasks in each CAPA and the expected time to complete a test is presented in Table 2.1 Testing times for the CAPA are approximate. This assessment is administered individually and the testing time varies from one student to another, based on factors such as the student's response time and attention span. A student may be tested with the CAPA over as many days as required within the school district's selected testing window.

Table 2.1 CAPA Item and Estimated Time Chart

ITEM and ESTIMATED TIME CHART		
	Grades 2–11	
CAPA Content Area	Items	Times
English–Language Arts	12	45 minutes
Mathematics	12	45 minutes
Science	12	45 minutes

Test Blueprints

ETS selects all CAPA test tasks to conform to the SBE-approved California content standards and test blueprints. The CAPA has been revised to better link it to the grade-level California content standards. The revised blueprints for CAPA were approved by the SBE in 2006 for implementation beginning in 2008. The test blueprints for the CAPA can be found on the CDE STAR CAPA Blueprints Web page at http://www.cde.ca.gov/ta/tg/sr/capablueprints.asp.

Content Rules and Task Selection

When developing a new test form for a given CAPA level and content area, test developers follow a number of rules. First and foremost, they select tasks that meet the blueprint for that level and content area. Using the electronic item bank, assessment specialists begin by identifying a number of linking tasks. These are tasks that appeared in the previous year's operational administration and they are used to equate the test forms administered each year. Linking tasks are selected to proportionally represent the full blueprint. Each CAPA form is a collection of test tasks designed to reflect a reliable, fair, and valid measure of student learning within well-defined course content.

Another consideration is the difficulty of each task. Test developers strive to ensure that there are some easy and some hard tasks and that there are a number of tasks in the middle range of difficulty. The detailed rules are presented in Chapter 4, which begins on page 27.

Psychometric Criteria

For the CAPA, the test developers and psychometricians strive to accomplish three goals while developing a test:

1. The test must have desired precision of measurement at all ability levels.
2. The test score must be valid and reliable for the intended population and for the various subgroups of test-takers.
3. The test forms must be comparable across years of administration to ensure the generalizability of scores over time.

In order to achieve these goals, a set of rules is developed that outlines the desired psychometric properties of the CAPA. Such rules are referred to as statistical targets. The targets for the total test are provided to test developers before a test construction cycle begins.

The test developers and psychometricians work together in making efforts to design the tests to these test targets. The staff also assesses the projected test characteristics during the preliminary review of the assembled forms. These target values are presented in Chapter 4, in Table 4.1 on page 28. The tasks in test forms are organized and sequenced to meet the requirements of the content area. Further details on the arrangement of tasks during test assembly are also described on page 29 in Chapter 4.

Test Administration

It is of the utmost priority to ETS to administer the CAPA in an appropriate, consistent, confidential, and standardized manner.

Test Security and Confidentiality

All tests within the STAR Program are secure documents. For the CAPA administration, every person having access to test materials maintains the security and confidentiality of the tests. ETS's Code of Ethics requires that all test information, including tangible materials (such as test booklets, test questions, test results), confidential files, processes, and activities are kept secure. To ensure security for all tests that ETS develops or handles, ETS maintains an Office of Testing Integrity (OTI). A detailed description of the OTI and its mission is presented in Chapter 5 on page 30.

In its pursuit of enforcing secure practices, ETS and the OTI strive to safeguard the various processes involved in a test development and administration cycle. Those processes are listed below. The practices related to each process are discussed in detail in Chapter 5, starting on page 30.

- Test development
- Task and data review
- Item banking
- Transfer of forms and tasks to the CDE
- Security of electronic files using a firewall
- Printing and publishing
- Test administration
- Test delivery
- Processing and scoring
- Data management
- Transfer of scores via secure data exchange
- Statistical analysis

- Reporting and posting results
- Student confidentiality
- Student test results

Procedures to Maintain Standardization

The CAPA processes are designed so that the tests are administered and scored in a standardized manner. ETS takes all necessary measures to ensure the standardization of the CAPA, as described in this section.

Test Administrators

The CAPA is administered in conjunction with the other tests that comprise the STAR Program. In that respect, ETS employs personnel who facilitate various processes involved in the standardization of an administration cycle. Staff at school districts who are central to the processes include district coordinators and test examiners. The responsibilities for each of the staff members are included in the *STAR District and Test Site Coordinator Manua*l (CDE, 2010a); see page 36 in Chapter 5 for more information.

Test Directions

ETS maintains a series of instructions compiled in detailed manuals that are available to the test administrators. Such documents include, but are not limited to, the following:

CAPA Examiner's Manual—The manual used by test examiners to administer and score the CAPA to be followed exactly so that all students have an equal opportunity to demonstrate their academic achievement (see page 36 for more information)

District and Test Site Coordinator Manual—Test administration procedures for district STAR coordinators and test site coordinators (see page 36 for more information)

STAR Management System manuals—Instructions for the Web-based modules that allow district STAR coordinators to set up test administrations, order materials, and submit and correct student Pre-ID data; every module has its own user manual with detailed instructions on how to use the STAR Management System (see page 36 for more information)

Test Variations, Accommodations, and Modifications

All public school students participate in the STAR Program, including English learners and students with disabilities. Students with an IEP and who have significant cognitive disabilities may take the CAPA when they are unable to take the CSTs with or without accommodations and/or modifications or the CMA with accommodations.

Examiners may adapt the CAPA in light of a student's instructional mode as specified in each student's IEP or Section 504 plan in one of two ways (1) Suggested adaptations for particular tasks, as specified in the task preparation; and (2) Core adaptations that are applicable for many of the tasks. Details of the adaptations are presented in the core adaptations of the *CAPA Examiner's Manual* (CDE, 2010b).

As noted on the CDE CAPA Participation Criteria Web page, "Since examiners may adapt the CAPA based on students' instructional mode, accommodations and modifications do not apply to the CAPA." (CDE, 2010c)

Scores

The CAPA total raw scores equal the sum of examinees' scores on the tasks. Raw scores for Level I range from 0 to 40; for the other CAPA levels, the raw-score range is from 0 to 32. Those raw scores are transformed to two-digit scale scores using the scaling process described starting on page 14. CAPA results are reported through the use of these scale scores; the scores range from 15 to 60 for each test. Also reported are performance levels obtained by classifying the scale scores into the following levels: far below basic, below basic, basic, proficient, and advanced. The state's target is for all students to score at the proficient or advanced level.

Detailed descriptions of CAPA scores are described on page 45 in Chapter 7.

Aggregation Procedures

In order to provide meaningful results to the stakeholders, CAPA scores for a given grade, level, and content area are aggregated at the school, independently testing charter school, district, county, and state levels. The aggregated scores are generated both for individual scores and group scores. The following sections present the types of aggregation performed on CAPA scores.

Individual Scores

Table 7.2 through Table 7.4 starting on page 49 in Chapter 7 provide summary statistics for individual scores, that describe overall student performance on each CAPA. Included in the tables are the possible and actual ranges, and the means and standard deviations of student scores, expressed in terms of both raw scores and scale scores. The tables also present statistical information about the CAPA tasks.

Group Scores

Statistics summarizing CAPA student performance by content area and for selected groups of students are provided in Table 7.B.1 through Table 7.B.3 starting on page 59 in Appendix 7B. In these tables, students are grouped by demographic characteristics, including gender, ethnicity, English-language fluency, primary disability, and economic status. The tables show the numbers of students with valid scores[1] in each group, scale score means and standard deviations as well as percentage in performance level for each demographic group. Table 7.6 on page 52 provides definitions for the demographic groups included in the tables.

Equating

Each CAPA is equated to a reference form using a common-item nonequivalent groups data collection design and methods based on IRT. The "base" or "reference" calibrations for the CAPA were established by calibrating samples of data from the 2009 administration. Doing so established a scale to which subsequent item calibrations could be linked. The 2010 items were placed on the reference 2009 scale using a set of linking items selected from the 2009 forms and re-administrated in 2010.

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[1] Valid scores are based on cases where examinees met one or more of the following criteria:

1. Attempted at least one question in each test part
2. A valid combination of grade and CAPA level
3. Did not have a parental exemption

The procedure used for equating the CAPA involves three steps: calibration, scaling, and linear transformation. Each of those procedures, as described below, is applied to all CAPA tests.

Calibration

The operational tasks in each CAPA were calibrated using a proprietary version of the PARSCALE program and Rasch partial credit model. The estimation process was constrained by setting a common discrimination value for all tasks equal to 1.0/1.7 (or 0.588). This approach is in keeping with previous CAPA calibration procedures accomplished using the WINSTEPS program (Linacre, 2000). The PARSCALE calibrations are run in two stages, following procedures used with other ETS testing programs. In the first stage, estimation imposed 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 subject 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.

Scaling

Calibrations of the 2010 tasks were linked to the previously obtained reference scale estimates using linking tasks and the Stocking and Lord (1983) procedure. In the case of the one-parameter model calibrations, this procedure is equivalent to setting the mean of the new task parameter estimates for the linking set equal to the mean of the previously scaled estimates. The linking set is a collection of tasks in a current test form that also appeared in last year's form and was scaled at that time.

The linking process is carried out iteratively by inspecting differences between the transformed new and old (reference) estimates for the linking tasks and removing tasks for which the difficulty estimates changed significantly. Tasks with large weighted root-mean-square differences (WRMSD) between item characteristic curves (ICCs) based on the old and new difficulty estimates were removed from the linking set. The differences are calculated using the following formula:

$$WRMSD = \sqrt{\sum_{j=1}^{n_g} w_j \left[P_n\left(\theta_j\right) - P_r\left(\theta_j\right) \right]^2} \tag{2.1}$$

where,

Abilities are grouped into intervals of 0.005 ranging from -3.0 to 3.0,

n_g is the number of intervals/groups,

θ_j is the mean of the ability estimates that fall in interval j,

w_j is a weight equal to the proportion of estimated abilities from the transformed new form in interval j,

$P_n(\theta_j)$ is the probability of correct response for the transformed new form item at ability θ_j, and

$P_r(\theta_j)$ is the probability of correct response for the old (reference) form item at ability θ_j.

Based on established procedures, any linking items for which the WRMSD was greater than 0.625 for Level I and 0.500 for Levels II through V were eliminated. This criterion has produced reasonable results over time in similar equating work done with other testing programs at ETS.

Linear Transformation

Once the new task calibrations for each test are transformed to the base scale, raw score to theta scoring tables were generated. The thetas in these tables were then linearly transformed to a two-digit score scale that ranged from 15 to 60. Since the basic and proficiency cut scores were required to be equal to 30 and 35, respectively, the following formula was used to make this transformation:

$$ScaleScore = \left(35 - \hat{\theta}_{pro} \times \left(\frac{35-30}{\hat{\theta}_{pro} - \hat{\theta}_{bas}} \right) \right) + \left(\frac{35-30}{\hat{\theta}_{pro} - \hat{\theta}_{bas}} \right) \times \hat{\theta} \tag{2.2}$$

where,

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

$\hat{\theta}_{pro}$ represents theta cut score for proficient on spring 2009 base scale, and

$\hat{\theta}_{bas}$ represents theta cut score for basic on spring 2009 base scale.

Complete raw-to-scale score conversion tables for the 2010 CAPA are presented in Table 8.D.10 through Table 8.D.23 in Appendix 8.D, starting on page 140. The raw scores and corresponding rounded converted scale scores are listed in those tables.

The scale scores defining the various performance levels are presented in Table 2.2, below.

Table 2.2 Scale Scores Ranges for Performance Levels

Content Area	CAPA Level	Far Below Basic	Below Basic	Basic	Proficient	Advanced
English–Language Arts	**I**	15	16 – 29	30 – 34	35 – 39	40 – 60
	II	15 – 18	19 – 29	30 – 34	35 – 39	40 – 60
	III	15 – 23	24 – 29	30 – 34	35 – 39	40 – 60
	IV	15 – 17	18 – 29	30 – 34	35 – 41	42 – 60
	V	15 – 22	23 – 29	30 – 34	35 – 39	40 – 60
Mathematics	**I**	15	16 – 29	30 – 34	35 – 38	39 – 60
	II	15 – 17	18 – 29	30 – 34	35 – 40	41 – 60
	III	15	16 – 29	30 – 34	35 – 39	40 – 60
	IV	15	16 – 29	30 – 34	35 – 40	41 – 60
	V	15 – 16	17 – 29	30 – 34	35 – 39	40 – 60
Science	**I**	15	16 – 29	30 – 34	35 – 38	39 – 60
	III	15 – 21	22 – 29	30 – 34	35 – 39	40 – 60
	IV	15 – 19	20 – 29	30 – 34	35 – 39	40 – 60
	V	15 – 20	21 – 29	30 – 34	35 – 38	39 – 60

References

California Department of Education. (2010a). *2010 STAR district and test site coordinator manual*. Sacramento, CA. http://www.startest.org/pdfs/STAR.coord_man.2010.pdf.

California Department of Education. (2010b). *2010 California Alternate Performance Assessment (CAPA) Examiner's Manual*. Sacramento, CA. http://www.startest.org/pdfs/CAPA.examiners_manual.nonsecure.2010.pdf.

California Department of Education. (2010c). *CAPA participation criteria.* Retrieved November 30, 2010, from http://www.cde.ca.gov/TA/tg/sr/participcritria.asp.

Educational Testing Service. (2002). *ETS standards for quality and fairness*. Office of Testing Integrity, Princeton, NJ: Educational Testing Service.

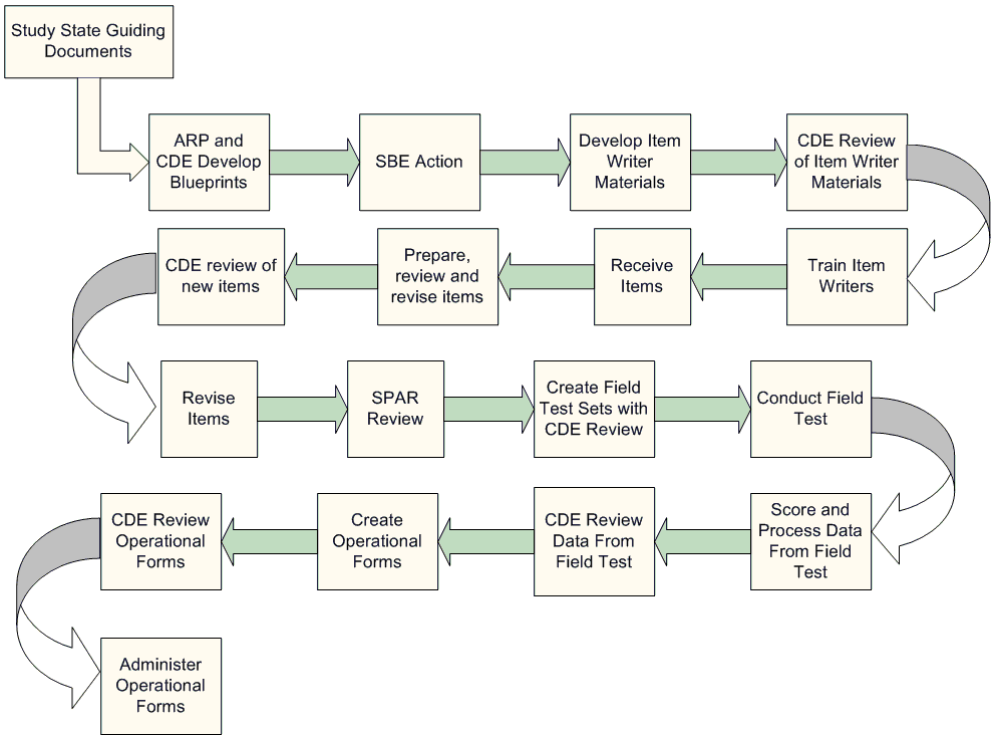
Linacre, J. M. (2000). *WINSTEPS: Rasch measurement* (Version 3.23). Chicago, IL: MESA Press.

Stocking, M. L., and Lord, F. M. (1983). Developing a common metric in item response theory. Applied Psychological Measurement, Vol. 7, pp. 201–10.

Chapter 3: Task (Item) Development

The CAPA tasks are developed to measure California's content standards and designed to conform to principles of item writing defined by ETS (ETS, 2002). Each CAPA task goes through a comprehensive development cycle as is described in Figure 3.1, below.

Figure 3.1 The ETS Item Development Process for the STAR Program



Rules for Task Development

The development of CAPA tasks follow guidelines for task writing approved by the CDE. These guidelines direct a task writer to assess a task for the relevance of the information being assessed, its relevance to the California content standards, its match to the test and task specifications, and its appropriateness to the population being assessed. As described below, tasks are eliminated early in a rigorous task review process when they are only peripherally related to the test and task specifications, do not measure core outcomes reflected in the California content standards, or are not developmentally appropriate.

Task Development Specifications

ETS senior content staff leads the task writers in the task development and review process. In addition, experienced ETS content specialists and assessment editors review each task during the forms-construction process. The lead assessment specialists for each content area work directly with the other ETS assessment specialists to carefully review and edit each task for such technical characteristics as quality, match to content standards, and conformity with California-approved task-writing practices. ETS follows the SBE-approved item utilization plan to guide the development of the tasks for each content area. Task specification documents include a description of the constructs to be measured and the California content standards. Those specifications help to ensure that the CAPA tests measure the content standards in the same way each year. The task specifications also provide specific and important guidance to task writers.

The task specifications describe the general characteristics of the tasks for each content standard, indicate task types or content to be avoided, and define the content limits for the tasks. More specifically, 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 CAPA blueprint
- The construct(s) appropriately measured by the standard
- A description of specific kinds of tasks to be avoided, if any (such as ELA tasks about insignificant details)
- A description of appropriate data representations (such as charts, tables, graphs, or other artwork) for mathematics and science tasks
- The content limits for the standard (such as one or two variables, maximum place values of numbers) for mathematics and science tasks
- A description of appropriate stimulus cards (if applicable) for ELA tasks

In addition, the ELA task specifications that contain guidelines for stimulus cards used to assess reading comprehension include the following:

- A list of topics to be avoided
- The acceptable ranges for the number of words on a stimulus card
- Expected use of artwork
- The target number of tasks attached to each reading stimulus card

Expected Task Ratio

ETS has developed the item utilization plan to continue the development of CAPA tasks. The plan includes strategies for developing tasks that will permit coverage of all appropriate standards for all tests in each content area and at each grade level. ETS test development staff uses this plan to determine the number of tasks to develop for each content area.

In previous years, the item utilization plan assumed that each year, 50 percent of items on an operational form would be refreshed (replaced); these items remained in the item bank for future use. However, beginning in 2010, the item utilization plan was modified to reflect changes in the item development process. The item refresh rate was reduced from 50 percent to 35 percent. This change reduced the overall test development activities for CAPA without impacting the test form comparability or the future viability of the item pool.

The item utilization plan also declares that five percent of the operational items are likely to become unusable because of normal attrition, and notes that there is a need to focus development on “critical” standards, which are standards that are difficult to measure well or for which we have few usable items.

Each year, ETS field tests 16 tasks per CAPA level for both ELA and mathematics, and eight tasks per CAPA level for science. Given that each test contains eight operational tasks, the ratios of field-test to operational tasks are 200 percent for ELA and mathematics and 100 percent for science for each CAPA level. These task ratios would allow for a five percent attrition rate while gradually increasing the overall size of the CAPA item bank. The field-test percentages and task counts are presented in Table 3.1.

Table 3.1 Field-test Percentages for the CAPA

Content Area	Number of Operational Tasks per CAPA level	Field-test Percentage per CAPA level	Number of Field-test Tasks per CAPA level
English-–Language Arts	8	200%	16
Mathematics	8	200%	16
Science	8	100%	8

Selection of Task Writers

Criteria for Selecting Task Writers

The tasks selected for each CAPA test are written by individual task writers who have a thorough understanding of the California content standards. Applicants for task writing are screened by senior ETS content staff. Only applicants with strong content and teaching backgrounds are approved for inclusion in the training program for task writers. Because most of the participants are current or former California educators, they are particularly knowledgeable about the standards assessed in the CAPA. All task writers meet the following minimum qualifications:

- Possession of a bachelor's degree in the relevant content area or in the field of education with special focus on a particular content of interest; an advanced degree in the relevant content area is desirable
- Previous experience in writing tasks for standards-based assessments, including knowledge of the many considerations that are important when developing tasks to measure state-specific standards
- Previous experience in writing tasks in the content areas covered by CAPA levels
- Familiarity, understanding, and support of the California content standards
- Current or previous teaching experience in California, when possible
- Knowledge about the abilities of the students taking the tests

Task (Item) Review Process

The tasks selected for CAPA undergo an extensive task review process that is designed to provide the best standards-based tests possible. This section summarizes the various reviews performed to ensure the quality of the CAPA tasks and test forms.

Contractor Review

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

The ETS review process for the CAPA includes the following:

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

Throughout this multistep task review process, the lead content-area assessment specialists and development team members continually evaluate the relevance of the information being assessed by the task, its relevance to the California content standards, its match to the test and task specifications, and its appropriateness to the population being assessed. Tasks that are only peripherally related to the test and task 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 tasks and materials undergo two reviews from the content area assessment specialists. These assessment specialists make sure that the test tasks 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 task specifications. Assessment specialists review each task on the basis of the following characteristics:

- Relevance of each task as the task relates to the purpose of the test
- Match of each task to the task specifications, including cognitive level
- Match of each task to the principles of quality task development
- Match of each task to the identified standard or standards
- Difficulty of the task
- Accuracy of the content of the task
- Readability of the task or stimulus card
- CAPA-level appropriateness of the task
- Appropriateness of any illustrations, graphs, or figures

Each task is classified with a code for the standard it is intended to measure. The assessment specialists also check all tasks against their classification codes, both to evaluate the correctness of the classification and to ensure that a given task is of a type appropriate to the outcome it was intended to measure. The reviewers may accept the task and classification as written, suggest revisions, or recommend that the task be discarded. These steps occur prior to the CDE's review.

2. Internal Editorial Review

After the content area assessment specialists review each task, a group of specially trained editors reviews each task in preparation for review by the CDE and the ARPs. The editors check tasks for clarity, correctness of language, appropriateness of language for the grade level assessed, adherence to the style guidelines, and conformity with accepted task-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 task before it is prepared for the CDE and ARP reviews. In addition, the review process promotes a general awareness of and responsiveness to the following:

- Cultural diversity
- Diversity of background, cultural tradition, and viewpoints to be found in the test-taking 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
- Task accessibility for English-language learners

Content Expert Reviews

Assessment Review Panels

ETS is responsible for working with ARPs as tasks are developed for the CAPA. The ARPs are advisory panels to the CDE and ETS and provide guidance on matters related to task development. The ARPs are responsible for reviewing all newly developed tasks for alignment to the California content standards. The ARPs also review the tasks for accuracy of content, clarity of phrasing, and quality. ETS provides the ARPs with the opportunity to review the tasks with the applicable field-test statistics and to make recommendations for the use of tasks in subsequent test forms. In their examination of test tasks, the ARPs may raise concerns related to age/level appropriateness and gender, racial/ethnic, and/or socioeconomic bias.

Composition of ARPs

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 CAPA ARPs, including:

- Three or more years of general teaching experience in grades kindergarten through twelve and in the content areas (ELA, mathematics, or science)
- Bachelor’s or higher degree in a grades or content area related to ELA, mathematics, or science
- Knowledge and experience with the California content standards for ELA, mathematics, or science
- Special education credential
- Experience with more than one type of disability
- Three to five years as a teacher or school administrator with a special education credential

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

Current ARP members are recruited through an application process. Recommendations are solicited from school districts and county offices of education as well as from CDE and SBE

staff. Applications are received and reviewed throughout the year. They are reviewed by the ETS assessment directors, who confirm that the applicant's qualifications meet the specified criteria. Applications that meet the criteria are forwarded to CDE and SBE staff for further review and agreement on ARP membership. Upon approval, the applicant is notified that he or she has been selected to serve on the ARP committee. Table 3.2 shows the educational qualifications, present occupation, and credentials of the current CAPA ARP members.

Table 3.2 CAPA ARP Member Qualifications, by Content Area and Total

CAPA	ELA	Math	Science	Grand Total
Total	8	9	7	24
Occupation (Members may teach multiple levels.)				
Teacher or Program Specialist, Elementary/Middle School	3	2	0	5
Teacher or Program Specialist, High School	1	1	3	5
Teacher or Program Specialist, K–12	3	3	4	10
University Personnel	0	0	0	0
Other District Personnel (e.g., Director of Special Services, etc.)	2	1	0	3
Highest Degree Earned				
Bachelor's Degree	3	4	0	7
Master's Degree	4	4	6	14
Doctorate	0	0	0	0
Credential (Members may hold multiple credentials.)				
Elementary Teaching (multiple subjects)	4	3	0	7
Secondary Teaching (single subject)	0	1	5	6
Special Education	5	6	5	16
Reading Specialist	0	0	0	0
English Learner (CLAD,BCLAD)	1	1	1	3
Administrative	1	1	1	3
Other	0	0	0	0
None (teaching at the university level)	0	0	0	0

ARP Meetings for Review of CAPA Tasks

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

- Overview of the purpose and scope of the CAPA
- Overview of the CAPA's test design specifications and blueprints
- Analysis of the CAPA's task specifications
- Overview of criteria for reviewing constructed-response tasks
- Review and evaluation of tasks for bias and sensitivity issues

Criteria also involve more global factors, including—for ELA—the appropriateness, difficulty, and readability of reading stimulus cards. The ARPs also are trained on how to make

recommendations for revising tasks. Guidelines for reviewing tasks are provided by ETS and approved by the CDE. The set of guidelines for reviewing tasks is summarized next.

Does the task:

- Measure the content standard?
- Match the test task specifications?
- Align with the construct being measured?
- Test worthwhile concepts or information?
- Reflect good and current teaching practices?
- Have wording that gives the student a full sense of what the task is asking?
- Avoid unnecessary wordiness?
- Reflect content that is free of bias against any person or group?

Is the stimulus (if any) for the task:

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

As the first step of the task review process, panel members review a set of tasks independently and record their individual comments. The next step in the review process is for the group to discuss each task. The content-area assessment specialists facilitate the discussion and record all recommendations. Those recommendations are recorded in a master task-review booklet. Task review binders and other task evaluation materials also serve to identify potential bias and sensitivity factors that the ARP consider as part of its task reviews.

ETS staff maintains 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 Panel

The SPAR panel is responsible for reviewing and approving all achievement tests to be used statewide for the testing of students in California public schools, grades two through eleven. At the SPAR panel meetings, all new tasks are presented in binders for review. The SPAR panel representatives ensure that the test tasks conform to the requirements of *EC* Section 60602. If the SPAR panel rejects specific tasks, the tasks are marked for rejection in the item bank and excluded from use on field tests. For the SPAR panel meeting, the task development coordinator is available by telephone to respond to any questions during the course of the meeting.

Field Testing

The primary purposes of field testing are to obtain information about task performance and to obtain statistics that can be used to assemble operational forms.

Stand-alone Field Testing

In 2002, for the new CAPA test, a pool of tasks was initially constructed by administering the newly developed tasks in a stand-alone field test. In stand-alone field testing, examinees

are recruited to take tests outside of the usual testing situation and the test results are typically not used for instructional or accountability purposes (Schmeiser & Welch, 2006).

Embedded Field-test Tasks

Although a stand-alone field test is useful for developing a new test because it can produce a large pool of quality tasks, embedded field testing is generally preferred because the tasks being field tested are scattered throughout the operational test. Variables such as test-taker motivation and test security are the same in embedded field testing as they will be when the field-tested tasks are later administered operationally. Such field testing involves distributing the tasks being field-tested within an operational test version. Different versions contain the same operational tasks and different field test tasks. The numbers of embedded field-test tasks for the CAPA are shown in Table 3.3.

Allocation of Students to Forms

The operational test versions for a given CAPA are distributed by random assignment to school districts and independently testing charter schools so that a large representative sample of test takers responds to the field-test items embedded in these versions. The random assignment of specific versions ensures that a diverse sample of students take each field-test task.

The students do not know which tasks are field-test tasks and which tasks are operational tasks; therefore, their motivation is not expected to vary over the two types of tasks (Patrick & Way, 2008).

Number of Forms and Sample Sizes

All CAPA assessments consist of four versions. Each version contains eight operational tasks that are the same and four unique tasks being field-tested. Scores on the field-test tasks are not counted toward student scores. See Table 2.1 on page 10 for more details on the test length.

Table 3.3 shows the number of forms, operational tasks, field-test tasks, and the approximate number of students in the P2[1] sample that took the operational and field-test tasks in spring 2010. The sample sizes for the field-test tasks are presented as ranges because the numbers of students who took a set of field-test tasks varied over the versions of CAPA.

Table 3.3 Summary of Tasks and Forms Presented in the 2010 CAPA

Content Area	Level	Operational		Field Test		
		N Tasks	Examinees Total (P2)	N Versions	N Tasks	Examinees Total (P2)
English–Language Arts	**I**	8	13,143	4	4	1,852–3,974
	II	8	6,682	4	4	1,318–1,729
	III	8	6,782	4	4	1,317–1,813
	IV	8	9,706	4	4	1,846–2,502
	V	8	10,443	4	4	1,985–2,740
Mathematics	**I**	8	13,111	4	4	1,851–3,963
	II	8	6,673	4	4	1,316–1,726
	III	8	6,770	4	4	1,312–1,815
	IV	8	9,676	4	4	1,838–2,491
	V	8	10,420	4	4	1,984–2,735

[1] The P2 data file contains 100 percent of school district data that were received for ETS Statistical Analysis by approximately August 23, 2010.

Content Area	Level	Operational		Field Test		
		N Tasks	Examinees Total (P2)	N Versions	N Tasks	Examinees Total (P2)
Science	I	8	3,490	4[2]	4	455–1,121
	III	8	3,237	4	4	610–873
	IV	8	3,154	4	4	570–782
	V	8	3,325	4	4	636–862

CDE Data Review

Once tasks have been field tested, ETS prepares the tasks and the associated statistics for review by the CDE. ETS provides tasks with their statistical data, along with annotated comments sheets, for the CDE to use in its review. ETS conducts an introductory training to highlight any new issues and serve as a statistical refresher. CDE consultants then make decisions about which tasks should be included in the item bank. ETS psychometric and content staffs are available to CDE consultants throughout this process.

Item Banking

Once the ARP new item review is completed, the tasks are placed in the item bank along with their corresponding review information. Tasks that are accepted by the ARP and CDE are updated to a “field-test ready” status; tasks that are rejected are updated to a “rejected before use” status. ETS then delivers the tasks to the CDE by means of a delivery of the California electronic item bank. Subsequent updates to tasks are based on field-test and operational use. However, only the latest content of the task is in the bank at any given time, along with the administration data from every administration that has included the task.

After field-test or operational use, tasks that do not meet statistical specification may be rejected; such tasks are updated with a status of “rejected for statistical reasons” and remain unavailable in the bank. These statistics are obtained by the research group at ETS, which carefully evaluates each task for its level of difficulty and discrimination as well as conformance to the IRT model. Researchers also determine if the task functions similarly for various subgroups of interest.

Status and availability of a task are updated programmatically as tasks are presented for review, accepted or rejected, placed on a form for field testing, presented for statistical review, used operationally, or released. All rejection and release indications are monitored and controlled through ETS’s assessment development processes.

ETS currently provides and maintains the electronic item banks for several of the California assessments including the California High School Exit Examination (CAHSEE) and STAR (CST, CMA, CAPA, and STS). CAHSEE and STAR are currently consolidated in the California Item Banking system. ETS works with the CDE to obtain the data for assessments under contract with other vendors for inclusion into the item bank, using the tools developed previously. ETS provides the item banking application using the LAN architecture and the relational database management system, SQL 2000, already deployed. ETS provides updated versions of the item bank to the CDE on an ongoing basis and works with the CDE to determine the optimum process if a change in databases is desired.

[2] There are two unique forms for science tests.

References

Educational Testing Service (2002). *ETS standards for quality and fairness*. Office of Testing Integrity. Princeton, NJ: Educational Testing Service.

Patrick, R., and Way, D. (March, 2008). *Field testing and equating designs for state educational assessments*. Paper presented at the annual meeting of the American Educational Research Association, New York, NY.

Schmeiser, C.B., and Welch, C.J. (2006). Test development. In R.L. Brennan (Ed.), *Educational measurement* (4th, ed.). Westport, CT: American Council on Education and Praeger Publishers.

Chapter 4: Test Assembly

The CAPA is constructed to measure students' performance relative to California's content standards approved by the SBE. The tests are also constructed to meet professional standards for validity and reliability. For the CAPA, the content standards and psychometric attributes are used as the basis for assembling the test forms.

Test Length

The number of tasks in each CAPA blueprint was determined by considering the construct that the test is intended to measure and the level of psychometric quality desired. Test length is closely related to the complexity of content to be measured by each test; this content is defined by California content standards for each level and content area. Also considered is the goal that the tests be short enough that most of the students complete the test in a reasonable amount of time.

Each CAPA test consists of 12 tasks, including eight operational tasks and four field-test tasks. For more details on the distribution of items at each level and content area, see Table 3.3 in Chapter 3.

Rules for Task Selection

Test Blueprints

ETS develops all CAPA test tasks to conform to the SBE-approved California content standards and the CAPA blueprints. The CAPA blueprints were revised and approved by the SBE in 2006 for implementation beginning in 2008.

The California content standards were used as the basis for choosing tasks for the tests. The blueprints for the CAPA can be found on the following CDE STAR CAPA Blueprints Web page at http://www.cde.ca.gov/ta/tg/sr/capablueprints.asp.

Content Rules and Task Selection

When developing a new test form for a given CAPA level and content area, test developers follow a number of rules. First and foremost, they select tasks that meet the blueprint for that level and content area. Using the electronic item bank, assessment specialists begin by identifying a number of linking tasks. These are tasks that appeared in the previous year's operational administration and are used to equate the test forms administered each year. Linking tasks are selected to proportionally represent the full blueprint. The linking items are selected for their strong match to the content and are reviewed to ensure that they meet specific psychometric criteria.

After the linking tasks are approved, assessment specialists populate the rest of the test form. Their first consideration is the strength of the content and the match of each task to a content standard. In selecting tasks, team members also try to ensure that they include a variety of formats and content and that at least some of them include graphics for visual interest. Another consideration is the difficulty of each task. Test developers strive to ensure that there are some easy and some hard tasks, and that there are a number of tasks in the middle range of difficulty. If tasks do not meet all content and psychometric criteria, staff reviews the other available tasks to determine if there are other selections that could improve the match of the test to all of the requirements. If such a match is not attainable, the content team works in conjunction with psychometricians and the CDE to determine which

combination of tasks will best serve the needs of the students taking the test. Chapter 3 on page 17 contains further information about this process.

Psychometric Criteria

For CAPA, the test developers and psychometricians strive to accomplish three goals while developing a test:

1. The test must have desired precision of measurement at all ability levels.
2. The test score must be valid and reliable for the intended population and for the various subgroups of test-takers.
3. The test forms must be comparable across years of administration to ensure the generalizability of scores over time

In order to achieve these goals, a set of rules is developed that outlines the desired psychometric properties of the CAPA. Such rules are referred to as statistical targets. Total test assembly targets are developed for each CAPA. These targets are provided to test developers before a test construction cycle begins.

The total test target or primary statistical target used for assembling the CAPA for the 2010 administration were the average and standard deviation of item difficulty based on the IRT *b*-parameters, average item score, and average polyserial correlation. The polyserial correlation describes the relationship between student performance on a polytomously scored item and student performance on the test as a whole. It is used as a measure of how well an item discriminates among test takers that differ in their ability and is related to the overall reliability of the test.

The target values for the CAPA, presented in Table 4.1, were those used to build the spring 2010 operational test forms. These specifications were developed from the analyses of test forms administered in 2009, the base year in which test results were reported using new scale and cut scores for the five performance levels: far below basic, below basic, basic, proficient and advanced.

Table 4.1 Target Statistical Specifications for the CAPA

Content Area	CAPA Level	Target Mean *b*	Target SD *b*	Mean AIS	Mean Polyserial
English–Language Arts	**I**	–0.39	0.50	2.75	0.80
	II	–0.56	0.50	2.20	0.80
	III	–0.49	0.50	2.20	0.80
	IV	–0.50	0.50	2.20	0.80
	V	–0.61	0.50	2.20	0.80
Mathematics	**I**	–0.27	0.50	2.75	0.80
	II	–0.79	0.50	2.20	0.80
	III	–0.80	0.50	2.20	0.80
	IV	–0.73	0.50	2.20	0.80
	V	–0.79	0.50	2.20	0.80
Science	**I**	–0.27	0.50	2.75	0.80
	III	–0.76	0.50	2.20	0.80
	IV	–0.61	0.50	2.20	0.80
	V	–0.31	0.50	2.20	0.80

Projected Psychometric Properties of the Assembled Tests

Prior to the 2010 administration, the psychometricians performed a preliminary review of the technical characteristics of the assembled tests. The expected or projected performance of examinees was estimated using the item level statistics for the selected items, available in the California item bank. Table 4.2 shows the mean observed statistics, available in the item bank, of the items on each CAPA based on the most recent administration of those items. These values can be compared to the target values in Table 4.1.

Table 4.2 Summary of 2010 CAPA Projected Statistical Attributes

Content Area	CAPA Level	Mean *b*	SD *b*	Mean AIS	Min AIS	Max AIS	Mean Polyserial
English–Language Arts	**I**	–0.61	0.17	2.98	2.45	3.44	0.78
	II	–0.84	0.35	2.41	1.85	2.78	0.72
	III	–0.98	0.50	2.55	2.17	3.03	0.74
	IV	–0.69	0.39	2.29	1.65	2.70	0.76
	V	–0.87	0.29	2.49	1.95	2.96	0.83
Mathematics	**I**	–0.24	0.18	2.68	2.41	3.12	0.76
	II	–1.06	0.68	2.54	1.44	3.37	0.74
	III	–1.03	0.47	2.43	1.69	3.08	0.67
	IV	–0.95	0.53	2.48	1.78	3.24	0.76
	V	–1.09	0.37	2.53	1.85	3.10	0.75
Science	**I**	–0.31	0.14	2.79	2.47	3.26	0.80
	III	–1.05	0.35	2.48	2.13	2.90	0.72
	IV	–0.95	0.17	2.47	2.25	2.79	0.75
	V	–0.45	0.29	2.36	2.06	2.65	0.74

Rules for Task Sequence and Layout

Linking tasks typically are placed in each form first; the sequence of the linking tasks is kept consistent from form to form. The initial tasks on a form and in each session are relatively easier than those tasks that follow so that many students experience success early in each testing session. The remaining tasks are sequenced within a form and within a session by alternating easier and more difficult tasks.

Chapter 5: Test Administration

Test Security and Confidentiality

All tests within the STAR Program are secure documents. For CAPA administration, every person having access to test materials is required to 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), which is described in the next section.

ETS's Office of Testing Integrity

The OTI is a division of ETS that provides quality assurance services and resides in the ETS Legal Department. The Office of Professional Standards Compliance of ETS publishes and maintains *ETS Standards for Quality and Fairness,* which supports the 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.

OTI's mission is to:

- Minimize any testing security violations that can impact the fairness of testing
- Investigate any security breach
- Report on security activities

The 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. In its pursuit of enforcing secure practices, ETS, through the OTI, strives to safeguard the various processes involved in a test development and administration cycle. These practices are discussed in detail in the next sections.

Test Development

During the test development process, ETS staff members adhere to the following established security procedures:

- Only authorized individuals have access to test content at any step during the development, review, and data analysis processes.
- Test developers keep all hard-copy 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 during the development process.
- Test developers take further security measures when test materials are to be shared outside of ETS; this is achieved by using registered and/or secure mail, using express delivery methods, and actively tracking records of dispatch and receipt of the materials.

Task and Data Review

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

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

Item Banking

When the ARP review is complete, the tasks are placed in the item bank. ETS then delivers the tasks to the CDE through the California electronic item bank. Subsequent updates to tasks are based on data from field testing and the operational use of the items. Only the latest content of the task is in the bank at any time, along with the administration data from every administration that has included the task.

Security of the electronic item banking system is of critical importance. The measures that ETS takes 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 provide authorized 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. Designated administrators at the CDE and at ETS authorize the users to access these electronic systems.

Transfer of Forms and Tasks to the CDE

ETS shares a secure file transfer protocol (SFTP) site with the CDE. SFTP is a standard method for reliable and exclusive routing of files. Files reside on a password-protected server that only authorized users can access. On that site, ETS posts Microsoft Word and Excel, Adobe Acrobat PDF, and other document files for the CDE to review. ETS sends a notification e-mail to the CDE to announce that files are posted. Task data are always transmitted in an encrypted format to the SFTP site, test data are never sent via e-mail. The SFTP sever is used as a conduit for the transfer of files; secure test data are not stored permanently on the shared SFTP sever.

Security of Electronic Files Using a Firewall

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

All electronic applications included in the STAR Management System (CDE, 2010a) remain protected by the ETS firewall software at all times. Due to the sensitive nature of the student information processed by the STAR Management System, the firewall plays a significant role in maintaining an assurance of confidentiality in the users of this information. (It should

be noted that the STAR Management System neither stores nor processes tests or student test results.)

Printing and Publishing

After tasks and test forms are approved, the files are sent for printing on a CD using a secure courier system. According to the established procedures, the OTI pre-approves all printing vendors before they can work on secured confidential and proprietary testing materials. The printing vendor must submit a completed ETS Printing Plan and Typesetting Facility Security Plan; both plans document security procedures, access to testing materials, a log of work in progress, personnel procedures, and access to the facilities by the employees and visitors. After reviewing the completed plans, representatives of the OTI visit the printing vendor to conduct an onsite inspection. The printing vendor ships printed test booklets to Pearson and other authorized locations. Pearson distributes the booklets to school districts in securely packaged boxes.

Test Administration

Pearson receives testing materials from printers, packages them, and sends them to school districts. After testing, the school districts return materials to Pearson for scoring. During these events, Pearson takes extraordinary measures to protect the testing materials. Pearson's customized Oracle business applications verify that inventory controls are in place from receipt of materials to packaging. The reputable carriers used by Pearson provide a specialized handling and delivery service that maintains test security and meets the STAR 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 testing materials in central, locked storage except during actual test administration times. Test site coordinators are responsible for accounting for and returning all secure materials to the district STAR coordinator, who is responsible for returning them to the STAR Scoring and Processing Centers. The following measures are in place to ensure security of STAR testing materials:

- District STAR coordinators are required to 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 school district.
- Test site coordinators have to 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 be delivered to the school/test site.
- Anyone requesting access to the testing 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 the coordinator will be asked to follow up with a written explanation of the violation or suspected violation.

Processing and Scoring

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

- There is controlled access to the facility.
- No test materials may 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 must 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. After they are stored, they will not be handled again unless questions arise about a student's score. School and district personnel are not allowed to look at a completed answer documents unless necessary for the purpose of transcription or to investigate irregular cases.

All answer documents, test booklets, and other secure testing materials are destroyed after October 31 each year.

Data Management

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 utilized. Upon entering the facilities, all Pearson employees are required to display identification badges that must be worn at all times while in the facility. Visitors must sign in and out. While they are at the facility, they are assigned a visitor badge and escorted by Pearson personnel. Access to the Data Center is further controlled by the computerized badge-reading system that allows entrance only to those 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, in a strictly controlled Configuration Management environment.

For mainframe processes, Pearson utilizes 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.

Transfer of Scores via Secure Data Exchange

After scoring is completed, Pearson sends scored data files to ETS and follows secure data exchange procedures. ETS and Pearson have implemented procedures and systems to provide efficient coordination of secure data exchange. This includes the established, SFTP site that is used for secure data transfers between ETS and Pearson. These well-established procedures provide timely, efficient, and secure transfer of data. Access to the STAR data files is limited to appropriate personnel with direct project responsibilities.

Statistical Analysis

The Information Technology (IT) area at ETS retrieves the Pearson data files from the SFTP site and loads them into a database. The Data Quality Services (DQS) 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 on student data, the files flow in three different directions. Paper reports, some with individual student results and others with summary results, are produced. Encrypted files of summary results are also sent to the CDE by means of SFTP. Any summary results that fewer than eleven students are not reported. The item-level statistics from the results are also entered into the item bank.

Student Confidentiality

To meet ESEA and state requirements, school districts must collect demographic data about students. This includes information about students' ethnicity, parent education, disabilities, whether the student qualified for the National School Lunch Program (NSLP), and so forth (CDE, 2010b). ETS takes precautions to prevent any of this information from becoming public or being used for anything for anything other than testing purposes. These procedures are applied to all documents in which these student demographic data may appear, including in Pre-ID files and reports.

Student 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. ETS staff access to production databases is limited to personnel with a business need to access that data. User IDs for production systems must be person-specific or for systems use only.

ETS has implemented network controls for routers, gateways, switches, firewalls, network tier management, and network connectivity. Routers, gateways, and switches represent points of access between networks. However, these do not contain mass storage or represent points of vulnerability, particularly 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 a secure off-site storage facility for safekeeping.

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 students in both electronic files and on paper reports during the following events:

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

In addition to protecting the confidentiality of testing materials, ETS's Code of Ethics further prohibits ETS employees from financial misuse, conflicts of interest, and unauthorized appropriation of ETS's property and resources. Specific rules are also given to ETS employees and their immediate families who may be administered a test developed by ETS, such as a STAR examination. The ETS Office of Testing Integrity verifies that these standards are followed throughout ETS. It does this in part by conducting periodic onsite security audits of departments, with followup reports containing recommendations for improvement.

Procedures to Maintain Standardization

The CAPA processes are designed so that the tests are administered and scored in a standardized manner. ETS takes all necessary measures to ensure the standardization of CAPA tests, as described in this section.

Test Administrators

The CAPA tests are administered in conjunction with other tests that comprise the STAR Program. In that respect, ETS employs personnel who facilitate various processes involved in the standardization of an administration cycle.

The responsibilities for district and test site staff members are included in the *STAR District and Test Site Coordinator Manual* (CDE, 2010c). This manual is described in the next section.

The staff members centrally involved in the test administration are as follows:

District STAR Coordinator

Each local education agency[1] (LEA) designates a district STAR coordinator who is responsible for ensuring the proper and consistent administration of the STAR tests. They are also responsible for securing testing materials upon receipt, distributing testing materials

[1] Local education agencies include public school districts, statewide benefit charter schools, state board-authorized charter schools, county of education programs, and charter schools testing independently from their home district.

to schools, tracking the materials, training and answering questions from district staff and test site coordinators, reporting any testing irregularities or security breaches to the CDE, receiving scorable and nonscorable materials from schools after an administration, and returning the materials to the STAR contractor for processing.

Test Examiner

The CAPA tests are administered by test examiners who may be assisted by test proctors and scribes. A test examiner is an employee of a school district or an employee of a nonpublic, nonsectarian school (NPS) who has been trained to administer the tests and has signed a STAR Test Security Affidavit. For the CAPA, the test examiner must be a certificated or licensed school staff member (5 *CCR* Section 850 [q]). Test examiners must follow the directions in the *CAPA Examiner's Manual* (CDE, 2010d) exactly.

Test Proctor

A test proctor is an employee of the school district or a person, assigned by an NPS to implement the IEP of a student, who has received training designed to prepare him or her to assist the test examiner in the administration of tests within the STAR Program (5 *CCR* Section 850 [r]). Test proctors must sign STAR Test Security Affidavits (5 *CCR* Section 859 [c]).

Observer

To ensure the comparability of scores, the test site coordinator and principal of the school should objectively and randomly select ten percent of the students who will take the CAPA in each content area at each level at each site to receive a second rating. The observer is a certificated or licensed employee (5 *CCR* Section 850 [q]) who observes the administration of each task and complete a separate answer document for those students who are second-rated.

CAPA Examiner's Manual

The *CAPA Examiner's Manual* describes the CAPA administrative procedures and scoring rubrics and contains the manipulative lists and all the tasks for all the CAPA content area tests at each level. Examiners must follow task preparation guidelines exactly (CDE, 2010d).

District and Test Site Coordinator Manual

Test administration procedures are to be followed exactly so that all students have an equal opportunity to demonstrate their academic achievement. The *STAR District and Test Site Coordinator Manual* contributes to this goal by providing information about the responsibilities of district and test site coordinators, as well as those of the other staff involved in the administration cycle (CDE, 2010c). However, the manual is not intended as a substitute for the *CCR*, *Title 5,* Education (*5 CCR*) or to detail all of the coordinator's responsibilities.

STAR Management System Manuals

The STAR Management System is a series of secure, Web-based modules that allow district STAR coordinators to set up test administrations, order materials, and submit and correct student Pre-ID data. Every module has its own user manual with detailed instructions on how to use the STAR Management System. The modules of the STAR Management System are as follows:

- **Test Administration Setup—**This module allows school districts to determine and calculate dates for scheduling the test administration for school districts, to verify contact information of those school districts, and to update the school district's shipping information. (CDE, 2010e)
- **Order Management—**This module allows school districts to enter quantities of testing materials for schools. Its manual includes guidelines for determining which materials to order. (CDE, 2010f)
- **Pre-ID—**This module allows school districts to enter or upload student information including demographics and to identify the test(s) the student will take. This information is printed on student test booklets or answer documents or on labels that can be affixed to test booklets or answer documents. Its manual includes the CDE's Pre-ID layout. (CDE, 2010b)
- **Extended Data Corrections—**This module allows school districts to correct the data that were submitted during Pre-ID prior to the end of the school district's selected testing window. (CDE, 2010g)

Accommodations for Students with Disabilities

All students participate in the STAR Program, including students with disabilities and English learners. ETS policy states that reasonable testing accommodations be provided to students with documented disabilities that are identified in the Americans with Disabilities Act (ADA). The ADA mandates that test accommodations be individualized, meaning that no single type of test accommodation may be adequate or appropriate for all individuals with any given type of disability. ADA authorizes that test takers with disabilities may be tested under standard conditions if ETS determines that only minor adjustments to the testing environment are required (e.g., wheelchair access, large-print test book, a sign language interpreter for spoken directions.)

Identification

Most students with disabilities and most English learners take the California Standards Tests under standard conditions. Some students with disabilities and some English learners, however, may need assistance when taking the tests. This assistance takes the form of test variations, accommodations, or modifications. The Matrices of Test Variations, Accommodations, and Modifications for administrations of California Statewide Assessments are provided in Appendix E of the *STAR District and Test Site Coordinator Manual* (CDE, 2010c). Because examiners may adapt the CAPA in light of a student's instructional mode, accommodations and modifications do not apply to the CAPA.

Adaptations

Students eligible for the CAPA represent a diverse population. Without compromising the comparability of scores, adaptations are allowed on the CAPA to ensure the student's optimal performance. These adaptations are regularly used for the student in the classroom throughout the year. The CAPA includes two types of adaptations:

1. Suggested adaptations for particular tasks, as specified in the task preparation instructions; and
2. Core adaptations, which are applicable for many of the tasks.

The core adaptations may be appropriate for students across many of the CAPA tasks and are provided in the *CAPA Examiners' Manual* (CDE, 2010d), on page 22 of the nonsecure manual.

Scoring

CAPA tasks are scored using a 5-point rubric (Level I) or a 4-point (Levels II–V) holistic rubric approved by the CDE. The rubrics include specific behavioral descriptors for each score point to minimize subjectivity in the rating process and facilitate score comparability and reliability. Student performance on each task is scored by one primary examiner, usually the child's teacher, or by another licensed or certificated staff member who is familiar to the student and who has completed the CAPA training. To establish scoring reliability, approximately ten percent of students receive a second independent rating by a trained observer who is also a licensed or certificated staff member and has completed the CAPA training. The answer document indicates whether the test was scored by the examiner or the observer.

Demographic Data Corrections

After reviewing student data, some school districts may discover demographic data or CAPA levels that are incorrect. The Demographic Data Corrections module of the STAR Management System gives school district the means to correct these data within a specified availability window. Districts may correct data to: (1) Have the school district's API/AYP recalculated; (2) Rescore uncoded or miscoded CAPA levels; (3) Obtain a corrected data CD-ROM for school district records; or (4) Match unmatched records (CDE, 2010h).

Testing Irregularities

Testing irregularities are circumstances that may compromise the reliability and validity of test results and, if more than five percent of the students tested are involved, could affect a school's API and AYP.

The district STAR coordinator is responsible for immediately notifying the CDE of any irregularities that occur before, during, or after testing. The test examiner is responsible for immediately notifying the district STAR coordinator of any security breaches or testing irregularities that occur in the administration of the test. Once the district STAR coordinator and CDE have determined that an irregularity has occurred, CDE instructs the district STAR coordinator on how and where to identify the irregularity on the answer document. The information and procedures to assist in identifying irregularities and notifying the CDE are provided in the *STAR District and Test Site Coordinator Manual* (CDE, 2010c).

Test Administration Incidents

A test administration incident is any event that occurs before, during, or after test administrations that does not conform to the instructions stated in the *CAPA Examiner's Manual* (CDE, 2010d) and the *STAR District and Test Site Coordinator Manual* (CDE, 2010c). These events include test administration errors and disruptions. Test administration incidents generally do not affect test results. These administration incidents are not reported to the CDE or the STAR Program testing contractor. The STAR test site coordinator should immediately notify the district STAR coordinator of any test administration incidents that occur. It is recommended by the CDE that districts and schools maintain records of these incidents.

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Chapter 6: Performance Standards

Background

From September 16 to 18, 2008, ETS conducted a standard-setting workshop in Sacramento, California, to recommend cut scores that delineated performance standards for the CAPA for ELA and mathematics levels I through V and the CAPA for science levels I and III through V.[1] The performance standards were defined by the SBE as (1) far below basic, (2) below basic, (3) basic, (4) proficient, and (5) advanced. Performance standards are developed from a general description of the performance level (policy level descriptors) and competencies lists, which operationally define each level. Cut scores numerically define the performance levels. This chapter describes the process of developing performance standards which were first applied to the CAPA operational tests in the spring of 2009.

ETS employed carefully designed standard-setting procedures to facilitate the development of performance standards for each CAPA test. The standard-setting method used for the CAPA was the Performance Profile Method, a holistic judgment approach based on profiles of student test performance for the areas of ELA and mathematics at all five test levels, and for science at levels I, III, IV, and V. Four panels of educators were convened to recommend cut scores: one panel for each content area focused on all levels above Level I and a separate panel focused on Level I. After the standard setting, ETS met with representatives of the CDE to review the preliminary results and provided an executive summary of the procedure and tables that showed the panel-recommended cut scores and impact data. The final cut scores were adopted by the SBE in November, 2008. See the technical report for the standard setting (ETS, 2008a) for more information.

Standard Setting Procedure

The process of standard setting is designed to identify a “cut score” or minimum test score that is required to qualify a student for each performance level. The process generally requires that a panel of subject-matter experts and others with relevant perspectives (for example, teachers, school administrators) be assembled. For the CAPA, panelists were recruited to include California educators with experience administering the CAPA, who have direct experience in the education of students who take the CAPA, and who are familiar with the California content standards. Panelists were recruited to be representative of the educators of the state’s CAPA-eligible students (ETS, 2008b). Panelists were assigned to one of four panels (Level I, ELA, mathematics, or science) such that the educators on each panel should have experience administering CAPA across the levels in the content area(s) to which they were assigned.

As with other standard setting processes, panelists participating in the CAPA workshop followed the steps listed below.

1. Prior to attending the workshop, all panelists received a pre-assignment. The task was to review, on their own, the content standards upon which the CAPA tests are based and take notes on their own expectations for students at each performance level. This allowed the panelists to understand how their perceptions may relate to the complexity of content standards.

[1] The CAPA for Science is not assessed at Level II.

2. At the start of the workshop, panelists received training which included the purpose of standard setting and their role in the work, the meaning of a "cut score" and "impact data," and specific training and practice in the method. Impact data included the percentage of students assessed in a previous test administration of the test who would fall into each performance level, given the panelists' judgments of cut scores.
3. Panelists next became familiar with the tasks by reviewing the actual test and the rubrics, and then assessing and discussing the demands of the tasks.
4. Panelists then reviewed a description of each performance standard (that is, the competencies list) as a group, noting the increasing demands of each subsequent level. In this step, they began to visualize the knowledge and skills of students in each performance standard and the differences between levels.
5. Panelists identified characteristics of a "borderline" test taker or "target student." This student is defined as one who possesses just enough knowledge of the content to move over the border separating a performance level from the performance level below.
6. After completing training in the method, confirmed through an evaluation questionnaire, panelists made individual judgments and discussed feedback related to other panelists' judgments and feedback based on student performance data (impact data[2]). Panelists could revise their judgments during the process if they wished. The final recommended cut scores were based on an average of panelists' judgments at the end of three rounds. For the CAPA, the cut scores recommended by the panelists and the recommendation of the State Superintendent of Public Instruction were presented for public comment at regional public hearings. Comments and recommendations were then presented to the SBE for approval.

Development of Competencies Lists

Prior to the CAPA standard-setting workshop, ETS facilitated a meeting in which a subset of the standard-setting panelists was assembled to develop a list of competencies based on the California content standards and California policy level descriptors. Four panels of educators were assembled to identify and discuss the competencies required of students in the CAPA levels and content areas for each performance level (below basic, basic, proficient, and advanced). Panels consisted of educators with experience working with students who take the CAPA. Panelists were assigned to one of four panels (Level I, ELA, mathematics, or science) based on experience working with students and administering the CAPA. At the conclusion of the meeting, the CDE reviewed the draft lists and delivered the final lists for use in standard setting. The lists were used to facilitate the discussion and construction of the target student definitions during the standard-setting workshop.

Standard Setting Methodology

Performance Profile Method

Because of the small number of tasks and the fact that all CAPA tasks are constructed response items, ETS applied a procedure that combined the Policy Capturing Method (Plake & Hambleton, 2001; Jaeger, 1995a; Jaeger, 1995b) and the Dominant Profile Method (Plake & Hambleton, 2001; Plake, Hambleton, & Jaeger, 1997; Putnam, Pence, & Jaeger, 1995). Both methods are holistic methods in that they ask panelists to make

[2] No impact data were presented to the Level I panel due to the change in the Level I rubric.

decisions based on an examinee's score profile or performance rather than on each separate item. The combined procedure that was used in 2008 is called the Performance Profile Method in this report. The procedure was a modification to the Performance Profile Method used for the CAPA standard setting in 2003 (Morgan, 2003).[3] The task for panelists was to mark the raw score representing the competencies a student should have at each performance level, that is, basic, proficient, and advanced.[4]

For each test, materials were developed so that panelists could review score patterns, or performance profiles, for the eight CAPA tasks; panelists used the profiles and corresponding raw scores to make cut score judgments. Profiles for Levels II–V were selected using 2008 student performance data. Profiles for Level I were informed by 2008 student performance data; however, due to a change in the Level I rubric after the 2008 test administration, the selection of Level I profiles also relied on verification by CAPA assessment experts, taking into account the changes in the Level I rubric (see Chapter 7 for more information on the rubric change).

The student profiles were presented at selected raw score points in an increasing order.[5] For most raw score points, two to three profiles are presented; but in the portion of the score range where total scores are achieved by a large group of students as indicated by the operational data, up to five profiles are presented. While it is recognized that any number of combinations of item ratings may result in the same total raw scores, the intent in the Performance Profile Method is to use a cut score that is compensatory in nature. Therefore, profiles within the same total raw score are ordered randomly. Panelists are instructed that it is permissible to select total raw scores "between" the presented raw score profiles as their recommended cut score judgment for any level.

More details regarding the process implemented for the CAPA standard setting and results summary can be found in the standard-setting technical report (ETS, 2008a).

Results

The recommended cut scores obtained from the standard setting were expressed in terms of raw scores; the panel median score after three rounds of judgments is the cut score recommendation for each level. These scores were transformed to scale scores that ranged between 15 and 60.

The cut score for the basic performance level was set equal to a scale score of 30 for every test level and content area; this means that a student must earn a score of 30 or higher to achieve a basic classification. The cut score for the proficient level was set equal to 35 for each test level and content area; this means that a student must earn a score of 35 or higher to achieve a proficient classification.

The cut scores for the other performance levels usually vary by grade and content area. They are derived using procedures based on item response theory. The raw cut scores for a

[3] Modifications were made to materials used such as the structure of the profiles and feedback. Panelists were asked to think holistically in both the 2003 and 2008 workshops.

[4] Cut scores for below basic and far below basic performance levels were set statistically.

[5] In creating score distributions for selection of profiles and projection of impact data, data files were based on sampling and selection criteria supplied by the CDE.

given test are mapped to IRT *thetas* ($\hat{\theta}$) using the test characteristic function[6] and then transformed to the scale score metric using the following equation:

$$Scale\ Cut\ Score = (35 - \theta_{proficient} \times \left(\frac{35-30}{\theta_{proficient} - \theta_{basic}} \right)) + \left(\frac{35-30}{\theta_{proficient} - \theta_{basic}} \right) \times \hat{\theta} \quad (6.1)$$

where,

$\theta_{proficient}$ represents the theta corresponding to the cut score for proficient, and

θ_{basic} represents the theta corresponding to the cut score for basic.

The scale score ranges for each performance level are presented in Table 2.2 on page 15. The cut score for each performance level is the lower bound of each scale score range. The scale score ranges do not change from year to year. Once established, they remain unchanged from administration to administration until such time that new performance standards are adopted.

Table 7.5 on page 51 in Chapter 7 presents the percentages of examinees meeting each performance level in 2010.

[6] In the case of polytomously scored items, the IRT test characteristic function is the sum of the item response functions (IRF), where the IRF of an item is the weighted sum of the response functions for each score category (weighted by the scores of the categories).

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Chapter 7: Scoring and Reporting

ETS conforms to high standards of quality and fairness (ETS, 2002) when scoring tests and reporting scores. Such standards dictate that ETS provides accurate and understandable assessment results to the intended recipients. It is also ETS's mission to provide appropriate guidelines for score interpretation and cautions about the limitations in the meaning and use of the test scores. Finally, attempts are made to ensure sufficient data are collected for the major subgroups of students. Such data help ETS to conduct analyses needed to ensure that the assessments are equitable for various groups of test takers.

Procedures for Maintaining and Retrieving Individual Scores

The CAPA is composed entirely of performance tasks. Each content area includes eight performance tasks that are scored by a trained examiner using a rubric that depends on the test level being assessed. After the student has responded to a task, the examiner marks the score using the corresponding circle on the student's answer document.

Scoring Rubric

The scoring rubric represents the guideline for scoring the task. The rubric varies according to the CAPA level. The rubric for CAPA Level I has a range of 0–5, with 5 being the maximum score. The rubric for CAPA Levels II–V has a range of 0–4, with 4 being the maximum score.

Beginning with the administration of the 2009 CAPA, the Level I rubric was changed to take into account issues related to scoring students who required a hand-over-hand prompt (ETS, 2008). ETS believed there was a significant difference between levels of prompting when dealing with this special population of students as evidenced by the amount of special education research that deals exclusively with prompting hierarchies. A child with significant cognitive disabilities who is able to complete a task successfully at one level of prompting may take weeks or months to increase his or her proficiency in that task in order to be able to complete the task successfully at a less intrusive level of prompting. The differences within prompting levels are the reason why ETS supported a rubric that differentiates between levels of prompting and scores the responses accordingly. For Level I ELA, mathematics, and science, all tasks are scored using the same rubric. For all other levels, the rubric is specific to the task. Both rubrics are presented in Table 7.1. Note that a score of zero in Level I indicates that the student did not orient toward a task after multiple prompts had been utilized. In levels II–V, a score of zero implies that the student did not attempt the task. In both cases, the score is defined as "No Response" for the purpose of scoring the task.

Table 7.1 Rubrics for CAPA Scoring

Level I		Levels II–V	
Score Points	**Description**	**Score Points**	**Description**
5	Correct with no prompting		
4	Correct with verbal or gestural prompt	4	Completes task with 100 percent accuracy
3	Correct with modeled prompt	3	Partially completes task (as defined for each task)

Level I		Levels II–V	
Score Points	**Description**	**Score Points**	**Description**
2	Correct with hand-over-hand prompt (student completes task independently)	2	Minimally completes task (as defined for each task)
1	Orients to task or incorrect response after attempting the task independently	1	Attempts task
0	No response	0	Does not attempt task

In order to score and report CAPA results, ETS follows an established set of written procedures. These specifications are presented in the next sections.

Scoring and Reporting Specifications

ETS develops standardized scoring procedures and specifications so that test materials are processed and scored accurately. These documents include the following:

- General Reporting Specifications—Provides the calculation rules for the information presented on STAR summary reports and defines the appropriate codes to use when a student does not take or complete a test or when a score will not be reported
- Score Key and Score Conversions—Defines file formats and information that is provided for scoring and the process of converting raw scores to scale scores
- Form Planner Specifications—Describes in detail the contents of files that contain keys required for scoring
- Aggregation Rules—Describes how and when a school's results are aggregated at the school, district, county, and state levels
- "What If" List—Provides a variety of anomalous scenarios that may occur when test materials are returned by school districts to Pearson and defines the action(s) to be taken in response
- Edit Specifications—Describes edits, defaults, and solutions to errors encountered while data are being captured as answer documents are processed

The scoring specifications are reviewed and revised by the CDE, ETS, and Pearson each year. After a version that all parties agree to is finalized, the CDE issues a formal approval of the scoring and reporting specifications.

Scanning and Scoring

Answer documents are scanned and scored by Pearson in accord with the scoring specifications that have been approved by the CDE. Answer documents are designed to produce a single complete record for each student. This record includes demographic data and scanned responses for each student; once computed, the scored responses and the total test scores for a student are also merged into the same record. All scores must comply with the ETS scoring specifications. Pearson has quality control checks in place to ensure the quality and accuracy of scanning, and the transfer of scores into the database of student records.

Each school district must return scorable and nonscorable materials within five working days after the last day for each test administration period.

Types of Scores

Raw Score

For the CAPA for ELA and mathematics, there are five test levels and eight tasks per level. For the CAPA for science, there are four test levels and eight tasks per level. Performance scoring for Level I is based on a rubric with a range of 0–5 with a maximum score of 5. Performance scoring for Levels II–V is based on a rubric with a range of 0–4 with a maximum score of 4. The raw scores for Level I range from 0 to 40; for the other CAPA levels, the raw scores range is from 0 to 32.

Scale Score

Raw scores on each CAPA test are converted to two-digit scale scores using the calibration process described in Chapter 2 on page 14. Scale scores range from 15 to 60 on each CAPA content-area test. The scale scores of examinees that have been tested in different years at a given CAPA test level and content area can be compared. However, the raw scores of these examinees cannot be meaningfully compared, because these scores are affected by the relative difficulty of the test taken as well as the ability of the examinee.

Performance Levels

Students taking each CAPA content-area test are classified into one of the following performance levels:

- far below basic
- below basic
- basic
- proficient
- advanced

For all CAPA tests, the cut score for the basic performance level is 30; this means that a student must earn a scale score of 30 or higher to achieve a basic classification. The cut score for the proficient performance level is 35; this means that a student must earn a scale score of 35 or higher to achieve a proficient classification. The cut scores for the other performance levels usually vary by level and content area.

Score Verification Procedures

ETS and Pearson take various necessary measures to ascertain that the student scores are computed accurately.

Monitoring and Quality Control of Scoring

Scorer Selection

Careful consideration is given to the selection of examiners for proper administration and scoring of the CAPA. It is preferred that the special education teacher or case carrier who regularly works with the student being tested administer and score the test. The examiner is required to be certificated or licensed and have successfully completed comprehensive training on CAPA administration.

If the examiner or case carrier is not available to administer the test, it may be administered and scored by another CAPA-trained staff member such as a school psychologist; speech, physical, or occupational therapist; program specialist; or certified teacher, principal or assistant principal. This individual should have experience working with students with significant cognitive disabilities and must be trained to administer the CAPA (CDE, 2010a).

Quality Control

Each student's responses to the CAPA tasks are rated by a single examiner; the total score is based on that rater's ratings. In addition, approximately ten percent of students at each test site are also rated by an observer to provide data that can be used to assess the accuracy and reliability of the scores. The observer, who is expected to meet the same qualification requirements as an examiner, scores the test at the same time as the test is being administered, but independently of the examiner. The score from the observer does not count toward the student's CAPA score.

Score Verification Process

ETS psychometricians employ special procedures that adjust for differences in task difficulty of one test form to another (see Chapter 2, Equating, for details). As a result of this process, scoring tables are produced. Such tables map the current year's raw score to an appropriate scale score. Pearson utilizes these tables to generate scale scores for each student.

ETS verifies Pearson's scale scores by adhering to procedures such as the following:

- Independently generating the scale scores for students in a small number of school districts and comparing these scores with those generated by Pearson; the selection of school districts is based on the availability of data for all schools included in those districts, known as "complete districts"
- Reviewing longitudinal data for reasonableness; the results of the analyses are used to look at the tends and trends for the complete districts
- Reviewing longitudinal data for reasonableness using 99 percent of the entire testing population; the results are used to evaluate the trends for the state as well as few large school districts

The results of the longitudinal analyses are provided to the CDE and jointly discussed. Any anomalies in the results are investigated further and jointly discussed. Scores are released after explanations that satisfy both the CDE and ETS are obtained.

Overview of Score Aggregation Procedures

In order to provide meaningful results to the stakeholders, CAPA scores for a given level and content area are aggregated at the school, independently testing charter school, district, county, and state levels. The aggregated scores are generated both for individual scores as well as group scores. The following section presents the types of aggregation performed on CAPA scores.

Individual Scores

The tables in this section provide state-level summary statistics describing student performance on each CAPA exam.

Score Distributions and Summary Statistics

Summary statistics are presented in Table 7.2 through Table 7.4 that describe student performance on each CAPA exam. Included in these tables are the number of tasks in each test, the number of examinees taking each test, and the means and standard deviations of student scores expressed in terms of both raw scores and scale scores. In addition, summary statistics for the operational tasks on each test are provided.

Table 7.2 Summary Statistics Describing Student Scores: ELA

Level	I	II	III	IV	V
Scale Score Information					
Number of examinees	13,143	6,682	6,782	9,705	10,443
Mean score	40.68	38.54	39.29	39.15	38.73
SD *	11.33	6.25	5.83	8.41	6.59
Possible range	15–60	15–60	15–60	15–60	15–60
Obtained range	15–60	15–60	15–60	15–60	15–60
Median	41	39	39	40	39
Reliability	0.90	0.86	0.88	0.90	0.91
SEM †	3.65	2.36	1.98	2.69	2.01
Raw Score Information					
Mean score	25.41	19.47	20.88	18.65	20.22
SD *	11.79	6.64	6.65	7.26	7.45
Possible range	0–40	0–32	0–32	0–32	0–32
Obtained range	0–40	0–32	0–32	0–32	0–32
Median	28	20	22	19	22
Reliability	0.90	0.86	0.88	0.90	0.91
SEM †	3.80	2.51	2.26	2.32	2.27
Task Information					
Number of tasks	8	8	8	8	8
Mean AIS ‡	3.18	2.43	2.61	2.34	2.54
SD AIS ‡	0.36	0.29	0.37	0.34	0.31
Min. AIS	2.73	1.90	2.21	1.66	1.95
Max. AIS	3.60	2.83	3.10	2.67	2.99
Possible range	0–5	0–4	0–4	0–4	0–4
Mean polyserial	0.81	0.75	0.78	0.80	0.81
SD polyserial	0.03	0.06	0.05	0.06	0.06
Min. polyserial	0.77	0.62	0.71	0.71	0.72
Max. polyserial	0.84	0.81	0.85	0.87	0.88
Mean Rasch difficulty	–0.63	–0.91	–0.95	–0.79	–0.89
SD Rasch difficulty	0.17	0.37	0.50	0.44	0.34
Min. Rasch difficulty	–0.82	–1.31	–1.62	–1.30	–1.33
Max. Rasch difficulty	–0.44	–0.36	–0.37	0.08	–0.30

* Standard Deviation | † Standard Error of Measurement | ‡ AIS = Average Item (Task) Score

Table 7.3 Summary Statistics Describing Student Scores: Mathematics

Level	I	II	III	IV	V
Scale Score Information					
Number of examinees	13,111	6,673	6,770	9,676	10,420
Mean score	35.87	37.34	36.50	37.15	37.52
SD *	9.30	8.37	5.80	8.91	8.55
Possible range	15–60	15–60	15–60	15–60	15–60
Obtained range	15–60	15–60	15–60	15–60	15–60
Median	36	37	36	37	38
Reliability	0.86	0.86	0.83	0.88	0.88
SEM †	3.52	3.15	2.42	3.14	3.00
Raw Score Information					
Mean score	22.43	20.53	19.79	20.45	20.81
SD *	11.12	7.02	6.19	7.29	7.47
Possible range	0–40	0–32	0–32	0–32	0–32
Obtained range	0–40	0–32	0–32	0–32	0–32
Median	23	21	20	21	22
Reliability	0.86	0.86	0.83	0.88	0.88
SEM †	4.21	2.64	2.59	2.57	2.62
Task Information					
Number of tasks	8	8	8	8	8
Mean AIS ‡	2.80	2.57	2.48	2.57	2.62
SD AIS ‡	0.21	0.62	0.47	0.59	0.37
Min. AIS	2.57	1.42	1.72	1.83	2.03
Max. AIS	3.20	3.48	3.14	3.30	3.13
Possible range	0–5	0–4	0–4	0–4	0–4
Mean polyserial	0.77	0.77	0.73	0.79	0.78
SD polyserial	0.03	0.08	0.08	0.10	0.03
Min. polyserial	0.72	0.59	0.62	0.60	0.73
Max. polyserial	0.80	0.84	0.83	0.89	0.83
Mean Rasch difficulty	–0.23	–1.04	–0.95	–1.02	–1.05
SD Rasch difficulty	0.14	0.67	0.39	0.64	0.32
Min. Rasch difficulty	–0.41	–2.03	–1.49	–1.95	–1.40
Max. Rasch difficulty	0.04	0.24	–0.43	–0.02	–0.48

* Standard Deviation | † Standard Error of Measurement | ‡ AIS = Average Item (Task) Score

Table 7.4 Summary Statistics Describing Student Scores: Science

Level	I	III	IV	V
Scale Score Information				
Number of examinees	3,490	3,237	3,154	3,325
Mean score	36.49	36.06	36.24	35.69
SD *	11.13	5.02	5.36	4.79
Possible range	15–60	15–60	15–60	15–60
Obtained range	15–60	15–60	15–60	15–60
Median	36	36	36	36
Reliability	0.89	0.85	0.84	0.84
SEM †	3.61	1.97	2.14	1.90
Raw Score Information				
Mean score	23.83	19.82	20.52	19.25
SD *	11.87	6.40	6.18	5.92
Possible range	0–40	0–32	0–32	0–32
Obtained range	0–40	0–32	0-32	0–32
Median	24	20	21	19
Reliability	0.89	0.85	0.84	0.84
SEM †	3.85	2.51	2.47	2.35
Task Information				
Number of tasks	8	8	8	8
Mean AIS ‡	2.98	2.48	2.57	2.44
SD AIS ‡	0.29	0.25	0.19	0.27
Min. AIS	2.60	2.17	2.4	2.11
Max. AIS	3.51	2.91	2.99	2.76
Possible range	0–5	0–4	0–4	0–4
Mean polyserial	0.81	0.74	0.73	0.74
SD polyserial	0.03	0.05	0.04	0.03
Min. polyserial	0.78	0.67	0.64	0.67
Max. polyserial	0.85	0.81	0.77	0.77
Mean Rasch difficulty	–0.37	–1.01	–0.98	–0.39
SD Rasch difficulty	0.15	0.31	0.13	0.27
Min. Rasch difficulty	–0.61	–1.66	–1.22	–0.75
Max. Rasch difficulty	–0.13	–0.62	–0.79	–0.06

* Standard Deviation | † Standard Error of Measurement | ‡ AIS = Average Item (Task) Score

The percentages of students in each performance level are presented in Table 7.5, which starts below. The numbers in the summary tables may not match exactly the results reported on the CDE Web site because of slight differences in the samples used to compute the statistics. The P2 data file was used for the analyses in this chapter.

Table 7.5 Percentage of Examinees in Each Performance Level

Content Area	CAPA Level	Far Below Basic	Below Basic	Basic	Proficient	Advanced
English–Language Arts	**I**	6%	7%	9%	23%	55%
	II	1%	4%	15%	38%	42%
	III	2%	2%	10%	40%	46%
	IV	3%	8%	17%	29%	43%
	V	2%	2%	16%	34%	45%

Content Area	CAPA Level	Far Below Basic	Below Basic	Basic	Proficient	Advanced
Mathematics	**I**	7%	9%	20%	32%	32%
	II	3%	12%	19%	31%	35%
	III	1%	6%	23%	45%	25%
	IV	2%	17%	12%	35%	33%
	V	2%	11%	19%	31%	37%
Science	**I**	9%	10%	21%	25%	35%
	III	1%	4%	24%	54%	16%
	IV	1%	5%	23%	53%	18%
	V	2%	4%	30%	45%	19%

Table 7.A.1 through Table 7.A.3 in Appendix 7.A, starting on page 57, show the distributions of scale scores for each CAPA. The results are reported in terms of three score intervals. Frequency counts expressed as dashes indicate that either there are no obtainable scale scores within that scale score range, or there were no students who obtained a scale score within the scale score range.

Group Scores

Statistics summarizing student performance by content area for selected groups of students are provided in Table 7.B.1 through Table 7.B.3 for the CAPA. In the tables, students are grouped by demographic characteristics, including gender, ethnicity, English-fluency language, economic status, and primary disability. The tables show the numbers of valid cases and percentages of students in each performance level by demographic group. Table 7.6 provides definitions of the demographic groups included in the tables. Students' economic status was determined by considering the education level of their parents and whether or not they participated in the National School Lunch Program (NSLP). To protect privacy when the number of students in a subgroup is ten or fewer, the summaries of performance are not reported and are presented as hyphens.

Table 7.6 Subgroup Definitions

Subgroup	Definition
Gender	• Male • Female
Ethnicity	• African American • American Indian or Alaska Native • Asian – Asian Indian – Cambodian – Chinese – Hmong – Japanese – Korean – Laotian – Vietnamese – Other Asian • Hispanic or Latino • Pacific Islander – Guamanian – Native Hawaiian – Samoan

Subgroup	Definition
	– Tahitian – Other Pacific Islander • Filipino • White (not Hispanic)
English Language Fluency	• English only • Initially fluent English proficient • English learner • Reclassified fluent English proficient
Economic Status	• Not economically disadvantaged • Economically disadvantaged
Primary Disability	• Mental retardation • Hard of hearing • Deafness • Speech/language impairment • Visual impairment • Emotional disturbance • Orthopedic impairment • Other health impairment • Specific learning impairment • Deaf blindness • Multiple group • Autism • Traumatic brain injury

Reports to Be Produced and Scores for Each Report

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

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

A detailed description of the uses and applications of STAR reports is presented in the next section.

Types of Score Reports

There are three categories of CAPA reports. These categories and the specific reports in each category are given in the Table 7.7, below.

Table 7.7 Types of CAPA Reports

1. Summary Reports	▪ STAR Student Master List Summary ▪ STAR Subgroup Summary (including the Ethnicity for Economic Status)
2. Individual Reports	▪ STAR Student Record Label ▪ STAR Student Master List ▪ STAR Student Report for the CAPA
3. Internet Reports	▪ CAPA Scores (state, county, district, school) ▪ CAPA Summary Scores (state, county, district, school)

These reports are sent to the independently testing charter schools, counties, or school districts; the school district forwards the appropriate reports to test sites or, in the case of the STAR Student Report, sends the reports to the child's parents or guardians and forwards a copy to the student's school or test site. Reports such as the STAR Student Report, Student Record Label, and Student Master List that include individual student results are not distributed beyond the student's school. Internet reports are described on the CDE Web site and are accessible to the public online at http://star.cde.ca.gov/.

Score Report Contents

The STAR Student Report provides scale scores and performance levels results for each CAPA exam taken by the student. Scale scores are reported on a scale ranging from 15 to 60. Results for the CAPA also are reported by performance levels, which are: far below basic, below basic, basic, proficient, and advanced.

Further information about the STAR Student Report and the other reports is provided in Appendix 7.C. Beginning in 2008, an additional score report, Ethnicity for Economic Status, is produced for the CAPA. This Subgroup Summary report disaggregates and reports results by selected ethnic groups within an economic status.

Score Report Applications

CAPA results provide parents and guardians with information about their children's progress. The results are a tool for increasing communication and collaboration between parents or guardians and teachers. Along with report cards from teachers and information from school and classroom tests, the STAR Student Report can be used by parents and guardians to talk with teachers about ways to improve their children's achievement of the California content standards.

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

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

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

The results from the CAPA are used for state and federal accountability programs to monitor each school's and district's progress toward achieving established goals. As mentioned previously, CAPA results are used to calculate each school's and district'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 (for example, size and ethnic makeup), identify low-performing and high-priority schools, and set yearly targets for academic growth.

CAPA results also are used to comply with federal Elementary and Secondary Education Act (ESEA) 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. Each year, California schools and districts must meet AYP

goals by showing that a specified percentage of CAPA test-takers at the district and school level are performing at or above the proficient level on the CAPA for ELA and mathematics.

Criteria for Interpreting Test Scores

A school district may use CAPA results to help make decisions about student placement, promotion, retention, or other considerations related to student achievement. However, it is important to remember that a single test can provide only limited information. Other relevant information should be considered as well. It is advisable for parents to evaluate their child's strengths and weaknesses in the relevant topics by reviewing classroom work and progress reports in addition to the child's CAPA results (CDE, 2010b). It is also important to note that a student's score in a content area contains measurement error and could vary somewhat if the student was retested.

Criteria for Interpreting Score Reports

The information presented on various reports must be interpreted with caution when making performance comparisons. When comparing scale score and performance level results for the CAPA, the user is limited to comparisons within the same content area and levels. This is because the score scales are different for each content area and level. The user may compare scale scores for the same content area and level, within a school, between schools, or between a school and its district, its county, or the state. The user can also make comparisons within the same level and content area across years. Comparing scores obtained in different levels or content areas should be avoided because the results are not on the same scale. Comparisons between raw scores should be limited to comparisons within not only content area and level but also test year. Since new score scales and cut scores were applied to the 2009 and 2010 CAPA test results, results from these years cannot meaningfully be compared to results obtained in previous years. For more details on the criteria for interpreting information provided on the score reports, see the *2010 STAR Post-Test Guide* (CDE, 2010c).

References

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Appendix 7.A—Scale Score Distribution Tables

Table 7.A.1 Scale Score Frequency Distributions: ELA, Levels I–V

Scale Score	ELA I		ELA II		ELA III		ELA IV		ELA V	
	Freq	Percent	Freq	Percent	Freq	Percent	Freq	Percent	Freq	Percent
60	1,648	12.54	78	1.17	86	1.27	150	1.55	221	2.12
57–59	–	–	–	–	–	–	–	–	–	–
54–56	456	3.47	–	–	–	–	189	1.95	–	–
51–53	–	–	100	1.50	118	1.74	236	2.43	–	–
48–50	615	4.68	133	1.99	249	3.67	650	6.70	266	2.55
45–47	1,571	11.95	491	7.35	693	10.22	1,210	12.47	876	8.39
42–44	1,555	11.83	1,011	15.13	1,191	17.56	1,764	18.18	1,634	15.65
39–41	2,126	16.18	1,598	23.91	1,514	22.32	1,214	12.51	2,703	25.88
36–38	1,885	14.34	1,613	24.14	1,502	22.15	1,636	16.86	2,251	21.56
33–35	923	7.02	836	12.51	934	13.77	845	8.71	1,167	11.17
30–32	599	4.56	507	7.59	255	3.76	787	8.11	824	7.89
27–29	519	3.95	86	1.29	74	1.09	301	3.10	146	1.40
24–26	167	1.27	88	1.32	58	0.86	333	3.43	42	0.40
21–23	135	1.03	36	0.54	49	0.72	65	0.67	106	1.02
18–20	113	0.86	25	0.37	14	0.21	57	0.59	57	0.55
15–17	831	6.32	80	1.20	45	0.66	268	2.76	150	1.44

Table 7.A.2 Scale Score Frequency Distributions: Mathematics, Levels I–V

Scale Score	Math I		Math II		Math III		Math IV		Math V	
	Freq	Percent	Freq	Percent	Freq	Percent	Freq	Percent	Freq	Percent
60	630	4.81	110	1.65	76	1.12	297	3.07	600	5.76
57–59	–	–	–	–	–	–	–	–	–	–
54–56	–	–	138	2.07	–	–	–	–	–	–
51–53	–	–	–	–	–	–	364	3.76	–	–
48–50	297	2.27	208	3.12	95	1.40	383	3.96	381	3.66
45–47	259	1.98	887	13.29	126	1.86	371	3.83	369	3.54
42–44	1,111	8.47	659	9.88	625	9.23	1,344	13.89	997	9.57
39–41	1,963	14.97	958	14.36	1,164	17.19	1,519	15.70	1,938	18.60
36–38	3,252	24.80	1,172	17.56	1,979	29.23	1,611	16.65	2,356	22.61
33–35	2,568	19.59	828	12.41	1,576	23.28	1,233	12.74	1,446	13.88
30–32	946	7.22	729	10.92	645	9.53	644	6.66	917	8.80
27–29	595	4.54	390	5.84	220	3.25	772	7.98	601	5.77
24–26	216	1.65	259	3.88	133	1.96	562	5.81	245	2.35
21–23	171	1.30	127	1.90	21	0.31	272	2.81	238	2.28
18–20	162	1.24	32	0.48	14	0.21	64	0.66	90	0.86
15–17	941	7.18	176	2.64	96	1.42	240	2.48	242	2.32

Table 7.A.3 Scale Score Frequency Distributions: Science, Levels I-V

Scale Score	Science I		Science III		Science IV		Science V	
	Freq	Percent	Freq	Percent	Freq	Percent	Freq	Percent
60	346	9.91	48	1.48	41	1.30	27	0.81
57–59	–	–	–	–	–	–	–	–
54–56	–	–	–	–	–	–	–	–
51–53	–	–	–	–	–	–	–	–
48–50	113	3.24	–	–	–	–	–	–
45–47	85	2.44	59	1.82	68	2.16	33	0.99
42–44	264	7.56	91	2.81	203	6.44	102	3.07
39–41	427	12.23	482	14.89	398	12.62	475	14.29
36–38	668	19.14	1,220	37.69	1,144	36.27	1,266	38.08
33–35	598	17.13	804	24.84	791	25.08	922	27.73
30–32	330	9.46	352	10.87	310	9.83	306	9.20
27–29	130	3.72	107	3.31	77	2.44	105	3.16
24–26	144	4.13	23	0.71	60	1.90	23	0.69
21–23	40	1.15	23	0.71	19	0.60	15	0.45
18–20	43	1.23	6	0.19	8	0.25	11	0.33
15–17	302	8.65	22	0.68	35	1.11	40	1.20

Appendix 7.B—Demographic Summaries

Table 7.B.1 Demographic Summary for ELA, All Examinees

		Percentage in Performance Level				
	Number Tested	Far Below Basic	Below Basic	Basic	Proficient	Advanced
All valid scores	46,755	3%	5%	13%	31%	47%
Male	30,276	3%	5%	13%	31%	47%
Female	16,335	3%	5%	13%	31%	47%
Gender unknown	144	1%	3%	10%	31%	55%
American Indian	368	3%	3%	11%	27%	56%
Asian American	2,986	4%	7%	18%	34%	37%
Pacific Islander	209	2%	4%	11%	36%	46%
Filipino	1,255	4%	6%	16%	33%	41%
Hispanic	23,729	3%	5%	13%	31%	48%
African American	4,682	3%	4%	11%	30%	52%
White	11,569	3%	5%	13%	31%	47%
Ethnicity unknown	1,957	4%	6%	14%	32%	45%
English Only	28,670	3%	5%	13%	31%	47%
Initially–Fluent English Proficient	929	6%	6%	18%	30%	40%
English Learner	15,201	3%	5%	13%	31%	47%
Reclassified–Fluent English Proficient	1,329	2%	5%	13%	31%	49%
English Proficient unknown	626	3%	3%	9%	31%	54%
Mental Retardation	19,532	2%	4%	15%	33%	45%
Hard of Hearing	333	3%	6%	14%	31%	45%
Deafness	430	2%	3%	15%	44%	35%
Speech/Language Impairment	1,669	0%	0%	3%	27%	70%
Visual Impairment	506	9%	9%	14%	28%	40%
Emotional Disturbance	362	1%	1%	2%	20%	76%
Orthopedic Impairment	4,197	7%	8%	13%	32%	40%
Other Health Impairment	1,956	2%	2%	9%	29%	57%
Specific Learning Impairment	2,861	0%	0%	2%	17%	81%
Deaf Blindness	41	7%	22%	17%	39%	15%
Multiple Group	2,113	10%	10%	17%	30%	33%
Autism	11,777	4%	6%	16%	32%	42%
Traumatic Brain Injury	313	6%	4%	6%	30%	52%
Unknown	665	2%	4%	9%	28%	56%
Not Econ. Disadvantaged	15,916	4%	6%	15%	32%	43%
Economically Disadvantaged	29,670	3%	5%	13%	31%	49%
Unknown Economic Status	1,169	3%	4%	11%	30%	52%
Primary Ethnicity—Not Economically Disadvantaged						
American Indian	108	3%	3%	10%	29%	56%
Asian American	1,596	4%	7%	19%	34%	37%
Pacific Islander	71	1%	6%	14%	34%	45%
Filipino	767	4%	7%	16%	32%	40%
Hispanic	4,256	6%	6%	14%	30%	44%
African American	1,289	4%	5%	12%	31%	47%
White	6,898	4%	5%	15%	33%	44%
Ethnicity unknown	931	4%	6%	15%	33%	41%

		Percentage in Performance Level				
	Number Tested	Far Below Basic	Below Basic	Basic	Proficient	Advanced
Primary Ethnicity—Economically Disadvantaged						
American Indian	250	3%	4%	12%	26%	56%
Asian American	1,308	4%	7%	17%	36%	37%
Pacific Islander	131	3%	2%	11%	38%	46%
Filipino	449	3%	5%	16%	33%	43%
Hispanic	19,002	3%	5%	13%	31%	49%
African American	3,261	2%	4%	10%	30%	54%
White	4,405	2%	4%	11%	29%	53%
Ethnicity unknown	864	3%	5%	15%	31%	46%
Primary Ethnicity—Unknown Economic Status						
American Indian	—	—	—	—	—	—
Asian American	82	4%	4%	16%	27%	50%
Pacific Islander	—	—	—	—	—	—
Filipino	39	8%	5%	13%	36%	38%
Hispanic	471	3%	3%	13%	33%	48%
African American	132	4%	4%	8%	28%	56%
White	266	3%	3%	11%	29%	55%
Ethnicity unknown	162	2%	5%	9%	27%	57%

* Results for groups with fewer than 11 members are not reported

Table 7.B.2 Demographic Summary for Mathematics, All Examinees

		Percentage in Performance Level				
	Number Tested	Far Below Basic	Below Basic	Basic	Proficient	Advanced
All valid scores	46,650	4%	11%	18%	34%	33%
Male	30,209	4%	11%	17%	34%	35%
Female	16,299	4%	12%	20%	35%	29%
Gender unknown	142	2%	9%	18%	23%	48%
American Indian	368	2%	8%	14%	36%	39%
Asian American	2,973	4%	13%	20%	34%	30%
Pacific Islander	210	2%	10%	18%	37%	33%
Filipino	1,250	5%	12%	18%	35%	30%
Hispanic	23,690	4%	11%	18%	34%	34%
African American	4,667	3%	10%	18%	35%	34%
White	11,539	4%	11%	19%	35%	31%
Ethnicity unknown	1,953	4%	12%	19%	35%	31%
English Only	28,603	4%	12%	19%	34%	31%
Initially–Fluent English Proficient	930	5%	15%	22%	29%	28%
English Learner	15,170	3%	10%	17%	34%	35%
Reclassified–Fluent English Proficient	1,326	2%	11%	17%	33%	37%
English Proficient unknown	621	3%	8%	15%	37%	38%
Mental Retardation	19,502	3%	13%	20%	36%	29%
Hard of Hearing	332	3%	14%	19%	30%	35%
Deafness	428	2%	7%	10%	32%	49%
Speech/Language Impairment	1,670	0%	2%	8%	34%	56%
Visual Impairment	504	11%	16%	22%	31%	21%
Emotional Disturbance	360	1%	2%	9%	28%	60%
Orthopedic Impairment	4,176	8%	15%	23%	32%	22%
Other Health Impairment	1,953	2%	7%	16%	36%	40%
Specific Learning Impairment	2,859	0%	1%	4%	29%	66%
Deaf Blindness	40	13%	25%	28%	30%	5%
Multiple Group	2,099	12%	16%	24%	29%	19%
Autism	11,755	4%	11%	18%	36%	32%
Traumatic Brain Injury	312	8%	5%	16%	32%	39%
Unknown	660	3%	8%	15%	34%	39%
Not Econ. Disadvantaged	15,866	5%	12%	20%	35%	29%
Economically Disadvantaged	29,620	3%	11%	17%	34%	35%
Unknown Economic Status	1,164	4%	10%	15%	36%	36%
Primary Ethnicity—Not Economically Disadvantaged						
American Indian	108	2%	7%	14%	38%	39%
Asian American	1,586	4%	11%	21%	35%	28%
Pacific Islander	71	1%	15%	20%	28%	35%
Filipino	762	5%	12%	19%	36%	27%
Hispanic	2,420	6%	12%	19%	33%	29%
African American	1,286	5%	11%	20%	35%	30%
White	6,883	4%	12%	20%	35%	28%
Ethnicity unknown	930	5%	12%	20%	33%	30%

		Percentage in Performance Level				
	Number Tested	Far Below Basic	Below Basic	Basic	Proficient	Advanced
Primary Ethnicity—Economically Disadvantaged						
American Indian	250	2%	8%	14%	36%	40%
Asian American	1,305	4%	14%	20%	32%	30%
Pacific Islander	132	3%	8%	17%	41%	31%
Filipino	448	4%	13%	19%	32%	32%
Hispanic	18,982	3%	11%	17%	34%	35%
African American	3,252	2%	10%	17%	35%	36%
White	4,391	3%	10%	17%	34%	36%
Ethnicity unknown	860	3%	12%	18%	37%	31%
Primary Ethnicity—Unknown Economic Status						
American Indian	—	—	—	—	—	—
Asian American	82	4%	17%	5%	29%	45%
Pacific Islander	—	—	—	—	—	—
Filipino	40	10%	10%	8%	25%	48%
Hispanic	468	4%	9%	18%	36%	34%
African American	129	2%	10%	16%	36%	36%
White	265	5%	9%	15%	36%	35%
Ethnicity unknown	163	2%	9%	15%	40%	34%

* Results for groups with fewer than 11 members are not reported

Table 7.B.3 Demographic Summary for Science, All Examinees

		Percentage in Performance Level				
	Number Tested	Far Below Basic	Below Basic	Basic	Proficient	Advanced
All valid scores	13,206	3%	6%	24%	44%	22%
Male	8,448	3%	6%	23%	44%	23%
Female	4,730	3%	6%	26%	44%	21%
Gender Unknown	28	7%	0%	32%	36%	25%
American Indian	92	3%	3%	14%	52%	27%
Asian American	816	5%	6%	29%	43%	17%
Pacific Islander	46	0%	2%	26%	50%	22%
Filipino	357	4%	6%	27%	41%	21%
Hispanic	6,671	3%	6%	24%	43%	23%
African American	1,318	3%	5%	21%	46%	26%
White	3,387	3%	6%	25%	44%	22%
Ethnicity unknown	519	3%	9%	24%	41%	22%
English Only	8,127	3%	6%	24%	44%	22%
Initially–Fluent English Proficient	266	8%	9%	27%	41%	15%
English Learner	4,211	3%	6%	24%	44%	22%
Reclassified–Fluent English Proficient	462	3%	5%	21%	45%	26%
English Proficient unknown	140	2%	4%	24%	41%	29%
Mental Retardation	5,974	2%	5%	26%	45%	21%
Hard of Hearing	83	4%	7%	19%	53%	17%
Deafness	129	2%	3%	21%	47%	28%
Speech/Language Impairment	348	0%	1%	10%	55%	34%
Visual Impairment	136	8%	10%	24%	39%	19%
Emotional Disturbance	100	2%	4%	9%	40%	45%
Orthopedic Impairment	1,227	9%	12%	26%	35%	18%
Other Health Impairment	565	1%	4%	16%	55%	25%
Specific Learning Impairment	810	0%	0%	8%	49%	43%
Deaf Blindness	11	18%	27%	27%	27%	0%
Multiple Group	606	12%	12%	27%	34%	15%
Autism	2,998	3%	7%	28%	42%	20%
Traumatic Brain Injury	87	7%	7%	15%	49%	22%
Unknown	132	2%	5%	23%	41%	30%
Not Econ. Disadvantaged	4,546	5%	7%	26%	42%	19%
Economically Disadvantaged	8,409	3%	5%	23%	45%	24%
Unknown Economic Status	251	2%	7%	27%	42%	22%
Primary Ethnicity—Not Economically Disadvantaged						
American Indian	35	3%	6%	14%	43%	34%
Asian American	415	5%	7%	28%	46%	15%
Pacific Islander	20	0%	0%	15%	55%	30%
Filipino	223	4%	7%	29%	45%	16%
Hispanic	1,217	6%	8%	26%	41%	19%
African American	355	5%	6%	25%	39%	25%
White	2,025	4%	6%	27%	43%	19%
Ethnicity unknown	256	4%	13%	22%	38%	24%

Primary Ethnicity—Economically Disadvantaged						
American Indian	57	4%	2%	14%	58%	23%
Asian American	385	5%	6%	29%	41%	18%
Pacific Islander	26	0%	4%	35%	46%	15%
Filipino	129	5%	5%	25%	36%	29%
Hispanic	5,343	3%	5%	24%	44%	24%
African American	932	2%	4%	19%	48%	26%
White	1,305	2%	6%	21%	46%	25%
Ethnicity unknown	232	1%	6%	27%	45%	20%
Primary Ethnicity—Unknown Economic Status						
American Indian	—	—	—	—	—	—
Asian American	16	0%	6%	44%	31%	19%
Pacific Islander	—	—	—	—	—	—
Filipino	—	—	—	—	—	—
Hispanic	111	5%	6%	31%	42%	16%
African American	31	0%	13%	23%	39%	26%
White	57	2%	7%	19%	47%	25%
Ethnicity unknown	31	0%	3%	26%	45%	26%

* Results for groups with fewer than 11 members are not reported

Appendix 7.C—Type of Score Report

Table 7.C.1 Score Reports Reflecting CAPA Results

2010 STAR CAPA Student Reports	
Description	**Distribution**
The CAPA Student Report	
This report provides parents/guardians and teachers with the student's results, presented in tables and graphs. Data presented include the following: • Scale scores • Performance levels (advanced, proficient, basic, below basic, and far below basic)	This report includes individual student results and is not distributed beyond parents/ guardians and the student's school. Two copies of this report are provided for each student. One is for the student's current teacher, and one is to be distributed by the school district to parents/guardians.
Student Record Label	
These reports are printed on adhesive labels to be affixed to the student's permanent school records. Each student shall have an individual record of accomplishment that includes STAR testing results (see California *EC* Section 60607[a]). Data presented include the following: • Scale scores • Performance levels	This report includes individual student results and is not distributed beyond the student's school.
Student Master List	
This report is an alphabetical roster that presents individual student results. It primarily includes the following data: • Scale scores • Performance levels	This report provides administrators and teachers with all students' results within each grade or within each grade and year-round schedule at a school. Because this report includes individual student results, it is not distributed beyond the student's school.
Student Master List Summary	
This report summarizes student results at the school, district, county, and state levels for each grade. It does *not* include any individual student information. For each CAPA grade and level, the following data are summarized by content area tested: • Number of students enrolled • Number and percent of students tested • Number and percent of valid scores • Number tested with scores • Mean percent correct • Mean scale score • Scale score standard deviation • Number and percent of students scoring at each performance level	This report is a resource for evaluators, researchers, teachers, parents/guardians, community members, and administrators. One copy is packaged for the school, and one for the school district. This report is also produced for school districts, counties, and the state. ***Note:*** The data in this report may be shared with parents/guardians, community members, and the media only if the data are for 11 or more students.

2010 STAR CAPA Student Reports	
Description	**Distribution**
Subgroup Summary	
This set of reports disaggregates and reports results by the following subgroups: • All students • Disability status (Disabilities among CAPA students include specific disabilities.) • 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 levels. CAPA statistics are listed by CAPA level. For each subgroup within a report and for the total number of students, the following data are included: • Total number tested in the subgroup • Percent tested in the subgroup as a percent of all students tested • Number and percent of valid scores • Number tested who received scores • Mean scale score • Standard deviation of scale score • Number and percent of students scoring at each performance level	This report is a resource for evaluators, researchers, teachers, parents/guardians, community members, and administrators. One copy is packaged for the school, and one for the school district. This report is also produced for school 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.

2010 STAR CAPA Student Reports	
Description	**Distribution**
Subgroup Summary—Ethnicity for Economic Status	
This report, a part of the Subgroup Summary, disaggregates and reports results by cross-referencing each ethnicity with economic status. The economic status for each student is "economically disadvantaged," "not economically disadvantaged," or "economic status unknown." A student is defined as "economically disadvantaged" if both parents have not received a high school diploma or the student is eligible to participate in the free or reduced-price lunch program also known as the National School Lunch Program (NSLP). As with the standard Subgroup Summary, this disaggregation contains no individual student-identifying information and is aggregated at the school, district, county, and state levels. CAPA statistics are listed by CAPA level. For each subgroup within a report, and for the total number of students, the following data are included: • Total number tested in the subgroup • Percent tested in the subgroup as a percent of all students tested • Number and percent of valid scores • Number tested who received scores • Mean scale score • Standard deviation of scale score • Number and percent of students scoring at each performance level	This report is a resource for evaluators, researchers, teachers, parents/guardians, community members, and administrators. One copy is packaged for the school, and one for the school district. This report is also produced for school 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 8: Analyses

This chapter summarizes the task (item)- and test-level statistics obtained for the CAPA tests administered during the spring of 2010.

The statistics presented in this chapter are divided into five sections in the following order:

1. Classical Item Analyses
2. Reliability Analyses
3. Analyses in Support of Validity Evidence
4. Item Response Theory (IRT) Analyses
5. Differential Item Functioning (DIF) Analyses

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

1. Appendix 8.A presents the classical item analyses including average item score (AIS) and polyserial correlation coefficient, and associated flags, for the operational and field-test tasks of each test. Also presented in this appendix is information about the distribution of scores for the operational tasks. In addition, the mean, minimum, and maximum of AIS and polyserial correlation for each operational task are presented in Table 8.2 on page 70.
2. Appendix 8.B presents results of the reliability analyses of total test scores for the population as a whole and for selected subgroups. Also presented are results of the analyses of the accuracy and consistency of the performance classifications.
3. Appendix 8.C presents tables showing the correlations between scores obtained on CAPA tests measuring different content areas, which are provided as an evidence of the validity of the interpretation and uses of CAPA scores. The results for the overall test population are presented in Table 8.4; the tables in Appendix 8.C summarize the results for various subgroups. Also included in Appendix 8.C are results of the rater agreement for each operational task.
4. Appendix 8.D presents the results of IRT analyses including the distribution of tasks based on their fit to the Rasch model. The appendix also includes summaries of Rasch item difficulty statistics (*b*-values) for the operational and field-test tasks. In addition, the appendix presents the scoring tables obtained as a result of the IRT equating process. Information related to the evaluation of linking tasks is presented in Table 8.5; these linking tasks were used in the equating process discussed later in this chapter.
5. Appendix 8.E presents the results of the DIF analyses applied to all operational and field-test tasks for which sufficient student samples were available. In this appendix, tasks flagged for significant DIF are listed. Also given are the distributions of items across DIF categories.

Samples Used for the Analyses

CAPA analyses were conducted at different times after test administration and involved varying proportions of the full CAPA data. The IRT results presented in Appendix 8.D are based on the equating sample that includes all valid cases available by early June 2010. The classical item analyses presented in Table 8.2, Appendix 8.A, and item-level DIF results presented in Appendix 8.E are based on the P1 data, which contained more than 99 percent of the entire test-taking population. All other analyses for this technical report, including

reliability statistics in Appendix 8.B and the content area correlations presented in Appendix 8.C, were calculated using the P2 data file. Summary statistics describing the samples are presented in Table 8.1; the samples used to generate scoring tables are labeled as "Equating Samples."

Table 8.1 CAPA Raw Score Means and Standard Deviations: Total P2 Population and Equating Sample

Content Area	Level	P2			Equating Sample			
		N	Mean	SD	N	% of P2	Mean	SD
English–Language Arts	I	13,143	25.41	11.79	4,789	36%	22.51	11.38
	II	6,682	19.47	6.64	2,908	44%	19.83	6.60
	III	6,782	20.88	6.65	2,942	43%	21.33	6.65
	IV	9,706	18.65	7.26	4,217	43%	19.11	7.22
	V	10,443	20.22	7.45	4,750	45%	20.44	7.39
Mathematics	I	13,111	22.43	11.12	4,769	36%	22.47	10.72
	II	6,673	20.53	7.02	2,908	44%	20.93	6.91
	III	6,770	19.79	6.19	2,935	43%	20.21	6.17
	IV	9,676	20.45	7.29	4,208	43%	20.71	7.17
	V	10,420	20.81	7.47	4,735	45%	21.04	7.43
Science	I	3,490	23.83	11.87	1,236	35%	24.29	11.55
	III	3,237	19.82	6.40	1,399	43%	20.28	6.56
	IV	3,154	20.52	6.18	1,380	44%	21.08	6.05
	V	3,325	19.25	5.92	1,498	45%	19.44	5.98

Classical Analyses

Average Item Score

The Average Item Score (AIS) indicates the average score that students obtained on a task. Desired values generally fall within the range of 30 percent to 80 percent of the maximum obtainable task score. Occasionally, a task that falls outside this range is included in a test form because of the quality and educational importance of the task content or because it is the best available measure for students with very high or low achievement.

CAPA task scores range from 0 to 5 for Level I and 0 to 4 for Levels II through V. For tasks scored using a 0–4 point rubric, 30 percent is represented by the value 1.20, and 80 percent is represented by the value 3.20. For tasks scored using a 0–5 point rubric, 30 percent is represented by the value 1.50 and 80 percent is represented by the value 4.00.

Polyserial Correlation of the Task Score with the Total Test Score

This statistic describes the relationship between students' scores on a specific task and their total test scores. The polyserial correlation is used when an interval variable is correlated with an ordinal variable that is assumed to reflect an underlying continuous latent variable.

Polyserial correlations are based on a polyserial regression model (Drasgow, 1988). The ETS proprietary software Generalized Analysis System (GENASYS) estimates the value of β for each item using maximum likelihood. In turn, it uses this estimate of β to compute the polyserial correlation from the following formula:

$$r_{polyreg} = \frac{\beta\sigma_{tot}}{\sqrt{\beta^2\sigma^2_{tot}+1}} \tag{8.1}$$

where,

σ_{tot} is the standard deviation of the students' total scores; and

β is the item parameter to be estimated from the data using maximum likelihood.

β is a regression coefficient (slope) for predicting the continuous version of a binary item score onto the continuous version of the total score. There are as many regressions as there are boundaries between scores with all sharing a common slope, β. For a polytomously-scored item, there are k-1 regressions, where k is the number of score points on the item. Beta (β) is the slope for all k-1 regressions.

The polyserial correlation is sometimes referred to as a discrimination index because it is an indicator of the degree to which students who do well on the total test also do well on a given task. A task is considered discriminating if high-ability students tend to receive higher scores and low-ability students tend to receive lower scores on the task.

Tasks with negative or extremely low correlations can indicate serious problems with the task itself or can indicate that students have not been taught the content. Based on the range of polyserials produced in field test analyses, an indicator of poor discrimination was set to less than 0.60.

A descriptive summary of the classical item statistics for the overall test are presented in Table 8.2. The task-by-task values are presented in Table 8.A.1 through Table 8.A.14. Some tasks were flagged for unusual statistics; these flags are shown in the tables. Although the flag definition appears in the heading of each table, the flags are displayed in the body of the tables only where applicable for the specific CAPA test presented. The flag classifications are as follows:

- Difficulty flags
  - A: Low average task score (below 1.5 at Level I; below 1.2 at Levels II–V)
  - H: High average task score (above 4.0 at Level I; above 3.2 at Levels II–V)
- Discrimination flag
  - R: Polyserial correlation less than .60
- Omit/nonresponse/flag
  - O: Omit/nonresponse rates greater than 5 percent

Table 8.2 Average Item Score and Polyserial Correlation

Content Area	Level	No. of items	No. of Examinees	Mean		Minimum		Maximum	
				AIS	Polyserial	AIS	Polyserial	AIS	Polyserial
ELA	I	8	13,133	3.18	0.81	2.73	0.77	3.60	0.84
	II	8	6,669	2.43	0.75	1.90	0.62	2.83	0.81
	III	8	6,768	2.61	0.78	2.21	0.71	3.10	0.85
	IV	8	9,699	2.34	0.80	1.66	0.71	2.67	0.87
	V	8	10,436	2.54	0.81	1.95	0.72	2.99	0.88
Math	I	8	13,101	2.80	0.77	2.57	0.72	3.20	0.80
	II	8	6,660	2.57	0.77	1.42	0.59	3.48	0.84
	III	8	6,756	2.48	0.73	1.72	0.62	3.14	0.83
	IV	8	9,670	2.57	0.79	1.83	0.60	3.30	0.89
	V	8	10,413	2.62	0.78	2.03	0.73	3.13	0.83

Content Area	Level	No. of items	No. of Examinees	Mean		Minimum		Maximum	
				AIS	Polyserial	AIS	Polyserial	AIS	Polyserial
Science	I	8	3,488	2.98	0.81	2.60	0.78	3.51	0.85
	III	8	3,232	2.48	0.74	2.17	0.67	2.91	0.81
	IV	8	3,154	2.57	0.73	2.40	0.64	2.99	0.77
	V	8	3,325	2.44	0.74	2.11	0.67	2.76	0.77

As noted previously, the score distributions for individual operational tasks comprising each CAPA test are provided by content area and level in Table 8.A.15 through Table 8.A.17.

Reliability Analyses

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 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 equating limitations or lack of parallelism, nor are they responsive to day-to-day variation due, for example, to students' 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 as measured by Cronbach's Alpha (Cronbach, 1951) is shown in equation (8.2):

$$\alpha = \frac{n}{n-1}\left[1 - \frac{\sum_{i=1}^{n}\sigma_i^2}{\sigma_t^2}\right] \tag{8.2}$$

where,

n is the number of tasks,

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

σ_t^2 is the variance of the total score (either the total raw score or scale score).

The standard error of measurement (SEM) provides a measure of score instability in the score metric. The SEM was computed as shown in equation (8.3):

$$\sigma_e = \sigma_t\sqrt{1-\alpha} \tag{8.3}$$

where,

α is the reliability estimated using (8.2) above, and

σ_t is the standard deviation of the total raw scores.

The 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 of ±1.96 SEM around the observed score would contain an examinee's true score (Crocker & 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).

Table 8.3 gives the reliability for CAPA tests along with the number of items and examinees upon which those analyses were performed.

Table 8.3 Reliabilities and Standard Errors of Measurement for the CAPA

Content Area	Level	No. of Items	No. of Examinees	Reliab.	Scale Score Mean	Scale Score S.D.	Scale Score SEM	Raw Score Mean	Raw Score S.D.	Raw Score SEM
English–Language Arts	**I**	8	13,143	0.90	40.68	11.33	3.65	25.41	11.79	3.80
	II	8	6,682	0.86	38.54	6.25	2.36	19.47	6.64	2.51
	III	8	6,782	0.88	39.29	5.83	1.98	20.88	6.65	2.26
	IV	8	9,706	0.90	39.15	8.41	2.69	18.65	7.26	2.32
	V	8	10,443	0.91	38.73	6.59	2.01	20.22	7.45	2.27
Mathematics	**I**	8	13,111	0.86	35.87	9.30	3.52	22.43	11.12	4.21
	II	8	6,673	0.86	37.34	8.37	3.15	20.53	7.02	2.64
	III	8	6,770	0.83	36.50	5.80	2.42	19.79	6.19	2.59
	IV	8	9,676	0.88	37.15	8.91	3.14	20.45	7.29	2.57
	V	8	10,420	0.88	37.52	8.55	3.00	21.81	7.47	2.62
Science	**I**	8	3,490	0.89	36.49	11.13	3.61	22.83	11.87	3.85
	III	8	3,237	0.85	36.06	5.02	1.97	19.82	6.40	2.51
	IV	8	3,154	0.84	36.24	5.36	2.14	20.52	6.18	2.47
	V	8	3,325	0.84	35.69	4.79	1.90	19.25	5.92	2.35

Subgroup Reliabilities and SEMs

The reliabilities of the CAPA were examined for various subgroups of the examinee population. The subgroups included in these analyses were defined by their gender, ethnicity, economic status, disability group, and English-language fluency. Reliability analyses are also presented by primary ethnicity within economic status.

Table 8.B.1 through Table 8.B.6 present the reliabilities and SEMs for the various subgroups. Note that the reliabilities are reported only for samples that are comprised of 11 or more examinees. Also, in some cases, score reliabilities were not estimable and are presented in the tables as a hyphen.

Conditional Standard Errors of Measurement

As part of the IRT-based equating procedures, scale-score conversion tables and conditional standard errors of measurement (CSEMs) are produced. CSEMs for CAPA scale scores are based on item response theory and are calculated by the IRTEQUATE module in GENASYS.

The CSEM is estimated as a function of measured ability. It is typically smaller in scale-score units toward the center of the scale in the test metric where more items are located and larger at the extremes where there are fewer items. An examinee's CSEM under the IRT framework is equal to the inverse of the square root of the test information function:

$$\mathrm{CSEM}(\hat{\theta}) = \frac{1}{\sqrt{\mathrm{I}(\theta)}} a \tag{8.4}$$

where,

CSEM($\hat{\theta}$) is the standard error of measurement; and

I(θ) is the test information function.

The statistic is multiplied by a, where a is the original scaling factor needed to transform theta to the scale score metric. The value of a varies by level and content area.

Standard errors of measurement vary across the scale. When a test has cut scores it is important to provide CSEMs at the cut scores. Table 8.D.10 through Table 8.D.23 in Appendix 8.D present the scale score CSEMs at the score required for a student to be classified in the below basic, basic, proficient, and advanced performance levels for the CAPA. The pattern of lower values of CSEMs at the basic and proficient levels are expected since (1) more items tend to be of middle difficulty; and (2) items at the extremes still provide information toward the middle of the scale. This results in more precise scores in the middle of the scale and less precise scores in the extremes of the scale.

Decision Classification Analyses

The methodology used for estimating the reliability of classification decisions is described in Livingston and Lewis (1995) and is implemented using the Educational Testing Service-proprietary computer program RELCLASS-COMP (Version 4.14).

Decision accuracy describes the extent to which examinees are classified in the same way as they would be on the basis of the average of all possible forms of a test. Decision accuracy answers the question: How does the actual classification of test-takers, based on their single-form scores, agree with the classification that would be made on the basis of their true scores, if their true scores were somehow known? RELCLASS-COMP estimates decision accuracy using an estimated multivariate distribution of reported classifications on the current form of the exam and the classifications based on an all-forms average (true score). In each case, the proportion of classifications with exact agreement is the sum of the entries in the diagonal of the contingency table representing the multivariate distribution.

Decision consistency describes the extent to which examinees are classified in the same way as they would be on the basis of a single form of a test other than the one for which data are available. Decision consistency answers the question: What is the agreement between the classifications based on two non-overlapping, equally difficult forms of the test? RELCLASS-COMP also estimates decision consistency using an estimated multivariate distribution of reported classifications on the current form of the exam and classifications on a hypothetical alternate form using the reliability of the test and strong true-score theory.

Reliability of classification at a cut score is estimated by collapsing the multivariate distribution at the passing score boundary into an *n* by *n* table (where *n* is the number of performance levels) and summing the entries in the diagonal. Figure 8.1 and Figure 8.2 present the two scenarios graphically.

Figure 8.1 Decision Accuracy for Achieving a Performance Level

		Decision made on a form actually taken	
		Does not achieve a performance level	Achieves a performance level
True status on all-forms average	Does not achieve a performance level	Correct classification	Mis-classification
	Achieves a performance level	Mis-classification	Correct classification

Figure 8.2 Decision Consistency for Achieving a Performance Level

		Decision made on the alternate form taken	
		Does not achieve a performance level	Achieves a performance level
Decision made on the form taken	Does not achieve a performance level	Correct classification	Mis-classification
	Achieves a performance level	Mis-classification	Correct classification

The results of these analyses are presented in Table 8.B.7 through Table 8.B.20 in Appendix 8.B.

Each table includes the contingency tables for the various performance level classifications. The proportion of accurately classified students is determined by summing across the diagonals of the upper tables, and the proportion of consistently classified students is determined by summing the diagonals of the lower tables.

Results for classifications collapsed to below-proficient versus proficient and above, which are the critical categories for adequate year progress (AYP) calculations, are also presented in the tables.

Validity Evidence

Validity refers to the degree to which each interpretation or use of a test score is supported by evidence that is gathered (AERA, APA, & NCME, 1999; ETS, 2002). It is a central concern underlying the development, administration, and scoring of a test and the uses and interpretations of test scores.

Validation is the process of accumulating evidence to support each proposed score interpretation or use. It does not involve a single study or gathering one particular kind of evidence. Validation involves multiple investigations and various kinds of evidence (AERA, APA, & NCME, 1999; Cronbach, 1971; ETS, 2002; Kane, 2006). The process begins with test design and continues through the entire assessment process, including item development and field testing, analyses of item and test data, test scaling, scoring, and score reporting.

This section presents the evidence gathered to support the intended uses and interpretations of scores for the CAPA testing program. The description is organized in the manner prescribed by *The Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 1999). These standards require a clear definition of the purpose of the test, which includes a description of the qualities—called constructs—that are to be assessed by a test, the population to be assessed, as well as how the scores are to be interpreted and used.

In addition, the *Standards* identify five kinds of evidence that can provide support for score interpretations and uses, which are as follows:

1. Evidence based on test content;
2. Evidence based on relations to other variables;
3. Evidence based on response processes;
4. Evidence based on internal structure, and;
5. Evidence based on the consequences of testing.

These kinds of evidence are also defined as important elements of validity information in documents developed by the U.S. Department of Education for the peer review of testing programs administered by states in response to the Elementary and Secondary Education Act (USDOE, 2001).

The next section defines the purpose of the CAPA, followed by a description and discussion of the kinds of validity evidence that have been gathered.

Purpose of the CAPA

As mentioned in Chapter 1, the CAPA is used in calculating school and district API. Additionally, the CAPA results for ELA and Mathematics in grades two through eight and grade ten are used in determining AYP that applies toward meeting the requirement of the Elementary and Secondary Education Act (ESEA), which is to have all students score at proficient or above by 2014.

The Constructs to Be Measured

The CAPA is designed to show how well students with an IEP and who have significant cognitive disabilities are performing with respect to California content standards. The content standards were approved by the SBE; they describe what students should know and be able to do at each level.

Test blueprints and specifications written to define the procedures used to measure the content standards provide an operational definition of the construct to which each set of standards refers—that is, they define for each content area to be assessed the tasks to be presented, the administration instructions to be given, and the rules used to score examinee responses. They control as many aspects of the measurement procedure as possible, so that the testing conditions will remain the same over test administrations (Cronbach, 1971; Cronbach, Gleser, Nanda, & Rajaratnam, 1972) to minimize construct-irrelevant score variance (Messick, 1989). The test blueprints for the CAPA can be found on the CDE STAR CAPA Blueprints Web page at http://www.cde.ca.gov/ta/tg/sr/capablueprints.asp. ETS has developed all CAPA test tasks to conform to the SBE-approved content standards and test blueprints.

The Interpretations and Uses of The Scores Generated

Total scores expressed as scale scores, and student performance levels are generated for each grade-level test. On the basis of a student's total score, an inference is drawn about how much knowledge and skill in the content area the student has. The total score also is used to classify students in terms of their level of knowledge and skill in the content area. The classifications are called performance levels and are labeled as follows: advanced, proficient, basic, below basic, and far below basic.

The tests that make up the STAR Program, along with other assessments, provide results or score summaries that are used 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; and
4. Providing data for state and federal accountability programs for schools.

These are the only uses and interpretations of scores for which validity evidence has been gathered. If the user wishes to interpret or use the scores in other ways, the user is cautioned that the validity of doing so has not been established (AERA, APA, & NCME, 1999, Standard 1.3). The user is advised to gather evidence to support these additional interpretations or uses (AERA, APA, & NCME, 1999, Standard, 1.4).

Intended Test Population(s)

Students with an IEP and who have significant cognitive disabilities in grades two through eleven take the CAPA when they are unable to take the CSTs with or without accommodations or modifications or the CMA with accommodations. Participation in the CAPA and eligibility are determined by a student's IEP team. Only students whose parents/guardians have submitted written requests to exempt them from STAR program testing do not take the tests.

Validity Evidence Collected

Evidence Based on Content

According to the AERA, APA, and NCME (1999), analyses that demonstrate a strong relationship between a test's content and the construct that the test was designed to measure can provide important evidence of validity. In current K–12 testing, the construct of interest usually is operationally defined by state content standards and the test blueprints that specify the content, format, and scoring of items that are admissible measures of the knowledge and skills described in the content standards. Evidence that the items meet these specifications and represent the domain of knowledge and skills referenced by the standards supports the inference that students' scores on these items can appropriately be regarded as measures of the intended construct.

As noted in the AERA, APA, and NCME's *Test Standards* (1999), evidence based on test content may involve logical analyses of test content in which experts judge the adequacy with which the test content conforms to the test specifications and represents the intended domain of content. Such reviews can also be used to determine whether the test content contains material that is not relevant to the construct of interest. Analyses of test content may also involve the use of empirical evidence of item quality.

Also to be considered in evaluating test content are the procedures used for test administration and test scoring. As Kane (2006, p. 29) has noted, although evidence that appropriate administration and scoring procedures have been used does not provide compelling evidence to support a particular score interpretation or use, such evidence may prove useful in refuting rival explanations of test results. Evidence based on content includes the following:

Description of the state standards—As was noted in Chapter 1, the SBE adopted rigorous content standards in 1997 and 1998 in four major content areas: ELA, history–social science, mathematics, 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.

Specifications and blueprints—ETS maintains item development specifications for the CAPA. The task specifications describe the characteristics of the tasks that should be written to measure each content standard. A thorough description of the specifications can be found in Chapter 3, starting on page 17. Once the tasks are developed and field-tested, ETS selects all CAPA test tasks to conform to the SBE-approved California content standards and test blueprints. Test blueprints for the CAPA were proposed by ETS and reviewed and approved by the Assessment Review Panel (ARP), which is an advisory panel to the CDE and ETS on areas related to item development for the CAPA. Tasks were also reviewed and approved by the CDE and presented to the SBE for adoption. There have been no recent changes in the blueprints for the CAPA.[1] The test blueprints for the CAPA can be found on the CDE STAR CAPA Blueprints Web page at http://www.cde.ca.gov/ta/tg/sr/capablueprints.asp.

Task development process—A detailed description of the content and psychometric criteria applicable for the 2010 CAPA is presented in Chapter 4, starting on page 27.

Task review process—Chapter 3 explains in detail the extensive item review process applied to tasks written for use in the CAPA. In brief, tasks written for the CAPA undergo multiple review cycles and involve multiple groups of reviewers. One of the reviews is carried out by an external reviewer, that is, the ARP. The ARP is responsible for reviewing all newly developed tasks for alignment to the California content standards.

Form construction process—For each test, the content standards, blueprints, and test specifications are used as the basis for choosing tasks. Additional targets for item difficulty and discrimination that are used for test construction were defined in light of what are desirable statistical characteristics in test tasks and statistical evaluations of the CAPA tasks.

Guidelines for test construction were established with the goal of maintaining parallel forms to the greatest extent possible from year to year. Details can be found in Chapter 4, starting on page 27.

Additionally, an external review panel, the Statewide Pupil Assessment Review (SPAR), is responsible for reviewing and approving the achievement tests to be used statewide for the testing of students in California public schools, grades two through eleven. More information about the SPAR is given in Chapter 3, starting on page 23.

Alignment study—Strong alignment between standards and assessments is fundamental to meaningful measurement of student achievement and instructional effectiveness. Alignment results should demonstrate that the assessments represent the full range of the content standards and that these assessments measure student knowledge in the same manner and at the same level of complexity as expected in the content standards.

Human Resource Research Organization (HumRRo) performed an alignment study for the CAPA in April 2007. This reported was titled *Independent Evaluation of the Alignment of the California Standards Tests (CSTs) and the California Alternate Performance Assessment (CAPA).*

[1] The blueprints for the CAPA were most recently revised and adopted by the SBE in 2006 for implementation beginning in 2008.

HumRRO utilized the Webb alignment method to evaluate the alignment of the performance tasks field-tested in the 2007 CAPA to the California content standards. The Webb method requires a set of raters to evaluate each test item on two different dimensions: (1) the standard(s) targeted by items, and (2) the depth of knowledge required of students to respond to items. These ratings form the basis of the four separate Webb alignment analyses: categorical concurrence, depth-of-knowledge consistency, range-of-knowledge correspondence, and balance-of-knowledge representation. The results indicated that the performance tasks assess the majority of CAPA standards well across levels for both ELA and mathematics. A copy of the study is available in the CDE Web document at http://www.cde.ca.gov/ta/tg/sr/documents/alignmentreport.pdf.

Evidence Based on Relations to Other Variables

Empirical results concerning the relationships between scores on a test and measures of other variables external to the test can also provide evidence of validity when these relationships are found to be consistent with the definition of the construct that the test is intended to measure. As indicated in the *Test Standards* (AERA, APA, & NCME, 1999), the variables investigated can include other tests that measure the same construct and different constructs, criterion measures that scores on the test are expected to predict, as well as demographic characteristics of examinees that are expected to be related and unrelated to test performance.

Differential Item Functioning Analyses

Analyses of DIF can provide evidence of the degree to which a score interpretation or use is valid for individuals who differ in particular demographic characteristics. For the CAPA, DIF analyses were performed on all operational tasks and field-test tasks for which sufficient student samples were available.

The results of the DIF analyses are presented in Appendix 8.E. The vast majority of the tasks exhibited little or no significant DIF, suggesting that, in general, scores based on the CAPA tasks would have the same meaning for individuals who differed in their demographic characteristics.

Correlations Between Content Areas

To the degree that students' content area scores correlate as expected, evidence of the validity in regarding those scores as measures of the intended constructs is provided. Table 8.4 gives the correlations between scores on the CAPA content-area tests, mean and standard deviation of total raw scores, and the numbers of students on which these correlations were based. Sample sizes for individual tests are shown on the diagonals of the correlation matrices, and the numbers of students on which the correlations were based are shown on the lower off-diagonals. The correlations are provided in the upper off-diagonals.

At Level I, the correlations between students' ELA, mathematics, and science scores were high. For Levels II and above, the correlations between content area scores tended to be more moderate.

Table 8.C.1 through Table 8.C.35 in Appendix 8.C provide the content area correlations by gender, ethnicity, English-language fluency, economic status, and disability. Similar patterns of correlations between students' ELA, mathematics, and science scores were found within the subgroups.

Note that the correlations are reported only for samples that are comprised of 11 or more examinees. Correlations between any two content areas where ten or fewer examinees took

the tests are expressed as hyphens. Correlations between content areas where no examinees took the two tests are expressed as "N/A."

Table 8.4 CAPA Content Area Correlations for CAPA Levels

Level	Content	ELA	Mathematics	Science
I	ELA	**13,143**	0.82	0.82
	Mathematics	13,104	**13,111**	0.81
	Science	3,488	3,488	**3,490**
II	ELA	**6,682**	0.77	N/A
	Mathematics	6,668	**6,673**	N/A
	Science	N/A	N/A	N/A
III	ELA	**6,782**	0.79	0.74
	Mathematics	6,767	**6,770**	0.74
	Science	3,237	3,233	**3,237**
IV	ELA	**9,706**	0.73	0.71
	Mathematics	9,669	**9,676**	0.70
	Science	3,149	3,149	**3,154**
V	ELA	**10,443**	0.71	0.71
	Mathematics	10,408	**10,420**	0.67
	Science	3,324	3,322	**3,325**

Evidence Based on Response Processes

As noted in the AERA, APA, and NCME's *Standards* (1999), additional support for a particular score interpretation or use can be provided by theoretical and empirical evidence indicating that examinees are using the intended response processes when responding to the items in a test. This evidence may be gathered from interacting with examinees in order to understand what processes underlie their item responses. Finally, evidence may also be derived from feedback provided by observers or judges involved in the scoring of examinee responses.

Evidence of Inter-rater Agreement

Rater consistency is critical to the scores of CAPA tasks and their interpretations. These findings provide evidence of the degree to which raters agree in their observations about the qualities evident in students' responses. In order to monitor and evaluate the accuracy of rating, approximately ten percent of students' test responses were scored twice. They were scored once by the primary examiner (rater 1) and a second time by an independent, trained observer (rater 2). Evidence that the raters' scores are consistent helps to support the inference that the scores have the intended meaning. The data collected were used to evaluate inter-rater agreement.

Inter-rater Agreement

As noted previously, approximately ten percent of the test population's responses to the tasks were scored by two raters. The range of percentage of students for whom the raters were in exact agreement was 89 to 97 percent in ELA, 93 to 99 percent in mathematics, and 90 to 98 percent in science for Level V.

The findings for each operational task for each test are presented in Table 8.C.36 through Table 8.C.40 in Appendix 8.C, which start on page 133.

Evidence Based on Internal Structure

As suggested by the *Standards* (AERA, APA, & NCME, 1999), evidence of validity can also be obtained from studies of the properties of the item (task) scores and the relationship

between these scores and scores on components of the test. To the extent that the score properties and relationships found are consistent with the definition of the construct measured by test, support is gained for interpreting these scores as measures of the construct.

For the CAPA, it is assumed that a single construct underlies the total scores obtained on each test. Evidence to support this assumption can be gathered from the results of task analyses, evaluations of internal consistency, and studies of model-data fit and reliability.

Reliability

Reliability is a prerequisite for validity. The finding of reliability in student scores supports the validity of the inference that the scores reflect a stable construct. This section will describe briefly findings concerning the total test level.

Overall reliability—The reliability analyses are presented in Table 8.3. The results indicate that the reliabilities for all CAPA levels for ELA, mathematics, and science tended to be high, ranging from 0.83 to 0.91.

Subgroup reliabilities—The reliabilities of the CAPA test scores were also examined for various subgroups of the examinee population that differed in their demographic characteristics. The characteristics considered were gender, ethnicity, economic status, disability group, English-language fluency, and ethnicity-by-economic status. The results of these analyses can be found in Table 8.B.1 though Table 8.B.6.

Evidence Based on Consequences of Testing

As observed in the *Standards*, tests are usually administered "with the expectation that some benefit will be realized from the intended use of the scores" (1999, p. 18). When this is the case, evidence that the expected benefits accrue will provide support for intended use of the scores. The CDE and ETS are in the process of determining what kinds of information can be gathered to assess the consequences of the administration of the CAPA.

IRT Analyses

The IRT model used to calibrate the CAPA test tasks is the one-parameter partial credit (1PPC) model, a more restrictive version of the generalized partial-credit model (Muraki, 1992), in which all tasks are assumed to be equally discriminating. This model states that the probability that an examinee with ability θ will perform in the *kth* category of m_j ordered score categories of task *j* can be expressed as:

$$P_{jk}(\theta) = \frac{\exp\left[\sum_{v=1}^{k} 1.7a_j(\theta - b_j - d_{jv})\right]}{\sum_{c=1}^{m_j} \exp\left[\sum_{v=1}^{c} 1.7a_j(\theta - b_j - d_{jv})\right]} \tag{8.5}$$

where,

m_j is the number of possible score categories (c=1…m_j) for task *j,*

a_j is the slope parameter (equal to 0.588) for task *j*,

b_j is the difficulty of task *j*, and

d_{jv} is the threshold parameter for category v of task *j*.

For the task calibrations, the PARSCALE program (Muraki & Bock, 1995) was constrained by setting a common discrimination value for all tasks equal to 1.0 / 1.7 (or 0.588) and by setting the lower asymptote for all tasks to zero. The resulting estimation is equivalent to the Rasch partial credit model for polytomously scored tasks. The PARSCALE calibrations were run in two stages, following procedures used with other ETS testing programs. In the first stage, estimation imposed normal constraints on the updated prior ability distribution. The estimates resulting from this first stage were used as starting values for a second PARSCALE run, in which the subject prior distribution was updated after each expectation maximization (EM) cycle with no constraints. For both stages, the metric of the scale was controlled by the constant discrimination parameters.

The parameters estimated for each task were evaluated for model-data fit, as described below.

IRT Model-Data Fit Analyses

ETS psychometricians classify operational and field-test tasks for the CAPA into discrete categories based on an evaluation of how well each task was fit by the Rasch partial credit model. The flagging procedure has categories of A, B, C, D, and F that are assigned based on an evaluation of graphical model-data fit information. Descriptors for each category are provided below.

Flag A

- 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

- 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

- 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
- This category often applies to items that appear to be functioning well, but that are not well fit by the Rasch model

Flag D

- 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

- 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)
- Very large Chi-square value relative to the other items with similar sample sizes and classical item statistics tend also to be very poor

In general, items with flagging categories of A, B, or C are all considered acceptable. Ratings of D are considered questionable, and the ratings of F indicate a poor model fit.

Model Fit Assessment Results

The model fit assessment is performed twice in the administration cycle. The assessment is first performed before scoring tables are produced and released. The assessment is performed again as part of the final item analyses when much larger samples are available. The flags produced as a result of this assessment are placed in the item bank. The test developers are asked to avoid the items flagged as D 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 and by CDE content specialists.

The distributions of the operational and field-test tasks across the IRT model data fit classifications are presented in Table 8.D.1 through Table 8.D.6 on page 138.

Evaluation of Scaling

Calibrations of the 2010 forms were scaled to the previously obtained reference scale (2009) estimates in the item bank using the Stocking and Lord (1983) procedure. Details on the scaling procedures are provided on page 14 of Chapter 2.

The linking process is carried out iteratively by inspecting differences between the transformed new and old (reference) estimates for the linking items and removing items for which the item difficulty estimates changed significantly. Items with large weighted root-mean-square differences (WRMSD) between item characteristic curves (ICCs) based on the old and new difficulty estimates are removed from the linking set. Based on established procedures, any linking items for which the WRMSD was greater than 0.625 for Level I and 0.500 for Levels II through V were eliminated. This criterion has produced reasonable results over time in similar equating work done with other testing programs at ETS. For the 2010 CAPA tests, no linking tasks were eliminated.

Table 8.5 presents, for each CAPA, the number of linking tasks between the 2010 (new) form and the test form to which it was linked (2009); the number of tasks removed from the linking task sets; the correlation between the final set of new and reference difficulty estimates for the linking tasks; and the average WRMSD statistic across the final set of linking tasks.

Table 8.5 Evaluation of Common Items between New and Reference Test Forms

Content Area	Level	No. Linking Tasks	Linking Tasks Removed	Final Correlation	WRMSD*
English–Language Arts	I	5	0	0.99	0.04
	II	5	0	0.95	0.04
	III	5	0	0.99	0.04
	IV	5	0	0.99	0.06
	V	5	0	1.00	0.05

Content Area	Level	No. Linking Tasks	Linking Tasks Removed	Final Correlation	WRMSD*
Mathematics	I	5	0	0.99	0.07
	II	5	0	1.00	0.05
	III	5	0	0.98	0.07
	IV	5	0	0.99	0.04
	V	5	0	1.00	0.03
Science	I	5	0	0.95	0.07
	III	5	0	0.94	0.07
	IV	5	0	0.87	0.05
	V	5	0	0.97	0.04

* Average over retained tasks

Summaries of Scaled IRT b-values

Once the IRT *b*-values are placed on the item bank scale, analyses are performed to assess the overall test difficulty and the distribution of tasks in a particular range of item difficulty.

Table 8.D.7 through Table 8.D.9 present univariate statistics (mean, standard deviation, minimum, and maximum) for the scaled IRT *b*-values. The results for the overall test are presented separately for the operational tasks and the field test tasks.

Post-Scaling Results

As described on page 14 of Chapter 2, once the new item calibrations for each test are transformed to the base scale, using equation (2.2), transformed thetas were linearly converted to two-digit scale scores that ranged from 15 to 60. Complete raw-to-scale score conversion tables for the 2010 CAPA are presented in Table 8.D.10 through Table 8.D.23 in Appendix 8.D, starting on page 140. The raw scores and corresponding rounded converted scale scores are listed in those tables. For all of the 2010 CAPA, scale scores were truncated at both ends of the scale so that the minimum reported scale score was 15 and the maximum reported scale score was 60. The scale scores defining the cut scores for all performance levels are presented in Table 2.2, which is on page 15 in Chapter 2.

Differential Item Functioning Analyses

Analyses of DIF assess differences in the item performance of groups of students that differ in their demographic characteristics.

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

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

As such, the common odds ratio provides an estimated effect size; a value of one indicates equal odds and thus no DIF (Dorans & Holland, 1993). The corresponding statistical test is

H_0: $\alpha = 1$, where α is a common odds ratio assumed equal for all matched score categories *s* = 1 to *S*. Values of less than one indicate DIF in favor of the focal group; a value of one indicates the null condition; and a value greater than one indicates DIF in favor of the reference group. The associated ($MH\chi^2$) is distributed as a Chi-square random variable with one degree of freedom.

The $MH\chi^2$ Mantel Chi-square statistic is used in conjunction with a second procedure, the standardization procedure (Dorans & Schmitt, 1993). This procedure produces a DIF statistic based on the standardized mean difference (SMD) in average task scores between members of two groups that have been matched on their overall test score. The SMD compares the task 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:

$$SMD = \sum_m w_m \left(E_{fm} - E_{rm}\right) / \sum_m w_m \tag{8.6}$$

where,

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

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

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

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

In addition, the classifications identify which group is being advantaged. These classifications are displayed in Table 8.6. The categories have been used by all ETS testing programs for more than 13 years.

Table 8.6 DIF Flags Based on the ETS DIF Classification Scheme

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

Category C contains tasks with large values of DIF. As shown in Table 8.6, above, tasks classified as C+ tend to be easier for members of the focal group than for members of the reference group with comparable total scores. Tasks classified as C– tend to be more difficult for members of the focal group than for members of the reference group whose total scores on the test are like those of the focal group.

The results of the DIF analyses are presented in Appendix 8.E. Table 8.E.1 and Table 8.E.2 list the tasks exhibiting significant DIF. Test developers are instructed to avoid selecting field-test items flagged as having shown DIF that disadvantages a focal group (C-DIF) for future operational test forms unless their inclusion is deemed essential to meeting test-content specifications. Table 8.7 lists specific subgroups that were used for DIF analyses for the CAPA.

Table 8.7 Subgroup Classification for DIF Analyses

DIF Type	Reference Group	Focal Group
Gender	Male	Female
Race/Ethnicity	White	• African American • American Indian • Asian • Combined Asian Group (Asian/Pacific Islander/Filipino) • Filipino • Hispanic/Latin American • Pacific Islander
Disability	Mental Retardation	• Autism • Deaf-Blindness • Deafness • Emotional Disturbance • Hard of Hearing • Multiple Disabilities • Orthopedic Impairment • Other Health Impairment • Specific Learning Disability • Speech or Language Impairment • Traumatic Brain Injury • Visual Impairment

Table 8.E.3 through Table 8.E.7 show the sample size for disability groups within test level and content area.

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Appendix 8.A—Classical Analyses: Task Statistics

Table 8.A.1 AIS and Polyserial Correlation: Level I, ELA

Flag values are as follows:
A = low average task score
R = low correlation with criterion
O = high percent of omits/not responding
H = high average task score

Version/ Field-Test Form	Task Position	AIS	Polyserial	Flag
Operational	1	2.73	.78	
1	2	3.36	.76	
Operational	3	3.55	.84	
Operational	4	3.60	.84	
1	5	2.71	.70	
Operational	6	3.44	.83	
Operational	7	2.78	.78	
1	8	3.45	.72	
Operational	9	2.93	.77	
Operational	10	3.40	.77	
1	11	2.77	.77	
Operational	12	2.97	.83	
2	2	2.82	.72	
2	5	3.54	.62	
2	8	2.98	.78	
2	11	2.96	.75	
3	2	3.23	.75	
3	5	2.97	.67	
3	8	3.46	.78	
3	11	2.94	.68	
4	2	4.12	.62	H
4	5	3.20	.74	
4	8	4.08	.65	H
4	11	3.68	.57	R

Table 8.A.2 AIS and Polyserial Correlation: Level II, ELA

Flag values are as follows:
A = low average task score
R = low correlation with criterion
O = high percent of omits/not responding
H = high average task score

Version/ Field-Test Form	Task Position	AIS	Polyserial	Flag
Operational	1	2.44	.76	
1	2	3.50	.60	R H
Operational	3	2.47	.76	
Operational	4	2.61	.80	
1	5	2.13	.65	
Operational	6	2.83	.81	
Operational	7	2.17	.79	
1	8	3.55	.70	H
Operational	9	2.63	.77	
Operational	10	2.41	.71	
1	11	3.02	.55	R
Operational	12	1.90	.62	
2	2	3.16	.57	R
2	5	3.53	.63	H
2	8	1.98	.73	
2	11	2.52	.67	
3	2	2.51	.59	R
3	5	1.95	.61	
3	8	3.09	.62	
3	11	2.16	.70	
4	2	2.21	.70	
4	5	2.70	.63	
4	8	2.97	.43	R
4	11	3.47	.66	H

Table 8.A.3 AIS and Polyserial Correlation: Level III, ELA

Flag values are as follows:
A = low average task score
R = low correlation with criterion
O = high percent of omits/not responding
H = high average task score

Version/ Field-Test Form	Task Position	AIS	Polyserial	Flag
Operational	1	2.46	.84	
1	2	2.96	.58	R
Operational	3	2.63	.83	
Operational	4	2.97	.75	
1	5	2.87	.70	
Operational	6	2.30	.71	
Operational	7	2.21	.72	
1	8	3.08	.78	
Operational	9	3.02	.76	
Operational	10	3.10	.78	
1	11	3.22	.70	H
Operational	12	2.22	.85	
2	2	2.71	.54	R
2	5	2.36	.79	
2	8	2.40	.75	
2	11	3.23	.61	H
3	2	3.56	.67	H
3	5	2.57	.70	
3	8	2.48	.77	
3	11	2.91	.62	
4	2	2.79	.63	
4	5	2.34	.76	
4	8	2.43	.57	R
4	11	3.60	.64	H

Table 8.A.4 AIS and Polyserial Correlation: Level IV, ELA

Flag values are as follows:
A = low average task score
R = low correlation with criterion
O = high percent of omits/not responding
H = high average task score

Version/ Field-Test Form	Task Position	AIS	Polyserial	Flag
Operational	1	2.47	.83	
1	2	2.81	.60	R
Operational	3	1.66	.77	
Operational	4	2.60	.87	
1	5	2.60	.55	R
Operational	6	2.33	.84	
Operational	7	2.61	.73	
1	8	3.51	.61	H
Operational	9	2.09	.78	
Operational	10	2.67	.71	
1	11	2.17	.73	
Operational	12	2.26	.87	
2	2	2.71	.70	
2	5	3.24	.75	H
2	8	3.00	.73	
2	11	2.69	.79	
3	2	3.00	.72	
3	5	3.34	.61	H
3	8	2.41	.83	
3	11	2.83	.74	
4	2	2.97	.67	
4	5	3.03	.53	R
4	8	2.94	.69	
4	11	3.16	.53	R

Table 8.A.5 AIS and Polyserial Correlation: Level V, ELA

Flag values are as follows:
A = low average task score
R = low correlation with criterion
O = high percent of omits/not responding
H = high average task score

Version/ Field-Test Form	Task Position	AIS	Polyserial	Flag
Operational	1	2.62	.85	
1	2	2.86	.52	R
Operational	3	2.76	.85	
Operational	4	2.74	.76	
1	5	3.40	.64	H
Operational	6	1.95	.77	
Operational	7	2.41	.87	
1	8	3.35	.73	H
Operational	9	2.99	.81	
Operational	10	2.42	.72	
1	11	3.05	.68	
Operational	12	2.46	.88	
2	2	3.02	.61	
2	5	3.09	.76	
2	8	2.74	.85	
2	11	2.99	.79	
3	2	3.09	.62	
3	5	2.48	.73	
3	8	2.69	.60	
3	11	3.40	.74	H
4	2	2.23	.66	
4	5	2.29	.18	R
4	8	2.52	.79	
4	11	2.95	.72	

Table 8.A.6 AIS and Polyserial Correlation: Level I, Mathematics

Flag values are as follows:
A = low average task score
R = low correlation with criterion
O = high percent of omits/not responding
H = high average task score

Version/ Field-Test Form	Task Position	AIS	Polyserial	Flag
Operational	13	2.75	.75	
1	14	2.95	.72	
Operational	15	3.01	.77	
Operational	16	2.68	.72	
1	17	3.20	.70	
Operational	18	2.79	.75	
Operational	19	2.59	.77	
1	20	2.78	.68	
Operational	21	2.84	.80	
Operational	22	2.57	.79	
1	23	2.75	.73	
Operational	24	3.20	.77	
2	14	2.63	.71	
2	17	2.96	.70	
2	20	2.49	.69	
2	23	2.78	.68	
3	14	2.48	.77	
3	17	3.36	.73	
3	20	2.85	.69	
3	23	2.74	.75	
4	14	2.99	.73	
4	17	3.07	.69	
4	20	3.33	.68	
4	23	2.52	.65	

Table 8.A.7 AIS and Polyserial Correlation: Level II, Mathematics

Flag values are as follows:
A = low average task score
R = low correlation with criterion
O = high percent of omits/not responding
H = high average task score

Version/ Field-Test Form	Task Position	AIS	Polyserial	Flag
Operational	13	3.48	.78	H
1	14	2.56	.63	
Operational	15	2.78	.83	
Operational	16	2.69	.79	
1	17	2.55	.55	R
Operational	18	2.11	.79	
Operational	19	1.42	.59	R
1	20	2.67	.74	
Operational	21	2.37	.84	
Operational	22	3.06	.79	
1	23	2.87	.79	
Operational	24	2.63	.77	
2	14	3.02	.63	
2	17	3.15	.66	
2	20	3.17	.68	
2	23	1.96	.75	
3	14	2.60	.52	R
3	17	3.10	.66	
3	20	3.43	.66	H
3	23	3.11	.75	
4	14	2.26	.50	R
4	17	2.45	.49	R
4	20	2.11	.67	
4	23	2.92	.74	

Table 8.A.8 AIS and Polyserial Correlation: Level III, Mathematics

Flag values are as follows:
A = low average task score
R = low correlation with criterion
O = high percent of omits/not responding
H = high average task score

Version/ Field-Test Form	Task Position	AIS	Polyserial	Flag
Operational	13	2.14	.66	
1	14	2.49	.54	R
Operational	15	3.14	.78	
Operational	16	2.97	.83	
1	17	2.63	.56	R
Operational	18	2.20	.66	
Operational	19	2.73	.66	
1	20	1.59	.58	R
Operational	21	2.59	.81	
Operational	22	2.32	.80	
1	23	2.26	.61	
Operational	24	1.72	.62	
2	14	2.14	.39	R
2	17	2.30	.49	R
2	20	2.70	.43	R
2	23	2.01	.32	R
3	14	2.42	.47	R
3	17	3.09	.71	
3	20	2.33	.47	R
3	23	2.03	.48	R
4	14	1.69	.47	R
4	17	2.38	.51	R
4	20	2.52	.70	
4	23	3.14	.50	R

Table 8.A.9 AIS and Polyserial Correlation: Level IV, Mathematics

Flag values are as follows:
A = low average task score
R = low correlation with criterion
O = high percent of omits/not responding
H = high average task score

Version/ Field-Test Form	Task Position	AIS	Polyserial	Flag
Operational	13	2.96	.87	
1	14	3.02	.56	R
Operational	15	1.83	.79	
Operational	16	2.11	.66	
1	17	1.24	.42	R
Operational	18	3.09	.89	
Operational	19	2.94	.87	
1	20	1.97	.73	
Operational	21	3.30	.60	R H
Operational	22	2.46	.81	
1	23	2.34	.43	R
Operational	24	1.84	.79	
2	14	2.71	.53	R
2	17	1.25	.50	R
2	20	2.54	.57	R
2	23	2.46	.81	
3	14	2.77	.71	
3	17	1.79	.61	
3	20	1.96	.74	
3	23	2.26	.81	
4	14	2.03	.56	R
4	17	2.10	.35	R
4	20	1.93	.76	
4	23	2.14	.82	

Table 8.A.10 AIS and Polyserial Correlation: Level V, Mathematics

Flag values are as follows:
A = low average task score
R = low correlation with criterion
O = high percent of omits/not responding
H = high average task score

Version/ Field-Test Form	Task Position	AIS	Polyserial	Flag
Operational	13	2.76	.73	
1	14	2.76	.54	R
Operational	15	3.13	.78	
Operational	16	2.85	.76	
1	17	2.29	.77	
Operational	18	2.79	.83	
Operational	19	2.31	.82	
1	20	1.90	.62	
Operational	21	2.81	.76	
Operational	22	2.31	.78	
1	23	2.34	.73	
Operational	24	2.03	.78	
2	14	3.16	.78	
2	17	1.69	.64	
2	20	2.75	.69	
2	23	3.18	.78	
3	14	2.28	.73	
3	17	2.71	.74	
3	20	2.62	.65	
3	23	2.86	.67	
4	14	2.48	.55	R
4	17	2.57	.66	
4	20	2.71	.71	
4	23	2.49	.72	

Table 8.A.11 AIS and Polyserial Correlation: Level I, Science

Flag values are as follows:
A = low average task score
R = low correlation with criterion
O = high percent of omits/not responding
H = high average task score

Version/Field-Test Form	Task Position	AIS	Polyserial	Flag
Operational	25	3.17	.83	
1/3*	26	2.40	.75	
Operational	27	2.71	.80	
Operational	28	2.94	.80	
1/3*	29	2.13	.71	
Operational	30	2.90	.85	
Operational	31	3.17	.78	
1/3*	32	2.93	.75	
Operational	33	2.85	.78	
Operational	34	3.51	.83	
1/3*	35	2.64	.67	
Operational	36	2.60	.81	
2/4*	26	2.87	.76	
2/4*	29	3.14	.71	
2/4*	32	2.66	.79	
2/4*	35	2.92	.69	

* This task appeared on more than one field-test form.

Table 8.A.12 AIS and Polyserial Correlation: Level III, Science

Flag values are as follows:
A = low average task score
R = low correlation with criterion
O = high percent of omits/not responding
H = high average task score

Version/Field-Test Form	Task Position	AIS	Polyserial	Flag
Operational	25	2.22	.67	
1/3*	26	2.75	.67	
Operational	27	2.91	.71	
Operational	28	2.65	.78	
1/3*	29	2.79	.72	
Operational	30	2.43	.81	
Operational	31	2.46	.72	
1/3*	32	2.62	.74	
Operational	33	2.67	.78	
Operational	34	2.31	.70	
1/3*	35	3.03	.66	
Operational	36	2.17	.73	
2/4*	26	2.96	.59	R
2/4*	29	2.87	.65	
2/4*	32	2.79	.68	
2/4*	35	2.57	.60	R

* This task appeared on more than one field-test form.

Table 8.A.13 AIS and Polyserial Correlation: Level IV, Science

Flag values are as follows:
A = low average task score
R = low correlation with criterion
O = high percent of omits/not responding
H = high average task score

Version/ Field-Test Form	Task Position	AIS	Polyserial	Flag
Operational	25	2.51	.76	
1/3*	26	2.84	.66	
Operational	27	2.53	.74	
Operational	28	2.40	.70	
1/3*	29	2.92	.63	
Operational	30	2.99	.64	
Operational	31	2.43	.72	
1/3*	32	2.19	.65	
Operational	33	2.64	.76	
Operational	34	2.44	.77	
1/3*	35	3.14	.72	
Operational	36	2.65	.74	
2/4*	26	2.84	.65	
2/4*	29	2.28	.70	
2/4*	32	3.06	.67	
2/4*	35	3.08	.72	

* This task appeared on more than one field-test form.

Table 8.A.14 AIS and Polyserial Correlation: Level V, Science

Flag values are as follows:
A = low average task score
R = low correlation with criterion
O = high percent of omits/not responding
H = high average task score

Version/ Field-Test Form	Task Position	AIS	Polyserial	Flag
Operational	25	2.11	.73	
1/3*	26	2.64	.67	
Operational	27	2.33	.67	
Operational	28	2.76	.75	
1/3*	29	2.56	.43	R
Operational	30	2.15	.77	
Operational	31	2.39	.75	
1/3*	32	3.53	.70	H
Operational	33	2.71	.73	
Operational	34	2.28	.72	
1/3*	35	1.98	.66	
Operational	36	2.76	.76	
2/4*	26	2.28	.66	
2/4*	29	2.45	.46	R
2/4*	32	2.56	.60	
2/4*	35	2.09	.68	

* This task appeared on more than one field-test form.

Table 8.A.15 Frequency of Operational Task Scores: ELA

ELA Level	Score on Task	1		2		3		4		5		6		7		8	
		Count	Pct	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
I	0	1,681	12.42	1,435	10.60	1,504	11.11	1,528	11.29	1,746	12.90	1,758	12.98	1,403	10.36	1,912	14.12
	1	4,736	34.98	2,594	19.16	2,351	17.36	2,738	20.22	4,287	31.66	3,843	28.38	3,091	22.83	3,918	28.94
	2	594	4.39	497	3.67	472	3.49	554	4.09	731	5.40	1,031	7.61	501	3.70	529	3.91
	3	670	4.95	519	3.83	487	3.60	583	4.31	819	6.05	536	3.96	551	4.07	569	4.20
	4	1,172	8.66	1,023	7.56	990	7.31	975	7.20	1,314	9.70	849	6.27	1,116	8.24	954	7.05
	5	4,687	34.62	7,472	55.18	7,736	57.13	7,162	52.90	4,643	34.29	5,523	40.79	6,878	50.80	5,658	41.79
II	0	384	5.42	369	5.21	365	5.15	347	4.90	583	8.23	301	4.25	318	4.49	429	6.05
	1	982	13.85	1,904	26.86	1,890	26.66	1,472	20.77	2,191	30.91	1,489	21.01	1,541	21.74	2,475	34.92
	2	2,117	29.87	1,234	17.41	1,284	18.12	1,281	18.07	1,198	16.90	1,642	23.17	2,041	28.80	2,581	36.41
	3	2,776	39.16	1,620	22.86	619	8.73	446	6.29	2,039	28.77	1,189	16.77	1,709	24.11	1,037	14.63
	4	829	11.70	1,961	27.67	2,930	41.34	3,542	49.97	1,077	15.19	2,467	34.81	1,479	20.87	566	7.99
III	0	546	7.68	448	6.30	316	4.44	323	4.54	313	4.40	258	3.63	276	3.88	575	8.08
	1	1,467	20.62	973	13.68	594	8.35	921	12.95	1,320	18.55	1,282	18.02	852	11.98	2,138	30.05
	2	1,324	18.61	1,641	23.07	1,246	17.51	3,311	46.54	3,055	42.94	1,104	15.52	803	11.29	1,339	18.82
	3	2,130	29.94	2,261	31.78	2,314	32.53	1,806	25.39	1,693	23.80	411	5.78	1,622	22.80	1,704	23.95
	4	1,647	23.15	1,791	25.18	2,644	37.17	753	10.58	733	10.30	4,059	57.06	3,561	50.06	1,358	19.09
IV	0	766	7.53	1,067	10.49	717	7.05	735	7.23	565	5.56	616	6.06	550	5.41	883	8.68
	1	1,920	18.88	5,274	51.85	2,054	20.19	2,618	25.74	1,918	18.86	4,266	41.94	1,608	15.81	2,982	29.32
	2	2,775	27.28	1,585	15.58	1,711	16.82	2,404	23.64	2,216	21.79	1,567	15.41	2,388	23.48	1,671	16.43
	3	2,131	20.95	1,064	10.46	2,733	26.87	2,215	21.78	2,533	24.90	1,662	16.34	2,747	27.01	2,710	26.64
	4	2,579	25.36	1,181	11.61	2,956	29.06	2,199	21.62	2,939	28.90	2,060	20.25	2,878	28.30	1,925	18.93
V	0	896	8.18	797	7.28	797	7.28	819	7.48	946	8.64	955	8.72	812	7.41	1,019	9.30
	1	1,875	17.12	1,637	14.95	1,456	13.29	4,946	45.16	2,729	24.92	1,364	12.45	3,322	30.33	2,731	24.93
	2	1,806	16.49	1,672	15.27	2,077	18.96	1,531	13.98	1,820	16.62	1,227	11.20	1,349	12.32	1,665	15.20
	3	3,673	33.53	3,612	32.98	3,558	32.48	2,274	20.76	3,046	27.81	2,364	21.58	2,683	24.50	2,685	24.51
	4	2,703	24.68	3,235	29.54	3,065	27.98	1,383	12.63	2,412	22.02	5,043	46.04	2,787	25.45	2,853	26.05

Table 8.A.16 Frequency of Operational Task Scores: Mathematics

Math Level	Score on Task	1		2		3		4		5		6		7		8	
		Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
I	0	1,948	14.39	1,640	12.11	1,560	11.52	1,658	12.25	3,218	23.77	1,879	13.88	1,900	14.03	1,535	11.34
	1	4,276	31.58	3,927	29.00	5,154	38.06	4,593	33.92	3,535	26.11	4,155	30.69	4,819	35.59	3,614	26.69
	2	582	4.30	607	4.48	570	4.21	620	4.58	401	2.96	648	4.79	817	6.03	541	4.00
	3	787	5.81	678	5.01	709	5.24	742	5.48	636	4.70	695	5.13	868	6.41	588	4.34
	4	1,401	10.35	1,129	8.34	1,087	8.03	1,125	8.31	893	6.60	1,057	7.81	1,043	7.70	1,023	7.56
	5	4,546	33.57	5,559	41.06	4,460	32.94	4,802	35.47	4,857	35.87	5,106	37.71	4,093	30.23	6,239	46.08
II	0	282	3.98	405	5.71	367	5.18	423	5.97	569	8.03	438	6.18	368	5.19	523	7.38
	1	659	9.30	1,850	26.10	1,404	19.81	3,435	48.46	4,570	64.48	2,551	35.99	1,041	14.69	1,565	22.08
	2	445	6.28	631	8.90	1,445	20.39	627	8.85	1,006	14.19	883	12.46	867	12.23	1,382	19.50
	3	457	6.45	672	9.48	1,154	16.28	499	7.04	544	7.67	819	11.55	1,008	14.22	873	12.32
	4	5,245	74.00	3,530	49.80	2,718	38.35	2,104	29.68	399	5.63	2,397	33.82	3,804	53.67	2,745	38.73
III	0	316	4.44	290	4.08	298	4.19	315	4.43	271	3.81	340	4.78	315	4.43	365	5.13
	1	2,551	35.86	816	11.47	1,479	20.79	1,378	19.37	744	10.46	2,305	32.40	2,394	33.65	3,909	54.95
	2	1,497	21.04	806	11.33	710	9.98	3,112	43.74	1,296	18.22	723	10.16	1,504	21.14	1,391	19.55
	3	1,650	23.19	1,481	20.82	845	11.88	1,571	22.08	3,543	49.80	818	11.50	859	12.07	575	8.08
	4	1,100	15.46	3,721	52.31	3,782	53.16	738	10.37	1,260	17.71	2,928	41.16	2,042	28.70	874	12.29
IV	0	559	5.50	793	7.80	537	5.28	607	5.97	584	5.74	517	5.08	581	5.71	881	8.66
	1	2,282	22.44	5,739	56.43	4,255	41.83	2,170	21.34	2,245	22.07	830	8.16	3,550	34.90	4,325	42.52
	2	632	6.21	838	8.24	2,147	21.11	413	4.06	632	6.21	1,086	10.68	1,311	12.89	2,352	23.12
	3	1,350	13.27	662	6.51	874	8.59	770	7.57	1,586	15.59	1,779	17.49	1,043	10.25	1,683	16.55
	4	5,348	52.58	2,139	21.03	2,358	23.18	6,211	61.07	5,124	50.38	5,959	58.59	3,686	36.24	930	9.14
V	0	696	6.35	787	7.19	785	7.17	742	6.77	778	7.10	843	7.70	808	7.38	972	8.87
	1	1,273	11.62	1,767	16.13	2,590	23.65	1,497	13.67	4,434	40.48	3,053	27.87	3,559	32.49	4,616	42.14
	2	3,839	35.05	524	4.78	1,091	9.96	2,875	26.25	1,193	10.89	592	5.40	2,110	19.26	1,871	17.08
	3	800	7.30	1,778	16.23	1,148	10.48	1,579	14.42	987	9.01	981	8.96	1,767	16.13	1,532	13.99
	4	4,345	39.67	6,097	55.67	5,339	48.74	4,260	38.89	3,561	32.51	5,484	50.07	2,709	24.73	1,962	17.91

Table 8.A.17 Frequency of Operational Task Scores: Science

Science Level	Score on Task	1		2		3		4		5		6		7		8	
		Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
I	0	777	17.73	883	20.15	847	19.32	835	19.05	751	17.13	861	19.64	773	17.64	962	21.95
	1	1,081	24.66	1,336	30.48	1,187	27.08	1,258	28.70	1,101	25.12	1,257	28.68	801	18.28	1,366	31.17
	2	161	3.67	184	4.20	170	3.88	163	3.72	169	3.86	194	4.43	132	3.01	203	4.63
	3	159	3.63	252	5.75	241	5.50	207	4.72	185	4.22	255	5.82	162	3.70	221	5.04
	4	279	6.37	319	7.28	353	8.05	271	6.18	332	7.57	340	7.76	303	6.91	330	7.53
	5	1,926	43.94	1,409	32.15	1,585	36.16	1,649	37.62	1,845	42.09	1,476	33.68	2,212	50.47	1,301	29.68
III	0	250	7.06	205	5.79	289	8.16	246	6.94	209	5.90	232	6.55	236	6.66	284	8.02
	1	817	23.06	222	6.27	628	17.73	1,120	31.61	582	16.43	794	22.41	858	24.22	1,185	33.45
	2	1,126	31.78	813	22.95	627	17.70	625	17.64	1,237	34.91	409	11.54	1,046	29.52	915	25.83
	3	948	26.76	1,270	35.85	947	26.73	278	7.85	737	20.80	969	27.35	764	21.56	355	10.02
	4	402	11.35	1,033	29.16	1,052	29.69	1,274	35.96	778	21.96	1,139	32.15	639	18.04	804	22.69
IV	0	276	7.64	276	7.64	285	7.89	320	8.86	293	8.11	296	8.19	320	8.86	300	8.30
	1	908	25.13	590	16.33	819	22.67	468	12.95	957	26.49	479	13.26	804	22.25	595	16.47
	2	511	14.14	984	27.23	941	26.04	481	13.31	627	17.35	730	20.20	787	21.78	740	20.48
	3	1,054	29.17	1,027	28.43	795	22.00	868	24.02	900	24.91	1,406	38.92	968	26.79	1,036	28.67
	4	864	23.91	736	20.37	773	21.39	1,476	40.85	836	23.14	702	19.43	734	20.32	942	26.07
V	0	408	10.08	493	12.18	433	10.69	486	12.00	437	10.79	432	10.67	430	10.62	466	11.51
	1	1,113	27.49	865	21.36	481	11.88	1,187	29.32	851	21.02	436	10.77	1,155	28.53	565	13.95
	2	1,269	31.34	1,062	26.23	708	17.49	1,028	25.39	1,115	27.54	672	16.60	933	23.04	760	18.77
	3	856	21.14	1,000	24.70	1,503	37.12	753	18.60	894	22.08	1,919	47.39	776	19.17	1,118	27.61
	4	403	9.95	629	15.53	924	22.82	595	14.69	752	18.57	590	14.57	755	18.65	1,140	28.16

Appendix 8.B—Reliability Analyses

Table 8.B.1 Reliabilities and SEMs by GENDER

Content Area	Level	No. of Tasks	Male		Female		Unknown Gender	
			Reliab.	SEM	Reliab.	SEM	Reliab.	SEM
English–Language Arts	**I**	8	0.89	3.81	0.90	3.78	0.89	3.62
	II	8	0.86	2.50	0.84	2.51	0.84	2.47
	III	8	0.89	2.25	0.88	2.26	0.80	2.65
	IV	8	0.90	2.33	0.90	2.31	0.85	2.45
	V	8	0.90	2.31	0.91	2.20	0.93	2.01
Mathematics	**I**	8	0.86	4.21	0.86	4.20	0.87	4.00
	II	8	0.86	2.64	0.85	2.64	0.84	2.99
	III	8	0.83	2.59	0.81	2.59	0.87	2.57
	IV	8	0.88	2.57	0.87	2.57	0.92	2.38
	V	8	0.88	2.62	0.87	2.63	0.89	2.49
Science *	**I**	8	0.89	3.89	0.90	3.89	0.92	3.82
	III	8	0.86	2.68	0.82	2.76	–	–
	IV	8	0.85	2.63	0.82	2.60	–	–
	V	8	0.84	2.53	0.84	2.47	–	–

* Results for groups with fewer than 11 members are not reported

Table 8.B.2 Reliabilities and SEMs by PRIMARY ETHNICITY

Content Area	Level	No. of Tasks	American Indian		Asian		Pacific Islander		Filipino	
			Reliab.	SEM	Reliab.	SEM	Reliab.	SEM	Reliab.	SEM
English–Language Arts	I	8	0.92	3.67	0.88	3.93	0.84	4.12	0.88	3.94
	II	8	0.88	2.53	0.85	2.55	0.79	2.56	0.90	2.41
	III	8	0.87	2.23	0.89	2.34	0.82	2.42	0.89	2.32
	IV	8	0.88	2.37	0.89	2.27	0.87	2.26	0.89	2.28
	V	8	0.89	4.24	0.91	3.33	0.90	3.20	0.89	3.82
Mathematics	I	8	0.86	4.19	0.84	4.28	0.82	4.35	0.85	4.27
	II	8	0.89	2.47	0.86	2.68	0.82	2.65	0.87	2.68
	III	8	0.76	2.66	0.85	2.58	0.80	2.68	0.85	2.51
	IV	8	0.84	2.63	0.89	2.57	0.83	2.63	0.88	2.61
	V	8	0.82	2.72	0.89	2.64	0.87	2.55	0.88	2.64
Science *	I	8	0.93	3.32	0.89	3.93	0.78	4.34	0.89	4.06
	III	8	0.74	3.92	0.81	2.71	0.72	2.52	0.83	2.70
	IV	8	0.77	4.58	0.85	2.60	–	–	0.86	2.66
	V	8	0.81	2.80	0.86	2.42	–	–	0.87	2.24

Content Area	Level	No. of Tasks	Hispanic		African American		White		Unknown Ethnicity	
			Reliab.	SEM	Reliab.	SEM	Reliab.	SEM	Reliab.	SEM
English–Language Arts	I	8	0.90	3.72	0.90	3.71	0.88	3.93	0.89	3.89
	II	8	0.85	2.51	0.84	2.51	0.87	2.48	0.86	2.53
	III	8	0.88	2.25	0.88	2.22	0.89	2.24	0.89	2.39
	IV	8	0.90	2.30	0.89	2.33	0.90	2.35	0.89	2.35
	V	8	0.91	3.62	0.90	3.77	0.90	3.50	0.92	3.31
Mathematics	I	8	0.87	4.16	0.86	4.16	0.84	4.30	0.85	4.21
	II	8	0.86	2.63	0.84	2.65	0.86	2.65	0.85	2.69
	III	8	0.82	2.59	0.80	2.58	0.83	2.60	0.84	2.59
	IV	8	0.88	2.55	0.87	2.58	0.87	2.59	0.88	2.59
	V	8	0.88	2.59	0.87	2.61	0.87	2.65	0.88	2.65
Science	I	8	0.90	3.81	0.90	3.72	0.88	4.08	0.89	3.88
	III	8	0.84	2.73	0.83	2.69	0.86	2.68	0.86	2.48
	IV	8	0.84	2.57	0.84	2.63	0.84	2.66	0.82	2.67
	V	8	0.84	2.50	0.79	2.80	0.84	2.49	0.87	2.35

* Results for groups with fewer than 11 members are not reported

Table 8.B.3 Reliabilities and SEMs by PRIMARY ETHNICITY for Economically Disadvantaged

Content Area	Level	No. of Tasks	American Indian		Asian		Pacific Islander		Filipino	
			Reliab.	SEM	Reliab.	SEM	Reliab.	SEM	Reliab.	SEM
English–Language Arts	I	8	0.92	3.64	0.88	3.88	0.84	4.24	0.89	3.84
	II	8	0.87	2.59	0.85	2.55	0.76	2.53	0.86	2.50
	III	8	0.87	2.16	0.87	2.39	0.80	2.43	0.89	2.27
	IV	8	0.86	2.48	0.88	2.29	0.89	2.17	0.86	2.38
	V	8	0.86	2.24	0.92	2.23	0.92	2.14	0.90	2.34
Mathematics	I	8	0.86	4.19	0.83	4.32	0.81	4.39	0.86	4.21
	II	8	0.90	2.38	0.88	2.64	0.75	2.75	0.87	2.56
	III	8	0.73	2.70	0.86	2.56	0.78	2.79	0.86	2.54
	IV	8	0.83	2.68	0.89	2.58	0.77	2.61	0.88	2.61
	V	8	0.78	2.76	0.90	2.59	0.87	2.63	0.88	2.59
Science *	I	8	0.95	3.15	0.89	3.86	–	–	0.88	3.94
	III	8	0.64	4.67	0.86	2.50	–	–	0.84	2.56
	IV	8	0.62	6.30	0.87	2.41	–	–	0.89	2.72
	V	8	0.65	2.41	0.87	2.44	–	–	0.91	2.21

Content Area	Level	No. of Tasks	Hispanic		African American		White		Unknown Ethnicity	
			Reliab.	SEM	Reliab.	SEM	Reliab.	SEM	Reliab.	SEM
English–Language Arts	I	8	0.90	3.69	0.90	3.66	0.88	3.88	0.89	3.84
	II	8	0.85	2.51	0.84	2.48	0.86	2.49	0.84	2.54
	III	8	0.87	2.24	0.87	2.21	0.88	2.21	0.87	2.25
	IV	8	0.90	2.31	0.88	2.35	0.89	2.36	0.89	2.36
	V	8	0.91	2.20	0.90	2.26	0.90	2.27	0.93	2.24
Mathematics	I	8	0.86	4.16	0.87	4.14	0.85	4.27	0.84	4.30
	II	8	0.86	2.64	0.84	2.64	0.85	2.64	0.83	2.72
	III	8	0.81	2.58	0.81	2.54	0.82	2.60	0.84	2.45
	IV	8	0.88	2.54	0.86	2.59	0.87	2.57	0.88	2.56
	V	8	0.88	2.58	0.87	2.61	0.87	2.61	0.89	2.63
Science	I	8	0.90	3.79	0.88	3.85	0.88	4.00	0.89	3.84
	III	8	0.83	2.77	0.84	2.64	0.86	2.62	0.85	2.42
	IV	8	0.83	2.58	0.83	2.58	0.84	2.62	0.76	2.52
	V	8	0.84	2.50	0.79	2.92	0.83	2.48	0.83	2.50

* Results for groups with fewer than 11 members are not reported

Table 8.B.4 Reliabilities and SEMs by PRIMARY ETHNICITY for Not Economically Disadvantaged

Content Area	Level	No. of Tasks	American Indian		Asian		Pacific Islander		Filipino	
			Reliab.	SEM	Reliab.	SEM	Reliab.	SEM	Reliab.	SEM
English–Language Arts*	I	8	0.89	3.82	0.88	3.96	0.85	3.97	0.89	3.96
	II	8	0.86	2.42	0.84	2.56	0.78	2.41	0.91	2.37
	III	8	0.87	2.31	0.90	2.31	–	–	0.89	2.34
	IV	8	0.91	2.04	0.89	2.26	0.83	2.42	0.91	2.19
	V	8	0.91	2.38	0.91	2.26	0.87	2.44	0.88	2.44
Mathematics	I	8	0.85	4.19	0.84	4.28	0.83	4.36	0.85	4.32
	II	8	0.83	2.77	0.84	2.73	0.86	2.46	0.86	2.76
	III	8	0.83	2.60	0.85	2.61	–	–	0.85	2.49
	IV	8	0.84	2.50	0.89	2.55	0.87	2.66	0.88	2.58
	V	8	0.86	2.70	0.87	2.69	0.90	2.34	0.87	2.71
Science *	I	8	0.88	3.53	0.89	3.99	–	–	0.90	4.09
	III	8	–	–	0.74	2.92	–	–	0.83	2.76
	IV	8	–	–	0.82	2.83	–	–	0.84	2.64
	V	8	0.90	2.81	0.86	2.29	–	–	0.82	2.24

Content Area	Level	No. of Tasks	Hispanic		African American		White		Unknown Ethnicity	
			Reliab.	SEM	Reliab.	SEM	Reliab.	SEM	Reliab.	SEM
English–Language Arts	I	8	0.91	3.82	0.90	3.83	0.88	3.96	0.88	3.97
	II	8	0.87	2.52	0.83	2.57	0.87	2.47	0.86	2.54
	III	8	0.90	2.27	0.88	2.24	0.89	2.26	0.89	2.47
	IV	8	0.91	2.27	0.91	2.30	0.90	2.34	0.90	2.35
	V	8	0.92	2.26	0.90	2.30	0.91	2.32	0.92	2.34
Mathematics	I	8	0.87	4.14	0.85	4.19	0.83	4.33	0.87	4.12
	II	8	0.87	2.58	0.84	2.66	0.86	2.65	0.87	2.66
	III	8	0.84	2.61	0.80	2.69	0.83	2.59	0.84	2.68
	IV	8	0.88	2.59	0.88	2.54	0.87	2.61	0.88	2.68
	V	8	0.89	2.62	0.88	2.61	0.87	2.67	0.90	2.61
Science	I	8	0.90	3.87	0.93	3.47	0.88	4.12	0.91	3.81
	III	8	0.86	2.55	0.78	2.94	0.86	2.71	0.88	2.46
	IV	8	0.87	2.48	0.87	2.71	0.84	2.70	0.83	2.84
	V	8	0.87	2.48	0.78	2.53	0.85	2.49	0.90	2.27

* Results for groups with fewer than 11 members are not reported

Table 8.B.5 Reliabilities and SEMs by PRIMARY ETHNICITY for Unknown Economic Status

Content Area	Level	No. of Tasks	American Indian		Asian		Pacific Islander		Filipino	
			Reliab.	SEM	Reliab.	SEM	Reliab.	SEM	Reliab.	SEM
English–Language Arts*	I	8	–	–	0.89	3.76	–	–	–	–
	II	8	–	–	0.91	2.32	–	–	0.94	2.18
	III	8	–	–	–	–	–	–	–	–
	IV	8	–	–	0.89	2.22	–	–	–	–
	V	8	–	–	0.83	2.28	–	–	–	–
Mathematics*	I	8	–	–	0.91	3.67	–	–	–	–
	II	8	–	–	0.94	2.19	–	–	0.95	2.37
	III	8	–	–	–	–	–	–	–	–
	IV	8	–	–	0.91	2.45	–	–	0.85	2.86
	V	8	–	–	0.80	2.51	–	–	–	–
Science *	I	8	–	–	–	–	–	–	–	–
	III	8	–	–	–	–	–	–	–	–
	IV	8	–	–	–	–	–	–	–	–
	V	8	–	–	–	–	–	–	–	–

Content Area	Level	No. of Tasks	Hispanic		African American		White		Unknown Ethnicity	
			Reliab.	SEM	Reliab.	SEM	Reliab.	SEM	Reliab.	SEM
English–Language Arts*	I	8	0.89	3.87	0.88	3.54	0.91	3.44	–	–
	II	8	0.85	2.58	0.86	2.64	0.90	2.32	0.89	2.43
	III	8	0.89	2.22	0.93	2.13	0.93	1.99	0.85	2.49
	IV	8	0.90	2.35	0.90	2.22	0.88	2.45	0.91	2.22
	V	8	0.89	2.23	0.92	2.01	0.86	2.20	0.85	2.14
Mathematics	I	8	0.87	4.12	0.85	4.11	0.88	4.00	0.82	4.25
	II	8	0.88	2.57	0.85	2.88	0.87	2.65	0.86	2.68
	III	8	0.79	2.63	0.76	2.95	0.88	2.48	0.85	2.55
	IV	8	0.88	2.64	0.88	2.49	0.83	2.56	0.90	2.32
	V	8	0.83	2.73	0.86	2.59	0.88	2.61	0.74	2.74
Science *	I	8	0.92	3.65	0.89	3.84	0.93	3.92	–	–
	III	8	0.88	2.72	–	–	0.86	2.71	–	–
	IV	8	0.92	2.50	–	–	–	–	–	–
	V	8	0.78	2.48	–	–	0.86	2.75	–	–

* Results for groups with fewer than 11 members are not reported

Table 8.B.6 Reliabilities and SEMs by Disability

Content Area	Level	No. of Tasks	Mental Retardation		Hard of Hearing		Deafness		Speech Impairment	
			Reliab.	SEM	Reliab.	SEM	Reliab.	SEM	Reliab.	SEM
English–Language Arts	I	8	0.90	3.65	0.88	3.79	0.89	3.69	0.91	2.68
	II	8	0.83	2.51	0.87	2.47	0.81	2.63	0.77	2.45
	III	8	0.87	2.27	0.85	2.20	0.87	2.33	0.73	2.14
	IV	8	0.89	2.30	0.89	2.33	0.87	2.26	0.83	2.29
	V	8	0.91	2.18	0.94	2.08	0.86	2.19	0.79	2.17
Mathematics	I	8	0.85	4.20	0.83	4.32	0.85	4.06	0.86	3.56
	II	8	0.85	2.61	0.86	2.78	0.85	2.76	0.76	2.52
	III	8	0.80	2.56	0.87	2.35	0.82	2.68	0.69	2.47
	IV	8	0.87	2.54	0.85	2.72	0.87	2.55	0.79	2.50
	V	8	0.87	2.61	0.92	2.36	0.85	2.46	0.75	2.54
Science	I	8	0.89	3.84	0.90	3.72	0.94	3.18	0.97	2.65
	III	8	0.82	2.65	0.86	2.29	0.79	2.70	0.74	2.95
	IV	8	0.80	2.63	0.73	2.55	0.78	3.15	0.70	2.39
	V	8	0.83	2.51	0.76	2.33	0.73	2.33	0.64	3.21

Content Area	Level	No. of Tasks	Visual Impairment		Emotional Disturbance		Orthopedic Impairment		Other Health Impairment	
			Reliab.	SEM	Reliab.	SEM	Reliab.	SEM	Reliab.	SEM
English–Language Arts	I	8	0.91	3.80	0.91	2.50	0.89	3.97	0.92	3.60
	II	8	0.88	2.24	0.75	2.49	0.84	2.58	0.82	2.52
	III	8	0.87	2.26	0.80	2.01	0.87	2.35	0.84	2.24
	IV	8	0.90	2.22	0.82	2.50	0.89	2.35	0.87	2.35
	V	8	0.86	2.35	0.84	2.16	0.92	2.27	0.88	2.19
Mathematics	I	8	0.88	3.93	0.92	2.96	0.86	4.12	0.88	4.05
	II	8	0.85	2.61	0.74	2.48	0.86	2.68	0.79	2.62
	III	8	0.78	2.51	0.71	2.58	0.82	2.70	0.80	2.55
	IV	8	0.88	2.61	0.85	2.61	0.87	2.64	0.85	2.57
	V	8	0.86	2.79	0.84	2.52	0.89	2.67	0.84	2.64
*Science **	I	8	0.90	3.86	–	–	0.89	3.92	0.92	3.56
	III	8	0.87	2.46	0.78	3.90	0.84	2.80	0.77	2.81
	IV	8	0.77	3.20	0.90	2.80	0.82	2.65	0.82	2.38
	V	8	0.81	2.83	0.87	2.58	0.88	2.35	0.76	2.39

Content Area	Level	No. of Tasks	Specific Learning Disability		Deaf-Blindness		Multiple Disabilities		Autism	
			Reliab.	SEM	Reliab.	SEM	Reliab.	SEM	Reliab.	SEM
*English–Language Arts**	I	8	0.87	2.61	0.83	4.09	0.91	3.71	0.84	3.97
	II	8	0.76	2.32	–	–	0.83	2.62	0.88	2.49
	III	8	0.71	2.01	–	–	0.90	2.31	0.90	2.27
	IV	8	0.77	2.35	–	–	0.89	2.32	0.91	2.21
	V	8	0.78	2.10	–	–	0.93	2.19	0.92	2.28
*Mathematics**	I	8	0.82	3.05	0.77	4.11	0.88	3.94	0.79	4.40
	II	8	0.71	2.38	–	–	0.86	2.70	0.87	2.69
	III	8	0.63	2.37	–	–	0.87	2.50	0.85	2.58
	IV	8	0.76	2.47	–	–	0.88	2.55	0.89	2.59
	V	8	0.71	2.50	–	–	0.90	2.61	0.89	2.66
*Science **	I	8	0.65	3.33	–	–	0.91	3.65	0.84	4.21
	III	8	0.75	2.81	–	–	0.85	2.72	0.86	2.71
	IV	8	0.76	2.81	–	–	0.86	2.50	0.88	2.54
	V	8	0.69	2.62	–	–	0.86	2.55	0.87	2.47

Content Area	Level	No. of Tasks	Traumatic Brain Injury Reliab.	Traumatic Brain Injury SEM	Unknown Disability Reliab.	Unknown Disability SEM
English–Language Arts	**I**	8	0.95	3.33	0.88	3.85
	II	8	0.75	2.62	0.88	2.52
	III	8	0.86	2.14	0.88	2.11
	IV	8	0.86	2.42	0.90	2.35
	V	8	0.85	2.58	0.88	2.27
Mathematics	**I**	8	0.93	3.68	0.85	4.25
	II	8	0.81	2.66	0.90	2.46
	III	8	0.85	2.47	0.78	2.63
	IV	8	0.85	2.57	0.85	2.59
	V	8	0.86	2.67	0.83	2.71
Science	**I**	8	0.95	3.17	0.84	4.28
	III	8	0.87	2.93	0.85	3.42
	IV	8	0.80	2.51	0.90	3.41
	V	8	0.82	2.35	0.88	2.55

* Results for groups with fewer than 11 members are not reported

Table 8.B.7 Decision Accuracy and Decision Consistency: Level I, ELA

	Placement Score	Advanced	Proficient	Basic	Below Basic	Far Below Basic	Category Total †
Decision Accuracy	26–40	0.50	0.05	0.00	0.00	0.00	0.55
	16–25	0.05	0.14	0.03	0.00	0.00	0.23
	10–15	0.00	0.03	0.05	0.01	0.00	0.09
All-forms Average *	5–9	0.00	0.00	0.02	0.03	0.01	0.07
	0–4	0.00	0.00	0.01	0.02	0.04	0.06
	Estimated Proportion Correctly Classified: Total = 0.76, Proficient & Above =0.93						
Decision Consistency	26–40	0.49	0.06	0.00	0.00	0.00	0.55
	16–25	0.06	0.11	0.04	0.01	0.00	0.23
	10–15	0.00	0.03	0.03	0.02	0.01	0.09
Alternate Form *	5–9	0.00	0.01	0.02	0.02	0.02	0.07
	0–4	0.00	0.00	0.01	0.02	0.04	0.06
	Estimated Proportion Correctly Classified: Total = 0.69, Proficient & Above = 0.90						

* Values in table are proportions of the total sample.

† Inconsistencies with category cell entries are due to rounding.

Table 8.B.8 Decision Accuracy and Decision Consistency: Level I, Mathematics

	Placement Score	Advanced	Proficient	Basic	Below Basic	Far Below Basic	Category Total †
Decision Accuracy	29–40	0.28	0.05	0.00	0.00	0.00	0.32
	19–28	0.06	0.20	0.05	0.00	0.00	0.32
	10–18	0.00	0.05	0.12	0.02	0.00	0.20
All-forms Average *	5–9	0.00	0.00	0.04	0.04	0.01	0.09
	0–4	0.00	0.00	0.01	0.03	0.04	0.07
	Estimated Proportion Correctly Classified: Total = 0.68, Proficient & Above = 0.89						
Decision Consistency	29–40	0.26	0.06	0.00	0.00	0.00	0.32
	19–28	0.08	0.15	0.07	0.01	0.00	0.32
	10–18	0.00	0.06	0.10	0.03	0.01	0.20
Alternate Form *	5–9	0.00	0.01	0.03	0.03	0.02	0.09
	0–4	0.00	0.00	0.01	0.02	0.04	0.07
	Estimated Proportion Correctly Classified: Total =0.58 , Proficient & Above = 0.85						

* Values in table are proportions of the total sample.

† Inconsistencies with category cell entries are due to rounding.

Table 8.B.9 Decision Accuracy and Decision Consistency: Level I, Science

	Placement Score	Advanced	Proficient	Basic	Below Basic	Far Below Basic	Category Total †
Decision Accuracy	31–40	0.31	0.05	0.00	0.00	0.00	0.35
	21–30	0.04	0.17	0.04	0.00	0.00	0.25
	12–20	0.00	0.05	0.12	0.03	0.00	0.21
All-forms Average *	6–11	0.00	0.00	0.04	0.05	0.01	0.10
	0–5	0.00	0.00	0.00	0.03	0.06	0.09
	Estimated Proportion Correctly Classified: Total = 0.71, Proficient & Above = 0.91						
Decision Consistency	31–40	0.29	0.06	0.00	0.00	0.00	0.35
	21–30	0.06	0.13	0.05	0.00	0.00	0.25
	12–20	0.01	0.06	0.09	0.04	0.01	0.21
Alternate Form *	6–11	0.00	0.00	0.03	0.04	0.02	0.10
	0–5	0.00	0.00	0.01	0.02	0.06	0.09
	Estimated Proportion Correctly Classified: Total = 0.62, Proficient & Above = 0.87						

* Values in table are proportions of the total sample.

† Inconsistencies with category cell entries are due to rounding.

Table 8.B.10 Decision Accuracy and Decision Consistency: Level II, ELA

	Placement Score	Advanced	Proficient	Basic	Below Basic	Far Below Basic	Category Total †
Decision Accuracy	22–32	0.35	0.06	0.00	0.00	0.00	0.42
	14–21	0.05	0.29	0.03	0.00	0.00	0.38
	9–13	0.00	0.05	0.09	0.02	0.00	0.15
All-forms Average *	4–8	0.00	0.00	0.01	0.02	0.00	0.04
	0–3	0.00	0.00	0.00	0.01	0.00	0.01
	Estimated Proportion Correctly Classified: Total = 0.76, Proficient & Above = 0.91						
Decision Consistency	22–32	0.33	0.08	0.00	0.00	0.00	0.42
	14–21	0.08	0.25	0.05	0.00	0.00	0.38
	9–13	0.00	0.06	0.07	0.02	0.00	0.15
Alternate Form *	4–8	0.00	0.00	0.01	0.02	0.00	0.04
	0–3	0.00	0.00	0.00	0.01	0.00	0.01
	Estimated Proportion Correctly Classified: Total = 0.67, Proficient & Above = 0.88						

* Values in table are proportions of the total sample.

† Inconsistencies with category cell entries are due to rounding.

Table 8.B.11 Decision Accuracy and Decision Consistency: Level II, Mathematics

	Placement Score	Advanced	Proficient	Basic	Below Basic	Far Below Basic	Category Total †
Decision Accuracy	25–32	0.28	0.07	0.00	0.00	0.00	0.35
	18–24	0.04	0.24	0.04	0.00	0.00	0.31
	13–17	0.00	0.06	0.10	0.03	0.00	0.19
All-forms Average *	7–12	0.00	0.00	0.04	0.07	0.01	0.12
	0–6	0.00	0.00	0.00	0.01	0.01	0.03
	Estimated Proportion Correctly Classified: Total = 0.70, Proficient & Above = 0.89						
Decision Consistency	25–32	0.26	0.08	0.01	0.00	0.00	0.35
	18–24	0.07	0.19	0.05	0.00	0.00	0.31
	13–17	0.01	0.06	0.08	0.04	0.00	0.19
Alternate Form *	7–12	0.00	0.01	0.04	0.06	0.02	0.12
	0–6	0.00	0.00	0.00	0.01	0.02	0.03
	Estimated Proportion Correctly Classified: Total = 0.61, Proficient & Above = 0.86						

* Values in table are proportions of the total sample.

† Inconsistencies with category cell entries are due to rounding.

Table 8.B.12 Decision Accuracy and Decision Consistency: Level III, ELA

	Placement Score	Advanced	Proficient	Basic	Below Basic	Far Below Basic	Category Total †
Decision Accuracy	23–32	0.42	0.05	0.00	0.00	0.00	0.46
	14–22	0.06	0.30	0.03	0.00	0.00	0.40
	8–13	0.00	0.03	0.07	0.00	0.00	0.10
All-forms Average *	4–7	0.00	0.00	0.01	0.01	0.00	0.02
	0–3	0.00	0.00	0.00	0.01	0.00	0.02
	Estimated Proportion Correctly Classified: Total = 0.81, Proficient & Above = 0.94						
Decision Consistency	23–32	0.39	0.07	0.00	0.00	0.00	0.46
	14–22	0.08	0.26	0.05	0.00	0.00	0.40
	8–13	0.00	0.03	0.06	0.01	0.00	0.10
Alternate Form *	4–7	0.00	0.00	0.01	0.01	0.00	0.02
	0–3	0.00	0.00	0.00	0.01	0.01	0.02
	Estimated Proportion Correctly Classified: Total = 0.74, Proficient & Above = 0.92						

* Values in table are proportions of the total sample.

† Inconsistencies with category cell entries are due to rounding.

Table 8.B.13 Decision Accuracy and Decision Consistency: Level III, Mathematics

	Placement Score	Advanced	Proficient	Basic	Below Basic	Far Below Basic	Category Total †
Decision Accuracy	25–32	0.18	0.06	0.00	0.00	0.00	0.25
	17–24	0.05	0.36	0.05	0.00	0.00	0.45
	11–16	0.00	0.07	0.14	0.02	0.00	0.23
All-forms Average *	4–10	0.00	0.00	0.02	0.04	0.00	0.06
	0–3	0.00	0.00	0.00	0.01	0.00	0.01
	Estimated Proportion Correctly Classified: Total = 0.72, Proficient & Above = 0.88						
Decision Consistency	25–32	0.17	0.08	0.00	0.00	0.00	0.25
	17–24	0.08	0.30	0.07	0.00	0.00	0.45
	11–16	0.00	0.08	0.11	0.03	0.00	0.23
Alternate Form *	4–10	0.00	0.00	0.02	0.04	0.00	0.06
	0–3	0.00	0.00	0.00	0.01	0.00	0.01
	Estimated Proportion Correctly Classified: Total = 0.62, Proficient & Above = 0.84						

* Values in table are proportions of the total sample.

† Inconsistencies with category cell entries are due to rounding.

Table 8.B.14 Decision Accuracy and Decision Consistency: Level III, Science

	Placement Score	Advanced	Proficient	Basic	Below Basic	Far Below Basic	Category Total †
Decision Accuracy	27–32	0.11	0.05	0.00	0.00	0.00	0.16
	17–26	0.03	0.46	0.05	0.00	0.00	0.54
	10–16	0.00	0.06	0.17	0.02	0.00	0.24
All-forms Average *	4–9	0.00	0.00	0.02	0.03	0.00	0.04
	0–3	0.00	0.00	0.00	0.01	0.00	0.01
	Estimated Proportion Correctly Classified: Total = 0.76, Proficient & Above = 0.89						
Decision Consistency	27–32	0.11	0.06	0.00	0.00	0.00	0.16
	17–26	0.06	0.40	0.08	0.00	0.00	0.54
	10–16	0.00	0.07	0.14	0.03	0.00	0.24
Alternate Form *	4–9	0.00	0.00	0.02	0.03	0.00	0.04
	0–3	0.00	0.00	0.00	0.01	0.00	0.01
	Estimated Proportion Correctly Classified: Total = 0.67, Proficient & Above = 0.85						

* Values in table are proportions of the total sample.

† Inconsistencies with category cell entries are due to rounding.

Table 8.B.15 Decision Accuracy and Decision Consistency: Level IV, ELA

	Placement Score	Advanced	Proficient	Basic	Below Basic	Far Below Basic	Category Total †
Decision Accuracy	21–32	0.38	0.05	0.00	0.00	0.00	0.43
	14–20	0.04	0.22	0.03	0.00	0.00	0.29
	10–13	0.01	0.05	0.08	0.03	0.00	0.17
All-forms Average *	5–9	0.00	0.00	0.02	0.06	0.00	0.08
	0–4	0.00	0.00	0.00	0.02	0.01	0.03
	Estimated Proportion Correctly Classified: Total = 0.75, Proficient & Above = 0.91						
Decision Consistency	21–32	0.36	0.07	0.00	0.00	0.00	0.43
	14–20	0.06	0.18	0.04	0.01	0.00	0.29
	10–13	0.01	0.06	0.06	0.04	0.01	0.17
Alternate Form *	5–9	0.00	0.00	0.02	0.05	0.01	0.08
	0–4	0.00	0.00	0.00	0.01	0.01	0.03
	Estimated Proportion Correctly Classified: Total = 0.67, Proficient & Above = 0.88						

* Values in table are proportions of the total sample.

† Inconsistencies with category cell entries are due to rounding.

Table 8.B.16 Decision Accuracy and Decision Consistency: Level IV, Mathematics

	Placement Score	Advanced	Proficient	Basic	Below Basic	Far Below Basic	Category Total †
Decision Accuracy	25–32	0.28	0.05	0.00	0.00	0.00	0.33
	18–24	0.05	0.24	0.05	0.01	0.00	0.35
	13–17	0.00	0.03	0.08	0.01	0.00	0.12
All-forms Average *	7–12	0.00	0.02	0.05	0.09	0.01	0.17
	0–6	0.00	0.00	0.00	0.01	0.01	0.02
	Estimated Proportion Correctly Classified: Total = 0.70, Proficient & Above = 0.89						
Decision Consistency	25–32	0.27	0.07	0.00	0.00	0.00	0.33
	18–24	0.07	0.20	0.07	0.02	0.00	0.35
	13–17	0.00	0.04	0.06	0.02	0.00	0.12
Alternate Form *	7–12	0.00	0.02	0.05	0.08	0.02	0.17
	0–6	0.00	0.00	0.00	0.01	0.02	0.02
	Estimated Proportion Correctly Classified: Total = 0.61, Proficient & Above = 0.86						

* Values in table are proportions of the total sample.

† Inconsistencies with category cell entries are due to rounding.

Table 8.B.17 Decision Accuracy and Decision Consistency: Level IV, Science

	Placement Score	Advanced	Proficient	Basic	Below Basic	Far Below Basic	Category Total †
Decision Accuracy	27–32	0.12	0.06	0.00	0.00	0.00	0.18
	18–26	0.04	0.44	0.05	0.00	0.00	0.53
	11–17	0.00	0.06	0.16	0.01	0.00	0.23
All-forms Average *	5–10	0.00	0.00	0.02	0.03	0.00	0.05
	0–4	0.00	0.00	0.00	0.01	0.00	0.01
	Estimated Proportion Correctly Classified: Total = 0.75, Proficient & Above = 0.89						
Decision Consistency	27–32	0.11	0.07	0.00	0.00	0.00	0.18
	18–26	0.07	0.38	0.08	0.00	0.00	0.53
	11–17	0.00	0.07	0.13	0.03	0.00	0.23
Alternate Form *	5–10	0.00	0.00	0.02	0.03	0.00	0.05
	0–4	0.00	0.00	0.00	0.01	0.00	0.01
	Estimated Proportion Correctly Classified: Total = 0.65, Proficient & Above = 0.85						

* Values in table are proportions of the total sample.

† Inconsistencies with category cell entries are due to rounding.

Table 8.B.18 Decision Accuracy and Decision Consistency: Level V, ELA

	Placement Score	Advanced	Proficient	Basic	Below Basic	Far Below Basic	Category Total †
Decision Accuracy	23–32	0.39	0.05	0.00	0.00	0.00	0.45
	14–22	0.04	0.28	0.02	0.00	0.00	0.34
	8–13	0.00	0.04	0.10	0.01	0.00	0.16
All-forms Average *	4–7	0.00	0.00	0.01	0.02	0.00	0.02
	0–3	0.00	0.00	0.01	0.01	0.01	0.02
	Estimated Proportion Correctly Classified: Total = 0.80, Proficient & Above = 0.93						
Decision Consistency	23–32	0.37	0.07	0.00	0.00	0.00	0.45
	14–22	0.06	0.24	0.04	0.00	0.00	0.34
	8–13	0.00	0.05	0.09	0.02	0.00	0.16
Alternate Form *	4–7	0.00	0.00	0.01	0.01	0.00	0.02
	0–3	0.00	0.00	0.01	0.01	0.01	0.02
	Estimated Proportion Correctly Classified: Total = 0.73, Proficient & Above = 0.91						

* Values in table are proportions of the total sample.

† Inconsistencies with category cell entries are due to rounding.

Table 8.B.19 Decision Accuracy and Decision Consistency: Level V, Mathematics

	Placement Score	Advanced	Proficient	Basic	Below Basic	Far Below Basic	Category Total †
Decision Accuracy	25–32	0.31	0.06	0.00	0.00	0.00	0.37
	18–24	0.05	0.22	0.04	0.00	0.00	0.31
	12–17	0.00	0.05	0.12	0.02	0.00	0.19
All-forms Average *	6–11	0.00	0.00	0.04	0.07	0.01	0.11
	0–5	0.00	0.00	0.00	0.01	0.01	0.02
	Estimated Proportion Correctly Classified: Total = 0.72, Proficient & Above = 0.90						
Decision Consistency	25–32	0.30	0.07	0.00	0.00	0.00	0.37
	18–24	0.07	0.17	0.06	0.01	0.00	0.31
	12–17	0.00	0.06	0.09	0.03	0.00	0.19
Alternate Form *	6–11	0.00	0.01	0.04	0.06	0.01	0.11
	0–5	0.00	0.00	0.00	0.01	0.01	0.02
	Estimated Proportion Correctly Classified: Total = 0.63, Proficient & Above = 0.87						

* Values in table are proportions of the total sample.

† Inconsistencies with category cell entries are due to rounding.

Table 8.B.20 Decision Accuracy and Decision Consistency: Level V, Science

	Placement Score	Advanced	Proficient	Basic	Below Basic	Far Below Basic	Category Total †
Decision Accuracy	25–32	0.14	0.06	0.00	0.00	0.00	0.19
	18–24	0.05	0.34	0.05	0.00	0.00	0.45
	11–17	0.00	0.06	0.20	0.02	0.00	0.29
All-forms Average *	4–10	0.00	0.00	0.01	0.04	0.00	0.06
	0–3	0.00	0.00	0.00	0.01	0.00	0.02
	Estimated Proportion Correctly Classified: Total = 0.72, Proficient & Above = 0.88						
Decision Consistency	25–32	0.13	0.07	0.00	0.00	0.00	0.19
	18–24	0.08	0.29	0.08	0.00	0.00	0.45
	11–17	0.00	0.08	0.17	0.04	0.00	0.29
Alternate Form *	4–10	0.00	0.00	0.02	0.04	0.00	0.06
	0–3	0.00	0.00	0.00	0.01	0.00	0.02
	Estimated Proportion Correctly Classified: Total = 0.62, Proficient & Above = 0.84						

* Values in table are proportions of the total sample.

† Inconsistencies with category cell entries are due to rounding.

Appendix 8.C—Correlations Between Content Area Scores

Table 8.C.1 CAPA Content Area Correlations by Gender: Level I

	Male			Female			Unknown		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**8,261**	0.82	0.82	**4,842**	0.82	0.83	**40**	0.79	0.88
Mathematics	8,237	**8,243**	0.81	4,827	**4,828**	0.82	40	**40**	0.87
Science	2,163	2,164	**2,164**	1,314	1,313	**1,315**	11	11	**11**

Table 8.C.2 CAPA Content Area Correlations by Gender: Level II

	Male			Female			Unknown		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**4,598**	0.77	N/A	**2,060**	0.76	N/A	**24**	0.75	N/A
Mathematics	4,588	**4,592**	N/A	2,057	**2,058**	N/A	23	**23**	N/A
Science	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 8.C.3 CAPA Content Area Correlations by Gender: Level III

	Male			Female			Unknown		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**4,486**	0.80	0.75	**2,284**	0.79	0.71	**12**	0.53	–
Mathematics	4,477	**4,478**	0.74	2,278	**2,280**	0.74	12	**12**	–
Science	2,143	2,140	**2,143**	1,089	1,088	**1,089**	5	5	**5**

Table 8.C.4 CAPA Content Area Correlations by Gender: Level IV

	Male			Female			Unknown		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**6,337**	0.73	0.72	**3,349**	0.73	0.71	**20**	0.72	–
Mathematics	6,312	**6,316**	0.70	3,337	**3,340**	0.70	20	**20**	–
Science	2,027	2,027	**2,031**	1,120	1,120	**1,121**	2	2	**2**

Table 8.C.5 CAPA Content Area Correlations by Gender: Level V

	Male			Female			Unknown		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**6,595**	0.71	0.71	**3,800**	0.73	0.71	**48**	0.77	–
Mathematics	6,574	**6,580**	0.66	3,787	**3,793**	0.68	47	**47**	–
Science	2,109	2,108	**2,110**	1,205	1,204	**1,205**	10	10	**10**

Table 8.C.6 CAPA Content Area Correlations by Ethnicity: Level I

	American Indian			Asian			Pacific Islander			Filipino		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**86**	0.83	0.89	**953**	0.80	0.82	**60**	0.72	0.72	**399**	0.83	0.79
Mathematics	86	**86**	0.80	949	**949**	0.83	60	**61**	0.72	397	**397**	0.74
Science	23	23	**23**	245	245	**245**	14	14	**14**	98	98	**98**
	Hispanic			**African American**			**White**			**Unknown Ethnicity**		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**6,880**	0.82	0.82	**1,191**	0.85	0.83	**3,068**	0.81	0.82	**506**	0.78	0.81
Mathematics	6,866	**6,870**	0.81	1,188	1,**188**	0.80	3,055	**3,056**	0.81	503	**504**	0.80
Science	1,811	1,812	**1812**	313	313	**313**	839	838	**840**	145	145	**145**

Table 8.C.7 CAPA Content Area Correlations by Ethnicity: Level II

	American Indian			Asian			Pacific Islander			Filipino		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**61**	0.83	N/A	**469**	0.74	N/A	**43**	0.61	N/A	**171**	0.77	N/A
Mathematics	61	**61**	N/A	467	**467**	N/A	43	**43**	N/A	170	**170**	N/A
Science	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Hispanic			**African American**			**White**			**Unknown Ethnicity**		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**3,468**	0.76	N/A	**648**	0.76	N/A	**1,499**	0.79	N/A	**323**	0.76	N/A
Mathematics	3,461	**3,463**	N/A	646	**646**	N/A	1,497	**1,500**	N/A	323	**323**	N/A
Science	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 8.C.8 CAPA Content Area Correlations by Ethnicity: Level III

	American Indian			Asian			Pacific Islander			Filipino		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**49**	0.77	0.35	**424**	0.80	0.70	**28**	0.79	0.61	**186**	0.81	0.87
Mathematics	49	**49**	0.56	423	**423**	0.80	28	**28**	0.56	184	**184**	0.76
Science	16	16	**16**	208	208	**208**	14	14	**14**	89	88	**89**
	Hispanic			**African American**			**White**			**Unknown Ethnicity**		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**3,540**	0.79	0.72	**658**	0.73	0.77	**1,614**	0.81	0.74	**283**	0.85	0.83
Mathematics	3,536	**3,537**	0.72	654	**654**	0.76	1,611	**1,612**	0.76	282	**283**	0.77
Science	1,654	1,652	**1,654**	327	326	**327**	796	796	**796**	133	133	**133**

Table 8.C.9 CAPA Content Area Correlations by Ethnicity: Level IV

	American Indian			Asian			Pacific Islander			Filipino		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**79**	0.69	0.66	**563**	0.73	0.73	**31**	0.72	–	**253**	0.71	0.77
Mathematics	79	**79**	0.71	559	**559**	0.70	31	**31**	–	252	**253**	0.83
Science	20	20	**20**	190	190	**190**	9	9	**9**	81	81	**81**
	Hispanic			**African American**			**White**			**Unknown Ethnicity**		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**4,917**	0.74	0.70	**1,025**	0.70	0.74	**2,425**	0.74	0.72	**413**	0.68	0.78
Mathematics	4,903	**4,907**	0.70	1,020	**1,021**	0.67	2,414	**2,415**	0.72	411	**411**	0.67
Science	1,581	1,581	**1,583**	326	326	**326**	820	821	**822**	122	121	**123**

Table 8.C.10 CAPA Content Area Correlations by Ethnicity: Level V

	American Indian			Asian			Pacific Islander			Filipino		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**93**	0.66	0.77	**577**	0.71	0.71	**47**	0.69	–	**246**	0.74	0.80
Mathematics	93	**93**	0.73	575	**575**	0.69	47	**47**	–	246	**246**	0.64
Science	33	33	**33**	173	173	**173**	9	9	**9**	89	89	**89**
	Hispanic			**African American**			**White**			**Unknown Ethnicity**		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**4,924**	0.71	0.69	**1,160**	0.71	0.72	**2,963**	0.70	0.73	**433**	0.73	0.78
Mathematics	4,909	**4,913**	0.68	1,157	**1,158**	0.63	2,952	**2,956**	0.66	429	**432**	0.71
Science	1,622	1,622	**1,622**	352	350	**352**	929	929	**929**	117	117	**118**

Table 8.C.11 CAPA Content Area Correlations by Ethnicity for Economically Disadvantaged: Level I

	American Indian			Asian			Pacific Islander			Filipino		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**55**	0.82	0.94	**403**	0.81	0.81	**35**	0.83	–	**156**	0.80	0.79
Mathematics	55	**55**	0.90	402	**402**	0.82	35	**36**	–	156	**156**	0.73
Science	12	12	**12**	117	117	**117**	9	9	**9**	45	45	**45**
	Hispanic			**African American**			**White**			**Unknown Ethnicity**		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**5,263**	0.81	0.81	**776**	0.83	0.82	**1,039**	0.81	0.80	**205**	0.79	0.83
Mathematics	5,258	**5,260**	0.80	774	**774**	0.81	1,034	**1,034**	0.81	203	**203**	0.77
Science	1,374	1,374	**1,374**	195	195	**195**	298	297	**299**	56	56	**56**

Table 8.C.12 CAPA Content Area Correlations by Ethnicity for Economically Disadvantaged: Level II

	American Indian			Asian			Pacific Islander			Filipino		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**45**	0.79	N/A	**196**	0.75	N/A	**26**	0.36	N/A	**60**	0.78	N/A
Mathematics	45	**45**	N/A	196	**196**	N/A	26	**26**	N/A	59	**59**	N/A
Science	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Hispanic			**African American**			**White**			**Unknown Ethnicity**		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**2,837**	0.76	N/A	**467**	0.77	N/A	**620**	0.78	N/A	**146**	0.75	N/A
Mathematics	2,833	**2,835**	N/A	467	**467**	N/A	620	**621**	N/A	146	**146**	N/A
Science	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 8.C.13 CAPA Content Area Correlations by Ethnicity for Economically Disadvantaged: Level III

	American Indian			Asian			Pacific Islander			Filipino		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**34**	0.78	0.80	**175**	0.82	0.80	**20**	0.83	–	**54**	0.79	0.85
Mathematics	34	**34**	0.77	175	**175**	0.85	20	**20**	–	54	**54**	0.70
Science	12	12	**12**	93	93	**93**	8	8	**8**	29	29	**29**
	Hispanic			**African American**			**White**			**Unknown Ethnicity**		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**2,929**	0.78	0.71	**496**	0.73	0.77	**658**	0.80	0.75	**114**	0.86	0.89
Mathematics	2,926	**2,927**	0.71	492	**492**	0.78	657	**657**	0.77	114	**114**	0.84
Science	1,367	1,365	**1,367**	255	254	**255**	335	335	**335**	56	56	**56**

Table 8.C.14 CAPA Content Area Correlations by Ethnicity for Economically Disadvantaged: Level IV

	American Indian			Asian			Pacific Islander			Filipino		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**58**	0.65	0.65	**250**	0.72	0.72	**20**	0.67	–	**95**	0.64	0.79
Mathematics	58	**58**	0.49	249	**249**	0.68	20	**20**	–	95	**95**	0.81
Science	12	12	**12**	94	94	**94**	5	5	**5**	26	26	**26**
	Hispanic			**African American**			**White**			**Unknown Ethnicity**		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**4,072**	0.74	0.69	**740**	0.68	0.70	**950**	0.73	0.65	**197**	0.68	0.78
Mathematics	4,063	**4,067**	0.69	736	**737**	0.61	945	**945**	0.71	195	**195**	0.79
Science	1,316	1,317	**1,317**	243	243	**243**	313	313	**313**	60	59	**61**

Table 8.C.15 CAPA Content Area Correlations by Ethnicity for Economically Disadvantaged: Level V

	American Indian			Asian			Pacific Islander			Filipino		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**58**	0.52	0.69	**284**	0.70	0.64	**30**	0.64	–	**84**	0.74	0.83
Mathematics	58	**58**	0.27	283	**283**	0.75	30	**30**	–	84	**84**	0.72
Science	21	21	**21**	81	81	**81**	4	4	**4**	29	29	**29**
	Hispanic			**African American**			**White**			**Unknown Ethnicity**		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**3,901**	0.72	0.67	**782**	0.70	0.71	**1,138**	0.70	0.70	**203**	0.72	0.61
Mathematics	3,891	**3,896**	0.67	782	**782**	0.62	1,133	**1,134**	0.64	201	**202**	0.64
Science	1,285	1,285	**1,285**	239	239	**239**	358	358	**358**	59	59	**59**

Table 8.C.16 CAPA Content Area Correlations by Ethnicity for Not Economically Disadvantaged: Level I

	American Indian			Asian			Pacific Islander			Filipino		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**30**	0.88	0.53	**526**	0.79	0.81	**23**	0.55	–	**233**	0.85	0.79
Mathematics	30	**30**	0.45	523	**523**	0.84	23	**23**	–	231	**231**	0.76
Science	11	11	**11**	125	125	**125**	5	5	**5**	53	53	**53**
	Hispanic			**African American**			**White**			**Unknown Ethnicity**		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**1,524**	0.84	0.84	**382**	0.87	0.86	**1,965**	0.81	0.83	**266**	0.77	0.81
Mathematics	1,516	**1,518**	0.85	382	**382**	0.82	1,957	**1,958**	0.81	265	**266**	0.80
Science	421	422	**422**	104	104	**104**	531	531	**531**	80	80	**80**

Table 8.C.17 CAPA Content Area Correlations by Ethnicity for Not Economically Disadvantaged: Level II

	American Indian			Asian			Pacific Islander			Filipino		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**13**	0.93	N/A	**257**	0.73	N/A	**14**	0.73	N/A	**100**	0.76	N/A
Mathematics	13	**13**	N/A	255	**255**	N/A	14	**14**	N/A	100	**100**	N/A
Science	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Hispanic			**African American**			**White**			**Unknown Ethnicity**		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**560**	0.77	N/A	**161**	0.72	N/A	**826**	0.80	N/A	**150**	0.77	N/A
Mathematics	557	**557**	N/A	160	**160**	N/A	824	**826**	N/A	150	**150**	N/A
Science	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 8.C.18 CAPA Content Area Correlations by Ethnicity for Not Economically Disadvantaged: Level III

	American Indian			Asian			Pacific Islander			Filipino		
	ELA	Math	Science	ELA	Math	Science	ELA	Math	Science	ELA	Math	Science
ELA	**13**	0.74	–	**239**	0.80	0.62	**8**	0.72	–	**132**	0.83	0.90
Mathematics	13	**13**	–	238	**238**	0.68	8	**8**	–	130	**130**	0.83
Science	4	4	**4**	111	111	**111**	6	6	**6**	60	59	**60**
	Hispanic			**African American**			**White**			**Unknown Ethnicity**		
	ELA	Math	Science	ELA	Math	Science	ELA	Math	Science	ELA	Math	Science
ELA	**556**	0.83	0.80	**150**	0.75	0.77	**929**	0.81	0.75	**150**	0.85	0.81
Mathematics	555	**555**	0.76	150	**150**	0.68	927	**928**	0.75	149	**150**	0.76
Science	259	259	**259**	69	69	**69**	449	449	**449**	71	71	**71**

Table 8.C.19 CAPA Content Area Correlations by Ethnicity for Not Economically Disadvantaged: Level IV

	American Indian			Asian			Pacific Islander			Filipino		
	ELA	Math	Science	ELA	Math	Science	ELA	Math	Science	ELA	Math	Science
ELA	**20**	0.70	–	**297**	0.75	0.75	**11**	0.77	–	**148**	0.73	0.78
Mathematics	20	**20**	–	294	**294**	0.75	11	**11**	–	147	**147**	0.86
Science	8	8	**8**	91	91	**91**	4	4	**4**	54	54	**54**
	Hispanic			**African American**			**White**			**Unknown Ethnicity**		
	ELA	Math	Science	ELA	Math	Science	ELA	Math	Science	ELA	Math	Science
ELA	**749**	0.74	0.74	**260**	0.74	0.84	**1,428**	0.74	0.75	**177**	0.66	0.79
Mathematics	746	**746**	0.69	259	**259**	0.82	1,422	**1,423**	0.73	177	**177**	0.57
Science	243	242	**244**	79	79	**79**	497	498	**499**	54	54	**54**

Table 8.C.20 CAPA Content Area Correlations by Ethnicity for Not Economically Disadvantaged: Level V

	American Indian			Asian			Pacific Islander			Filipino		
	ELA	Math	Science	ELA	Math	Science	ELA	Math	Science	ELA	Math	Science
ELA	**32**	0.68	0.81	**227**	0.74	0.78	**15**	0.82	–	**154**	0.75	0.68
Mathematics	32	**32**	0.90	276	**276**	0.64	15	**15**	–	154	**154**	0.49
Science	12	12	**12**	88	88	**88**	5	5	**5**	56	56	**56**
	Hispanic			**African American**			**White**			**Unknown Ethnicity**		
	ELA	Math	Science	ELA	Math	Science	ELA	Math	Science	ELA	Math	Science
ELA	**867**	0.72	0.75	**336**	0.75	0.77	**1,750**	0.71	0.75	**188**	0.76	0.91
Mathematics	864	**864**	0.72	335	**335**	0.71	1,745	**1,748**	0.68	187	**187**	0.77
Science	292	292	**292**	103	103	**103**	546	546	**546**	50	50	**51**

Table 8.C.21 CAPA Content Area Correlations by Ethnicity for Unknown Economic Status: Level I

	American Indian			Asian			Pacific Islander			Filipino		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**1**	–	–	**24**	0.91	–	**2**	–	–	**10**	–	–
Mathematics	1	**1**	–	24	**24**	–	2	**2**	–	10	**10**	–
Science	0	0	**0**	3	3	**3**	0	0	**0**	0	0	**0**
	Hispanic			**African American**			**White**			**Unknown Ethnicity**		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**93**	0.84	0.93	**33**	0.78	0.69	**64**	0.81	–	**35**	0.77	–
Mathematics	92	**92**	0.80	32	**32**	0.48	64	**64**	–	35	**35**	–
Science	16	16	**16**	14	14	**14**	10	10	**10**	9	9	**9**

Table 8.C.22 CAPA Content Area Correlations by Ethnicity for Unknown Economic Status: Level II

	American Indian			Asian			Pacific Islander			Filipino		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**3**	–	N/A	**16**	0.86	N/A	**3**	–	N/A	**11**	0.89	N/A
Mathematics	3	**3**	N/A	16	**16**	N/A	3	**3**	N/A	11	**11**	N/A
Science	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Hispanic			**African American**			**White**			**Unknown Ethnicity**		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**71**	0.82	N/A	**20**	0.85	N/A	**53**	0.76	N/A	**27**	0.75	N/A
Mathematics	71	**71**	N/A	19	**19**	N/A	53	**53**	N/A	27	**27**	N/A
Science	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 8.C.23 CAPA Content Area Correlations by Ethnicity for Unknown Economic Status: Level III

	American Indian			Asian			Pacific Islander			Filipino		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**2**	–	–	**10**	–	–	**0**	–	–	**0**	–	–
Mathematics	2	**2**	–	10	**10**	–	0	**0**	–	0	**0**	–
Science	0	0	**0**	4	4	**4**	0	0	**0**	0	0	**0**
	Hispanic			**African American**			**White**			**Unknown Ethnicity**		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**55**	0.74	0.59	**12**	0.76	–	**27**	0.76	0.33	**19**	0.74	–
Mathematics	55	**55**	0.65	12	**12**	–	27	**27**	0.73	19	**19**	–
Science	28	28	**28**	3	3	**3**	12	12	**12**	6	6	**6**

Table 8.C.24 CAPA Content Area Correlations by Ethnicity for Unknown Economic Status: Level IV

	American Indian			Asian			Pacific Islander			Filipino		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**1**	–	–	**16**	0.58	–	**0**	–	–	**10**	–	–
Mathematics	1	**1**	–	16	**16**	–	0	**0**	–	10	**11**	–
Science	0	0	**0**	5	5	**5**	0	0	**0**	1	1	**1**
	Hispanic			**African American**			**White**			**Unknown Ethnicity**		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**96**	0.75	0.85	**25**	0.66	–	**47**	0.76	–	**39**	0.76	–
Mathematics	94	**94**	0.87	25	**25**	–	47	**47**	–	39	**39**	–
Science	22	22	**22**	4	4	**4**	10	10	**10**	8	8	**8**

Table 8.C.25 CAPA Content Area Correlations by Ethnicity for Unknown Economic Status: Level V

	American Indian			Asian			Pacific Islander			Filipino		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**3**	–	–	**16**	0.43	0.54	**2**	–	–	**8**	–	–
Mathematics	3	**3**	–	16	**16**	0.58	2	**2**	–	8	**8**	–
Science	0	0	**0**	4	4	**4**	0	0	**0**	4	4	**4**
	Hispanic			**African American**			**White**			**Unknown Ethnicity**		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**156**	0.63	0.81	**42**	0.68	–	**75**	0.58	0.81	**42**	0.53	–
Mathematics	154	**156**	0.68	40	**41**	–	74	**74**	0.50	41	**43**	–
Science	45	45	**45**	10	8	**10**	25	25	**25**	8	8	**8**

Table 8.C.26 CAPA Content Area Correlations by Economic Status: Level I

	Disadvantaged			Not Disadvantaged			Unknown Status		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**7,932**	0.81	0.81	**4,949**	0.83	0.83	**262**	0.81	0.81
Mathematics	7,917	**7,920**	0.80	4,927	**4,931**	0.82	260	**260**	0.74
Science	2,106	2,105	**2,107**	1,330	1,331	**1,331**	52	52	**52**

Table 8.C.27 CAPA Content Area Correlations by Economic Status: Level II

	Disadvantaged			Not Disadvantaged			Unknown Status		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**4,397**	0.76	N/A	**2,081**	0.77	N/A	**204**	0.80	N/A
Mathematics	4,392	**4,395**	N/A	2,073	**2,075**	N/A	203	**203**	N/A
Science	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 8.C.28 CAPA Content Area Correlations by Economic Status: Level III

	Disadvantaged			Not Disadvantaged			Unknown Status		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**4,480**	0.78	0.73	**2,177**	0.81	0.76	**125**	0.72	0.53
Mathematics	4,472	**4,473**	0.74	2,170	**2,172**	0.74	125	**125**	0.66
Science	2,155	2,152	**2,155**	1,029	1,028	**1,029**	53	53	**53**

Table 8.C.29 CAPA Content Area Correlations by Economic Status: Level IV

	Disadvantaged			Not Disadvantaged			Unknown Status		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**6,382**	0.72	0.69	**3,090**	0.73	0.75	**234**	0.74	0.81
Mathematics	6,361	**6,366**	0.68	3,076	**3,077**	0.72	232	**233**	0.87
Science	2,069	2,069	**2,071**	1,030	1,030	**1,033**	50	50	**50**

Table 8.C.30 CAPA Content Area Correlations by Economic Status: Level V

	Disadvantaged			Not Disadvantaged			Unknown Status		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**6,480**	0.71	0.68	**3,619**	0.72	0.76	**344**	0.60	0.79
Mathematics	6,462	**6,466**	0.66	3,608	**3,611**	0.69	338	**343**	0.57
Science	2,076	2,076	**2,076**	1,152	1,152	**1,153**	96	94	**96**

Table 8.C.31 CAPA Content Area Correlations by Disability: Level I

	Mental Retardation			Hard of Hearing			Deafness			Speech Impairment		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**5,069**	0.79	0.78	**97**	0.77	0.83	**50**	0.80	0.75	**106**	0.71	0.95
Mathematics	5,062	**5,064**	0.77	97	**97**	0.64	49	**49**	0.71	106	**106**	0.82
Science	1,423	1,423	**1,423**	22	22	**22**	18	18	**18**	12	12	**12**
	Visual Impairment			**Emotional Disturbance**			**Orthopedic Impairment**			**Other Health Impairment**		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**295**	0.84	0.89	**16**	0.81	–	**2,410**	0.84	0.85	**341**	0.83	0.92
Mathematics	295	**295**	0.85	16	**16**	–	2,399	**2,400**	0.84	339	**340**	0.90
Science	70	70	**70**	5	5	**5**	681	681	**681**	82	83	**83**
	Specific Learning Disability			**Deaf-Blindness**			**Multiple Disabilities**			**Autism**		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**102**	0.67	0.49	**31**	0.80	–	**1,202**	0.87	0.87	**3,197**	0.75	0.74
Mathematics	100	**100**	0.76	30	**30**	–	1,193	**1,194**	0.88	3,191	**3,193**	0.74
Science	19	19	**19**	8	8	**8**	327	326	**327**	765	765	**765**
	Traumatic Brain Injury			**Unknown Disability**								
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**						
ELA	**91**	0.89	0.91	**136**	0.85	0.80						
Mathematics	91	**91**	0.94	136	**136**	0.48						
Science	20	20	**20**	36	36	**37**						

Table 8.C.32 CAPA Content Area Correlations by Disability: Level II

	Mental Retardation			Hard of Hearing			Deafness			Speech Impairment		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**2,172**	0.75	N/A	**45**	0.77	N/A	**68**	0.80	N/A	**644**	0.61	N/A
Mathematics	2,167	**2,169**	N/A	45	**45**	N/A	68	**68**	N/A	644	**645**	N/A
Science	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Visual Impairment			**Emotional Disturbance**			**Orthopedic Impairment**			**Other Health Impairment**		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**30**	0.75	N/A	**43**	0.72	N/A	**298**	0.80	N/A	**339**	0.67	N/A
Mathematics	30	**30**	N/A	42	**42**	N/A	298	**298**	N/A	338	**338**	N/A
Science	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Specific Learning Disability			**Deaf-Blindness**			**Multiple Disabilities**			**Autism**		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**501**	0.64	N/A	**3**	–	N/A	**128**	0.71	N/A	**2,248**	0.79	N/A
Mathematics	498	**498**	N/A	3	**3**	N/A	126	**127**	N/A	2,246	**2,247**	N/A
Science	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Traumatic Brain Injury			**Unknown Disability**								
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**						
ELA	**41**	0.58	N/A	**122**	0.80	N/A						
Mathematics	41	**41**	N/A	122	**122**	N/A						
Science	N/A	N/A	N/A	N/A	N/A	N/A						

Table 8.C.33 CAPA Content Area Correlations by Disability: Level III

	Mental Retardation			Hard of Hearing			Deafness			Speech Impairment		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**2,647**	0.79	0.73	**47**	0.73	0.76	**51**	0.84	0.85	**392**	0.55	0.48
Mathematics	2,643	**2,654**	0.77	46	**46**	0.89	50	**50**	0.76	392	**392**	0.59
Science	1,344	1,344	**1,344**	21	20	**21**	27	26	**27**	170	170	**170**
	Visual Impairment			**Emotional Disturbance**			**Orthopedic Impairment**			**Other Health Impairment**		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**42**	0.68	0.82	**53**	0.72	0.67	**376**	0.80	0.73	**345**	0.73	0.72
Mathematics	42	**42**	0.62	52	**52**	0.63	373	**374**	0.82	345	**345**	0.72
Science	20	20	**20**	23	23	**23**	180	179	**180**	159	159	**159**
	Specific Learning Disability			**Deaf-Blindness**			**Multiple Disabilities**			**Autism**		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**623**	0.59	0.56	**4**	0.59	1.00	**179**	0.84	0.73	**1,919**	0.81	0.77
Mathematics	623	**623**	0.48	4	**4**	1.00	178	**178**	0.79	1,915	**1,915**	0.74
Science	272	272	**272**	2	2	**2**	80	80	**80**	898	897	**898**
	Traumatic Brain Injury			**Unknown Disability**								
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**						
ELA	**34**	0.85	0.55	**70**	0.74	0.50						
Mathematics	34	**34**	0.64	70	**70**	0.51						
Science	18	18	**18**	23	23	**23**						

Table 8.C.34 CAPA Content Area Correlations by Disability: Level IV

	Mental Retardation			Hard of Hearing			Deafness			Speech Impairment		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**4,484**	0.74	0.68	**70**	0.67	0.56	**108**	0.67	0.54	**301**	0.61	0.58
Mathematics	4,467	**4,468**	0.69	70	**70**	0.63	108	**108**	0.44	301	**301**	0.60
Science	1,535	1,533	**1,536**	23	23	**23**	36	36	**36**	89	89	**89**
	Visual Impairment			**Emotional Disturbance**			**Orthopedic Impairment**			**Other Health Impairment**		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**63**	0.74	0.73	**79**	0.64	0.62	**556**	0.75	0.74	**455**	0.67	0.71
Mathematics	62	**62**	0.69	79	**79**	0.63	552	**552**	0.71	453	**454**	0.71
Science	21	21	**21**	24	24	**25**	190	190	**190**	160	161	**161**
	Specific Learning Disability			**Deaf-Blindness**			**Multiple Disabilities**			**Autism**		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**763**	0.57	0.57	**2**	–1.00	–	**268**	0.69	0.78	**2,357**	0.76	0.76
Mathematics	762	**765**	0.54	2	**2**	–	266	**267**	0.77	2,350	**2,351**	0.73
Science	234	234	**234**	0	0	**0**	91	92	**92**	698	698	**699**
	Traumatic Brain Injury			**Unknown Disability**								
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**						
ELA	**60**	0.70	0.64	**140**	0.74	0.86						
Mathematics	60	**60**	0.71	137	**137**	0.89						
Science	21	21	**21**	27	27	**27**						

Table 8.C.35 CAPA Content Area Correlations by Disability: Level V

	Mental Retardation			Hard of Hearing			Deafness			Speech Impairment		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**5,160**	0.73	0.70	**74**	0.74	0.58	**153**	0.62	0.55	**226**	0.40	0.32
Mathematics	5,150	**5,156**	0.67	74	**74**	0.55	153	**153**	0.52	226	**226**	0.37
Science	1,671	1,671	**1,671**	17	17	**17**	48	48	**48**	77	77	**77**
	Visual Impairment			**Emotional Disturbance**			**Orthopedic Impairment**			**Other Health Impairment**		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**76**	0.54	0.63	**171**	0.57	0.77	**557**	0.76	0.73	**476**	0.68	0.51
Mathematics	75	**75**	0.78	171	**171**	0.70	552	**552**	0.74	475	**476**	0.56
Science	25	25	**25**	47	47	**47**	176	176	**176**	162	162	**162**
	Specific Learning Disability			**Deaf-Blindness**			**Multiple Disabilities**			**Autism**		
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**	**ELA**	**Math**	**Science**
ELA	**873**	0.44	0.48	0	–	–	**336**	0.76	0.78	**2,056**	0.73	0.75
Mathematics	872	**873**	0.43	0	0	–	333	**333**	0.73	2,049	**2,049**	0.70
Science	285	285	**285**	0	0	0	107	107	**107**	635	635	**636**
	Traumatic Brain Injury			**Unknown Disability**								
	ELA	**Math**	**Science**	**ELA**	**Math**	**Science**						
ELA	**87**	0.68	0.61	**197**	0.66	0.84						
Mathematics	86	**86**	0.59	191	**195**	0.78						
Science	28	28	**28**	45	43	**45**						

Table 8.C.36 Inter-Rater Agreement Analyses for Operational Tasks: Level I

Level I		First Rating			Second Rating			% Agreement			MAD *	Corr †
Content Area	Task	N	Mean	SD	N	Mean	SD	Exact	Adjacent	Neither		
English–Language Arts	1	1,774	2.74	1.94	1,774	2.72	1.94	96.22	2.99	0.79	0.05	0.99
	3	1,774	3.69	1.84	1,774	3.68	1.83	95.94	3.04	1.00	0.06	0.98
	4	1,774	3.79	1.80	1,774	3.79	1.80	95.55	3.33	1.12	0.07	0.97
	6	1,774	3.69	1.82	1,774	3.66	1.84	95.26	3.10	1.63	0.09	0.97
	7	1,774	2.82	1.92	1,774	2.80	1.92	94.14	4.40	1.46	0.10	0.97
	9	1,774	3.14	1.94	1,774	3.13	1.94	94.76	3.44	1.80	0.10	0.97
	10	1,774	3.55	1.86	1,774	3.53	1.87	96.11	2.71	1.19	0.07	0.98
	12	1,774	3.08	1.99	1,774	3.10	1.98	94.81	3.04	2.14	0.11	0.95
Mathematics	1	1,749	2.94	1.92	1,749	2.93	1.92	95.25	3.37	1.37	0.08	0.97
	3	1,749	3.14	1.93	1,749	3.13	1.93	94.97	3.60	1.44	0.08	0.97
	4	1,749	2.87	1.92	1,749	2.86	1.91	95.37	2.92	1.71	0.09	0.97
	6	1,749	2.92	1.94	1,749	2.89	1.93	94.85	3.14	2.00	0.10	0.96
	7	1,749	2.84	2.07	1,749	2.81	2.07	94.34	4.29	1.37	0.09	0.98
	9	1,749	2.99	1.97	1,749	2.98	1.98	94.51	3.77	1.72	0.09	0.97
	10	1,749	2.63	1.90	1,749	2.63	1.90	94.97	3.37	1.66	0.09	0.97
	12	1,749	3.42	1.92	1,749	3.39	1.93	94.85	3.83	1.31	0.09	0.97
Science	1	463	3.31	1.96	463	3.29	1.97	96.54	2.81	0.66	0.05	0.99
	3	463	2.95	1.94	463	2.91	1.95	96.33	2.38	1.30	0.06	0.98
	4	463	3.17	1.96	463	3.15	1.95	95.03	3.24	1.73	0.09	0.97
	6	463	3.09	1.96	463	3.08	1.96	97.62	1.08	1.30	0.06	0.97
	7	463	3.40	1.90	463	3.37	1.92	96.11	2.16	1.73	0.08	0.97
	9	463	3.01	1.95	463	2.98	1.95	96.33	2.16	1.51	0.08	0.97
	10	463	3.79	1.79	463	3.76	1.81	94.82	3.67	1.51	0.09	0.96
	12	463	2.80	1.98	463	2.79	1.97	93.74	3.24	3.03	0.15	0.93

* Mean absolute difference between first and second ratings

† Pearson correlation between first and second ratings

Table 8.C.37 Inter-Rater Agreement Analyses for Operational Tasks: Level II

Level II		First Rating			Second Rating			% Agreement			MAD *	Corr †
Content Area	Task	N	Mean	SD	N	Mean	SD	Exact	Adjacent	Neither		
English–Language Arts	1	1,307	2.51	0.91	1,307	2.51	0.92	95.56	3.75	0.69	0.05	0.96
	3	1,307	2.40	1.22	1,307	2.41	1.22	93.27	5.66	1.08	0.08	0.96
	4	1,307	2.54	1.34	1,307	2.55	1.34	94.95	3.29	1.76	0.07	0.96
	6	1,307	2.85	1.30	1,307	2.85	1.30	95.26	3.75	0.99	0.06	0.97
	7	1,307	2.25	1.19	1,307	2.25	1.20	95.18	3.98	0.85	0.06	0.97
	9	1,307	2.69	1.20	1,307	2.71	1.20	96.40	2.91	0.69	0.05	0.97
	10	1,307	2.40	1.08	1,307	2.40	1.08	93.88	4.74	1.38	0.08	0.94
	12	1,307	1.85	0.90	1,307	1.86	0.92	94.34	4.59	0.23	0.07	0.92
Mathematics	1	1,306	3.60	0.92	1,306	3.60	0.92	98.62	1.07	0.41	0.02	0.98
	3	1,306	2.88	1.36	1,306	2.87	1.37	98.01	1.45	0.54	0.03	0.99
	4	1,306	2.78	1.20	1,306	2.78	1.19	95.94	3.45	0.61	0.05	0.97
	6	1,306	2.12	1.39	1,306	2.13	1.39	95.89	3.06	1.15	0.06	0.97
	7	1,306	1.32	0.81	1,306	1.32	0.83	95.33	3.83	0.84	0.06	0.92
	9	1,306	2.41	1.35	1,306	2.41	1.35	97.47	2.22	0.31	0.03	0.99
	10	1,306	3.18	1.15	1,306	3.19	1.14	97.09	2.22	0.68	0.04	0.97
	12	1,306	2.62	1.30	1,306	2.64	1.29	95.79	2.83	1.38	0.07	0.94

* Mean absolute difference between first and second ratings

† Pearson correlation between first and second ratings

Table 8.C.38 Inter-Rater Agreement Analyses for Operational Tasks: Level III

Level III		First Rating			Second Rating			% Agreement			MAD *	Corr †
Content Area	Task	N	Mean	SD	N	Mean	SD	Exact	Adjacent	Neither		
English–Language Arts	1	1,290	2.50	1.16	1,290	2.49	1.16	95.04	4.50	0.47	0.06	0.97
	3	1,290	2.69	1.05	1,290	2.69	1.07	94.11	5.35	0.54	0.07	0.96
	4	1,290	3.00	0.98	1,290	3.01	0.99	96.59	2.95	0.47	0.04	0.97
	6	1,290	2.31	0.85	1,290	2.32	0.85	94.03	5.04	0.93	0.07	0.94
	7	1,290	2.19	0.90	1,290	2.18	0.90	96.12	3.10	0.78	0.05	0.96
	9	1,290	3.02	1.27	1,290	3.01	1.28	95.81	3.02	1.16	0.06	0.97
	10	1,290	3.19	1.07	1,290	3.19	1.08	96.43	2.64	0.93	0.05	0.96
	12	1,290	2.27	1.20	1,290	2.24	1.22	93.02	6.28	0.71	0.08	0.96
Mathematics	1	1,288	2.06	1.11	1,288	2.06	1.12	93.32	5.59	1.09	0.08	0.95
	3	1,288	3.17	1.07	1,288	3.17	1.07	96.89	2.56	0.54	0.05	0.96
	4	1,288	3.04	1.25	1,288	3.04	1.26	97.20	2.17	0.62	0.04	0.98
	6	1,288	2.20	0.88	1,288	2.20	0.89	92.62	6.44	0.93	0.09	0.93
	7	1,288	2.78	0.85	1,288	2.78	0.85	96.74	2.48	0.77	0.04	0.95
	9	1,288	2.67	1.35	1,288	2.67	1.35	97.44	2.02	0.55	0.03	0.98
	10	1,288	2.34	1.27	1,288	2.34	1.27	97.90	1.79	0.31	0.02	0.99
	12	1,288	1.59	0.98	1,288	1.60	0.99	95.89	3.57	0.54	0.05	0.96
Science	1	597	2.27	0.94	597	2.23	0.96	93.47	5.03	1.51	0.09	0.90
	3	597	2.96	0.90	597	2.95	0.92	95.48	3.85	0.67	0.06	0.92
	4	597	2.72	1.08	597	2.69	1.09	95.14	4.02	0.85	0.07	0.95
	6	597	2.48	1.34	597	2.45	1.35	96.15	3.18	0.68	0.05	0.97
	7	597	2.48	1.00	597	2.46	1.01	92.46	6.20	1.34	0.09	0.94
	9	597	2.71	1.21	597	2.71	1.21	96.65	2.68	0.67	0.04	0.98
	10	597	2.27	1.04	597	2.26	1.05	95.48	4.02	0.51	0.05	0.96
	12	597	2.26	1.22	597	2.27	1.22	95.98	3.02	1.01	0.06	0.96

* Mean absolute difference between first and second ratings

† Pearson correlation between first and second ratings

Table 8.C.39 Inter-Rater Agreement Analyses for Operational Tasks: Level IV

Level IV		First Rating			Second Rating			% Agreement			MAD *	Corr †
Content Area	Task	N	Mean	SD	N	Mean	SD	Exact	Adjacent	Neither		
English–Language Arts	1	1,371	2.46	1.14	1,371	2.46	1.15	93.87	5.47	0.65	0.07	0.97
	3	1,371	1.51	1.06	1,371	1.51	1.06	92.78	6.20	1.02	0.09	0.95
	4	1,371	2.61	1.20	1,371	2.62	1.19	92.34	7.08	0.59	0.08	0.96
	6	1,371	2.35	1.16	1,371	2.35	1.16	88.69	10.50	0.80	0.12	0.94
	7	1,371	2.64	1.15	1,371	2.63	1.16	91.61	7.95	0.43	0.09	0.96
	9	1,371	2.10	1.20	1,371	2.10	1.20	95.92	3.72	0.36	0.05	0.98
	10	1,371	2.70	1.08	1,371	2.70	1.08	95.77	3.50	0.73	0.06	0.96
	12	1,371	2.31	1.18	1,371	2.31	1.19	91.17	8.02	0.80	0.10	0.96
Mathematics	1	1,371	2.94	1.30	1,371	2.93	1.30	97.08	2.48	0.43	0.04	0.98
	3	1,371	1.77	1.27	1,371	1.77	1.28	96.43	2.84	0.72	0.05	0.97
	4	1,371	2.02	1.22	1,371	2.01	1.22	95.26	3.50	1.24	0.07	0.96
	6	1,371	3.16	1.28	1,371	3.15	1.28	96.64	2.19	1.17	0.05	0.97
	7	1,371	2.95	1.27	1,371	2.94	1.28	96.35	2.84	0.80	0.05	0.97
	9	1,371	3.30	1.04	1,371	3.31	1.04	96.79	2.48	0.73	0.05	0.96
	10	1,371	2.43	1.36	1,371	2.43	1.36	97.01	2.55	0.43	0.04	0.99
	12	1,371	1.82	1.03	1,371	1.82	1.03	94.82	4.52	0.66	0.06	0.96
Science	1	419	2.52	1.17	419	2.52	1.18	95.47	4.06	0.48	0.05	0.98
	3	419	2.55	1.06	419	2.53	1.05	93.32	5.49	1.19	0.08	0.95
	4	419	2.41	1.11	419	2.39	1.14	94.27	4.53	1.19	0.07	0.96
	6	419	3.22	1.04	419	3.24	1.01	93.79	4.77	1.44	0.09	0.93
	7	419	2.43	1.15	419	2.40	1.18	91.41	6.44	2.15	0.11	0.94
	9	419	2.72	0.96	419	2.73	0.97	94.75	5.01	0.24	0.05	0.97
	10	419	2.48	1.11	419	2.51	1.12	94.03	5.01	0.96	0.07	0.95
	12	419	2.70	1.14	419	2.70	1.14	94.51	4.53	0.96	0.07	0.96

* Mean absolute difference between first and second ratings

† Pearson correlation between first and second ratings

Table 8.C.40 Inter-Rater Agreement Analyses for Operational Tasks: Level V

Level V		First Rating			Second Rating			% Agreement			MAD *	Corr †
Content Area	Task	N	Mean	SD	N	Mean	SD	Exact	Adjacent	Neither		
English–Language Arts	1	1,050	2.61	1.14	1,050	2.61	1.14	91.62	7.90	0.48	0.09	0.96
	3	1,050	2.78	1.09	1,050	2.77	1.10	93.81	5.81	0.39	0.07	0.97
	4	1,050	2.72	1.09	1,050	2.73	1.10	93.14	6.00	0.86	0.08	0.95
	6	1,050	1.88	1.11	1,050	1.88	1.12	91.90	6.29	1.81	0.10	0.93
	7	1,050	2.39	1.18	1,050	2.38	1.19	92.67	6.57	0.77	0.08	0.96
	9	1,050	3.00	1.20	1,050	3.00	1.21	92.48	6.57	0.95	0.09	0.95
	10	1,050	2.44	1.23	1,050	2.43	1.24	96.48	2.76	0.76	0.05	0.97
	12	1,050	2.44	1.24	1,050	2.43	1.24	93.14	6.38	0.48	0.08	0.97
Mathematics	1	1,039	2.75	1.11	1,039	2.76	1.13	96.73	2.50	0.77	0.04	0.97
	3	1,039	3.23	1.13	1,039	3.22	1.15	95.57	3.56	0.86	0.06	0.95
	4	1,039	2.84	1.34	1,039	2.85	1.34	94.71	3.27	2.02	0.09	0.95
	6	1,039	2.78	1.16	1,039	2.78	1.17	96.73	2.60	0.67	0.04	0.98
	7	1,039	2.23	1.35	1,039	2.22	1.35	96.54	2.60	0.87	0.05	0.98
	9	1,039	2.84	1.39	1,039	2.85	1.38	96.25	3.27	0.48	0.04	0.98
	10	1,039	2.31	1.24	1,039	2.32	1.24	96.82	2.60	0.58	0.04	0.98
	12	1,039	1.99	1.18	1,039	2.00	1.19	93.65	5.20	1.16	0.08	0.96
Science	1	342	2.00	0.95	342	1.99	0.96	94.15	5.56	0.29	0.06	0.96
	3	342	2.46	1.09	342	2.47	1.09	92.69	5.56	1.76	0.10	0.93
	4	342	2.72	1.07	342	2.73	1.06	95.91	2.92	1.16	0.06	0.94
	6	342	2.12	1.09	342	2.13	1.10	95.03	4.97	0.00	0.05	0.98
	7	342	2.38	1.03	342	2.37	1.04	92.40	6.43	1.16	0.10	0.92
	9	342	2.71	0.87	342	2.72	0.86	94.74	4.97	0.29	0.06	0.96
	10	342	2.23	1.13	342	2.22	1.13	90.94	6.73	2.34	0.13	0.91
	12	342	2.73	1.14	342	2.74	1.11	90.06	7.31	2.63	0.16	0.86

* Mean absolute difference between first and second ratings

† Pearson correlation between first and second ratings

Appendix 8.D—IRT Analyses

Table 8.D.1 Item Classifications for Model-Data Fit Across All CAPA Levels

Fit Classification	ELA No. of Items	Mathematics No. of Items	Science No. of Items
A	14	13	12
B	68	84	42
C	29	16	9
D	8	7	1
F	1	0	0

Table 8.D.2 Fit Classifications: Level I Tasks

Fit	ELA Frequency	Mathematics Frequency	Science Frequency
A	2	2	2
B	15	21	14
C	7	1	0
D	0	0	0
F	0	0	0

Table 8.D.3 Fit Classifications: Level II Tasks

Fit	ELA Frequency	Mathematics Frequency
A	3	3
B	19	15
C	1	6
D	1	0
F	0	0

Table 8.D.4 Fit Classifications: Level III Tasks

Fit	ELA Frequency	Mathematics Frequency	Science Frequency
A	3	2	4
B	15	19	9
C	5	2	3
D	1	1	0
F	0	0	0

Table 8.D.5 Fit Classifications: Level IV Tasks

Fit	ELA Frequency	Mathematics Frequency	Science Frequency
A	3	0	4
B	12	14	9
C	7	6	3
D	2	4	0
F	0	0	0

Table 8.D.6 Fit Classifications: Level V Tasks

Fit	ELA Frequency	Mathematics Frequency	Science Frequency
A	3	6	2
B	7	15	10
C	9	1	3
D	4	2	1
F	1	0	0

Table 8.D.7 IRT *b*-values for ELA, by Level

Level		Number of Items	Mean	Standard Deviation	Min	Max
I	All Operational Items	8	–0.63	0.17	–0.82	–0.44
	Field-Test Items	16	–0.63	0.18	-1.04	–0.42
II	All Operational Items	8	–0.91	0.37	-1.31	–0.36
	Field-Test Items	16	-1.30	0.68	-2.11	–0.07
III	All Operational Items	8	–0.95	0.50	-1.62	–0.37
	Field-Test Items	16	-1.29	0.58	-2.39	–0.42
IV	All Operational Items	8	–0.79	0.44	-1.30	0.08
	Field-Test Items	16	-1.52	0.47	-2.28	–0.68
V	All Operational Items	8	–0.89	0.34	-1.33	–0.30
	Field-Test Items	16	-1.39	0.47	-2.20	–0.67

Table 8.D.8 IRT *b*-values for Mathematics, by Level

Level		Number of Items	Mean	Standard Deviation	Min	Max
I	All Operational Items	8	–0.23	0.14	–0.41	0.04
	Field-Test Items	16	–0.26	0.15	–0.48	0.00
II	All Operational Items	8	–1.04	0.67	–2.03	0.24
	Field-Test Items	16	–1.25	0.46	–2.02	–0.38
III	All Operational Items	8	–0.95	0.39	–1.49	–0.43
	Field-Test Items	16	–0.95	0.43	–1.78	–0.11
IV	All Operational Items	8	–1.02	0.64	–1.95	–0.02
	Field-Test Items	16	–0.51	0.63	–1.68	0.81
V	All Operational Items	8	–1.05	0.32	–1.40	–0.48
	Field-Test Items	16	–0.98	0.35	–1.46	–0.17

Table 8.D.9 IRT *b*-values for Science, by Level

Level		Number of Items	Mean	Standard Deviation	Min	Max
I	All Operational Items	8	–0.37	0.15	–0.61	–0.13
	Field-Test Items	8	–0.19	0.18	–0.45	0.08
III	All Operational Items	8	–1.01	0.31	–1.66	–0.62
	Field-Test Items	8	–1.33	0.21	–1.72	–1.10
IV	All Operational Items	8	–0.98	0.13	–1.22	–0.79
	Field-Test Items	8	–1.08	0.44	–1.50	–0.27
V	All Operational Items	8	–0.39	0.27	–0.75	–0.06
	Field-Test Items	8	–0.43	0.54	–1.54	0.32

Table 8.D.10 Score Conversions: Level I, ELA

Raw Score	Theta	Scale Score	CSEM	Performance Level
40	N/A	60	0	Advanced
39	1.1705	54	7	
38	0.8110	50	6	
37	0.6265	48	5	
36	0.5013	47	4	
35	0.4050	45	3	
34	0.3257	45	3	
33	0.2574	44	3	
32	0.1967	43	3	
31	0.1415	42	3	
30	0.0903	42	3	
29	0.0422	41	2	
28	–0.0036	41	2	
27	–0.0475	40	2	
26	–0.0902	40	2	
25	–0.1319	39	2	Proficient
24	–0.1730	39	2	
23	–0.2138	38	2	
22	–0.2545	38	2	
21	–0.2955	38	2	
20	–0.3370	37	2	
19	–0.3794	37	2	
18	–0.4230	36	2	
17	–0.4682	36	2	
16	–0.5157	35	3	
15	–0.5661	34	3	Basic
14	–0.6202	34	3	
13	-06794	33	3	
12	–0.7455	32	3	
11	–0.8211	32	3	
10	–0.9105	30	4	
9	–1.0211	29	4	Below Basic
8	–1.1655	28	5	
7	–1.3659	25	6	
6	–1.6496	22	6	
5	–2.0179	18	6	
4	–2.4407	15	2	Far Below Basic
3	–2.9132	15	0	
2	–3.4827	15	0	
1	–4.3207	15	0	
0	N/A	15	0	

Table 8.D.11 Score Conversions: Level II, ELA

Raw Score	Theta	Scale Score	CSEM	Performance Level
32	N/A	60	0	Advanced
31	2.9262	53	5	
30	2.1777	49	4	
29	1.7209	47	3	
28	1.3864	45	3	
27	1.1219	44	2	
26	0.9033	43	2	
25	0.7170	42	2	
24	0.5538	41	2	
23	0.4072	41	2	
22	0.2726	40	2	
21	0.1462	39	2	Proficient
20	0.0252	39	2	
19	–0.0931	38	2	
18	–0.2110	38	2	
17	–0.3309	37	2	
16	–0.4552	36	2	
15	–0.5872	36	2	
14	–0.7304	35	2	
13	–0.8901	34	2	Basic
12	–1.0728	33	2	
11	–1.2876	32	2	
10	–1.5453	31	3	
9	–1.8565	30	3	
8	–2.2238	28	3	Below Basic
7	–2.6354	26	3	
6	–3.0698	24	3	
5	–3.5136	22	3	
4	–3.9710	19	3	
3	–4.4659	17	3	Far Below Basic
2	–5.0547	15	1	
1	–5.9108	15	0	
0	N/A	15	0	

Table 8.D.12 Score Conversions: Level III, ELA

Raw Score	Theta	Scale Score	CSEM	Performance Level
32	N/A	60	0	Advanced
31	3.1444	51	6	
30	2.3754	48	3	
29	1.8878	46	3	
28	1.5154	45	2	
27	1.2077	43	2	
26	0.9434	42	2	
25	0.7109	42	2	
24	0.5029	41	2	
23	0.3141	40	2	
22	0.1402	39	2	Proficient
21	–0.0224	39	2	
20	–0.1768	38	1	
19	–0.3259	38	1	
18	–0.4721	37	1	
17	–0.6183	36	1	
16	–0.7667	36	1	
15	–0.9199	35	2	
14	–1.0806	35	2	
13	–1.2513	34	2	Basic
12	–1.4349	33	2	
11	–1.6343	33	2	
10	–1.8520	32	2	
9	–2.0903	31	2	
8	–2.3507	30	2	
7	–2.6347	29	2	Below Basic
6	–2.9446	28	2	
5	–3.2851	26	2	
4	–3.6668	25	2	
3	–4.1117	23	3	Far Below Basic
2	–4.6719	21	3	
1	–5.5161	18	3	
0	N/A	15	0	

Table 8.D.13 Score Conversions: Level IV, ELA

Raw Score	Theta	Scale Score	CSEM	Performance Level
32	N/A	60	0	Advanced
31	2.8913	56	4	
30	2.2288	52	4	
29	1.8445	50	3	
28	1.5673	48	3	
27	1.3446	47	3	
26	1.1537	46	2	
25	0.9829	45	2	
24	0.8254	44	2	
23	0.6769	43	2	
22	0.5342	42	2	
21	0.3950	42	2	
20	0.2574	41	2	Proficient
19	0.1196	40	2	
18	–0.0201	39	2	
17	–0.1635	38	2	
16	–0.3126	37	2	
15	–0.4701	37	2	
14	–0.6389	36	2	
13	–0.8232	34	3	Basic
12	–1.0285	33	3	
11	–1.2618	32	3	
10	–1.5319	30	3	
9	–1.8466	28	3	Below Basic
8	–2.2085	26	4	
7	–2.6083	24	4	
6	–3.0296	22	4	
5	–3.4631	19	4	
4	–3.9146	16	3	Far Below Basic
3	–4.4079	15	1	
2	–4.9986	15	0	
1	–5.8595	15	0	
0	N/A	15	0	

Table 8.D.14 Score Conversions: Level V, ELA

Raw Score	Theta	Scale Score	CSEM	Performance Level
32	N/A	60	0	Advanced
31	3.0161	49	6	
30	2.2690	47	3	
29	1.8192	45	2	
28	1.4928	44	2	
27	1.2329	43	2	
26	1.0135	42	2	
25	0.8207	41	2	
24	0.6462	41	1	
23	0.4845	40	1	
22	0.3318	39	1	Proficient
21	0.1853	39	1	
20	0.0427	38	1	
19	–0.0980	38	1	
18	–0.2386	37	1	
17	–0.3809	37	1	
16	–0.5267	36	1	
15	–0.6782	36	1	
14	–0.8380	35	2	
13	–1.0095	34	2	Basic
12	–1.1972	34	2	
11	–1.4074	33	2	
10	–1.6482	32	2	
9	–1.9296	31	2	
8	–2.2591	30	2	
7	–2.6340	28	2	Below Basic
6	–3.0396	27	2	
5	–3.4626	25	2	
4	–3.9049	23	3	
3	–4.3889	22	3	Far Below Basic
2	–4.9701	19	3	
1	–5.8216	16	2	
0	N/A	15	0	

Table 8.D.15 Score Conversions: Level I, Mathematics

Raw Score	Theta	Scale Score	CSEM	Performance Level
40	N/A	60	0	Advanced
39	1.5141	49	9	
38	1.1621	46	5	
37	0.9835	44	4	
36	0.8635	43	3	
35	0.7720	42	3	
34	0.6793	41	3	
33	0.6335	41	2	
32	0.5771	40	2	
31	0.5262	40	2	
30	0.4792	39	2	
29	0.4353	39	2	
28	0.3937	38	2	Proficient
27	0.3539	38	2	
26	0.3153	37	2	
25	0.2777	37	2	
24	0.2406	37	2	
23	0.2038	36	2	
22	0.1670	36	2	
21	0.1300	36	2	
20	0.0923	35	2	
19	0.0537	35	2	
18	0.0138	34	2	Basic
17	–0.0277	34	2	
16	–0.0716	34	2	
15	–0.1184	33	2	
14	–0.1690	33	2	
13	–0.2247	32	2	
12	–0.2872	31	3	
11	–0.3594	31	3	
10	–0.4455	30	3	
9	–0.5530	29	4	Below Basic
8	–0.6957	27	4	
7	–0.8997	25	5	
6	–1.2023	22	6	
5	–1.6086	18	6	
4	–2.0719	15	2	Far Below Basic
3	–2.5775	15	0	
2	–3.1730	15	0	
1	–4.0318	15	0	
0	N/A	15	0	

Table 8.D.16 Score Conversions: Level II, Mathematics

Raw Score	Theta	Scale Score	CSEM	Performance Level
32	N/A	60	0	Advanced
31	2.2537	54	6	
30	1.6852	50	5	
29	1.3260	47	4	
28	1.0554	45	4	
27	0.8397	43	3	
26	0.6606	42	3	
25	0.5049	41	3	
24	0.3652	40	3	Proficient
23	0.2359	39	3	
22	0.1134	38	3	
21	–0.0050	37	2	
20	–0.1212	36	2	
19	–0.2370	36	2	
18	–0.3538	35	3	
17	–0.4731	34	3	Basic
16	–0.5966	33	3	
15	–0.7260	32	3	
14	–0.8632	31	3	
13	–1.0108	30	3	
12	–1.1727	29	3	Below Basic
11	–1.3548	27	3	
10	–1.5673	26	4	
9	–1.8271	24	4	
8	–2.1549	22	4	
7	–2.5554	19	5	
6	–2.9960	15	3	Far Below Basic
5	–3.4432	15	0	
4	–3.8966	15	0	
3	–4.3827	15	0	
2	–4.9605	15	0	
1	–5.8055	15	0	
0	N/A	15	0	

Table 8.D.17 Score Conversions: Level III, Mathematics

Raw Score	Theta	Scale Score	CSEM	Performance Level
32	N/A	60	0	Advanced
31	2.6132	50	7	
30	1.9328	46	4	
29	1.5397	44	3	
28	1.2581	43	3	
27	1.0330	42	2	
26	0.8413	41	2	
25	0.6710	40	2	
24	0.5158	39	2	Proficient
23	0.3715	38	2	
22	0.2353	38	2	
21	0.1048	37	2	
20	–0.0220	36	2	
19	–0.1469	36	2	
18	–0.2717	35	2	
17	–0.3983	35	2	
16	–0.5288	34	2	Basic
15	–0.6656	33	2	
14	–0.8117	33	2	
13	–0.9712	32	2	
12	–1.1497	31	2	
11	–1.3546	30	2	
10	–1.5958	29	3	Below Basic
9	–1.8843	27	3	
8	–2.2261	25	3	
7	–2.6129	24	3	
6	–3.0239	22	3	
5	–3.4445	19	3	
4	–3.8790	17	3	
3	–4.3518	15	2	Far Below Basic
2	–4.9199	15	0	
1	–5.7571	15	0	
0	N/A	15	0	

Table 8.D.18 Score Conversions: Level IV, Mathematics

Raw Score	Theta	Scale Score	CSEM	Performance Level
32	N/A	60	0	Advanced
31	2.3982	53	6	
30	1.7812	48	5	
29	1.4399	46	4	
28	1.1979	44	3	
27	1.0030	43	3	
26	0.8336	42	3	
25	0.6791	41	3	
24	0.5337	40	3	Proficient
23	0.3946	39	3	
22	0.2601	38	3	
21	0.1295	37	2	
20	0.0024	36	2	
19	–0.1218	35	2	
18	–0.2437	35	2	
17	–0.3647	34	2	Basic
16	–0.4865	33	2	
15	–0.6117	32	2	
14	–0.7433	31	3	
13	–0.8860	30	3	
12	–1.0463	29	3	Below Basic
11	–1.2344	28	3	
10	–1.4668	26	4	
9	–1.7710	24	4	
8	–2.1812	21	5	
7	–2.6913	18	4	
6	–3.2210	15	2	Far Below Basic
5	–3.7220	15	0	
4	–4.2072	15	0	
3	–4.7136	15	0	
2	–5.3059	15	0	
1	–6.1618	15	0	
0	N/A	15	0	

Table 8.D.19 Score Conversions: Level V, Mathematics

Raw Score	Theta	Scale Score	CSEM	Performance Level
32	N/A	60	0	Advanced
31	1.9850	49	8	
30	1.4583	45	4	
29	1.1601	44	3	
28	0.9464	42	3	
27	0.7757	41	2	
26	0.6304	40	2	
25	0.5014	40	2	
24	0.3834	39	2	Proficient
23	0.2728	38	2	
22	0.1673	38	2	
21	0.0649	37	2	
20	–0.0358	36	2	
19	–0.1364	36	2	
18	–0.2383	35	2	
17	–0.3430	34	2	Basic
16	–0.4525	34	2	
15	–0.5689	33	2	
14	–0.6956	32	2	
13	–0.8372	31	2	
12	–1.0009	30	3	
11	–1.1983	29	3	Below Basic
10	–1.4484	28	3	
9	–1.7771	26	4	
8	–2.1953	23	4	
7	–2.6628	20	4	
6	–3.1268	18	4	
5	–3.5741	15	2	Far Below Basic
4	–4.0204	15	0	
3	–4.4977	15	0	
2	–5.0666	15	0	
1	–5.9027	15	0	
0	N/A	15	0	

Table 8.D.20 Score Conversions: Level I, Science

Raw Score	Theta	Scale Score	CSEM	Performance Level
40	N/A	60	0	**Advanced**
39	1.4750	49	10	
38	1.1190	45	6	
37	0.9367	44	4	
36	0.8133	42	3	
35	0.7188	41	3	
34	0.6411	41	3	
33	0.5745	40	3	
32	0.5153	39	2	
31	0.4617	39	2	
30	0.4121	38	2	
29	0.3655	38	2	
28	0.3213	38	2	**Proficient**
27	0.2788	37	2	
26	0.2375	37	2	
25	0.1972	36	2	
24	0.1574	36	2	
23	0.1178	35	2	
22	0.0782	35	2	
21	0.0382	35	2	
20	–0.0025	34	2	
19	–0.0443	34	2	
18	–0.0875	33	2	**Basic**
17	–0.1328	33	2	
16	–0.1805	32	2	
15	–0.2317	32	2	
14	–0.2873	31	3	
13	–0.3488	31	3	
12	–0.4186	30	3	
11	–0.5001	29	3	
10	–0.5992	28	3	**Below Basic**
9	–0.7268	27	4	
8	–0.9036	25	5	
7	–1.1667	23	6	
6	–1.5429	19	6	
5	–1.9854	15	3	
4	–2.4460	15	0	**Far Below Basic**
3	–2.9364	15	0	
2	–3.5148	15	0	
1	–4.3575	15	0	
0	N/A	15	0	

Table 8.D.21 Score Conversions: Level III, Science

Raw Score	Theta	Scale Score	CSEM	Performance Level
32	N/A	60	0	Advanced
31	2.5491	45	9	
30	1.8666	43	3	
29	1.4701	41	2	
28	1.1880	40	2	
27	0.9661	40	2	
26	0.7805	39	1	Proficient
25	0.6183	38	1	
24	0.4716	38	1	
23	0.3354	37	1	
22	0.2060	37	1	
21	0.0806	36	1	
20	–0.0432	36	1	
19	–0.1675	36	1	
18	–0.2944	35	1	
17	–0.4261	35	1	
16	–0.5650	34	1	Basic
15	–0.7140	34	1	
14	–0.8766	33	1	
13	–1.0571	32	2	
12	–1.2607	32	2	
11	–1.4928	31	2	
10	–1.7579	30	2	
9	–0.0570	29	2	Below Basic
8	–2.3854	28	2	
7	–2.7346	27	2	
6	–3.0976	25	2	
5	–3.4745	24	2	
4	–3.8751	23	2	
3	–4.3233	21	3	Far Below Basic
2	–4.8736	19	3	
1	–5.6977	16	2	
0	N/A	15	0	

Table 8.D.22 Score Conversions: Level IV, Science

Raw Score	Theta	Scale Score	CSEM	Performance Level
32	N/A	60	0	Advanced
31	2.8632	47	8	
30	2.1391	44	3	
29	1.7064	42	2	
28	1.3937	41	2	
27	1.1458	40	2	
26	0.9381	39	2	Proficient
25	0.7571	38	2	
24	0.5945	38	2	
23	0.4447	37	1	
22	0.3040	37	1	
21	0.1694	36	1	
20	0.0384	36	1	
19	–0.0910	35	1	
18	–0.2209	35	1	
17	–0.3533	34	1	Basic
16	–0.4904	34	1	
15	–0.6349	33	2	
14	–0.7902	32	2	
13	–0.9609	32	2	
12	–1.1534	31	2	
11	–1.3773	30	2	
10	–1.6457	29	2	Below Basic
9	–1.9755	28	2	
8	–2.3769	26	3	
7	–2.8323	24	3	
6	–3.3012	23	3	
5	–3.7617	21	3	
4	–4.2222	19	3	Far Below Basic
3	–4.7126	17	3	
2	–5.2932	15	1	
1	–6.1398	15	0	
0	N/A	15	0	

Table 8.D.23 Score Conversions: Level V, Science

Raw Score	Theta	Scale Score	CSEM	Performance Level
32	N/A	60	0	Advanced
31	3.6404	46	8	
30	2.8978	44	3	
29	2.4471	42	2	
28	2.1168	41	2	
27	1.8518	40	2	
26	1.6271	40	2	
25	1.4289	39	1	
24	1.2485	38	1	Proficient
23	1.0803	38	1	
22	0.9201	37	1	
21	0.7648	37	1	
20	0.6118	36	1	
19	0.4592	36	1	
18	0.3050	35	1	
17	0.1475	34	1	Basic
16	–0.0152	34	1	
15	–0.1849	33	1	
14	–0.3641	33	1	
13	–0.5559	32	2	
12	–0.7647	31	2	
11	–0.9962	31	2	
10	–1.2579	30	2	
9	–1.5581	29	2	Below Basic
8	–1.9015	28	2	
7	–2.2832	26	2	
6	–2.6885	25	2	
5	–3.1065	23	2	
4	–3.5416	22	2	
3	–4.0169	20	2	Far Below Basic
2	–4.5885	18	3	
1	–5.4297	16	2	
0	N/A	15	0	

Appendix 8.E—DIF Analyses

Table 8.E.1 Item Exhibiting Significant DIF by Ethnic Group

Content Area	Task No.	Level	Task#	Version	SMD	Comparison	In Favor Of
English–Language Arts Operational Tasks	VC208668	V	6	Operational	0.304	White/Asian	Asian
	VC208660	V	10	Operational	0.426	White/Asian	Asian
	VC208660	V	10	Operational	0.477	White/Filipino	Filipino
	VC208660	V	10	Operational	0.413	White/CoAsian	CoAsian
English–Language Arts Field-test Tasks	VE089809	I	2	3	0.553	White/Asian	Asian
	VE097368	V	5	3	0.307	White/Asian	Asian
Mathematics Operational Tasks	VC207429	III	18	Operational	-0.261	White/Filipino	White
Mathematics Field-test Tasks	VE098616	III	23	1	0.299	White/Black	Black
	VE099826	V	23	1	0.355	White/Asian	Asian
Science Operational Tasks*	–	–	–	–	–	–	–
Science Field-test Tasks*	–	–	–	–	–	–	–

* No science items exhibited significant ethnic DIF.

Table 8.E.2 Items Exhibiting Significant DIF by Disability Group

Content Area	Task No.	Level	Task#	Version	SMD	Comparison	In Favor Of
English–Language Arts Operational Tasks	VC208488	IV	9	Operational	0.457	MR/Autism	Autism
	VC208350	IV	10	Operational	0.358	MR/Autism	Autism
	VC208668	V	6	Operational	0.570	MR/Autism	Autism
	VC208675	V	9	Operational	–0.447	MR/Autism	MR
	VC208660	V	10	Operational	0.851	MR/Autism	Autism
English–Language Arts Field-test Tasks	VE089789	I	8	1	–0.512	MR/OI	MR
	VE089797	I	11	1	–0.551	MR/OI	MR
	VE089809	I	2	3	–0.725	MR/OI	MR
	VE089922	I	2	4	0.404	MR/OI	OrthoImped
	VE089809	I	2	3	–0.686	MR/MD	MR
	VE089928	I	11	4	–0.601	MR/Autism	MR
	VE091435	II	11	1	0.499	MR/Autism	Autism
	VE091457	II	8	2	–0.387	MR/Autism	MR
	VE091432	II	8	4	0.630	MR/Autism	Autism
	VE099193	III	8	2	–0.356	MR/Autism	MR
	VE099196	III	8	3	–0.430	MR/Autism	MR
	VE093618	IV	2	1	0.856	MR/Autism	Autism
	VE093557	IV	11	1	0.605	MR/Autism	Autism
	VE093495	IV	11	4	0.404	MR/Autism	Autism
	VE097689	V	11	2	–0.324	MR/Autism	MR
	VE097593	V	2	3	0.430	MR/Autism	Autism
	VE097584	V	2	4	0.930	MR/Autism	Autism
Mathematics Operational Tasks	VC207429	III	18	Operational	–2.090	MR/SI	MR
	VC468572	III	13	Operational	–0.284	MR/SL	MR
	VC207454	III	22	Operational	0.348	MR/SL	Specific Learning Disability
	VC207429	III	18	Operational	–0.279	MR/AU	MR
	VC207333	III	21	Operational	0.388	MR/AU	Autism
	VC208066	V	21	Operational	–0.336	MR/SI	MR
	VC208066	V	21	Operational	–0.371	MR/SL	MR

Content Area	Task No.	Level	Task#	Version	SMD	Comparison	In Favor Of
Mathematics Field-test Tasks	VE091514	II	14	2	–0.298	MR/AU	MR
	VE092917	II	23	2	0.380	MR/AU	Autism
	VE092920	II	23	3	0.475	MR/AU	Autism
	VE097898	II	20	4	–0.275	MR/AU	MR
	VE093041	III	17	3	0.346	MR/AU	Autism
	VE098685	III	23	4	0.429	MR/AU	Autism
	VC335975	V	17	3	0.258	MR/SL	Specific Learning Disability
	VE098858	V	17	4	0.334	MR/SL	Specific Learning Disability
	VE099826	V	23	1	0.348	MR/AU	Autism
Science Operational Tasks	VC206555	IV	31	Operational	0.344	MR/AU	Autism
Science Field-test Tasks	VE091158	I	35	1,3	0.612	MR/OI	OrthoImped
	VE091828	III	29	1,3	5.960	MR/AU	MR

Table 8.E.3 CAPA Disability Distributions: Level I

Disability	ELA		Mathematics		Science	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Mental retardation	5,069	38.6	5,064	38.6	1,423	40.9
Hard of hearing	97	0.7	97	0.7	22	0.6
Deafness	50	0.4	49	0.4	18	0.5
Speech or language impairment	106	0.8	106	0.8	12	0.3
Visual impairment	295	2.2	295	2.3	70	2.0
Emotional disturbance	16	0.1	16	0.1	0	0.0
Orthopedic impairment	2,410	18.3	2,400	18.3	681	19.6
Other health impairment	341	2.6	340	2.6	83	2.4
Specific learning disability	102	0.8	100	0.8	19	0.5
Deaf-blindness	31	0.2	30	0.2	0	0.0
Multiple disabilities	1,202	9.1	1,194	9.1	327	9.4
Autism	3,197	24.3	3,193	24.4	765	22.0
Traumatic brain injury	91	0.7	91	0.7	20	0.6
Unknown	136	1.0	136	1.0	37	1.0
TOTAL	13,143	100	13,111	100	3,477	100

Table 8.E.4 CAPA Disability Distributions: Level II

Disability	ELA		Mathematics	
	Frequency	Percent	Frequency	Percent
Mental retardation	2,127	32.1	2,169	32.5
Hard of hearing	45	0.7	45	0.7
Deafness	68	1.0	68	1.0
Speech or language impairment	644	9.7	645	9.7
Visual impairment	30	0.5	30	0.4
Emotional disturbance	43	0.6	42	0.6
Orthopedic impairment	298	4.5	298	4.5
Other health impairment	339	5.1	338	5.0
Specific learning disability	501	7.5	498	7.5
Deaf-blindness	0	0.0	0	0.0
Multiple disabilities	128	1.9	127	1.9
Autism	2,248	33.8	2,247	33.7
Traumatic brain injury	41	0.6	41	0.6
Unknown	122	1.8	122	1.8
TOTAL	6,634	100	6,670	100

Table 8.E.5 CAPA Disability Distributions: Level III

Disability	ELA		Mathematics		Science	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Mental retardation	2,647	39.1	2,645	39.1	1,344	41.5
Hard of hearing	47	0.7	46	0.7	21	0.6
Deafness	51	0.8	50	0.7	27	0.8
Speech or language impairment	392	5.8	392	5.8	170	5.3
Visual impairment	42	0.6	42	0.6	20	0.6
Emotional disturbance	53	0.8	52	0.8	23	0.7
Orthopedic impairment	376	5.5	374	5.5	180	5.6
Other health impairment	345	5.1	345	5.1	159	4.9
Specific learning disability	623	9.2	623	9.2	272	8.4
Deaf-blindness	0	0.0	0	0.0	0	0.0
Multiple disabilities	179	2.6	178	2.6	80	2.5
Autism	1,919	28.3	1915	28.3	898	27.8
Traumatic brain injury	34	0.5	34	0.5	18	0.6
Unknown	70	1.0	70	1.0	23	0.7
TOTAL	6,778	100	6,766	100	3,235	100

Table 8.E.6 CAPA Disability Distributions: Level IV

Disability	ELA		Mathematics		Science	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Mental retardation	4,484	46.2	4,468	46.2	1,536	48.7
Hard of hearing	70	0.7	70	0.7	23	0.7
Deafness	108	1.1	108	1.1	36	1.1
Speech or language impairment	301	3.1	301	3.1	89	2.8
Visual impairment	63	0.6	62	0.6	21	0.7
Emotional disturbance	79	0.8	79	0.8	25	0.8
Orthopedic impairment	556	5.7	552	5.7	190	6.0
Other health impairment	455	4.7	454	4.7	161	5.1
Specific learning disability	762	7.9	765	7.9	234	7.4
Deaf-blindness	0	0.0	0	0.0	0	0.0
Multiple disabilities	268	2.8	267	2.8	92	2.9
Autism	2,357	24.3	2,351	24.3	699	22.2
Traumatic brain injury	60	0.6	60	0.6	21	0.7
Unknown	140	1.4	137	1.4	27	0.9
TOTAL	9,703	100	9,674	100	3,154	100

Table 8.E.7 CAPA Disability Distributions: Level V

Disability	ELA		Mathematics		Science	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Mental retardation	5,160	49.4	5,156	49.5	1,671	50.3
Hard of hearing	74	0.7	74	0.7	17	0.5
Deafness	153	1.5	153	1.5	48	1.4
Speech or language impairment	226	2.2	226	2.2	77	2.3
Visual impairment	76	0.7	75	0.7	25	0.8
Emotional disturbance	171	1.6	171	1.6	47	1.4
Orthopedic impairment	557	5.3	552	5.3	176	5.3
Other health impairment	476	4.6	476	4.6	162	4.9
Specific learning disability	873	8.4	873	8.4	285	8.6
Deaf-blindness	0	0.0	0	0.0	0	0.0
Multiple disabilities	336	3.2	333	3.2	107	3.2
Autism	2,056	19.7	2,049	19.7	636	19.1
Traumatic brain injury	87	0.8	86	0.8	28	0.8
Unknown	197	1.9	195	1.9	45	1.4
TOTAL	10,442	100	10,419	100	3,324	100

Chapter 9: Quality Control Procedures

ETS implements rigorous quality control procedures throughout the test development, administration, scoring and reporting processes. As part of this effort, ETS maintains an Office of Testing Integrity (OTI) that resides in the ETS legal department. OTI provides quality assurance services for all testing programs administered by ETS. In addition, the Office of Professional Standards Compliance at ETS publishes and maintains the *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.

In addition, each department at ETS that is involved in the testing cycle designs and implements an independent set of procedures to ensure the quality of their products. In the next sections, these procedures are described.

Quality Control of Task Development

The task development process for the CAPA is described in detail in Chapter 3, starting on page 17. The next sections highlight elements of the process devoted specifically to the quality control of task development.

Task Specifications

ETS maintains task development specifications for the CAPA and has developed an item utilization plan to guide the development of the tasks for each content area. Task writing emphasis is determined in consultation with the CDE. Adherence to the specifications ensures the maintenance of quality and consistency of the task development process.

Task Writers

The tasks for the CAPA are written by task writers that have a thorough understanding of the California content standards. The task writers are carefully screened and selected by senior ETS content staff and approved by the CDE. Only those with strong content and teaching backgrounds who have experience with students who have severe cognitive disabilities are invited to participate in an extensive training program for task writers.

Internal Contractor Reviews

Once tasks have been written, ETS assessment specialists make sure that each task goes through an intensive internal review process. Every step of this process is designed to produce tasks that exceed industry standards for quality. It includes three rounds of content reviews, two rounds of editorial reviews, an internal fairness review, and a high-level review and approval by a content area director. A carefully designed and monitored workflow and detailed checklists help to ensure that all tasks meet the specifications for the process.

Content Review

ETS assessment specialists make sure that the tasks and related materials comply with ETS's written guidelines for clarity, style, accuracy, and appropriateness and with approved task specifications.

The artwork and graphics for the tasks are created during the internal content review period so assessment specialists can evaluate the correctness and appropriateness of the art early in the task development process. ETS selects visuals that are relevant to the task content

and that are easily understood so students do not struggle to determine the purpose or meaning of the questions.

Editorial Review

Another step in the ETS internal review process involves a team of specially trained editors who check questions for clarity, correctness of language, grade-level appropriateness of language, adherence to style guidelines, and conformity to acceptable task-writing practices. The editorial review also includes rounds of copyediting and proofreading. ETS takes pride in the typographical integrity of the tasks presented to our clients and strives for error-free tasks beginning with the initial rounds of review.

Fairness Review

One of the final steps in the ETS internal review process is to have all tasks and stimuli reviewed for fairness. Only ETS staff members who have participated in the ETS Fairness Training, a rigorous internal training course, conduct this bias and sensitivity review. These staff members have been trained to identify and eliminate test questions that contain content that could be construed as offensive to, or biased against, members of specific ethnic, racial, or gender groups.

Assessment Director Review

As a final quality control step, the content area's assessment director or another senior-level content reviewer will read each task before it is presented to the CDE.

Assessment Review Panel Review

The ARPs are panels that advise the CDE and ETS on areas related to task development for the CAPA. The ARPs are responsible for reviewing all newly developed tasks for alignment to the California content standards. The ARPs also review the tasks for accuracy of content, clarity of phrasing, and quality.

Statewide Pupil Assessment Review Panel Review

The SPAR panel is responsible for reviewing and approving the achievement tests that are to be used statewide for the testing of students in California public schools in grades two through eleven. The SPAR panel representatives ensure that the CAPA tasks conform to the requirements of *EC* Section 60602.

Data Review of Field-tested Tasks

ETS field tests newly developed tasks to obtain statistical information about task performance. This information is used to evaluate tasks that are candidates for use in operational test forms. The tasks and task (item) statistics are examined carefully at data review meetings, which is where content experts discuss tasks that have poor statistics and do not meet the psychometric criteria for task quality. The CDE defines the criteria for acceptable or unacceptable task statistics. These criteria ensure that the task (1) has an appropriate level of difficulty for the target population; (2) discriminates well between examinees that differ in ability; and (3) conforms well to the statistical model underlying the measurement of the intended constructs. The results of analyses for differential item functioning (DIF) are used to make judgments about the appropriateness of items for various subgroups.

The panelists respond to questions such as:

- Are there any instructional issues that have negatively affected the performance of the task?
- Is there a content problem within the task?

The panelists make recommendations about whether to accept or reject each task for inclusion in the California item bank.

Quality Control of the Item Bank

After the data review meetings, tasks are placed in the item bank along with their statistics and reviewers' evaluations of their quality. ETS then delivers the tasks to the CDE through the California electronic item bank. The item bank database is maintained by a staff of application systems programmers, led by the Item Bank Manager, at ETS. All processes are logged; all change requests—California item bank updates for task availability status—are tracked; and all output and California item bank deliveries are quality controlled for accuracy.

Quality of the item bank and secure transfer of the California item bank to the CDE is very important. The ETS internal item bank database resides on a server within the ETS firewall; access to the SQL Server database is strictly controlled by means of system administration. The 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 database are able to use the item bank. Users are authorized by a designated administrator at the CDE and at ETS.

ETS has extensive experience in accurate and secure data transfer of many types, including CDs, secure remote hosting, secure Web access, and secure file transfer protocol (SFTP), which is the current method used to deliver the California electronic item bank to the CDE.

The measures taken for ensuring the accuracy, confidentiality, and security of electronic files are as follows:

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

Quality Control of Test Form Development

The ETS Assessment Development group is committed to providing the highest quality product to the students of California and has in place a number of quality control checks to ensure that outcome. During the task development process, there are multiple senior reviews of tasks, including one by the Assessment Director. Test forms certification is a formal quality control process established as a final checkpoint prior to printing. In it, content, editorial, and senior development staff review test forms for accuracy and clueing issues.

ETS also includes quality checks throughout preparation of the form planners. A form planner specifications document is developed by the test development team lead with input from ETS's item bank and statistics groups; this form is then reviewed by all team members who build forms at a training specific to form planners. After trained content team members sign off on a form planner, a representative from the internal QC group reviews each file for

accuracy against the specifications document. Assessment Directors review and sign off on form planners prior to processing.

As processes are refined and enhanced, ETS will implement further QC checks as appropriate.

Quality Control of Test Materials

Collecting Test Materials

Once the tests are administered, school districts return scorable and nonscorable materials within five working days after the last selected testing day of each test administration period. The freight return kits provided to the districts contain color-coded labels identifying scorable and nonscorable materials and labels with bar-coded information identifying the school and district. The school districts apply the appropriate labels and number the cartons prior to returning the materials to the processing center by means of their assigned carrier. The use of the color-coded labels streamlines the return process.

All scorable materials are delivered to the Pearson scanning and scoring facilities in Iowa City, Iowa. The nonscorable materials, including *CAPA Examiner's Manuals*, are returned to the Security Processing Department in Pearson's Cedar Rapids, Iowa facility. ETS and Pearson closely monitor the return of materials. The STAR Technical Assistance Center (TAC) at ETS monitors returns and notifies school districts that do not return their materials in a timely manner. STAR TAC contacts the district STAR coordinators and works with them to facilitate the return of the test materials.

Processing Test Materials

Upon receipt of the testing materials, Pearson uses precise inventory and test processing system, in addition to quality assurance procedures, to maintain an up-to-date accounting of all the testing materials within their facilities. The materials are removed carefully from the shipping cartons and examined for a number of conditions, including physical damage, shipping errors, and omissions. A visual inspection to compare the number of students recorded on the School and Grade Identification (SGID) sheet with the number of answer documents in the stack is also conducted.

Pearson's image scanning process captures security information electronically and compares scorable material quantities reported on SGIDs to actual documents scanned. School districts are contacted by phone if there are any missing shipments or the quantity of materials returned appears to be less than expected.

Quality Control of Scanning

Before any STAR documents are scanned, Pearson conducts a complete check of the scanning system. ETS and Pearson create test decks for every test and form. Each test deck consists of approximately 25 answer documents marked to cover response ranges, demographic data, blanks, double marks, and other responses. Fictitious students are created to verify that each marking possibility is processed correctly by the scanning program. The output file generated as a result of this activity is thoroughly checked against each answer document after each stage to verify that the scanner is capturing marks correctly. When the program output is confirmed to match the expected results, a scan program release form is signed and the scan program is placed in the production environment under configuration management.

The intensity levels of each scanner are constantly monitored for quality control purposes. Intensity diagnostics sheets are run before and during each batch to verify that the scanner is working properly. In the event that a scanner fails to properly pick up tasks on the diagnostic sheets, the scanner is recalibrated to work properly before being allowed to continue processing student documents.

Documents received in poor condition (torn, folded, or water-stained) that could not be fed through the high-speed scanners are either scanned using a flat-bed scanner or keyed into the system manually.

Post-scanning Edits

After scanning, there are three opportunities for demographic data to be edited:

- After scanning, by Pearson online editors
- After Pearson's online editing, by district STAR coordinators (demographic edit)
- After paper reporting, by district STAR coordinators

Demographic edits completed by the Pearson editors and by the district STAR coordinator online are included in the data used for the paper reporting and for the technical reports.

Quality Control of Image Editing

Prior to submitting any STAR operational documents through the image editing process, Pearson creates a mock set of documents to test all of the errors listed in the edit specifications. The set of test documents is used to verify that each image of the document is saved so that an editor would be able to review the documents though an interactive interface. The edits are confirmed to show the appropriate error, the correct image to edit the task, and the appropriate problem and resolution text that instructs the editor on the actions that should be taken.

Once the set of mock test documents is created, the image edit system completes the following procedures:

1. Scan the set of test documents.
2. Verify that the images from the documents are saved correctly.
3. Verify that the appropriate problem and resolution text displays for each type of error.
4. Submit the post-edit program.
5. Make changes and resubmit the post-edit program if errors are identified that require correction.
6. Print a listing of the post-edit file, the correction card file, and the original scan file.

Pearson checks correction cards against the post file to ensure the appropriate corrections are made. The post file will have all keyed corrections and any defaults from the edit specifications.

Quality Control of Answer Document Processing and Scoring

Accountability of Answer Documents

In addition to the quality control checks carried out in scanning and image editing, the following manual quality checks are conducted to verify that the answer documents are correctly attributed to the students, schools, districts, and subgroups:

- Grade counts are compared to the District Master File Sheets.
- Document counts are compared to the School Master File Sheets.

- Document counts are compared to the SGIDs.
- All school districts and grades are compared to the CDE County-District-School (CDS) Master File.

Any discrepancies identified in the steps outlined above are followed up by Pearson staff with the school districts for resolution.

Processing of Answer Documents

Prior to processing operational answer sheets and executing subsequent data processing programs, ETS conducts an end-to-end test. As part of this test, ETS prepares approximately 700 test cases covering all tests and many scenarios designed to exercise particular business rule logic. ETS marks answer sheets for those 700 test cases. They are then scanned, scored, and aggregated. The results at various inspection points are checked by psychometricians and Data Quality Services staff. Additionally, a post-scan test file of approximately 50,000 records is scored and aggregated to test a broader range of scoring and aggregation scenarios. These procedures assure that students and school districts get the correct scores when the actual scoring process is carried out.

Scoring and Reporting Specifications

ETS develops standardized scoring procedures and specifications so that testing materials are processed and scored accurately. These documents include:

- General Reporting Specifications
- Form Planner Specifications
- Aggregation Rules
- ”What If”. . . List
- Edit Specifications
- Matching Criteria for ten percent of the CAPA tests that are scored more than once.

Each of these documents is explained in detail in Chapter 7, starting on page 46. The scoring specifications are reviewed and revised by the CDE, ETS, and Pearson each year. After a version that all parties endorse is finalized, the CDE issues a formal approval of the scoring and reporting specifications.

Matching Information on CAPA Answer Documents

Answer documents are designed to produce a single complete record for each student. This record includes demographic data and scanned responses for each student; once computed, the scored responses and the total test scores for a student are also merged into the same record. All scores must comply with the ETS scoring specifications.

All STAR answer documents contain uniquely numbered lithocodes that are both scannable and eye-readable. The lithocodes allow all pages of the document to be linked throughout processing, even after the documents have been slit into single sheets for scanning. For those students using more than one score, lithocodes link their demographics and responses within a document, while matching criteria are used to create a single record for all of the student’s documents. The documents are matched within grade using the match criteria approved by the CDE.

Storing Answer Documents

After the answer documents have been scanned, edited, scored, and cleared the clean-post process, they are palletized and placed in the secure storage facilities at Pearson. The materials are stored until October 31 of each year, after which ETS requests permission to

destroy the materials. After receiving CDE approval, the materials are destroyed in a secure manner.

Quality Control of Psychometric Processes

Quality Control of Task (Item) Analyses, DIF, and the Scoring Process

The psychometric analyses conducted at ETS undergo comprehensive quality checks by a team of psychometricians and data analysts. Detailed checklists are consulted by members of the team for each of the statistical procedures performed on each CAPA. Quality assurance checks also include a review of the current year's statistics to statistics from previous years. The results of preliminary classical task analyses that provide a check on scoring keys are also reviewed by a senior psychometrician. The tasks that are flagged for questionable statistical attributes are sent to test development staff for their review; the comments are reviewed by the psychometricians before tasks are approved to be included in the equating process.

The results of the equating process are reviewed by a psychometric manager in addition to the aforementioned team of psychometricians and data analysts. If the senior psychometrician and the manager reach a consensus that an equating result does not conform to the norm, special binders are prepared for review by senior psychometric advisors at ETS along with several pieces of informative analyses to facilitate the process.

A few additional checks are performed for each process as described below.

Calibrations

During the calibration process, which is described in detail in Chapter 2, starting on page 14, checks are made to ascertain that the correct options for the analyses are selected. Checks are also made on the number of tasks, number of examinees with valid scores, IRT Rasch task difficulty estimates, standard errors for the Rasch task difficulty estimates, and the match of selected statistics to the results on the same statistics obtained during preliminary task analyses. Psychometricians also perform detailed reviews of plots and statistics to investigate if the data fit the model.

Scaling

During the scaling process, checks are made to ensure the following:

- Correct linking tasks are used;
- Stability analysis and subsequent removal of tasks from the linking set (if any) during the scaling evaluation process are implemented according to specification (see details in the "Evaluation of Scaling" section in Chapter 8, on page 82); and
- Scaling constants are correctly applied to transform the new task difficulty estimates on to the item bank scale.

Scoring Tables

Once equating activities are complete and raw-to-scale scoring tables are generated, the psychometricians carry out quality control checks on each scoring table. Scoring tables are checked to verify the following:

- All raw scores are included in the tables;
- Scale scores increase as raw scores increase;
- The minimum reported scale score is 15 and maximum reported scale scores is 60; and
- The cut points for the performance levels are correctly identified.

As a check on the reasonableness of the performance levels, psychometricians compare results from the current year with results from the past year at the cut points and the percentage of all students in each performance level. After all quality control steps are completed and any differences are resolved, a senior psychometrician checks the scoring tables as the final step in quality control.

Score Verification Process

Pearson utilizes the raw-to-scale scoring tables to assign scale scores for each student. ETS verifies Pearson's scale scores by following procedures, such as:

- Independently generating the scale scores for students in a small number of school districts and comparing these scores with those generated by Pearson; the selection of districts is based on the availability of data for all schools included in those districts, known as "complete districts"
- Reviewing longitudinal data for reasonableness; the results of the analyses are used to look at the tends and trends for the complete districts
- Reviewing longitudinal data for reasonableness using over 90 percent of the entire testing population; the results are used to look at the trends for the state as well as few large districts

The results of the longitudinal analyses are provided to the CDE and jointly discussed. Any anomalies in the results are investigated further and jointly discussed. Scores are released after explanations that satisfy both CDE and ETS are obtained.

Offloads to Test Development

The statistics based on classical task analyses and the IRT analyses are obtained at two different times in the testing cycle. The first time, the statistics are obtained on the equating samples to ensure the quality of equating, and then on larger sample sizes to ensure the stability of the statistics that are to be used for future test assembly. Statistics used to generate DIF flags are also obtained from the larger samples and are provided to test development staff in specially designed Excel spreadsheets called "statistical offloads." The offloads are thoroughly checked by the psychometric staff before their release for test development review.

Quality Control of Reporting

For the quality control of various STAR student and summary reports, four general areas are evaluated, including the following:

1. Comparing report formats to input sources from the CDE-approved samples
2. Validating and verifying the report data by querying the appropriate student data
3. Evaluating the production print execution performance by comparing the number of report copies, sequence of report order, and offset characteristics to the CDE's requirements
4. Proofreading reports at the CDE, ETS, and Pearson prior to any school district mailings

All reports are required to include a single, accurate CDS code, a charter school number (if applicable), a school district name, and a school name. All elements conform to the CDE's official CDS code and naming records. From the start of processing through scoring and reporting, the CDS Master File is used to verify and confirm accurate codes and names. The CDE Master File is provided by the CDE to throughout the year as updates are available.

For students for whom there is more than one answer document, the matching process, as described previously, provides for the creation of individual student records from which reports were created.

After the reports are validated against the CDE's requirements, a set of reports for pilot districts are provided to the CDE and ETS for review and approval. Pearson sends paper reports on the actual report forms, folded as they are expected to look in production. The CDE and ETS review and sign off on the report package after a thorough review.

Upon the CDE's approval of the reports generated from the pilot test, Pearson proceeds with the first production batch test. The first production batch is selected to validate a subset of school districts that contain examples of key reporting characteristics representative of the state as a whole. The first production batch test incorporates client-selected school districts and provides the last check prior to generating all reports and mailing them to the districts.

Excluding Student Scores from Summary Reports

ETS provides specifications to the CDE that document when to exclude student scores from summary reports. These specifications include the logic for handling answer documents that, for example, was absent, was not tested due to parent/guardian request, or did not complete the test due to illness.

Chapter 10: Historical Comparisons

Base Year Comparisons

Historical comparisons of the CAPA results are performed to identify the trends in examinee performance and test characteristics over time. Such comparisons are performed for ELA and mathematics in Levels I through V and science in Levels I and III through V for the spring 2010 administration and the 2009 base year. The indicators of examinee performance include the mean and standard deviation of scale scores, observed score ranges, and the percentage of examinees classified into proficient and advanced performance levels. Test characteristics are compared by looking at the mean proportion correct, overall score reliability, and SEM, as well as the mean IRT *b*-value for each CAPA test.

The base year of CAPA refers to the year in which the base score scale was established. Operational forms administered in the years following the base year are linked to the base year score scale using procedures described in Chapter 2.

The CAPA was first administered in 2003. Subsequently, the CAPA has been revised to better link it to the grade-level California content standards. The revised blueprints for the CAPA were approved by the SBE in 2006 for implementation beginning in 2008; new tasks were developed to meet the revised blueprints and field tested.

A standard setting was held in the fall of 2008 to establish new cut scores for the below basic, basic, proficient, and advanced performance levels based on the revised standards for Levels I through V in ELA and mathematics and Levels I and III through V in science. Spring 2009 was the first administration in which test results were reported using the new scales and cut scores for the four performance levels; thus, 2009 became the base year.

Examinee Performance

Given in Table 10.A.1 for each CAPA are the number of examinees assessed and the means and standard deviations of examinees' scale scores in the base year (2009) and in 2010.

Students taking each CAPA are classified into one of five performance levels: far below basic, below basic, basic, proficient, and advanced. The percentages of students qualifying for the proficient and advanced levels are presented in Table 10.A.2[1] on page 170. The goal is for all students to achieve at or above the proficient level by 2014. This goal for all students is consistent with school growth targets for state accountability and the federal requirements under the Elementary and Secondary Education Act.

Table 10.A.3 through Table 10.A.5 show for each CAPA the distribution of scale scores observed in the base year and in 2010. Frequency counts are provided for each scale score interval of 3. A frequency count of "–" indicates that either there are no obtainable scale scores within that scale score range or there are no students obtaining a scale score within the scale score range. For the CAPA, a minimum score of 30 is required for a student to reach the basic level of performance and a minimum score of 35 is required for a student to reach the proficient level of performance.

[1] This information may differ slightly from information found on the CDE's STAR reporting Web page at http://star.cde.ca.gov due to differing dates on which data were accessed.

Test Characteristics

The results of CAPA item and test analysis indicate that the CAPA meet the technical criteria established in professional standards for high-stakes tests. In addition, every year, efforts are made to improve the technical quality of CAPA.

Table 10.B.1 and Table 10.B.2 present, respectively, the average item scores and the mean equated IRT *b*-values[2] for the tasks in the base year and in 2010 CAPA. The average item score is affected both by the difficulty of the items and the abilities of the students taking them. The mean equated IRT *b*-values reflect only average item difficulty.

The average polyserial correlations for the CAPA are presented in Table 10.B.3. The reliabilities and standard errors expressed in raw score units appear in Table 10.B.4. Like the average item score, polyserial correlations and reliabilities are affected by both item characteristics and student characteristics.

[2] Comparisons of mean *b*-values should only be made within a given test. These statistics are based on the equating samples.

Appendix 10.A—Historical Comparisons Tables

Table 10.A.1 Number of Examinees Tested, Scale Score Means and Standard Deviations of CAPA for Base Year (2009) and 2010

		Number of Examinees (valid scores)		Scale Score Mean and Standard Deviation			
				Base		2010	
Content Area	CAPA	Base	2010	Mean	S.D.	Mean	S.D.
English–Language Arts	I	12,531	13,143	40.84	12.02	40.68	11.33
	II	6,587	6,682	39.24	7.46	38.54	6.25
	III	6,614	6,782	39.12	5.94	39.29	5.83
	IV	9,853	9,705	39.19	7.75	39.15	8.41
	V	10,517	10,443	38.54	6.21	38.73	6.59
Mathematics	I	12,484	13,111	35.11	9.74	35.87	9.30
	II	6,569	6,673	37.60	9.56	37.34	8.37
	III	6,602	6,770	36.58	6.64	36.50	5.80
	IV	9,831	9,676	36.41	8.80	37.15	8.91
	V	10,485	10,420	37.51	8.85	37.52	8.55
Science	I	3,296	3,490	35.59	11.25	36.49	11.13
	III	3,267	3,237	36.24	5.45	36.06	5.02
	IV	3,190	3,154	35.56	5.53	36.24	5.36
	V	3,396	3,325	35.35	5.34	35.69	4.79

Table 10.A.2 Percentage of Proficient and Above and Percentage of Advanced for Base Year (2009) and 2010

		% Proficient and Above		% Advanced	
Content Area	CAPA	Base	2010	Base	2010
English–Language Arts	I	75%	78%	51%	55%
	II	78%	80%	41%	42%
	III	83%	86%	42%	46%
	IV	77%	72%	37%	43%
	V	80%	79%	42%	45%
Mathematics	I	61%	64%	29%	32%
	II	62%	66%	33%	35%
	III	65%	70%	31%	25%
	IV	60%	68%	31%	33%
	V	67%	68%	34%	37%
Science	I	59%	60%	33%	35%
	III	69%	70%	19%	16%
	IV	58%	71%	15%	18%
	V	61%	64%	17%	19%

Table 10.A.3 Observed Score Distributions of CAPA for Base Year (2009) and 2010 for ELA

Observed Score Distributions	Level I		Level II		Level III		Level IV		Level V	
	Base	2010	Base	2010	Base	2010	Base	2010	Base	2010
60	2,230	1,648	405	78	199	86	219	150	274	221
57–59	–	–	–	–	–	–	–	–	–	–
54–56	–	456	–	–	–	–	239	189	–	–
51–53	624	–	–	100	–	118	–	236	–	–
48–50	388	615	375	133	304	249	653	650	400	266
45–47	299	1,571	375	491	426	693	967	1,210	517	876
42–44	1,708	1,555	795	1,011	934	1,191	1,534	1,764	1,277	1,634
39–41	1,784	2,126	1,090	1,598	1,341	1,514	1,911	1,214	3,097	2,703
36–38	1,567	1,885	1,776	1,613	2,044	1,502	1,669	1,636	2,179	2,251
33–35	1,559	923	1,081	836	891	934	1,008	845	1,698	1,167
30–32	694	599	362	507	258	255	822	787	572	824
27–29	545	519	154	86	111	74	398	301	211	146
24–26	140	167	89	88	45	58	83	333	113	42
21–23	128	135	28	36	34	49	70	65	59	106
18–20	128	113	12	25	5	14	125	57	33	57
15–17	737	831	45	80	22	45	155	268	87	150

Table 10.A.4 Observed Score Distributions of CAPA for Base Year (2009) and 2010 for Mathematics

Observed Score Distributions	Level I		Level II		Level III		Level IV		Level V	
	Base	2010	Base	2010	Base	2010	Base	2010	Base	Base
60	603	630	417	110	134	76	269	297	767	600
57–59	–	–	–	–	–	–	–	–	–	–
54–56	–	–	–	138	–	–	–	–	–	–
51–53	–	–	386	–	–	–	391	364	–	–
48–50	237	297	–	208	230	95	295	383	–	381
45–47	382	259	338	887	–	126	687	371	499	369
42–44	934	1,111	682	659	762	625	689	1,344	1,104	997
39–41	1,465	1,963	886	958	1,274	1,164	1,436	1,519	1,804	1,938
36–38	2,775	3,252	1,049	1,172	1,579	1,979	1,687	1,611	2,475	2,356
33–35	2,628	2,568	1,053	828	1,105	1,576	1,229	1,233	1,524	1,446
30–32	1,053	946	658	729	837	645	1,319	644	918	917
27–29	407	595	547	390	320	220	888	772	473	601
24–26	492	216	137	259	200	133	286	562	278	245
21–23	174	171	209	127	39	21	257	272	321	238
18–20	177	162	34	32	33	14	75	64	61	90
15–17	1,157	941	173	176	89	96	323	240	261	242

Table 10.A.5 Observed Score Distributions of CAPA for Base Year (2009) and 2010 for Science

Observed Score Distributions	Level I		Level III		Level IV		Level V	
	Base	2010	Base	2010	Base	2010	Base	2010
60	280	346	69	48	46	41	33	27
57–59	–	–	–	–	–	–	–	–
54–56	–	–	–	–	–	–	–	–
51–53	–	–	–	–	–	–	–	–
48–50	81	113	–	–	–	–	–	–
45–47	69	85	105	59	44	68	46	33
42–44	267	264	122	91	157	203	129	102
39–41	394	427	493	482	393	398	373	475
36–38	588	668	934	1,220	1,010	1,144	1,288	1,266
33–35	611	598	1,093	804	864	791	874	922
30–32	271	330	268	352	420	310	332	306
27–29	108	130	104	107	155	77	196	105
24–26	207	144	29	23	36	60	36	23
21–23	–	40	20	23	10	19	25	15
18–20	49	43	10	6	19	8	14	11
15–17	371	302	20	22	36	35	50	40

Appendix 10.B—Historical Comparisons Tables

Table 10.B.1 Average Item Score of CAPA Operational Test Items for Base Year (2009) and 2010

Content Area	CAPA	Average Item Score	
		Base	2010
English–Language Arts	I	3.37	3.18
	II	2.91	2.43
	III	2.91	2.61
	IV	2.51	2.34
	V	2.73	2.54
Mathematics	I	2.70	2.80
	II	2.70	2.57
	III	2.70	2.48
	IV	2.37	2.57
	V	2.76	2.62
Science	I	2.75	2.98
	III	2.71	2.48
	IV	2.47	2.57
	V	2.47	2.44

Table 10.B.2 Mean IRT *b*-values for Operational Test Items for Base Year (2009) and 2010

Content Area	CAPA	Mean IRT *b*-value	
		Base	2010
English–Language Arts	I	–0.74	–0.63
	II	–1.54	–0.91
	III	–1.52	–0.95
	IV	–0.93	–0.79
	V	–1.19	–0.89
Mathematics	I	–0.29	–0.23
	II	–1.18	–1.04
	III	–1.29	–0.95
	IV	–0.85	–1.02
	V	–1.21	–1.05
Science	I	–0.23	–0.37
	III	–1.29	–1.01
	IV	–0.95	–0.98
	V	–0.54	–0.39

Table 10.B.3 Mean Polyserial Correlation of CAPA Operational Test Items for Base Year (2009) and 2010

Content Area	CAPA	Mean Polyserial Correlation	
		Base	2010
English–Language Arts	I	0.81	0.81
	II	0.75	0.75
	III	0.75	0.78
	IV	0.78	0.80
	V	0.79	0.81
Mathematics	I	0.79	0.77
	II	0.78	0.77
	III	0.76	0.73
	IV	0.79	0.79
	V	0.78	0.78
Science	I	0.82	0.81
	III	0.75	0.74
	IV	0.75	0.73
	V	0.78	0.74

Table 10.B.4 Score Reliabilities and SEM of CAPA for Base Year (2009) and 2010

Content Area	CAPA	Reliability		SEM	
		Base	2010	Base	2010
English–Language Arts	I	0.91	0.90	3.67	3.80
	II	0.84	0.86	2.49	2.51
	III	0.86	0.88	2.26	2.26
	IV	0.88	0.90	2.50	2.32
	V	0.89	0.91	2.35	2.27
Mathematics	I	0.87	0.86	4.00	4.21
	II	0.88	0.86	2.58	2.64
	III	0.87	0.83	2.54	2.59
	IV	0.88	0.88	2.62	2.57
	V	0.87	0.88	2.70	2.62
Science	I	0.91	0.89	3.76	3.85
	III	0.85	0.85	2.43	2.51
	IV	0.85	0.84	2.46	2.47
	V	0.87	0.84	2.30	2.35