



Missouri

DEPARTMENT OF ELEMENTARY & SECONDARY

EDUCATION™

End-of-Course Assessments

Technical Report

2017–2018

English II
Algebra I
Biology
English I
Algebra II
Geometry
Physical Science

Submitted to the
Missouri Department of Elementary and Secondary Education

Presented by
Questar Assessment Inc.



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List of Abbreviations

Below is a list of abbreviations that appear in this technical report.

ALD	achievement level descriptor
ARC	Assessment Resource Center
AYP	adequate yearly progress
CLE	course-level expectation
CR	constructed-response
CSEM	conditional standard error of measurement
CTT	classical test theory
DESE	Department of Elementary and Secondary Education
DIF	differential item functioning
DOK	Depth of Knowledge
EFT	embedded field test
ELL	English language learner
EOC	end-of-course
ESEA	Elementary and Secondary Education Act
FRL	free and reduced lunch
GLE	grade-level expectation
GRF	general research file
IAP	Individualized Accommodation Program
IDEA	Individuals with Disabilities Education Act
IEP	Individualized Education Program
IRT	item response theory
ISR	Individual Student Report
ITS	Internet Testing Systems
LEP	limited English proficient
LOSS	lowest obtainable scale score
MAP	Missouri Assessment Program
MCDS	Missouri Comprehensive Data System
MH	Mantel-Haenszel
MLS	Missouri Learning Standard
MOSIS	Missouri Student Information System
NCLB	No Child Left Behind Act
PE	performance event
RS	raw score
RSS	raw-to-scale score
SD	standard deviation
SE	standard error
SEM	standard error of measurement
SR	selected-response
TAC	Technical Advisory Committee
TE	technology enhanced
WP	writing prompt

Chapter 1: Introduction

1.1. Overview of Missouri End-of-Course (MO EOC) Assessments

The MO EOC assessments are criterion-referenced assessments designed to measure students' knowledge of the Missouri Learning Standards, which define the knowledge and skills students need in each grade level and course for success in college, other postsecondary training, and careers.

1.1.1. MO EOC Content Areas

The MO EOC assessments include the following content areas:

- English II
- Algebra I
- Biology
- English I
- Algebra II
- Geometry
- Government
- American History
- Physical Science

Including the MO EOC assessments, the current Missouri Assessment Program (MAP) system includes the following assessment components for elementary and middle school:

- Grades 3–8 Communication Arts
- Grades 3–8 Mathematics
- Grades 5 and 8 Science

The statewide assessment program also includes the Missouri Assessment Program–Alternate (MAP-A) for students with severe cognitive disabilities, WIDA ACCESS for English language learners (ELLs), and a Personal Finance assessment for high school students who do not enroll in a personal finance course or who are receiving personal finance credit for embedded coursework.

1.1.2. A Brief History of MO EOC Assessments

English II, Algebra I, and Biology were developed and first administered in 2008–2009. English I, Algebra II, Geometry, Government, and American History were developed and first administered in 2009–2010. Physical Science was first administered in 2014–2015.

Therefore, the 2017–2018 administration of the MO EOC assessments marked the tenth operational year for English II, Algebra I, and Biology; the ninth operational year for English I, Algebra II, Geometry, Government, and American History; and the fourth operational year for Physical Science.

Table 1.1 provides the major events that have occurred for the MO EOC assessments from 2008–2009 to 2017–2018 to assist with the understanding and interpretation of test results throughout this report.

Table 1.1. Summary of Major Events from 2008–2009 to 2017–2018

Accountability Year	Event(s)
2008–2009	<ul style="list-style-type: none"> English II, Algebra I, and Biology were administered operationally in both paper/pencil and online format (dual platform) starting in Fall 2008. These assessments consisted of both SR items and PE/WPs.
2009–2010	<ul style="list-style-type: none"> English I, Algebra II, Geometry, Government, and American History were administered operationally in both paper/pencil and online format (dual platform) starting in Fall 2009. These assessments consisted of SR items only.
2010–2011	<ul style="list-style-type: none"> PE/WPs were temporarily suspended from English II, Algebra I, and Biology starting in Summer 2010. Assessments with SR items only (which include English I, Algebra II, Geometry, American History, and Government) were available in online format only.
2011–2012	<ul style="list-style-type: none"> All assessments were administered online.
2012–2013	<ul style="list-style-type: none"> PE/WPs were added back to English II, Algebra I, and Biology starting in Fall 2012.
2013–2014	<ul style="list-style-type: none"> iPad and Chromebook administration was available for SR items in Summer 2013. iPad and Chromebook administration was available for PE/WPs starting in Fall 2013.
2014–2015	<ul style="list-style-type: none"> Physical Science was administered for the first time in Fall 2014. Changes occurred for English I, English II, Algebra I, Algebra II, and Geometry, including revised blueprints, new test forms, and alignment of existing items to the Missouri Learning Standards. Beginning in Fall 2014, English II, Algebra I, Algebra II, Biology, and Government are required and English I, Geometry, Physical Science, and American History are optional.
2015–2016	<ul style="list-style-type: none"> A new Biology RSS table was used to score students for the Spring 2016 administration following a recalibration study.
2016–2017	<ul style="list-style-type: none"> Student performance data revealed form comparability issues for the Algebra I and English II assessments. The results for these two tests were excluded from federal accountability.
2017–2018	<ul style="list-style-type: none"> A standard setting workshop was held to set new standards for English I, English II, Algebra I, Algebra II and Geometry after the first administration of new operational forms.

1.1.3. Current Administration of MO EOC Assessments

As the nine MO EOC assessments were administered in either new or old (previously administered) forms in three current administrations (Summer 2017, Fall 2017 and Spring 2018), it is helpful to clarify the coverage of this technical report. The Table 1.2 presents the type of forms of the content areas by administrations.

The test forms for English I, English II, Algebra I, Algebra II, and Geometry were newly developed for the 2017–2018 administration cycle. A standard setting workshop took place in July 2018 to set cut scores for achievement levels. The test forms for Government and American History were original intact forms previously administered in other testing administrations.

The current technical report includes those assessments listed here:

- Five operational test forms of English and mathematics content areas in both Fall 2017 and Spring 2018
- Stand-alone field test forms of Biology and Physical Science in both Fall 2017 and Spring 2018

The technical report English, Mathematics and Science data tables from the old forms administered in Summer 2017 are provided in Appendix K. The old Social Studies (Government and American History) forms from three administrations are addressed in a separate technical report.

Table 1.2. Type of Forms in Content Area by Administration

Content Area	Summer 2017	Fall 2017	Spring 2018
Algebra I	Old	New	New
Algebra II	Old	New	New
English I	Old	New	New
English II	Old	New	New
Geometry	Old	New	New
Biology	Old	SAFT	SAFT
Physical Science	--	--	SAFT
Government	Old	Old	Old
American History	Old	Old	Old

1.2. Purpose and Intended Use of MO EOC Test Scores

According to the *Standards for Educational and Psychological Testing* (AERA, APA, and NCME, 2014), Standard 1.1 states that:

The test developer should set forth clearly how test scores are intended to be interpreted and consequently used. The population(s) for which a test is intended should be delimited clearly, and the construct or constructs that the test is intended to assess should be described clearly. (p. 23)

The Missouri State Board of Education identified the following purposes for the MO EOC assessments:

- Measures and reflects students’ mastery toward postsecondary readiness
- Identifies students’ strengths and weaknesses
- Communicates expectations for all students
- Serves as the basis for state and national accountability plans
- Evaluation of programs

The MO EOC assessments assess the Missouri Learning Standards (MLS) and were created to meet the needs of Missouri districts, schools, teachers, and students while also meeting state and federal requirements. Evidence of students’ progress in meeting the Missouri Learning Standards

is obtained from the MO EOC assessments. These assessments provide the data that DESE uses to inform students, parents, the public, and the state legislature about student performance to help make informed decisions about educational issues and drive student services throughout the state.

The intended interpretation of the MO EOC assessment scores is that the scores indicate students' progress toward mastering the Missouri Learning Standards. The interpretative argument involves the analysis of student performance in terms of individual achievement on the state standards and the conversion of these scores to performance levels (Kane, 2006). Student scores should facilitate proper interpretations while minimizing misinterpretations and unwarranted inferences. The MO EOC assessments incorporate the meaning of the test scores by anchoring the achievement level cut scores to known scale score values.

1.3. Validity Evidence and Validation Processes

Validity is the most fundamental consideration in educational and psychological testing. It refers to “the degree to which evidence and theory support the interpretations of test scores for proposed uses of tests” (AERA, APA, & NCME, 2014, p. 11). According to the *Standards for Educational and Psychological Testing*,

Ultimately, the validity of an intended interpretation of test scores relies on all the available evidence relevant to the technical quality of a testing system...[this includes] evidence of careful test construction; adequate score reliability; appropriate test administration and scoring; accurate score scaling, equating, and standard setting; and careful attention to fairness for all test takers, as appropriate to the test interpretation in question. (p. 22)

The valid interpretation and appropriate use of MO EOC assessment scores are supported in a variety of ways. The validity evidence of score use and interpretation for any assessment stems from

- the statement of the test's purpose and the intended use of the scores;
- the steps taken in designing the test; and
- the processes of developing the content of the test, consulting with stakeholders, communicating about the test to users, scoring and reporting, and conducting data analysis.

The documentation of each of these steps is a necessary piece of a comprehensive, defensible validity argument for the intended uses of the assessment scores. This document provides evidence necessary to assess the validity of the MO EOC assessment scores for their intended purposes.

The MO EOC assessments are part of an integrated program of testing, accountability, and curricular and instructional support. In reading this technical report, it is critical to remember that the assessment program does not exist in a vacuum; it is not just a test. It is one part of a complex network intended to help schools to improve student learning. The MO EOC assessments are an integrated program of testing and accountability, as well as curricular and instructional support. The assessments can only be evaluated properly within their full context.

This technical report provides details about the development and implementation of the MO EOC assessments. All information contained herein ultimately contributes to the argument for the validity of the interpretation and use of scores for their intended purposes. This section describes some of the aspects of validity evidence in this report.

1.3.1. Various Item Types

For 2017–2018, the English I, English II, Algebra I, Algebra I and Geometry assessments contained selected-response (SR), technology enhanced (TE) items, and performance events/writing prompts (PE/WPs). A SR item presents students with a question followed by four response options. TE items include a variety of item types, such as drag and drop, free draw, text entry, extended text, line match, and graphing. PEs are open-ended items that require students to perform more complicated tasks. A PE measures depth of understanding and interpretative and analytical abilities in a format that allows for more than one approach to arrive at a correct response. The advantage of this item type is that it provides insight into a student’s ability to apply knowledge and understanding in real-life situations. The WP, a special type of PE that appears in the English I and II assessments, is an open-ended item that requires students to demonstrate their writing proficiency.

1.3.2. Multiple Administrations

Testing for the MO EOC assessments is conducted during three state-designated windows each year for summer, fall, and spring. These tests are designed to be administered in approximately one testing period and are not strictly timed. The 2017–2018 MO EOC assessments were offered primarily in an online administration mode with Paper/Pencil, Braille, and Large Print forms available for students requiring accommodations.

1.3.3. Reporting the Results

The MO EOC assessment reports provide useful information for determining the performance of students in a particular school and classroom. These reports help identify students who are below Proficient in a particular content area so that the school may determine a course of action that will meet the students’ specific needs. Districts may also use locally designed assessments aligned to the Missouri Learning Standards to provide more detailed information for each student in specific content areas.

Individual Student Reports (ISRs) and student raw scores are available to a district five business days after the close of their district testing window. Timely availability of score reports allows teachers the option to consider MO EOC assessment results in assigning course grades. ISRs are only available in an online format unless an order is placed by the district for paper reports. However, due to the standard setting activities for the new assessments in English I, English II, Algebra I, Algebra II, and Geometry, the ISRs were delayed pending approval of the cut scores.

1.4. Organizational Support

DESE coordinates the development and implementation of the MO EOC Assessments. In addition to planning, scheduling, and directing all EOC activities, the staff is extensively

involved in numerous test reviews, security, and quality assurance procedures. At the outset of the 2008 contract award, Riverside Publishing was the primary contractor working in partnership with Questar Assessment Inc. (Questar), the Assessment Resource Center (ARC), Internet Testing Systems (ITS), Bookette, and others. Beginning with the Summer 2011 administration, DESE contracted operational activities with Questar. Table 1.3 summarizes the main activities for each group involved with the 2017–2018 MO EOC administrations.

Table 1.2. Organizational Support

Group	Responsibilities
Questar Assessment Inc. (Questar)	<ul style="list-style-type: none"> • Provide program management, including primary contact with DESE; coordinate all meetings; handle all administrative costs/activities; generate all program management reports and status reports • Create and update the <i>Test Coordinators Manual</i>, <i>Software Installation Guides</i>, and other ancillary materials • Conduct psychometric analyses, reporting, linking/equating studies, and associated tasks • Provide all needed prepress work for program materials through camera-ready art • Produce all materials, including online, Paper/Pencil, Braille, and Large Print versions of the test, as well as online testing tools and content area-specific tutorials • Account for secure test books received after testing • Provide a direct customer service line, including technical support and general support to the program and customer interactions • Store materials after testing • Participate in and present at Technical Advisory Committee (TAC) meetings • Score all SR items and the PE/WPs • Produce and distribute all score reports and the Guide for Interpreting Results • Complete the technical report for DESE • Provide online enrollment and pre-ID system for use by Missouri districts • Provide online testing interface and online test administration site • Package and distribute materials • Barcode test books with security IDs
Educational Testing Service (ETS)	<ul style="list-style-type: none"> • Facilitated the standard setting workshop for the English I, English II, Algebra I, Algebra II and Geometry EOC assessments in July 2018.
Districts	<ul style="list-style-type: none"> • Distribute materials to school buildings, track all secure materials, and promptly return all materials, including transcribed test forms, for scoring • Assist in the timely resolution of scoring alerts • Act as a liaison between Questar and buildings

Group	Responsibilities
School Buildings	<ul style="list-style-type: none"> • Administer tests, track all secure materials, and promptly return materials to districts for scoring
SeaChange Print Innovations	<ul style="list-style-type: none"> • Print Large Print versions
American Printing House for the Blind (APH)	<ul style="list-style-type: none"> • Print Braille versions

1.5. Chapter Summaries

Below are summaries of the information contained in the following chapters of this report.

Chapter 2: Test Content and Development

Chapter 2 provides the test blueprints with target point distributions and test specifications for the Fall 2017 and Spring 2018 administrations. Appendix A provides actual point distributions. Information about item writing, content and bias reviews, test form construction, and statistical item review is also presented. The evidence is important to the content-related validity of the MO EOC assessment scores. This chapter also discusses principles of universal design and outlines the quality control processes employed throughout the test development process. Documentation of previous test designs can be found in the technical reports located on DESE's website at <http://dese.mo.gov/college-career-readiness/assessment/assessment-technical-support-materials>.

Chapter 3: Test Administration

Chapter 3 contains information about the administration of the MO EOC assessments. The chapter begins with testing windows and a description of students for whom the assessments are appropriate. Administration details are then summarized. This summary includes a description of how the materials are distributed and how Test Examiners are trained, as well as information about the organization of the assessments, preparation of students to take the assessments, and directions for administration. The chapter also includes information about the accommodations allowed on the MO EOC assessments and describes how materials are submitted for processing and scoring.

Chapter 4: Scoring

Chapter 4 covers the scoring processes for both the selected-response (SR) and performance events/writing prompts (PEs, WPs, and CRs) on the MO EOC assessments. It contains information on how Questar scored the MO EOC assessment, including the scoring training and qualification processes, scoring procedures, and monitoring for quality assurance. Finally, this chapter provides rater agreement for the Fall 2017 and Spring 2018 administrations. Information in this chapter provides evidence to support the validity and reliability of rater scores.

Chapter 5: Psychometric Analyses

Chapter 5 contains item-level analysis summary information and IRT based scaling and equating procedures. The classical item statistics include item difficulty and item discrimination indices for each content area for the Fall 2017 and Spring 2018 operational items. The results indicate that the MO EOC assessments have sound psychometric properties. The items measure achievement across a broad range of difficulty and most items are appropriately correlated with the total test score. The IRT based scaling and equating portion of this chapter begins with an introduction to the item response theory (IRT) model used for the scaling and equating of the MO EOC assessments. Next, the scaling process for the Fall 2017 and Spring 2018 English and Mathematics assessments for are provided. Finally, the raw-to-scale score (RSS) conversion tables for the Fall 2017 and Spring 2018 operational forms are presented in Appendix D.

Chapter 6: Standard Setting and Cutpoint Validation

Chapter 6 summarizes the 2018 standard setting workshop that took place in July 2018. The chapter describes various features of the workshop including the external benchmark, description of the panel members, staffing, bookmark procedure, results, and the post-standard setting activities. The *Final Technical Report on the Standard-Setting Workshop for the Missouri Assessment Program* contains additional information on the 2018 standard setting workshop.

Chapter 7: Reliability and Construct-related Validity

Chapter 7 begins by defining reliability and providing an overview of reliability estimation techniques. Raw-score internal consistency reliability coefficients are presented for all students and for each demographic group. Classification accuracy and classification consistency statistics are also presented. The results indicate acceptable reliability and measurement precision. The validity evidence for the MO EOC assessments related to the internal structure of the assessments and other types of validity evidence proposed by the *Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 2014) are followed in this chapter. It provides an argument supporting the validity of the MO EOC assessments for measuring Missouri students' mastery of the Missouri Learning Standards, for identifying students' strengths and weaknesses, for serving as a basis for evaluating accountability plans, and for program evaluation.

Chapter 8: Reporting and Results

Chapter 8 contains information about the reports Questar produced for the MO EOC assessments, including the Individual Student Report (ISR) and Student Score Label. A brief description of the state's data portal and reporting system is also included. The second part of this chapter provides descriptive statistics for raw scores and scale scores. Raw score statistics are summarized by test administration, content area, and cluster. Scale score statistics are summarized for each content area and are also broken down by gender and ethnicity as well as migrant, free and reduced lunch (FRL), limited English proficient (LEP), Title I, Individualized Education Program (IEP), and accommodation statuses.

Chapter 2: Test Content and Development

2.1. Introduction

On April 19, 2016, the Missouri State Board of Education approved new MLS for ELA, Mathematics, Science, and Social Studies. The revised standards were implemented in the 2016–2017 school year. For the English and Mathematics assessments, these standards were assessed in 2017–2018. For the Science assessments, a stand-alone field testing took place in 2017–2018 and operational testing will begin in 2018–2019. For the Social Studies assessments, a stand-alone field testing will take place in 2018–2019; operational testing with the new standards will begin in 2019–2020.

Therefore, new operational test forms were developed for English I, English II, Algebra I, Algebra II, and Geometry. Two core forms were administered for the English and Mathematics assessments. Stand-alone field test forms were developed for Biology and Physical Science for the Fall 2017 and Spring 2018 administrations.

According to the *Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 2014), “Important validity evidence can be obtained from an analysis of the relationship between the content of a test and the construct it is intended to measure” (p. 14). Accordingly, the descriptions of the test development procedures included in the MO EOC technical reports provide validity evidence of the MO EOC Assessments. Documentation of test development from previous administrations, including the test designs, can be found in previous technical reports on DESE’s website at <http://dese.mo.gov/college-career-readiness/assessment/assessment-technical-support-materials>.

2.2. MO EOC Content Standard

2.2.1. Content Validity

Baker and Linn (2002) suggests “Two questions are central in the evaluation of content aspects of validity. Is the definition of the content domain to be assessed adequate and appropriate? Does the test provide an adequate representation of the content domain the test is intended to measure?” (p. 6). The following sections help answer these two questions and address Standard 4.12¹, which specifically relates to the definition and development of test content.

2.2.2. Appropriateness of Content Definition

In 1993, the Missouri legislature passed the Outstanding Schools Act (Senate Bill 380) that required the State Board of Education to adopt challenging academic performance standards. These standards define the skills and competencies necessary for students to successfully advance through the public school system, prepare for post-secondary education and the workplace, and participate as citizens in a democratic society. The Missouri State Board of Education formally adopted the academic standards known as the Show-Me Standards in January 1996.

¹ **Standard 4.12:** Test developers should document the extent to which the content domain of a test represents the domain defined in the test specifications (AERA, APA, NCME, 2014, p. 89).

In addition to mandating the development of rigorous academic standards, the Outstanding Schools Act of 1993 required the development and implementation of a comprehensive, primarily performance-based assessment program to measure student proficiency in the knowledge, skills, and competencies identified in the Show-Me standards. Upon adoption of the standards in 1996, Missouri began developing the MAP.

In January 2007, the Missouri State Board of Education approved a plan to replace the MAP with end-of-course assessments for high school students. This transition occurred at the beginning of August 2008. The MO EOC assessments tested English II, Algebra I, and Biology. The remaining MO EOC assessments (English I, Algebra II, Geometry, Government, and American History) were added the following year. The intent was to provide MO EOC assessments that are an integral part of the statewide assessment system and, as such, are a logical extension of MAP Grade-Level Assessments.

The Missouri State Board of Education approved new Missouri Learning Standards on April 19, 2016. These standards were implemented in 2016–2017. The MAP began assessing these standards in 2017–2018 for English and Mathematics. The new Science standards will be assessed beginning in 2018–2019; the new Social Studies standards will be assessed beginning in 2019–2020.

2.2.3. Adequacy of Content Representation

The adequacy of the content representation of the MO EOC assessments is important because the tests must provide an indication of student progress toward achieving the knowledge and skills identified in the Missouri Learning Standards. The assessments must also fulfill the requirements of the Every Student Succeeds Act (ESSA).

The MO EOC assessments measure students' progress toward the Missouri Learning Standards, which are Missouri's content standards. Adequate representation of the content domains defined in the content standards is assured through the use of a test blueprint and a documented test construction process. The content standards were taken into consideration in the writing of SR items. Evidence to support the content validity of the MO EOC assessments was provided in this Chapter through the documentation of the test specifications and blueprints, item-writing processes, and item-review processes. Specific efforts to ensure content validity are summarized below.

- Items were developed to include a wide array of contexts and cultures.
- Detailed test and item/passage development specifications were established; tests included sufficient numbers of items; and items were adequately distributed across content, levels of cognitive complexity, and difficulty.
- Qualified item writers were provided training.
- Each newly developed item was first reviewed by content specialists and editors to ensure all items were aligned with the content standards. Appropriateness for the intended grade, depth of knowledge, graphics, grammar/punctuation, language demand, and distractor reasonableness were also considered.

- Missouri teachers from diverse ethnic and geographical backgrounds reviewed the items to ensure all items were accessible to as many students as possible.
- Missouri teachers were trained to create clear and simple instructions.
- Content and bias review committees reviewed the items following specific criteria.

2.2.4. Summary of Alignment Studies

Alignment studies evaluate whether the assessments represent the full range of content standards and measure student knowledge in the manner and at the level of complexity specified by the content standards. Alignment studies for the assessments built to the previous blueprints and MLS are summarized in last year’s technical report. Refer to the *2016–2017 MO EOC Technical Report* for descriptions of those studies.

2.3. Test Blueprints

Test blueprints specify the relative percentage of items in each high-level content strand. Tables 2.1–2.5 provide the Fall 2017, and Spring 2018 test construction blueprints for English I, English II, Algebra I, Algebra II, Geometry, and Biology. Beginning in Fall 2017, the test blueprints for these content areas changed to reflect the new standards. The test blueprints for the Fall and Spring administrations are presented for the operational tests only.

Table 2.1. Test Construction Blueprint—English II, Fall 2017 and Spring 2018

Content Strand	Point Range	Range of Emphasis
Reading Literary Text	15	30%
Reading Informational Texts	15	30%
Writing	20	40%
Total	50	100%

Table 2.2. Test Construction Blueprint—Algebra I, Fall 2017 and Spring 2018

Content Strand	Point Range	Range of Emphasis
Algebra	18-22	36-44%
Functions	18-22	36-44%
Number/Quantity and Statistics	8-12	16-24%
Total	50	100%

Table 2.3. Test Construction Blueprint—English I, Fall 2017 and Spring 2018

Content Strand	Point Range	Range of Emphasis
Reading Literary Text	15	30%
Reading Informational Texts	15	30%
Writing	20	40%
Total	50	100%

Table 2.4. Test Construction Blueprint—Algebra II, Fall 2017 and Spring 2018

Content Strand	Point Range	Range of Emphasis
Algebra	25-28	50-56%
Functions	11-14	22-28%
Number/Quantity and Statistics	10-12	20-24%
Total	50	100%

Table 2.5. Test Construction Blueprint—Geometry, Fall 2017 and Spring 2018

Content Strand	Point Range	Range of Emphasis
Congruence/Similarity, Coordinate Geometry & Circles	32-35	64-70%
Geometric Measurement & Modeling	6-10	12-20%
Stats and Probability	6-10	12-20%
Total	50	100%

2.4. Test Specifications

Standard 1.11² addresses the appropriateness of test content and its relationship to a solid validity argument. Additionally, Standard 4.2³ defines test specifications and provides examples of the type of information that should be included in a specifications document. The test specifications

² **Standard 1.11:** When the rationale for test score interpretation for a given use rests in part on the appropriateness of test content, the procedures followed in specifying and generating test content should be described and justified with reference to the intended population to be tested and the construct the test is intended to measure or the domain it is intended to represent. If the definition of the content sampled incorporates criteria such as importance, frequency, or criticality, these criteria should also be clearly explained and justified (AERA, APA, NCME, 2014, p. 26).

³ **Standard 4.2:** In addition to describing intended uses of the test, the test specifications should define the content of the test, the proposed test length, the item formats, the desired psychometric properties of the test items and the test, and the ordering of items and sections. Test specifications should also specify the amount of time allowed for testing; directions for the test takers; procedures to be used for test administration, including permissible variations; any materials to be used; and scoring and reporting procedures. Specifications for computer-based tests should include a description of any hardware and software requirements (AERA, APA, NCME, 2014, p. 85–86).

describe the content and format of the test and delineate the ideal number of items and points assessed for each standard.

While Tables 2.1–2.5 provide the target point distributions, Appendix A contains the actual point distributions. Details on the development and use of the test specification documents for previous MO EOC test forms can be found in previous technical reports on DESE’s website at <http://dese.mo.gov/college-career-readiness/assessment/assessment-technical-support-materials>.

The following is an overview of the 2017–2018 test specifications:

- English II
 - The English II assessment measures student achievement in the following content strands:
 - Reading Literary Texts
 - Reading Informational Texts
 - Writing
 - The English II assessment has 40 OP items (SR and TE), 12 FT items, and 1 WP with a score range of 0–2, 1–4, and 1–4 based on the three part scoring guide.

- Algebra I
 - The Algebra I assessment measures student achievement in the following content strands:
 - Algebra
 - Functions
 - Number/Quantity and Statistics
 - Session 1 consists of 40 SR and TE items and Session 2 consists of one PE worth a total of 10 points. All items are aligned to the strands listed.
 - PEs are aligned to any of the strands listed, and while no set point value for each PE task is designated, the total must add up to 10 points.

- Biology
 - The Biology assessment (stand-alone field test only) measures student achievement in the following new content and process strands:
 - From Molecules to Organisms: Structure and Process
 - Ecosystems: Interactions, Energy, and Dynamics
 - Heredity: Inheritance and Variation of Traits
 - Biological Evolution: Unity and Diversity
 - Earth and Human Activity
 - Each SAFT form is comprised of 40–50 items (SR, TE, and Scenario Sets/PE). All items are aligned to the strands listed.

- English I
 - The English I assessment measures student achievement in the following content strands:
 - Reading Literary Texts
 - Reading Informational Texts
 - Writing
 - The English I assessment has 40 OP items (SR and TE), 12 FT items, and 1 WP with a score range of 0–2, 1–4, and 1–4 based on the three part scoring guide.

- Algebra II
 - The Algebra II assessment measures student achievement in the following content strands:
 - Algebra
 - Functions
 - Number/Quantity and Statistics
 - Session 1 consists of 40 SR and TE items and Session 2 consists of one PE worth a total of 10 points. All items are aligned to the strands listed.
 - PEs are aligned to any of the strands listed, and while no set point value for each PE task is designated, the total must add up to 10 points.

- Geometry
 - The Geometry assessment measures student achievement in the following content strands:
 - Congruence/Similarity, Coordinate Geometry, & Circles
 - Geometric Measurement & Modeling
 - Statistics and Probability
 - Session 1 consists of 40 SR and TE items and Session 2 consists of one PE worth a total of 10 points. All items are aligned to the strands listed.
 - PEs are aligned to any of the strands listed, and while no set point value for each PE task is designated, the total must add up to 10 points.

2.5. Item Development

The construction process of the 2017–2018 test forms is discussed in this section. Specifically, historical information regarding both item-development procedures and content coverage from Questar is presented. Content-related validity evidence that supports test interpretation is presented in terms of how the MO EOC assessments were assembled.

Questar test development specialists created a detailed item and passage development plan based on the blueprints for each content area. The plans included the number of items necessary for each assessed CLE and an outline of the review process for developed items and passages. This process included internal Questar reviews, DESE item review, and a content and bias review by Missouri educators.

The forms for the Fall 2017 and Spring 2018 English and Mathematics assessments were constructed using items that were field tested during Fall 2016 and Spring 2017 administrations. During the process of building the forms for the operational test administrations, statistical characteristics (i.e., p -values and point-biserial correlations) were used to evaluate the items and test forms. The Biology and Physical Science forms, constructed using items from an earlier Questar-run item writer workshop, were delivered in stand-alone field test forms.

2.5.1. Item Writing

Missouri educators, DESE staff members, Regional Instructional Facilitators (curriculum and assessment specialists housed in each of Missouri's nine Regional Professional Development Centers), and Questar test development specialists created all the test items, including the PEs. English II and English I permissioned passages were found by Questar passage searchers and approved by DESE staff and Missouri educators, and the corresponding writing prompts were written by item writers trained by Questar test development specialists and DESE staff. Requirements to be an item writer included experience in classroom teaching and expert content knowledge.

The Item Writer Workshop for the Missouri EOC Assessments in English, Math, Science, and Social Studies took place May 30 through June 2, 2017 in Lake Ozark, Missouri. DESE invited participants from educational sites throughout Missouri for the purpose of authoring items aligned to the new Missouri Learning Standards (MLS) for use as future field test items. The target number of items to be authored varied from course to course in keeping with the item development plans (IDP) and item writing (IW) assignments prepared by Questar. Program management, technical support, meeting logistics, oversight, as well as training and facilitation were led by Questar with facilitator support for the Math courses provided by the Council for Aid to Education (CAE).

The workshop was held over a five-day period and was conducted with 12 teacher participants per content area. Teacher participants were selected by DESE to represent school districts throughout Missouri. The content developed at the workshops was based on the updated Missouri Learning Standards and CLEs.

The English I and English II participants wrote SR, TE, and Writing (both stand-alone and writing prompt) items associated with the passages that had been approved prior to the item-writing workshops. The Algebra I, Algebra II, and Geometry participants wrote SR, TE, and PE items along with rubrics. Physical Science and Biology participants wrote SR and TE items along with scenario sets with rubrics. The Government and American History participants wrote SR and TE items along with scenario sets to the new standards; these items will be stand-alone field tested in 2018–2019.

During the item-writing workshops, Questar test development specialists conducted training sessions with the item writers and provided instructions on avoiding bias and stereotyping of groups and individuals based on gender, race, ethnicity, religion, age, language, socioeconomic group, and disability. Questar test development specialists also trained item writers to write items that adhere to the principles of universal design, making the items accessible to the widest range

of students. For example, items and passages were written using clear and concise language, and all art, graphs, and tables were labeled and were not overly crowded with extraneous information. Instruction was also provided on developing items at particular cognitive levels based on Norman Webb's DOK levels.

Questar test development specialists trained item writers to enter content into Questar's paper templates as well as the electronic content management system. During training, each item writer wrote several items and received feedback on them. Participants also received feedback through the content management system where Questar test development specialists responded to teachers' items as they were submitted. As items were produced, they were continuously reviewed, revised, edited, and evaluated by Questar test development specialists and DESE staff. Item writers who generated high-quality work on or ahead of schedule were given additional assignments.

After a general session presentation and training, participants went into their content specific breakout groups. For most rooms, educators were grouped in pairs and IW assignments given to each pair of participants for completion. Rooms with odd numbers of participants were grouped in teams of two to three as needed. There were copies of the following materials in each room, in addition to any appropriate content specific materials (e.g., passages for authoring passage item sets or source materials):

- Item Writing Guide
- Templates for each item type
- Missouri Learning Standards
- Content area item specifications
- Quick Notes for authoring items in the online authoring system
- Metadata notes for authoring item metadata in the online authoring system
- Guides for authoring each item type in the online authoring system
- IW Assignments

As items were written, they were tracked according to the item development plan. Questar kept records to maintain a workflow that generated items in assessment strands and CLEs as required by the test blueprint. All items and passages went through several rounds of internal reviews, including content and editorial reviews. Questar test development specialists reviewed each item with respect to alignment, clarity, and correspondence with item specifications.

2.5.2. Universal Design

Questar test development specialists were experienced in employing the principles of universal design in item development so that all students have equal access to the assessments. Questar included these principles when training Missouri teachers to write the items.

According to the National Center on Educational Outcomes (NCEO) Synthesis Report 44 (Thompson, Johnstone, & Thurlow, 2002), universally designed assessments have seven elements:

- Inclusive assessment population
- Precisely defined constructs
- Accessible, nonbiased items
- Amenable to accommodations
- Simple, clear, and intuitive instructions and procedures
- Maximum readability and comprehensibility
- Maximum legibility

All items for the MO EOC Assessments were developed with these elements in mind. Questar ensured the development of MO EOC items in accordance with these principles in the following manner:

- Items were developed to include a wide array of contexts and cultures. These item types may make students feel more included, increase motivation, and avoid bias.
- The test and item specifications served as a model for precisely defining the constructs that the tests would measure. These specifications indicated to the item writer, content reviewer, and test development specialists exactly what was to be measured. The item could assess a particular part of a standard or a combination of elements within a standard. The reviews served as a method for eliminating items that included assessment of knowledge outside the standard. For example, a Mathematics item should have nonmathematical vocabulary below grade level, otherwise the item might also be assessing reading ability, introducing construct-irrelevant variance.
- The review of items, which included Missouri teachers from diverse ethnic and geographic backgrounds, served to ensure that all items were accessible to as many students as possible.
- Questar staff members trained Missouri teachers to create clear and simple instructions so that students would have a clear understanding of the task needed to answer an item. Teacher review committees had an opportunity to review the instructions to ensure that they were appropriate for the grade levels and content areas. To ensure the appropriateness of the level of the vocabulary, Children’s Writer’s Word Book and EDL Core Vocabulary were employed by test developers and item review committees.
- Finally, items with text, art, tables, maps, and diagrams were constructed with maximum legibility.

Table 2.6 presents the number of item writers by content area. Table 2.7 presents the total number of items by item type that were generated during the IWW.

Table 2.6. Number of Participants in IWW

Group	# Participants
English I	12
English II	12
Algebra I	12

Group	# Participants
Algebra II	12
Geometry	11
Biology; Physical Science	27
American History; Government	12
Total	98

Table 2.7. Number of Items by Type at the End of the IWW

Content Area	Associate	Choice	Composite	Drag and Drop	Extended Text	Gap Match	Graphic Gap Match	Hot Text	Inline Choice	Line Graphing	Line Match	Match	Order	Text Entry	Total
Algebra I		79	31	6	9		3		2	2	8	4		14	158
Algebra II		79	24	6	7		2				8	12		18	156
American History		34					1	1			2	4	1		43
Biology		101	27	4	16		6	10	5		3	14			186
English I		124	17	8		3		18	8		2	10			190
English II		143	9	6		5		11	1			12		3	190
Geometry		79	31	6	5		8		8	2	5	3	1	12	160
Government		125	8	7	3	2	3	11	3		6	25	1		194
Physical Science	1	77	36	2	11	1	1	7	6		3	8	1	7	161
Science		1		1											2
Total	1	842	183	46	51	11	24	58	33	4	37	92	4	54	1,440

2.5.3. Content and Bias Review Process

Standard 4.8⁴ addresses the importance of item review by an examination of the item statistics and the use of expert panels of judges. This section details the steps taken to ensure that the items chosen for the operational forms of the MO EOC Assessments were of high technical quality and were free from bias. Content and bias reviews were conducted in July 2017 and October 2017. The content review committees included DESE staff, Missouri educators from around the state, Regional Instructional Facilitators, and Questar staff.

The content and bias review committees reviewed SR items and PE/WPs using the following criteria:

- Overall quality and syntactical clarity
- Content coverage and content appropriateness
- Alignment to the specified CLE
- Appropriate contexts
- One clearly correct answer and plausible distractors for SR items
- Free from bias or any racial, socioeconomic, gender, or other sensitivity issues

The bias review committee was held separately from the content review committee and focused on reviewing items on the last criterion above. Suggestions from the bias review committee were then shared with the content review committee for their review and a determination on how to incorporate the edits.

Bias reviewers assessed each item for sensitivity of item context, familiarity of language, possible stereotypes in context, and any potential advantages or disadvantages the context or content of an item might provide to a student or group of students. Guidelines for sensitivity reviews were as follows:

Ensure that language has the same basic semantic content for all students regardless of race, gender, ethnicity, age, sexual orientation, or physical or mental condition.

Consider the denotative and connotative meaning of words, expressions, images, and symbols.

Avoid items or materials that might evoke negative or potentially inflammatory associations on the part of students.

Consider the fairness of items and supporting materials:

- Include females and males, and reflect nontraditional and traditional roles, relationships, and traits and occupations.
- Present women, very young and elderly individuals, individuals with disabilities, a range of religious, ethnic, and racial minorities in roles of diverse status and power, conventional and unconventional.

⁴ **Standard 4.8:** The test review process should include empirical analyses and/or the use of expert judges to review items and scoring criteria. When expert judges are used, their qualifications, relevant experiences, and demographic characteristics should be documented, along with instructions and training in the item review process that the judges receive (AERA, APA, NCME, 2014, p. 88).

- Ensure that there is no stereotyping.
- Represent the multiculturalism and diversity of our schools, nation, and world.
- Consider the possibility of sensitivity toward particular topics, which may interfere with students' ability to address item directives. Topics often regarded as sensitive include the following:
 - Death/suicide
 - Extreme illness
 - Violence/terrorism
 - Religion
 - Sex/birth control/pregnancy
 - Drugs/alcohol
 - Bigotry/bias
 - Homelessness
 - Family dysfunction
- Avoid creating situations in which students are asked to, or feel compelled to, divulge personal information (e.g., religious, social, and economic disclosures).

Before reviewing the items, a group training session was held with all committee members. Questar presented a PowerPoint that described the MO EOC program, the test development process, and the content and bias review procedures. After the large-group session, the committee members went to their respective break-out rooms to discuss the week's activities in more detail. The committee members were provided with copies of the MLS and item specifications for the content area they were to review. Each Questar content facilitator reviewed these documents with the committee and answered any questions. The committee members were given the following checklists that could be referenced throughout the review process:

For all items:

- Does the item assess the assigned MLS?
- Is the item clear, concise, and complete?
- Does the item contain accurate and sufficient content information?
- Is the item grade-level appropriate, and are the vocabulary and syntax appropriate for the students at the intended grade? (Reference the EDL Core Vocabularies.)
- Is the item fair to all students and free of bias and sensitivity issues?
- Does the item have correct punctuation, and is it grammatically correct?
- Is the item free from spelling and typographical errors?
- Is clueing avoided within an item stem and options, as well as among items?
- Does the item stand alone? (The answer to one item should not be dependent on the content of another item.)
- Are the equations, tables, charts, graphs, and other art clear, accurate, and necessary?
- Does the item have only one correct answer? (This is an exception for multi-select items.)
- Does the item have unique, plausible distractors containing common errors students would make?

- Options are parallel and balanced, and outliers (e.g., use of key words from the stem, negatives, proper nouns, numerals) are avoided.
- Do all distractors contain clear rationale statements?
- Is the item free from absolutes (“none of the above,” “all of the above”) as options and free from the use of negatives (“not,” “none,” “except”) in the stem?
- Does the item avoid repeating words from the stem in the options?
- Does the item pose a single problem (although the solution may require more than one step)?
- Options are plausible and passage-based (for ELA).
- Options are grammatically and syntactically compatible with the stem.
- Options are stacked short-to-long or long-to-short.
- Direct quote options from the passage are ordered as they appear in the passage.

Technology checklist:

- The use of technology is justified (i.e., the item allows the student to respond in a way that is not possible or is not efficient via a traditional multiple-choice item).
- The technological aspects of the item do not introduce unnecessary demands on students.
- The standard that the item assesses lends itself well to the use of the format.

For PE/WPs:

- Does the item assess the assigned MLS?
- Does the item clearly specify how the student should respond?
- Does the item allow for a variety of acceptable responses for the student to get full credit?
- Is the item grade-level appropriate, and are the vocabulary and syntax appropriate for the students at the intended grade? (Reference the EDL Core Vocabularies.)
- Is the item rich enough to elicit an appropriate range of responses covering all possible score points?
- Is the item fair to all students and free of bias and sensitivity issues?
- Does the rubric clearly define an acceptable answer or answers at each score point level?

Missouri educators participated in the review process for each content area. The number of participants by content area is presented in Table 2.8. The committee members read and reviewed each item. Discussions were held about whether the items met the criteria listed above. The committees then rejected or revised any items they deemed unsatisfactory. If there was disagreement about how to proceed with an item, the Questar facilitator polled the group and followed the direction of the majority.

Table 2.9 shows the number of items reviewed and accepted in 2017. The accepted items were placed in a pool of items from which the 2017–2018 Biology and Physical Science standalone field test forms were built. The accepted items for the English and Mathematics EOC content

areas were placed on operational forms in the 2017–2018 administrations. The accepted items for Government and American History were banked for the 2018–2019 stand-alone field test forms.

All item review sessions were held in secure meeting rooms, and all materials were confidential. Committee members were required to sign confidentiality agreements so that the integrity of the test content was not compromised. Although educators were encouraged to share information with their colleagues about the process of the item review, they were made fully aware of the expectation that any information about specific items and passages was to remain secure and confidential.

Table 2.8. Number of Participants by Content Area

Group	# Participants
English I	8
English II	8
Algebra I	9
Algebra II	8
Geometry	8
Biology; Physical Science	7
Physical Science	6
American History; Government	10
Total	64

Table 2.9. Content/Bias Item Review Acceptance Rates

Content Area	Total #Items Presented for Review	#Items Accepted (as-is or with edits)	Acceptance Rate (items accepted as-is or with edits)
English I	275	262	95%
English II	283	238	84%
Algebra I	251	235	94%
Algebra II	271	256	94%
Geometry	281	258	92%
Government	202	186	92%
Am. History	44	41	93%
Biology	154	141	92%
Physical Science	169	129	76%

2.6. Pilot and Field Testing

2.6.1. Field-test Selection and Administration

The items accepted at the content/bias review were used to build the embedded and stand-alone field-test forms administered in Fall 2017 and Spring 2018. Field-test items were selected so that each form met the established operational blueprint requirements for content coverage as closely as possible as shown in Table 2.10.

Table 2.10. Field Test Form Design

Form	English I	English II	Algebra I	Algebra II	Geometry	American History	Government	Biology	Physical Science
Form 1 (Core 1/FT) TTS	40 OP + 1 WP 12 FT Slots	40 OP + 1 WP 12 FT Slots	40 OP + 1 PE 10 FT Slots	40 OP + 1 PE 10 FT Slots	40 OP + 1 PE 10 FT Slots*	40 OP 10 FT Slots*	40 OP 10 FT Slots	FT 1 40–50 items	FT 1 40–50 items
Form 2 (Core 2/FT)	40 OP + 1 WP 12 FT Slots	40 OP + 1 PWP 12 FT Slots	40 OP + 1 PE 10 FT Slots	40 OP + 1 PE 10 FT Slots	40 OP + 1 PE 10 FT Slots*	N/A	N/A	FT 2 40–60 items	FT 2 40–60 items

Note. * indicates placeholder items; American History/Government were reuse forms. Biology and Physical Science were stand-alone field test forms.

2.6.2. Classical Item Analyses

The statistics computed for the field test items are described below. The p -value and the item-test correlation indicate the item difficulty and discrimination, and differential item functioning (DIF) was used to identify items that are potentially unfair.

- Item difficulty (p -value)
 - The p -value indicates how easy or hard an item is, and is bound by 0 and 1. For items worth one point, the p -value is the proportion of students who answered an item correctly. For items worth more than one point, the p -value is the average item score divided by the total possible points. The following was also presented:
 - The percentage of students choosing each option for the multiple-choice (MC) items;
 - The percentage of students obtaining each score point for other item types.
- Item discrimination (item-test correlation)
 - The correlation indicates how well an item distinguishes between low- and high-performing students and ranges from -1 to $+1$.
 - The correlation for each item was computed using students' scores on the field test item and students' total operational test score. Since all the items of interest are field test items, the operational test score did not include the item of interest.
 - An item with a high correlation indicates that students who do well on the total test tend to answer the item correctly and students who do poorly on the total test tend to answer the item incorrectly.
 - The point-biserial correlation, a special case of the Pearson product-moment correlation, was used for any item worth one point, like the MC items. The Pearson product-moment correlation was used for the items worth more than one point.

- Correlations were computed for the distractors of the MC items and for each score point for the other item types.
- Differential item functioning (DIF)
 - DIF compares item performance between two groups of students who are matched on overall ability. It is expected that students who have comparable knowledge as measured by the test should perform similarly on the item.
 - DIF occurs when students from two different subgroups perform substantially different on an item.
 - The presence of DIF does not necessarily indicate bias. Sometimes the knowledge or skill assessed by an item happens to be more common in one group than in another group. The presence of DIF should be considered as evidence that bears further investigation.
 - Items were classified into three categories. Items classified as category C DIF were flagged.
 - A = negligible DIF
 - B = slight to moderate DIF
 - C = moderate to large DIF
 - DIF was performed using the Mantel-Haenszel (MH) (1959) procedure for dichotomous items and WINSTEPS software (Linacre, 2006a) for polytomous items.
 - For the MH procedure, the odds ratio was converted to the delta metric, and the Educational Testing Service categorization was applied to flag the significance of DIF effects (Dorans & Holland, 1992). If the absolute value of delta was smaller than 1.00, the item was categorized as A. If the absolute value of delta was larger than or equal to 1.50, the item was classified as C. Otherwise, items were categorized as B.
 - For the WINSTEPS DIF analyses, the level of DIF was determined by the absolute logit value of the DIF contrast. Absolute logit values less than 0.43 were classified as A, greater than or equal to 0.64 were classified as C, and between 0.43 and 0.63, inclusively, were classified as B (Linacre, 2006b).
 - Group comparisons were Male vs. Female, White vs. Hispanic, and White vs. African American

DIF analyses were performed when there was a minimum of 200 students in the focal group.

2.6.3. Statistical Data Review

After completion of the 2016–2017 assessment windows, Questar test development specialists and psychometricians reviewed the statistical characteristics of the items. Questar used classical item statistics, including n -counts, p -values, percentage of choosing each response option, point-biserial correlations, and differential item functioning (DIF) analysis.

During the data review, Questar Research and Test Development staff and DESE staff reviewed student performance on the Spring 2017 field test items for all EOC courses except for Government and American History. Items were reviewed regarding their statistical characteristics. Item reviewers from DESE and Questar were provided with the following information:

- Form
- Position
- Item as it appeared in the printed books
- Item alignment to the Missouri Show-Me Standards
- The p -value of the correct answer and percentage of students who selected each distractor (for SR items only)
- Mean and SD of item score (for PE/WPs only)
- Point-biserial correlation of correct response and point-biserial for each distractor (for SR items only)
- Total number of students who attempted to answer each question
- DIF using the Mantel-Haenszel (MH) (1959) procedure and the Educational Testing Service (ETS) classification (for SR items only)

Questar and DESE staff reviewed items that were flagged because of statistics that fell outside the parameters determined by the Questar Research staff. Table 2.11 contains the guidelines that were used for data review.

Table 2.11. Criteria for Flagged Items

Item Flagging Criteria	Indicates
If p -value of keyed response < 0.35	Difficult item
If p -value of keyed response > 0.95	Easy item
If p -value of keyed response $< p$ -value of distractor	Possible miskey
If p -value of distractor > 0.35	Possible second correct option
If point-biserial of keyed response < 0.20	Poorly discriminating item
If point-biserial of a distractor is > 0.00	Possible second correct option
If ETS classification is B or C (from DIF analysis)	Possible bias in item

Each flagged item was reviewed; Questar and DESE then decided whether the item should be accepted or rejected. The review included items flagged with moderate to severe DIF (an ETS classification of B or C). Table 2.12 provides the number of items field tested and the non-flagged and flagged items by content area.

Table 2.12. Number of Flagged Items by Content Area

Content Area	No Flag	Flag	Total
Algebra I	35	60	95
Algebra II	38	42	80
Geometry	28	49	77
English I	34	51	85
English II	45	39	84
Total	180	241	421

Table 2.13 presents the number of items flagged for each criterion. Items were most frequently flagged for poor discrimination, high item difficulty, and a positive correlation for a distractor. No item was flagged for being too easy (p -value > 0.95). Across the content areas, 43 percent of items had no flags ($n = 180$), 24 percent had one flag ($n = 99$), 19 percent had two flags ($n = 82$), 6 percent had three flags ($n = 24$), 8 percent had four flags ($n = 34$), and less than one percent had 5 flags ($n = 2$).

Table 2.13. Items Flagged by Criterion

Content Area	FT Items	Low p -Value	High p -Value	Popular Distractor	Low Correlation	Distractor Correlation	C DIF
Algebra I	95	46	0	17	34	24	2
Algebra II	80	24	0	13	25	18	0
Geometry	77	28	0	15	34	26	4
English I	85	23	0	8	45	27	3
English II	84	18	0	5	26	12	4
Total	421	139	0	58	164	107	13

A flagged item was accepted if the review team determined that the item was strong and tested students on content they were expected to know. Accepted items were then made available in the pool of items that could be used to create the operational forms. Items the review team felt were biased or inappropriate for the MO EOC assessments were rejected. Rejected items were removed from the item pool, making them invalid.

2.6.4. Results from Data Review

Table 2.14 provides the data review meeting results. The numbers of items that were rated as accept, reject, and revise are presented by content area and reporting category. Out of 241 items that were reviewed, 188 were accepted (78%), 46 will be revised (19%), and 7 were rejected (3%).

Table 2.14. Data Review Results by Reporting Category

Content Area	Reporting Category	FT Items	Flag Status		Rating		
			No Flag	Flag	Accept	Reject	Revise
Algebra I	Algebra	35	13	22	18	1	3
	Functions	34	12	22	17	2	3
	Number/Quantity and Statistics	17	5	12	10	1	1
	PE Items	9	5	4	4	0	0
	Total	95	35	60	49	4	7
Algebra II	Algebra	30	9	21	17	0	4
	Functions	33	23	10	9	0	1
	Number/Quantity and Statistics	17	6	11	9	0	2
	Total	80	38	42	35	0	7
Geometry	Congruence/Similarity, Coordinate	50	23	27	16	1	10
	Statistics and Probability	15	2	13	6	0	7
	Geometric Measurement and Modeling	12	3	9	9	0	0
	Total	77	28	49	31	1	17
English I	Reading Informational Texts	36	12	24	18	0	6
	Reading Literary Texts	38	18	20	17	0	3
	Writing	11	4	7	6	0	1
	Total	85	34	51	41	0	10
English II	Reading Informational Texts	35	19	16	13	2	1
	Reading Literary Texts	38	18	20	18	0	2
	Writing	11	8	3	1	0	2
	Total	84	45	39	32	2	5
	Grand Total	421	180	241	188	7	46

2.7. Form Construction

2.7.1. Online Form Construction

In 2010–2011, Missouri began moving toward a full implementation of online administration of all MO EOC Assessments. To assist in a smooth transition to online administration of all MO EOC Assessments without interruption of data trends, Questar completed an online comparability study (see the *2013–2014 MO EOC Technical Report*, Appendix C, for the full report). Based on the results of the study, the MO TAC reached a consensus that the move from Paper/Pencil to online administration would not affect student performance. As such, all 2017–2018 EOC assessments are available online.

Beginning in 2011–2012, Questar was tasked with moving all MO EOC assessments to an online delivery platform (with the exception of the Paper/Pencil, Braille, and Large Print test forms for

students needing such accommodations). By 2017–2018, all assessments are available on Questar’s Nextera delivery platform. More information on the current online test administration can be found in Chapter 3.

2.7.2. *Quality Control for Form Construction*

Checklists and quality control procedures accompanied each stage of form construction. Following is a list of some quality control procedures used during the assembly of the MO EOC assessment forms:

1. Construct forms based on all content requirements noted in the test blueprint and test specifications.
2. Verify correct number of items per standard or reporting category based on test blueprint.
3. Review items to ensure a wide sampling of the knowledge and skills being measured.
4. Ensure that all items have been through the appropriate review procedures and are approved for use by DESE.
5. Check for a variety of item topics, equal distribution of males and females, ethnicities, etc.
6. Verify appropriate portions of items with and without artwork.
7. Check for clueing across all items on each form.
8. Verify equal or nearly equal distribution of answer choices for SR items.
9. Ensure that the test meets the required statistical specifications (i.e., that as many items as possible have p -values between 0.35 and 0.90 and as many items as possible have point-biserial correlations above 0.20).
10. Consider any statistical flags or problems.
11. Check statistics to ensure that the collection of items on a given form yields an overall difficulty that falls within the specified range.
12. Verify that items have not been released to the public.
13. Verify correct answer key for each item.
14. Perform content review of form (senior staff).
15. Perform statistical review of form (psychometrician/statistician).
16. Send form to DESE for review and approval.

2.7.3. *Braille and Large Print Versions*

Beyond employing the principles of universal design, all operational assessments were offered in Paper/Pencil (for students requiring a paper form of the assessment), Braille, and Large Print versions for visually impaired students taking the MO EOC Assessments. To accommodate these students, a Braille and a Large Print paper version of the test were available. Once the Braille and Large Print forms were created for each assessment, reviews were held with DESE educators who had specialized training in working with visually impaired students.

The teachers consulted the *Large Print and Braille Style Guide*, which was also used during form composition, and relied on their own expertise to determine whether changes to directions, passages, or items were needed; teachers also determined whether items should be omitted.

Questar’s Braille vendor (APH) also reviewed the forms and made recommendations based on how items, passages, and directions would be transcribed to Braille.

Questar and DESE reviewed the recommendations from all of these sources to determine if any required items had to be omitted to accommodate the three versions. Table 2.15 below shows the breakdown. Items omitted from the operational assessment were items that would not transcribe to Braille appropriately. The items may be TE items or items with art. Students taking the Braille form were given credit for these items. The EFT items were eliminated from both the Braille and Large Print versions of these forms due to the irregular testing conditions and small sample sizes for these groups. For 2017–2018, a single Braille and Large Print test version was used for all MO EOC assessments.

Table 2.15. Accommodated Form Design

Form	English I	English II	Algebra 1	Algebra 2	Geometry	Amer. History	Government	Biology	Phys. Science
Accom Form 1 PP	40 OP + 1 PE 12 Omits"	40 OP + 1 PE 12 Omits	40 OP + 1 PE 10 Omits	40 OP + 1 PE 10 Omits	40 OP + 1 PE 10 Omits	40 OP 10 FT Slots	40 OP 10 FT Slots	41 items	46 items
Accom Form 1 LP	40 OP + 1 PE 12 Omits	40 OP + 1 PE 12 Omits	40 OP + 1 PE 10 Omits	40 OP + 1 PE 10 Omits	40 OP + 1 PE 10 Omits	40 OP 10 Omits	40 OP 10 Omits	41 items	46 items
Accom Form 1 BR	40 OP + 1 PE 12 Omits	40 OP + 1 PE 12 Omits	40 OP + 1 PE 10 Omits	40 OP + 1 PE 10 Omits	40 OP + 1 PE 10 Omits	40 OP 10 Omits	40 OP 10 Omits	41 items	46 items

Note. Biology and Physical Science were SAFT forms, so items were chosen from the SAFT forms that would easily convert to PP, LP, and Braille, hence no omits.

2.8. Summary

The MO EOC assessments provide an indication of student progress toward achieving the knowledge and skills identified in the Missouri Learning Standards. Just as the content standards guided the item development and selection process, the consideration of content played an equally important role in form development. Form development required a balance of both content coverage and item difficulty. As items were selected for inclusion on particular forms, every effort was made to balance the content coverage to ensure the items aligned to the content standards being assessed while simultaneously considering the overall difficulty of the forms.

Chapter 3: Test Administration

3.1. Introduction

This chapter contains information about DESE and Questar’s processes that ensure the standardized administration of the MO EOC assessments. The *Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 2014) states, “For tests designed to assess the test taker’s knowledge, skills, abilities, or other personal characteristics, standardization helps to ensure that all test takers have the same opportunity to demonstrate their competencies” (p. 111). In other words, attention to the details of information dissemination, Test Examiner training, test security, and accommodations and modifications help ensure that students taking the MO EOC assessments in different locations and under different circumstances have comparable opportunities for success.

The *EOC Test Coordinator’s Manual* contains detailed information about the testing guidelines, materials handling, and standardized administration instructions for the MO EOC assessments. While this manual is not included here, much of the information contained in this chapter can be found in it.

Questar uses its online assessment platform to manage and deliver the MO EOC Online assessments. This platform has two components:

- Student Test Delivery – The online testing student client is a small-footprint, secure browser application that is downloaded to the students’ workstations to allow uninterrupted testing and failsafe protection of student responses in the event of a connection loss.
- Administration and Reporting System – The online testing system administration system is a web application that allows districts, schools, and teachers/proctors to manage their students and assessments.

The 2011–2012 administration was the first year that districts were required to use an online delivery format. Students who required a Paper/Pencil, Braille, or Large Print version according to their Individualized Education Program (IEP) were an exception to this rule. In these cases, administrators marked this accommodation on the online test administration site. The *Test Coordinator’s Manual* contains specific information about the registration and administration of the MO EOC assessments. This process was continued for 2017–2018.

3.2. Testing Calendar

Table 3.1 displays the 2017–2018 MO EOC testing windows. Each MO EOC assessment is tailored to each EOC content area and is designed to be administered when a student has completed the content defined for that course. Multiple testing windows allow school districts the flexibility to schedule MO EOC testing as close as possible to the end of each course so that they can provide students the greatest opportunity to demonstrate proficiency in the course content.

Table 3.1. Testing Windows

Test Period	Dates
Summer 2017	June 5, 2017 – August 25, 2017
Fall 2017	October 4, 2017 – January 19, 2018
Spring 2018	February 19, 2018 – May 25, 2018

Districts can offer EOC course content in any grade and in a variety of configurations. Although many districts offer EOC course content within a course bearing the same name, EOC course content can also be embedded within a course or across several courses. MO EOC assessments are administered according to a "right test, right time" philosophy when students have completed the appropriate content.

3.3. Students for Whom the MO EOC Assessments are Appropriate

The responsibility and authority for testing students in the MO EOC assessments at the appropriate time in the course of instruction belongs to the local district. The MO EOC assessments are based on Missouri Learning Standards rather than on CLEs. Therefore, when the content of the Missouri Learning Standards is covered in the local school district's curriculum, the test may be administered regardless of student grade level or course name.

3.3.1. Students with Individualized Education Programs (IEPs)

A student with disabilities, as classified under the Individuals with Disabilities Education Act (IDEA), has an IEP that, in part, governs whether a particular assessment is appropriate for the student. In the case of the MO EOC assessments, decisions about whether a student with a disability will participate in the assessments are made by the student's IEP team and are documented in the IEP. All students must take required MO EOC assessments. If, however, a student's disability qualifies him or her to take the MAP-Alternate Assessment (MAP-A) for students with severe cognitive disabilities, that student will not participate in the MO EOC assessments.

3.3.2. Students with Individual Accommodation Programs

Students with Individual Accommodation Programs (IAPs) are considered disabled under Section 504 of the 1973 Rehabilitation Act. These students are not served under IDEA and are not documented with a particular designation for the MO EOC assessment. However, professionals who are knowledgeable about a student's disability and educational needs should make accommodation decisions for the student as they would for a student with an IEP.

3.3.3. English Language Learner (ELL) Students

Students who have been in the United States for 12 cumulative months or less since school age at the time of test administration may be exempted from taking the English I and English II assessments by the local school district. The students must, however, participate in other required MO EOC assessments, although their scores do not count toward school accountability purposes. All students, including ELL students, are required to take the Algebra I, Biology, and Government MO EOC assessments.

3.4. Students for Whom a School or District is Accountable

For accountability purposes, Missouri must include the results for any student who is eligible to take the MO EOC assessments and has been enrolled for at least one full academic year in a school (for school accountability) or district (for district accountability) without transferring out of the building or district for a significant period of time and re-enrolling. A full academic year is defined as the last Wednesday in September through the MO EOC assessment administration. A significant period of time is considered “one more than half of the eligible days between the last Wednesday in September and the test administration.” DESE obtains enrollment information from the Missouri Student Information System (MOSIS) data that are reported by school districts. This rule applies to the building and district summary levels independently. For example, a student who is coded as “In building less than a year” but was in the district a full academic year is excluded from the building totals but is included in the district totals.

3.5. Dissemination of Testing Materials and Information

All test administration information, including the *Test Coordinator’s Manual* and training webinars, were posted to the online test administration site for District Test Coordinators, School Test Coordinators, Examiners, and Information Technology Coordinators. One week prior to the start of the testing window, Questar distributed all password information for the online system by e-mail to district and school level users participating in the current EOC administration. Districts had the opportunity to order the Braille and Large Print editions of the assessment from Questar. The District Test Coordinator downloaded and printed the accommodated Paper/Pencil test edition through the online administration site, as needed for students in the district. The District Test Coordinator was responsible for inventorying all Paper/Pencil materials, as well as disseminating the online test information to the test administrators. The District Test Coordinator was also responsible for answering all district questions about test procedures and the online assessment platform. If the District Test Coordinator needed assistance with a question, he/she could contact Questar’s Missouri Customer Service through the designated phone number and/or e-mail address.

3.6. District and Test Examiner Training

Both Questar and DESE were responsible for training the district staff on EOC test administration. Questar and DESE provided training webinars, scripts, and PowerPoint presentations on the *Test Coordinator’s Manual*, state procedures, and general testing issues. These training resources were available both on the DESE website and on the online test administration site. Appendix F contains the 2017–2018 training PowerPoint presentations for the MO EOC assessments.

Questar provided both onsite and recorded trainings on the online assessment platform. Questar training contained proprietary information and was only available on the test administration site. All Test Coordinators and Test Examiners were to view these standardized trainings prior to test administration. The District Test Coordinator was allowed to provide supplemental training on local issues (e.g., schedules). Both DESE and Questar were available to answer any questions the districts may have had about the MO EOC assessment administration.

3.7. Test Security

3.7.1. Summary

The MO EOC assessment test books (Paper/Pencil, Large Print, and Braille) and online assessments were secure. Test Coordinators were instructed to keep the materials in a locked room or cabinet at all times when not in use. No testing materials could be photocopied, duplicated, scanned, or made accessible to personnel who were not responsible for testing. Additionally, written or oral discussion of specific MO EOC assessment items breaches the security and integrity of the test. In accordance with the Standards, the *Test Coordinator's Manual* contained explicit instructions about test security for Test Coordinators and Test Examiners.⁵

Standardized training was required for all District and School Test Coordinators, Examiners, translators, proctors, and any district staff who had responsibilities in testing. Each test book that was shipped to the district or downloaded and printed by the district contained secure barcode information for tracking purposes. Questar used this information to ensure that districts used the materials assigned to them for testing and returned all of their secure materials after the completion of testing. The Paper/Pencil forms included a barcode on each page of the document. Upon return to Questar, the barcode information on each test was verified. Questar then followed up with the appropriate district(s) regarding any missing materials to ensure return or destruction (if materials were contaminated).

When the tests were delivered online, Test Examiners only had access to the test administrator features and did not have access to the students' screens for the online assessment. Students had unique, secure logins to access the assessments they were registered for; these logins were disabled after the student had completed testing. For tests with multiple sessions (those including a PE/WP), the students also had a Session Access code given to them by the teacher at the start of the session to ensure that students accessed the correct session of the test. Test items, as well as student responses, were encrypted during transmission to and from student computers.

3.7.2. Detection and Prevention of Testing Irregularities

To protect the validity and fairness of scores on the MO EOC assessments, DESE has implemented measures to prevent and detect cheating. Possible cheating violations include the following:

- Copying and reviewing MO EOC assessment items with students
- Cueing students during testing either verbally or with written materials on the classroom walls
- Cueing students nonverbally, such as tapping or nodding the head
- Using a calculator on an EOC assessment that does not allow calculator use, unless specified by the student's IEP
- Using a calculator that contains stored equations or connects to the Internet
- Splitting sessions into two parts
- Ignoring the standardized directions in the test books
- Paraphrasing parts of the assessment to students

⁵ **Standard 6.7:** Test users have the responsibility of protecting the security of test materials at all times (AERA, APA, NCME, 2014, p. 117).

- Changing or completing (or allowing other school personnel to change or complete) student answers
- Allowing accommodations that are not written in the IEP
- Allowing accommodations for students who do not have an IEP
- Allowing students to use dictionaries on parts of the MO EOC assessment other than the WP
- Defining terms on the test
- Allowing students to access cell phones or other electronic devices during testing

To detect cheating, DESE has implemented the following steps for the MO EOC assessments:

1. School officials, parents, and other interested parties call or e-mail DESE to report a testing concern or allegation.
2. A narrative of the conversation, if reported orally, is written and read back to the individual reporting the concern.
3. The superintendent of the district in which the allegation is made is then contacted and read the narrative or e-mail.
4. A letter is sent to confirm the conversation and to ask the superintendent to investigate the claim.
5. A MO EOC assessment Quality Assurance Concern District Response Report is sent for the superintendent to use for replying to the allegation.

DESE also implemented a self-monitoring process whereby District Test Coordinators completed a Quality Assurance (QA) self-monitoring form.⁶ This QA process was issued to District Test Coordinators in an administrative memo.⁷ The form was designed to be used by District Test Coordinators as part of their regular supervision process throughout the testing window. The QA self-monitoring form allowed districts to monitor and strengthen their administration of the MO EOC assessments. The questions on the form were designed to focus attention and help districts examine important areas of assessment training, administration, and test security.

District Test Coordinators were asked to complete one MO EOC Quality Assurance form for one EOC classroom. Regarding cheating prevention, the form asked District Test Coordinators to “Explain the district’s test security plan” and answer the question, “What preventative measures are taken to curb cheating within the computer lab?” District Test Coordinators were urged to report testing irregularities or concerns immediately to the Assessment Section at assessment@dese.mo.gov or (573) 751-3545. DESE also performed onsite spot checks of quality assurance procedures during the spring testing window.

When testing irregularities were reported, DESE was able to request that Questar perform statistical analyses to detect and flag unusual response patterns. DESE then worked with districts to establish procedures for follow-up decisions appropriate to the situation.

⁶ View the QA form online at <http://tiny.cc/deseqaself2017>.

⁷ View the memo online at <https://dese.mo.gov/sites/default/files/am/documents/CCR-17-001.pdf>.

3.8. Test Administration

3.8.1. Test Organization

Students took the MO EOC assessments in one or two sessions depending on the content area. All assessments were administered online unless the student's IEP specified a Braille/Large Print or Paper/Pencil administration. Each SR item consisted of a stem followed by four response options. To answer, the student clicked a response option. The tests were not timed. Students were encouraged to complete an online tutorial of the online assessment platform prior to testing. This tutorial included instructions on how to use the tools in the system and practice questions for the students.

3.8.2. Test and Ancillary Materials

District Test Coordinators or School Test Coordinators were responsible for providing all MO EOC assessment materials to Test Examiners. The materials provided by Questar and/or DESE included the following:

- *Test Coordinator's Manual* (electronic copy)
- Large Print and/or Braille test materials
- Return kit materials for accommodated test materials
- Accommodated Paper/Pencil test booklets (printed from the online assessment platform by the school district)

Students taking an accommodated version of the MO EOC assessments needed the following additional materials, which were not provided by Questar or DESE:

- No. 2 pencils
- Scratch paper

For the online assessment, each student needed a computer with a monitor, mouse, and keyboard or a tablet device. Adequate space should have been left between workstations. Students could use scratch, grid, or draft paper and a writing utensil while taking the online assessment. The Test Examiner needed the following:

- A computer for logging on to the test administrator interface
- A writing board and utensil

Additionally, students taking either the Paper/Pencil or online version were allowed to use a calculator for the Algebra I, Algebra II, and Geometry assessments. Students taking the English I and English II writing prompts had access to a dictionary, thesaurus, and grammar handbook. Students taking any of the mathematics assessments had access to the Mathematics Reference Sheet; students taking the Physical Science assessment had access to the Periodic Table of Elements.

Calculators could not contain stored equations or functions at the time of the EOC Mathematics assessments. Test Examiners were responsible for ensuring and verifying that calculators with

the ability to store functions and equations (e.g., a graphing or a scientific calculator) had the memory cleared before and after each mathematics assessment.

Calculators could not have Internet connectivity or be able to connect to anyone inside or outside the classroom during testing. Students could not use a calculator on a laptop or other portable computer, pocket organizer, cell phone, device with a typewriter-style keyboard, electronic writing pad, or pen-input device unless a particular assistive device was required for a student and was specified on his or her IEP.

3.8.3. Preparing the Test Administration Site and the Students

Before students began the assessment using the online system, a representative of the district or school was responsible for the following tasks:

- Read the entire *Test Coordinator’s Manual*.
- Review the DESE and Questar trainings regarding the EOC assessments.
- Run a workstation readiness test on each workstation used for testing.
- Ensure that the online test delivery system is downloaded to each workstation for test delivery.
- Provide an upload to DESE (precode file) of all students that will be testing for the current administration of the EOC assessments. (The precode file is a data file containing one record per student; each student is assigned a unique MOSIS ID. The purpose of the data file is to identify students, Examiners, and content areas for testing.)
- Input identification information for students who were not included in the precode file.
- Specify district testing windows within the Missouri statewide test administration window.

Additionally, the Test Examiner was responsible for setting and verifying class information and setting students’ testing status codes and/or accommodations information in the online test administration system.

Students were NOT allowed to use electronic devices such as cellular phones, digital cameras, gaming devices, or scanners during the testing session. However, students could use calculators during the Algebra I, Algebra II, and Geometry test sessions. (See Section 5.7.2 for more information regarding calculator usage and restrictions.)

3.8.4. Directions for Administration

In accordance with Standard 6.1,⁸ specific standardized directions for administration were printed in the *Directions for Administration 2017-2018* (DFA) manual. Directions to be read aloud to the students were printed in bold type and had a callout arrow in the margin for clarity. Information for the teacher that should not be read aloud was in italic type. Figure 3.1 provides an example of a script from the DFA for the Geometry EOC assessment.

⁸ **Standard 6.1:** Test administrators should follow carefully the standardized procedures for administration and scoring specified by the test developer and any instructions from the test user (AERA, APA, NCME, 2014; p. 114).

Figure 3.1. Directions for Administering from the DFA—Geometry

Geometry Directions—Session I

The Test Administrator should use his/her computer or tablet to create a testing session, as outlined in the *Test Coordinator’s Manual*. On each student’s device, open the secure browser to the student log-in page.

These directions pick up from where the “Preparing Students for Testing” section ended (page 13).

SAY For the questions in this test, you will select an answer from the provided choices or type your answers in the space provided. Remember to check that you have correctly identified the answer choice after you select it. Your score on these questions will depend on how well you follow directions and show your understanding of Geometry. You may use a calculator and scratch paper to work through the questions. The Mathematics Reference Sheet is available during testing by selecting the REFERENCE SHEET icon. Select the HELP button for instructions on how to use the system tools.

There are several important things to remember:

1. Read each question carefully and think about the answer. Then choose the answer that you think is best.
2. If you do not know the answer to a question, mark it for review, skip it, and go on. You may return to it later.
3. When you finish the test, you may check your work.

Do you have any questions?

Answer any questions the students may have.

SAY You should now see a screen asking for the Access Code. In the space provided, type in [insert your Access Code]. Then select “Continue” to begin the test.

If a student does not understand a word, you may pronounce the word for the student but do not define, explain, or paraphrase it. You may pronounce only one word per sentence. Pronouncing several words or phrases is an oral reading accommodation. If a student has not finished in the allotted time and is making adequate progress, the student should be allowed to finish. It is highly encouraged that all students complete the test during one testing session. However, should a student be unable to finish, testing may resume the following day. Test Examiners must address the concern with their STC immediately for assistance.

There is a separate Access Code for each session. Ensure the Access Code is used for the session being administered.

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3.9. Accommodations and Modifications

A student’s IEP team had the responsibility and authority to determine individual accommodations to support and ensure his or her participation in the MO EOC assessments. Students who were English language learners (ELLs) were also able to receive accommodations to support and ensure participation in the MO EOC assessments. Accommodations are intended to assist the student to demonstrate his or her knowledge, skills, and abilities. The accommodations for the MO EOC assessments include, but were not limited to, the following:

- A student may receive a modified version of the testing materials, such as the Braille, Large Print, or Paper/Pencil edition.
- A teacher may present the test content to a student in a nonstandard way, such as by reading it aloud in English or in the student’s native language, paraphrasing it, or using sign language. For the English I and English II assessments, this will result in the lowest obtainable scale score (LOSS) being assigned.
- A student may be allowed additional time to complete one or more sessions of the assessment.
- A student may use an assistive communicative device.
- A student may be tested individually or in a small group.

- A student may be allowed to use a computer, another word-processing device, or a teacher scribe to record his or her responses.
- A student may use other assistive materials such as a bilingual dictionary.

Modifications are alterations in the test that change construct-related requirements. The resultant information may not be equal to the information that might be obtained without modifications. The following modifications for the MO EOC assessments were able to be provided:

- Oral reading of the assessment, including paraphrasing questions
- Oral reading in native language
- Use of a bilingual dictionary for the English I or English II assessment

In accordance with Standard 6.3,⁹ Test Examiners indicated an accommodation by checking the appropriate box(es) for the student in the online test administration site.

Tables 3.2 and 3.3 contain information about the percentage of students who received each type of accommodation for each MO EOC assessment for Fall 2017 and Spring 2018. The “Other Setting” accommodation was the most prevalent type of accommodation across all MO EOC assessments. See Appendix G for a list of accommodation codes from the *2017–2018 Test Coordinator’s Manual*.

Table 3.2. Accommodation Distributions—Fall 2017

Accommodation	English II		Algebra I		English I		Algebra II		Geometry	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Braille	0	0	0	0	0	0	0	0	0	0
Large Print	1	0.04	0	0	0	0	0	0	0	0
Oral Reading	2	0.08	1	0.02	0	0	0	0	0	0
Oral Reading—Blind/Partial Sight	57	2.33	14	0.3	0	0	0	0	0	0
Oral Reading—Paper/Pencil Only	0	0	0	0	0	0	0	0	0	0
Signing of Assessment	0	0	0	0	0	0	0	0	0	0
Paper Based Assessment—Paper/Pencil Only	7	0.29	5	0.11	0	0	0	0	0	0
Oral Reading in Native Language ELA	1	0.04	0	0	0	0	0	0	0	0
Use of Scribe	0	0	0	0	0	0	0	0	0	0
Speech to Text Online not Embedded	0	0	0	0	0	0	0	0	0	0
Abacus	0	0	0	0	0	0	0	0	0	0
Multiplication Table	3	0.12	9	0.19	0	0	0	0	0	0
Specialized Calculator	0	0	4	0.09	0	0	0	0	0	0
Alternate Response	0	0	0	0	0	0	0	0	0	0
Oral Reading Assistive Technology-Non ELA	87	3.56	207	4.47	3	3.37	1	0.19	5	1.92

⁹ **Standard 6.3:** Changes or disruptions to standardized test administration procedures or scoring should be documented and reported to the test user (AERA, APA, NCME, 2014, p. 115).

Accommodation	English II		Algebra I		English I		Algebra II		Geometry	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Oral Reading Assistive Technology- ELA only	2	0.08	11	0.24	0	0	0	0	0	0
Oral Reading Any—not Embedded	45	1.84	61	1.32	1	1.12	0	0	0	0
Color Contrast—Paper/Pencil	2	0.08	0	0	0	0	0	0	0	0
Color Overlay—Paper/Pencil	0	0	2	0.04	0	0	1	0.19	0	0
Magnification	0	0	0	0	0	0	0	0	0	0
Masking	0	0	0	0	0	0	0	0	0	0
Translation	1	0.04	0	0	0	0	0	0	0	0
Oral Reading in Native Language Non ELA	3	0.12	1	0.02	0	0	0	0	0	0
Use of Scribe Non ELA Writing without IEP or 504	5	0.2	8	0.17	0	0	0	0	0	0
Bilingual Dictionary on Writing Performance Task for ELL	12	0.49	0	0	0	0	0	0	0	0
Other Setting	135	5.52	250	5.4	5	5.62	1	0.19	3	1.15

Table 3.3. Accommodation Distributions—Spring 2018

Accommodation	English II		Algebra I		English I		Algebra II		Geometry	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Braille	9	0.01	1	0	1	0.01	1	0.01	1	0.02
Large Print	23	0.04	33	0.06	4	0.03	6	0.03	0	0
Oral Reading	81	0.13	24	0.04	8	0.07	0	0	0	0
Oral Reading—Blind/Partial Sight	1,530	2.49	301	0.5	356	3.11	16	0.09	45	1.01
Oral Reading—Paper/Pencil Only	1	0	1	0	1	0.01	0	0	0	0
Signing of Assessment	0	0	0	0	0	0	0	0	0	0
Paper Based Assessment— Paper/Pencil Only	128	0.21	145	0.24	18	0.16	6	0.03	0	0
Oral Reading in Native Language ELA	6	0.01	4	0.01	1	0.01	0	0	0	0
Use of Scribe	0	0	0	0	0	0	0	0	0	0
Speech to Text Online not Embedded	37	0.06	14	0.02	2	0.02	0	0	1	0.02
Abacus	0	0	0	0	0	0	1	0.01	0	0
Multiplication Table	8	0.01	168	0.28	0	0	0	0	4	0.09
Specialized Calculator	25	0.04	102	0.17	5	0.04	3	0.02	3	0.07
Alternate Response	4	0.01	5	0.01	0	0	0	0	0	0
Oral Reading Assistive Technology- Non ELA	3,265	5.31	4,133	6.9	587	5.12	563	3.28	393	8.82
Oral Reading Assistive Technology- ELA only	55	0.09	59	0.1	12	0.1	5	0.03	2	0.04
Oral Reading Any—not Embedded	881	1.43	1,092	1.82	258	2.25	20	0.12	48	1.08
Color Contrast—Paper/Pencil	287	0.47	232	0.39	124	1.08	51	0.3	108	2.42
Color Overlay—Paper/Pencil	6	0.01	13	0.02	2	0.02	0	0	0	0
Magnification	12	0.02	9	0.02	0	0	0	0	0	0

Accommodation	English II		Algebra I		English I		Algebra II		Geometry	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Masking	0	0	1	0	0	0	0	0	0	0
Translation	12	0.02	31	0.05	31	0.27	2	0.01	0	0
Oral Reading in Native Language Non ELA	73	0.12	62	0.1	30	0.26	2	0.01	0	0
Use of Scribe Non ELA Writing without IEP or 504	100	0.16	75	0.13	15	0.13	2	0.01	0	0
Bilingual Dictionary on Writing Performance Task for ELL	128	0.21	26	0.04	4	0.03	1	0.01	0	0
Other Setting	4,150	6.75	3,961	6.62	764	6.67	126	0.73	128	2.87

3.10. Materials Handling and Return

3.10.1. Materials Handling during Administration

The *Test Coordinator's Manual* contained detailed instructions for how schools and districts should collect and package the Paper/Pencil, Braille, and/or Large Print testing materials at the end of the test administration. For Test Examiners, these activities included, but were not limited to, the following:

- Collecting test books from the students using the accommodated editions
- Returning all used and unused test books to the School Test Coordinator
- Collecting all scratch paper used during testing
- Properly handling all contaminated test books (i.e., books having contact with bodily fluids such as blood or with any potentially hazardous material)

For School Test Coordinators, these activities included, but were not limited to, the following:

- Collecting testing materials from the Test Examiners
- Returning all test books (used and unused) to the District Test Coordinator
- Destroying all nonsecure testing materials

After receiving the used and unused test books from the School Test Coordinators, District Test Coordinators completed the following steps:

- Verifying 100% return of test books
- Completing the Test Book Accountability Form and faxing it to Questar

For the online system, the student needed to click the submit button once he or she had finished testing to submit the test for scoring. No additional information was needed from the Test Examiner after the student had completed the online test. All demographic information was edited or added by the test administrator before the student started the assessment.

3.10.2. Questar's Secure Material Check-In Procedures

Questar adhered to strict quality assurance procedures in order to ensure that all accommodated test booklets were returned and accounted for. The check-in procedures included multiple steps

to ensure that no test booklets were overlooked. All staff members received thorough and specific training before they participated in the check-in of test booklets.

Upon receipt of accommodated test booklets from the school districts, boxes were kept in a secure location and remained sealed until check-in. If a box had to be opened for any reason, it was immediately resealed.

Two teams checked in the secure materials. The first team prepared the test booklets for scanning. One district box was opened at a time, and secure test booklets were separated from ancillary materials and stacked on carts to be checked in. This process was repeated for all boxes for a district to ensure that all materials returned to Questar at the same time were checked in at the same time. Once the first team filled the cart(s) with all the secure materials from a district, the cart(s) was passed to a second team.

The second team checked in each test booklet by scanning the secure barcode into Questar's database. Operators worked in teams of two at computers equipped with barcode scanners. Operator 1 counted and scanned enough secure documents to fill a storage box. The operator verified that the database collected the same number of barcodes. If there was a discrepancy, an immediate reconciliation took place.

Each ID number (barcode number) had a check digit that ensured that all numbers were correctly read by the scanner and that no ID number was miskeyed when manually entered. If a barcode was damaged or not readable, the operator manually entered the barcode number into the system. After this process was complete, the box of secure materials was handed to Operator 2 and scanned a second time. The database verified that the same barcode numbers were read during the scanning of the box or an immediate reconciliation took place. After verification, the secure materials were placed in a Questar box for storage. The scanning system provided audible and onscreen cues to alert operators of scanning discrepancies.

Further validity checks were done before each box was sealed to ensure that there were no ID barcode scanning discrepancies and that all ID numbers were correct. The validity checks also ensured that the ID numbers and the quantity in each box matched what was entered into the database. Finally, each box was placed on a pallet and stored.

Post-check-in procedures were also performed prior to notifying the districts of missing secure materials. For any district that was missing a secure material, an individual box-by-box hand search was conducted in an attempt to locate the secure material(s). If an unaccounted secure material was found, the material was then coded into the database by a Questar supervisor, and Questar's Program Management team was notified. If unaccounted-for material(s) were not found during the box-by-box hand search, the material(s) was considered missing and the district was notified via the Secure Missing Material Report process. This was also communicated to DESE, who would then follow up with discretion.

3.11. Summary

The distribution, administration, and collection of the MO EOC assessments were carefully communicated and executed in accordance with the detailed *Test Coordinator's Manual*. All

standards related to test security, administration, and accommodations were adhered to throughout the process. The most important steps and procedures have been covered in this chapter. Readers interested in further detail should consult the *Test Coordinator's Manual* for the MO EOC Assessments.

Chapter 4: Scoring

4.1. Introduction

The MO EOC assessment forms were processed and scored by Questar. The selected response (SR) items are automatically scored against a fixed key immediately after a test is submitted by the student. Each test form is tested entering 100% correct responses and 100% incorrect responses through both desktop and tablet clients; each test score is validated as part of a comprehensive end-to-end process culminating in final reports. The performance event and writing prompt (PE/WP) items were scored by Questar’s qualified scorers.

This chapter outlines the processes used to implement scoring materials for the PE/WPs and Constructed Responses (CRs), receive and scan student responses, hire and train scorers, score the PE/WPs and CRs, and maintain control of the quality of the scoring processes.

4.2. Scorer Training and Scoring Processes

Questar adopted the human-scoring process for WPs (in the English I and II assessments), PEs, and CRs (in the Algebra I, Algebra II, and Geometry assessments). The PE/WPs required students to respond with extended written answers to questions on given topics or to questions regarding specific events.

The following sections outline Questar’s processes for scoring the PE/WPs and CRs in the MO EOC assessments for the Fall 2017 and Spring 2018 administrations.

4.2.1. Scorer Training

4.2.1.1. Recruitment and Selection

Scoring quality starts with the recruitment process and extends through screening and placement (assigning scorers to prompts based on their skills and experience), training, qualification, and scoring. Questar accessed a large pool of educated candidates to professionally evaluate assessment prompts.

Questar selected scorers according to their strengths and background. All scorers had a four-year college degree at a minimum. The following steps show an overview of key processes:

1. Process Timeline and Recruitment Tool: Questar used a web-based application to collect data on scorer education, prior scoring experience, and other key information to screen candidates currently in the database system.
2. Initial Screening: Candidate data was analyzed and prospective scorers prioritized.
3. Offer: Questar contacted prospective scorers with details about project requirements, timelines, and quality standards.
4. Final Documentation and Project Placement: Scorers signed confidentiality agreements to consent to keep all information and student responses confidential. Only qualified scorers who successfully completed training were allowed to evaluate student responses.

4.2.1.2. Training Materials

For the Fall 2017 and Spring 2018 administrations, Questar content specialists created training materials that were reviewed by DESE content specialists. During this process, Questar scoring staff communicated with DESE regarding item questions or clarifications.

Training materials included the following:

- Anchor Sets: The anchor set is the primary reference for scorers as they internalize the rubric during training. All scorers had access to the anchor set while scoring and were regularly directed to refer to it.
- Practice Sets: Practice sets were used to help trainees develop experience in independently applying the scoring guide or rubric to student responses. The practice sets provided guidance and practice for trainees in defining the line between score points as well as applying the scoring criteria to a wider range of types of responses.
- Qualification Sets: All qualifying sets were used to confirm that scorer trainees had grasped the scoring criteria and were able to accurately assign the range of scores to student responses. Scorer trainees had to demonstrate acceptable performance on these sets by meeting a predetermined standard for accuracy to qualify to score MO EOC PEs and WPs. Questar's digital scoring system programmatically enforced qualification rules.

4.2.1.3. Training Process

Scorers went through online training and qualifying prior to scoring, including reviewing scoring guidelines and procedures. This training provided scorers with a clear understanding of the training materials and scoring protocols of the MO EOC Assessments. Scorers were expected to read and review annotations of the training materials with focused direction given by scoring directors or content specialists. The following are the steps used during the training of the items:

- Scoring for Questar: This gave a brief overview of what scoring is, the tools provided to help the scorers, and the individuals who would support the scorers during the project.
- Questar Scoring System: Scorers were trained on the internal scoring system.
- Scoring the MO EOC assessments: Specifics were provided regarding the Missouri Project. DESE and Questar worked collaboratively so the scorers understood the project.
- Scoring the Item: This training process walked the scorers through the anchor, practice, and qualification papers. The scorers proceeded through the qualification process and, upon qualifying, they continued on to operational scoring.
- Additional Training: Before operational scoring could begin, information on how to handle unscorable student responses and alert responses was provided.

Scoring started for the scorer once all of the steps were successfully completed.

4.2.1.4. Scorer Selection with Qualification

If applicants did not successfully complete the training and qualifying requirements, they were not allowed to score any MO EOC student responses. Furthermore, qualified scorers were

dismissed if their scoring performance did not meet defined standards. Below are the qualification standards that must have been met in order to score the MO EOC assessments. The range of possible scores is noted below. The 4-point items have possible score points of 0, 1, 2, 3 and 4; or 1, 2, 3, and 4 depending on the item. All other hand-scored items have 0 as the lowest score. Exact agreement is based on agreement to the answer key. Depending on the prompt, there will be either one or two qualifying sets. For prompts that require a specific response or responses, as may be found in math, one qualifying set is used.

- 4-point items
 - (0–4, 1–4)
 - 2 sets of 10 papers
 - 80% exact agreement on one of two sets
 - Scorers saw both sets. If they passed the first, the second was a review.
- 3-point items
 - (0–3)
 - 1 or 2 sets of 10 papers, depending on the item.
 - 80% exact agreement on one set.
 - If two sets, scorers saw both sets. If they passed the first, the second was a review.
- 2-point items
 - (0–2)
 - 1 or 2 sets of 10 papers, depending on the item.
 - 80% exact agreement on one set.
 - If two sets, scorers saw both sets. If they passed the first, the second was a review.
- 1-point items
 - (0–1)
 - 1 or 2 sets of 10 papers, depending on the item.
 - 80% exact agreement on one set.
 - If two sets, scorers saw both sets. If they passed the first, the second was a review.

4.2.1.5. Second Read Procedures

Rater agreement is the agreement between the first and second scores assigned to student responses. Rater agreement indices include exact and adjacent agreement. Guidelines for rater agreement are determined in accordance with customer requirements and Questar scoring standards for exact and adjacent agreement. Questar scoring staff used rater agreement results as one factor in determining the needs for continuing training and intervention on individual levels.

Questar’s scoring system included comprehensive rater agreement reports that allowed scoring directors to monitor both individual and group performance. After the first score was applied, the system automatically sent the tenth document to a different scorer for a second read. Reader one provided the score of record, and the second read was for rater agreement purposes only.

4.2.2. Scoring Processes with Monitoring and Recalibration Procedures

4.2.2.1. Read-Behinds

The process of reading behind scorers (hereafter referred to as a *read-behind*) was a major responsibility of Questar’s content staff and a primary tool for guarding against scorer drift. Questar’s scoring system’s integrated read-behind tool allowed Questar staff to review the scores assigned to individual student responses by any given scorer. The team leads used an internal report to monitor and ensure consistent scoring. If an incorrect score was identified during the read-behind, the correct score was assigned; that score became the score of record.

Questar’s content staff could perform a search for the following:

- Responses scored by a particular scorer
- Responses receiving a particular score point
- Responses with scores that agree with, are adjacent to, or are non-adjacent to each other
- Combinations of these features

Content staff reviewed responses to confirm that the scores were correctly assigned and to give customized feedback and remediation to individual scorers.

4.2.2.2. Calibration

Content staff used calibration sets as needed to reinforce scoring standards, introduce scoring decisions, or correct scoring issues and trends. The primary goal of calibration was to continue training and to reinforce the scoring standards. Calibration sets may be “on the line” between score points or might contain unusual examples that are challenging to score and therefore useful for reinforcing the scoring rubric. Online calibration sets could be given to entire groups, a subset of scorers, or individual scorers, as needed to score independently. These annotated sample responses promoted accuracy by exploring project-specific issues, score boundaries, or types of responses that were particularly challenging to score consistently. After scoring an online calibration set, scorers could ask questions and seek clarification of the score point or annotation.

Calibration sets are developed throughout the scoring window by using responses that serve as training examples both in one-on-one and group situations. Calibration sets are also used after a weekend off, if needed. These papers are shredded after the project is complete.

4.2.2.3. Managing Scoring Quality (Scorer Exception Processing)

Content staff, often along with a project manager or human resource representative, intervened when scorer performance statistics did not meet quality standards or a scorer violated other Questar policies. Intervention included calibration, retraining, direct counseling, review of papers, and requalification. Scorer exception processing allowed Questar’s project managers to define intervals at which the scoring system would check scorer validity for exact and adjacent agreement. If scorers were below pre-set standards, staff monitoring this process would interrupt their scoring process to review anchor papers or take other steps to improve their scoring. Through this process, Questar’s scoring system could provide an additional training/requalification set and, if performance was not improved, could lock scorers out of the

scoring system. This process prevented scorers from continuing to score if standards were not maintained.

Because the system monitored scorers and provided the scorers' information quickly, Questar's content staff continually focused on quality control measures. These measures included read-behinds, calibration, and responding to questions in the review queue. Content staff were able to spend more time working directly with scorers who had questions.

4.3. Quality Control with Validity Responses

Validity responses are pre-scored responses strategically interspersed in the pool of operational responses. These responses are not distinguishable from operational responses; scorers' scores are only accepted for monitoring purposes, not in replacement of the true score.

The use of validity responses provides an objective procedure that helps ensure that scorers are applying the same standards throughout the project. This procedure offers feedback on the accuracy and consistency of individual scorers and groups of scorers assigned to a given item. Questar's validity mechanism provides an objective and systematic check of accuracy. It verifies that scorers are applying the same standards throughout the project and, therefore, guards against scorer drift and ultimately group drift. This procedure provides immediate feedback on individual scorers and the group as a whole.

Validity papers are actual student responses chosen by the team leads or scoring director as examples that clearly earn certain scores. There is only one scoring director per content area. Following the standards established, scoring directors assigned "true scores" to validity responses to compare how often scorers match them throughout the scoring session. The validity pool included responses encompassing the entire score range for each item. Scorers scored them without being aware they were scoring validity papers rather than operational responses. Validity responses were sent to scorers throughout the project.

Each MO EOC content area was set to contain validity papers at a frequency rate determined by the range of scores and complexity of each item. This means that each scorer would see a validity paper at varying times throughout the project. The scorers could not distinguish a validity paper from an operational response because these papers are pulled from operational scoring. The process of selecting validity papers and refreshing the pool was to select papers scored by expert readers. Questar's system allows a team leader, scoring director, or content specialist to score validity items using a hierarchical approval process to ensure the score has been adequately confirmed. For instance, if a score of 3 was given by a team leader, it could not be selected for a validity response unless confirmed and approved by the scoring director. If the validity response was chosen by the scoring director, the response must be confirmed and approved by the content specialist.

Tables 4.1 and 4.2 show the summaries of the validity paper results at the end of the project for the Fall 2017 and Spring 2018 administrations. The "Rater Agreement Plan" column indicates the expected percentage of agreement given the maximum points available for the item. A higher percentage was expected for items with fewer points; a lower percentage was expected for items with more points. For example, the rater agreement plan was 100 percent for 1-point items and

80 percent for 4-point items. The “Rater Agreement Actual” column shows the observed rater agreement. The variance is the difference between the actual and planned rater agreement. Positive values indicate that the actual agreement was higher than the planned agreement, whereas negative values indicate that the actual agreement was lower than the planned agreement.

Overall, items worth 1 point tended to have smaller variances than items worth 2 or more points. The item with the largest negative variance in the Fall administration was an item where rater agreement was lower than the planned rater agreement (65% versus 80% for a 4-point English II item). The item with the largest negative variance in the Spring was an item where rater agreement was lower than the planned rater agreement (67% versus 80% for a 4-point English I item). There are many incidents of positive variance, where the rater agreement was higher than the planned rater agreement. The results of the validity paper scoring indicate that the variance was relatively small and within 10% for the majority of items.

Table 4.1. Summary of Validity Paper Results—Fall 2017

Item	Responses		Points	Rater Agreement		Difference (%)
	Received	Scored		Goal (%)	Actual (%)	
English I – MO0001870-1	28	26	4	80%	100%	20
English I – MO0001870-2	28	26	4	80%	100%	20
English I – MO0001870-3	28	26	2	95%	100%	5
English I – MO0001873-1	26	24	4	80%	100%	20
English I – MO0001873-2	26	24	4	80%	67%	-13
English I – MO0001873-3	26	24	2	95%	100%	5
English I – MO0001878-1	20	18	4	80%	100%	20
English I – MO0001878-2	20	18	4	80%	100%	20
English I – MO0001878-3	20	18	2	95%	100%	5
English I – MO0001881-1	24	20	4	80%	100%	20
English I – MO0001881-2	24	20	4	80%	100%	20
English I – MO0001881-3	24	20	2	95%	100%	5
English II – MO0000946-1	603	559	4	80%	76%	-4
English II – MO0000946-2	603	559	4	80%	82%	2
English II – MO0000946-3	603	559	2	95%	83%	-12
English II – MO0001805-1	710	637	4	80%	73%	-7
English II – MO0001805-2	710	637	4	80%	70%	-10
English II – MO0001805-3	710	637	2	95%	92%	-3

Item	Responses		Points	Rater Agreement		Difference (%)
	Received	Scored		Goal (%)	Actual (%)	
English II – MO0001817-1	587	508	4	80%	81%	1
English II – MO0001817-2	587	508	4	80%	69%	-11
English II – MO0001817-3	587	508	2	95%	90%	-5
English II – MO0001843-1	540	496	4	80%	65%	-15
English II – MO0001843-2	540	496	4	80%	82%	2
English II – MO0001843-3	540	496	2	95%	84%	-11
Algebra I – MOA116353	4,674	4,672	1	100%	100%	0
Algebra I – MOA116493	4,674	4,672	1	100%	98%	-2
Algebra I – MOA116502	4,674	4,672	1	100%	99%	-1
Algebra I – MOA116581_1	4,638	4,637	3	85%	100%	15
Algebra I – MOA116581_6	4,638	4,637	3	85%	88%	3
Algebra II – MO0001073	529	529	1	100%	100%	0
Algebra II – MO0001083	529	529	4	80%	88%	8
Algebra II – MOA2163	529	529	1	100%	100%	0
Algebra II – MOA21673	529	529	1	100%	98%	-2
Algebra II – MOA21695	529	529	1	100%	98%	-2
Geometry – MO0001747	265	265	2	95%	100%	5
Geometry – MO0033067	265	265	2	95%	100%	5
Geometry – MOG16224	265	265	1	100%	100%	0
Geometry – MOG1624	265	265	1	100%	100%	0
Geometry – MOG16294	265	265	1	100%	100%	0
Geometry – MOG16508	265	265	1	100%	100%	0
Geometry – MOG16576	265	265	1	100%	100%	0
Geometry – MOG16777	265	265	1	100%	100%	0
Geometry – MOG16791	265	265	1	100%	100%	0
Geometry – MOG16812	265	265	1	100%	100%	0

Table 4.2. Summary of Validity Paper Results—Spring 2018

Item	Responses		Points	Rater Agreement		Difference (%)
	Received	Scored		Goal (%)	Actual (%)	
English I – MO0001878-1	5,214	5,119	4	80%	71%	-9
English I – MO0001878-2	5,214	5,119	4	80%	75%	-5
English I – MO0001878-3	5,214	5,119	2	95%	94%	-1
English I – MO0001881-1	6,232	6,039	4	80%	67%	-13
English I – MO0001881-2	6,232	6,039	4	80%	72%	-8
English I – MO0001881-3	6,232	6,039	2	95%	93%	-2
English II – MO0000946-1	28,300	27,686	4	80%	79%	-1
English II – MO0000946-2	28,300	27,686	4	80%	84%	4
English II – MO0000946-3	28,300	27,686	2	95%	95%	0
English II – MO0001805-1	33,040	31,996	4	80%	70%	-10
English II – MO0001805-2	33,040	31,996	4	80%	72%	-8
English II – MO0001805-3	33,040	31,996	2	95%	93%	-2
Algebra I – MOA116299_1	27,418	2,679	1	100%	100%	0
Algebra I – MOA116299_2	27,418	10,292	2	95%	95%	0
Algebra I – MOA116299_3	27,417	7,846	2	95%	99%	4
Algebra I – MOA116299_4	27,417	26,722	2	95%	83%	-12
Algebra I – MOA116299_5	27,417	10,487	2	95%	100%	5
Algebra I – MOA116353	60,040	20,226	1	100%	99%	-1
Algebra I – MOA116493	32,539	10,230	1	100%	97%	-3
Algebra I – MOA116502	60,040	4,734	1	100%	98%	-2
Algebra I – MOA116581_1	32,459	11,127	3	85%	99%	14
Algebra I – MOA116581_6	32,458	31,542	3	85%	83%	-2
Algebra II – MO0001073	9,020	2,271	1	100%	98%	-2
Algebra II – MO0001083	9,020	8,882	4	80%	78%	-2
Algebra II – MO0001097	8,201	2,517	1	100%	97%	-3
Algebra II – MO0001099	8,201	8,096	3	85%	78%	-7
Algebra II – MO0001110	8,201	8,074	3	85%	94%	9
Algebra II – MOA21619	8,210	1,405	1	100%	100%	0
Algebra II – MOA2163	9,031	5,754	1	100%	100%	0

Item	Responses		Points	Rater Agreement		Difference (%)
	Received	Scored		Goal (%)	Actual (%)	
Algebra II – MOA216371	8,209	4,221	1	100%	100%	0
Algebra II – MOA216427	8,209	1,678	1	100%	98%	-2
Algebra II – MOA216498	8,210	2,537	1	100%	98%	-2
Algebra II – MOA2166	8,210	4,043	1	100%	99%	-1
Algebra II – MOA21673	9,031	2,371	1	100%	100%	0
Algebra II – MOA21695	9,031	1,095	1	100%	99%	-1
Geometry – MO0001747	2,471	1,267	2	95%	93%	-2
Geometry – MO0001888	2,031	1,732	2	95%	100%	5
Geometry – MO0001889	2,031	2,031	3	85%	93%	8
Geometry – MO0033067	2,471	2,171	2	95%	100%	5
Geometry – MOG16224	4,504	2,449	1	100%	100%	0
Geometry – MOG1624	2,471	1,836	1	100%	100%	0
Geometry – MOG16294	4,504	859	1	100%	97%	-3
Geometry – MOG16364	2,033	1,110	1	100%	100%	0
Geometry – MOG16508	265	1,174	1	100%	100%	0
Geometry – MOG16576	265	944	1	100%	99%	-1
Geometry – MOG16777	265	723	1	100%	99%	-1
Geometry – MOG16791	265	1,151	1	100%	100%	0
Geometry – MOG16812	265	1,250	1	100%	100%	0

4.3.1. Validity as Review

Selected validity responses were annotated by the content staff and flagged for review. If a scorer incorrectly scored one of these responses, content staff would address this with the scorer. This feedback helped to prevent scorer drift. Once a scorer received a validity response, it was not re-administered.

4.3.2. Frequency Distribution

Frequency distribution, the number or percentage of scores assigned at each score point of a rubric, was another key metric tracked and managed during scoring. Questar evaluated any anomalous scoring trends at the item and scorer level and intervened with the individuals involved. Anomalous scoring trends were determined by comparing individual reader distribution of scores to the overall group distribution of scores. Frequency distribution reports

showed a breakdown of score points assigned on a given item. Expressed in percentages, data in these reports showed how often scorers, individually and as a group, assigned each score point.

4.3.3. Retraining and Resetting Scores

Questar's electronic scoring system has the ability to purge the scores assigned by a scorer whose work was deemed substandard. In those cases, the scores assigned by that individual would be cleared from the database. The responses would then be rerouted to qualified scorers and rescored according to the original scoring design. The scoring system also allows scoring leadership to reset scores for a date range or an item. Questar has not had to use this process to-date during this project. If it had, that reader would have been removed from the project.

4.3.4. Reporting and Data Analysis

Questar's digital scoring system automatically captured and tracked all score data. By reviewing up-to-date scorer performance statistics, Questar could quickly identify particular scorers whose performance fell outside of group norms while also keeping close track of the group as a whole. Reports for use in quality monitoring and project completion status were generated and updated automatically. These reports were available to Questar scoring leadership staff at any time via the digital scoring system. Questar's reports gave daily and cumulative statistics and provided individual and group average agreement percentages.

4.3.5. Item Types and Score Points for Each Content Area

The English I and English II tests each include a writing task. The writing tasks are scored on a three-trait analytic rubric: conventions (scored 0–2), development and elaboration (scored 1–4), and organization and flow (scored 1–4).

Algebra I, Algebra II, and Geometry contained constructed responses of 0–1, 0–2, 0–3, and 0–4 score points.

4.4. Quality Measure of Scoring: Rater Agreement

Rater agreement provides evidence supporting scorer consistency. Tables 4.5 and 4.6 present the rater agreement for each item for Fall 2017 and Spring 2018, respectively. The tables provide the total n -count for each item, the n -count for each item minus the number of auto-scores, expert scores, read-behinds, and the n -count of double reads (i.e., the responses that received a second read). The actual agreement rates are raw data-rates before any adjudication was performed, if needed. Adjudication is only performed by team leads and scoring directors and was calculated based on the double reads. The percentage of student responses of which two raters agreed exactly for a given item is presented (Exact Agreement Actual). Some degree of disagreement is to be expected with human judges, so the Exact + Adjacent Agreement is also presented. For a few 1-point Algebra I, Algebra II, and Geometry items, the Exact + Adjacent Agreement is less than 100% due to instances where the raters disagreed on whether the student response was scoreable.

Across the two administrations, the Exact Agreements were higher than 80% with a few exceptions. The Exact + Adjacent Agreements were perfect (100%) for the majority of items and 95% or higher for all but one of the remaining items.

Another approach to rater agreement is weighted kappa, which corrects for chance agreement (i.e., the probability that two raters will agree simply by chance based on number of score points available). The Fleiss-Cohen weights were applied for the weighted kappa statistic (Fleiss & Cohen, 1973). The Landis and Koch (1977) proposed interpretation guidelines for kappa values are available in Table 4.3.

Table 4.3. Guidelines for Interpretation of Kappa

Value	Interpretation
Less than 0.01	Poor agreement
0.01 to 0.20	Slight agreement
0.21 to 0.40	Fair agreement
0.41 to 0.60	Moderate agreement
0.61 to 0.80	Substantial agreement
0.81 to 1.00	Almost perfect agreement

Across the two administrations, most of the weighted kappa values fall within the category of Almost Perfect Agreement (49 of 59, 83%), although there are a few items in the Substantial (6 of 59, 10%) and Moderate (4 of 59, 7%) Agreement classifications. In summary, the rater agreement percentages (i.e., Exact, Exact + Adjacent) and the weighted kappa results indicate a high degree of consensus among raters for the human-scoring items.

Table 4.4. Rater Agreement—Fall 2017

Item	Score Points	n-Count Responses			Exact Agreement		Exact or Adjacent Agreement	
		Received	Scored	Double Reads	Goal (%)	Actual (%)	Goal (%)	Actual (%)
English I – MO0001870-1	4	28	26	3	80%	100%	100%	100%
English I – MO0001870-2	4	28	26	3	80%	100%	100%	100%
English I – MO0001870-3	2	28	26	3	95%	100%	100%	100%
English I – MO0001873-1	4	26	24	3	80%	100%	100%	100%
English I – MO0001873-2	4	26	24	3	80%	67%	100%	100%
English I – MO0001873-3	2	26	24	3	95%	100%	100%	100%
English I – MO0001878-1	4	20	18	2	80%	100%	100%	100%
English I – MO0001878-2	4	20	18	2	80%	100%	100%	100%
English I – MO0001878-3	2	20	18	2	95%	100%	100%	100%
English I – MO0001881-1	4	24	20	3	80%	100%	100%	100%
English I – MO0001881-2	4	24	20	3	80%	100%	100%	100%
English I – MO0001881-3	2	24	20	3	95%	100%	100%	100%
English II – MO0000946-1	4	603	559	54	80%	76%	100%	100%

Item	Score Points	n-Count Responses			Exact Agreement		Exact or Adjacent Agreement	
		Received	Scored	Double Reads	Goal (%)	Actual (%)	Goal (%)	Actual (%)
English II – MO0000946-2	4	603	559	54	80%	82%	100%	100%
English II – MO0000946-3	2	603	559	54	95%	83%	100%	88%
English II – MO0001805-1	4	710	637	64	80%	73%	100%	97%
English II – MO0001805-2	4	710	637	64	80%	70%	100%	97%
English II – MO0001805-3	2	710	637	64	95%	92%	100%	97%
English II – MO0001817-1	4	587	508	48	80%	81%	100%	100%
English II – MO0001817-2	4	587	508	48	80%	69%	100%	100%
English II – MO0001817-3	2	587	508	48	95%	90%	100%	100%
English II – MO0001843-1	4	540	496	51	80%	65%	100%	100%
English II – MO0001843-2	4	540	496	51	80%	82%	100%	100%
English II – MO0001843-3	2	540	496	51	95%	84%	100%	98%
Algebra I – MOA116353	1	4,674	4,672	451	100%	100%	100%	100%
Algebra I – MOA116493	1	4,674	4,672	463	100%	98%	100%	98%
Algebra I – MOA116502	1	4,674	4,672	462	100%	99%	100%	99%
Algebra I – MOA116581_1	3	4,638	4,637	462	85%	100%	100%	100%
Algebra I – MOA116581_6	3	4,638	4637	461	85%	88%	100%	98%
Algebra II – MO0001073	1	529	529	53	100%	100%	100%	100%
Algebra II – MO0001083	4	529	529	53	80%	88%	100%	98%
Algebra II – MOA2163	1	529	529	53	100%	100%	100%	100%
Algebra II – MOA21673	1	529	529	53	100%	98%	100%	98%
Algebra II – MOA21695	1	529	529	53	100%	98%	100%	100%
Geometry – MO0001747	2	265	265	27	95%	100%	100%	100%
Geometry – MO0033067	2	265	265	27	95%	100%	100%	100%
Geometry – MOG16224	1	265	265	27	100%	100%	100%	100%
Geometry – MOG1624	1	265	265	27	100%	100%	100%	100%
Geometry – MOG16294	1	265	265	27	100%	100%	100%	100%

Item	Score Points	n-Count Responses			Exact Agreement		Exact or Adjacent Agreement	
		Received	Scored	Double Reads	Goal (%)	Actual (%)	Goal (%)	Actual (%)
Geometry – MOG16508	1	265	265	27	100%	100%	100%	100%
Geometry – MOG16576	1	265	265	27	100%	100%	100%	100%
Geometry – MOG16777	1	265	265	27	100%	100%	100%	100%
Geometry – MOG16791	1	265	265	27	100%	100%	100%	100%
Geometry – MOG16812	1	265	265	27	100%	100%	100%	100%

Table 4.5. Rater Agreement—Spring 2018

Item	Score Points	n-Count Responses			Exact Agreement		Exact or Adjacent Agreement	
		Received	Scored	Double Reads	Goal (%)	Actual (%)	Goal (%)	Actual (%)
English I – MO0001878-1	4	5,214	5,119	512	80%	71%	100%	100%
English I – MO0001878-2	4	5,214	5,119	512	80%	75%	100%	99%
English I – MO0001878-3	2	5,214	5,119	512	95%	94%	100%	100%
English I – MO0001881-1	4	6,232	6,039	597	80%	67%	100%	99%
English I – MO0001881-2	4	6,232	6,039	597	80%	72%	100%	100%
English I – MO0001881-3	2	6,232	6,039	597	95%	93%	100%	100%
English II – MO0000946-1	4	28,300	27,686	2758	80%	79%	100%	100%
English II – MO0000946-2	4	28,300	27,686	2758	80%	84%	100%	100%
English II – MO0000946-3	2	28,300	27,686	2758	95%	95%	100%	100%
English II – MO0001805-1	4	33,040	31,996	3176	80%	70%	100%	99%
English II – MO0001805-2	4	33,040	31,996	3176	80%	72%	100%	100%
English II – MO0001805-3	2	33,040	31,996	3176	95%	93%	100%	100%
Algebra I – MOA116299_1	1	27,418	2,679	245	100%	100%	100%	100%
Algebra I – MOA116299_2	2	27,418	10,292	732	95%	95%	100%	99%
Algebra I – MOA116299_3	2	27,417	7,846	751	95%	99%	100%	100%

Item	Score Points	n-Count Responses			Exact Agreement		Exact or Adjacent Agreement	
		Received	Scored	Double Reads	Goal (%)	Actual (%)	Goal (%)	Actual (%)
Algebra I – MOA116299_4	2	27,417	26,722	2659	95%	83%	100%	97%
Algebra I – MOA116299_5	2	27,417	10,487	1029	95%	100%	100%	100%
Algebra I – MOA116353	1	60,040	20,226	2015	100%	99%	100%	99%
Algebra I – MOA116493	1	32,539	10,230	1036	100%	97%	100%	97%
Algebra I – MOA116502	1	60,040	4,734	453	100%	98%	100%	99%
Algebra I – MOA116581_1	3	32,459	11,127	1108	85%	99%	100%	100%
Algebra I – MOA116581_6	3	32,458	31,542	3131	85%	83%	100%	97%
Algebra II – MO0001073	1	9,020	2,271	242	100%	98%	100%	98%
Algebra II – MO0001083	4	9,020	8,882	887	80%	78%	100%	96%
Algebra II – MO0001097	1	8,201	2,517	248	100%	97%	100%	97%
Algebra II – MO0001099	3	8,201	8,096	810	85%	78%	100%	97%
Algebra II – MO0001110	3	8,201	8,074	799	85%	94%	100%	100%
Algebra II – MOA21619	1	8,210	1,405	140	100%	100%	100%	100%
Algebra II – MOA2163	1	9,031	5,754	577	100%	100%	100%	100%
Algebra II – MOA216371	1	8,209	4,221	441	100%	100%	100%	100%
Algebra II – MOA216427	1	8,209	1,678	185	100%	98%	100%	98%
Algebra II – MOA216498	1	8,210	2,537	280	100%	98%	100%	98%
Algebra II – MOA2166	1	8,210	4,043	401	100%	99%	100%	99%
Algebra II – MOA21673	1	9,031	2,371	246	100%	100%	100%	100%
Algebra II – MOA21695	1	9,031	1,095	121	100%	99%	100%	99%
Geometry – MO0001747	2	2,471	1,267	134	95%	93%	100%	100%
Geometry – MO0001888	2	2,031	1,732	168	95%	100%	100%	100%
Geometry – MO0001889	3	2,031	2,031	203	85%	93%	100%	99%
Geometry – MO0033067	2	2,471	2,171	225	95%	100%	100%	100%
Geometry – MOG16224	1	4,504	2,449	247	100%	100%	100%	100%

Item	Score Points	n-Count Responses			Exact Agreement		Exact or Adjacent Agreement	
		Received	Scored	Double Reads	Goal (%)	Actual (%)	Goal (%)	Actual (%)
Geometry – MOG1624	1	2,471	1,836	182	100%	100%	100%	100%
Geometry – MOG16294	1	4,504	859	89	100%	97%	100%	97%
Geometry – MOG16364	1	2,033	1,110	113	100%	100%	100%	100%
Geometry – MOG16508	1	4,504	1,174	119	100%	100%	100%	100%
Geometry – MOG16576	1	4,504	944	102	100%	99%	100%	99%
Geometry – MOG16777	1	2,471	723	70	100%	99%	100%	100%
Geometry – MOG16791	1	4,504	1,151	114	100%	100%	100%	100%
Geometry – MOG16812	1	2,471	1,250	125	100%	100%	100%	100%

Chapter 5: Psychometric Analyses

5.1. Overview of the Operational Test Data Analysis

Psychometric analyses are a pivotal part of the validation of the MO EOC assessments. This chapter provides the classical item statistics, the differential item functioning analysis results, IRT based scaling and equating procedures, and the information to evaluate the equivalency among test forms.

5.2. Classical Item Statistics

This section presents the item analysis summary information, which includes mean item scores and discrimination indices, at the item level for each content area. These item summary statistics (i.e., p -values, point-biserial correlations, and omit rates) are based on the operational administrations that included responses from 7,990 students for Fall 2017, and 153,765 students for Spring 2018 across all content areas, as shown in Table 5.1. Also, the differential item functioning (DIF) analyses are included in the MO EOC 2017–2018 technical report.

Table 5.1. Number of Students Included in the Analyses

Content Area	Fall 2017	Spring 2018
Algebra I	4,670	59,828
Algebra II	526	17,173
English I	89	11,430
English II	2,444	61,400
Geometry	261	3,934
Total	7,990	153,765

5.2.1. Item-Level Statistics

Appendix B presents the item difficulty, discrimination, and omission rates for all items on each assessment for the Fall 2017 and Spring 2018 operational administrations. Field test items are not included in the tables. The results indicate the items measure achievement across a range of difficulty and most items are correlated with the total test score, thereby discriminating between low- and high-performing students.

For dichotomous items, item difficulty is the proportion of students who gave correct responses to the item (also referred to as p -value). For polytomous items, the mean score is the average of the scores for students who responded to these items. The discrimination index is the point-biserial correlation between the item score and the total score based on the remaining items (also referred to as *corrected point-biserial correlation*). Both item difficulty and item discrimination are expressed in the raw score metric. The student counts given are the total test population for that content area. However, two forms were administered for the Fall 2017 and Spring 2018 English and Mathematics assessments, so not all students responded to each item.

When building a test form for the MO EOC assessment, care is taken to refrain from choosing items with p -values less than 0.30, greater than 0.95, or with negative point biserials. When p -values and point biserials are out of range, the answer keys are checked to verify that they are correct.

5.2.2. Speededness

The consequence of time limits on students' scores is called *speededness*. A test is speeded if examinees do not have time to respond to all items on the test. Examinees may receive a lower score than they would have had the test not been timed. Most *speededness* statistics are based on the number of items that were not attempted by students. The MO EOC assessments were not designed to be speeded tests. Rather, they were intended to be *power tests*. That is, students are expected to have ample time to finish all items and prompts. For the purpose of this analysis, if a student did not attempt the last item on any of the separately timed subsections of the test, it was assumed that the student might not have reached the item because he or she ran out of time.

Item omit rates, especially for items appearing later in a test, are a gauge of potential test speededness. The "Omit Rate" column in Appendix B shows the percentage of students who omitted each SR item for each MO EOC assessment. As shown in the tables, the omit rates are zero or negligible for most items, thereby supporting the interpretation that the MO EOC assessments are power tests.

5.2.3. Differential Item Functioning (DIF)

Differential item functioning (DIF) occurs when an item has difficulty measures that vary substantially across subgroups of examinees with comparable ability. DIF will be examined using the Mantel-Haenszel (MH) (1959) procedure for dichotomous items and WINSTEPS software (Linacre, 2006a) for the polytomous items. DIF analyses for the MO EOC assessments will be presented in the next iteration of the technical report. Items flagged for DIF are used to score students.

The Mantel-Haenszel method is a nonparametric approach to DIF. In the MH procedure, total raw scores are held constant while an odds ratio is estimated. In practice, the odds ratio is generally converted to the delta metric; the Educational Testing Service (ETS) categorization is applied to flag the significance of DIF effects (Dorans & Holland, 1992).

With the groups matched on raw score, comparable examinees can be placed in $j \times 2$ tables of group by item response, where j equals the number of levels of the matching variable. For these analyses, if j equals each observed score category of the k -item tests, with $j = 0, 1, 2, \dots, k$, then one 2×2 table for a given item with score category j can be represented as the following:

Table 5.2. General Notation for the 2 x 2 Data Matrix

	Correct	Incorrect	Total
Reference	y_j	x_j	m_j
Focal	y'_j	x'_j	m'_j
Total	n_j	n'_j	N_j

The Delta MH test statistic and variance have the following form:

$$DeltaMH = 2.35 \ln \frac{\sum_{j=0}^K \frac{(y_j x'_j - y'_j x_j)}{N_j}}{\sum_{j=0}^K \frac{y'_j x_j}{N_j}}$$

where y_j , x_j , y'_j , and x'_j are the frequency counts of cells of the 2×2 tables, N_j is the total n for the cells.

The critical values of the ETS categorizations are 1.00 and 1.50 on the delta scale for categories A (negligible DIF), B (slight to moderate DIF), and C (moderate to severe DIF). Specifically, if the absolute value of delta is smaller than 1.00, the item is categorized as A. If the absolute value of delta is larger than or equal to 1.50, the item is classified as C. Otherwise items are categorized as B. In both the A and C categories, statistical significance is set at the 5% level for a single item.

The critical values for the polytomous items are determined by the DIF contrast, calculated by the DIF measure of reference group minus the DIF measure of focal group. Absolute logit values less than 0.43 were classified as A, greater than or equal to 0.64 were classified as C, and between 0.43 and 0.63, inclusively, were classified as B (Linacre, 2006b). Negative DIF contrast values favor the reference group whereas positive DIF contrast values favor the focal group.

Tables 5.3, and 5.4 present the results of the DIF analyses for the items included on the Fall 2017, and Spring 2018 operational forms, respectively. In these analyses, male students and White students were considered the reference groups for gender and ethnicity, respectively. The female students were the focal group for gender and the Black and Hispanic students were the focal groups for ethnicity. DIF analyses are performed when there is a minimum of 200 students in the focal group.

Table 5.3. Differential Item Functioning Analysis Results—Fall 2017

Content Area	Group	n-Count	Dichotomous Items					Polytomous Items				
			A	B	B-	C	C-	A	B	B-	C	C-
English II	M/F	641/509	38	1	1	0	0	4	2	0	0	0
	W/B	644/312	36	1	3	0	0	0	0	0	0	0
	W/H	644/113	0	0	0	0	0	0	0	0	0	0
Algebra I	M/F	2,284/2,161	37	1	1	0	1	3	0	1	0	0
	W/B	2,902/944	36	1	3	0	0	4	0	0	0	0
	W/H	2,902/336	36	2	2	0	0	3	0	1	0	0
English I	M/F	18/26	0	0	0	0	0	0	0	0	0	0
	W/B	20/11	0	0	0	0	0	0	0	0	0	0
	W/H	20/5	0	0	0	0	0	0	0	0	0	0
Algebra II	M/F	267/257	40	1	1	1	1	1	0	1	0	0
	W/B	383/60	0	0	0	0	0	0	0	0	0	0
	W/H	383/39	0	0	0	0	0	0	0	0	0	0

Content Area	Group	n-Count	Dichotomous Items					Polytomous Items				
			A	B	B-	C	C-	A	B	B-	C	C-
Geometry	M/F	99/157	0	0	0	0	0	0	0	0	0	0
	W/B	206/22	0	0	0	0	0	0	0	0	0	0
	W/H	206/12	0	0	0	0	0	0	0	0	0	0

Note. Classifications with a negative sign (“-”) favor the reference group, while classifications with no sign favor the focal group. DIF contrast groups: M/F = male versus female; W/B = White versus Black; and W/H = White versus Hispanic.

Table 5.4. Differential Item Functioning Analysis Results—Spring 2018

Content Area	Group	n-Count	Dichotomous Items					Polytomous Items				
			A	B	B-	C	C-	A	B	B-	C	C-
English II	M/F	16,888/16,195	39	1	0	0	0	1	2	0	0	0
	W/B	24,359/4,900	39	0	1	0	0	3	0	0	0	0
	W/H	24,359/1,969	40	0	0	0	0	3	0	0	0	0
Algebra I	M/F	14,163/13,977	36	2	2	0	0	4	0	0	0	0
	W/B	21,082/3,802	38	1	1	0	0	4	0	0	0	0
	W/H	21,082/1,644	40	0	0	0	0	4	0	0	0	0
English I	M/F	3,207/3,015	40	0	0	0	0	1	0	0	2	0
	W/B	4,895/688	37	0	2	0	1	3	0	0	0	0
	W/H	4,895/383	38	0	2	0	0	3	0	0	0	0
Algebra II	M/F	3,934/4,486	44	0	0	0	0	2	0	0	0	0
	W/B	6,876/532	42	0	2	0	0	2	0	0	0	0
	W/H	6,876/441	41	2	1	0	0	2	0	0	0	0
Geometry	M/F	998/1,049	38	1	1	0	1	3	1	0	0	0
	W/B	1,747/99	0	0	0	0	0	0	0	0	0	0
	W/H	1,747/103	0	0	0	0	0	0	0	0	0	0

Note. Classifications with a negative sign (“-”) favor the reference group, while classifications with no sign favor the focal group. DIF contrast groups: M/F = male versus female; W/B = White versus Black; and W/H = White versus Hispanic.

5.2.4. Summary

The item analyses provided in this chapter show that the MO EOC assessments have sound psychometric properties. For example, *p*-values show that MO EOC assessment items measure achievement across a broad range of difficulty. In addition, item discrimination values show that most items are appropriately correlated with the total test score and thus contribute to distinguishing between lower-performing and higher-performing students. Also, very few students omitted items during testing. The low percentage of students omitting items provides evidence that the test is a power test of the students’ skills and not a speeded test. Additionally, DIF analyses conducted on gender and ethnicity help address construct-irrelevant variance, which presents a serious threat to the validity of inferences made from achievement test scores.

5.3. Scaling and Equating

5.3.1. Introduction

This section begins with a description of the IRT models used for equating followed by details of the scaling and equating procedures implemented on the five 2017–18 MO EOC English and Mathematics operational test forms. Scaling and equating maintain the consistency of the MO EOC assessments’ score scales over time and ensure that the achievement levels are applied consistently from year to year.

For the five English and Mathematics content areas (English I, English II, Algebra I, Algebra II, and Geometry), two core forms (A and B) were concurrently calibrated on the base-year scale using the data from both Fall 2017 and Spring 2018 administrations. One of the core forms (A) was used in the standard setting workshop to identify the scaled score cut points to categorize students’ achievement levels. Subsequently, the reporting score scale was developed and used to report student scale scores on both administrations after the approval of the DESE.

For the two Science content areas (Biology and Physical Science), the stand-alone field tests (SAFT) were administered in Fall 2017 (Biology only) and Spring 2018. Those field test items will be used to construct the operational core forms for the Fall 2018 and Spring 2019 administrations. It was planned to not report student Science scores for Fall 2017 and Spring 2018.

The scaling and equating methods used for the English and Mathematics assessments are consistent with the methods used in the past. Detailed procedures for scaling and equating for the 2014–2015 administration are provided in the *2014–2015 MO EOC Technical Report*.

5.3.2. Item Response Theory (IRT)

Rasch scaling is “a method for obtaining objective, fundamental, linear measures from stochastic observations of ordered category responses” (Linacre, 2006a, p. 10). One feature of the Rasch model that distinguishes it from classical test theory is the placement of estimates of a person’s ability and item difficulty on the same scale. The Rasch model expresses the probability of a correct response to an item as a function of the ability of the person and the difficulty of the item. In the Rasch model, the probability of a correct response to item i , given θ , is

$$P_i(\theta) = \frac{e^{(\theta - b_i)}}{1 + e^{(\theta - b_i)}},$$

where θ = latent trait, or ability, level and b_i = the difficulty parameter for item i .

Masters (1982) developed the partial credit model as an extension of the Rasch model to handle polytomous items, or items that allow for partially correct responses (e.g., open-ended items).

For an item with possible scores ranging from zero to J , the probability of obtaining score j on item i , given θ , is

$$P_{ij}(\theta) = \frac{e^{\sum_{k=0}^j (\theta - d_{ik})}}{\sum_{x=0}^J e^{\sum_{k=0}^x (\theta - d_{ik})}},$$

where d_{ij} is the difference between the overall item difficulty, b_i , and the step parameter γ_{ij} for level j of item i , and the sum of step parameters is zero across all levels of item i .

WINSTEPS software (Linacre, 2006b) was used to perform the calibration of the item parameters which were essential information for scaling and equating of the MO EOC assessments. WINSTEPS is designed to produce a single scale by jointly analyzing data from students' responses to both dichotomous items and polytomous items. The dichotomous items were calibrated using the Rasch model (Rasch, 1960; Wright & Stone, 1979); the partial credit model (Masters, 1982) was used to calibrate the polytomous items.

The Rasch measure and threshold parameters of all operational items are listed in the tables in the Appendix I. the tables also present the item fit indexes along with the standard error of estimates.

5.3.3. Scaling and Equating

5.3.3.1. Scale Development

The base-year scales for the five English and Mathematics test forms were built by the concurrent calibration of the two core operational forms using the data from both Fall 2017 and Spring 2018 administrations. The resultant item parameters were used to estimate students' ability following the inverse-TCC mapping procedure and the raw score to theta estimate conversion table. This conversion table was also used in the standard setting workshop to determine the scale score cut points based on the new standards.

The critical form equivalency issue between two operational test forms (A and B) were evaluated in multiple ways. The raw score cut corresponding to the scaled score cut in the RSS are presented in the Table 5.5 for both core forms. The small degree of discrepancies between the core forms indicates that the difficulties of the forms are very similar. The test characteristic curves (TCC) and the test information curves (TIC) for both forms are provided in the Appendix J.

Table 5.5. Raw Score Cut by Core Form

Content Area	Cut Point	Core A	Core B
Algebra I	Basic	16	15
	Proficient	24	23
	Advanced	32	32
Algebra II	Basic	15	16
	Proficient	25	26
	Advanced	34	35
English I	Basic	17	19
	Proficient	27	28
	Advanced	36	36
English II	Basic	17	18
	Proficient	27	28
	Advanced	39	39

Content Area	Cut Point	Core A	Core B
Geometry	Basic	16	14
	Proficient	25	23
	Advanced	34	32

The scale scores and conditional standard errors of measurement (CSEM) used in score reporting are derived from the application of item response theory (IRT)—a latent trait scaling methodology. IRT theta (ability) estimates are mathematically converted to the scale score metric using a linear transformation that includes a slope parameter (a multiplication constant) and an intercept parameter (an additive constant). Further, the state board-approved performance standards (finalized after standard setting) are used to assign students into the proper performance levels.

Descriptive statistics for the distributions of the theta estimates for each test are presented in Table 5.6. Those values, in addition to the linear transformation constants that convert theta estimates to scale scores, serve as the basic parameters for the scale construction procedures.

Table 5.6. Descriptive Statistics of Theta Estimates for the 2017–2018 Administrations of the MAP EOC Assessments

Content Area	Mean Theta	SD Theta	5 SDs Below Mean	Minimum Theta
Algebra I	-0.31	1.18	-6.19	-5.82
Algebra II	0.01	1.28	-6.40	-6.06
Geometry	-0.01	1.12	-5.61	-5.94
English I	0.24	1.01	-4.80	-6.07
English II	0.14	1.03	-5.01	-5.90

The cut scores determined at the standard setting meeting were reviewed by the TAC and the State Board of Education. Chapter 6 contains details on the standard setting results and approval process.

The scale development procedure determines the scaling parameters (e.g., the standard deviation of scale score distribution) to find the slope of the linear function and the LOSS and HOSS to shape the desirable scale score distributions. The criteria used to evaluate each scaling option included the following:

- (1) the scale score range (i.e., the maximum - minimum scale score values);
- (2) the number of score points in each performance level, especially the two middle performance levels (i.e., Basic and Proficient);
- (3) clumping—the percentage of raw score points that were associated with duplicated scale score values (e.g., if raw scores of 15 and 16 both had scale score value of 410); and
- (4) gaps—the percentage of scale score points that are not manifested in the conversion table (e.g., if a raw score of 15 had a scale score of 405 and a raw score of 15 had a scale score of 410, the scale score values of 406, 407, 408, and 409 are not observed).

The three candidate scales considered had a Proficient scale score cut equal to 400 with standard deviations of 10, 15, and 20, respectively. Based on the results of the study, one scaling option was recommended. This scale had a Proficient cut equal to 400, scale score SD equal to 15, and LOSS equal to 325. The evaluation of the scaling options and the above recommendation purposefully did not include consideration of HOSS. In regards to HOSS, Questar recommends the maximum scale score value be allowed to float in the next several years. When the desired six operational forms have been developed, the HOSS can be reconsidered using the maximum scaled scores values over all test forms to guide that decision.

5.3.3.2. Estimation of the Slope and Intercept

Table 5.7 presents the slopes and intercepts for the RSS linear transformation along with the theta and scale score cut points.

Table 5.7. Theta to Scale Score Transformation with Slopes and Intercepts

Content Area	Basic		Proficient		Advanced		Slope	Intercept
	Theta	SS	Theta	SS	Theta	SS		
Algebra I	-1.0667	389	-0.2389	400	0.5056	409	12.753	403.047
Algebra II	-0.9444	388	0.0833	400	1.0000	411	11.691	399.026
English I	-1.0722	384	0.0000	400	1.0389	415	14.895	400.000
English II	-1.0611	384	0.0111	400	1.3778	420	14.559	399.838
Geometry	-1.0667	387	-0.0722	400	0.9556	414	13.379	400.966

5.3.3.3. Scale Score Ranges

Table 5.8 shows the scale score ranges for Fall 2017 and Spring 2018.

Table 5.8. Scale Score Ranges by Achievement Level for Fall 2017 and Spring 2018

Content Area	Achievement Level	Scale Score Range
English II	Below Basic	325–383
	Basic	384–399
	Proficient	400–419
	Advanced	420 or higher
Algebra I	Below Basic	325–388
	Basic	389–399
	Proficient	400–408
	Advanced	409 or higher
English I	Below Basic	325–383
	Basic	384–399
	Proficient	400–414
	Advanced	415 or higher
Algebra II	Below Basic	325–387
	Basic	388–399
	Proficient	400–410

Content Area	Achievement Level	Scale Score Range
	Advanced	411 or higher
Geometry	Below Basic	325–386
	Basic	387–399
	Proficient	400–413
	Advanced	414 and higher

5.3.4. RSS Conversions

Appendix C provides the RSS conversion tables of both core forms for Fall 2017 and Spring 2018. The tables include the scale score, conditional standard error of measurement, and achievement level categorization associated with each raw score point for both forms.

Chapter 6: Standard Setting

6.1. General Overview of the Standard Setting

The new MLS for ELA and Mathematics were approved by Missouri State Board of Education on April 19, 2016. Missouri schools implemented the new MLS in 2016–2017; the MAP assessment aligned to the MLS was first administered in 2017–2018.

DESE partnered with Questar and Educational Testing Service (ETS) to achieve these goals and conduct a standard setting workshop to recommend cut scores for the MAP EOC assessments. The standard setting process employed the Bookmark method and resulted in recommended cut scores by Missouri educators. The four performance levels for the MAP (*Below Basic*, *Basic*, *Proficient*, and *Advanced*) are designed to indicate students' knowledge of the skills listed in the MLS.

6.2. Standard Setting Workshop Process

A total of 36 educators from the state of Missouri participated as panelists in the workshop. The Bookmark method was chosen because it allowed different item types, such as multiple-choice and constructed-response items, to be ordered together in the ordered item booklets (OIBs). The panelists used the performance level descriptors (PLDs) and OIBs to set the cut scores. The procedure also incorporated the external benchmarks with the presentation of the ACT College and Career Readiness (CCR) data for reference.

The cuts were recommended in three rounds. Feedback was provided after each round. Specifically, frequency distributions and medians of the panelists' recommendations were provided after Rounds 1 and 2. Impact data (the percentage of students in each performance level) were presented to the panelists after Rounds 2 and 3. Panelists were then given an opportunity to discuss the feedback at their tables (after every round) and with the room (after Rounds 2 and 3).

6.2.1. Benchmarks

Benchmarks and external, policy-based information were an essential part of the MAP EOC standard setting workshop. The workshop incorporated the external benchmarks with the presentation of the ACT College and Career Readiness (CCR) data for reference. Specifically, panelists were encouraged to include their judgments around the ACT CCR Benchmark score; the Benchmark score was indicated on the item map panelists used to recommend the *Proficient* cut scores.

After determining which ACT tests were to be used as benchmarks, the proportion of Missouri students classified as meeting or exceeding the ACT CCR benchmarks in English (59%) and Mathematics (34%) was provided to the panelists. The intent of including these data points was to provide additional information about an assessment with similar goals as the EOC assessments to the participants. Specifically, the panelists considered student proficiency on skills related to college and career readiness.

6.2.2. Panelists

Representative samples of MO educators from across the state participated in the standard setting sessions. In recruiting panelists, the goal was to include MO educators with experience in the education of students in the relevant high school courses who were familiar with the EOC assessment and the

corresponding MLS. Additionally, college faculty currently teaching introductory (freshman) courses were recruited.

6.3. Evaluation of Standard Setting Workshop

The recommended cut scores and associated impact data based on the median cut scores from Round 3 were made. However, DESE leadership adjusted panelists' recommended cut scores using the CSEMs after the workshop. The final recommended cut scores are presented in Table 6.1.

This section provides the standard errors associated with the recommended cut scores, including the standard error of judgment and the conditional standard error of measurement.

6.3.1. Standard Errors Associated with Recommendations

In this section, statistical uncertainty (or noise) accompanying the recommended cut scores are shown.

6.3.1.1. Standard Error of Judgment (SEJ)

The SEJ quantifies the error associated with the standard setting panel judgements. Specifically, it is calculated by multiplying 1.2538 by the standard error of the mean, which is a research-based estimate of the standard error of the median (Guildford, 1965; MacCann & Stanley, 2004; Walker & Lev, 1953). Mathematically, it is computed as the following:

$$\hat{\sigma}_{Median} = \frac{1.2538\hat{\sigma}_{\bar{x}}}{\sqrt{n}}$$

where $\hat{\sigma}_{\bar{x}}$ is the standard deviation of the panelist judgements and n equals the number of panelists.

6.3.1.2. Conditional Standard Error of Measurement (CSEM)

The CSEM quantifies the amount of measurement error associated with a certain point on the underlying test scale. The CSEM is a way to take into consideration the reliability of the assessment scores. Policy makers can use this statistic as one approach in adjusting cut score recommendations. For example, a decision maker might raise or lower a proposed cut score one CSEM based on the probability that examinees hold true scores within the range around the cut score.

CSEMs are conditioned on the ability of the student, meaning that the test has different levels of measurement error at different points along the ability scale. Rasch-based CSEMs for each scale score are defined as the reciprocal of the square root of the test information at the point on the ability continuum that corresponds to each scale score (Hambleton & Swaminathan, 1985). The CSEM is calculated as follows:

$$CSEM(\theta) = \frac{1}{\sqrt{I(\theta)}}$$

where $CSEM(\theta)$ is the Rasch-based CSEM for a scale score and $I(\theta)$ equals the test information. In the equation above, $I(\theta)$ is defined as:

$$I(\theta) = \pi_{vi}(1 - \pi_{vi})$$

where π_{vi} is the probability of person v (of a given ability θ) correctly responding to item i (of a given difficulty).

These values, SEJ and CSEM, are associated with each cut score and are shown in Table 6.1. The conditional standard error of measurement refers to the CSEM. The standard error of judgement refers to the standard error of panelists' cut score recommendations in Round 3, the last round before participants discussed their individual bookmark placements across tables.

Table 6.1. Standard Error Values Associated with the Round 3 Cut Score Recommendations

Content	Standard Error of Judgement			Conditional Standard Error of Measurement		
	Basic	Proficient	Advanced	Basic	Proficient	Advanced
English I	0.2	0.8	0.6	30	29	33
English II	1.4	0.9	1.1	29	29	36
Algebra I	0.6	0.9	0.6	30	27	28
Algebra II	0.6	0.7	1.5	31	29	29
Geometry	0.4	0.5	0.2	31	29	31

6.4. Post Standard Setting Activities

After the standard setting, the cut score recommendations from the grade-level and EOC standard setting workshops were reviewed by DESE. It was noted from the review that:

- the percentage of students classified as *Proficient* or above in the EOC tests tended to be much higher compared to CCR benchmarks on the ACT English and Mathematics tests; and
- the percentages of students classified as *Proficient* or above in the EOC were discrepant to those from Grades 7 and 8, particularly for the English tests.

As a result, DESE asked the planned policy review committee to consider an articulation between Grade 7, Grade 8, and high school.

6.4.1. Policy Review Meeting

On August 21, 2018, a policy review meeting with eight Missouri administrators and stakeholders was held to review the cut recommendations from the EOC and grade-level standard setting workshops. A member of the TAC facilitated the process. Any unanticipated or inexplicable patterns in the recommendations were to be considered; any appropriate adjustments were to be recommended to DESE.

The policy review committee acknowledged the unexpected differences in impact data between Grades 7, 8, and high school. The committee was not able to unanimously agree on the best course of action to take to resolve the inconsistency. For instance, the option of raising the rigor of the cut scores in the EOC tests to better reflect the performance of Missouri students on the benchmarked tests (e.g., ACT) was favored by approximately half of the committee members. However, a small group of participants

expressed strong concerns to making such an adjustment. The committee did not make any recommendations to DESE on cut adjustments for either the EOC or the grade-level tests.

6.4.2. Technical Advisory Committee Meeting

At the TAC meeting, the standard setting vendors presented the recommendations from the standard settings. Furthermore, the policy review meeting facilitator also reported the discussions and lack of consensus from the committee.

The TAC also noticed the inconsistency between the Grade 7, Grade 8, and EOC impact data. Nevertheless, the TAC noted that it was DESE’s responsibility to recommend sensible cuts from both the content- and policy-based perspectives.

A plausible practice often adopted by state departments of education was brought up by the TAC, which is to consider panelists’ recommendations and make post-hoc policy adjustments to assist better articulation across grades. One common approach to adjusting the cuts utilizes the CSEM, a statistic that quantifies error associated with students’ test scores. If an examinee were to be tested multiple times on the same test form, one would not expect the obtained score to be exactly equal. The observed scores will most likely form a distribution, where the scores would fall within a band of +/- 1 CSEM about two-thirds of the time. Hence, discrepancies in test scores of less than +/-1 CSEM are often times deemed inconsequential (theoretically or practically).

As suggested by the TAC, DESE leadership adjusted panelists’ recommended cut scores using the CSEMs after the workshop. The following adjustments were proposed and implemented to the EOC tests:

- Algebra II, *Advanced*, +1 CSEM,
- English I, *Proficient*, +1 CSEM, and
- English II, *Proficient*, +1 CSEM.

Table 6.2 shows the recommended cut scores and associated impact data for the MAP EOC tests based on the data from Fall 2017 and Spring 2018 operational test administrations.

Table 6.2. Recommended Cut Scores and Associated Impact data for the MAP EOC Assessment

Content	Recommended Cuts Scores			% Students by Level Based on Fall 2017 and Spring 2018				
	Basic	Proficient	Advanced	Below Basic	Basic	Proficient	Advanced	Prof. + Adv.
English I	354	450	544	10.2	31.6	39.5	18.7	58.2
English II	355	451	574	12.8	30.4	47.3	9.5	56.8
Algebra I	354	429	496	28.5	27.3	21.9	22.3	44.2
Algebra II	365	458	540	22.0	33.8	26.5	17.8	44.3
Geometry	354	444	536	16.5	37.2	27.9	18.4	46.3

6.5. Summary

This chapter provides details of the standard setting workshop; panelists, materials, processes and error associated recommended cut. The post standard setting activities, including a policy meeting and TAC meeting, are also presented with the final adjustment using the CSEM.

Chapter 7: Studies of Reliability and Construct-related Validity

7.1. Introduction

Evidence of internal structure of test scores is the center of validity arguments. This chapter provides studies of reliability and construct-related validity evidence focusing on the consistency of the internal assessment structure.

7.2. Reliability

DESE is required to ensure that the instruments used to measure student achievement for school accountability provide reliable results. As Standard 2.0 of the *Standards for Educational and Psychological Testing* states “Appropriate evidence of reliability/precision should be provided for the interpretation for each intended score use” (p. 42). This section provides evidence that scores from the MO EOC assessments measure student achievement in a reliable manner¹⁰ and that the size of the measurement error associated with reported test scores is reasonable¹¹, especially at the Proficient cut score.

7.2.1. Defining Reliability

According to the *Standards for Educational and Psychological Testing* and consistent with the measurement literature, reliability is defined two different ways:

First, the term has been used to refer to the reliability coefficients of classical test theory, defined as the correlation between scores on two equivalent forms of the test, presuming that taking one form has no effect on performance on the second form. Second, the term has been used in a more general sense, to refer to the consistency of scores across replications of a testing procedure, regardless of how this consistency is estimated or reported. (p. 33)

In general, reliability refers to the consistency of student test scores, or the extent to which an assessment yields the same results repeatedly. Reliability considers random error, which results from outside influences that can affect a student’s score. An assessment that produces highly consistent, stable results (i.e., mostly free from random error) is considered highly reliable. The less random error, the more reliable the test scores are. The more reliable the assessment scores are, the more consistent a student’s test scores will be if the student takes a replicated version of the test (i.e., a test that has different items but that covers the same topics using the same number of items per topic.) Reliability can be estimated via the correlation of scores on forms assumed to be parallel (equivalence reliability), from test-retest data (stability reliability), or from a single test administration (internal consistency reliability).

¹⁰ **Standard 2.3:** For each total score, subscore, or combination of scores that is to be interpreted, estimates of relevant indices of reliability/precision should be reported (AERA, APA, NCME, 2014, p. 43).

¹¹ **Standard 2.13:** The standard error of measurement, both overall and conditional (if reported), should be provided in units of each reported score (AERA, APA, NCME, 2014, p. 45).

7.2.2. Reliability Coefficient

Classical test theory (CTT) provides a means to quantify reliability. In CTT, an observed measurement, such as test score (X) is defined as a composite of true score (T) and an associated random error component (E):

$$X = T + E$$

The definitions and assumptions in CTT lead to several important properties. For example, it can be demonstrated that observed score variance equals the sum of (a) the variance in true scores—true individual differences in the attribute being measured, and (b) the variance from random fluctuations due to the imperfections in the measurement process (error variance).

$$\sigma_x^2 = \sigma_t^2 + \sigma_e^2$$

Normally, a covariance term is required when adding variances, but it is not in this case as true scores and errors are assumed to be uncorrelated in CTT. The reliability coefficient expresses the consistency of test scores as the ratio of true-score variance to total observed-score variance.

$$\rho_{x_1x_2} = \frac{\sigma_t^2}{\sigma_x^2}$$

Although the extremes are never achieved in applied testing programs, reliability coefficients theoretically range from 0.0 to 1.0. Larger coefficients are more desirable because they indicate that test scores are less influenced by random error. If all test score variance were true, the scores would be perfectly consistent and the index would equal 1.0. The index would be 0.0 if none of the test score variance were true. Such scores would only be random noise (i.e., all measurement error).

7.2.3. Estimating Reliability

The reliability of a specific test cannot be directly estimated from the equation above. Although several different reliability indices exist, an industry-standard index for describing internal consistency reliability based on a single test administration is coefficient alpha (Cronbach, 1951), which provides an estimate of reliability that is mathematically equivalent to the average of all possible split-half reliability estimates computed by the Rulon method. For a test consisting of p items, in which the item scores Y_j are summed to get a total score X , coefficient alpha is computed as follows:

$$\alpha = \left(\frac{p}{1-p} \right) \left(1 - \frac{\sum_{j=1}^p \sigma_{Y_j}^2}{\sigma_X^2} \right)$$

7.2.4. Interpretation Considerations

The coefficient alpha indicates the internal consistency of the responses over a set of items measuring an underlying trait. In this case, it measures academic achievement in the MO EOC content tests. As an internal consistency index, it can be conceptualized as indicating the extent to which an exchangeable set of items from the same domain would result in a similar rank ordering of students.

Relative error is reflected by coefficient alpha. Further, coefficient alpha is only sensitive to random errors due to the sampling of items. It does not take into account other random sources of error (e.g., variations associated with the linking process, daily fluctuation in student health and behavior, the testing environment, or rater inconsistency).

7.3. Reliability Evidence

Reliability evidence for the 2017–2018 MO EOC assessments includes the following:

- Internal consistency
- Standard error of measurement (SEM) for raw scores
- Conditional standard error of measurement (CSEM) for Scale Scores
- Classification accuracy and consistency
- Rater agreement (presented in Sections 4.4)

7.3.1. Standard Error of Measurement (SEM) for Raw Scores

No test provides a perfect measure of a student’s ability because all tests have a known standard error of measurement (SEM). The SEM represents the amount of variability that can be expected in a student’s test score because of the inherent imprecision of the test. For example, if the student were tested again with a new test of comparable difficulty, he or she would likely obtain a slightly different score. The expected range for this new score is provided as a standard error (SE) and gives an indication of the margin of error for the reported scale score.

7.3.1.1. Traditional SEMs and Traditional Confidence Intervals (CIs)

The SEM is defined as the standard deviation of the distribution of observed scores for students with identical true scores. The standard deviation is a measure of the dispersion of the observed scores; for the normal distribution, about 32 percent of observations are more than one standard deviation above or below the mean.

The SEM formula:

$$SEM = \sigma_x \sqrt{1 - \alpha}$$

indicates that the value of the SEM depends on both the reliability coefficient and the standard deviation of test scores.

SEMs allow accurate statements regarding the overall precision of test scores. SEMs help place “reasonable limits” (Gulliksen, 1950) around observed scores through construction of an approximate score band or *confidence intervals* (CIs). These bands are constructed by taking the observed scores, X , and adding and subtracting a multiplicative factor of the SEM. As an example, students with a given true score will have observed scores that fall between ± 1 SEM about two-thirds of the time.

7.3.1.2. Reliabilities and SEMs by Student Subgroup

Separate analyses were performed for each EOC content area. The tables in Appendix H will provide the reliabilities and SEMs for the total population and for select student subgroups in the

next version of the technical report. For each table, the effect size, reliability, and SEM are reported for each group provided there were at least 50 students in the group.

Provided minimal sample size requirements are met, an effect size is reported within each group. The effect size is a measure of how much the scores of two groups of students differ from each other. Based on score standard deviations, it is calculated using Cohen's d equation:

$$d = \frac{\bar{X}_F - \bar{X}_R}{\hat{\sigma}_X},$$

where the numerator is the difference in average scores between a focal and a reference group, and the denominator is an estimate of total score standard deviation. In this case, the standard deviations across groups were pooled to generate the standard deviation estimate.

An effect size of 1.0 is equivalent to a difference of one standard deviation. An effect size of 0.8 is considered "large;" an effect size of 0.5 is considered "medium;" and an effect size of 0.2 is considered "small." Effect sizes are also reported whenever the reference and focal groups each have a minimum of 50 students.

Following EOC program convention, the reference groups are Male in gender and White in ethnicity. For subgroups, the reference groups are No in LEP status, IEP status, Migrant status, FRL status, Title 1 status, and Accommodations status.

1.1.1.1. Interpretation Considerations

The SEM approach only provides a single numerical estimate for constructing confidence intervals for examinees regardless of their score level. In reality, such confidence intervals vary according to a student's score. Consequently, care should be taken using the SEM for students with extreme scores. Because test reliabilities and standard deviations are group specific, the same is true for SEMs and CIs. For the MO EOC, the SEM approach is calculated using raw scores. As such, the resulting confidence interval bands are in the raw-score metric.

7.3.2. Conditional Standard Error of Measurement (CSEM) for Scale Scores

7.3.2.1. CSEMs and Conditional CIs

According to the *Standards for Educational and Psychological Testing*, Standard 2.14 states:

When possible and appropriate, conditional standard errors of measurement should be reported at several score levels unless there is evidence that the standard error is constant across score levels. Where cut scores are specified for selection or classification, the standard errors of measurement should be reported in the vicinity of each cut score. (p. 46)

This section describes the calculation of the CSEMs. As noted below, the CSEMs for each scale score are presented in Appendix C and the CSEMs at the Proficient cut are presented in Table 6.2

Rasch-based CSEMs are also used for the MO EOC assessments. CSEMs also allow accurate statements regarding the precision of individual test scores by helping derive reasonable limits around observed scaled scores through construction of approximate score bands; this is referred

to as *conditional confidence intervals* (CIs). Any given test will have CSEMs that vary as a function of the scaled scores. This makes the CSEM especially useful in characterizing measurement precision around a score level used for decision making, such as a cut score used to identify students who meet a given performance standard.

MO EOC CSEMs come from the Winsteps program and are based on the principle of statistical information. The CSEM at any given point on the ability (θ , theta) continuum is defined as the reciprocal of the square root of the test information function derived from the Rasch scaling model. In the formula, $CSEM(\hat{\theta})$ is the conditional standard error of measurement; $I(\hat{\theta})$ is the test information function.

$$CSEM(\theta) = \frac{1}{\sqrt{I(\theta)}}$$

Test information depends on the sum of the corresponding information functions for the test items. Item information depends on each item's unique conditional item score variance as determined from its difficulty parameters and conditional item score variance. The formula provides the CSEMs on the Rasch ability (θ) metric.

7.3.2.2. *CSEMs at the Proficient Cut*

CSEMs are useful for characterizing measurement precision in the neighborhood of score levels used for decision making, such as cut scores at various achievement levels. The CSEMs for the Proficient cut scores for the MO EOC assessments are presented in Table 7.1. The CSEM values were 5 for Core A and B of English I and English II. The CSEM values for the Mathematics content areas were 4 for the Fall and Spring assessments on both Core A and B forms. CSEMs for the other scale scores are reported in Appendix C. Note that CSEMs are smaller in the middle of the score distribution than at the extremes. This pattern is expected for CSEMs based on item response theory (IRT).

Table 7.1. CSEM at Proficient Cut Score

Test Period	Content Area	SS Cut	CSEM
Fall 2017	English II	400	5
	Algebra I	400	4
	English I	400	5
	Algebra II	400	4
	Geometry	400	4
Spring 2018	English II	400	5
	Algebra I	400	4
	English I	400	5
	Algebra II	400	4
	Geometry	400	4

7.3.3. *Classification Accuracy and Consistency*

The accuracy and consistency of classifying students into achievement levels are critical components of a standards-based reporting framework (Livingston & Lewis, 1995). For the MO EOC tests, students are classified into one of four achievement levels. Questar conducted classification accuracy and consistency analyses to determine the statistical accuracy and consistency of the classifications. This section explains the methodologies used to assess the reliability of classification decisions and gives the results of these analyses.

7.3.3.1. *Classification Accuracy and Consistency as a Measure of Reliability*

Classification accuracy refers to the accuracy of decisions (e.g., the accuracy of students' assignments to achievement levels), or the extent to which decisions would agree with those that would be made if each student could somehow be tested with all possible versions of the assessment, which implies that the scores did not contain any measurement error. Because errorless test scores do not exist, accuracy must be estimated.

Consistency measures the extent to which classifications based on test scores match the classifications based on scores from a second parallel form of the assessment that is equal in difficulty and covers the same content as the form the students actually took. Consistency can be evaluated directly from actual responses to test items if two complete and parallel forms of the test are administered to the same group of students. In operational testing programs, however, such a design is usually impractical. Instead, techniques have been developed to estimate both the accuracy and consistency of classifications based on a single administration of a test.

The Livingston and Lewis (1995) technique addresses the single administration of a test by making use of “true scores” in the classical test theory sense. A true score is the score that would be obtained if a test had no measurement error. True scores cannot be observed and so must be estimated. The estimated true scores are used to categorize students into their “true” classifications.

As described in the Livingston and Lewis (1995), using the BB-CLASS for PC software (Brennan, 2004), a four-by-four contingency table of accuracy was calculated for each grade, where cell $[i, j]$ represented the estimated proportion of students whose true score fell into classification i (where $i = 1$ to 4) and observed score fell into classification j (where $j = 1$ to 4). The sum of the diagonal entries (i.e., the proportion of students whose true and observed classifications matched) signified overall accuracy.

To calculate consistency, true scores were used to estimate the joint distribution of classifications on two independent, parallel test forms. Following the same statistical procedures, a new four-by-four contingency table was calculated for each grade and populated by the proportion of students who would be categorized into each combination of classifications according to the two (hypothetical) parallel test forms. Cell $[i, j]$ of this table represented the estimated proportion of students whose observed score on the first form would fall into classification i (where $i = 1$ to 4) and whose observed score on the second form would fall into classification j (where $j = 1$ to 4). The sum of the diagonal entries (i.e., the proportion of students categorized by the two forms into exactly the same classification) signified overall consistency.

In addition to the overall consistency, Cohen’s (1960) coefficient K (kappa) assesses the proportion of consistent classifications after removing the proportion of consistent classifications that would be expected by chance. It is calculated using the following formula:

$$K = \frac{(\text{Observed agreement}) - (\text{Chance agreement})}{1 - (\text{Chance agreement})} = \frac{\sum_i C_{ii} - \sum_i C_{i.}C_{.i}}{1 - \sum_i C_{i.}C_{.i}}$$

where

$C_{i.}$ is the proportion of students whose observed achievement level would be level i (where $i = 1-4$) on the first hypothetical parallel form of the test;

$C_{.i}$ is the proportion of students whose observed achievement level would be level i (where $i = 1-4$) on the second hypothetical parallel form of the test; and

C_{ii} is the proportion of students whose observed achievement level would be level i (where $i = 1-4$) on both hypothetical parallel forms of the test.

Because K is corrected for chance, its values are lower than other consistency estimates. Based on the four-by-four contingency tables used to estimate the overall accuracy and consistency, the classification accuracy and consistency conditional on achievement level are also evaluated.

Consistency conditional on achievement level is conceived as the ratio between the proportion of correct classifications at the selected achievement level and the proportion of all the students classified into that level.

Except for instances where both row and column marginal sums are the same in the consistency table, accuracy conditional on achievement level is conceived in a similar manner. The accuracy table uses the sum based on estimated status as the total for computing accuracy conditional on achievement level.

For some testing situations where the greatest concern may be decisions around achievement level thresholds, the primary concern is distinguishing between students who are proficient and those who are not yet proficient. In this case, accuracy at the Basic/Proficient threshold is critically important, which summarizes the percentage of students who are correctly classified either above or below the particular cutpoint. To evaluate decisions at specific cut scores, the same four-by-four contingency tables are used.

The accuracy index at the cut score is computed as the sum of the proportions of correct classifications around this selected cut score. The consistency at a specific cut score is obtained in a similar way but involves computing the sum of the proportions of consistent classifications around this selected cut score.

7.3.3.2. Decision Accuracy and Consistency Results

Results of the DAC analyses described above are provided in Tables 7.2 through 7.4. The table includes overall accuracy indices and overall kappa values. Consistency indices are displayed in parentheses next to the accuracy values. Results range 0.71–0.79 for accuracy, 0.61–0.70 for consistency, and 0.44–0.57 for kappa. These results indicate that the vast majority of students were classified accurately and consistently with respect to measurement error and chance.

Accuracy and consistency values conditional on achievement level are also given. For these calculations, the denominator is the proportion of students associated with a given achievement level. For example, the conditional accuracy value is 0.86 for Below Basic for Fall 2017 Algebra I. This figure indicates that among the students whose true scores placed them in this classification, 86% would be expected to be in this classification when categorized according to their observed scores. Similarly, a consistency value of 0.79 indicates that 79% of students with observed scores in the Below Basic would be expected to score in this classification again if a second parallel test form were taken.

Table 7.2. Summary of Decision Accuracy (and Consistency) Results Fall 2017—Overall and Conditional on Achievement Level

Content Area	Overall	Kappa	Conditional on Achievement Level			
			Below Basic	Basic	Proficient	Advanced
Algebra I	0.76 (0.67)	0.56	0.86 (0.79)	0.68 (0.57)	0.61 (0.49)	0.87 (0.79)
Algebra II	0.79 (0.70)	0.60	0.88 (0.81)	0.74 (0.65)	0.71 (0.61)	0.85 (0.76)
English I	0.74 (0.64)	0.44	--	0.79 (0.73)	0.73 (0.65)	0.61 (0.48)
English II	0.77 (0.68)	0.54	0.85 (0.76)	0.72 (0.63)	0.77 (0.68)	0.79 (0.63)
Geometry	0.77 (0.68)	0.55	0.79 (0.64)	0.72 (0.62)	0.74 (0.65)	0.86 (0.78)

Note. Empty cells are due to the small sample size.

Table 7.3. Summary of Decision Accuracy (and Consistency) Results Spring 2018—Overall and Conditional on Achievement Level

Content Area	Overall	Kappa	Conditional on Achievement Level			
			Below Basic	Basic	Proficient	Advanced
Algebra I	0.74 (0.65)	0.53	0.85 (0.76)	0.67 (0.57)	0.60 (0.49)	0.86 (0.78)
Algebra II	0.77 (0.68)	0.57	0.86 (0.77)	0.72 (0.63)	0.70 (0.60)	0.86 (0.77)
English I	0.75 (0.65)	0.50	0.78 (0.61)	0.74 (0.64)	0.71 (0.63)	0.82 (0.71)
English II	0.78 (0.69)	0.54	0.80 (0.65)	0.75 (0.66)	0.80 (0.73)	0.81 (0.67)
Geometry	0.75 (0.66)	0.53	0.83 (0.72)	0.71 (0.61)	0.73 (0.64)	0.83 (0.73)

Tables 7.4 through 7.5 provide accuracy and consistency estimates for the Fall 2017 and Spring 2018 MO EOC tests at each cutpoint, as well as false positive and false negative decision rates. A false positive is the proportion of students whose observed scores were above the cut and whose true scores were below the cut. A false negative is the proportion of students whose observed scores were below the cut and whose true scores were above the cut. The accuracy and consistency indices at the Basic/Proficient threshold range from 0.87–0.95 and 0.82–0.92. The false positive and false negative decision rates at the Basic/Proficient threshold range from 3–7% and 1–6%. These results indicate that nearly all students were correctly classified with respect to being above or below the Basic/Proficient cutpoints.

**Table 7.4. Summary of Decision Accuracy (and Consistency) Results Fall 2017—
Conditional on Cut Score Point**

	Test	Algebra I	Algebra II	English I	English II	Geometry
Below Basic/Basic	Accuracy (Consistency)	0.90 (0.87)	0.93 (0.90)	0.96 (0.94)	0.91 (0.87)	0.95 (0.93)
	False Positive	0.05	0.03	0.00	0.04	0.02
	False Negative	0.05	0.04	0.04	0.05	0.03
Basic/ Proficient	Accuracy (Consistency)	0.91 (0.88)	0.91 (0.88)	0.89 (0.85)	0.90 (0.85)	0.90 (0.87)
	False Positive	0.05	0.04	0.05	0.06	0.04
	False Negative	0.04	0.04	0.05	0.05	0.05
Proficient/ Advanced	Accuracy (Consistency)	0.94 (0.91)	0.95 (0.92)	0.88 (0.84)	0.97 (0.95)	0.91 (0.88)
	False Positive	0.04	0.03	0.07	0.02	0.05
	False Negative	0.03	0.02	0.05	0.01	0.04

**Table 7.5. Summary of Decision Accuracy (and Consistency) Results Spring 2018—
Conditional on Cut Score Point**

	Test	Algebra I	Algebra II	English I	English II	Geometry
Below Basic/Basic	Accuracy (Consistency)	0.92 (0.89)	0.93 (0.90)	0.96 (0.94)	0.95 (0.93)	0.93 (0.91)
	False Positive	0.03	0.03	0.01	0.02	0.03
	False Negative	0.04	0.04	0.03	0.03	0.04
Basic/ Proficient	Accuracy (Consistency)	0.90 (0.86)	0.91 (0.87)	0.88 (0.83)	0.89 (0.84)	0.89 (0.85)
	False Positive	0.05	0.05	0.06	0.05	0.05
	False Negative	0.05	0.05	0.06	0.06	0.05
Proficient/ Advanced	Accuracy (Consistency)	0.92 (0.88)	0.93 (0.90)	0.91 (0.87)	0.94 (0.92)	0.93 (0.90)
	False Positive	0.05	0.04	0.05	0.04	0.04
	False Negative	0.04	0.03	0.04	0.02	0.03

7.4. Construct-related Validity Evidence

This section summarizes the validity evidence as it relates to the purpose and intended use of the MO EOC test results (refer to Section 1.2). Validity evidence based on the internal structure of the MO EOC assessments is then provided through a correlational analysis of MO EOC Assessment content clusters. References to specific standards are provided where appropriate.

7.4.1. Internal Structure

The item analyses shown in Appendix B reveal that the MO EOC assessments have sound psychometric properties. The p -value ranges were sufficiently broad, indicating that the items measure achievement across a broad range of difficulty. Item-test correlations, indicators of item discrimination, are also provided. Almost all items had acceptable discrimination values (i.e., discrimination values > 0.15). Some extremely difficult items had low discrimination values that were likely attenuated by their difficulty.

Empirical investigation of DIF strengthens the validity evidence related to score interpretations for students in particular groups by evaluating potential sources of construct-irrelevant variance. DIF results might be better considered as internal—structure validity evidence. Statistical analyses results are provided in Chapter 5. The results indicated that none of the PE/WP items were flagged for DIF and that either no or very few SR items were flagged for DIF across subjects and administrations.

Standard 1.13¹² pertains to the relationships between the parts of the test. Because the MO EOC assessments measure student performance in several content areas, it is important to study the pattern of relationships among the content domains and clusters.

Tables 7.6–7.10 summarize correlation coefficients among test domains and clusters for English II, Algebra I, Algebra II, English I and Geometry. Because the correlation coefficients will be affected by the limited number of items measuring each domain, the correlation coefficient between two content standard clusters may be artificially low because of measurement error. Therefore, the correlations are corrected for attenuation. The formula for the correlation coefficient statistically corrected for attenuation (r_{ca}) is Spearman’s formula

$$r_{ca} = \frac{r_{xy}}{\sqrt{r_{xx}r_{yy}}}$$

Where r_{xy} is the correlation between content clusters, r_{xx} is the reliability of one content cluster, and r_{yy} is the reliability of the other content cluster.

¹² **Standard 1.13:** If the rationale for a test score interpretation for a given use depends on premises about the relationships among test items or among parts of the test, evidence concerning the internal structure of the test should be provided (AERA, APA, NCME, 2014, p. 26–27).

The tables report the Pearson correlations below the diagonal, the correlations corrected for attenuation above the diagonal, and Cronbach’s coefficient alpha of the cluster scores on the diagonal in bolded text. The corrected correlations between clusters within each assessment are strong (> 0.80), with many correlations exceeding 0.90. The disattenuated correlations greater than 1.00 that indicate that measurement error is not randomly distributed are reported as 1.00.

Each content area test is comprised of two or more content clusters that measure a single construct or dimension. The results suggest that the cluster scores are appropriately related to each other. Therefore, the results provide evidence that a unidimensional construct is measured on each of the MO EOC assessments that support the validity of the test construct.

Table 7.6. Correlation Coefficients Between Domains and Clusters—English II

		#Points	Reading	Writing
Fall 2017	Reading	30	0.80	0.92
	Writing	20	0.75	0.83
Spring 2018	Reading	30	0.80	0.92
	Writing	20	0.74	0.80

Table 7.7. Correlation Coefficients Between Domains and Clusters—Algebra I

		#Points	Algebra	Functions	Number/Quantity and Statistics
Fall 2017	Algebra	20	0.83	0.97	1.00
	Functions	18	0.78	0.79	1.00
	Number/Quantity and Statistics	12	0.70	0.71	0.52
Spring 2018	Algebra	20	0.82	0.96	1.00
	Functions	18	0.76	0.77	1.00
	Number/Quantity and Statistics	12	0.67	0.68	0.54

Table 7.8. Correlation Coefficients Between Domains and Clusters—Algebra II

		#Points	Algebra	Functions	Number/Quantity and Statistics
Fall 2017	Algebra	27	0.87	1.00	1.00
	Functions	14	0.83	0.76	1.00
	Number/Quantity and Statistics	9	0.79	0.75	0.65
Spring 2018	Algebra	27	0.86	1.00	0.99
	Functions	14	0.79	0.71	1.00
	Number/Quantity and Statistics	9	0.75	0.69	0.66

Table 7.9. Correlation Coefficients Between Domains and Clusters—English I

		#Points	Reading	Writing
Fall 2017	Reading	30	0.73	0.94
	Writing	20	0.60	0.56
Spring 2018	Reading	30	0.81	0.94
	Writing	20	0.70	0.69

Table 7.10. Correlation Coefficients Between Domains and Clusters—Geometry

		#Points	Congruence/Similarity Coordinate Geometry & Circles	Geometry	Statistics and Probability
Fall 2017	Congruence/Similarity Coordinate Geometry & Circles	34	0.86	0.96	1.00
	Geometry	10	0.68	0.59	0.93
	Statistics and Probability	6	0.61	0.47	0.43
Spring 2018	Congruence/Similarity Coordinate Geometry & Circles	34	0.85	0.95	0.94
	Geometry	10	0.72	0.68	0.91
	Statistics and Probability	6	0.55	0.47	0.39

7.4.2. Convergent and Divergent Validity

Convergent validity examines the extent to which theoretically related constructs are empirically related, whereas divergent validity examines the extent to which theoretically unrelated constructs are empirically unrelated. The *Standards* state the following regarding convergent and divergent validity: “Relationships between test scores and other measures intended to assess the same or similar constructs provide convergent evidence, whereas relationships between test scores and measures purportedly of different constructs provide discriminant evidence” (AERA, APA, & NCME, 2014, p. 16–17). The MO EOC assessments were designed to measure different constructs, as shown by both the standards they assess and the content coverage detailed in the test blueprints.

7.4.2.1. *Pearson Correlations Among Assessments*

Table 7.11 shows evidence of convergent and divergent validity. The data sets used for the analysis were drawn from the Spring 2018 operational test administration. The students in the data sets were merged using Missouri’s unique student identification number. Any student who took at least two operational tests was included in the correlations. Table 7.11 shows the Pearson correlation coefficients between scale scores for Spring 2018.

Evidence of divergent validity is supported by the lower correlations between content areas that measure dissimilar constructs. For example, the correlations between Algebra and between English (from 0.51 to 0.69) are in a range typical of achievement constructs that are positively

related primarily by virtue of their relation to general school achievement. Evidence of convergent validity emerges when comparing correlations between the similar contents of Mathematics (from 0.69 to 0.81) and English (0.74).

Table 7.11. Pearson Correlation among Assessments

Assessment	Algebra I	Algebra II	English I	English II	Geometry
Algebra I	1.00	0.81	0.62	0.69	0.74
Algebra II	0.81	1.00	0.53	0.51	0.69
English I	0.62	0.53	1.00	0.74	0.47
English II	0.69	0.51	0.74	1.00	0.56
Geometry	0.74	0.69	0.47	0.56	1.00

7.5. Summary

This chapter provided the validity evidence related to the reliability and construct-related validity. Post-administration test analyses support the technical quality of the MO EOC assessments. The validity of score inferences is bolstered when test scores are consistent. The reliability of the 2017–2018 test forms adequate across the content areas and administrations. The CSEMs at the Proficient cut scores are acceptable. The validation process involves the ongoing collection of a variety of evidence to support the proposed test-score interpretations and uses. Much of the information contained in this chapter is validity evidence for the MO EOC assessments’ stated purposes.

Chapter 8: Reporting and Results

8.1. Introduction

This chapter provides the types of MO EOC test reporting and the descriptive summary of test score results for each of the five MO EOC assessments from the Fall 2017 and Spring 2018 administrations, including the total raw scores, scale scores, and achievement levels.

8.2. Types of Reports

The purpose of reporting assessment data is to communicate test results to students, parents, teachers, administrators, and other stakeholders. The MO EOC assessment reports provide useful information in determining the performance of students in a particular district, school, or classroom. These reports help describe students' knowledge and skills regarding a set of expectations, allow educators to determine specific instructional needs, measure student mastery toward post-secondary readiness, provide evidence of accountability for Missouri and national programs, and evaluate educational programs. Districts may also use locally designed assessments aligned to the Missouri Learning Standards to provide more detailed information for each student in specific content areas.

Questar delivers a General Research File (GRF) to DESE at the end of each test administration that contains all of the raw data collected for each administration. Questar also provides a *Guide to Interpreting Results* for DESE to post on their website that provides explanations of the CLEs and ALDs for each content area; this guide also contains samples of the Individual Student Report (ISR) and the Student Score Label with descriptions of the information they contain. ISRs are provided in the online assessment platform for all assessment windows. Student Score Labels are provided in hard copy to districts following each administration.

The MO EOC assessment score indicates that an individual student performs at the Below Basic, Basic, Proficient, or Advanced level in a given content area. The scores are scaled in several ways: raw scores, scale scores (derived from the Rasch model), and achievement levels (based on scale score cuts) that describe what students can do in terms of the content and skills assessed. These scores provide a way to compare test results with standards of academic performance. Reporting category scores (subscale scores) are not reported for the MO EOC assessments.

Missouri promotes the use of achievement level results and reports them annually on each assessment at the student, school, district, and state levels. Individual student and average scale scores are also used, but they play a secondary role and are generally interpreted with reference to their distance from achievement level cut points.

As described in Chapter 5, Questar converted each student's earned raw score points into a scale score to determine the achievement level scores. The scale score determined the student's achievement level. Each achievement level represented standards of performance for each content area. Test results are reported for students as a whole, as well as by student group, including gender, ethnicity, migrant status, free and reduced lunch (FRL) status, English language proficiency, Title I, IEP status, and accommodations used during testing. Scores are reported to schools and districts in annually published reports.

No stakes for teachers are attached to student-level scores by the state. Teachers are encouraged to consider student performance on the MO EOC assessments in determining course grades. DESE recommends that MO EOC scores account for at least 10 percent, but not more than 25 percent, of a student's grade in a course with a corresponding MO EOC assessment. Teachers are counseled to interpret individual student scores only in the context of other assessment results and their own experience.

8.2.1. Individual Student Report (ISR)

The 2017–2018 Individual Student Report (ISR) provides information about performance on the MO EOC assessment by describing the results in terms of four levels of achievement in a content area. It is used for measuring an individual student's mastery toward postsecondary readiness for the content area. It is also used in instructional planning as a point of reference during parent-teacher conferences and for permanent record keeping. Teachers are informed that other sources of information should be used along with this report when determining the student's areas of strength or need.

On the report, achievement-level scores describe what students can do in terms of the CLEs for the content and skills assessed by the MO EOC assessment. A student at the *Proficient* or *Advanced* level has met the standard.

A sample of the ISR appears in Figure 8.1. A brief description of selected parts of the report is as follows:

- A. The heading of the ISR includes the content area for the results being presented. A separate report is produced for each content area tested.
- B. The student information section contains the biographic data for the individual student taking the assessment. Identifying information including the MOSIS ID, date-of birth, grade, test date, building, and district is listed, followed by the test period.
- C. The individual student's results are presented numerically as a three-digit scale score with the SE. An accompanying bar graph to the right of the scale score illustrates the achievement level obtained by the student. Achievement levels (whether *Below Basic*, *Basic*, *Proficient*, or *Advanced*) are based on the scale score ranges listed beneath the Achievement Level heading in the table.
- D. The mean scale scores for the student's building and district are displayed in the two rows below the student's individual results. The mean scale score, with an associated SE, and the bar graph provide a way to view the individual's results in contrast to the group's results for the content area during the same test period.
- E. The narrative describes the student performance characteristics corresponding to the obtained achievement level. The text is specific to the content area tested. A URL for a website that provides additional information for all of the achievement levels for the content area is located at the bottom of the narrative.

Figure 8.1. Individual Student Report (ISR)



A MISSOURI END-OF-COURSE
BIOLOGY
SARAH JOHNSON

Sarah's Overall Results

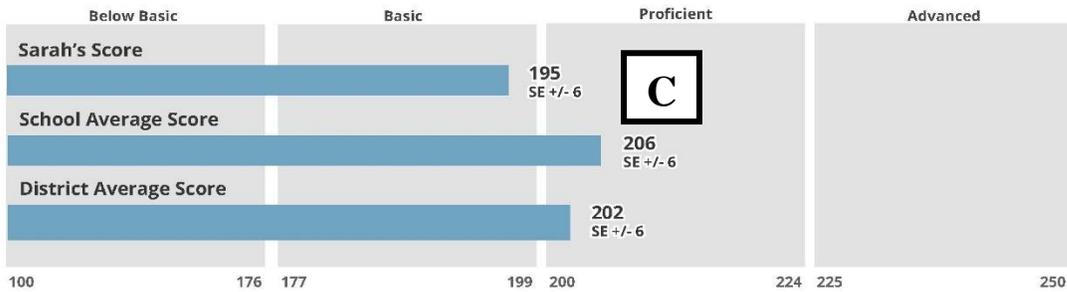
BASIC

Sarah's
Achievement Level:
Basic

Students performing at the Basic level on the Missouri End-of-Course Assessment demonstrate a partial understanding of the course-level expectations for Biology. They demonstrate these skills in addition to understanding and applying the skills at the Below Basic level, students scoring at the Basic level use some strategies.

Name: Sarah Johnson
MOSIS: 999999999
Birth Date: mm-dd-yyyy
Grade: 11
Test Date: Fall 2017
District: Missouri School District
School: Missouri School

B



C

D	Below Basic 100-176	Basic 177-199	Proficient 200-224	Advanced 225-250
	Students demonstrate little understanding of the skills and processes identified in the Course Level Expectations for Biology.	Students demonstrate an incomplete understanding of the skills and processes identified in the Course Level Expectations for Biology.	Students demonstrate an understanding of the skills and processes identified in the Course Level Expectations for Biology.	Students demonstrate a thorough understanding of the skills and processes identified in the Course Level Expectations for Biology.

E

For more information about achievement levels, please visit the following web site:
<http://dese.mo.gov/college-career-readiness/assessment/end-course>



8.2.2. Student Score Label

The 2017–2018 Student Score Label provides a summary of a student’s results on the MO EOC assessment. A separate label is produced for each content area tested. The individual label provides the student’s biographic data, scale score, and achievement level. The labels have an adhesive backing so they can be easily transferred onto the student record folders.

A sample label is shown in Figure 8.2. A brief description of selected parts of the label is as follows:

- A. The left side of the label shows the student’s name and identifying information.
- B. The upper right side shows the content area tested. If a student has results for more than one content area, the next label is printed below the first one.
- C. The lower right side shows the student’s scale score and achievement level.

Figure 8.2. Student Score Label

LNAME8, FNAME8	A	Missouri End-of-Course	B
MOSIS-ID	11890	English II	
Building	Missouri School		
District	Missouri District	Scale Score: 233	C
Test Period	Fall 2017	Achievement Level: Advanced	

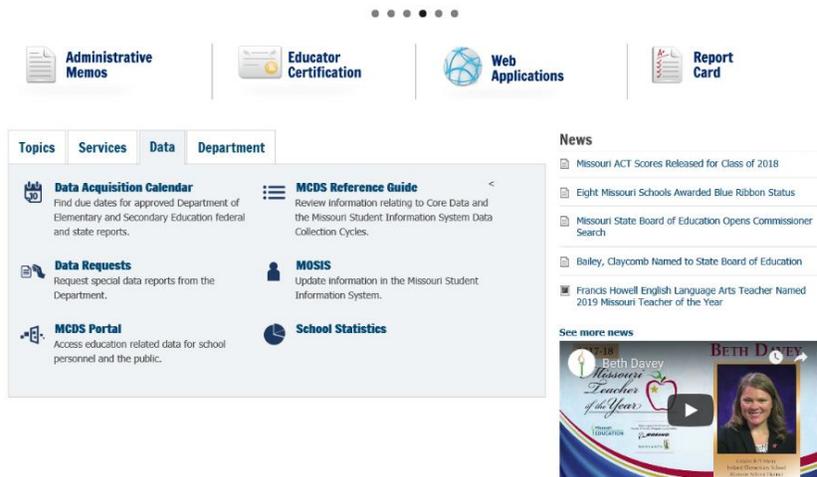
8.2.3. Missouri Comprehensive Data System (MCDS) Portal

8.2.3.1. Purpose and Use

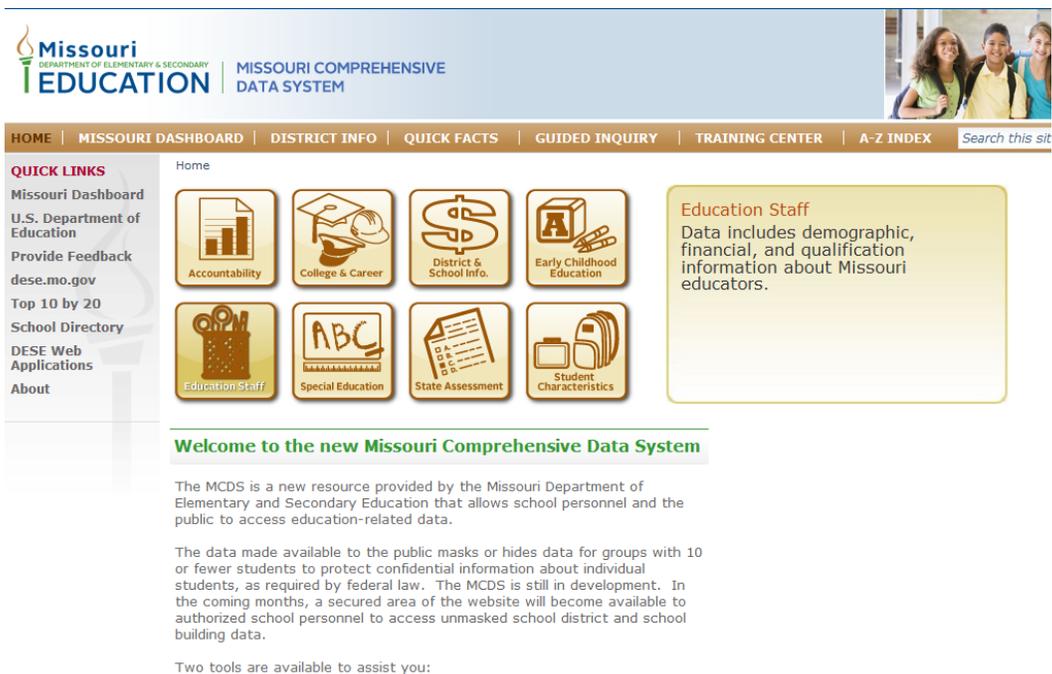
For the first two years of the MO EOC assessment administration, summary-level EOC results were available to school district personnel in a set of standard reporting configurations through DESE’s Crystal Reporting system. Reporting options included administrative reports, adequate yearly progress (AYP) reports, achievement level reports, content standard reports, and item analysis reports.

Beginning with the 2011–2012 school year, DESE transitioned all assessment reporting to the state’s data portal, the Missouri Comprehensive Data System (MCDS). MCDS provides the general public with access to high-level EOC summary reports and allows school district personnel with appropriate permissions to access EOC data at a variety of levels. Through MCDS, designated district personnel are able to request on-demand, customized reports that are configured and disaggregated in ways that best meet their needs for such activities as evaluating programs, revising curriculum, and improving teaching and learning.

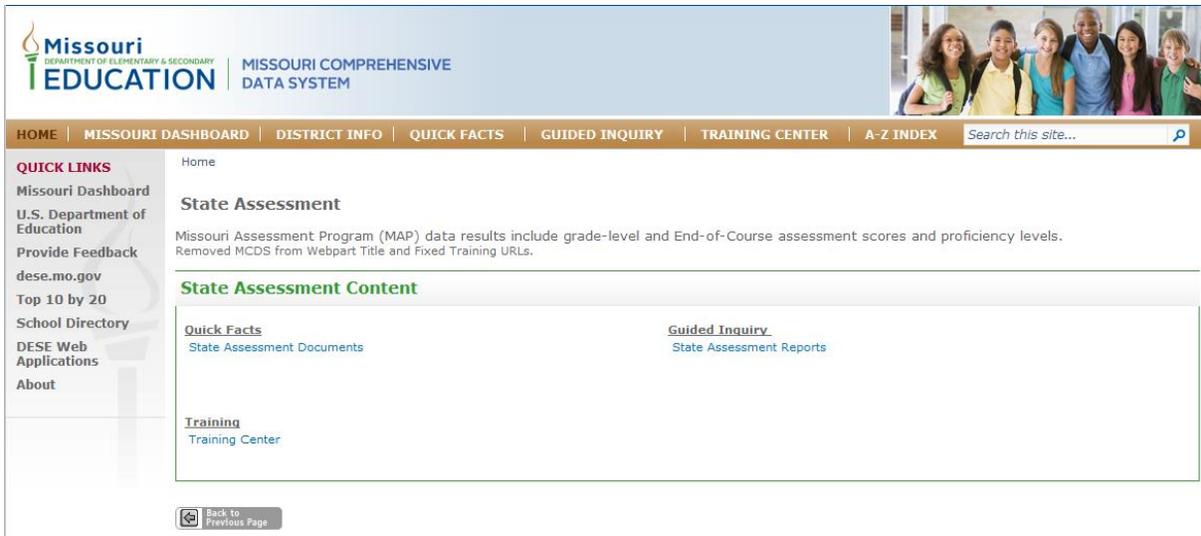
Users access MCDS from a link to the portal on the Department’s homepage (<http://dese.mo.gov/>). From there, they access the data portal directly through the MCDS link, as shown in the following image.



Secure content is available through a link at the top of the MCDS portal’s homepage. District users with appropriate permissions can log in to access data. Once users have logged in, they are returned to the MCDS portal page where they can locate EOC data through the State Assessment link.



On the State Assessment page, a Guided Inquiry link allows users to create summary administrative reports, achievement level reports, and historical AYP reports. Authenticated users can also download student-level data from the Guided Inquiry link.



An unlimited number of reports with any configuration may be created through MCDS. In addition to administrative reports, the MCDS portal also provides an unlimited configuration of summary reports, as shown in Table 8.1, that are beyond the scope of this technical report. Additional information and training pertaining to MCDS capabilities are available on DESE’s website at <http://mcds.dese.mo.gov/trainingcenter/Pages/default.aspx>.

Table 8.1. Reports Available on the MCDS Portal

Report Type	Report
Administrative Reports	Guided Inquiry - State Assessment Administrative: MAP Scale Score Summary
	Guided Inquiry - State Assessment Administrative: MAP Student Demographics
	Guided Inquiry - State Assessment Administrative: MAP Participation Invalidation
	Guided Inquiry - State Assessment Administrative: MAP Student Achievement Level
	Guided Inquiry - State Assessment Administrative: EOC History Report
Achievement Level Reports	Guided Inquiry - State Assessment Achievement Level - 4 Levels: Achievement Level 4 Report
	Guided Inquiry - State Assessment Achievement Level - 4 Levels: Achievement Level 4 Charts
Content Standards Report	Guided Inquiry - State Assessment Content Standard - Item Analysis: Content Standard Summary
Item Analysis Expanded Reports	Guided Inquiry - State Assessment Content Standard - Item Analysis: Content Standard IBD
	Guided Inquiry - State Assessment Content Standard - Item Analysis: Goal Process IBD

8.2.4. Administrative Reports

Administrative reports provide student-level test data. Based on only the MO EOC assessment results, four reports are generated: MO EOC Scale Score Summary, MO EOC Student Demographic, Student Achievement Level, and Student Report. Additionally, a historical report of the student's EOC participation is located within the administrative reports. The following list describes the contents of each administrative report:

- **MO EOC Scale Score Summary:** This report lists each student in the school or district along with his or her MOSIS ID, testing year, content area, grade level, MO EOC scale score, and achievement level.
- **MO EOC Student Demographic:** This report lists all students in the school or district along with their date of birth (DOB), content area, MOSIS ID, district ID, and relevant demographic information, including whether the student has been in the district for less than a year, whether the student has been in the building for less than a year, whether the student is limited English proficient (LEP), the student's race, whether the student qualifies for free and reduced lunch (FRL), whether the student has an individualized education program (IEP), whether the student is an English-language learner (ELL)/LEP who has been in the school for less than one year and in the country for less than three years, whether the student is an LEP/ELL Title III, the number of months the LEP/ELL student has been in the United States, the student's disability diagnosis, and whether the student is Title I.
- **Student Achievement Level:** This report lists all students in a school or district along with the year of testing, content area, grade-level, achievement level, and MOSIS ID.
- **Student Report:** For each school or district, this report contains the following information: student name, DOB, MOSIS ID, content area tested, grade level, achievement level, and scale score for each content area tested.
- **EOC History Report:** This report lists the history of MO EOC completion for all students in the school or district.

8.3. Current Test Administration Results

The descriptive statistics for the number correct raw score, scale scores, and achievement levels for each of the five MO EOC assessments from the Fall 2017 and Spring 2018 administrations are presented here. The statistics include *n*-counts, means, standard deviations (SD), minimum and maximum values, and a variety of data disaggregation.

8.3.1. Total Raw Scores

Table 8.2 summarizes the descriptive statistics for total raw score (RS) by test administration (test period) and content area. The information includes the total number of students who took the particular MO EOC assessment (*n*-count), the number of items and possible points, the observed minimum and maximum scores, and mean and standard deviation of raw scores.

Table 8.2. Descriptive Statistics of Total Raw Scores

Test Period	Content Area	n-Count	#Items	#Pts.			Mean	SD
				Possible	Min.	Max.		
Fall 2017	English II	1,150	46	50	0	47	23.50	9.31
	Algebra I	4,449	44	50	1	50	21.88	10.41
	English I	44	46	50	16	39	27.86	6.47
	Algebra II	525	46	50	0	47	22.86	10.00
	Geometry	256	45	50	5	46	27.91	8.78
Spring 2018	English II	33,103	43	50	0	49	27.69	8.61
	Algebra I	28,146	44	50	0	50	23.81	10.00
	English I	6,239	43	50	2	48	27.92	8.00
	Algebra II	8,423	46	50	0	49	23.56	9.93
	Geometry	2,049	45	50	4	50	24.68	8.86

8.3.1.1. Total Raw Score by Cluster

Tables 8.3, and 8.4 summarize the number correct RS—including the average raw score, the SD, and the standard error of measurement (SEM)—by test administration (test period), content area, and cluster. More information on SEM is provided in Chapter 7.

Table 8.3. Descriptive Statistics of Total Raw Scores by Cluster—Fall 2017

Content Area	Cluster	#Pts. Possible	#Items	Mean	SD	SEM
English II	Reading	30	30	12.83	5.39	2.42
	Writing	20	16	10.67	4.57	1.90
Algebra I	Algebra	20	20	8.66	4.42	1.84
	Functions	18	18	7.55	3.93	1.79
	Number/Quantity and Statistics	12	6	1.92	1.43	0.99
English I	Reading	30	30	16.32	4.66	2.41
	Writing	20	16	11.55	2.49	1.66
Algebra II	Algebra	27	26	12.57	5.82	2.09
	Functions	14	11	5.23	2.80	1.38
	Number/Quantity and Statistics	9	9	4.89	2.15	1.27
Geometry	Congruence/Similarity	34	31	16.46	6.13	2.33
	Coordinate Geometry & Circles	10	8	4.28	1.72	1.10
	Geometric Measurement & Modeling	6	6	3.33	1.25	0.95

Table 8.4. Descriptive Statistics of Total Raw Scores by Cluster—Spring 2018

Content Area	Cluster	#Pts. Possible	#Items	Mean	SD	SEM
English II	Reading	30	30	15.03	5.37	2.43
	Writing	20	13	12.67	3.84	1.71
Algebra I	Algebra	20	20	9.18	4.32	1.85
	Functions	18	18	8.29	3.83	1.82
	Number/Quantity and Statistics	12	6	2.14	1.49	1.02
English I	Reading	30	30	16.44	5.40	2.38
	Writing	20	13	11.52	3.14	1.75
Algebra II	Algebra	27	26	12.56	5.69	2.12
	Functions	14	11	4.82	2.75	1.49
	Number/Quantity and Statistics	9	9	5.22	2.20	1.27
Geometry	Congruence/Similarity	34	31	14.69	6.08	2.36
	Coordinate Geometry & Circles					
	Geometric Measurement & Modeling	10	8	3.44	2.01	1.14
	Statistics & Probability	6	6	3.00	1.21	0.94

8.3.2. Scale Scores

Table 8.5 summarizes the descriptive statistics of scale scores for each MO EOC assessment by administration. For the Fall and Spring administrations of English and Mathematics content areas, the lowest obtainable scale score is 325. The highest scale score has not been determined. The mean scale score data in Table 8.6 may be reviewed in light of the Proficient cut score of 400.

Table 8.6 then presents the minimum scale score needed to obtain each level of achievement. The achievement level distributions for the Fall and Spring administration of English and Mathematics contents areas are presented in the Table 8.7.

Table 8.5. Descriptive Statistics of the Scale Scores

Test Period	Content Area	n-Count	Min.	Max.	Mean	SD
Fall 2017	English II	2,445	325	450	394.09	16.32
	Algebra I	4,632	345	471	396.55	14.46
	English I	89	380	423	402.15	11.02
	Algebra II	526	328	436	396.07	14.09
	Geometry	261	364	442	405.17	13.91
Spring 2018	English II	61,440	325	469	402.06	14.69
	Algebra I	59,862	329	471	399.39	14.19
	English I	11,454	341	463	403.37	14.21
	Algebra II	17,180	328	467	398.98	14.00
	Geometry	4,454	360	479	400.61	14.36

Table 8.6. Scale Score Cuts for Fall 2017 and Spring 2018

Content Area	Basic	Proficient	Advanced
English II	384	400	420
Algebra I	389	400	409
English I	384	400	415
Algebra II	388	400	411
Geometry	387	400	414

Table 8.7. Achievement Level Distributions for Fall 2017 and Spring 2018

Content Area	Achievement Level	Fall 2017		Spring 2018		Overall	
		Freq.	%	Freq.	%	Freq.	%
English II	Below Basic	704	28.8	7,003	11.4	7,772	12.1
	Basic	809	33.1	18,739	30.5	19,712	30.7
	Proficient	796	32.6	29,241	47.6	30,198	47.0
	Advanced	136	5.6	6,457	10.5	6,610	10.3
	Below Basic + Basic	1,513	61.9	25,742	41.9	27,484	42.8
	Proficient + Advanced	932	38.1	35,698	58.1	36,808	57.3
	Total	2,445	100.0	61,440	100.0	64,292	100.0
Algebra I	Below Basic	1,463	31.6	13,875	23.2	15,597	23.8
	Basic	1,347	29.1	17,834	29.8	19,406	29.6
	Proficient	868	18.7	13,150	22.0	14,443	22.0
	Advanced	954	20.6	15,003	25.1	16,088	24.6
	Below Basic + Basic	2,810	60.7	31,709	53.0	35,003	53.4
	Proficient + Advanced	1,822	39.3	28,153	47.0	30,531	46.6
	Total	4,632	100.0	59,862	100.0	65,534	100.0
English I	Below Basic	5	5.6	1,050	9.2	1,058	9.2
	Basic	34	38.2	3,291	28.7	3,331	28.8
	Proficient	37	41.6	4,475	39.1	4,517	39.1
	Advanced	13	14.6	2,638	23.0	2,651	22.9
	Below Basic + Basic	39	43.8	4,341	37.9	4,389	38.0
	Proficient + Advanced	50	56.2	7,113	62.1	7,168	62.0
	Total	89	100.0	11,454	100.0	11,557	100.0
Algebra II	Below Basic	140	26.6	3,704	21.6	3,858	21.8
	Basic	156	29.7	5,244	30.5	5,410	30.5
	Proficient	156	29.7	4,749	27.6	4,908	27.7
	Advanced	74	14.1	3,483	20.3	3,559	20.1
	Below Basic + Basic	296	56.3	8,948	52.1	9,268	52.3
	Proficient + Advanced	230	43.7	8,232	47.9	8,467	47.7
	Total	526	100.0	17,180	100.0	17,735	100.0
Geometry	Below Basic	28	10.7	700	15.7	744	15.7
	Basic	63	24.1	1,690	37.9	1,759	37.0
	Proficient	94	36.0	1,248	28.0	1,355	28.5
	Advanced	76	29.1	816	18.3	896	18.9
	Below Basic + Basic	91	34.9	2,390	53.7	2,503	52.7
	Proficient + Advanced	170	65.1	2,064	46.3	2,251	47.4

Content Area	Achievement Level	Fall 2017		Spring 2018		Overall	
		Freq.	%	Freq.	%	Freq.	%
	Total	261	100.0	4,454	100.0	4,754	100.0

8.3.2.1. *By Demographic Group*

Descriptive statistics of scale scores and percentage distributions of students' achievement levels by demographic groups are summarized in Appendix D and Appendix E. The results are only reported for groups with 10 or more students. The demographic variables included are gender, ethnicity, migrant status, free and reduced lunch (FRL), limited English proficient (LEP), Title I, individualized education program (IEP), and accommodations.

8.4. Longitudinal Comparison of Test Results

The longitudinal test results provide the trends of the student performances across years in each course. The 2017–2018 Fall and Spring student score data based on the new standards in the five English and Mathematics assessments is available and will be utilized to complete future longitudinal comparisons. The coming years of results will be provided in this section.

The historical trends of the number and percentage of students in each achievement level by content area from 2008–2009 to 2016–2017 can be found in the technical reports located on DESE's website at <http://dese.mo.gov/college-career-readiness/assessment/assessment-technical-support-materials>.

8.5. Summary

This chapter provides the type of score reporting and presents the current test administration results. In coming years, the longitudinal test results will be provided in this chapter as well.

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Appendix A: Actual Point Distributions

Algebra I

Table A.1. Actual Point Distributions—Algebra I, Fall 2017

Reporting Category	Blueprint Target	Actual
	#Points	
Algebra	18-22	20
Function	18-22	18
Number and Data	8-12	12
Total	50	50

Table A.2. Actual Point Distributions—Algebra I, Spring 2018

Reporting Category	Blueprint Target	Actual
	#Points	
Algebra	18-22	20
Function	18-22	19
Number and Data	8-12	11
Total	50	50

Algebra II

Table A.3. Actual Point Distributions—Algebra II, Fall 2017

Reporting Category	Blueprint Target	Actual
	#Points	
Algebra	25-28	27
Function	11-14	13
Number Quantity and Statistics	10-12	10
Total	50	50

Table A.4. Actual Point Distributions—Algebra II, Spring 2018

Reporting Category	Blueprint Target	Actual
	#Points	
Algebra	25-28	25
Function	11-14	14
Number Quantity and Statistics	10-12	11
Total	50	50

English I

Table A.5. Actual Point Distributions—English I, Fall 2017

Reporting Category	Blueprint Target	Actual
	#Points	
Reading Literary Text	15	15
Reading Informational Text	15	15
Writing	20	20
Total	50	50

Table A.6. Actual Point Distributions—English I, Spring 2018

Reporting Category	Blueprint Target	Actual
	#Points	#Points
Reading Literary Text	15	15
Reading Informational Text	15	15
Writing	20	20
Total	50	50

English II

Table A.7. Actual Point Distributions—English II, Fall 2017

Reporting Category	Blueprint Target	Actual
	#Points	
Reading Literary Text	15	15
Reading Informational Text	15	15
Writing	20	20
Total	50	50

Table A.8. Actual Point Distributions—English II, Spring 2018

Reporting Category	Blueprint Target	Actual
	#Points	
Reading Literary Text	15	15
Reading Informational Text	15	15
Writing	20	20
Total	50	50

Geometry

Table A.9. Actual Point Distributions—Geometry, Fall 2017

Reporting Category	Blueprint Target	Actual
	#Points	
Congruence/Similarity, Coordinate Geometry and Circles	32-35	34
Geometric Measurement and Modeling	6-10	10
Statistics and Probability	6-10	6
Total	50	50

Table A.10. Actual Point Distributions—Geometry, Spring 2018

Reporting Category	Blueprint Target	Actual
	#Points	
Congruence/Similarity, Coordinate Geometry and Circles	32-35	34
Geometric Measurement and Modeling	6-10	10
Statistics and Probability	6-10	6
Total	50	50

Appendix B: Classical Item Statistics

Table B.1. Item Statistics—English II, Fall 2017

n-Count: 2,444

UIN	<i>P</i> -Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
MO0000946	0.60	0.64	0
MO0000946_1	0.62	0.64	0
MO0000946_2	0.52	0.65	0
MO0000946_3	0.94	0.40	0
MO0001805	0.58	0.64	0
MO0001805_1	0.59	0.69	0
MO0001805_2	0.53	0.66	0
MO0001805_3	0.89	0.42	0
MO0001817	0.58	0.62	0
MO0001817_1	0.60	0.63	0
MO0001817_2	0.53	0.61	0
MO0001817_3	0.92	0.45	0
MO0001825	0.40	0.20	1
MO0001827	0.34	0.09	1
MO0001828	0.58	0.59	1
MO0001831	0.59	0.42	1
MO0001834	0.58	0.46	1
MO0001843	0.59	0.64	0
MO0001843_1	0.59	0.64	0
MO0001843_2	0.53	0.67	0
MO0001843_3	0.90	0.45	0
MO0001887	0.65	0.50	1
MOE116160	0.55	0.27	0
MOE116291	0.51	0.40	0
MOE116294	0.32	0.38	0
MOE116295	0.89	0.37	0
MOE116296	0.24	0.37	0
MOE116300	0.55	0.34	0
MOE116303	0.11	0.21	0
MOE116354	0.26	0.35	0
MOE116355	0.58	0.45	0
MOE116358	0.54	0.37	0
MOE2161	0.33	0.24	1
MOE21612	0.20	0.32	0
MOE21619	0.48	0.35	1
MOE21620	0.56	0.40	0
MOE21621	0.29	0.15	1
MOE216215	0.23	0.32	1
MOE216217	0.39	0.37	0
MOE216218	0.36	0.36	0
MOE21622	0.44	0.27	0
MOE216220	0.38	0.28	0
MOE216224	0.49	0.11	0
MOE216237	0.40	0.31	0
MOE21624	0.52	0.36	1
MOE216303	0.42	0.32	0
MOE216367	0.12	0.22	0
MOE216368	0.39	0.35	0
MOE216371	0.36	0.45	0
MOE216373	0.36	0.15	1

UIN	P-Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
MOE216374	0.45	0.52	1
MOE2165	0.55	0.29	1
MOE2166	0.38	0.19	1
MOE216635	0.63	0.32	0
MOE216636	0.24	0.12	0
MOE216641	0.50	0.30	0
MOE216643	0.51	0.36	0
MOE216709	0.68	0.48	0
MOE216710	0.08	0.21	0
MOE21675	0.67	0.38	0
MOE216775	0.55	0.33	1
MOE216776	0.63	0.57	1
MOE216779	0.57	0.48	1
MOE21678	0.54	0.33	0
MOE216780	0.46	0.46	1
MOE216788	0.49	0.51	1
MOE216791	0.19	0.45	0
MOE216793	0.37	0.47	0
MOE21683	0.55	0.42	0

Table B.2. Item Statistics—Algebra I, Fall 2017

n-Count: 4,670

UIN	P-Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
MOA11612	0.33	0.10	0
MOA116150	0.86	0.34	0
MOA116151	0.55	0.38	1
MOA116153	0.38	0.17	0
MOA116156	0.59	0.48	0
MOA116225	0.59	0.40	0
MOA116287	0.17	0.56	0
MOA116290	0.46	0.26	1
MOA116294	0.68	0.37	0
MOA116353	0.36	0.62	0
MOA116359	0.33	0.45	0
MOA116361	0.44	0.40	0
MOA116425	0.27	0.51	0
MOA116427	0.61	0.39	0
MOA116429	0.34	0.44	0
MOA116438	0.35	0.20	0
MOA116493	0.16	0.45	0
MOA116496	0.55	0.26	0
MOA116497	0.47	0.60	0
MOA116501	0.38	0.56	0
MOA116502	0.26	0.31	0
MOA116569	0.18	0.25	0
MOA116572	0.24	0.14	0
MOA116581_1	0.35	0.66	0
MOA116581_3	0.53	0.61	0
MOA116581_4	0.73	0.53	0
MOA116581_6	0.36	0.51	0
MOA116589	0.55	0.48	0

UIN	P-Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
MOA1166	0.52	0.41	0
MOA116637	0.79	0.42	0
MOA116646	0.54	0.36	0
MOA116647	0.61	0.42	0
MOA116651	0.58	0.39	0
MOA1167	0.50	0.57	0
MOA116702	0.14	0.52	0
MOA116706	0.62	0.44	0
MOA116710	0.46	0.51	0
MOA116718	0.20	0.50	0
MOA116722	0.26	0.56	0
MOA116730	0.43	0.15	0
MOA11675	0.35	0.29	0
MOA116798	0.31	0.54	1
MOA11684	0.16	0.43	0
MOA11685	0.30	0.32	0

Table B.3. Item Statistics—English I, Fall 2017

n-Count: 89

UIN	P-Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
MO0001781	0.70	0.34	0
MO0001782	0.48	0.27	0
MO0001783	0.46	0.18	0
MO0001812	0.90	0.11	0
MO0001818	0.26	0.36	0
MO0001870	0.71	0.60	0
MO0001870_1	0.65	0.50	0
MO0001870_2	0.62	0.66	0
MO0001870_3	1.00	--	0
MO0001873	0.66	0.49	0
MO0001873_1	0.63	0.59	0
MO0001873_2	0.57	0.46	0
MO0001873_3	0.92	0.58	0
MO0001878	0.66	0.33	0
MO0001878_1	0.60	0.44	0
MO0001878_2	0.56	0.27	0
MO0001878_3	1.00	--	0
MO0001881	0.64	0.32	0
MO0001881_1	0.65	0.53	0
MO0001881_2	0.54	0.29	0
MO0001881_3	0.97	0.35	0
MO0001886	0.12	0.34	0
MO0017550	0.88	0.25	0
MO0017581	0.88	-0.01	0
MO0017631	0.52	0.17	0
MO0017637	0.69	0.40	0
MO0017638	0.57	0.41	0
MO0018251	0.55	0.15	0
MO0018258	0.57	-0.13	0
MO0018266	0.83	0.53	0

UIN	P-Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
MO0018281	0.74	-0.02	0
MO0018534	0.57	0.38	0
MOE1161	0.60	0.02	0
MOE11610	0.60	0.22	0
MOE11614	0.79	0.38	0
MOE116142	0.62	0.29	0
MOE116145	0.01	0.03	0
MOE116148	0.38	0.11	0
MOE116149	0.70	0.26	0
MOE116152	0.64	0.32	0
MOE116161	0.55	0.48	0
MOE11617	0.48	0.36	0
MOE1162	0.29	0.43	0
MOE116211	0.55	0.53	0
MOE116214	0.81	0.37	0
MOE116215	0.72	0.30	0
MOE116216	0.57	0.37	0
MOE116217	0.43	0.24	0
MOE116223	0.13	-0.07	0
MOE116225	0.58	0.20	0
MOE116228	0.51	0.27	0
MOE116298	0.25	0.33	0
MOE116299	0.82	0.13	0
MOE116364	0.60	0.26	0
MOE116365	0.38	0.32	0
MOE116366	0.62	0.29	0
MOE116428	0.69	0.40	0
MOE116432	0.78	0.28	0
MOE116441	0.62	0.18	0
MOE116447	0.19	0.27	0
MOE116449	0.36	0.28	0
MOE11675	0.53	0.03	0
MOE116774	0.11	0.20	0
MOE116776	0.21	0.30	0
MOE116778	0.51	0.33	0
MOE11678	0.47	0.16	0
MOE116780	0.38	0.17	0
MOE116781	0.64	0.37	0
MOE116782	0.57	-0.47	0
MOE116783	0.45	-0.12	0
MOE116785	0.38	0.04	0
MOE116790	0.69	0.07	0
MOE11680	0.51	-0.32	0
MOE11688	0.67	0.27	0
MOE11689	0.61	0.30	0

Table B.4. Item Statistics—Algebra II, Fall 2017

n-Count: 526

UIN	P-Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
MO0001065	0.14	0.44	0

UIN	P-Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
MO0001073	0.26	0.53	0
MO0001078	0.25	0.17	0
MO0001081	0.11	0.03	0
MO0001082	0.49	0.11	0
MO0001083	0.21	0.56	0
MOA2161	0.48	0.32	0
MOA216105	0.44	0.37	0
MOA216126	0.44	0.51	0
MOA21614	0.73	0.44	0
MOA21615	0.47	0.51	0
MOA216154	0.57	0.59	0
MOA216157	0.73	0.27	0
MOA21616	0.41	0.31	0
MOA21620	0.31	0.46	0
MOA216228	0.64	0.46	1
MOA216236	0.30	0.23	0
MOA2163	0.24	0.57	0
MOA216355	0.64	0.53	0
MOA216367	0.52	0.36	0
MOA216375	0.28	0.33	0
MOA216379	0.71	0.50	0
MOA216425	0.71	0.53	0
MOA216428	0.68	0.45	0
MOA216432	0.58	0.63	0
MOA216438	0.82	0.44	0
MOA216439	0.63	0.43	0
MOA216440	0.70	0.45	0
MOA216441	0.57	0.48	0
MOA216445	0.78	0.16	0
MOA216446	0.79	0.45	0
MOA216497	0.43	0.35	0
MOA216501	0.26	0.25	0
MOA216519	0.32	0.29	0
MOA216522	0.67	0.61	0
MOA21671	0.40	0.32	0
MOA21673	0.59	0.60	0
MOA21675	0.67	0.48	0
MOA21682	0.46	0.57	0
MOA21683	0.52	0.46	0
MOA21685	0.31	0.45	0
MOA21687	0.37	0.43	0
MOA2169	0.64	0.47	0
MOA21692	0.23	0.23	0
MOA21695	0.09	0.25	0
MOA21699	0.42	0.27	0

Table B.5. Item Statistics—Geometry, Fall 2017

n-Count: 261

UIN	P-Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
MO0001747	0.55	0.61	0

UIN	P-Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
MO0001761	0.60	0.38	0
MO0001763	0.71	0.36	0
MO0001764	0.97	0.23	0
MO0033067	0.16	0.42	0
MOG161	0.62	0.41	0
MOG1611	0.66	0.37	0
MOG1614	0.78	0.39	0
MOG16145	0.52	0.37	0
MOG16146	0.37	0.34	0
MOG1615	0.72	0.39	0
MOG16151	0.90	0.22	0
MOG1617	0.47	0.18	0
MOG1618	0.82	0.44	0
MOG16212	0.52	0.37	0
MOG16224	0.12	0.38	0
MOG16227	0.28	0.45	0
MOG1624	0.18	0.44	0
MOG16284	0.78	0.44	0
MOG16286	0.68	0.43	0
MOG16288	0.30	0.24	0
MOG16294	0.73	0.33	0
MOG16295	0.84	0.26	0
MOG16357	0.73	0.47	0
MOG16360	0.55	0.39	0
MOG16362	0.35	0.17	0
MOG16368	0.23	0.29	0
MOG16421	0.86	0.32	0
MOG16426	0.68	0.45	0
MOG16498	0.81	0.28	0
MOG165	0.86	0.30	0
MOG16507	0.84	0.38	0
MOG16508	0.51	0.49	0
MOG16571	0.51	0.32	0
MOG16576	0.22	0.32	0
MOG166	0.46	0.21	0
MOG16777	0.36	0.31	0
MOG16778	0.54	0.34	0
MOG16783	0.36	0.34	0
MOG16789	0.72	0.60	0
MOG16791	0.57	0.55	0
MOG168	0.56	0.34	0
MOG16801	0.42	0.22	0
MOG16811	0.43	0.46	0
MOG16812	0.18	0.47	0

Table B.6. Item Statistics—English II, Spring 2018

n-Count: 61,400

UIN	P-Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
MO0000946	0.69	0.54	0
MO0000946_1	0.69	0.54	0

Appendix B: Classical Item Statistics

UIN	P-Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
MO0000946_2	0.58	0.51	0
MO0000946_3	0.97	0.33	0
MO0001805	0.67	0.59	0
MO0001805_1	0.66	0.60	0
MO0001805_2	0.58	0.58	0
MO0001805_3	0.96	0.36	0
MO0001825	0.46	0.27	0
MO0001827	0.37	0.21	0
MO0001828	0.77	0.56	0
MO0001831	0.72	0.44	0
MO0001834	0.70	0.44	0
MO0001887	0.77	0.36	0
MOE116160	0.60	0.29	0
MOE116291	0.64	0.39	0
MOE116294	0.42	0.33	0
MOE116295	0.95	0.31	0
MOE116296	0.32	0.30	0
MOE116300	0.63	0.34	0
MOE116303	0.18	0.22	0
MOE116354	0.34	0.35	0
MOE116355	0.70	0.37	0
MOE116358	0.65	0.37	0
MOE2161	0.41	0.26	0
MOE21612	0.26	0.32	0
MOE21619	0.57	0.34	0
MOE21620	0.68	0.43	0
MOE21621	0.32	0.24	0
MOE216215	0.31	0.34	0
MOE216217	0.47	0.31	0
MOE216218	0.48	0.29	0
MOE21622	0.51	0.27	0
MOE216220	0.40	0.26	0
MOE216224	0.52	0.12	0
MOE216237	0.47	0.36	0
MOE21624	0.64	0.35	0
MOE216303	0.51	0.27	0
MOE216367	0.15	0.16	0
MOE216368	0.47	0.36	0
MOE216371	0.50	0.37	0
MOE216373	0.38	0.16	0
MOE216374	0.59	0.48	0
MOE2165	0.62	0.30	0
MOE2166	0.42	0.24	0
MOE216635	0.73	0.30	0
MOE216636	0.27	0.20	0
MOE216641	0.59	0.33	0
MOE216643	0.62	0.38	0
MOE216709	0.78	0.49	0
MOE216710	0.13	0.18	0
MOE21675	0.73	0.30	0
MOE216775	0.63	0.31	0
MOE216776	0.78	0.49	0
MOE216779	0.73	0.49	0

UIN	P-Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
MOE21678	0.61	0.38	0
MOE216780	0.60	0.47	0
MOE216788	0.62	0.49	0
MOE216791	0.33	0.42	0
MOE216793	0.52	0.41	0
MOE21683	0.66	0.41	0

Table B.7. Item Statistics—Algebra I, Spring 2018

n-Count: 59,828

UIN	P-Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
MOA11610	0.42	0.37	0
MOA11612	0.35	0.21	0
MOA116148	0.28	0.22	0
MOA116150	0.88	0.32	0
MOA116151	0.59	0.36	0
MOA116153	0.42	0.26	0
MOA116156	0.66	0.46	0
MOA116158	0.45	0.30	0
MOA116225	0.63	0.32	0
MOA116287	0.17	0.53	0
MOA116290	0.48	0.26	0
MOA116294	0.70	0.35	0
MOA116296	0.68	0.49	0
MOA116299_1	0.59	0.60	0
MOA116299_2	0.47	0.71	0
MOA116299_3	0.53	0.65	0
MOA116299_4	0.26	0.52	0
MOA116299_5	0.33	0.66	0
MOA116299_6	0.35	0.53	0
MOA116353	0.40	0.57	0
MOA116359	0.35	0.43	0
MOA116361	0.49	0.43	0
MOA116425	0.35	0.48	0
MOA116427	0.67	0.39	0
MOA116429	0.40	0.43	0
MOA116438	0.29	0.16	0
MOA116493	0.18	0.44	0
MOA116496	0.53	0.32	0
MOA116497	0.55	0.56	0
MOA116498	0.22	0.29	0
MOA1165	0.57	0.29	0
MOA116501	0.44	0.52	0
MOA116502	0.27	0.26	0
MOA116564	0.22	0.31	0
MOA116569	0.18	0.28	0
MOA116572	0.24	0.13	0
MOA116581_1	0.39	0.62	0
MOA116581_3	0.57	0.57	0
MOA116581_4	0.78	0.50	0
MOA116581_6	0.42	0.47	0
MOA116589	0.60	0.47	0

UIN	P-Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
MOA1166	0.58	0.40	0
MOA116635	0.33	0.48	0
MOA116637	0.83	0.36	0
MOA116646	0.55	0.36	0
MOA116647	0.69	0.38	0
MOA116651	0.60	0.33	0
MOA1167	0.57	0.53	0
MOA116702	0.15	0.49	0
MOA116706	0.66	0.41	0
MOA116710	0.54	0.47	0
MOA116717	0.24	0.34	0
MOA116718	0.27	0.49	0
MOA116722	0.26	0.44	0
MOA116730	0.44	0.17	0
MOA11675	0.38	0.33	0
MOA11676	0.50	0.16	0
MOA116771	0.48	0.29	0
MOA116798	0.34	0.51	0
MOA116802	0.54	0.34	0
MOA11684	0.22	0.46	0
MOA11685	0.34	0.28	0

Table B.8. Item Statistics—English I, Spring 2018

n-Count: 11,430

UIN	P-Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
MO0001781	0.58	0.23	0
MO0001782	0.67	0.32	0
MO0001783	0.50	0.14	0
MO0001812	0.88	0.37	0
MO0001818	0.33	0.38	0
MO0001878	0.67	0.49	0
MO0001878_1	0.67	0.48	0
MO0001878_2	0.54	0.43	0
MO0001878_3	0.97	0.34	0
MO0001881	0.67	0.52	0
MO0001881_1	0.64	0.52	0
MO0001881_2	0.57	0.50	0
MO0001881_3	0.95	0.32	0
MO0001886	0.11	0.24	0
MO0017550	0.85	0.40	0
MO0017581	0.81	0.44	0
MO0017631	0.53	0.35	0
MO0017637	0.73	0.41	0
MO0017638	0.62	0.46	0
MO0018251	0.65	0.28	0
MO0018258	0.55	0.24	0
MO0018266	0.77	0.41	0
MO0018281	0.75	0.41	0
MO0018534	0.64	0.34	0
MOE1161	0.61	0.18	0

UIN	P-Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
MOE11610	0.64	0.41	0
MOE11614	0.68	0.43	0
MOE116142	0.66	0.25	0
MOE116145	0.03	0.09	0
MOE116148	0.56	0.15	0
MOE116149	0.65	0.38	0
MOE116152	0.67	0.32	0
MOE116161	0.53	0.36	0
MOE11617	0.51	0.38	0
MOE1162	0.22	0.13	0
MOE116211	0.62	0.46	0
MOE116214	0.80	0.42	0
MOE116215	0.64	0.31	0
MOE116216	0.54	0.26	0
MOE116217	0.47	0.23	0
MOE116223	0.15	0.19	0
MOE116225	0.62	0.36	0
MOE116228	0.54	0.26	0
MOE116298	0.29	0.30	0
MOE116299	0.76	0.35	0
MOE116364	0.68	0.42	0
MOE116365	0.23	0.25	0
MOE116366	0.55	0.27	0
MOE116428	0.79	0.37	0
MOE116432	0.81	0.37	0
MOE116441	0.59	0.35	0
MOE116447	0.34	0.41	0
MOE116449	0.49	0.34	0
MOE11675	0.57	0.29	0
MOE116774	0.26	0.35	0
MOE116776	0.23	0.20	0
MOE116778	0.60	0.50	0
MOE11678	0.57	0.25	0
MOE116780	0.45	0.24	0
MOE116781	0.65	0.41	0
MOE116782	0.44	-0.13	0
MOE116783	0.53	0.24	0
MOE116785	0.44	0.30	0
MOE116790	0.56	0.27	0
MOE11680	0.51	0.27	0
MOE11688	0.65	0.44	0
MOE11689	0.57	0.28	0

Table B.9. Item Statistics—Algebra II, Spring 2018

n-Count: 17,173

UIN	P-Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
MO0001065	0.10	0.38	0
MO0001073	0.64	0.56	0
MO0001078	0.24	0.19	0
MO0001081	0.13	0.06	0

Appendix B: Classical Item Statistics

UIN	P-Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
MO0001082	0.50	0.16	0
MO0001083	0.22	0.55	0
MO0001097	0.31	0.57	0
MO0001098	0.33	0.48	0
MO0001099	0.47	0.60	0
MO0001108	0.62	0.37	0
MO0001110	0.27	0.63	0
MO0001113	0.95	0.23	0
MOA2161	0.49	0.31	0
MOA216101	0.16	0.34	0
MOA216105	0.47	0.35	0
MOA216126	0.47	0.45	0
MOA21614	0.77	0.36	0
MOA216141	0.52	0.34	0
MOA21615	0.47	0.57	0
MOA216154	0.58	0.53	0
MOA216157	0.81	0.25	0
MOA216159	0.78	0.43	0
MOA21616	0.37	0.30	0
MOA21619	0.75	0.48	0
MOA21620	0.30	0.40	0
MOA216218	0.44	0.41	0
MOA216228	0.57	0.51	0
MOA216231	0.40	0.50	0
MOA216236	0.36	0.29	0
MOA216296	0.88	0.25	0
MOA2163	0.21	0.54	0
MOA216355	0.64	0.47	0
MOA216367	0.54	0.31	0
MOA216371	0.23	0.50	0
MOA216375	0.34	0.39	0
MOA216376	0.38	0.53	0
MOA216379	0.67	0.48	0
MOA216425	0.70	0.50	0
MOA216427	0.69	0.44	0
MOA216428	0.68	0.47	0
MOA216432	0.62	0.59	0
MOA216434	0.94	0.26	0
MOA216438	0.80	0.33	0
MOA216439	0.58	0.42	0
MOA216440	0.63	0.42	0
MOA216441	0.52	0.44	0
MOA216443	0.74	0.18	0
MOA216444	0.25	0.44	0
MOA216445	0.79	0.26	0
MOA216446	0.73	0.45	0
MOA216497	0.44	0.33	0
MOA216498	0.22	0.50	0
MOA216501	0.26	0.21	0
MOA216506	0.56	0.34	0
MOA216517	0.23	0.39	0
MOA216519	0.27	0.22	0
MOA216522	0.67	0.49	0

UIN	P-Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
MOA216524	0.43	0.31	0
MOA2166	0.18	0.45	0
MOA21671	0.31	0.32	0
MOA21673	0.56	0.59	0
MOA21675	0.68	0.48	0
MOA21677	0.69	0.27	0
MOA21681	0.26	0.39	0
MOA21682	0.47	0.56	0
MOA21683	0.49	0.45	0
MOA21685	0.30	0.44	0
MOA21686	0.31	0.41	0
MOA21687	0.38	0.36	0
MOA2169	0.58	0.44	0
MOA21690	0.44	0.32	0
MOA21692	0.26	0.24	0
MOA21693	0.35	0.42	0
MOA21695	0.09	0.24	0
MOA21697	0.72	0.41	0
MOA21699	0.40	0.29	0

Table B.10. Item Statistics—Geometry, Spring 2018

n-Count: 3,934

UIN	P-Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
MO0001747	0.43	0.58	0
MO0001761	0.50	0.43	0
MO0001763	0.62	0.28	0
MO0001764	0.95	0.18	0
MO0001769	0.48	0.45	0
MO0001770	0.54	0.25	0
MO0001888	0.17	0.60	0
MO0001889	0.26	0.55	0
MO0033067	0.09	0.54	0
MOG161	0.51	0.40	0
MOG1611	0.63	0.33	0
MOG1614	0.63	0.36	0
MOG16141	0.51	0.39	0
MOG16145	0.48	0.40	0
MOG16146	0.35	0.38	0
MOG16148	0.54	0.45	0
MOG1615	0.54	0.37	0
MOG16151	0.82	0.27	0
MOG1617	0.40	0.17	0
MOG1618	0.73	0.42	0
MOG16212	0.46	0.39	0
MOG16221	0.54	0.26	0
MOG16224	0.10	0.45	0
MOG16225	0.11	0.21	0
MOG16227	0.16	0.40	0
MOG1624	0.06	0.34	0
MOG16284	0.75	0.44	0

Appendix B: Classical Item Statistics

UIN	P-Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
MOG16285	0.65	0.48	0
MOG16286	0.55	0.29	0
MOG16288	0.19	0.23	0
MOG16294	0.59	0.37	0
MOG16295	0.74	0.33	0
MOG16357	0.67	0.38	0
MOG16360	0.49	0.35	0
MOG16362	0.32	0.19	0
MOG16364	0.29	0.52	0
MOG16365	0.67	0.31	0
MOG16368	0.23	0.24	0
MOG16421	0.80	0.29	0
MOG16422	0.57	0.45	0
MOG16426	0.56	0.38	0
MOG16433	0.34	0.42	0
MOG16434	0.43	0.36	0
MOG16496	0.91	0.29	0
MOG16498	0.78	0.18	0
MOG165	0.77	0.27	0
MOG16507	0.70	0.39	0
MOG16508	0.50	0.49	0
MOG16571	0.55	0.15	0
MOG16576	0.18	0.38	0
MOG166	0.41	0.20	0
MOG16777	0.26	0.42	0
MOG16778	0.38	0.39	0
MOG16783	0.35	0.49	0
MOG16789	0.56	0.55	0
MOG16791	0.48	0.51	0
MOG16799	0.58	0.11	0
MOG168	0.55	0.40	0
MOG16801	0.39	0.29	0
MOG16808	0.74	0.30	0
MOG16810	0.38	0.42	0
MOG16811	0.33	0.36	0
MOG16812	0.14	0.53	0

Appendix C: Raw-to-Scale Score (RSS) Conversions

Table C.1. RSS Conversions—English II, Fall 2017 and Spring 2018

Raw Score	Core Form A			Core Form B		
	Scale Score	CSEM	Performance Level	Scale Score	CSEM	Performance Level
0	325	25	1	325	25	1
1	335	15	1	332	15	1
2	345	10	1	342	10	1
3	351	9	1	348	9	1
4	355	8	1	352	8	1
5	359	7	1	356	7	1
6	362	6	1	359	7	1
7	365	6	1	362	6	1
8	367	6	1	364	6	1
9	370	6	1	367	6	1
10	372	6	1	369	6	1
11	374	5	1	371	6	1
12	376	5	1	373	5	1
13	378	5	1	375	5	1
14	379	5	1	377	5	1
15	381	5	1	379	5	1
16	383	5	1	381	5	1
17	384	5	2	383	5	1
18	386	5	2	385	5	2
19	388	5	2	386	5	2
20	389	5	2	388	5	2
21	391	5	2	390	5	2
22	392	5	2	391	5	2
23	394	5	2	393	5	2
24	395	5	2	394	5	2
25	397	5	2	396	5	2
26	399	5	2	398	5	2
27	400	5	3	399	5	2
28	402	5	3	401	5	3
29	403	5	3	403	5	3
30	405	5	3	404	5	3
31	406	5	3	406	5	3
32	408	5	3	407	5	3
33	410	5	3	409	5	3
34	411	5	3	411	5	3
35	413	5	3	413	5	3
36	415	5	3	415	5	3
37	417	5	3	417	5	3

Appendix C: Raw-to-Scale Score (RSS) Conversions

Raw Score	Core Form A			Core Form B		
	Scale Score	CSEM	Performance Level	Scale Score	CSEM	Performance Level
38	419	6	3	419	6	3
39	421	6	4	421	6	4
40	424	6	4	423	6	4
41	426	6	4	426	6	4
42	429	6	4	429	6	4
43	432	7	4	432	7	4
44	435	7	4	435	7	4
45	439	8	4	439	8	4
46	444	9	4	444	9	4
47	450	10	4	450	10	4
48	457	12	4	458	12	4
49	469	16	4	470	16	4
50	489	27	4	489	27	4

Table C.2. RSS Conversions—Algebra I, Fall 2017 and Spring 2018

Raw Score	Core Form A			Core Form B		
	Scale Score	CSEM	Performance Level	Scale Score	CSEM	Performance Level
0	329	24	1	332	24	1
1	345	13	1	348	13	1
2	355	10	1	358	10	1
3	360	8	1	364	8	1
4	365	7	1	368	7	1
5	368	6	1	371	6	1
6	372	6	1	374	6	1
7	374	6	1	377	6	1
8	377	5	1	379	5	1
9	379	5	1	381	5	1
10	381	5	1	383	5	1
11	382	5	1	385	5	1
12	384	5	1	386	4	1
13	386	4	1	388	4	1
14	387	4	1	389	4	2
15	389	4	2	391	4	2
16	390	4	2	392	4	2
17	391	4	2	393	4	2
18	393	4	2	395	4	2
19	394	4	2	396	4	2
20	395	4	2	397	4	2
21	396	4	2	398	4	2

Appendix C: Raw-to-Scale Score (RSS) Conversions

Raw Score	Core Form A			Core Form B		
	Scale Score	CSEM	Performance Level	Scale Score	CSEM	Performance Level
22	398	4	2	399	4	2
23	399	4	2	400	4	3
24	400	4	3	402	4	3
25	401	4	3	403	4	3
26	402	4	3	404	4	3
27	404	4	3	405	4	3
28	405	4	3	406	4	3
29	406	4	3	407	4	3
30	407	4	3	408	4	3
31	408	4	3	409	4	4
32	410	4	4	410	4	4
33	411	4	4	412	4	4
34	412	4	4	413	4	4
35	414	4	4	414	4	4
36	415	4	4	415	4	4
37	417	4	4	417	4	4
38	418	5	4	418	4	4
39	420	5	4	420	4	4
40	422	5	4	421	5	4
41	423	5	4	423	5	4
42	425	5	4	425	5	4
43	428	5	4	427	5	4
44	430	6	4	430	6	4
45	433	6	4	432	6	4
46	436	7	4	436	7	4
47	441	8	4	440	8	4
48	446	9	4	445	9	4
49	456	13	4	455	13	4
50	471	23	4	470	23	4

Table C.3. RSS Conversions—English I, Fall 2017 and Spring 2018

Raw Score	Core Form A			Core Form B		
	Scale Score	CSEM	Performance Level	Scale Score	CSEM	Performance Level
0	325	25	1	325	25	1
1	330	15	1	328	15	1
2	341	11	1	338	11	1
3	347	9	1	345	9	1
4	352	8	1	350	8	1
5	356	7	1	354	7	1

Appendix C: Raw-to-Scale Score (RSS) Conversions

Raw Score	Core Form A			Core Form B		
	Scale Score	CSEM	Performance Level	Scale Score	CSEM	Performance Level
6	360	7	1	357	7	1
7	363	7	1	360	6	1
8	365	6	1	363	6	1
9	368	6	1	365	6	1
10	370	6	1	368	6	1
11	372	6	1	370	6	1
12	375	6	1	372	6	1
13	377	5	1	374	6	1
14	379	5	1	376	5	1
15	381	5	1	378	5	1
16	382	5	1	380	5	1
17	384	5	2	382	5	1
18	386	5	2	383	5	1
19	388	5	2	385	5	2
20	389	5	2	387	5	2
21	391	5	2	389	5	2
22	393	5	2	390	5	2
23	394	5	2	392	5	2
24	396	5	2	394	5	2
25	397	5	2	395	5	2
26	399	5	2	397	5	2
27	401	5	3	399	5	2
28	402	5	3	401	5	3
29	404	5	3	402	5	3
30	406	5	3	404	5	3
31	407	5	3	406	5	3
32	409	5	3	408	5	3
33	411	5	3	410	5	3
34	413	5	3	412	6	3
35	415	5	4	414	6	3
36	417	6	4	416	6	4
37	419	6	4	418	6	4
38	421	6	4	421	6	4
39	423	6	4	423	6	4
40	426	6	4	426	7	4
41	429	7	4	429	7	4
42	432	7	4	433	7	4
43	435	7	4	436	8	4
44	439	8	4	440	8	4
45	443	8	4	445	9	4

Appendix C: Raw-to-Scale Score (RSS) Conversions

Raw Score	Core Form A			Core Form B		
	Scale Score	CSEM	Performance Level	Scale Score	CSEM	Performance Level
46	448	9	4	451	10	4
47	455	10	4	458	11	4
48	463	12	4	467	12	4
49	476	16	4	480	16	4
50	495	28	4	500	28	4

Table C.4. RSS Conversions—Algebra II, Fall 2017 and Spring 2018

Raw Score	Core Form A			Core Form B		
	Scale Score	CSEM	Performance Level	Scale Score	CSEM	Performance Level
0	328	22	1	335	21	1
1	343	12	1	350	12	1
2	352	9	1	358	9	1
3	358	8	1	363	7	1
4	363	7	1	367	6	1
5	366	6	1	370	6	1
6	369	6	1	373	5	1
7	372	5	1	375	5	1
8	374	5	1	377	5	1
9	376	5	1	379	5	1
10	378	5	1	381	4	1
11	380	5	1	383	4	1
12	382	4	1	384	4	1
13	384	4	1	386	4	1
14	385	4	1	387	4	1
15	387	4	1	389	4	2
16	388	4	2	390	4	2
17	390	4	2	391	4	2
18	391	4	2	393	4	2
19	392	4	2	394	4	2
20	394	4	2	395	4	2
21	395	4	2	396	4	2
22	396	4	2	397	4	2
23	397	4	2	399	4	2
24	398	4	2	400	4	3
25	400	4	3	401	4	3
26	401	4	3	402	4	3
27	402	4	3	403	4	3
28	403	4	3	405	4	3
29	404	4	3	406	4	3

Appendix C: Raw-to-Scale Score (RSS) Conversions

Raw Score	Core Form A			Core Form B		
	Scale Score	CSEM	Performance Level	Scale Score	CSEM	Performance Level
30	405	4	3	407	4	3
31	407	4	3	408	4	3
32	408	4	3	409	4	3
33	409	4	3	411	4	4
34	410	4	3	412	4	4
35	411	4	4	413	4	4
36	413	4	4	414	4	4
37	414	4	4	416	4	4
38	416	4	4	417	4	4
39	417	4	4	419	4	4
40	419	4	4	420	4	4
41	420	5	4	422	5	4
42	422	5	4	424	5	4
43	424	5	4	426	5	4
44	427	5	4	429	5	4
45	429	6	4	431	6	4
46	432	6	4	435	6	4
47	436	7	4	439	7	4
48	441	9	4	444	9	4
49	450	12	4	453	12	4
50	465	21	4	467	22	4

Table C.5. RSS Conversions—Geometry, Fall 2017 and Spring 2018

Raw Score	Core Form A			Core Form B		
	Scale Score	CSEM	Performance Level	Scale Score	CSEM	Performance Level
0	325	25	1	327	25	1
1	339	14	1	343	14	1
2	349	10	1	353	10	1
3	356	9	1	359	8	1
4	360	8	1	364	7	1
5	364	7	1	368	7	1
6	367	6	1	371	6	1
7	370	6	1	374	6	1
8	373	6	1	376	6	1
9	375	5	1	378	5	1
10	377	5	1	380	5	1
11	379	5	1	382	5	1
12	381	5	1	384	5	1
13	383	5	1	386	5	1

Appendix C: Raw-to-Scale Score (RSS) Conversions

Raw Score	Core Form A			Core Form B		
	Scale Score	CSEM	Performance Level	Scale Score	CSEM	Performance Level
14	384	5	1	388	5	2
15	386	5	1	389	5	2
16	388	5	2	391	5	2
17	389	5	2	392	4	2
18	391	4	2	394	4	2
19	392	4	2	395	4	2
20	394	4	2	397	4	2
21	395	4	2	398	4	2
22	396	4	2	399	4	2
23	398	4	2	401	4	3
24	399	4	2	402	4	3
25	401	4	3	404	4	3
26	402	4	3	405	4	3
27	404	4	3	406	4	3
28	405	4	3	408	4	3
29	406	4	3	409	4	3
30	408	4	3	411	4	3
31	409	5	3	412	5	3
32	411	5	3	414	5	4
33	412	5	3	415	5	4
34	414	5	4	417	5	4
35	416	5	4	419	5	4
36	417	5	4	421	5	4
37	419	5	4	422	5	4
38	421	5	4	424	5	4
39	423	5	4	426	5	4
40	425	5	4	429	5	4
41	427	5	4	431	6	4
42	430	6	4	433	6	4
43	432	6	4	436	6	4
44	435	6	4	439	7	4
45	438	7	4	443	7	4
46	442	7	4	447	8	4
47	446	8	4	452	8	4
48	452	10	4	458	10	4
49	462	14	4	467	13	4
50	479	25	4	483	24	4

Appendix D: Scale Score Descriptive Statistics by Demographic Group**Table D.1. Scale Score Descriptive Statistics by Gender, Fall 2017**

Content Area	Gender	n-Count	Min.	Max.	Mean	SD
English II	Female	1,104	352	450	396.76	15.77
	Male	1,330	325	439	391.96	16.48
Algebra I	Female	2,229	355	456	396.92	14.21
	Male	2,379	345	471	396.28	14.72
English I	Female	46	382	423	403.93	11.06
	Male	42	380	421	400.31	10.89
Algebra II	Female	258	358	429	396.29	13.49
	Male	268	328	436	395.85	14.66
Geometry	Female	159	373	442	404.88	14.15
	Male	102	364	438	405.62	13.58

Table D.2. Scale Score Descriptive Statistics by Gender, Spring 2018

Content Area	Gender	n-Count	Min.	Max.	Mean	SD
English II	Female	30,307	325	469	404.37	14.04
	Male	31,069	325	457	399.83	14.94
Algebra I	Female	29,510	329	471	399.88	13.86
	Male	30,273	329	471	398.94	14.46
English I	Female	5,665	341	463	405.79	13.66
	Male	5,779	341	448	401.01	14.33
Algebra II	Female	9,131	328	467	398.81	13.46
	Male	8,037	328	467	399.17	14.60
Geometry	Female	2,268	367	458	399.89	13.83
	Male	2,184	360	479	401.37	14.85

Table D.3. Scale Score Descriptive Statistics by Ethnicity, Fall 2017

Content Area	Ethnicity	n-Count	Min.	Max.	Mean	SD
English II	American Indian/ Alaskan Native	15	374	423	393.07	14.34
	Asian	55	359	444	399.13	17.28
	Black (not Hispanic)	640	325	429	388.46	14.13
	Hispanic	265	352	439	392.89	13.82
	Multi-racial	88	359	439	396.72	18.33
	Pacific Islander	3	--	--	--	--
	White (not Hispanic)	1,367	325	450	396.68	16.90
Algebra I	American Indian/ Alaskan Native	16	377	414	399.44	11.38
	Asian	93	360	433	406.81	14.79
	Black (not Hispanic)	1,014	345	436	388.93	11.42
	Hispanic	366	365	441	393.82	12.50
	Multi-racial	158	368	436	395.92	13.02

Appendix D: Descriptive Statistics by Demographic Group

Content Area	Ethnicity	n-Count	Min.	Max.	Mean	SD
Algebra I	Pacific Islander	7	--	--	--	--
	White (not Hispanic)	2,953	355	471	399.29	14.63
English I	American Indian/ Alaskan Native	--	--	--	--	--
	Asian	10	388	419	400.70	11.43
	Black (not Hispanic)	22	380	417	398.55	10.80
	Hispanic	7	--	--	--	--
	Multi-racial	5	--	--	--	--
	Pacific Islander	--	--	--	--	--
	White (not Hispanic)	44	382	423	404.66	10.62
Algebra II	American Indian/ Alaskan Native	3	--	--	--	--
	Asian	21	378	424	407.00	12.67
	Black (not Hispanic)	60	358	436	385.45	14.26
	Hispanic	40	363	417	394.05	13.73
	Multi-racial	17	374	427	396.59	14.95
	Pacific Islander	2	--	--	--	--
	White (not Hispanic)	383	328	429	397.36	13.08
Geometry	American Indian/ Alaskan Native	1	--	--	--	--
	Asian	6	--	--	--	--
	Black (not Hispanic)	22	379	432	396.64	13.29
	Hispanic	12	386	430	401.17	13.11
	Multi-racial	9	--	--	--	--
	Pacific Islander	--	--	--	--	--
	White (not Hispanic)	211	364	442	406.34	14.00

Table D.4. Scale Score Descriptive Statistics by Ethnicity, Spring 2018

Content Area	Ethnicity	n-Count	Min.	Max.	Mean	SD
English II	American Indian/ Alaskan Native	272	355	435	400.12	13.24
	Asian	1,330	335	469	407.92	15.84
	Black (not Hispanic)	8,753	325	450	393.71	14.07
	Hispanic	3,608	325	450	398.92	13.85
	Multi-racial	1,770	325	444	401.19	14.32
	Pacific Islander	142	364	435	396.24	13.88
	White (not Hispanic)	45,467	325	458	403.83	14.21
Algebra I	American Indian/ Alaskan Native	232	329	432	396.63	13.84
	Asian	1,275	368	471	410.23	16.09
	Black (not Hispanic)	8,491	329	456	391.62	12.33
	Hispanic	3,643	329	445	397.07	13.22
	Multi-racial	1,741	355	446	400.03	14.15
	Pacific Islander	141	365	428	395.95	12.95

Appendix D: Descriptive Statistics by Demographic Group

Content Area	Ethnicity	n-Count	Min.	Max.	Mean	SD
Algebra I	White (not Hispanic)	44,241	329	471	400.77	13.91
English I	American Indian/ Alaskan Native	59	370	429	403.32	14.09
	Asian	143	360	439	405.92	16.53
	Black (not Hispanic)	1,280	341	443	393.40	14.69
	Hispanic	716	356	439	399.27	14.66
	Multi-racial	269	352	439	403.98	13.97
	Pacific Islander	18	347	416	391.61	14.55
	White (not Hispanic)	8,959	341	463	405.10	13.38
Algebra II	American Indian/ Alaskan Native	54	372	422	396.41	13.17
	Asian	645	352	467	408.25	15.32
	Black (not Hispanic)	1,137	328	444	390.84	12.88
	Hispanic	955	363	444	395.44	12.70
	Multi-racial	514	343	444	398.67	14.55
	Pacific Islander	25	374	429	396.96	14.63
	White (not Hispanic)	13,818	328	467	399.48	13.71
Geometry	American Indian/ Alaskan Native	40	373	442	400.28	14.53
	Asian	83	379	479	418.65	19.66
	Black (not Hispanic)	204	367	430	396.95	11.34
	Hispanic	235	367	479	395.04	13.58
	Multi-racial	108	360	452	399.70	15.68
	Pacific Islander	9	--	--	--	--
	White (not Hispanic)	3,739	364	479	400.64	13.93

Table D.5. Scale Score Descriptive Statistics by Migrant Status, Fall 2017

Content Area	Migrant	n-Count	Min.	Max.	Mean	SD
English II	No	2,425	325	450	394.13	16.34
	Yes	9	--	--	--	--
Algebra I	No	4,604	345	471	396.60	14.48
	Yes	4	--	--	--	--
English I	No	88	380	423	402.20	11.07
	Yes	--	--	--	--	--
Algebra II	No	526	328	436	396.07	14.09
	Yes	--	--	--	--	--
Geometry	No	261	364	442	405.17	13.91
	Yes	--	--	--	--	--

Table D.6. Scale Score Descriptive Statistics by Migrant Status, Spring 2018

Content Area	Migrant	<i>n</i> -Count	Min.	Max.	Mean	SD
English II	No	61,350	325	469	402.08	14.68
	Yes	26	370	421	392.38	12.90
Algebra I	No	59,753	329	471	399.40	14.17
	Yes	30	374	425	392.07	11.78
English I	No	11,443	341	463	403.38	14.20
	Yes	1	--	--	--	--
Algebra II	No	17,167	328	467	398.98	14.00
	Yes	1	--	--	--	--
Geometry	No	4,451	360	479	400.62	14.36
	Yes	1	--	--	--	--

Table D.7. Scale Score Descriptive Statistics by Free and Reduced Lunch, Fall 2017

Content Area	FRL	<i>n</i> -Count	Min.	Max.	Mean	SD
English II	No	1,006	325	450	400.03	17.07
	Yes	1,428	352	439	389.98	14.42
Algebra I	No	2,333	355	471	401.94	14.64
	Yes	2,275	345	456	391.11	12.06
English I	No	23	382	423	404.74	11.83
	Yes	65	380	423	401.31	10.74
Algebra II	No	362	328	429	398.30	13.32
	Yes	164	358	436	391.13	14.51
Geometry	No	181	373	442	407.78	13.91
	Yes	80	364	432	399.26	12.04

Table D.8. Scale Score Descriptive Statistics by Free and Reduced Lunch, Spring 2018

Content Area	FRL	<i>n</i> -Count	Min.	Max.	Mean	SD
English II	No	34,630	325	469	406.10	13.71
	Yes	26,746	325	458	396.86	14.24
Algebra I	No	32,778	329	471	403.54	13.95
	Yes	27,005	329	470	394.38	12.75
English I	No	5,426	352	463	407.58	12.66
	Yes	6,018	341	448	399.59	14.46
Algebra II	No	12,315	328	467	401.12	13.84
	Yes	4,853	328	453	393.54	12.90
Geometry	No	2,582	364	479	403.32	15.10
	Yes	1,870	360	479	396.89	12.34

Table D.9. Scale Score Descriptive Statistics by Limited English Proficient, Fall 2017

Content Area	LEP	n-Count	Min.	Max.	Mean	SD
English II	No	2,253	325	450	394.73	16.49
	Yes	181	352	415	386.74	12.03
Algebra I	No	4,431	345	471	396.85	14.53
	Yes	177	360	425	390.07	11.24
English I	No	76	380	423	401.99	11.13
	Yes	12	388	419	403.58	10.99
Algebra II	No	518	328	436	396.20	14.09
	Yes	8	--	--	--	--
Geometry	No	259	364	442	405.22	13.94
	Yes	2	--	--	--	--

Table D.10. Scale Score Descriptive Statistics by Limited English Proficient, Spring 2018

Content Area	LEP	n-Count	Min.	Max.	Mean	SD
English II	No	59,713	325	469	402.40	14.61
	Yes	1,663	356	435	390.34	11.97
Algebra I	No	57,772	329	471	399.62	14.17
	Yes	2,011	358	455	393.21	12.71
English I	No	11,035	341	463	403.82	14.02
	Yes	409	347	426	391.43	13.89
Algebra II	No	16,883	328	467	399.08	13.99
	Yes	285	352	431	392.92	13.68
Geometry	No	4,335	360	479	400.88	14.33
	Yes	117	367	433	390.97	11.68

Table D.11. Scale Score Descriptive Statistics by Title I, Fall 2017

Content Area	Title I	n-Count	Min.	Max.	Mean	SD
English II	No	1,811	325	450	394.86	17.20
	Yes	623	352	439	392.02	13.30
Algebra I	No	3,893	345	471	397.54	14.82
	Yes	715	360	425	391.45	11.17
English I	No	12	380	421	397.75	13.21
	Yes	76	382	423	402.91	10.62
Algebra II	No	471	328	429	397.00	13.87
	Yes	55	363	436	388.07	13.49
Geometry	No	257	364	442	405.01	13.90
	Yes	4	--	--	--	--

Table D.12. Scale Score Descriptive Statistics by Title I, Spring 2018

Content Area	Title I	n-Count	Min.	Max.	Mean	SD
English II	No	55,875	325	469	402.80	14.55
	Yes	5,501	325	450	394.72	13.92
Algebra I	No	53,334	329	471	400.03	14.12
	Yes	6,449	329	470	394.18	13.52
English I	No	9,758	341	463	404.80	13.54
	Yes	1,686	341	448	395.17	15.15
Algebra II	No	16,375	328	467	399.43	13.93
	Yes	793	328	444	389.61	12.20
Geometry	No	4,152	360	479	400.96	14.44
	Yes	300	367	435	395.89	12.18

Table D.13. Scale Score Descriptive Statistics by Students with IEPs, Fall 2017

Content Area	IEP	n-Count	Min.	Max.	Mean	SD
English II	No	2,148	325	450	395.69	16.15
	Yes	286	352	417	382.48	12.61
Algebra I	No	4,086	345	471	397.96	14.32
	Yes	522	355	436	385.85	10.70
English I	No	81	382	423	403.26	10.24
	Yes	7	--	--	--	--
Algebra II	No	521	328	436	396.12	14.06
	Yes	5	--	--	--	--
Geometry	No	257	364	442	405.35	13.93
	Yes	4	--	--	--	--

Table D.14. Scale Score Descriptive Statistics by Students with IEPs, Spring 2018

Content Area	IEP	n-Count	Min.	Max.	Mean	SD
English II	No	54,906	325	469	403.80	13.93
	Yes	6,470	325	444	387.42	12.49
Algebra I	No	53,317	329	471	400.92	13.74
	Yes	6,466	329	446	386.87	11.15
English I	No	10,442	341	463	404.64	13.73
	Yes	1,002	341	433	390.20	12.26
Algebra II	No	16,938	328	467	399.09	13.96
	Yes	230	343	444	390.71	14.44
Geometry	No	4,291	360	479	401.00	14.24
	Yes	161	367	452	390.38	13.71

Table D.15. Scale Score Descriptive Statistics by Students with Accommodations, Fall 2017

Content Area	Accom.	n-Count	Min.	Max.	Mean	SD
English II	No	2,217	325	450	394.85	16.43
	Yes	228	352	426	386.70	13.12
Algebra I	No	4,223	345	471	397.35	14.46
	Yes	409	355	433	388.28	11.63
English I	No	83	380	423	402.88	10.84
	Yes	6	--	--	--	--
Algebra II	No	524	328	436	396.06	14.11
	Yes	2	--	--	--	--
Geometry	No	256	364	442	405.43	13.90
	Yes	5	--	--	--	--

Table D.16. Scale Score Descriptive Statistics by Students with Accommodations, Spring 2018

Content Area	Accom.	n-Count	Min.	Max.	Mean	SD
English II	No	61,434	325	469	402.06	14.69
	Yes	6	--	--	--	--
Algebra I	No	59,849	329	471	399.39	14.19
	Yes	13	381	418	395.00	12.22
English I	No	11,452	341	463	403.37	14.21
	Yes	2	--	--	--	--
Algebra II	No	17,180	328	467	398.98	14.00
	Yes	--	--	--	--	--
Geometry	No	4,454	360	479	400.61	14.36
	Yes	--	--	--	--	--

Appendix E: Achievement-Level Distributions by Demographic Group

Table E.1. Achievement-Level Distributions by Gender, Fall 2017

Content Area	Gender	Achievement Level	Freq.	%
English II	Female	Below Basic	241	21.83
		Basic	383	34.69
		Proficient	400	36.23
		Advanced	80	7.25
		Proficient + Advanced	480	43.48
	Total	1,104	100.00	
	Male	Below Basic	457	34.36
		Basic	422	31.73
		Proficient	395	29.70
		Advanced	56	4.21
Proficient + Advanced		451	33.91	
Total	1,330	100.00		
Algebra I	Female	Below Basic	681	30.55
		Basic	649	29.12
		Proficient	411	18.44
		Advanced	488	21.89
		Proficient + Advanced	899	40.33
	Total	2,229	100.00	
	Male	Below Basic	769	32.32
		Basic	689	28.96
		Proficient	455	19.13
		Advanced	466	19.59
Proficient + Advanced		921	38.71	
Total	2,379	100.00		
English I	Female	Below Basic	--	--
		Basic	16	34.78
		Proficient	20	43.48
		Advanced	--	--
		Proficient + Advanced	28	60.87
	Total	46	100.00	
	Male	Below Basic	--	--
		Basic	17	40.48
		Proficient	17	40.48
		Advanced	--	--
Proficient + Advanced		22	52.38	
Total	42	100.00		
Algebra II	Female	Below Basic	68	26.36
		Basic	76	29.46
		Proficient	81	31.40
		Advanced	33	12.79
		Proficient + Advanced	114	44.19
	Total	258	100.00	
	Male	Below Basic	72	26.87
		Basic	80	29.85
		Proficient	75	27.99
		Advanced	41	15.30
Proficient + Advanced		116	43.28	
Total	268	100.00		

Appendix E: Achievement-Level Distributions by Demographic Group

Content Area	Gender	Achievement Level	Freq.	%
Geometry	Female	Below Basic	15	9.43
		Basic	44	27.67
		Proficient	52	32.70
		Advanced	48	30.19
		Proficient + Advanced	100	62.89
	Total	159	100.00	
	Male	Below Basic	13	12.75
		Basic	19	18.63
		Proficient	42	41.18
		Advanced	28	27.45
Proficient + Advanced		70	68.63	
Total	102	100.00		

Table E.2. Achievement-Level Distributions by Gender, Spring 2018

Content Area	Gender	Achievement Level	Freq.	%
English II	Female	Below Basic	2,271	7.49
		Basic	8,516	28.10
		Proficient	15,609	51.50
		Advanced	3,911	12.90
		Proficient + Advanced	19,520	64.41
	Total	30,307	100.00	
	Male	Below Basic	4,703	15.14
		Basic	10,199	32.83
		Proficient	13,623	43.85
		Advanced	2,544	8.19
Proficient + Advanced		16,167	52.04	
Total	31,069	100.00		
Algebra I	Female	Below Basic	6,324	21.43
		Basic	8,830	29.92
		Proficient	6,794	23.02
		Advanced	7,562	25.63
		Proficient + Advanced	14,356	48.65
	Total	29,510	100.00	
	Male	Below Basic	7,508	24.80
		Basic	8,984	29.68
		Proficient	6,347	20.97
		Advanced	7,434	24.56
Proficient + Advanced		13,781	45.52	
Total	30,273	100.00		
English I	Female	Below Basic	340	6.00
		Basic	1,446	25.53
		Proficient	2,301	40.62
		Advanced	1,578	27.86
		Proficient + Advanced	3,879	68.47
	Total	5,665	100.00	
	Male	Below Basic	707	12.23
		Basic	1,844	31.91
		Proficient	2,170	37.55
		Advanced	1,058	18.31
Proficient + Advanced		3,228	55.86	
Total	5,779	100.00		

Appendix E: Achievement-Level Distributions by Demographic Group

Content Area	Gender	Achievement Level	Freq.	%
Algebra II	Female	Below Basic	1,944	21.29
		Basic	2,794	30.60
		Proficient	2,653	29.05
		Advanced	1,740	19.06
		Proficient + Advanced	4,393	48.11
	Total	9,131	100.00	
	Male	Below Basic	1,756	21.85
		Basic	2,447	30.45
		Proficient	2,093	26.04
		Advanced	1,741	21.66
Proficient + Advanced		3,834	47.70	
Total	8,037	100.00		
Geometry	Female	Below Basic	365	16.09
		Basic	891	39.29
		Proficient	637	28.09
		Advanced	375	16.53
		Proficient + Advanced	1,012	44.62
	Total	2,268	100.00	
	Male	Below Basic	334	15.29
		Basic	798	36.54
		Proficient	611	27.98
		Advanced	441	20.19
Proficient + Advanced		1,052	48.17	
Total	2,184	100.00		

Table E.3. Achievement-Level Distributions—Ethnicity, Fall 2017

Content Area	Ethnicity	Achievement Level	Freq.	%
English II	American Indian/ Alaskan Native	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	15	100.00
	Asian	Below Basic	10	18.18
		Basic	16	29.09
		Proficient	23	41.82
		Advanced	--	--
		Proficient + Advanced	29	52.73
		Total	55	100.00
	Black (not Hispanic)	Below Basic	250	39.06
		Basic	251	39.22
		Proficient	132	20.63
		Advanced	--	--
		Proficient + Advanced	139	21.72
		Total	640	100.00
	Hispanic	Below Basic	70	26.42
		Basic	106	40.00
Proficient		86	32.45	
Advanced		--	--	
Proficient + Advanced		89	33.58	
Total		265	100.00	

Appendix E: Achievement-Level Distributions by Demographic Group

Content Area	Ethnicity	Achievement Level	Freq.	%
English II	Multi-racial	Below Basic	25	28.41
		Basic	20	22.73
		Proficient	35	39.77
		Advanced	--	--
		Proficient + Advanced	43	48.86
	Pacific Islander	Total	88	100.00
		Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
	White (not Hispanic)	Proficient + Advanced	--	--
		Total	3	100.00
		Below Basic	336	24.58
		Basic	406	29.70
		Proficient	514	37.60
Algebra I	American Indian/ Alaskan Native	Advanced	111	8.12
		Proficient + Advanced	625	45.72
		Total	1,367	100.00
		Below Basic	--	--
		Basic	--	--
	Asian	Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	16	100.00
		Below Basic	10	10.75
	Black (not Hispanic)	Basic	16	17.20
		Proficient	24	25.81
		Advanced	43	46.24
		Proficient + Advanced	67	72.04
		Total	93	100.00
Hispanic	Below Basic	542	53.45	
	Basic	294	28.99	
	Proficient	123	12.13	
	Advanced	55	5.42	
	Proficient + Advanced	178	17.55	
Multi-racial	Total	1,014	100.00	
	Below Basic	122	33.33	
	Basic	142	38.80	
	Proficient	55	15.03	
	Advanced	47	12.84	
Pacific Islander	Proficient + Advanced	102	27.87	
	Total	366	100.00	
	Below Basic	46	29.11	
	Basic	55	34.81	
	Proficient	32	20.25	
Pacific Islander	Advanced	25	15.82	
	Proficient + Advanced	57	36.08	
	Total	158	100.00	
	Below Basic	--	--	
	Basic	--	--	
Pacific Islander	Proficient	--	--	
	Advanced	--	--	

Appendix E: Achievement-Level Distributions by Demographic Group

Content Area	Ethnicity	Achievement Level	Freq.	%
Algebra I	Pacific Islander	Proficient + Advanced	--	--
		Total	7	100.00
	White (not Hispanic)	Below Basic	721	24.42
		Basic	826	27.97
		Proficient	627	21.23
Advanced		779	26.38	
Proficient + Advanced	1,406	47.61		
Total	2,953	100.00		
English I	Asian	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
	Total	10	100.00	
	Black (not Hispanic)	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	10	45.45
	Total	22	100.00	
	Hispanic	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
	Total	7	100.00	
	Multi-racial	Below Basic	--	--
Basic		--	--	
Proficient		--	--	
Advanced		--	--	
Proficient + Advanced		--	--	
Total	5	100.00		
White (not Hispanic)	Below Basic	--	--	
	Basic	15	34.09	
	Proficient	20	45.45	
	Advanced	--	--	
	Proficient + Advanced	28	63.64	
Total	44	100.00		
Algebra II	American Indian/ Alaskan Native	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
	Total	3	100.00	
	Asian	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	17	80.95
Total	21	100.00		
Black (not Hispanic)	Below Basic	35	58.33	
	Basic	15	25.00	
	Proficient	--	--	

Appendix E: Achievement-Level Distributions by Demographic Group

Content Area	Ethnicity	Achievement Level	Freq.	%
Algebra II	Black (not Hispanic)	Advanced	--	--
		Proficient + Advanced	10	16.67
		Total	60	100.00
	Hispanic	Below Basic	11	27.50
		Basic	13	32.50
		Proficient	11	27.50
		Advanced	--	--
		Proficient + Advanced	16	40.00
	Multi-racial	Total	40	100.00
		Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
	Pacific Islander	Proficient + Advanced	--	--
		Total	17	100.00
		Below Basic	--	--
		Basic	--	--
		Proficient	--	--
	White (not Hispanic)	Advanced	--	--
		Proficient + Advanced	--	--
Total		2	100.00	
Below Basic		87	22.72	
Basic		118	30.81	
White (not Hispanic)	Proficient	123	32.11	
	Advanced	55	14.36	
	Proficient + Advanced	178	46.48	
	Total	383	100.00	
	Geometry	American Indian/ Alaskan Native	Below Basic	--
Basic			--	--
Proficient			--	--
Advanced			--	--
Proficient + Advanced			--	--
Asian		Total	1	100.00
		Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
Black (not Hispanic)		Proficient + Advanced	--	--
		Total	6	100.00
		Below Basic	--	--
		Basic	11	50.00
		Proficient	--	--
Hispanic		Advanced	--	--
		Proficient + Advanced	--	--
		Total	22	100.00
		Below Basic	--	--
		Basic	--	--
Hispanic	Proficient	--	--	
	Advanced	--	--	
	Proficient + Advanced	--	--	
	Total	12	100.00	

Appendix E: Achievement-Level Distributions by Demographic Group

Content Area	Ethnicity	Achievement Level	Freq.	%
Geometry	Multi-racial	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
	Total	9	100.00	
	White (not Hispanic)	Below Basic	20	9.48
		Basic	46	21.80
		Proficient	77	36.49
		Advanced	68	32.23
Proficient + Advanced		145	68.72	
Total	211	100.00		

Table E.4. Achievement-Level Distributions by Ethnicity, Spring 2018

Content Area	Ethnicity	Achievement Level	Freq.	%
English II	American Indian/ Alaskan Native	Below Basic	34	12.50
		Basic	92	33.82
		Proficient	131	48.16
		Advanced	15	5.51
		Proficient + Advanced	146	53.68
	Total	272	100.00	
	Asian	Below Basic	101	7.59
		Basic	269	20.23
		Proficient	656	49.32
		Advanced	304	22.86
		Proficient + Advanced	960	72.18
	Total	1,330	100.00	
	Black (not Hispanic)	Below Basic	2,125	24.28
		Basic	3,647	41.67
		Proficient	2,722	31.10
		Advanced	259	2.96
		Proficient + Advanced	2,981	34.06
	Total	8,753	100.00	
	Hispanic	Below Basic	505	14.00
		Basic	1,368	37.92
		Proficient	1,505	41.71
		Advanced	230	6.37
		Proficient + Advanced	1,735	48.09
	Total	3,608	100.00	
Multi-racial	Below Basic	200	11.30	
	Basic	585	33.05	
	Proficient	825	46.61	
	Advanced	160	9.04	
	Proficient + Advanced	985	55.65	
Total	1,770	100.00		
Pacific Islander	Below Basic	29	20.42	
	Basic	54	38.03	
	Proficient	50	35.21	
	Advanced	--	--	
	Proficient + Advanced	59	41.55	
Total	142	100.00		

Appendix E: Achievement-Level Distributions by Demographic Group

Content Area	Ethnicity	Achievement Level	Freq.	%	
English II	White (not Hispanic)	Below Basic	3,975	8.74	
		Basic	12,697	27.93	
		Proficient	23,322	51.29	
		Advanced	5,473	12.04	
		Proficient + Advanced	28,795	63.33	
		Total	45,467	100.00	
Algebra I	American Indian/ Alaskan Native	Below Basic	72	31.03	
		Basic	63	27.16	
		Proficient	52	22.41	
		Advanced	45	19.40	
		Proficient + Advanced	97	41.81	
			Total	232	100.00
	Asian	Below Basic	130	10.20	
		Basic	188	14.75	
		Proficient	262	20.55	
		Advanced	695	54.51	
		Proficient + Advanced	957	75.06	
			Total	1,275	100.00
	Black (not Hispanic)	Below Basic	3,692	43.48	
		Basic	2,780	32.74	
		Proficient	1,236	14.56	
		Advanced	783	9.22	
		Proficient + Advanced	2,019	23.78	
			Total	8,491	100.00
	Hispanic	Below Basic	981	26.93	
		Basic	1,230	33.76	
		Proficient	746	20.48	
		Advanced	686	18.83	
		Proficient + Advanced	1,432	39.31	
			Total	3,643	100.00
	Multi-racial	Below Basic	390	22.40	
Basic		508	29.18		
Proficient		379	21.77		
Advanced		464	26.65		
Proficient + Advanced		843	48.42		
		Total	1,741	100.00	
Pacific Islander	Below Basic	39	27.66		
	Basic	50	35.46		
	Proficient	30	21.28		
	Advanced	22	15.60		
	Proficient + Advanced	52	36.88		
		Total	141	100.00	
White (not Hispanic)	Below Basic	8,527	19.27		
	Basic	12,991	29.36		
	Proficient	10,427	23.57		
	Advanced	12,296	27.79		
	Proficient + Advanced	22,723	51.36		
		Total	44,241	100.00	
English I	American Indian/ Alaskan Native	Below Basic	--	--	
		Basic	18	30.51	
		Proficient	18	30.51	
		Advanced	16	27.12	

Appendix E: Achievement-Level Distributions by Demographic Group

Content Area	Ethnicity	Achievement Level	Freq.	%
English I	American Indian/ Alaskan Native	Proficient + Advanced	34	57.63
		Total	59	100.00
	Asian	Below Basic	19	13.29
		Basic	29	20.28
		Proficient	44	30.77
		Advanced	51	35.66
		Proficient + Advanced	95	66.43
	Total	143	100.00	
	Black (not Hispanic)	Below Basic	329	25.70
		Basic	495	38.67
		Proficient	354	27.66
		Advanced	102	7.97
		Proficient + Advanced	456	35.63
	Total	1,280	100.00	
	Hispanic	Below Basic	104	14.53
		Basic	246	34.36
		Proficient	252	35.20
		Advanced	114	15.92
		Proficient + Advanced	366	51.12
	Total	716	100.00	
	Multi-racial	Below Basic	21	7.81
Basic		78	29.00	
Proficient		104	38.66	
Advanced		66	24.54	
Proficient + Advanced		170	63.20	
Total	269	100.00		
Pacific Islander	Below Basic	--	--	
	Basic	10	55.56	
	Proficient	--	--	
	Advanced	--	--	
	Proficient + Advanced	--	--	
Total	18	100.00		
White (not Hispanic)	Below Basic	563	6.28	
	Basic	2,414	26.94	
	Proficient	3,696	41.25	
	Advanced	2,286	25.52	
	Proficient + Advanced	5,982	66.77	
Total	8,959	100.00		
Algebra II	American Indian/ Alaskan Native	Below Basic	16	29.63
		Basic	17	31.48
		Proficient	11	20.37
		Advanced	10	18.52
		Proficient + Advanced	21	38.89
	Total	54	100.00	
	Asian	Below Basic	53	8.22
		Basic	120	18.60
		Proficient	186	28.84
		Advanced	286	44.34
		Proficient + Advanced	472	73.18
	Total	645	100.00	
Black (not Hispanic)	Below Basic	461	40.55	
	Basic	414	36.41	

Appendix E: Achievement-Level Distributions by Demographic Group

Content Area	Ethnicity	Achievement Level	Freq.	%
Algebra II	Black (not Hispanic)	Proficient	181	15.92
		Advanced	81	7.12
		Proficient + Advanced	262	23.04
		Total	1,137	100.00
	Hispanic	Below Basic	278	29.11
		Basic	332	34.76
		Proficient	219	22.93
		Advanced	126	13.19
		Proficient + Advanced	345	36.13
	Total	955	100.00	
	Multi-racial	Below Basic	130	25.29
		Basic	139	27.04
		Proficient	135	26.26
		Advanced	110	21.40
		Proficient + Advanced	245	47.67
	Total	514	100.00	
	Pacific Islander	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
Proficient + Advanced		11	44.00	
Total	25	100.00		
White (not Hispanic)	Below Basic	2,751	19.91	
	Basic	4,209	30.46	
	Proficient	4,004	28.98	
	Advanced	2,854	20.65	
	Proficient + Advanced	6,858	49.63	
Total	13,818	100.00		
Geometry	American Indian/ Alaskan Native	Below Basic	--	--
		Basic	15	37.50
		Proficient	11	27.50
		Advanced	--	--
		Proficient + Advanced	19	47.50
	Total	40	100.00	
	Asian	Below Basic	--	--
		Basic	--	--
		Proficient	26	31.33
		Advanced	45	54.22
		Proficient + Advanced	71	85.54
	Total	83	100.00	
	Black (not Hispanic)	Below Basic	44	21.57
		Basic	82	40.20
		Proficient	57	27.94
		Advanced	21	10.29
		Proficient + Advanced	78	38.24
	Total	204	100.00	
	Hispanic	Below Basic	66	28.09
		Basic	98	41.70
Proficient		50	21.28	
Advanced		21	8.94	
Proficient + Advanced		71	30.21	
Total	235	100.00		

Appendix E: Achievement-Level Distributions by Demographic Group

Content Area	Ethnicity	Achievement Level	Freq.	%
Geometry	Multi-racial	Below Basic	20	18.52
		Basic	41	37.96
		Proficient	24	22.22
		Advanced	23	21.30
		Proficient + Advanced	47	43.52
	Total	108	100.00	
	Pacific Islander	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
	Total	9	100.00	
	White (not Hispanic)	Below Basic	555	14.84
		Basic	1,441	38.54
		Proficient	1,073	28.70
Advanced		670	17.92	
Proficient + Advanced		1,743	46.62	
Total	3,739	100.00		

Table E.5. Achievement-Level Distributions by Migrant, Fall 2017

Content Area	Migrant	Achievement Level	Freq.	%
English II	No	Below Basic	695	28.66
		Basic	802	33.07
		Proficient	792	32.66
		Advanced	136	5.61
		Proficient + Advanced	928	38.27
	Total	2,425	100.00	
	Yes	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
Proficient + Advanced		--	--	
Total	9	100.00		
Algebra I	No	Below Basic	1,449	31.47
		Basic	1,335	29.00
		Proficient	866	18.81
		Advanced	954	20.72
		Proficient + Advanced	1,820	39.53
	Total	4,604	100.00	
	Yes	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
Proficient + Advanced		--	--	
Total	4	100.00		
English I	No	Below Basic	--	--
		Basic	33	37.50
		Proficient	37	42.05
		Advanced	13	14.77
		Proficient + Advanced	50	56.82
		Total	88	100.00

Appendix E: Achievement-Level Distributions by Demographic Group

Content Area	Migrant	Achievement Level	Freq.	%
English I	Yes	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	--	--
Algebra II	No	Below Basic	140	26.62
		Basic	156	29.66
		Proficient	156	29.66
		Advanced	74	14.07
		Proficient + Advanced	230	43.73
		Total	526	100.00
	Yes	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
Geometry	No	Below Basic	28	10.73
		Basic	63	24.14
		Proficient	94	36.02
		Advanced	76	29.12
		Proficient + Advanced	170	65.13
		Total	261	100.00
	Yes	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--

Table E.6. Achievement-Level Distributions by Migrant, Spring 2018

Content Area	Migrant	Achievement Level	Freq.	%
English II	No	Below Basic	6,967	11.36
		Basic	18,704	30.49
		Proficient	29,225	47.64
		Advanced	6,454	10.52
		Proficient + Advanced	35,679	58.16
		Total	61,350	100.00
	Yes	Below Basic	--	--
		Basic	11	42.31
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
Algebra I	No	Below Basic	13,822	23.13
		Basic	17,800	29.79
		Proficient	13,138	21.99
		Advanced	14,993	25.09
		Proficient + Advanced	28,131	47.08
		Total	59,753	100.00

Appendix E: Achievement-Level Distributions by Demographic Group

Content Area	Migrant	Achievement Level	Freq.	%	
Algebra I	Yes	Below Basic	10	33.33	
		Basic	14	46.67	
		Proficient	--	--	
		Advanced	--	--	
		Proficient + Advanced	--	--	
		Total	30	100.00	
English I	No	Below Basic	1,046	9.14	
		Basic	3,290	28.75	
		Proficient	4,471	39.07	
		Advanced	2,636	23.04	
		Proficient + Advanced	7,107	62.11	
			Total	11,443	100.00
	Yes	Below Basic	--	--	
		Basic	--	--	
		Proficient	--	--	
		Advanced	--	--	
Proficient + Advanced		--	--		
		Total	1	100.00	
Algebra II	No	Below Basic	3,700	21.55	
		Basic	5,240	30.52	
		Proficient	4,746	27.65	
		Advanced	3,481	20.28	
		Proficient + Advanced	8,227	47.92	
			Total	17,167	100.00
	Yes	Below Basic	--	--	
		Basic	--	--	
		Proficient	--	--	
		Advanced	--	--	
Proficient + Advanced		--	--		
		Total	1	100.00	
Geometry	No	Below Basic	699	15.70	
		Basic	1,688	37.92	
		Proficient	1,248	28.04	
		Advanced	816	18.33	
		Proficient + Advanced	2,064	46.37	
			Total	4,451	100.00
	Yes	Below Basic	--	--	
		Basic	--	--	
		Proficient	--	--	
		Advanced	--	--	
Proficient + Advanced		--	--		
		Total	1	100.00	

Table E.7. Achievement-Level Distributions by Free and Reduced Lunch, Fall 2017

Content Area	FRL	Achievement Level	Freq.	%
English II	No	Below Basic	183	18.19
		Basic	266	26.44
		Proficient	444	44.14
		Advanced	113	11.23
		Proficient + Advanced	557	55.37
		Total	1,006	100.00

Appendix E: Achievement-Level Distributions by Demographic Group

Content Area	FRL	Achievement Level	Freq.	%
English II	Yes	Below Basic	515	36.06
		Basic	539	37.75
		Proficient	351	24.58
		Advanced	23	1.61
		Proficient + Advanced	374	26.19
		Total	1,428	100.00
Algebra I	No	Below Basic	424	18.17
		Basic	618	26.49
		Proficient	531	22.76
		Advanced	760	32.58
		Proficient + Advanced	1,291	55.34
	Total	2,333	100.00	
	Yes	Below Basic	1,026	45.10
		Basic	720	31.65
		Proficient	335	14.73
		Advanced	194	8.53
Proficient + Advanced		529	23.25	
Total	2,275	100.00		
English I	No	Below Basic	--	--
		Basic	--	--
		Proficient	11	47.83
		Advanced	--	--
		Proficient + Advanced	16	69.57
	Total	23	100.00	
	Yes	Below Basic	--	--
		Basic	28	43.08
		Proficient	26	40.00
		Advanced	--	--
Proficient + Advanced		34	52.31	
Total	65	100.00		
Algebra II	No	Below Basic	72	19.89
		Basic	108	29.83
		Proficient	121	33.43
		Advanced	61	16.85
		Proficient + Advanced	182	50.28
	Total	362	100.00	
	Yes	Below Basic	68	41.46
		Basic	48	29.27
		Proficient	35	21.34
		Advanced	13	7.93
Proficient + Advanced		48	29.27	
Total	164	100.00		
Geometry	No	Below Basic	17	9.39
		Basic	33	18.23
		Proficient	67	37.02
		Advanced	64	35.36
		Proficient + Advanced	131	72.38
	Total	181	100.00	
	Yes	Below Basic	11	13.75
		Basic	30	37.50
		Proficient	27	33.75
Advanced		12	15.00	

Appendix E: Achievement-Level Distributions by Demographic Group

Content Area	FRL	Achievement Level	Freq.	%
Geometry	Yes	Proficient + Advanced	39	48.75
		Total	80	100.00

Table E.8. Achievement-Level Distributions by Free and Reduced Lunch, Spring 2018

Content Area	FRL	Achievement Level	Freq.	%
English II	No	Below Basic	2,108	6.09
		Basic	8,317	24.02
		Proficient	19,022	54.93
		Advanced	5,183	14.97
		Proficient + Advanced	24,205	69.90
	Yes	Total	34,630	100.00
		Below Basic	4,866	18.19
		Basic	10,398	38.88
		Proficient	10,210	38.17
		Advanced	1,272	4.76
Algebra I	No	Proficient + Advanced	11,482	42.93
		Total	26,746	100.00
		Below Basic	4,541	13.85
		Basic	8,692	26.52
		Proficient	8,193	25.00
	Yes	Advanced	11,352	34.63
		Proficient + Advanced	19,545	59.63
		Total	32,778	100.00
		Below Basic	9,291	34.40
		Basic	9,122	33.78
English I	No	Proficient	4,948	18.32
		Advanced	3,644	13.49
		Proficient + Advanced	8,592	31.82
		Total	27,005	100.00
		Below Basic	217	4.00
	Yes	Basic	1,173	21.62
		Proficient	2,378	43.83
		Advanced	1,658	30.56
		Proficient + Advanced	4,036	74.38
		Total	5,426	100.00
Algebra II	No	Below Basic	830	13.79
		Basic	2,117	35.18
		Proficient	2,093	34.78
		Advanced	978	16.25
		Proficient + Advanced	3,071	51.03
	Yes	Total	6,018	100.00
		Below Basic	2,071	16.82
		Basic	3,523	28.61
		Proficient	3,708	30.11
		Advanced	3,013	24.47
Yes	Proficient + Advanced	6,721	54.58	
	Total	12,315	100.00	
	Below Basic	1,629	33.57	
	Basic	1,718	35.40	
	Proficient	1,038	21.39	
Yes	Advanced	468	9.64	

Appendix E: Achievement-Level Distributions by Demographic Group

Content Area	FRL	Achievement Level	Freq.	%
Algebra II	Yes	Proficient + Advanced	1,506	31.03
		Total	4,853	100.00
Geometry	No	Below Basic	306	11.85
		Basic	884	34.24
		Proficient	764	29.59
		Advanced	628	24.32
		Proficient + Advanced	1,392	53.91
	Yes	Total	2,582	100.00
		Below Basic	393	21.02
		Basic	805	43.05
		Proficient	484	25.88
		Advanced	188	10.05
Proficient + Advanced	672	35.94		
Total	1,870	100.00		

Table E.9. Achievement-Level Distributions by Limited English Proficient, Fall 2017

Content Area	LEP	Achievement Level	Freq.	%
English II	No	Below Basic	620	27.52
		Basic	732	32.49
		Proficient	765	33.95
		Advanced	136	6.04
		Proficient + Advanced	901	39.99
	Yes	Total	2,253	100.00
		Below Basic	78	43.09
		Basic	73	40.33
		Proficient	30	16.57
		Advanced	--	--
Proficient + Advanced	30	16.57		
Total	181	100.00		
Algebra I	No	Below Basic	1,373	30.99
		Basic	1,269	28.64
		Proficient	847	19.12
		Advanced	942	21.26
		Proficient + Advanced	1,789	40.37
	Yes	Total	4,431	100.00
		Below Basic	77	43.50
		Basic	69	38.98
		Proficient	19	10.73
		Advanced	12	6.78
Proficient + Advanced	31	17.51		
Total	177	100.00		
English I	No	Below Basic	--	--
		Basic	29	38.16
		Proficient	31	40.79
		Advanced	11	14.47
		Proficient + Advanced	42	55.26
	Yes	Total	76	100.00
		Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--

Appendix E: Achievement-Level Distributions by Demographic Group

Content Area	LEP	Achievement Level	Freq.	%	
English I	Yes	Proficient + Advanced	--	--	
		Total	12	100.00	
Algebra II	No	Below Basic	137	26.45	
		Basic	152	29.34	
		Proficient	155	29.92	
		Advanced	74	14.29	
		Proficient + Advanced	229	44.21	
	Yes	Total	518	100.00	
		Below Basic	--	--	
		Basic	--	--	
		Proficient	--	--	
		Advanced	--	--	
Geometry	No	Proficient + Advanced	--	--	
		Total	8	100.00	
		Below Basic	28	10.81	
		Basic	62	23.94	
		Proficient	93	35.91	
Algebra I	No	Advanced	76	29.34	
		Proficient + Advanced	169	65.25	
		Total	259	100.00	
		Yes	Below Basic	--	--
			Basic	--	--
	Proficient		--	--	
	Advanced		--	--	
	Proficient + Advanced		--	--	
	Geometry	Yes	Total	2	100.00

Table E.10. Achievement-Level Distributions by Limited English Proficient, Spring 2018

Content Area	LEP	Achievement Level	Freq.	%
English II	No	Below Basic	6,470	10.84
		Basic	17,912	30.00
		Proficient	28,895	48.39
		Advanced	6,436	10.78
		Proficient + Advanced	35,331	59.17
	Yes	Total	59,713	100.00
		Below Basic	504	30.31
		Basic	803	48.29
		Proficient	337	20.26
		Advanced	19	1.14
Algebra I	No	Proficient + Advanced	356	21.41
		Total	1,663	100.00
		Below Basic	13,050	22.59
		Basic	17,145	29.68
		Proficient	12,827	22.20
	Yes	Advanced	14,750	25.53
		Proficient + Advanced	27,577	47.73
		Total	57,772	100.00
		Below Basic	782	38.89
		Basic	669	33.27
Algebra II	Yes	Proficient	314	15.61
		Advanced	246	12.23

Appendix E: Achievement-Level Distributions by Demographic Group

Content Area	LEP	Achievement Level	Freq.	%
Algebra I	Yes	Proficient + Advanced	560	27.85
		Total	2,011	100.00
English I	No	Below Basic	931	8.44
		Basic	3,108	28.16
		Proficient	4,381	39.70
		Advanced	2,615	23.70
		Proficient + Advanced	6,996	63.40
	Total	11,035	100.00	
	Yes	Below Basic	116	28.36
		Basic	182	44.50
		Proficient	90	22.00
		Advanced	21	5.13
Proficient + Advanced		111	27.14	
Total	409	100.00		
Algebra II	No	Below Basic	3,595	21.29
		Basic	5,145	30.47
		Proficient	4,694	27.80
		Advanced	3,449	20.43
		Proficient + Advanced	8,143	48.23
	Total	16,883	100.00	
	Yes	Below Basic	105	36.84
		Basic	96	33.68
		Proficient	52	18.25
		Advanced	32	11.23
Proficient + Advanced		84	29.47	
Total	285	100.00		
Geometry	No	Below Basic	652	15.04
		Basic	1,640	37.83
		Proficient	1,233	28.44
		Advanced	810	18.69
		Proficient + Advanced	2,043	47.13
	Total	4,335	100.00	
	Yes	Below Basic	47	40.17
		Basic	49	41.88
		Proficient	15	12.82
		Advanced	--	--
Proficient + Advanced		21	17.95	
Total	117	100.00		

Table E.11. Achievement-Level Distributions by Title I, Fall 2017

Content Area	Title I	Achievement Level	Freq.	%
English II	No	Below Basic	522	28.82
		Basic	544	30.04
		Proficient	617	34.07
		Advanced	128	7.07
		Proficient + Advanced	745	41.14
	Total	1,811	100.00	
	Yes	Below Basic	176	28.25
		Basic	261	41.89
		Proficient	178	28.57
		Advanced	--	--
Total		117	100.00	

Appendix E: Achievement-Level Distributions by Demographic Group

Content Area	Title I	Achievement Level	Freq.	%
English II	Yes	Proficient + Advanced	186	29.86
		Total	623	100.00
Algebra I	No	Below Basic	1,154	29.64
		Basic	1,094	28.10
		Proficient	739	18.98
		Advanced	906	23.27
		Proficient + Advanced	1,645	42.26
	Yes	Total	3,893	100.00
		Below Basic	296	41.40
		Basic	244	34.13
		Proficient	127	17.76
		Advanced	48	6.71
Proficient + Advanced	175	24.48		
Total	715	100.00		
English I	No	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
	Yes	Total	12	100.00
		Below Basic	--	--
		Basic	29	38.16
		Proficient	34	44.74
		Advanced	11	14.47
Proficient + Advanced	45	59.21		
Total	76	100.00		
Algebra II	No	Below Basic	113	23.99
		Basic	138	29.30
		Proficient	148	31.42
		Advanced	72	15.29
		Proficient + Advanced	220	46.71
	Yes	Total	471	100.00
		Below Basic	27	49.09
		Basic	18	32.73
		Proficient	--	--
		Advanced	--	--
Proficient + Advanced	10	18.18		
Total	55	100.00		
Geometry	No	Below Basic	28	10.89
		Basic	63	24.51
		Proficient	92	35.80
		Advanced	74	28.79
		Proficient + Advanced	166	64.59
	Yes	Total	257	100.00
		Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
Proficient + Advanced	--	--		
Total	4	100.00		

Table E.12. Achievement-Level Distributions by Title I, Spring 2018

Content Area	Title I	Achievement Level	Freq.	%
English II	No	Below Basic	5,759	10.31
		Basic	16,440	29.42
		Proficient	27,404	49.05
		Advanced	6,272	11.23
		Proficient + Advanced	33,676	60.27
	Yes	Total	55,875	100.00
		Below Basic	1,215	22.09
		Basic	2,275	41.36
		Proficient	1,828	33.23
		Advanced	183	3.33
Algebra I	No	Proficient + Advanced	2,011	36.56
		Total	5,501	100.00
		Below Basic	11,376	21.33
		Basic	15,868	29.75
		Proficient	12,042	22.58
	Yes	Advanced	14,048	26.34
		Proficient + Advanced	26,090	48.92
		Total	53,334	100.00
		Below Basic	2,456	38.08
		Basic	1,946	30.18
English I	No	Proficient	1,099	17.04
		Advanced	948	14.70
		Proficient + Advanced	2,047	31.74
		Total	6,449	100.00
		Below Basic	679	6.96
	Yes	Basic	2,649	27.15
		Proficient	3,969	40.67
		Advanced	2,461	25.22
		Proficient + Advanced	6,430	65.89
		Total	9,758	100.00
Algebra II	No	Below Basic	368	21.83
		Basic	641	38.02
		Proficient	502	29.77
		Advanced	175	10.38
		Proficient + Advanced	677	40.15
	Yes	Total	1,686	100.00
		Below Basic	3,340	20.40
		Basic	4,954	30.25
		Proficient	4,641	28.34
		Advanced	3,440	21.01
Geometry	No	Proficient + Advanced	8,081	49.35
		Total	16,375	100.00
		Below Basic	360	45.40
		Basic	287	36.19
		Proficient	105	13.24
	Yes	Advanced	41	5.17
		Proficient + Advanced	146	18.41
		Total	793	100.00
		Below Basic	628	15.13
		Basic	1,563	37.64
Geometry	No	Proficient	1,172	28.23

Appendix E: Achievement-Level Distributions by Demographic Group

Content Area	Title I	Achievement Level	Freq.	%
Geometry	No	Advanced	789	19.00
		Proficient + Advanced	1,961	47.23
		Total	4,152	100.00
	Yes	Below Basic	71	23.67
		Basic	126	42.00
		Proficient	76	25.33
		Advanced	27	9.00
		Proficient + Advanced	103	34.33
	Total	300	100.00	

Table E.13. Achievement-Level Distributions by Individualized Education Program, Fall 2017

Content Area	IEP	Achievement Level	Freq.	%
English II	No	Below Basic	528	24.58
		Basic	719	33.47
		Proficient	765	35.61
		Advanced	136	6.33
		Proficient + Advanced	901	41.95
	Total	2,148	100.00	
	Yes	Below Basic	170	59.44
		Basic	86	30.07
		Proficient	30	10.49
		Advanced	--	--
Proficient + Advanced		30	10.49	
Total	286	100.00		
Algebra I	No	Below Basic	1,103	26.99
		Basic	1,222	29.91
		Proficient	827	20.24
		Advanced	934	22.86
		Proficient + Advanced	1,761	43.10
	Total	4,086	100.00	
	Yes	Below Basic	347	66.48
		Basic	116	22.22
		Proficient	39	7.47
		Advanced	20	3.83
Proficient + Advanced		59	11.30	
Total	522	100.00		
English I	No	Below Basic	--	--
		Basic	32	39.51
		Proficient	36	44.44
		Advanced	12	14.81
		Proficient + Advanced	48	59.26
	Total	81	100.00	
	Yes	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
Proficient + Advanced		--	--	
Total	7	100.00		
Algebra II	No	Below Basic	138	26.49
		Basic	155	29.75
		Proficient	155	29.75

Appendix E: Achievement-Level Distributions by Demographic Group

Content Area	IEP	Achievement Level	Freq.	%	
		Advanced	73	14.01	
Algebra II	No	Proficient + Advanced	228	43.76	
		Total	521	100.00	
	Yes	Below Basic	--	--	
		Basic	--	--	
		Proficient	--	--	
	Advanced	--	--		
		Proficient + Advanced	--	--	
		Total	5	100.00	
Geometry	No	Below Basic	27	10.51	
		Basic	60	23.35	
		Proficient	94	36.58	
		Advanced	76	29.57	
			Proficient + Advanced	170	66.15
			Total	257	100.00
	Yes	Below Basic	--	--	
		Basic	--	--	
Proficient		--	--		
Advanced		--	--		
		Proficient + Advanced	--	--	
		Total	4	100.00	

Table E.14. Achievement-Level Distributions by Individualized Education Program, Spring 2018

Content Area	IEP	Achievement Level	Freq.	%
English II	No	Below Basic	4,332	7.89
		Basic	15,909	28.97
		Proficient	28,270	51.49
		Advanced	6,395	11.65
		Proficient + Advanced	34,665	63.14
		Total	54,906	100.00
	Yes	Below Basic	2,642	40.83
		Basic	2,806	43.37
Proficient		962	14.87	
Advanced		60	0.93	
	Proficient + Advanced	1,022	15.80	
	Total	6,470	100.00	
Algebra I	No	Below Basic	9,853	18.48
		Basic	16,088	30.17
		Proficient	12,648	23.72
		Advanced	14,728	27.62
		Proficient + Advanced	27,376	51.35
		Total	53,317	100.00
	Yes	Below Basic	3,979	61.54
		Basic	1,726	26.69
Proficient		493	7.62	
Advanced		268	4.14	
	Proficient + Advanced	761	11.77	
	Total	6,466	100.00	
English I	No	Below Basic	758	7.26
		Basic	2,785	26.67
		Proficient	4,291	41.09

Appendix E: Achievement-Level Distributions by Demographic Group

Content Area	IEP	Achievement Level	Freq.	%
		Advanced	2,608	24.98
English I	No	Proficient + Advanced	6,899	66.07
		Total	10,442	100.00
	Yes	Below Basic	289	28.84
		Basic	505	50.40
		Proficient	180	17.96
		Advanced	28	2.79
Proficient + Advanced	208	20.76		
Total	1,002	100.00		
Algebra II	No	Below Basic	3,595	21.22
		Basic	5,169	30.52
		Proficient	4,715	27.84
		Advanced	3,459	20.42
		Proficient + Advanced	8,174	48.26
	Total	16,938	100.00	
	Yes	Below Basic	105	45.65
		Basic	72	31.30
		Proficient	31	13.48
		Advanced	22	9.57
Proficient + Advanced		53	23.04	
Total	230	100.00		
Geometry	No	Below Basic	621	14.47
		Basic	1,638	38.17
		Proficient	1,225	28.55
		Advanced	807	18.81
		Proficient + Advanced	2,032	47.35
		Total	4,291	100.00
	Yes	Below Basic	78	48.45
		Basic	51	31.68
		Proficient	23	14.29
		Advanced	--	--
		Proficient + Advanced	32	19.88
Total	161	100.00		

Table E.15. Achievement-Level Distributions by Accommodations, Fall 2017

Content Area	Accom.	Achievement Level	Freq.	%
English II	No	Below Basic	597	26.93
		Basic	726	32.75
		Proficient	760	34.28
		Advanced	134	6.04
		Proficient + Advanced	894	40.32
		Total	2,217	100.00
	Yes	Below Basic	107	46.93
		Basic	83	36.40
		Proficient	36	15.79
		Advanced	--	--
Proficient + Advanced	38	16.67		
Total	228	100.00		
Algebra I	No	Below Basic	1,229	29.10
		Basic	1,237	29.29
		Proficient	831	19.68

Appendix E: Achievement-Level Distributions by Demographic Group

Content Area	Accom.	Achievement Level	Freq.	%
Algebra I	No	Advanced	926	21.93
		Proficient + Advanced	1,757	41.61
		Total	4,223	100.00
	Yes	Below Basic	234	57.21
		Basic	110	26.89
		Proficient	37	9.05
		Advanced	28	6.85
		Proficient + Advanced	65	15.89
	Total	409	100.00	
	English I	No	Below Basic	--
Basic			31	37.35
Proficient			36	43.37
Advanced			13	15.66
Proficient + Advanced			49	59.04
Total		83	100.00	
Yes		Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
	Proficient + Advanced	--	--	
Total	6	100.00		
Algebra II	No	Below Basic	140	26.72
		Basic	155	29.58
		Proficient	155	29.58
		Advanced	74	14.12
		Proficient + Advanced	229	43.70
	Total	524	100.00	
	Yes	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
Proficient + Advanced		--	--	
Total	2	100.00		
Geometry	No	Below Basic	27	10.55
		Basic	59	23.05
		Proficient	94	36.72
		Advanced	76	29.69
		Proficient + Advanced	170	66.41
	Total	256	100.00	
	Yes	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
Proficient + Advanced		--	--	
Total	5	100.00		

Table E.16 Achievement-Level Distributions by Accommodations, Spring 2018

Content Area	Accom.	Achievement Level	Freq.	%
English II	No	Below Basic	7,000	11.39
		Basic	18,738	30.50
		Proficient	29,240	47.60
English II	No	Advanced	6,456	10.51

Appendix E: Achievement-Level Distributions by Demographic Group

Content Area	Accom.	Achievement Level	Freq.	%
		Proficient + Advanced	35,696	58.10
		Total	61,434	100.00
	Yes	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	6	100.00
Algebra I	No	Below Basic	13,870	23.17
		Basic	17,831	29.79
		Proficient	13,147	21.97
		Advanced	15,001	25.06
		Proficient + Advanced	28,148	47.03
	Yes	Total	59,849	100.00
		Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	13	100.00
English I	No	Below Basic	1,050	9.17
		Basic	3,289	28.72
		Proficient	4,475	39.08
		Advanced	2,638	23.04
		Proficient + Advanced	7,113	62.11
	Yes	Total	11,452	100.00
		Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	2	100.00
Algebra II	No	Below Basic	3,704	21.56
		Basic	5,244	30.52
		Proficient	4,749	27.64
		Advanced	3,483	20.27
		Proficient + Advanced	8,232	47.92
	Yes	Total	17,180	100.00
		Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	--	--
Geometry	No	Below Basic	700	15.72
		Basic	1,690	37.94
		Proficient	1,248	28.02
		Advanced	816	18.32
		Proficient + Advanced	2,064	46.34
		Total	4,454	100.00

Geometry	Yes	Below Basic	--	--
----------	-----	-------------	----	----

Appendix E: Achievement-Level Distributions by Demographic Group

Content Area	Accom.	Achievement Level	Freq.	%
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	--	--

Appendix F: Test Administration Training Presentation



Missouri End-of-Course Assessments Overview

General Information

- New EOC assessments aligned to the new standards have been built for all Mathematics and English Language Arts courses.
- Biology EOC testing in 2017-2018 will be a Stand Alone Field Test. Government and American History EOC assessments will remain the same throughout 2017-2018.

Implementation Schedule

2015-16	2016-17	2017-18	2018-19	2019-20
English Language Arts/Mathematics				
Science	Science	Science Field Test	Science	Science
Social Studies				


 Tests aligned to previous Missouri Learning Standards
 Field tests aligned to revised Missouri Learning Standards
 Tests aligned to revised Missouri Learning Standards Grade Level Expectations (Approved April 2016)



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New for 2017-2018

- **Nextera® Admin**
 - Testing Dashboard
 - Testing metrics
- **Test Delivery System**
 - Scientific Calculator
 - Enhanced tools
- **Customer support Chat feature**
- **Material updates**
 - Test Coordinator Manuals
 - Directions for Administration



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Important Dates

Test Window	
Fall Administration: American History and Government	October 2nd, 2017–January 19, 2018 (Pre-Test opens 9/25/17)
Fall Administration: Algebra I, Algebra II, Geometry, Biology, English I, and English II	November 6, 2017–January 19, 2018 (Pre-Test opens 10/30/17; no Pre-Test for Biology)
Spring Administration	February 19, 2018–May 25, 2018
Pre-ID Dates	
1st Fall Pre-ID Window	File due to DESE: 9/15/17 Student data available: 9/25/17
2nd Fall Pre-ID Window	File due to DESE: 11/3/17 Student data available: 11/13/17
1st Spring Pre-ID Window	File due to DESE: 1/26/18 Student data available: 2/12/18
2nd Spring Pre-ID Window	File due to DESE: 3/2/18 Student data available: 3/19/18
3rd Spring Pre-ID Window	File due to DESE: 3/30/18 Student data available: 4/16/18



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Tutorials

- **New Tutorials are available!**
 - Generic with all item types
 - Math tutorial with math item types
 - ELA tutorial with ELA item types
 - Science tutorial with science item types
- Offer an opportunity for students to become familiar with the item types, tools and format they will experience during testing.
- Administrators are encouraged to allow students plenty of time to work with the tutorials to become familiar with all the new item types and testing platform.

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Nextera

Nextera System Overview

Nextera, is made up of two components that provide a full-service assessment solution.

- Online Test Administration System (Nextera Admin):
 - Student and testing management tools
 - Multi-tiered, role-based system
- Test Delivery System
 - The Secure Browser keeps students focused on their test
 - Test content is downloaded to the student's device to ensure uninterrupted testing for students

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Nextera Admin

- Secure, web-based administration system provides access to all users with no additional download.
 - Login
 - Home
 - Students
 - Classes
 - Test Administrations
 - Accounts
 - Reports
 - Help

Missouri Assessment Program
Powered by Nextera™

User ID

Password

Forgot your password?
First Time User? Create an Account


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Nextera Test Delivery System

- Installed on each device
- Allows the test to be presented securely on the device
- Employs an HTML5 framework
 - No Java dependencies
- Provides confidence in saving student responses
 - Test content cached when student logs in
 - Student response/interaction continuously sent to Questar
 - Responses stored/encrypted locally on computer/device in case of network loss

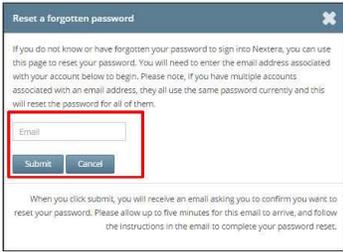


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Sign in

If you forget or lose your password:

1. Click the “**Forgot your password?**” link.
2. From the Forgotten Password screen, enter email address and click “**Submit**”.





3. Receive email to confirm you want to reset your password.
4. Please allow up to five minutes for this email to arrive, and follow the instructions in the email to complete your password reset.



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The screenshot shows the 'Home' page of the Missouri Assessment Program. On the left, there is a sidebar with the following sections: 'Your Profile' (Name: Suzanne Sanders, Email: ssanders@questar.com, Associated with QAI Test School 1 (QATST1), Mailing Address: QAI Test School 1, 123, N. St, Shipping Address: QAI Test School 1, 456, N. St), 'Administration Quick Links' (Please find the help information below.), 'District Test Coordinator Checklist' (DTC Important Information), and 'School Test Coordinator Checklist' (Please find the help information below.). A modal window titled 'Missouri Assessment' is open, showing 'What would you like to work on next?' with fields for Window (2017-2018 Pre-Test), District (QA PM District (PM1-001)), School, and Content Area. A callout box points to the sidebar with the text: 'This section appears on the left side of the Home page and lists announcements and links to other information you may need as an STC, DTC or Teacher.'

The screenshot shows the 'Testing Status Dashboard' on the Home page. It includes a bullet point: 'New Testing Status Dashboard will display real-time metrics'. Below this, the dashboard title 'Testing Status Dashboard' is displayed, followed by 'You're Viewing: Statewide | English I' and a 'change' link. A donut chart is shown with the text 'Total Students Scheduled: -' in the center. A label 'Data not available' points to the empty chart. The Questar logo is visible in the bottom right corner.

Nextera Admin Accounts and Classes

Accounts

- DTCs and STCs are responsible for managing profiles in the Nextera Admin site.
 - Select the Accounts menu, then select Accounts.
 - Validate the Teachers listed.
 - To add a new Teacher, click **New Account**.

Accounts

Manage Accounts [New Account](#)

All accounts associated with the district and school you've selected appear below. Click on the View button to see more details on an account and make updates. For new accounts, click the "Activate" link to send a welcome email to the user and enable the account. For activated accounts, you can click the "Reset" link to send the user an email containing instructions on how to reset his or her password.

Search

User ID	Last Name	First Name	Email Address	Account Type	Membership	Actions	History
Alg001@questara.com	T	Alg	Alg001@questara.com	Teacher	School A13	View Reset	History

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Accounts – Add a New Teacher

- Fill out contact information.
- All fields that are in **bold** are required.
- Username must be the Teacher's email address.
- Select Role and click **Add Role**.

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Accounts – Add a New Teacher

- Indicate Content Area(s) for the teacher.
- Enter their Questar-supplied ID number for the TeacherID field.
- Click **Save**.

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Accounts

- To Edit an existing Teacher's account, click **View** then click **Edit** on the View Teacher screen.
- Click **Reset** to send a temporary password to a Teacher.
 - This new password will replace the temporary password and will become the password they should use for future logins.

Accounts

Manage Accounts New Account

All accounts associated with the district and school you've selected appear below. Click on the View button to see more details on an account and make updates. For new accounts, click the "Activate" link to send a welcome email to the user and enable the account. For activated accounts, you can click the "Reset" link to send the user an email containing instructions on how to reset his or her password.

Search
Type part of a name, User ID, or email address

User ID	Last Name	First Name	Email Address	Account Type	Membership	Actions	History
Alg001@questar.com	T	Alg	Alg001@questar.com	Teacher	School A13	View Reset	History

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Accounts – District Testing Window

- Located under the Accounts tab, DTCs need to indicate a 7-Day testing window for each content area they plan to test.
- Click “Create Test Window”

District Test Windows Create Test Window

Admin Name	District	Subject Name	Start Date	End Date	
Fall 2017 EOC	QA PM District	Government	2017-10-05	2017-10-11	Edit
Fall 2017 EOC	QA PM District	American History	2017-10-09	2017-10-17	Edit
Fall 2017 EOC	QA PM District	Algebra I	2017-11-06	2017-11-14	Edit
Fall 2017 EOC	QA PM District	Algebra II	2017-11-14	2017-11-22	Edit
Fall 2017 EOC	QA PM District	English I	2017-11-13	2017-11-21	Edit
Fall 2017 EOC	QA PM District	Geometry	2017-11-13	2017-11-21	Edit
Fall 2017 EOC	QA PM District	English II	2017-11-13	2017-11-21	Edit
Fall 2017 EOC	QA PM District	Biology	2017-11-13	2017-11-21	Edit

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Accounts – District Testing Window

- Select the Subject, Start date and End date
- New: The Reporting date will populate the 5th business day after the end date.

Edit testing window

Admin* District* Subject*

Fall 2017 EOC QA PM District Government

Start date End date

10/05/2017 10/11/2017

Reporting date

10/17/2017

Not Testing

Cancel Save

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Classes

- Students are assigned to classes/teachers from the state Pre-ID load.
- The STC has the ability to move students from one class to another, and create new classes, if needed.
- The STC will assign the teacher to each class.
- Teachers can only view students in their classes.

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Classes – New Class

- To add a new class, from the Classes page, click **New Class**.
- Select the Teacher from drop-down.
- Name the Class.

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Classes – New Class continued

- Select from different grouping of students using the Class drop-down menu.
- Mark the students you want to add to the class using arrows.
- Click **Save**.

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Classes

- View/sort classes by content area.
- Edit an existing class
- To view a class, click **View**.

Classes

Classes for Fall 2017 EOC, QAI Test School 1 (QAIT51), Government New Class

Search

Class	Teacher	Test Administrator Name	Grades	View
1st Hour	Test Teacher	None	—	View

Click View to see the list of students that are associated with a class and make any changes.

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Classes – View Class

- Sort by student first and last name, MI and student ID.
- Click **Edit** to add or remove students from the class.

Class Details

You're Viewing: **Jefferson, Mary-1** [Edit](#)

Test Administrator/Class: **Mary Jefferson/1**

Algebra I, Fall 2015-16

Students in this Class:

First Name	MI	Last Name	Student ID	View
Jonathan	K	Adams	111222333	View
Felicity	M	Lincoln	987654321	View
Maya	J	Mickleson	998877665	View

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Classes – Download a Class List

- From the **Classes** page, click **View**.
- Download Students in this Class.

Class Details

You're Viewing: **Jefferson, Mary-1** Edit

Test Administrator/Class: Mary Jefferson/1

Algebra I, Fall 2016

Students in this Class:

First Name	MI	Last Name	Student ID	
Jonathan	K	Adams	111222333	View
Felicity	M	Lincoln	987654321	View
Maya	J	Mickelson	999877665	View

[Download Students in this Class \(Excel CSV\)](#)

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Students Page

- Displays list of students in selected district, school and content area.
 - Students will be pre-entered based on file received from the state.
- Add new students or select **View** to edit student profiles.

Students

Click on any column header to sort on its contents.

Manage Students

New Student

Show students in any class, including those not assigned to one.

There are 4 students in Alpha MS High School (2020-2020) taking Algebra I in Fall 2016.

Student ID

111222333

987654321

First Name

Jonathan

Felicity

MI

K

M

Last Name

Adams

Lincoln

Algebra I Class

1 (Mary Jefferson)

1 (Mary Jefferson)

View

View

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Students – Add a Student

- Add a student:
 - Select **New Student**.
 - Enter student information – bold fields are required.
 - Select a class.
 - Click **Save**.

New Student

Demographic Information:

Student ID	<input type="text"/>	MI	<input type="text"/>
First Name	<input type="text"/>	Last Name	<input type="text"/>
Date of Birth	<input type="text" value="mm/dd/yyyy"/>		

State Assigned Student ID	<input type="text"/>
Grade	<input type="text"/>
Credit	<input type="text"/>
Gender	<input type="text"/>

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Students – Edit a Student

- To edit a student:
 - Select **View**, then **Edit**.
 - Edit any fields that are not grayed out.
 - Set Accessibility and Accommodations for a student by clicking **Modify**.
 - Select the approved options.
 - Click **Save**.

The screenshot shows the 'Edit Student' interface for a student named 'Algebra I'. On the left, under 'Accessibility and Accommodation Options', the 'Modify' button is highlighted with a red box. Other options include Answer Masking Tool (OFF), Screen Reader (OFF), Initial Page Zoom (OFF), Classroom Accommodations (3 Selected), and Read Aloud (Offline) (OFF). On the right, the 'Select Accommodations' panel is visible, showing options like Answer Masking Tool, Screen Reader, Reverse Contrast, Background Color, Initial Page Zoom, and Read Aloud (Online). At the bottom, there are 'Save' and 'Cancel' buttons.

Questar

Accommodations

- Accommodations and accessibility options can be set for each test a student is taking.

The screenshot shows the 'Accommodations' interface for a student named 'Algebra I'. The 'Modify' button is highlighted with a blue box. The interface shows various accessibility and accommodation options: Answer Masking Tool (OFF), Screen Reader (OFF), Reverse Contrast (OFF), Background Color (OFF), Initial Page Zoom (OFF), Classroom Accommodations (3 Selected), Read Aloud (Online) (OFF), and Print Variations (OFF). At the bottom, there is a 'Modify' button and a dropdown menu.

Questar

Accommodations Continued

- Online Accommodations highlights
 - Text-To-Speech
 - Read Aloud
- Offline Accommodations highlights
 - Print variations such as Paper, Large Print and Braille
- Classroom Accommodations highlights
 - Multi select tab to identify any classroom accommodations
 - Read aloud options, scribe. Etc.
- These accommodations must be indicated prior to testing.



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NEW: Students – Multi Student Edit

- Multi Student Edit:
 - Select **Multi Student Edit** from the Students Tab dropdown.
 - Select the desired tool or accommodation (it will turn blue)
 - Check boxes for students.
 - Click Save.

Multi-Student Edit

Current subject: **No Subject**

Search

Enter any part of a student's ID, last name, or grade to begin.

Print Page

Refresh

MOSES	First Name	MI	Last Name	Content Area	Grade	Active Accommodations
<input type="checkbox"/>	000001212	None		Math	10	
<input type="checkbox"/>	000001212	None		English	10	
<input type="checkbox"/>	8811000001	MO-PT		Math	10	
<input type="checkbox"/>	8811000001	MO-PT		English	10	
<input type="checkbox"/>	8811000001	MO-PT		Math	10	
<input type="checkbox"/>	8811000001	MO-PT		English	10	
<input type="checkbox"/>	8811000001	MO-PT		Math	10	
<input type="checkbox"/>	8811000001	MO-PT		English	10	



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Important Dates

- The first drop-down on the Test Administrations menu references important dates throughout the academic year.



The screenshot shows the Missouri Assessment Program interface. At the top, it says "Missouri Assessment Program" and "Questar." Below that is a navigation bar with links: HOME, STUDENTS, CLASSES, TEST ADMINISTRATIONS, ACCOUNTS, REPORTS, and HELP. The "TEST ADMINISTRATIONS" link is highlighted. Below the navigation bar, there is a section titled "Important Dates" with a dropdown menu that also displays "Important Dates".

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Test Administrations

- The second drop-down is to view testing status.
 - View by Teacher and class.
 - View student logins and progress by clicking **View**.

Test Administrations

Testing Status for: Algebra I, Fall 2016 EOC

Filter By Testing Status: All Search:

Teacher	Class	Content Area	Test Name	Testing Status	
Teacher Teacher	Teacher Teacher Class	Algebra I	Algebra I	Not Started	View Delete

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Test Administrations - View Test

- **Examiner View** opens a window for the Test Administrator to view testing progress with no access to other parts of the system.
- **Print Labels** to produce student testing credentials, labels or a roster.

Test is in progress.
Students may sign in and take the test using their User ID's and the PIN shown below.

Examiner View
Print Labels

Session ID: PIN: 3436 Submit Cancel

Registered Students:

Session: All Sessions

Last Name	First Name	User ID	Password	Status	Total Items Completed	Date/Time Started	Date/Time Completed	Status Codes
Anderson	David	123456	123456789	Session 1: Not Started	0			0

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Student Invalidations

- If a student's test session needs to be invalidated, the test administrator should notify the DTC immediately following the invalid test session.
 1. The DTC will contact DESE and complete an irregularity report.
 2. Enter the invalidation into the Nextera Admin site by clicking set status Codes.

Status	Total Items Completed	Date/Time Started	Date/Time Completed	Status Codes
Session 1: Not Started	0			Set

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Test Administrations – Status Codes

- Indicate *Not Testing* or *Invalidate Test* and then select the reason from the dropdown box.
- If invalidating an Algebra I student, ensure you invalidate both sessions (1&2).

Questar.

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NEW: Pre-Test Teacher Scoring

- Pre-Test Teacher Scoring is now done via the Admin site
 - All constructed response item types.
 - View and score Text Entry, Writing Prompts, multi-part item types.
 - Gain reporting information
- Start by locating the “Score” button for a completed session.

Class	Content Area	Test Name	Testing status	View	Delete	Score
Geo 1	Geometry	2017-2018 Pre-Test	In Progress	View		Score

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NEW: Pre-Test Teacher Scoring

- Select “Score” next to a students session under the Hand Score column.

Testing status	Hand Score
Session 1: Finished	
Session 2: Finished	Score

- The entire class can be scored at one time, or each individual student.
- Student Pre-Test session must be in “Finished” status in order to score items.
 - Note: Not all sessions require Teacher scoring as many item types are machine scored.

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NEW: Pre-Test Teacher Scoring

- Review the student response and indicate a score by using the menu on the right.
- Select "View Scoring Information" to review the scoring rubric.
 - Rubrics also found in the back of the Pre-Test pdf files posted on HELP tab.

View Scoring Information

Score item
Numerals only, max score 1.
1

Comments

43

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NEW: Pre-Test Teacher Scoring

- Once scoring for the students session is complete, select "Submit and Close" or if additional student sessions are to be scored, select "Submit and Next".

Cancel

Submit and Close

Submit and Next

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Reports

- View and download reports by district, school, content area and report type.
- Report options will be based on the user's role (i.e. DTC, STC, or Teacher).



Missouri Assessment Program Questar

HOME STUDENTS CLASSES TEST ADMINISTRATIONS ACCOUNTS **REPORTS** HELP

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Help

- Access commonly asked questions
- View/Download Manuals, Quick Reference Guides, Training Modules
- Download and install New Secure Browser
- Contact Customer Support (MOCustomerSupport@QuestarAI.com)



Help

Contact Support

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Commonly Asked Support Questions

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Appendix G: Accommodation Codes

ACCOMMODATIONS

Accommodations for use on the End-of-Course Assessment are available only to student with an IEP/504 plan. Please read the full description prior to usage.

All accommodations need to be marked in Nextera prior to the assessment. Some tools are only for use by English Learner (EL) students (EL students are those coded LEP_RCV or LEP_NRC in MOSIS).

Accommodation	Description	Code
Abacus	<p>Students with this accommodation in their IEP/504 plan may have access to an abacus.</p> <p>This accommodation must be chosen in Nextera under student accommodations prior to testing.</p>	A391
Alternate Response Options	<p>Students with this accommodation in their IEP/504 plan may respond to items using an alternate option, including but not limited to: Adapted Keyboards, StickyKeys, MouseKeys, FilterKeys, Adapted Mouse, Touch Screen, Head Wand and Switches.</p> <p><i>Please Note: While the use of alternate response options is not directly supported by Questar, the help desk will work with districts needing to use one. The option must be provided by the district.</i></p> <p>This accommodation must be chosen in Nextera under student accommodations prior to testing.</p>	A441
Braille	<p>Students with visual impairments with this accommodation in their IEP/504 plan may access the assessment via a Braille version. Tactile overlays and graphics tools may be used to assist the student in accessing the content.</p> <p><i>Please Note: Answers from students who access the assessment using the Braille format must be entered into the Nextera Test Delivery System prior to shipping the Braille assessment back. Please follow the instructions found in the Braille kit.</i></p> <p>This accommodation must be chosen in Nextera under student accommodations prior to testing.</p>	A012

ACCOMMODATIONS

Accommodations for use on the End-of-Course Assessment are available only to student with an IEP/504 plan. Please read the full description prior to usage.

All accommodations need to be marked in Nextera prior to the assessment. Some tools are only for use by English Learner (EL) students (EL students are those coded LEP_RCV or LEP_NRC in MOSIS).

Accommodation	Description	Code
Large Print	<p>Students with visual impairments with this accommodation in their IEP/504 plan may access the assessment via a Large Print version.</p> <p><i>Please Note: Answers from students who access the assessment using the Large Print format must be entered into the Nextera Test Delivery System prior to shipping the Large Print assessment back. Please follow the instructions found in the Large Print kit.</i></p> <p>This accommodation must be chosen in Nextera under student accommodations prior to testing.</p>	A021
Multiplication Table	<p>Students with this accommodation in their IEP/504 plan may have access to a single digit multiplication table.</p> <p>This accommodation must be chosen in Nextera under student accommodations prior to testing.</p>	A395
Paper Based Assessment	<p>Students with this accommodation in their IEP/504 plan may take the assessment using the Paper/Pencil format.</p> <p><i>Please Note: Answers from students who access the assessment using the Paper/Pencil format must be entered into the Nextera Test Delivery System prior to shipping the Paper assessment back.</i></p> <p>This accommodation must be chosen in Nextera under student accommodations prior to testing.</p>	A102
Read Aloud (ELA Reading Passages)	<p><i>Please see the Read Aloud section after the universal tools/accommodations list.</i></p>	
Specialized Calculator	<p>Students with this accommodation in their IEP/504 plan may have access to a specialized calculator. The specialized calculator can include a talking calculator or Braille calculator among others. The memory of the physical calculator must be cleared before and after testing by the test examiner.</p> <p><i>Please Note: Use of a calculator is only for the Mathematics and Science assessments.</i></p> <p>This accommodation must be chosen in Nextera under student accommodations prior to testing.</p>	A396

ACCOMMODATIONS

Accommodations for use on the End-of-Course Assessment are available only to student with an IEP/504 plan. Please read the full description prior to usage.

All accommodations need to be marked in Nextera prior to the assessment. Some tools are only for use by English Learner (EL) students (EL students are those coded LEP_RCV or LEP_NRC in MOSIS).

Accommodation	Description	Code
Speech-To-Text – Assistive Technology	<p>Students with this accommodation in their IEP/504 plan may use that technology in conjunction with the Nextera Test Delivery System. The software must be provided by the district.</p> <p><i>Please Note: The use of assistive technology software should be familiar to the student and should be software the student uses in the everyday classroom. While the use of assistive technology software is not directly supported by Questar, the help desk will work with districts needing to use the software. The software must be provided by the district.</i></p> <p>This accommodation must be chosen in Nextera under student accommodations prior to testing.</p>	A352

Accommodation	Description	Code
Paper Based Assessment	<p>Students with this accommodation in their IEP/504 plan may take the assessment using the paper/pencil format.</p> <p><i>Please Note: Answers from students who access the assessment using the Paper/ Pencil format must be entered into iTester prior to shipping the Paper assessment back. Please follow the instructions found in the return kit.</i></p> <p>This accommodation must be chosen in the iTester Admin Students tab under special forms and also in the Test Sessions tab under student</p>	A102
Read Aloud (ELA Reading Passages) – Human Reader	<p>Students with this accommodation in their IEP/504 plan, taking the online, paper/ pencil, Large Print, or Braille assessments may have the ELA Reading Passages read aloud by a human reader.</p> <p><i>Please Note: The Human Reader should be familiar to the student and have read aloud experience with the student in some capacity prior to the state assessment.</i></p> <p>This accommodation must be chosen in the iTester Admin Test Sessions tab</p>	A045
Read Aloud (ELA Reading Passages) – Assistive Technology	<p>Students with this accommodation in their IEP/504 plan, who use specific text- to-speech assistive technology software in the everyday classroom, may use that technology in conjunction with the iTester testing platform to have the ELA Reading Passages read aloud by the software. The software must be provided by the district.</p> <p><i>Please Note: The use of assistive technology software should be familiar to the student and should be software the student uses in the everyday classroom.</i></p> <p><i>Please Note: While the use of assistive technology software is not directly supported by Questar, the help desk will work with districts needing to use</i></p>	A044
Read Aloud (ELA Reading Passages) – Native Language	<p>ELL students with this accommodation in their IEP/504 plan, taking the online, paper/pencil, Large Print, or Braille assessments may have the ELA Reading Passages read aloud to them in their native language by a human reader.</p> <p>This accommodation must be chosen in the iTester Admin Test Sessions tab</p>	A112
Read-Aloud (ELA Reading Passages) – Blind Students	<p>Blind students who do not yet possess adequate Braille skills with this accommodation in their IEP/504 plan may have the ELA Reading Passages read aloud by a human reader.</p> <p>This accommodation must be chosen in the iTester Admin Test Sessions tab under student accommodations prior to testing</p>	A046
Specialized Calculator	<p>Students with this accommodation in their IEP/504 plan may have access to a specialized calculator. The specialized calculator can include a talking calculator or Braille calculator among others. The memory of the physical calculator must be cleared before and after testing by the test examiner.</p> <p>This accommodation must be chosen in the iTester Admin Test Sessions tab under student accommodations prior to testing</p>	A396

Accommodation	Description	Code
<p>Speech-To-Text – Assistive Technology</p>	<p>Students with this accommodation in their IEP/504 plan, who use specific speech- to-text assistive technology software in the everyday classroom, may use that technology in conjunction with the iTester testing platform. The software must be provided by the district.</p> <p><i>Please Note: The use of assistive technology software should be familiar to the student and should be software the student uses in the everyday classroom.</i></p> <p><i>Please Note: While the use of assistive technology software is not directly supported by Questar, the help desk will work with districts needing to use the software.</i></p>	<p>A352</p>

Appendix H: Alpha Coefficients and SEMs

Table H.1. Alpha Coefficients and SEMs—English II, Fall 2017

Group	<i>n</i> -Count	Mean Raw Score	SD Raw Score	Effect Size	Reliability	SEM
All Students	1,150	23.50	9.32	--	0.87	3.42
Gender						
Female	509	24.69	9.02	0.24	0.86	3.39
Male	641	22.55	9.45	--	0.87	3.43
Ethnicity						
American Indian/Alaskan Native	9	--	--	--	--	--
Asian	28	26.00	9.67	--	--	--
Pacific Islander	2	--	--	--	--	--
Black (not Hispanic)	312	20.18	8.17	-0.59	0.80	3.63
Hispanic	113	22.53	8.16	-0.31	0.82	3.43
White (not Hispanic)	644	25.02	9.57	--	0.88	3.36
Multi-racial	0	--	--	--	--	--
LEP						
No	1,071	23.83	9.39	--	0.87	3.43
Yes	79	18.96	6.91	-0.70	0.75	3.45
IEP						
No	1,026	24.24	9.29	--	0.87	3.41
Yes	124	17.35	6.97	-0.99	0.77	3.36
Migrant						
No	1,147	23.49	9.32	--	0.87	3.42
Yes	3	--	--	--	--	--
FRL						
No	480	27.03	9.57	--	0.88	3.34
Yes	670	20.97	8.25	-0.73	0.82	3.47
Title I						
No	852	23.86	9.77	--	0.88	3.40
Yes	298	22.45	7.81	-0.18	0.80	3.50
Accommodations						
No	1,067	23.83	9.35	--	0.87	3.42
Yes	83	19.20	7.69	-0.60	0.80	3.42

Table H.2. Alpha Coefficients and SEMs—Algebra I, Fall 2017

Group	n-Count	Mean Raw Score	SD Raw Score	Effect Size	Reliability	SEM
All Students	4,445	21.90	10.40		0.91	3.15
Gender						
Female	2,161	22.12	10.26	0.04	0.90	3.18
Male	2,284	21.69	10.52	--	0.91	3.12
Ethnicity						
American Indian/Alaskan Native	16	23.00	9.10	--	--	--
Asian	98	28.44	10.38	0.45	0.91	3.05
Pacific Islander	6	--	--	--	--	--
Black (not Hispanic)	944	16.40	8.05	-0.91	0.86	3.03
Hispanic	336	19.41	8.70	-0.50	0.87	3.16
White (not Hispanic)	2,902	23.76	10.54	--	0.91	3.16
Multi-racial	0	--	--	--	--	--
LEP						
No	4,273	22.10	10.44	--	0.91	3.15
Yes	172	16.91	7.85	-0.66	0.86	2.99
IEP						
No	4,024	22.69	10.34	--	0.91	3.15
Yes	421	14.35	7.53	-1.11	0.86	2.81
Migrant						
No	4,441	21.90	10.40	--	0.91	3.15
Yes	4	--	--	--	--	--
FRL						
No	2,317	25.57	10.51	--	0.91	3.13
Yes	2,128	17.90	8.65	-0.89	0.87	3.14
Title I						
No	3,761	22.60	10.62	--	0.91	3.15
Yes	684	18.08	8.10	-0.56	0.85	3.17
Accommodations						
No	4,248	22.09	10.39	--	0.91	3.15
Yes	197	17.85	9.75	-0.44	0.90	3.07

Table H.3. Alpha Coefficients and SEMs—English I, Fall 2017

Group	<i>n</i>-Count	Mean Raw Score	SD Raw Score	Effect Size	Reliability	SEM
All Students	44	27.86	6.54	--	--	--
Gender						
Female	26	28.73	6.06	--	--	--
Male	18	26.61	7.17	--	--	--
Ethnicity						
American Indian/Alaskan Native	0	--	--	--	--	--
Asian	5	--	--	--	--	--
Pacific Islander	0	--	--	--	--	--
Black (not Hispanic)	11	28.09	4.18	--	--	--
Hispanic	5	--	--	--	--	--
White (not Hispanic)	20	29.45	7.02	--	--	--
Multi-racial	0	--	--	--	--	--
LEP						
No	39	28.00	6.51	--	--	--
Yes	5	--	--	--	--	--
IEP						
No	43	28.14	6.35	--	--	--
Yes	1	--	--	--	--	--
Migrant						
No	44	27.86	6.54	--	--	--
Yes	0	--	--	--	--	--
FRL						
No	12	28.92	6.50	--	--	--
Yes	32	27.47	6.61	--	--	--
Title I						
No	5	--	--	--	--	--
Yes	39	27.97	6.45	--	--	--
Accommodations						
No	43	27.91	6.61	--	--	--
Yes	1	--	--	--	--	--

Table H.4. Alpha Coefficients and SEMs—Algebra II, Fall 2017

Group	<i>n</i>-Count	Mean Raw Score	SD Raw Score	Effect Size	Reliability	SEM
All Students	525	22.86	10.01	--	0.92	2.80
Gender						
Female	257	22.98	9.78	0.02	0.92	2.75
Male	268	22.75	10.25	--	0.92	2.84
Ethnicity						
American Indian/Alaskan Native	3	--	--	--	--	--
Asian	21	30.76	9.94	--	--	--
Pacific Islander	1	--	--	--	--	--
Black (not Hispanic)	60	15.45	9.12	-0.90	0.91	2.75
Hispanic	39	21.38	9.71	--	--	--
White (not Hispanic)	384	23.69	9.47	--	0.91	2.80
Multi-racial	0	--	--	--	--	--
LEP						
No	517	22.96	10.02	--	0.92	2.80
Yes	8	--	--	--	--	--
IEP						
No	520	22.89	9.99	--	0.92	2.80
Yes	5	--	--	--	--	--
Migrant						
No	525	22.86	10.01	--	0.92	2.80
Yes	0	--	--	--	--	--
FRL						
No	362	24.46	9.60	--	0.92	2.78
Yes	163	19.31	10.03	-0.51	0.92	2.84
Title I						
No	470	23.55	9.94	--	0.92	2.79
Yes	55	16.96	8.70	-0.76	--	--
Accommodations						
No	524	22.85	10.02	--	0.92	2.80
Yes	1	--	--	--	--	--

Table H.5. Alpha Coefficients and SEMs—Geometry, Fall 2017

Group	<i>n</i>-Count	Mean Raw Score	SD Raw Score	Effect Size	Reliability	SEM
All Students	256	27.91	8.80	--	0.89	2.92
Gender						
Female	157	27.59	8.94	-0.09	0.89	2.96
Male	99	28.43	8.59	--	0.89	2.86
Ethnicity						
American Indian/Alaskan Native	1	--	--	--	--	--
Asian	6	--	--	--	--	--
Pacific Islander	0	--	--	--	--	--
Black (not Hispanic)	22	22.05	8.49	--	--	--
Hispanic	12	25.08	8.39	--	--	--
White (not Hispanic)	206	28.73	8.78	--	0.89	2.93
Multi-racial	0	--	--	--	--	--
LEP						
No	254	27.94	8.82	--	0.89	2.92
Yes	2	--	--	--	--	--
IEP						
No	255	27.94	8.81	--	0.89	2.92
Yes	1	--	--	--	--	--
Migrant						
No	256	27.91	8.80	--	0.89	2.92
Yes	0	--	--	--	--	--
FRL						
No	179	29.48	8.75	--	0.89	2.87
Yes	77	24.27	7.83	-0.67	0.85	3.02
Title I						
No	252	27.81	8.81	--	0.89	2.92
Yes	4	--	--	--	--	--
Accommodations						
No	256	27.91	8.80	--	0.89	2.92
Yes	0	--	--	--	--	--

Table H.6. Alpha Coefficients and SEMs—English II, Spring 2018

Group	n-Count	Mean Raw Score	SD Raw Score	Effect Size	Reliability	SEM
All Students	33,083	27.70	8.59	--	0.86	3.20
Gender						
Female	16,195	29.16	8.13	0.35	0.85	3.11
Male	16,888	26.31	8.80	--	0.86	3.25
Ethnicity						
American Indian/Alaskan Native	152	26.11	8.15	-0.32	0.84	3.31
Asian	692	31.17	8.86	0.27	0.88	3.11
Pacific Islander	80	24.61	8.27	-0.50	0.84	3.26
Black (not Hispanic)	4,900	23.03	8.19	-0.70	0.83	3.36
Hispanic	1,969	25.77	8.18	-0.36	0.84	3.24
White (not Hispanic)	24,359	28.75	8.34	--	0.86	3.16
Multi-racial	0	--	--	--	--	--
LEP						
No	32,149	27.91	8.55	--	0.86	3.19
Yes	934	20.56	6.93	-1.06	0.75	3.45
IEP						
No	28,565	29.05	8.03	--	0.85	3.12
Yes	4,518	19.20	7.04	-1.40	0.77	3.40
Migrant						
No	33,067	27.71	8.59	--	0.86	3.20
Yes	16	20.75	7.61	--	--	--
FRL						
No	18,319	30.13	7.98	--	0.85	3.09
Yes	14,764	24.69	8.37	-0.65	0.84	3.31
Title I						
No	29,949	28.13	8.52	--	0.86	3.19
Yes	3,134	23.63	8.26	-0.55	0.84	3.30
Accommodations						
No	33,080	27.71	8.59	--	0.86	3.20
Yes	3	--	--	--	--	--

Table H.7. Alpha Coefficients and SEMs—Algebra I, Spring 2018

Group	n-Count	Mean Raw Score	SD Raw Score	Effect Size	Reliability	SEM
All Students	28,140	23.81	10.00	--	0.90	3.16
Gender						
Female	13,977	24.11	9.85	0.06	0.89	3.20
Male	14,163	23.51	10.12	--	0.90	3.13
Ethnicity						
American Indian/Alaskan Native	97	21.39	9.44	-0.36	0.89	3.16
Asian	631	31.45	10.49	0.64	0.92	3.00
Pacific Islander	60	21.82	10.12	-0.29	0.90	3.26
Black (not Hispanic)	3,802	18.05	8.32	-0.81	0.86	3.10
Hispanic	1,644	21.99	9.26	-0.30	0.88	3.19
White (not Hispanic)	21,082	24.77	9.86	--	0.90	3.16
Multi-racial	0	--	--	--	--	--
LEP						
No	27,182	23.97	9.99	--	0.90	3.16
Yes	958	19.21	9.08	-0.53	0.88	3.12
IEP						
No	25,454	24.74	9.77	--	0.90	3.16
Yes	2,686	15.05	7.59	-1.28	0.85	2.92
Migrant						
No	28,128	23.82	10.00	--	0.90	3.16
Yes	12	15.25	7.68	--	--	--
FRL						
No	15,653	26.75	9.83	--	0.90	3.13
Yes	12,487	20.13	8.93	-0.74	0.88	3.15
Title I						
No	25,329	24.24	9.96	--	0.90	3.16
Yes	2,811	19.99	9.52	-0.45	0.89	3.17
Accommodations						
No	28,139	23.81	10.00	--	0.90	3.16
Yes	1	--	--	--	--	--

Table H.8. Alpha Coefficients and SEMs—English I, Spring 2018

Group	n-Count	Mean Raw Score	SD Raw Score	Effect Size	Reliability	SEM
All Students	6,222	27.98	7.92	--	0.84	3.13
Gender						
Female	3,015	29.38	7.55	0.36	0.84	3.06
Male	3,207	26.67	8.03	--	0.84	3.17
Ethnicity						
American Indian/Alaskan Native	41	26.73	7.85	--	--	--
Asian	73	30.00	8.19	0.14	0.86	3.05
Pacific Islander	8	--	--	--	--	--
Black (not Hispanic)	688	22.84	8.20	-0.73	0.84	3.30
Hispanic	382	26.22	7.81	-0.33	0.84	3.17
White (not Hispanic)	4,895	28.83	7.58	--	0.83	3.09
Multi-racial	0	--	--	--	--	--
LEP						
No	5,989	28.22	7.85	--	0.84	3.13
Yes	233	21.75	7.04	-0.92	0.79	3.26
IEP						
No	5,475	28.97	7.57	--	0.83	3.08
Yes	747	20.74	6.53	-1.26	0.75	3.28
Migrant						
No	6,221	27.99	7.91	--	0.84	3.13
Yes	1	--	--	--	--	--
FRL						
No	2,877	30.33	7.15	--	0.82	3.03
Yes	3,345	25.96	7.99	-0.55	0.84	3.20
Title I						
No	5,275	28.72	7.66	--	0.84	3.11
Yes	947	23.87	8.08	-0.60	0.84	3.23
Accommodations						
No	6,220	27.98	7.92	--	0.84	3.13
Yes	2	--	--	--	--	--

Table H.9. Alpha Coefficients and SEMs—Algebra II, Spring 2018

Group	n-Count	Mean Raw Score	SD Raw Score	Effect Size	Reliability	SEM
All Students	8,422	23.56	9.93	--	0.91	2.91
Gender						
Female	4,487	23.54	9.72	0.00	0.91	2.89
Male	3,935	23.59	10.15	--	0.92	2.93
Ethnicity						
American Indian/Alaskan Native	24	23.08	9.87	--	--	--
Asian	312	30.46	10.28	0.64	0.92	2.83
Pacific Islander	12	20.58	9.97	--	--	--
Black (not Hispanic)	532	17.93	8.92	-0.66	0.90	2.82
Hispanic	441	21.57	9.71	-0.23	0.91	2.92
White (not Hispanic)	6,878	23.83	9.74	--	0.91	2.92
Multi-racial	0	--	--	--	--	--
LEP						
No	8,297	23.62	9.92	--	0.91	2.91
Yes	125	19.78	9.97	-0.39	0.91	2.94
IEP						
No	8,328	23.61	9.92	--	0.91	2.91
Yes	94	19.06	9.99	-0.46	0.90	3.10
Migrant						
No	8,422	23.56	9.93	--	0.91	2.91
Yes	0	--	--	--	--	--
FRL						
No	6,084	25.02	9.81	--	0.91	2.90
Yes	2,338	19.75	9.18	-0.57	0.90	2.93
Title I						
No	8,059	23.83	9.92	--	0.91	2.91
Yes	363	17.66	8.14	-0.76	0.88	2.81
Accommodations						
No	8,422	23.56	9.93	--	0.91	2.91
Yes	0	--	--	--	--	--

Table H.10. Alpha Coefficients and SEMs—Geometry, Spring 2018

Group	n-Count	Mean Raw Score	SD Raw Score	Effect Size	Reliability	SEM
All Students	2,047	24.70	8.85	--	0.89	2.92
Gender						
Female	1,049	24.27	8.61	-0.10	0.88	2.95
Male	998	25.15	9.08	--	0.90	2.89
Ethnicity						
American Indian/Alaskan Native	7	--	--	--	--	--
Asian	41	34.63	10.02	--	--	--
Pacific Islander	2	--	--	--	--	--
Black (not Hispanic)	99	22.24	7.85	-0.34	0.85	3.01
Hispanic	103	20.29	8.83	-0.52	0.90	2.81
White (not Hispanic)	1,747	24.89	8.61	--	0.88	2.92
Multi-racial	0	--	--	--	--	--
LEP						
No	1,997	24.90	8.80	--	0.89	2.92
Yes	50	16.64	7.01	-1.18	--	--
IEP						
No	1,979	24.96	8.75	--	0.89	2.92
Yes	68	17.06	8.28	-0.96	0.88	2.84
Migrant						
No	2,047	24.70	8.85	--	0.89	2.92
Yes	0	--	--	--	--	--
FRL						
No	1,210	26.42	9.09	--	0.90	2.91
Yes	837	22.21	7.86	-0.54	0.86	2.94
Title I						
No	1,925	24.94	8.86	--	0.89	2.92
Yes	122	20.90	7.72	-0.52	0.85	3.00
Accommodations						
No	2,047	24.70	8.85	--	0.89	2.92
Yes	0	--	--	--	--	--

Appendix I: IRT Item Statistics

Table I.1. IRT Item Statistics–Algebra I–Dichotomous

Sequence	Item ID	Rasch Measure	Standard Error	Infit	Outfit	PTMA	Core Form
1	MOA116225	-1.0214	0.0119	1.04	1.12	0.38	A
2	MOA116294	-1.4197	0.0124	0.99	1.01	0.40	A
3	MOA116150	-2.7027	0.0128	0.92	0.82	0.36	A & B
4	MOA116427	-1.1583	0.0092	0.98	0.95	0.43	A & B
5	MOA116353	0.2188	0.0090	0.83	0.76	0.59	A & B
6	MOA116718	0.9279	0.0099	0.90	0.81	0.51	A & B
7	MOA116569	1.4950	0.0149	1.07	1.34	0.32	A
8	MOA116156	-1.1108	0.0091	0.91	0.84	0.49	A & B
9	MOA116501	0.0048	0.0089	0.88	0.83	0.55	A & B
10	MOA116502	0.9496	0.0099	1.14	1.20	0.31	A & B
11	MOA116702	1.8232	0.0120	0.83	0.62	0.52	A & B
12	MOA11675	0.3013	0.0091	1.09	1.17	0.37	A & B
13	MOA116429	0.2133	0.0090	0.98	0.97	0.46	A & B
14	MOA116647	-1.2700	0.0093	0.97	0.96	0.43	A & B
15	MOA116730	-0.0948	0.0117	1.27	1.35	0.23	A
16	MOA1166	-0.7158	0.0089	1.00	0.98	0.44	A & B
17	MOA116637	-2.2087	0.0111	0.92	0.84	0.40	A & B
18	MOA116572	1.0623	0.0135	1.25	1.67	0.18	A
19	MOA116706	-1.1551	0.0092	0.96	0.91	0.45	A & B
20	MOA1167	-0.6747	0.0089	0.85	0.80	0.56	A & B
21	MOA116438	0.6740	0.0127	1.23	1.51	0.22	A
22	MOA116287	1.5775	0.0152	0.82	0.63	0.55	A
23	MOA116651	-0.8108	0.0089	1.06	1.11	0.38	A & B
24	MOA11684	1.2623	0.0141	0.92	0.83	0.48	A
25	MOA116359	0.4623	0.0093	0.96	0.99	0.46	A & B
26	MOA116722	0.9381	0.0132	0.93	0.88	0.48	A
27	MOA11612	0.4868	0.0093	1.22	1.38	0.25	A & B
28	MOA11685	0.5450	0.0093	1.14	1.20	0.32	A & B
29	MOA116710	-0.5122	0.0088	0.92	0.90	0.50	A & B
30	MOA116151	-0.7542	0.0089	1.04	1.03	0.41	A & B
31	MOA116290	-0.2302	0.0088	1.17	1.21	0.31	A & B
32	MOA116425	0.5101	0.0093	0.91	0.87	0.51	A & B
33	MOA116589	-0.7881	0.0089	0.93	0.86	0.50	A & B
34	MOA116646	-0.5508	0.0088	1.05	1.06	0.40	A & B
35	MOA116361	-0.2486	0.0088	0.98	0.99	0.46	A & B
36	MOA116493	1.5085	0.0149	0.94	0.77	0.46	A
37	MOA116153	0.0977	0.0090	1.18	1.26	0.30	A & B
38	MOA116798	0.5015	0.0093	0.87	0.87	0.54	A & B
39	MOA116496	-0.5571	0.0116	1.10	1.13	0.35	A

Sequence	Item ID	Rasch Measure	Standard Error	Infit	Outfit	PTMA	Core Form
40	MOA116497	-0.5878	0.0116	0.81	0.76	0.59	A
45	MOA116296	-1.1631	0.0143	0.86	0.79	0.52	B
46	MOA1165	-0.5968	0.0136	1.13	1.17	0.33	B
47	MOA116717	1.1752	0.0155	1.04	1.14	0.37	B
48	MOA116498	1.3119	0.0160	1.08	1.16	0.33	B
49	MOA116158	0.0206	0.0136	1.13	1.18	0.34	B
50	MOA116771	-0.1539	0.0136	1.13	1.18	0.34	B
51	MOA116148	0.9141	0.0149	1.18	1.33	0.26	B
52	MOA11676	-0.2138	0.0136	1.29	1.37	0.21	B
53	MOA11610	0.1933	0.0137	1.05	1.06	0.41	B
54	MOA116564	1.3161	0.0160	1.07	1.09	0.34	B
55	MOA116635	0.6298	0.0143	0.92	0.87	0.51	B
56	MOA116802	-0.4219	0.0136	1.08	1.11	0.38	B
57	MOA116299_1	-0.6846	0.0137	0.77	0.71	0.62	B
62	MOA116299_6	0.5412	0.0142	0.87	0.84	0.54	B

Table I.2. IRT Item Statistics–Algebra I–Polytomous

Sequence	Item ID	Rasch Measure	Threshold			Standard Error	Infit	Outfit	PTMA	Core Form
			0/1	1/2	2/3					
41	MOA116581_1	0.1695	0.9088	-1.7737	0.8649	0.0062	1.01	0.98	0.68	A
42	MOA116581_3	-0.6583	0.0501	-0.0501	--	0.0076	0.92	0.89	0.62	A
43	MOA116581_4	-2.0232	-1.0188	1.0188	--	0.0099	0.88	0.84	0.55	A
44	MOA116581_6	-0.066	-1.3749	0.9414	0.4336	0.0069	1.31	1.4	0.55	A
58	MOA116299_2	-0.1364	0.9118	-0.9118	--	0.0085	0.74	0.64	0.73	B
59	MOA116299_3	-0.3769	0.3545	-0.3545	--	0.0087	0.84	0.78	0.68	B
60	MOA116299_4	0.9302	-0.0543	0.0543	--	0.0101	1.03	0.95	0.56	B
61	MOA116299_5	0.4491	1.1265	-1.1265	--	0.0089	0.83	0.67	0.68	B

Table I.3. IRT Item Statistics–Algebra II–Dichotomous

Sequence	Item ID	Rasch Measure	Standard Error	Infit	Outfit	PTMA	Core Form
1	MOA216438	-1.8107	0.0282	1.01	0.94	0.38	A
2	MOA216446	-1.2984	0.0255	0.91	0.83	0.49	A
3	MOA216157	-1.8392	0.0209	1.08	1.32	0.29	A & B
4	MOA216439	-0.4772	0.0233	0.99	0.96	0.46	A
5	MOA216355	-0.7641	0.0175	0.92	0.87	0.50	A & B
6	MOA216375	0.8620	0.0244	1.01	1.11	0.42	A
7	MOA21616	0.6546	0.0239	1.12	1.25	0.34	A
8	MOA216441	-0.1323	0.0170	0.97	0.97	0.48	A & B
9	MOA216445	-1.6639	0.0201	1.10	1.25	0.30	A & B
10	MOA216519	1.2087	0.0256	1.19	1.40	0.27	A
11	MOA21673	-0.3723	0.0232	0.79	0.73	0.61	A
12	MOA216379	-0.9523	0.0179	0.90	0.82	0.51	A & B
13	MOA21692	1.3507	0.0193	1.18	1.42	0.28	A & B
14	MOA2161	-0.0052	0.0231	1.12	1.16	0.36	A
15	MOA216126	0.1233	0.0231	0.96	0.94	0.48	A
16	MOA21620	1.0549	0.0250	1.00	0.99	0.44	A
17	MOA216105	0.1314	0.0170	1.09	1.13	0.39	A & B
18	MOA216367	-0.2558	0.0231	1.11	1.15	0.36	A
19	MOA21683	0.0448	0.0170	0.97	0.96	0.48	A & B
20	MOA216428	-1.0155	0.0245	0.90	0.87	0.50	A
21	MOA21614	-1.5106	0.0195	0.99	0.98	0.40	A & B
22	MOA216501	1.2933	0.0260	1.21	1.40	0.25	A
23	MOA21695	2.8800	0.0395	1.08	1.38	0.27	A
24	MOA2169	-0.4620	0.0172	0.97	0.94	0.48	A & B
25	MOA216154	-0.4622	0.0233	0.86	0.80	0.56	A
26	MOA21682	0.1187	0.0170	0.84	0.79	0.58	A & B
27	MOA2163	1.6636	0.0280	0.82	0.64	0.56	A
28	MOA216440	-0.7190	0.0175	0.98	0.95	0.45	A & B
29	MOA216228	-0.4102	0.0171	0.89	0.84	0.54	A & B
30	MOA21699	0.4589	0.0235	1.14	1.21	0.33	A
31	MOA216425	-1.1360	0.0249	0.87	0.75	0.53	A
32	MOA216497	0.3045	0.0171	1.10	1.16	0.38	A & B
33	MOA21685	1.0684	0.0251	0.96	0.93	0.47	A
34	MOA21687	0.6466	0.0175	1.07	1.13	0.40	A & B
35	MOA21615	0.1393	0.0170	0.84	0.79	0.59	A & B
36	MOA216522	-0.9339	0.0242	0.88	0.80	0.53	A
37	MOA216236	0.6992	0.0240	1.12	1.24	0.34	A
38	MOA21671	0.9459	0.0247	1.07	1.29	0.36	A
39	MOA21675	-1.0125	0.0245	0.89	0.84	0.52	A
40	MOA216432	-0.6615	0.0236	0.78	0.70	0.62	A
41	MO0001065	2.5758	0.0358	0.89	0.71	0.41	A
43	MO0001078	1.3910	0.0265	1.19	1.48	0.23	A

Appendix I: IRT Item Statistics

Sequence	Item ID	Rasch Measure	Standard Error	Infit	Outfit	PTMA	Core Form
44	MO0001081	2.3109	0.0330	1.23	2.06	0.10	A
45	MO0001082	-0.0288	0.0231	1.29	1.42	0.21	A
47	MOA216434	-3.1825	0.0470	0.95	0.74	0.29	B
48	MOA21619	-1.3700	0.0281	0.86	0.75	0.50	B
49	MOA21686	1.0259	0.0270	1.03	1.00	0.45	B
50	MOA216159	-1.5572	0.0291	0.89	0.82	0.46	B
51	MOA216517	1.6144	0.0299	1.00	1.16	0.43	B
52	MOA216141	-0.0775	0.0251	1.12	1.15	0.38	B
53	MOA216498	1.6424	0.0300	0.89	0.78	0.53	B
54	MOA216101	2.1545	0.0337	1.05	1.00	0.38	B
55	MOA216443	-1.2912	0.0277	1.21	1.47	0.23	B
56	MOA216218	0.3133	0.0253	1.03	1.02	0.45	B
57	MOA216376	0.6394	0.0259	0.89	0.84	0.55	B
58	MOA21697	-1.2203	0.0274	0.96	0.89	0.44	B
59	MOA216444	1.4101	0.0287	0.97	0.95	0.47	B
60	MOA21693	0.8060	0.0263	1.03	1.02	0.45	B
61	MOA21690	0.2997	0.0253	1.14	1.21	0.36	B
62	MOA21681	1.3395	0.0284	1.03	1.06	0.43	B
63	MOA2166	1.9766	0.0323	0.94	0.79	0.48	B
64	MOA216296	-2.3905	0.0359	1.02	1.10	0.29	B
65	MOA216371	1.5674	0.0296	0.89	0.77	0.53	B
66	MOA216427	-1.0296	0.0267	0.94	0.91	0.46	B
67	MOA216231	0.5145	0.0256	0.92	0.87	0.53	B
68	MOA216524	0.3647	0.0254	1.15	1.25	0.35	B
69	MOA216506	-0.2934	0.0252	1.11	1.14	0.38	B
70	MOA21677	-1.0097	0.0266	1.15	1.21	0.31	B
71	MO0001097	1.0323	0.0271	0.83	0.73	0.59	B
72	MO0001098	0.9090	0.0266	0.93	0.98	0.51	B
74	MO0001108	-0.6239	0.0256	1.06	1.03	0.40	B
76	MO0001113	-3.4914	0.0530	0.94	0.70	0.27	B

Table I.4. IRT Item Statistics–Algebra II–Polytomous

Sequence	Item ID	Rasch Measure	Threshold				Standard Error	Infit	Outfit	PTMA	Core Form
			0/1	1/2	2/3	3/4					
42	MO0001073	-0.5879	-0.4259	0.4259	--	--	0.0161	0.96	0.96	0.60	A
46	MO0001083	1.3126	-0.2912	-0.4824	0.0055	0.7681	0.0124	1.24	1.19	0.63	A
73	MO0001099	0.1237	-0.0124	-0.1667	0.1792	--	0.0131	1.16	1.20	0.67	B
75	MO0001110	1.1077	-0.2065	-0.2133	0.4198	--	0.0150	1.02	0.91	0.68	B

Table I.5. IRT Item Statistics–English I–Dichotomous

Sequence	Item ID	Rasch Measure	Standard Error	Infit	Outfit	PTMA	Core Form
1	MOE116142	-0.5876	0.0290	1.08	1.13	0.30	A
2	MOE116364	-0.6564	0.0293	0.93	0.89	0.46	A
3	MOE116366	-0.0301	0.0278	1.07	1.08	0.34	A
4	MOE116148	-0.0621	0.0278	1.19	1.26	0.21	A
5	MOE116365	1.5926	0.0319	1.03	1.07	0.31	A
6	MOE116298	1.3164	0.0221	0.99	0.99	0.36	A & B
7	MOE116299	-1.1538	0.0237	0.98	0.94	0.39	A & B
8	MOE116149	-0.4837	0.0212	0.96	0.95	0.43	A & B
9	MOE116223	2.2418	0.0274	1.04	1.08	0.23	A & B
10	MOE116441	-0.1853	0.0207	0.99	0.98	0.40	A & B
11	MOE116228	0.0434	0.0204	1.08	1.11	0.32	A & B
12	MOE116225	-0.3614	0.0210	0.98	0.97	0.41	A & B
13	MOE116428	-1.3009	0.0245	0.94	0.89	0.41	A & B
14	MOE116214	-1.3779	0.0249	0.90	0.80	0.46	A & B
15	MOE116432	-1.4380	0.0253	0.95	0.88	0.40	A & B
16	MOE11614	-0.6922	0.0294	0.91	0.87	0.47	A
17	MOE11680	0.1527	0.0276	1.08	1.09	0.33	A

Appendix I: IRT Item Statistics

Sequence	Item ID	Rasch Measure	Standard Error	Infit	Outfit	PTMA	Core Form
18	MOE116161	0.0853	0.0277	0.98	0.98	0.42	A
19	MOE11675	-0.1257	0.0279	1.06	1.06	0.35	A
20	MOE11678	-0.1081	0.0279	1.09	1.13	0.31	A
21	MOE116145	4.0220	0.0539	1.01	1.13	0.12	A & B
22	MOE11689	-0.1041	0.0206	1.06	1.07	0.34	A & B
23	MOE11688	-0.4859	0.0213	0.91	0.86	0.49	A & B
24	MOE11617	0.2050	0.0203	0.95	0.96	0.44	A & B
25	MOE116152	-0.6063	0.0216	1.02	1.01	0.37	A & B
26	MOE116447	1.0163	0.0290	0.92	0.89	0.46	A
27	MOE116211	-0.3860	0.0284	0.89	0.86	0.50	A
28	MOE116217	0.3752	0.0277	1.11	1.16	0.29	A
29	MOE116216	-0.0058	0.0277	1.08	1.12	0.32	A
30	MOE116215	-0.4930	0.0287	1.02	1.05	0.36	A
31	MOE116774	1.4611	0.0311	0.94	0.93	0.41	A
32	MOE116776	1.6584	0.0236	1.07	1.11	0.26	A & B
33	MO0001783	0.2507	0.0203	1.18	1.26	0.21	A & B
34	MO0001812	-2.0532	0.0300	0.90	0.80	0.40	A & B
35	MOE116778	-0.2792	0.0282	0.86	0.82	0.53	A
36	MOE116780	0.4858	0.0204	1.08	1.14	0.30	A & B
37	MOE116781	-0.5184	0.0213	0.94	0.90	0.45	A & B
38	MO0001818	1.0659	0.0213	0.94	0.88	0.44	A & B
39	MO0001781	-0.1851	0.0280	1.11	1.15	0.29	A
40	MOE116785	0.4964	0.0278	1.04	1.06	0.36	A
41	MO0018266	-1.1630	0.0356	0.92	0.83	0.45	B
42	MO0018258	0.0695	0.0302	1.09	1.12	0.30	B
43	MO0018534	-0.3778	0.0312	1.00	0.99	0.40	B
44	MO0018281	-1.0285	0.0346	0.93	0.87	0.45	B
45	MO0018251	-0.4197	0.0314	1.05	1.06	0.34	B
46	MO0017550	-1.7542	0.0414	0.91	0.76	0.43	B
47	MO0017581	-1.3919	0.0375	0.89	0.77	0.47	B
48	MO0017631	0.1563	0.0301	0.98	0.98	0.41	B
49	MO0017637	-0.8762	0.0336	0.93	0.88	0.45	B
50	MO0017638	-0.2741	0.0309	0.89	0.87	0.51	B
51	MOE1162	1.7212	0.0350	1.08	1.26	0.20	B
52	MOE11610	-0.3690	0.0312	0.93	0.90	0.47	B
53	MOE1161	-0.2418	0.0308	1.14	1.17	0.25	B
54	MOE116449	0.3343	0.0300	0.98	0.99	0.41	B
55	MOE116790	0.0057	0.0303	1.06	1.07	0.33	B
56	MOE116782	0.5485	0.0301	1.42	1.56	-0.07	B
57	MO0001886	2.6686	0.0458	0.96	0.81	0.29	B
58	MO0001782	-0.5238	0.0318	1.01	1.01	0.38	B
59	MOE116783	0.1274	0.0301	1.08	1.10	0.31	B

Table I.6. IRT Item Statistics–English I–Polytomous

Sequence	Item ID	Rasch Measure	Threshold				Standard Error	Infit	Outfit	PTMA	Core Form
			0/1	1/2	2/3	3/4					
60	MO0001881_3	-2.3231	0.5580	-0.5580	--	--	0.0363	0.84	0.55	0.41	A
62	MO0001878_3	-2.5696	0.4333	-0.4333	--	--	0.0468	0.83	0.51	0.41	B
64	MO0001881_1	-0.4792	-2.6110	-1.6408	0.0593	4.1926	0.0209	0.85	0.85	0.60	A
65	MO0001881_2	-0.2306	-3.1866	-1.7173	1.1468	3.7571	0.0207	0.88	0.88	0.59	A
68	MO0001878_1	-0.4019	-2.6878	-1.8954	-0.3466	4.9298	0.0254	0.86	0.85	0.56	B
69	MO0001878_2	-0.0290	-3.4155	-2.2636	1.7260	3.9532	0.0259	0.89	0.88	0.52	B

Table I.7. IRT Item Statistics–English II–Dichotomous

Sequence	Item ID	Rasch Measure	Standard Error	Infit	Outfit	PTMA	Core Form
1	MOE216635	-0.9567	0.0130	1.00	1.07	0.35	A
2	MOE216641	-0.2465	0.0121	1.04	1.05	0.37	A
3	MOE216710	2.3467	0.0169	1.06	1.23	0.23	A
4	MOE216643	-0.3737	0.0122	0.98	0.97	0.42	A
5	MOE216636	1.3307	0.0132	1.11	1.40	0.25	A
6	MOE116355	-0.8554	0.0094	0.97	1.02	0.42	A & B
7	MOE116300	-0.4987	0.0090	1.03	1.02	0.39	A & B
8	MOE116354	0.9651	0.0091	0.97	1.00	0.41	A & B
9	MOE116303	1.9685	0.0110	1.04	1.11	0.27	A & B
10	MOE116358	-0.5762	0.0091	1.00	0.98	0.42	A & B
11	MOE216303	0.1280	0.0087	1.10	1.13	0.32	A & B
12	MOE21683	-0.6241	0.0092	0.96	0.92	0.45	A & B
13	MOE216237	0.3115	0.0087	1.00	1.02	0.41	A & B
14	MOE21675	-1.0604	0.0097	1.04	1.08	0.35	A & B
15	MOE21678	-0.4022	0.0089	0.99	0.95	0.43	A & B
16	MOE216217	0.3038	0.0087	1.05	1.07	0.37	A & B
17	MOE216215	1.1230	0.0093	0.96	1.04	0.40	A & B

Appendix I: IRT Item Statistics

Sequence	Item ID	Rasch Measure	Standard Error	Infit	Outfit	PTMA	Core Form
18	MOE216220	0.6436	0.0089	1.09	1.16	0.31	A & B
19	MOE216218	0.2810	0.0087	1.08	1.10	0.34	A & B
20	MOE216224	0.0343	0.0087	1.25	1.35	0.18	A & B
21	MOE21619	-0.1972	0.0088	1.03	1.04	0.39	A & B
22	MOE21622	0.1072	0.0087	1.10	1.13	0.33	A & B
23	MOE21620	-0.7288	0.0093	0.94	0.88	0.47	A & B
24	MOE21621	1.0401	0.0092	1.08	1.23	0.29	A & B
25	MOE21624	-0.5104	0.0090	1.02	1.03	0.40	A & B
26	MOE216709	-1.2245	0.0136	0.80	0.67	0.52	A
27	MOE2161	0.6166	0.0121	1.11	1.17	0.31	A
28	MOE2165	-0.4054	0.0122	1.06	1.08	0.35	A
29	MOE21612	1.4201	0.0135	1.00	1.04	0.37	A
30	MOE2166	0.5557	0.0121	1.12	1.22	0.30	A
31	MOE216775	-0.4633	0.0090	1.05	1.07	0.36	A & B
32	MOE216776	-1.3494	0.0103	0.84	0.74	0.52	A & B
33	MOE216779	-1.0048	0.0097	0.87	0.78	0.52	A & B
34	MOE216780	-0.3008	0.0089	0.90	0.86	0.51	A & B
35	MOE216791	1.0070	0.0092	0.91	0.84	0.47	A & B
36	MO0001825	0.3692	0.0120	1.10	1.17	0.32	A
37	MOE216793	0.0769	0.0087	0.96	0.94	0.46	A & B
38	MO0001831	-0.9518	0.0096	0.92	0.86	0.47	A & B
39	MO0001834	-0.7601	0.0126	0.89	0.84	0.48	A
40	MOE216788	-0.3720	0.0122	0.87	0.83	0.52	A
41	MOE116295	-3.1790	0.0273	0.91	0.54	0.34	B
42	MOE116291	-0.5212	0.0133	0.98	0.96	0.43	B
43	MOE116160	-0.3029	0.0131	1.08	1.08	0.34	B
44	MOE116294	0.5538	0.0129	1.02	1.02	0.39	B
45	MOE116296	1.0893	0.0136	1.02	1.02	0.35	B
46	MOE216367	2.1974	0.0171	1.07	1.23	0.20	B
47	MOE216374	-0.2292	0.0130	0.89	0.85	0.52	B
48	MOE216368	0.3340	0.0128	1.00	1.01	0.41	B
49	MOE216371	0.1809	0.0128	0.99	0.97	0.43	B
50	MOE216373	0.7738	0.0131	1.15	1.32	0.23	B
51	MO0001887	-1.2569	0.0150	0.96	1.01	0.41	B
52	MO0001828	-1.2171	0.0149	0.80	0.65	0.58	B
53	MO0001827	0.8107	0.0131	1.11	1.28	0.26	B

Table I.8. IRT Item Statistics–English II–Polytomous

Sequence	Item ID	Rasch Measure	Threshold				Standard Error	Infit	Outfit	PTMA	Core Form
			0/1	1/2	2/3	3/4					
54	MO0001805_3	-2.3147	0.4950	-0.4950	--	--	0.0145	0.77	0.48	0.47	A
56	MO0000946_3	-2.5392	0.6634	-0.6634	--	--	0.0186	0.78	0.47	0.43	B
58	MO0001805_1	-0.4787	-1.9677	-1.5981	-0.1423	3.7080	0.0084	0.75	0.75	0.68	A
59	MO0001805_2	-0.0512	-2.7537	-1.8119	0.5960	3.9696	0.0085	0.78	0.79	0.67	A
62	MO0000946_1	-0.5737	-1.9682	-1.6745	-0.7123	4.3549	0.0105	0.77	0.77	0.62	B
63	MO0000946_2	-0.1359	-2.5389	-2.5385	1.1507	3.9267	0.0102	0.84	0.84	0.61	B

Table I.9. IRT Item Statistics–Geometry–Dichotomous

Sequence	Item ID	Rasch Measure	Standard Error	Infit	Outfit	PTMA	Core Form
1	MOG1618	-1.4575	0.0484	0.89	0.75	0.45	A
2	MOG16571	-0.3450	0.0427	1.20	1.31	0.23	A
3	MOG16151	-1.9333	0.0412	1.00	1.13	0.29	A & B
4	MOG16284	-1.4425	0.0367	0.88	0.77	0.46	A & B
5	MOG16508	-0.1136	0.0323	0.90	0.88	0.51	A & B
6	MOG16224	2.5533	0.0512	0.87	0.63	0.48	A & B
7	MOG16426	-0.3686	0.0324	0.99	0.97	0.42	A & B
8	MOG16801	0.4332	0.0330	1.10	1.12	0.35	A & B
9	MOG1611	-0.7701	0.0333	1.01	0.99	0.38	A & B
10	MOG16421	-1.8915	0.0535	0.98	0.90	0.33	A
11	MOG16778	0.4708	0.0332	0.98	1.00	0.45	A & B
12	MOG165	-1.6283	0.0502	1.01	1.01	0.32	A
13	MOG16357	-0.9543	0.0339	0.96	0.90	0.42	A & B
14	MOG16777	1.0638	0.0473	0.97	0.93	0.46	A
15	MOG16212	0.0835	0.0324	0.99	0.98	0.43	A & B
16	MOG16507	-1.1816	0.0350	0.93	0.90	0.42	A & B
17	MOG161	-0.2641	0.0426	0.96	0.97	0.45	A

Appendix I: IRT Item Statistics

Sequence	Item ID	Rasch Measure	Standard Error	Infit	Outfit	PTMA	Core Form
18	MOG16360	-0.0305	0.0323	1.03	1.05	0.39	A & B
19	MOG16498	-1.6312	0.0382	1.08	1.48	0.23	A & B
20	MOG16789	-0.4579	0.0325	0.81	0.74	0.58	A & B
21	MOG16286	-0.3189	0.0323	1.07	1.09	0.35	A & B
22	MOG1615	-0.4467	0.0428	0.97	0.96	0.43	A
23	MOG16145	0.0138	0.0323	0.99	0.98	0.44	A & B
24	MOG16146	0.6786	0.0339	1.02	1.02	0.42	A & B
25	MOG16362	0.8432	0.0346	1.20	1.33	0.26	A & B
26	MOG16783	0.6032	0.0444	0.91	0.88	0.51	A
27	MOG168	-0.3569	0.0324	0.98	0.96	0.43	A & B
28	MOG1617	0.3794	0.0435	1.23	1.33	0.23	A
29	MOG16294	-0.4964	0.0326	0.98	0.97	0.42	A & B
30	MOG1624	2.8482	0.0752	0.95	0.66	0.41	A
31	MOG16295	-1.4575	0.0484	0.98	0.97	0.36	A
32	MOG16812	2.0276	0.0584	0.83	0.57	0.55	A
33	MOG166	0.3567	0.0329	1.19	1.24	0.27	A & B
34	MOG16791	-0.0368	0.0323	0.86	0.85	0.54	A & B
35	MOG16576	1.7601	0.0411	1.00	0.90	0.42	A & B
36	MOG16227	1.9036	0.0426	0.93	0.96	0.45	A & B
37	MOG1614	-0.8817	0.0443	0.98	1.00	0.40	A
38	MOG16811	0.7884	0.0343	1.03	1.03	0.41	A & B
39	MOG16288	1.7332	0.0408	1.10	1.40	0.30	A & B
40	MOG16368	1.3819	0.0501	1.10	1.30	0.31	A
44	MO0001764	-3.6412	0.0999	0.97	0.86	0.20	A
46	MOG16141	-0.0765	0.0495	1.00	1.02	0.42	B
47	MOG16221	-0.1923	0.0495	1.12	1.17	0.31	B
48	MOG16799	-0.4353	0.0498	1.27	1.37	0.18	B
49	MOG16225	2.6260	0.0794	1.08	1.62	0.26	B
50	MOG16434	0.3467	0.0502	1.04	1.04	0.40	B
51	MOG16496	-2.7087	0.0815	0.92	0.77	0.32	B
52	MOG16422	-0.3506	0.0497	0.92	0.89	0.48	B
53	MOG16810	0.6081	0.0514	0.97	0.95	0.47	B
54	MOG16364	1.0817	0.0546	0.86	0.79	0.55	B
55	MOG16148	-0.1874	0.0495	0.93	0.89	0.48	B
56	MOG16365	-0.8765	0.0517	1.03	1.04	0.35	B
57	MOG16808	-1.3037	0.0551	1.00	1.05	0.34	B
58	MOG16433	0.8001	0.0525	0.98	1.00	0.46	B
59	MOG16285	-0.7887	0.0512	0.86	0.79	0.51	B
61	MO0001770	-0.2064	0.0495	1.13	1.21	0.31	B

Table I.10. IRT Item Statistics–Geometry–Polytomous

Sequence	Item ID	Rasch Measure	Threshold					Standard Error	Infit	Outfit	PTMA	Core Form
			0/1	1/2	2/3	3/4	4/5					
41	MO0001747	0.0394	-0.1078	0.1078	--	--	--	0.0282	0.91	0.90	0.62	A
42	MO0001761	-0.1901	-1.2520	1.2520	--	--	--	0.0332	1.02	1.02	0.50	A
43	MO0001763	-0.6964	-0.8021	-0.4426	1.2448	--	--	0.0253	1.42	1.55	0.38	A
45	MO0033067	2.1383	0.1874	-0.1874	--	--	--	0.0448	0.84	0.50	0.58	A
60	MO0001769	0.1335	-1.2633	1.2633	--	--	--	0.0387	1.02	1.01	0.51	B
62	MO0001888	1.7411	-0.2130	0.2130	--	--	--	0.0443	0.83	0.66	0.65	B
63	MO0001889	1.8146	-2.6204	-1.5159	0.0136	2.2265	1.8962	0.0289	1.05	1.05	0.64	B

Appendix J: TCC and Conditional Standard Error

Figure J.1. Test Characteristic Curve – Algebra I

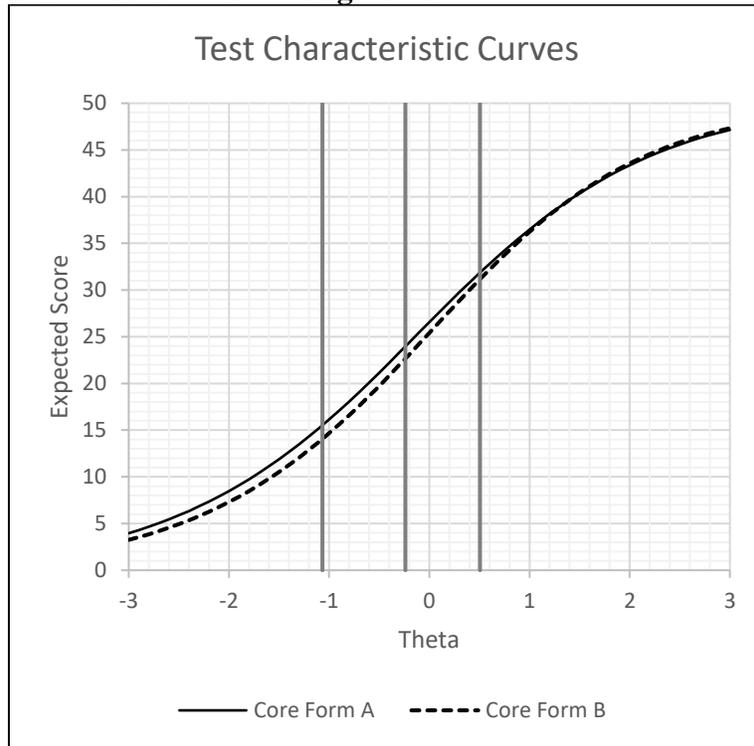


Figure J.2. Test Information Curve – Algebra I

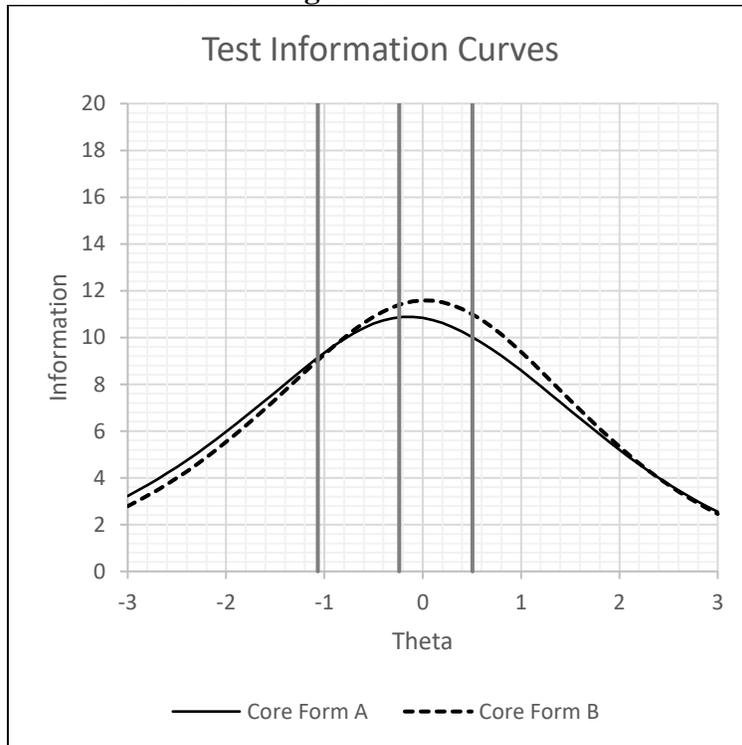


Figure J.3. Test Characteristic Curve – Algebra II

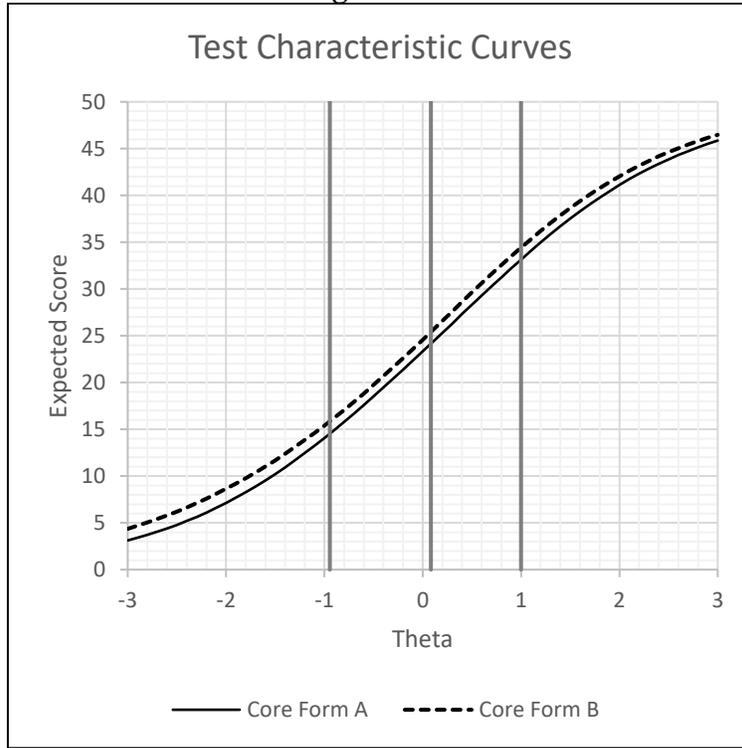


Figure J.4. Test Information Curve – Algebra II

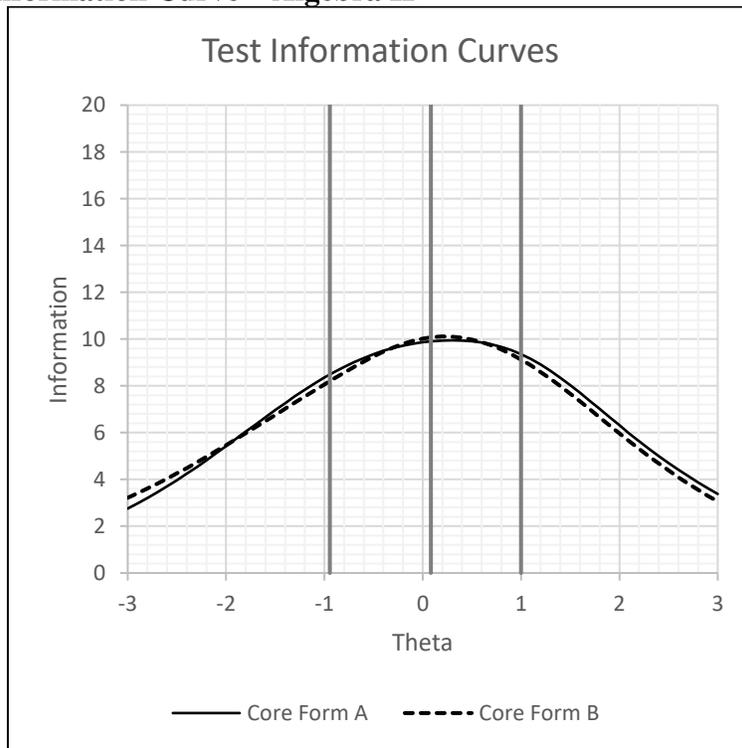


Figure J.5. Test Characteristic Curve – English I

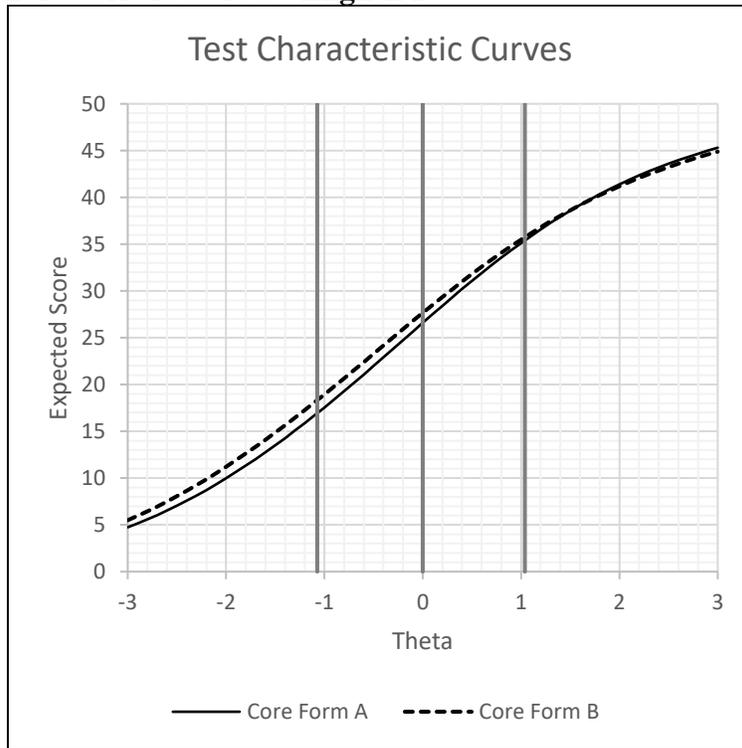


Figure J.6. Test Information Curve – English I

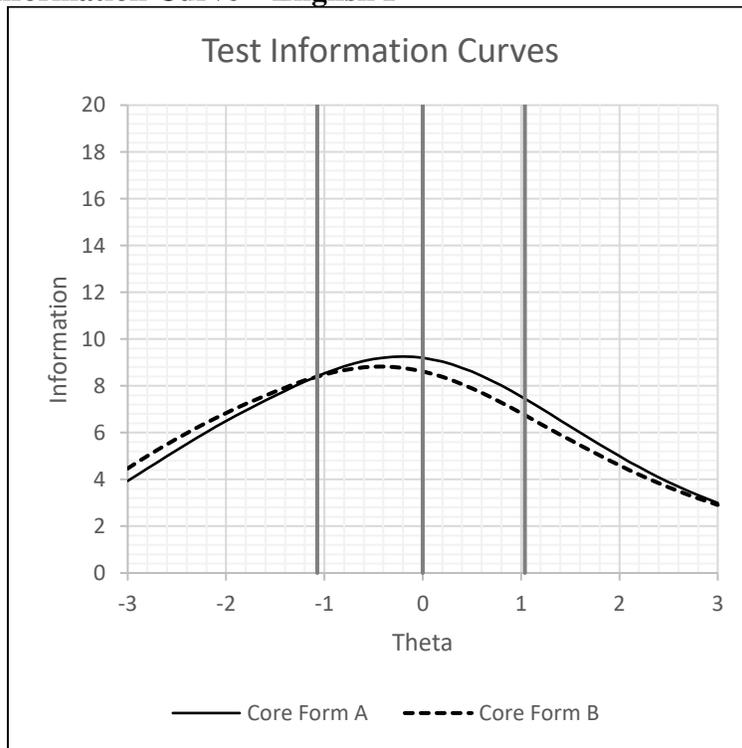


Figure J.7. Test Characteristic Curve – English II

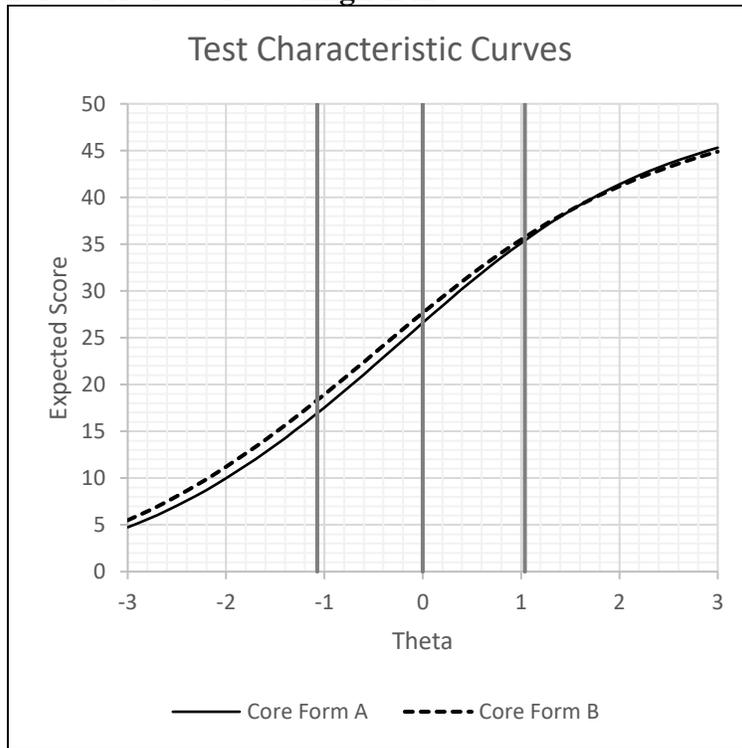


Figure J.8. Test Information Curve – English II

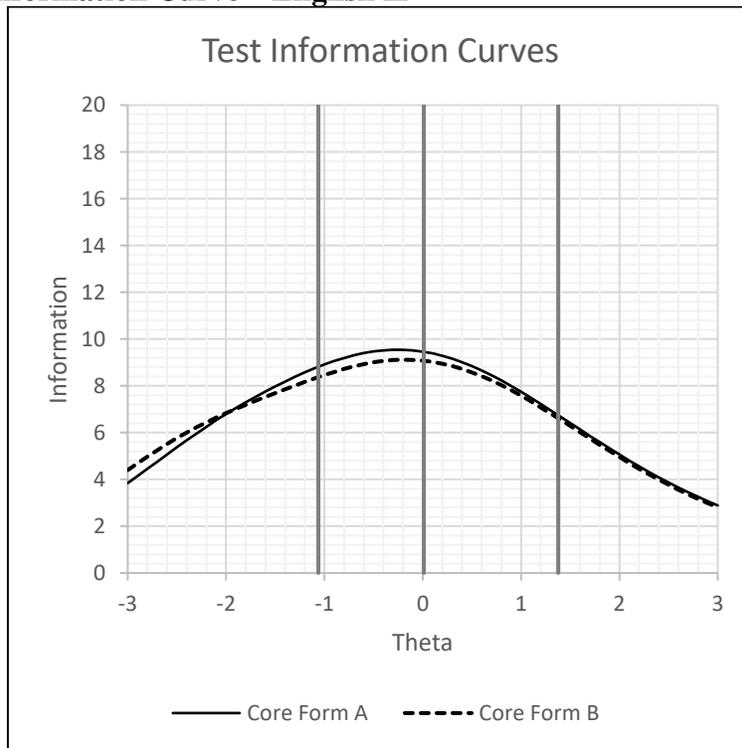


Figure J.9. Test Characteristic Curve – Geometry

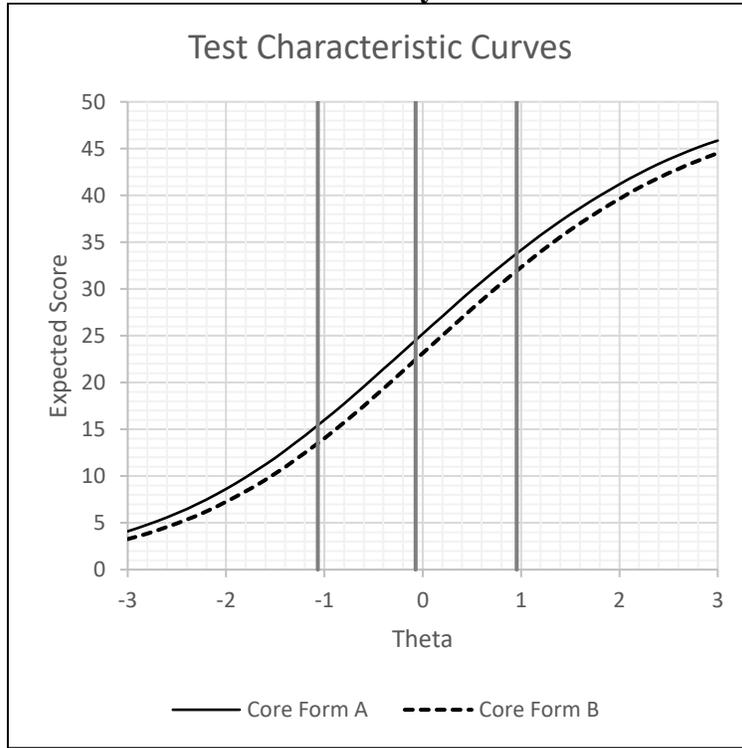
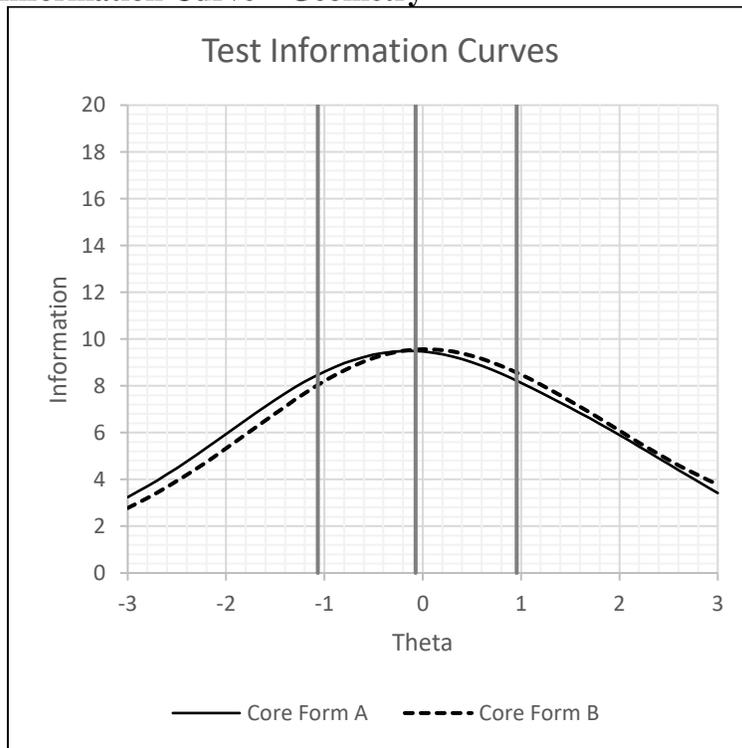


Figure J.10. Test Information Curve – Geometry



Appendix K: Technical Information from Summer 2017 Administration

Table K.1. Test Construction Blueprint—English II

Claim	Category	Big Idea	Target #Points	Point Range	Range of Emphasis
Reading	Claim 1a	Apply reading skills to demonstrate the ability to integrate key ideas and details, interpret and analyze the craft and structure of texts, and evaluate the knowledge and ideas found in literary texts	15	15	33%
	Claim 1b	Apply reading skills to demonstrate the ability to integrate key ideas and details, interpret and analyze the craft and structure of texts, and evaluate the knowledge and ideas found in informational text	15	15	33%
Writing	Claim 2a	Demonstrate the ability to produce a variety of text types and purposes	10	10	22%
	Claim 2b	Demonstrate a command of the convention of standard English, appropriate grade-level acquisition of vocabulary	5	5	11%
Total			45	45	100%

Table K.2. Test Construction Blueprint—Algebra I

Content Strand	Target #Points	Point Range	Range of Emphasis
Number and Quantity	3	2–4	5–10%
Algebra	17	14–21	35–53%
Functions	15	11–20	28–50%
Stats and Probability	5	3–6	8–15%
Total	40	40	100%

Table K.3. Test Construction Blueprint—Biology

Content Strand	Point Range	Range of Emphasis
From Molecules to Organisms: Structure and Process	11-15	22-30%
Ecosystems: Interactions, Energy, and Dynamics	8-12	16-24%
Heredity: Inheritance and Variation of Traits	11-15	22-30%
Biological Evolution: Unity and Diversity	11-15	22-30%
Earth and Human Activity	3-6	6-12%

Content Strand	Point Range	Range of Emphasis
Total	50	100%

Table K.4. Test Construction Blueprint—English I

Claim	Category	Big Idea	Target #Points	Point Range	Range of Emphasis
Reading	Claim 1a	Apply reading skills to demonstrate the ability to integrate key ideas and details, interpret and analyze the craft and structure of texts, and evaluate the knowledge and ideas found in literary texts	15	15	33%
	Claim 1b	Apply reading skills to demonstrate the ability to integrate key ideas and details, interpret and analyze the craft and structure of texts, and evaluate the knowledge and ideas found in informational text	15	15	33%
Writing	Claim 2a	Demonstrate the ability to produce a variety of text types and purposes	10	10	22%
	Claim 2b	Demonstrate a command of the convention of standard English, appropriate grade-level acquisition of vocabulary	5	5	11%
Total			45	45	100%

Table K.5. Test Construction Blueprint—Algebra II

Content Strand	Target #Points	Point Range	Range of Emphasis
Number and Quantity	0	0–4	0–10%
Algebra	17	16–22	40–55%
Functions	23	18–24	45–60%
Stats and Probability	0	0–6	0–15%
Total	40	40	100%

Table K.6. Test Construction Blueprint—Geometry

Content Strand	Point Range	Range of Emphasis
Geometry	34–40	85–100%
Stats and Probability	0–6	0–15%
Total	40	100%

Table K.7. Number of Students Included in the Analyses

Content Area	n-Count
Algebra I	1,040
Algebra II	29
Biology	319
English I	14
English II	407
Geometry	39
Total	2,724

Table K.8. DIF Results

Content Area	Group	n-Count	Dichotomous Items					Polytomous Items					
			A	B	B-	C	C-	A	B	B-	C	C-	
English II	M/F	219/188	0	0	0	0	0	0	0	0	0	0	0
	W/B	187/172	0	0	0	0	0	0	0	0	0	0	0
	W/H	187/29	0	0	0	0	0	0	0	0	0	0	0
Algebra I	M/F	514/526	36	3	1	0	0	3	0	0	0	0	0
	W/B	653/266	32	1	3	0	4	2	0	1	0	0	0
	W/H	653/69	0	0	0	0	0	0	0	0	0	0	0
Biology	M/F	169/151	0	0	0	0	0	0	0	0	0	0	0
	W/B	173/111	0	0	0	0	0	0	0	0	0	0	0
	W/H	173/17	0	0	0	0	0	0	0	0	0	0	0
English I	M/F	5/9	0	0	0	0	0	0	0	0	0	0	0
	W/B	9/1	0	0	0	0	0	0	0	0	0	0	0
	W/H	9/2	0	0	0	0	0	0	0	0	0	0	0
Algebra II	M/F	12/17	0	0	0	0	0	0	0	0	0	0	0
	W/B	24/2	0	0	0	0	0	0	0	0	0	0	0
	W/H	24/1	0	0	0	0	0	0	0	0	0	0	0
Geometry	M/F	19/20	0	0	0	0	0	0	0	0	0	0	0
	W/B	13/15	0	0	0	0	0	0	0	0	0	0	0
	W/H	13/9	0	0	0	0	0	0	0	0	0	0	0

Note. Classifications with a negative sign (“-”) favor the reference group, while classifications with no sign favor the focal group. DIF contrast groups: M/F = male versus female; W/B = White versus Black; and W/H = White versus Hispanic.

Table K.9. Accommodation Distributions

Accommodation	English II		Algebra I		Biology		English I		Algebra II		Geometry	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Braille	0	0	0	0	0	0	0	0	0	0	0	0
Large Print	0	0	0	0	0	0	0	0	0	0	1	0.12
Oral Reading	0	0	0	0	0	0	0	0	0	0	0	0
Oral Reading—Blind/Partial Sight	3	0.74	0	0	0	0	0	0	0	0	0	0
Oral Reading—Paper/Pencil Only	0	0	0	0	0	0	0	0	0	0	0	0
Signing of Assessment	0	0	0	0	0	0	0	0	0	0	0	0
Paper Based Assessment—Paper/Pencil Only	1	0.25	2	0.19	0	0	0	0	0	0	1	0.12
Oral Reading in Native Language ELA	0	0	0	0	0	0	0	0	0	0	0	0
Use of Scribe	0	0	0	0	0	0	0	0	0	0	0	0
Speech to Text Online not Embedded	0	0	0	0	0	0	0	0	0	0	0	0
Abacus	0	0	0	0	0	0	0	0	0	0	0	0
Multiplication Table	0	0	0	0	0	0	0	0	0	0	0	0
Specialized Calculator	0	0	0	0	0	0	0	0	0	0	0	0
Alternate Response	0	0	0	0	0	0	0	0	0	0	0	0
Oral Reading Assistive Technology-Non ELA	3	0.74	10	0.96	0	0	0	0	0	0	10	1.22
Oral Reading Assistive Technology-ELA only	0	0	0	0	0	0	0	0	0	0	0	0
Oral Reading Any—not Embedded	3	0.74	3	0.29	0	0	0	0	0	0	1	0.12
Color Contrast—Paper/Pencil	0	0	0	0	0	0	0	0	0	0	0	0
Color Overlay—Paper/Pencil	0	0	0	0	0	0	0	0	0	0	0	0
Magnification	0	0	0	0	0	0	0	0	0	0	0	0
Masking	0	0	0	0	0	0	0	0	0	0	0	0
Translation	0	0	0	0	0	0	0	0	0	0	0	0
Oral Reading in Native Language Non ELA	0	0	1	0.1	0	0	0	0	0	0	0	0
Use of Scribe Non ELA Writing without IEP or 504	0	0	0	0	0	0	0	0	0	0	0	0
Bilingual Dictionary on Writing Performance Task for ELL	0	0	0	0	0	0	0	0	0	0	0	0

Accommodation	English II		Algebra I		Biology		English I		Algebra II		Geometry	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Other Setting	18	4.42	16	1.54	0	0	0	0	0	0	6	0.73

Table K.10. Rater Agreement

Item	# of Score Points	n-Count Responses Received	n-Count Responses Scored	n-Count Double Reads	Exact Agreement Plan	Exact Agreement Actual	Exact + Adjacent Plan	Exact + Adjacent Actual
English I – 100085793-1	4	16	16	1	80%	100%	100%	100%
English I – 100085793-2	4	16	16	1	80%	100%	100%	100%
English I – 100085793-3	2	16	16	1	95%	100%	100%	100%
English II – 100085792-1	4	408	408	18	80%	100%	100%	100%
English II – 100085792-2	4	408	408	18	80%	100%	100%	100%
English II – 100085792-3	2	408	408	18	95%	100%	100%	100%
Algebra I – 100076622-1	4	1,034	1,034	104	80%	99%	100%	100%
Algebra I – 100076622-2	2	1,034	1,034	104	95%	99%	100%	100%
Algebra I – 100076622-3	4	1,034	1,034	104	80%	91%	100%	100%
Biology 1 – 100075983	1	320	320	32	100%	94%	100%	100%
Biology 2 – 100075984	1	318	318	32	100%	100%	100%	100%
Biology 3 – 100075985	1	319	319	31	100%	100%	100%	100%
Biology 4 – 100075986	3	318	318	32	85%	88%	100%	100%
Biology 5 – 100075992	2	312	312	32	95%	91%	100%	100%
Biology 6 – 100075987	3	317	317	32	85%	97%	100%	100%
Biology 7 – 100075989	4	315	315	32	80%	100%	100%	100%
Biology 8 – 100075988	3	306	306	31	85%	97%	100%	100%
Biology 9 – 100075990	1	318	318	32	100%	100%	100%	100%
Biology 10 – 100075991	1	318	318	32	100%	100%	100%	100%

Table K.11. Scale Score Ranges by Achievement Level

Content Area	Achievement Level	Scale Score Range
English II	Below Basic	100–181
	Basic	182–199
	Proficient	200–224
	Advanced	225–250
Algebra I	Below Basic	100–186
	Basic	187–199
	Proficient	200–224
	Advanced	225–250
Biology	Below Basic	100–176
	Basic	177–199
	Proficient	200–224
	Advanced	225–250
English I	Below Basic	100–179
	Basic	180–199
	Proficient	200–224
	Advanced	225–250
Algebra II	Below Basic	100–185
	Basic	186–199
	Proficient	200–224
	Advanced	225–250
Geometry	Below Basic	100–188
	Basic	189–199
	Proficient	200–224
	Advanced	225–250
Physical Science	Below Basic	100–167
	Basic	168–199
	Proficient	200–224
	Advanced	225–250

Table K.22. Descriptive Statistics for Total Raw Score

Content Area	n-Count	#Items	#Pts.			Mean	SD
			Possible	Min.	Max.		
English II	389	38	45	5	40	26.05	7.33
Algebra I	1,024	43	50	4	48	23.72	8.83
Biology	307	45	55	4	50	28.34	9.74
English I	14	38	45	15	36	24.79	6.51
Algebra II	29	40	40	10	36	17.38	6.27
Geometry	39	40	40	6	34	19.00	7.35

Table K.13. Descriptive Statistics for Total Raw Score by Cluster

Content Area	Cluster	#Pts. Possible	#Items	Mean	SD	SEM
English II	Reading	35	35	19.16	6.35	2.62
	Writing	10	3	7.05	1.48	0.61
Algebra I	Algebra	23	19	9.49	4.35	2.20
	Functions	19	16	9.66	3.75	2.04
	Numbers & Operations	3	3	1.54	1.02	0.77
	Statistics & Probability	5	5	3.03	1.22	0.99
Biology	Changes in Ecosystems	13	13	8.36	2.98	1.50
	Characteristics and Interactions	22	22	10.51	3.77	2.18
	Scientific Inquiry	20	10	9.49	4.49	2.43
English I	Reading	35	35	18.36	5.33	2.41
	Writing	10	3	6.43	2.09	0.94
Algebra II	Algebra	18	18	7.72	3.41	1.86
	Functions	22	22	9.66	3.48	2.11
Geometry	Geometry	40	40	19.00	7.35	2.76

Table K.14. Descriptive Statistics of the Scale Scores

Content Area	n-Count	Min.	Max.	Mean	SD
English II	407	150	232	195.52	15.79
Algebra I	1,040	142	250	201.58	19.38
Biology	320	131	239	191.80	18.07
English I	14	174	222	195.00	15.07
Algebra II	29	168	250	190.17	19.58
Geometry	39	158	239	196.03	19.71

Table K.15. Scale Score Cuts

Content Area	Basic	Proficient	Advanced
English II	182	200	225
Algebra I	187	200	225
Biology	178	200	225
English I	180	200	225
Algebra II	186	200	225
Geometry	189	200	225

*Note. Physical Science was not offered in the summer.

Table K.36. CSEMs at the Proficient Cut Score

Content Area	SS Cut*	CSEM
English II	200	6
Algebra I	200	7
Biology	200	6
English I	200	6
Algebra II	200	8
Geometry	200	7

Table K.17. Summary of Decision Accuracy (and Consistency) Results—Overall and Conditional on Achievement Level

Content Area	Overall	Kappa	Conditional on Achievement Level			
			Below Basic	Basic	Proficient	Advanced
Algebra I	0.74 (0.65)	0.49	0.83 (0.72)	0.54 (0.43)	0.78 (0.72)	0.79 (0.62)
Algebra II	0.62 (0.53)	0.24	0.58 (0.57)	0.52 (0.39)	0.74 (0.35)	0.96 (0.94)
Biology	0.78 (0.69)	0.53	0.82 (0.71)	0.75 (0.67)	0.80 (0.71)	0.74 (0.48)
English I	0.78 (0.70)	0.51				
English II	0.77 (0.68)	0.51	0.81 (0.68)	0.72 (0.63)	0.81 (0.74)	0.73 (0.46)
Geometry	0.74 (0.66)	0.5	0.85 (0.77)	0.49 (0.39)	0.79 (0.71)	0.77 (0.56)

Note. Empty cells are due to the small sample size.

Table K.18. Summary of Decision Accuracy (and Consistency) Results—Conditional on Cut Score Point

	Test	Algebra I	Algebra II	Biology	English I	English II	Geometry
Below Basic/Basic	Accuracy (Consistency)	0.91 (0.88)	0.64 (0.58)	0.91 (0.88)	0.85 (0.80)	0.91 (0.88)	0.89 (0.85)
	False Positive	0.04	0.35	0.04	0	0.03	0.05
	False Negative	0.05	0.02	0.05	0.15	0.05	0.06
Basic/Proficient	Accuracy (Consistency)	0.88 (0.83)	0.95 (0.92)	0.88 (0.84)	0.94 (0.91)	0.87 (0.82)	0.88 (0.83)
	False Positive	0.06	0.04	0.06	0.03	0.07	0.06
	False Negative	0.06	0.01	0.05	0.03	0.06	0.06
Proficient/Advanced	Accuracy (Consistency)	0.94 (0.91)	0.99 (0.99)	0.98 (0.97)	0.99 (0.99)	0.98 (0.97)	0.96 (0.94)
	False Positive	0.04	0	0.01	0.01	0.01	0.03

Test	Algebra I	Algebra II	Biology	English I	English II	Geometry
False Negative	0.02	0	0	0	0	0.01

Table K.49. Correlation Coefficients Between Domains and Clusters—English II

	#Points	Reading	Writing
Reading	35	0.83	0.52
Writing	10	0.43	0.83

Note. Student counts are 389, 1,150 and 33,103 for the 3 admins, respectively.

Table K.50. Correlation Coefficients Between Domains and Clusters—Algebra I

	#Points	Algebra	Functions	Numbers and Operations	Statistics and Probability
Algebra	23	0.74	1.01	0.94	0.92
Functions	19	0.73	0.70	0.92	1.00
Numbers and Operations	3	0.53	0.51	0.43	0.82
Statistics and Probability	5	0.47	0.49	0.32	0.34

Note. Student count is 1,024.

Table K.21. Correlation Coefficients Between Domains and Clusters—Biology

	#Points	Changes in Ecosystems	Characteristics and Interactions	Scientific Inquiry
Changes in Ecosystems	13	0.75	0.92	0.89
Characteristics and Interactions	22	0.65	0.67	0.83
Scientific Inquiry	20	0.65	0.57	0.71

Note. Student count is 307.

Table K.22. Correlation Coefficients Between Domains and Clusters—Algebra II

	#Points	Algebra	Functions
Algebra	18	0.70	0.99
Functions	22	0.66	0.63

Note. Student count is 29.

Table K.23. Correlation Coefficients Between Domains and Clusters—English I

	#Points	Reading	Writing
Reading	35	0.79	0.55
Writing	10	0.44	0.80

Note. Student counts are 14, 44, and 6,239 for the 3 admins, respectively

Table K.24. Correlation Coefficients Between Domains and Clusters—Geometry

	#Points	Geometry
Geometry	40	0.86

Note. Student count is 39.

Table K.25. Actual Point Distributions—Algebra I

Reporting Category	Blueprint Target	Actual
	#Points	
Number and Quantity	4	3
Algebra	27	23
Function	14	19
Stats and Probability	5	5
Total	50	50

Table K.26. Actual Point Distributions—Algebra II

Reporting Category	Blueprint Target	Actual
	#Points	
Number and Quantity	0–4	0
Algebra	16–22	18
Function	18–24	22
Stats and Probability	0–6	0
Total	40	40

Table K.27. Actual Point Distributions—Biology

Reporting Category	Blueprint Target	Actual
	#Points	
Characteristics and Interactions of Living Organisms	22	22
Changes in Ecosystems and Interactions of Organisms with Their Environments	13	13

Reporting Category	Blueprint Target	Actual
	#Points	
Scientific Inquiry	20	20
Total	35	35

Table K.28. Actual Point Distributions—English I

Reporting Category	Blueprint Target	Actual
	#Points	
Reading – Claim 1a	15	15
Reading – Claim 1b	15	15
Writing – Claim 2a	8	8
Writing – Claim 2b	7	7
Total	45	45

Table K.29. Actual Point Distributions—English II

Reporting Category	Blueprint Target	Actual
	#Points	
Reading – Claim 1a	15	15
Reading – Claim 1b	15	15
Writing – Claim 2a	8	8
Writing – Claim 2b	7	7
Total	45	45

Table K.30. Actual Point Distributions—Geometry

Reporting Category	Target	Actual
	#Points	
Geometry	40	40
Total	40	40

Table K.31. Item Statistics—English II

n-Count: 407

UIN	<i>p</i> -Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
100075858	0.61	0.29	0
100075881	0.84	0.38	0
100076208	0.47	0.33	0
100076209	0.40	0.22	0
100076210	0.51	0.37	0
100076211	0.33	0.07	0
100076212	0.39	0.26	0

UIN	<i>p</i> -Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
100076333	0.30	0.23	0
100076334	0.69	0.41	0
100076335	0.74	0.48	1
100076336	0.52	0.45	0
100076338	0.45	0.28	0
100076342	0.56	0.43	0
100076343	0.75	0.25	0
100076344	0.67	0.41	0
100076349	0.65	0.22	0
100076352	0.33	0.02	0
100076394	0.80	0.37	0
100076395	0.49	0.16	0
100076396	0.70	0.31	0
100076397	0.69	0.39	0
100076399	0.77	0.46	0
100076400	0.55	0.20	0
100085792_1	0.66	0.53	1
100085792_2	0.65	0.50	1
100085792_3	0.82	0.48	1
100087540	0.68	0.42	0
100087595	0.43	0.32	0
100087598	0.44	0.45	0
100087600	0.61	0.50	0
100087601	0.46	0.36	0
100087643	0.52	0.22	0
100087669	0.50	0.51	1
100087776	0.53	0.47	0
100087777	0.31	0.15	0
100087890	0.45	0.38	1
100088016	0.55	0.31	0
100088063	0.34	0.10	0

Table K.32. Item Statistics—Algebra I*n*-Count: 1,040

UIN	<i>p</i> -Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
100075693	0.51	0.37	0
100075695	0.39	0.13	0
100075727	0.54	0.42	0
100075767	0.71	0.45	0
100075795	0.56	0.56	0
100075820	0.50	0.45	0
100076201	0.17	0.33	0
100076580	0.55	0.34	0
100076591	0.32	0.20	0
100076595	0.68	0.45	0
100076613	0.54	0.42	0
100076622_1	0.24	0.60	1
100076622_2	0.49	0.39	1
100076622_3	0.17	0.49	1
100076877	0.79	0.41	0
100076890	0.66	0.36	0
100076896	0.59	0.42	0

UIN	<i>p</i> -Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
100082483	0.51	0.43	0
100082750	0.59	0.44	0
100082857	0.63	0.26	0
100083130	0.60	0.36	0
100087438	0.38	0.34	0
100087439	0.52	0.44	0
100087449	0.47	0.39	0
100087487	0.47	0.30	0
100087501	0.37	0.33	0
100087512	0.42	0.29	0
100087524	0.40	0.25	0
100088035	0.36	0.26	0
100088130	0.46	0.08	0
100088298	0.50	0.24	0
100088310	0.43	0.41	0
100088321	0.53	0.30	0
100088322	0.88	0.24	0
100088352	0.93	0.29	0
100088734	0.68	0.48	0
100088748	0.57	0.25	0
100088759	0.53	0.25	0
100088848	0.49	0.30	0
100088876	0.53	0.12	0
100088922	0.55	0.53	0
100088951	0.26	0.12	0
100088952	0.51	0.06	0

Table K.33. Item Statistics for Biology*n*-Count: 319

UIN	<i>P</i> -Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
100075704	0.25	0.24	0
100075705	0.57	0.38	0
100075747	0.62	0.10	0
100075750	0.55	0.48	0
100075790	0.57	0.30	0
100075865	0.37	0.28	0
100075878	0.83	0.40	0
100075897	0.50	0.19	0
100075983	0.56	0.44	1
100075984	0.55	0.41	1
100075985	0.47	0.53	1
100075986	0.44	0.55	1
100075987	0.63	0.54	2
100075988	0.20	0.46	5
100075989	0.38	0.48	2
100075990	0.95	0.33	1
100075991	0.95	0.32	1
100075992	0.36	0.45	3
100076148	0.78	0.40	0
100076216	0.67	0.42	0

UIN	P-Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
100076221	0.49	0.40	0
100076231	0.48	0.25	0
100076240	0.42	0.27	0
100076321	0.36	0.15	1
100076325	0.63	0.42	0
100076327	0.40	0.24	0
100076328	0.54	0.24	0
100076452	0.37	0.38	0
100076457	0.49	0.07	0
100076459	0.39	0.17	0
100076461	0.84	0.36	0
100076465	0.72	0.45	0
100076491	0.41	0.13	0
100076631	0.50	0.29	0
100076668	0.45	0.35	0
100076690	0.55	0.34	0
100076695	0.70	0.48	0
100076696	0.76	0.44	0
100076712	0.48	0.37	0
100076772	0.54	0.49	0
100076773	0.34	0.09	1
100076828	0.33	-0.01	0
100076837	0.59	0.42	0
100076840	0.63	0.38	0
100076848	0.56	0.37	0

Table K.34. Item Statistics—English I

n-Count: 14

UIN	P-Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
100082464	0.07	-0.37	0
100082470	0.43	0.70	0
100082474	0.64	0.44	0
100082493	0.71	0.56	0
100082632	0.79	0.47	0
100082634	0.57	0.16	0
100082698	0.36	0.28	0
100082704	0.86	0.28	0
100082817	0.57	-0.02	0
100082829	0.36	0.25	0
100082839	0.36	0.57	0
100082852	0.36	0.45	0
100082882	0.57	0.05	0
100082883	0.14	0.44	0
100083104	0.86	0.48	0
100083124	0.07	0.01	0
100083127	0.14	-0.16	0
100083128	0.71	0.59	0
100083132	0.50	-0.28	0
100083147	0.64	0.47	0
100083149	0.93	0.30	0

UIN	P-Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
100083372	0.86	0.25	0
100083379	0.57	0.28	0
100083835	0.50	0.22	0
100083837	0.50	0.20	0
100083842	0.14	0.41	0
100083843	0.29	-0.17	0
100083844	0.50	0.09	0
100083847	0.21	0.56	0
100084239	0.93	0.25	0
100084240	0.79	0.56	0
100084241	0.93	0.12	0
100084246	0.71	0.54	0
100084250	0.36	0.70	0
100084251	0.43	0.09	0
100085793_1	0.59	0.56	0
100085793_2	0.61	0.54	0
100085793_3	0.82	0.32	0

Table K.35. Item Statistics—Algebra II

n-Count: 19

UIN	P-Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
100075798	0.72	0.24	0
100076663	0.65	0.14	0
100080439	0.28	0.51	0
100080578	0.34	0.04	0
100080728	0.34	0.54	0
100080887	0.59	0.38	0
100081454	0.55	0.27	0
100081543	0.41	0.11	0
100081565	0.14	0.44	0
100081568	0.41	0.51	0
100081580	0.86	0.28	0
100082090	0.34	0.12	0
100082102	0.59	0.50	0
100082279	0.45	0.32	0
100082457	0.38	0.18	0
100082628	0.28	0.24	0
100082716	0.31	0.37	0
100082740	0.41	0.39	0
100082837	0.86	0.13	0
100082846	0.34	0.29	0
100083020	0.52	0.27	0
100083034	0.45	0.05	0
100083157	0.34	0.11	0
100083166	0.41	0.31	0
100083289	0.55	0.45	0
100083479	0.65	0.11	0
100083745	0.65	0.32	0
100087360	0.45	0.20	0
100087550	0.59	0.33	0
100088868	0.45	-0.06	0
100088929	0.28	0.29	0

UIN	P-Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
100101425	0.41	0.20	0
100101433	0.28	0.29	0
100101435	0.41	0.36	0
100101558	0.34	0.53	0
100101788	0.34	0.11	0
100101804	0.34	0.05	0
100101840	0.24	0.55	0
100102377	0.14	0.28	0
100102541	0.24	0.09	0

Table K.36. Item Statistics—Geometry

n-Count: 39

UIN	P-Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
100080551	0.46	0.45	0
100080557	0.18	0.29	0
100080616	0.31	0.32	0
100080761	0.28	0.15	0
100080763	0.82	0.50	0
100080772	0.51	0.38	0
100081010	0.44	0.28	0
100081014	0.44	0.42	0
100081223	0.46	0.21	0
100081284	0.61	0.38	0
100081339	0.28	0.65	0
100081489	0.67	0.37	0
100081544	0.59	0.58	0
100081607	0.46	0.10	0
100081799	0.51	0.29	0
100081861	0.72	0.37	0
100082043	0.74	0.41	0
100082182	0.49	0.64	0
100082189	0.59	0.50	0
100082245	0.49	0.68	0
100082258	0.51	0.42	0
100082309	0.23	0.26	0
100082330	0.33	0.53	0
100082335	0.61	0.48	0
100082345	0.56	0.39	0
100082347	0.41	0.33	0
100082348	0.46	0.02	0
100082351	0.33	-0.10	0
100082358	0.72	0.22	0
100082365	0.61	0.07	0
100082366	0.49	0.46	0
100082382	0.38	0.10	0
100083493	0.10	-0.38	3
100083569	0.61	0.30	0
100101334	0.54	0.43	0
100101578	0.15	0.37	0
100101622	0.69	0.40	0
100101728	0.51	0.42	0
100101730	0.54	0.53	0

UIN	P-Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
100101959	0.13	0.02	0

Table K.37. RSS Conversions—English II

Raw Score	Scale Score	CSEM
0	105	28
1	124	16
2	135	11
3	142	9
4	146	8
5	150	7
6	153	7
7	156	6
8	159	6
9	161	6
10	163	6
11	165	6
12	167	6
13	169	6
14	172	6
15	174	6
16	176	6
17	178	6
18	179	6
19	182	6
20	183	5
21	185	5
22	187	5
23	189	5
24	191	5
25	193	6
26	195	6
27	197	6
28	200	6
29	201	6
30	203	6
31	205	6
32	208	6
33	210	6
34	212	6
35	215	6
36	218	7
37	221	7
38	225	7

Appendix K: Technical Information from Summer 2017 Administration

Raw Score	Scale Score	CSEM
39	227	8
40	232	8
41	236	9
42	242	10
43	250	12
44	250	16
45	250	29

Table K.38. RSS Conversions—Algebra I

Raw Score	Scale Score	CSEM
0	100	40
1	107	22
2	124	16
3	134	14
4	142	12
5	148	11
6	153	10
7	158	10
8	162	9
9	166	9
10	169	8
11	172	8
12	175	8
13	178	8
14	181	7
15	183	7
16	186	7
17	188	7
18	190	7
19	193	7
20	195	7
21	197	7
22	200	7
23	201	7
24	203	7
25	205	7
26	207	6
27	209	6
28	211	6
29	213	6
30	215	6
31	217	6
32	219	6

Raw Score	Scale Score	CSEM
33	221	7
34	223	7
35	225	7
36	227	7
37	229	7
38	231	7
39	234	7
40	236	8
41	239	8
42	242	8
43	245	9
44	249	9
45	250	10
46	250	11
47	250	13
48	250	16
49	250	22
50	250	39

Table K.39. RSS Conversions—Biology

Raw Score	Scale Score	CSEM
0	100	36
1	100	20
2	114	15
3	124	13
4	131	11
5	137	10
6	142	9
7	146	9
8	150	8
9	153	8
10	156	8
11	159	7
12	162	7
13	164	7
14	167	7
15	169	7
16	171	6
17	173	6
18	175	6
19	177	6
20	179	6
21	180	6

Appendix K: Technical Information from Summer 2017 Administration

Raw Score	Scale Score	CSEM
22	182	6
23	184	6
24	185	6
25	187	6
26	189	6
27	190	6
28	192	6
29	194	6
30	195	6
31	197	6
32	198	6
33	200	6
34	202	6
35	203	6
36	205	6
37	207	6
38	209	6
39	210	6
40	212	6
41	214	6
42	216	6
43	218	7
44	221	7
45	225	7
46	226	7
47	229	8
48	232	8
49	235	9
50	239	9
51	244	10
52	250	12
53	250	14
54	250	20
55	250	36

Table K.40. RSS Conversions—English I

Raw Score	Scale Score	CSEM
0	100	32
1	117	18
2	129	13
3	137	10
4	142	9
5	147	8
6	150	8
7	154	7
8	157	7
9	159	7
10	162	7
11	164	7
12	167	6
13	169	6
14	171	6
15	174	6
16	176	6
17	178	6
18	180	6
19	182	6
20	184	6
21	186	6
22	189	6
23	191	6
24	193	6
25	195	6
26	197	6
27	200	6
28	201	6
29	204	6
30	206	6
31	208	7
32	211	7
33	213	7
34	216	7
35	219	7
36	222	7
37	225	8
38	228	8
39	232	8
40	237	9

Appendix K: Technical Information from Summer 2017 Administration

Raw Score	Scale Score	CSEM
41	242	10
42	248	11
43	250	13
44	250	18
45	250	32

Table K.41. RSS Conversions—Algebra II

Raw Score	Scale Score	CSEM
0	100	43
1	104	24
2	121	17
3	131	14
4	139	13
5	146	12
6	151	11
7	156	10
8	160	10
9	164	9
10	168	9
11	171	9
12	174	9
13	177	8
14	180	8
15	183	8
16	186	8
17	189	8
18	192	8
19	195	8
20	197	8
21	200	8
22	203	8
23	206	8
24	208	8
25	211	8
26	214	8
27	217	8
28	220	9
29	225	9
30	227	9
31	231	9
32	235	10
33	239	10
34	243	11

Appendix K: Technical Information from Summer 2017 Administration

Raw Score	Scale Score	CSEM
35	249	12
36	250	13
37	250	14
38	250	17
39	250	24
40	250	43

Table K.42. RSS Conversions—Geometry

Raw Score	Scale Score	CSEM
0	100	36
1	118	20
2	132	15
3	141	12
4	148	11
5	154	10
6	158	9
7	162	9
8	166	8
9	169	8
10	173	8
11	176	8
12	178	7
13	181	7
14	184	7
15	186	7
16	189	7
17	191	7
18	194	7
19	196	7
20	200	7
21	201	7
22	203	7
23	205	7
24	208	7
25	210	7
26	213	7
27	216	7
28	218	7
29	221	8
30	225	8
31	227	8
32	231	8
33	235	9

Raw Score	Scale Score	CSEM
34	239	9
35	243	10
36	249	11
37	250	12
38	250	15
39	250	20
40	250	36

Table K.43. Scale Score Descriptive Statistics by Demographic Group—Gender

Content Area	Gender	n-Count	Min.	Max.	Mean	SD
English II	Female	183	150	232	195.59	16.55
	Male	215	150	232	195.49	15.27
Algebra I	Female	525	148	250	202.23	20.11
	Male	515	142	250	200.91	18.60
Biology	Female	150	146	232	191.21	18.27
	Male	168	131	239	192.49	17.95
English I	Female	9	--	--	--	--
	Male	5	--	--	--	--
Algebra II	Female	16	168	214	187.81	11.61
	Male	13	168	250	193.08	26.63
Geometry	Female	20	169	231	192.00	18.58
	Male	19	158	239	200.26	20.46

Table K.44. Scale Score Descriptive Statistics by Demographic Group—Ethnicity

Content Area	Ethnicity	n-Count	Min.	Max.	Mean	SD
English II	American Indian/ Alaskan Native	1	--	--	--	--
	Asian	11	179	212	195.18	12.40
	Black (not Hispanic)	156	150	232	192.53	16.90
	Hispanic	31	165	232	194.55	15.15
	Multi-racial	13	172	221	194.15	15.69
	White (not Hispanic)	175	165	227	199.27	14.12
Algebra I	American Indian/ Alaskan Native	4	--	--	--	--
	Asian	17	158	234	199.18	21.05
	Black (not Hispanic)	256	142	249	192.07	18.91
	Hispanic	79	158	239	195.89	16.25
	Multi-racial	31	172	236	194.84	17.46
	Pacific Islander	2				
White (not Hispanic)	634	166	250	206.91	18.06	
Biology	American Indian/ Alaskan Native	--	--	--	--	--
	Asian	4	--	--	--	--

Content Area	Ethnicity	n-Count	Min.	Max.	Mean	SD
Biology	Black (not Hispanic)	99	131	216	182.90	16.92
	Hispanic	21	167	235	189.71	15.95
	Multi-racial	17	162	218	195.12	15.40
	Pacific Islander	1				
	White (not Hispanic)	166	156	239	198.58	16.50
English I	American Indian/ Alaskan Native	--	--	--	--	--
	Asian	--	--	--	--	--
	Pacific Islander	--	--	--	--	--
	Black (not Hispanic)	1	--	--	--	--
	Hispanic	3	--	--	--	--
	Multi-racial	2	--	--	--	--
Algebra II	White (not Hispanic)	8	--	--	--	--
	American Indian/ Alaskan Native	--	--	--	--	--
	Asian	--	--	--	--	--
	Black (not Hispanic)	1	--	--	--	--
	Hispanic	1	--	--	--	--
	Multi-racial	3	--	--	--	--
	Pacific Islander	--	--	--	--	--
Geometry	White (not Hispanic)	23	168	243	189.52	17.38
	American Indian/ Alaskan Native	1	--	--	--	--
	Asian	1	--	--	--	--
	Black (not Hispanic)	15	169	221	191.93	16.91
	Hispanic	9	--	--	--	--
	Multi-racial	--	--	--	--	--
Geometry	White (not Hispanic)	13	176	239	206.85	22.14

Table K.45. Scale Score Descriptive Statistics by Demographic Group—Migrant Status

Content Area	Migrant	n-Count	Min.	Max.	Mean	SD
English II	No	398	150	232	195.54	15.85
	Yes	--	--	--	--	--
Algebra I	No	1,039	142	250	201.59	19.38
	Yes	1	--	--	--	--
Biology	No	318	131	239	191.89	18.09
	Yes	--	--	--	--	--
English I	No	14	174	222	195.00	15.07
	Yes	--	--	--	--	--
Algebra II	No	29	168	250	190.17	19.58
	Yes	--	--	--	--	--
Geometry	No	39	158	239	196.03	19.71
	Yes	--	--	--	--	--

Table K.46. Scale Score Descriptive Statistics by Demographic Group—Free and Reduced Lunch

Content Area	FRL	<i>n</i> -Count	Min.	Max.	Mean	SD
English II	No	161	150	232	198.83	15.84
	Yes	237	150	232	193.30	15.50
Algebra I	No	536	158	250	206.50	18.08
	Yes	504	142	250	196.35	19.37
Biology	No	147	150	235	196.50	17.01
	Yes	171	131	239	187.93	18.09
English I	No	7	--	--	--	--
	Yes	7	--	--	--	--
Algebra II	No	24	168	250	189.38	20.99
	Yes	5	--	--	--	--
Geometry	No	21	169	239	201.76	20.43
	Yes	18	158	221	189.33	17.01

Table K.47. Scale Score Descriptive Statistics by Demographic Group—Limited English Proficient

Content Area	LEP	<i>n</i> -Count	Min.	Max.	Mean	SD
English II	No	383	150	232	195.59	15.82
	Yes	15	167	232	194.20	17.19
Algebra I	No	996	148	250	202.16	19.33
	Yes	44	142	227	188.43	15.53
Biology	No	311	131	239	192.09	18.14
	Yes	7	--	--	--	--
English I	No	14	174	222	195.00	15.07
	Yes	--	--	--	--	--
Algebra II	No	29	168	250	190.17	19.58
	Yes	--	--	--	--	--
Geometry	No	33	169	239	199.15	19.28
	Yes	6	--	--	--	--

Table K.48. Scale Score Descriptive Statistics by Demographic Group—Title I

Content Area	Title I	<i>n</i> -Count	Min.	Max.	Mean	SD
English II	No	260	150	227	193.06	16.01
	Yes	138	167	232	200.20	14.50
Algebra I	No	776	148	250	204.49	19.09
	Yes	264	142	236	193.01	17.64
Biology	No	231	131	239	192.93	19.50
	Yes	87	156	221	189.13	13.34
English I	No	8	--	--	--	--
	Yes	6	--	--	--	--

Content Area	Title I	<i>n</i> -Count	Min.	Max.	Mean	SD
Algebra II	No	14	168	250	193.71	26.69
	Yes	15	174	211	186.87	9.01
Geometry	No	22	169	239	198.82	21.29
	Yes	17	158	221	192.41	17.42

Table K.49. Scale Score Descriptive Statistics by Demographic Group—Students with IEPs

Content Area	IEP	<i>n</i> -Count	Min.	Max.	Mean	SD
English II	No	362	150	232	195.88	15.93
	Yes	36	150	221	192.06	14.83
Algebra I	No	983	142	250	201.98	19.30
	Yes	57	158	250	194.68	19.54
Biology	No	289	131	239	192.69	18.08
	Yes	29	153	212	183.97	16.40
English I	No	14	174	222	195.00	15.07
	Yes	--	--	--	--	--
Algebra II	No	29	168	250	190.17	19.58
	Yes	--	--	--	--	--
Geometry	No	39	158	239	196.03	19.71
	Yes	--	--	--	--	--

Table K.50. Scale Score Descriptive Statistics by Demographic Group—Students with Accommodations

Content Area	Accom.	<i>n</i> -Count	Min.	Max.	Mean	SD
English II	No	397	150	232	195.80	15.63
	Yes	10	150	212	184.60	19.25
Algebra I	No	1,024	142	250	201.63	19.40
	Yes	16	158	229	198.25	18.21
Biology	No	311	131	239	192.26	18.03
	Yes	9	--	--	--	--
English I	No	14	174	222	195.00	15.07
	Yes	--	--	--	--	--
Algebra II	No	29	168	250	190.17	19.58
	Yes	--	--	--	--	--
Geometry	No	39	158	239	196.03	19.71
	Yes	--	--	--	--	--

Table K.51. Achievement-Level Distributions—Gender

Content Area	Gender	Achievement Level	Freq.	%
English II	Female	Below Basic	30	16.39
		Basic	71	38.80
		Proficient	71	38.80
		Advanced	11	6.01
		Proficient + Advanced	82	44.81
		Total	183	100.00
	Male	Below Basic	34	15.81
		Basic	89	41.40
		Proficient	86	40.00
		Advanced	--	--
		Proficient + Advanced	92	42.79
Total		215	100.00	
Algebra I	Female	Below Basic	133	25.33
		Basic	104	19.81
		Proficient	216	41.14
		Advanced	72	13.71
		Proficient + Advanced	288	54.86
		Total	525	100.00
	Male	Below Basic	126	24.47
		Basic	121	23.50
		Proficient	209	40.58
		Advanced	59	11.46
		Proficient + Advanced	268	52.04
Total		515	100.00	
Biology	Female	Below Basic	29	19.33
		Basic	69	46.00
		Proficient	48	32.00
		Advanced	--	--
		Proficient + Advanced	52	34.67
		Total	150	100.00
	Male	Below Basic	26	15.48
		Basic	88	52.38
		Proficient	43	25.60
		Advanced	11	6.55
		Proficient + Advanced	54	32.14
Total		168	100.00	
English I	Female	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	9	100.00
	Male	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
Total		5	100.00	

Content Area	Gender	Achievement Level	Freq.	%
Algebra II	Female	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
	Total	16	100.00	
	Male	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
Proficient + Advanced		--	--	
Total	13	100.00		
Geometry	Female	Below Basic	10	50.00
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
	Total	20	100.00	
	Male	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
Proficient + Advanced		10	52.63	
Total	19	100.00		

Table K.52. Achievement-Level Distribution—Ethnicity

Content Area	Ethnicity	Achievement Level	Freq.	%
English II	American Indian/ Alaskan Native	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
	Total	1	100.00	
	Asian	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
	Total	11	100.00	
	Black (not Hispanic)	Below Basic	34	21.79
		Basic	64	41.03
		Proficient	54	34.62
		Advanced	--	--
		Proficient + Advanced	58	37.18
	Total	156	100.00	
	Hispanic	Below Basic	--	--
		Basic	16	51.61
Proficient		--	--	
Advanced		--	--	
Proficient + Advanced		11	35.48	
Total	31	100.00		

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Content Area	Ethnicity	Achievement Level	Freq.	%
English II	Multi-racial	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	13	100.00
	White (not Hispanic)	Below Basic	16	9.14
		Basic	67	38.29
		Proficient	81	46.29
		Advanced	11	6.29
		Proficient + Advanced	92	52.57
Total		175	100.00	
Algebra I	American Indian/ Alaskan Native	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	4	100.00
	Asian	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	17	100.00
	Black (not Hispanic)	Below Basic	109	42.58
		Basic	57	22.27
		Proficient	78	30.47
		Advanced	12	4.69
		Proficient + Advanced	90	35.16
		Total	256	100.00
	Hispanic	Below Basic	25	31.65
		Basic	25	31.65
		Proficient	24	30.38
		Advanced	--	--
		Proficient + Advanced	29	36.71
		Total	79	100.00
	Multi-racial	Below Basic	14	45.16
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
Proficient + Advanced		11	35.48	
Total		31	100.00	
Pacific Islander	Below Basic	--	--	
	Basic	--	--	
	Proficient	--	--	
	Advanced	--	--	
	Proficient + Advanced	--	--	
	Total	2	100.00	
White (not Hispanic)	Below Basic	95	14.98	
	Basic	130	20.50	
	Proficient	301	47.48	
	Advanced	108	17.03	
	Proficient + Advanced	409	64.51	
	Total			

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Content Area	Ethnicity	Achievement Level	Freq.	%
Algebra I	White (not Hispanic)	Total	634	100.00
Biology	Asian	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	4	100.00
	Black (not Hispanic)	Below Basic	31	31.31
		Basic	51	51.52
		Proficient	17	17.17
		Advanced	--	--
		Proficient + Advanced	17	17.17
		Total	99	100.00
	Hispanic	Below Basic	--	--
		Basic	12	57.14
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	21	100.00
	Multi-racial	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
Advanced		--	--	
Proficient + Advanced		--	--	
Total		17	100.00	
Pacific Islander	Below Basic	--	--	
	Basic	--	--	
	Proficient	--	--	
	Advanced	--	--	
	Proficient + Advanced	--	--	
	Total	1	100.00	
White (not Hispanic)	Below Basic	13	7.83	
	Basic	76	45.78	
	Proficient	63	37.95	
	Advanced	14	8.43	
	Proficient + Advanced	77	46.39	
	Total	166	100.00	
English I	Black (not Hispanic)	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	1	100.00
	Hispanic	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	3	100.00
Multi-racial	Below Basic	--	--	
	Basic	--	--	
	Proficient	--	--	

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Content Area	Ethnicity	Achievement Level	Freq.	%
English I	Multi-racial	Advanced	--	--
		Proficient + Advanced	--	--
		Total	2	100.00
	White (not Hispanic)	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
Advanced		--	--	
Proficient + Advanced		--	--	
Total	8	100.00		
Algebra II	Black (not Hispanic)	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	1	100.00
	Hispanic	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
	Total	1	100.00	
	Multi-racial	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
Proficient + Advanced		--	--	
Total	3	100.00		
White (not Hispanic)	Below Basic	11	47.83	
	Basic	--	--	
	Proficient	--	--	
	Advanced	--	--	
	Proficient + Advanced	--	--	
	Total	23	100.00	
Geometry	American Indian/ Alaskan Native	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	1	100.00
	Asian	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
	Total	1	100.00	
Black (not Hispanic)	Below Basic	--	--	
	Basic	--	--	
	Proficient	--	--	
	Advanced	--	--	
	Proficient + Advanced	--	--	
	Total	15	100.00	

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Content Area	Ethnicity	Achievement Level	Freq.	%
Geometry	Hispanic	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	9	100.00
	White (not Hispanic)	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	13	100.00
	Total		78	100.00
	Multi-racial	Below Basic	--	--
		Basic	--	--
		Proficient	16	55.17
		Advanced	--	--
		Proficient + Advanced	19	65.52
		Total	29	100.00
	Pacific Islander	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	2	100.00
	White (not Hispanic)	Below Basic	30	5.69
		Basic	125	23.72
Proficient		239	45.35	
Advanced		133	25.24	
Proficient + Advanced		372	70.59	
Total		527	100.00	
Proficient + Advanced Total		-- 1	-- 100.00	
Black (not Hispanic)	Below Basic	--	--	
	Basic	--	--	
	Proficient	--	--	
	Advanced	--	--	
	Proficient + Advanced	--	--	
	Total	3	100.00	
Hispanic	Below Basic	--	--	
	Basic	--	--	
	Proficient	--	--	
	Advanced	--	--	
	Proficient + Advanced	--	--	
	Total	4	100.00	
Multi-racial	Below Basic	--	--	
	Basic	--	--	
	Proficient	--	--	
	Advanced	--	--	
	Proficient + Advanced	--	--	
	Total	4	100.00	

Table K.53. Achievement-Level Distributions—Migrant

Content Area	Migrant	Achievement Level	Freq.	%
English II	No	Below Basic	64	16.08
		Basic	160	40.20
		Proficient	157	39.45
		Advanced	17	4.27
		Proficient + Advanced	174	43.72
		Total	398	100.00
	Yes	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	--	--
Algebra I	No	Below Basic	258	24.83
		Basic	225	21.66
		Proficient	425	40.90
		Advanced	131	12.61
		Proficient + Advanced	556	53.51
		Total	1,039	100.00
	Yes	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	1	100.00
Biology	No	Below Basic	55	17.30
		Basic	157	49.37
		Proficient	91	28.62
		Advanced	15	4.72
		Proficient + Advanced	106	33.33
		Total	318	100.00
	Yes	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	--	--
English I	No	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	14	100.00
	Yes	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	--	--
Algebra II	No	Below Basic	14	48.28
		Basic	10	34.48
		Proficient	--	--

Content Area	Migrant	Achievement Level	Freq.	%
Algebra II	No	Advanced	--	--
		Proficient + Advanced	--	--
		Total	29	100.00
	Yes	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
Advanced		--	--	
Proficient + Advanced		--	--	
Geometry	No	Below Basic	16	41.03
		Basic	--	--
		Proficient	13	33.33
		Advanced	--	--
		Proficient + Advanced	17	43.59
	Yes	Total	39	100.00
		Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	--	--

Table K.54. Achievement-Level Distributions—Free and Reduced Lunch

Content Area	FRL	Achievement Level	Freq.	%
English II	No	Below Basic	21	13.04
		Basic	54	33.54
		Proficient	75	46.58
		Advanced	11	6.83
		Proficient + Advanced	86	53.42
	Yes	Total	161	100.00
		Below Basic	43	18.14
		Basic	106	44.73
		Proficient	82	34.60
		Advanced	--	--
Algebra I	No	Proficient + Advanced	88	37.13
		Total	237	100.00
		Below Basic	86	16.04
		Basic	102	19.03
		Proficient	258	48.13
	Yes	Advanced	90	16.79
		Proficient + Advanced	348	64.93
		Total	536	100.00
		Below Basic	173	34.33
		Basic	123	24.40
Biology	No	Proficient	167	33.13
		Advanced	41	8.13
		Proficient + Advanced	208	41.27
		Total	504	100.00
		Below Basic	12	8.16
		Basic	78	53.06
		Proficient	43	29.25
		Advanced	14	9.52
		Total	147	100.00

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Content Area	FRL	Achievement Level	Freq.	%
Biology	No	Proficient + Advanced	57	38.78
		Total	147	100.00
	Yes	Below Basic	43	25.15
		Basic	79	46.20
		Proficient	48	28.07
		Advanced	--	--
Proficient + Advanced		49	28.65	
Total	171	100.00		
English I	No	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
	Total	7	100.00	
Yes	Below Basic	--	--	
	Basic	--	--	
	Proficient	--	--	
	Advanced	--	--	
	Proficient + Advanced	--	--	
	Total	7	100.00	
Algebra II	No	Below Basic	13	54.17
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
	Total	24	100.00	
Yes	Below Basic	--	--	
	Basic	--	--	
	Proficient	--	--	
	Advanced	--	--	
	Proficient + Advanced	--	--	
	Total	5	100.00	
Geometry	No	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	11	52.38
	Total	21	100.00	
Yes	Below Basic	11	61.11	
	Basic	--	--	
	Proficient	--	--	
	Advanced	--	--	
	Proficient + Advanced	--	--	
	Total	18	100.00	

Table K.55. Achievement-Level Distributions—Limited English Proficient

Content Area	LEP	Achievement Level	Freq.	%
English II	No	Below Basic	60	15.67
		Basic	156	40.73
		Proficient	151	39.43
		Advanced	16	4.18
		Proficient + Advanced	167	43.60
		Total	383	100.00
	Yes	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	15	100.00
Algebra I	No	Below Basic	236	23.69
		Basic	212	21.29
		Proficient	419	42.07
		Advanced	129	12.95
		Proficient + Advanced	548	55.02
		Total	996	100.00
	Yes	Below Basic	23	52.27
		Basic	13	29.55
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	44	100.00
Biology	No	Below Basic	52	16.72
		Basic	154	49.52
		Proficient	90	28.94
		Advanced	15	4.82
		Proficient + Advanced	105	33.76
		Total	311	100.00
	Yes	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	7	100.00
English I	No	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	14	100.00
	Yes	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	--	--
Algebra II	No	Below Basic	14	48.28
		Basic	10	34.48

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Content Area	LEP	Achievement Level	Freq.	%
Algebra II	No	Proficient	29	100.00
		Advanced		
		Proficient + Advanced		
		Total		
	Yes	Below Basic	--	--
		Basic	--	--
Proficient		--	--	
Advanced		--	--	
Proficient + Advanced		--	--	
Total		--	--	
Geometry	No	Below Basic	11	33.33
		Basic	--	--
		Proficient	13	39.39
		Advanced	--	--
		Proficient + Advanced	17	51.52
	Total	33	100.00	
	Yes	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
Proficient + Advanced		--	--	
Total	6	100.00		

Table K.56. Achievement-Level Distributions—Title I

Content Area	Title I	Achievement Level	Freq.	%
English II	No	Below Basic	53	20.38
		Basic	105	40.38
		Proficient	96	36.92
		Advanced	--	--
		Proficient + Advanced	102	39.23
	Total	260	100.00	
	Yes	Below Basic	11	7.97
		Basic	55	39.86
		Proficient	61	44.20
		Advanced	11	7.97
Proficient + Advanced		72	52.17	
Total	138	100.00		
Algebra I	No	Below Basic	150	19.33
		Basic	158	20.36
		Proficient	351	45.23
		Advanced	117	15.08
		Proficient + Advanced	468	60.31
	Total	776	100.00	
	Yes	Below Basic	109	41.29
		Basic	67	25.38
		Proficient	74	28.03
		Advanced	14	5.30
Proficient + Advanced		88	33.33	
Total	264	100.00		
Biology	No	Below Basic	40	17.32
		Basic	102	44.16

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Content Area	Title I	Achievement Level	Freq.	%
Biology	No	Proficient	74	32.03
		Advanced	15	6.49
		Proficient + Advanced	89	38.53
		Total	231	100.00
	Yes	Below Basic	15	17.24
		Basic	55	63.22
		Proficient	17	19.54
		Advanced	--	--
		Proficient + Advanced	17	19.54
		Total	87	100.00
English I	No	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
	Total	8	100.00	
	Yes	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
Proficient + Advanced		--	--	
Total	6	100.00		
Algebra II	No	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
	Total	14	100.00	
	Yes	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
Proficient + Advanced		--	--	
Total	15	100.00		
Geometry	No	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
	Total	22	100.00	
	Yes	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
Proficient + Advanced		--	--	
Total	17	100.00		

Table K.57. Achievement-Level Distributions—Individualized Education Program

Content Area	IEP	Achievement Level	Freq.	%
English II	No	Below Basic	58	16.02
		Basic	143	39.50
		Proficient	144	39.78
		Advanced	17	4.70
		Proficient + Advanced	161	44.48
		Total	362	100.00
	Yes	Below Basic	--	--
		Basic	17	47.22
		Proficient	13	36.11
		Advanced	--	--
		Proficient + Advanced	13	36.11
		Total	36	100.00
Algebra I	No	Below Basic	238	24.21
		Basic	213	21.67
		Proficient	406	41.30
		Advanced	126	12.82
		Proficient + Advanced	532	54.12
		Total	983	100.00
	Yes	Below Basic	21	36.84
		Basic	12	21.05
		Proficient	19	33.33
		Advanced	--	--
		Proficient + Advanced	24	42.11
		Total	57	100.00
Biology	No	Below Basic	47	16.26
		Basic	142	49.13
		Proficient	85	29.41
		Advanced	15	5.19
		Proficient + Advanced	100	34.60
		Total	289	100.00
	Yes	Below Basic	--	--
		Basic	15	51.72
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	29	100.00
English I	No	Below Basic		
		Basic		
		Proficient		
		Advanced		
		Proficient + Advanced		
		Total	14	100.00
	Yes	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	--	--
Algebra II	No	Below Basic	14	48.28
		Basic	10	34.48
		Proficient	--	--

Content Area	IEP	Achievement Level	Freq.	%
Algebra II	No	Advanced	--	--
		Proficient + Advanced	--	--
		Total	29	100.00
	Yes	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
Advanced		--	--	
Proficient + Advanced		--	--	
Geometry	No	Below Basic	16	41.03
		Basic	--	--
		Proficient	13	33.33
		Advanced	--	--
		Proficient + Advanced	17	43.59
	Yes	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
Total			39	100.00

Table K.58. Achievement-Level Distributions—Accommodations

Content Area	Accom.	Achievement Level	Freq.	%
English II	No	Below Basic	61	15.37
		Basic	161	40.55
		Proficient	158	39.80
		Advanced	17	4.28
		Proficient + Advanced	175	44.08
	Yes	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
Algebra I	No	Below Basic	256	25.00
		Basic	219	21.39
		Proficient	420	41.02
		Advanced	129	12.60
		Proficient + Advanced	549	53.61
	Yes	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
Biology	No	Below Basic	16	100.00
		Basic	52	16.72
		Proficient	153	49.20
		Advanced	91	29.26

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Content Area	Accom.	Achievement Level	Freq.	%
Biology	No	Advanced	15	4.82
		Proficient + Advanced	106	34.08
		Total	311	100.00
	Yes	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
		Total	9	100.00
English I	No	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
	Total	14	100.00	
	Yes	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
Advanced		--	--	
Total	--	--		
Algebra II	No	Below Basic	14	48.28
		Basic	10	34.48
		Proficient	--	--
		Advanced	--	--
		Proficient + Advanced	--	--
	Total	29	100.00	
	Yes	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
Advanced		--	--	
Total	--	--		
Geometry	No	Below Basic	16	41.03
		Basic	--	--
		Proficient	13	33.33
		Advanced	--	--
		Proficient + Advanced	17	43.59
	Total	39	100.00	
	Yes	Below Basic	--	--
		Basic	--	--
		Proficient	--	--
Advanced		--	--	
Total	--	--		

Table K.59. Alpha Coefficients and SEMs—English II

Group	<i>n</i> -Count	Mean Raw Score	SD Raw Score	Effect Size	Reliability	SEM
All Students	407	25.87	7.43	--	0.83	3.05
Gender						
Female	188	25.95	7.69	0.02	0.84	3.12
Male	219	25.80	7.22	--	0.83	2.99
Ethnicity						
American Indian/Alaskan Native	1	--	--	--	--	--
Asian	10	25.30	6.18	--	--	--
Pacific Islander	0	--	--	--	--	--
Black (not Hispanic)	172	24.17	7.95	-0.40	0.83	3.27
Hispanic	29	26.28	6.71	--	--	--
White (not Hispanic)	187	27.34	6.79	--	0.82	2.87
Multi-racial	0	--	--	--	--	--
LEP						
No	392	25.90	7.42	--	0.83	3.05
Yes	15	25.07	7.90	--	--	--
IEP						
No	371	26.03	7.46	--	0.83	3.04
Yes	36	24.25	7.02	--	--	--
Migrant						
No	407	25.87	7.43	--	0.83	3.05
Yes	0	--	--	--	--	--
FRL						
No	170	27.32	7.30	--	0.84	2.92
Yes	237	24.84	7.36	-0.34	0.82	3.15
Title I						
No	269	24.77	7.63	--	0.83	3.13
Yes	138	28.03	6.54	0.50	0.80	2.90
Accommodations						
No	397	26.00	7.35	--	0.83	3.04
Yes	10	20.80	9.24	--	--	--

Table K.60. Alpha Coefficients and SEMs—Algebra I

Group	<i>n</i> -Count	Mean Raw Score	SD Raw Score	Effect Size	Reliability	SEM
All Students	1,040	23.68	8.86	--	0.85	3.43
Gender						
Female	526	24.00	9.19	0.07	0.86	3.41
Male	514	23.36	8.51	--	0.84	3.43
Ethnicity						

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Group	n-Count	Mean Raw Score	SD Raw Score	Effect Size	Reliability	SEM
American Indian/Alaskan Native	3	--	--	--	--	--
Asian	17	22.88	9.01	--	--	--
Pacific Islander	3	--	--	--	--	--
Black (not Hispanic)	266	19.21	8.13	-0.83	0.83	3.32
Hispanic	69	20.42	7.20	-0.77	0.77	3.43
White (not Hispanic)	653	25.96	8.52	--	0.84	3.43
Multi-racial	0	--	--	--	--	--
LEP						
No	996	23.95	8.86	--	0.85	3.42
Yes	44	17.70	6.46	--	--	--
IEP						
No	983	23.87	8.85	--	0.85	3.42
Yes	57	20.54	8.63	-0.38	0.84	3.40
Migrant						
No	1,039	23.69	8.86	--	0.85	3.43
Yes	1	--	--	--	--	--
FRL						
No	536	25.90	8.47	--	0.84	3.43
Yes	504	21.32	8.67	-0.53	0.85	3.41
Title I						
No	776	25.00	8.80	--	0.85	3.39
Yes	264	19.81	7.88	-0.66	0.81	3.48
Accommodations						
No	1,024	23.71	8.88	--	0.85	3.43
Yes	16	22.19	8.05	--	--	--

Table K.61. Alpha Coefficients and SEMs—Biology

Group	n-Count	Mean Raw Score	SD Raw Score	Effect Size	Reliability	SEM
All Students	320	28.05	9.79	--	0.86	3.64
Gender						
Female	151	27.81	9.97	-0.05	0.86	3.67
Male	169	28.26	9.66	--	0.86	3.65
Ethnicity						
American Indian/Alaskan Native	0	--	--	--	--	--
Asian	5	--	--	--	--	--
Pacific Islander	1	--	--	--	--	--
Black (not Hispanic)	111	23.14	8.94	-0.90	0.83	3.66
Hispanic	17	26.88	9.53	--	--	--
White (not Hispanic)	173	31.16	9.37	--	0.86	3.49
Multi-racial	0	--	--	--	--	--
LEP						

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Group		<i>n</i> -Count	Mean Raw Score	SD Raw Score	Effect Size	Reliability	SEM
	No	313	28.16	9.81	--	0.86	3.63
	Yes	7	--	--	--	--	--
IEP							
	No	291	28.46	9.79	--	0.86	3.67
	Yes	29	23.86	8.95	--	--	--
Migrant							
	No	320	28.05	9.79	--	0.86	3.64
	Yes	0	--	--	--	--	--
FRL							
	No	149	30.36	9.30	--	0.86	3.54
	Yes	171	26.03	9.79	-0.44	0.86	3.70
Title I							
	No	233	28.64	10.43	--	0.88	3.62
	Yes	87	26.45	7.65	-0.29	0.77	3.65
Accommodations							
	No	311	28.31	9.77	--	0.86	3.64
	Yes	9	--	--	--	--	--

Table K.62. Alpha Coefficients and SEMs—English I

Group		<i>n</i> -Count	Mean Raw Score	SD Raw Score	Effect Size	Reliability	SEM
All Students		14	24.79	6.75	--	--	--
Gender							
	Female	9	--	--	--	--	--
	Male	5	--	--	--	--	--
Ethnicity							
	American Indian/Alaskan Native	0	--	--	--	--	--
	Asian	0	--	--	--	--	--
	Pacific Islander	0	--	--	--	--	--
	Black (not Hispanic)	1	--	--	--	--	--
	Hispanic	2	--	--	--	--	--
	White (not Hispanic)	9	--	--	--	--	--
	Multi-racial	0	--	--	--	--	--
LEP							
	No	14	24.79	6.75	--	--	--
	Yes	0	--	--	--	--	--
IEP							
	No	14	24.79	6.75	--	--	--
	Yes	0	--	--	--	--	--
Migrant							
	No	14	24.79	6.75	--	--	--
	Yes	0	--	--	--	--	--

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Group	<i>n</i> -Count	Mean Raw Score	SD Raw Score	Effect Size	Reliability	SEM
FRL						
No	7	--	--	--	--	--
Yes	7	--	--	--	--	--
Title I						
No	8	--	--	--	--	--
Yes	6	--	--	--	--	--
Accommodations						
No	14	24.79	6.75	--	--	--
Yes	0	--	--	--	--	--

Table K.63. Alpha Coefficients and SEMs—Algebra II

Group	<i>n</i> -Count	Mean Raw Score	SD Raw Score	Effect Size	Reliability	SEM
All Students	29	17.38	6.38	--	--	--
Gender						
Female	17	16.35	4.17	--	--	--
Male	12	18.83	8.62	--	--	--
Ethnicity						
American Indian/Alaskan Native	0	--	--	--	--	--
Asian	0	--	--	--	--	--
Pacific Islander	0	--	--	--	--	--
Black (not Hispanic)	2	--	--	--	--	--
Hispanic	1	--	--	--	--	--
White (not Hispanic)	24	18.00	6.83	--	--	--
Multi-racial	0	--	--	--	--	--
LEP						
No	29	17.38	6.38	--	--	--
Yes	0	--	--	--	--	--
IEP						
No	29	17.38	6.38	--	--	--
Yes	0	--	--	--	--	--
Migrant						
No	29	17.38	6.38	--	--	--
Yes	0	--	--	--	--	--
FRL						
No	24	17.08	6.79	--	--	--
Yes	5	--	--	--	--	--
Title I						
No	14	18.50	8.63	--	--	--
Yes	15	16.33	3.13	--	--	--
Accommodations						

Group		<i>n</i> -Count	Mean Raw Score	SD Raw Score	Effect Size	Reliability	SEM
	No	29	17.38	6.38	--	--	--
	Yes	0	--	--	--	--	--

Table K.64. Alpha Coefficients and SEMs—Geometry

Group		<i>n</i> -Count	Mean Raw Score	SD Raw Score	Effect Size	Reliability	SEM
All Students		39	19.00	7.45	--	--	--
Gender							
	Female	20	17.45	7.19	--	--	--
	Male	19	20.63	7.55	--	--	--
Ethnicity							
	American Indian/Alaskan Native	1	--	--	--	--	--
	Asian	1	--	--	--	--	--
	Pacific Islander	0	--	--	--	--	--
	Black (not Hispanic)	15	17.53	6.64	--	--	--
	Hispanic	9	--	--	--	--	--
	White (not Hispanic)	13	22.92	8.26	--	--	--
	Multi-racial	0	--	--	--	--	--
LEP							
	No	33	20.18	7.33	--	--	--
	Yes	6	--	--	--	--	--
IEP							
	No	39	19.00	7.45	--	--	--
	Yes	0	--	--	--	--	--
Migrant							
	No	39	19.00	7.45	--	--	--
	Yes	0	--	--	--	--	--
FRL							
	No	21	21.10	7.67	--	--	--
	Yes	18	16.56	6.56	--	--	--
Title I							
	No	22	19.91	8.03	--	--	--
	Yes	17	17.82	6.67	--	--	--
Accommodations							
	No	39	19.00	7.45	--	--	--
	Yes	0	--	--	--	--	--