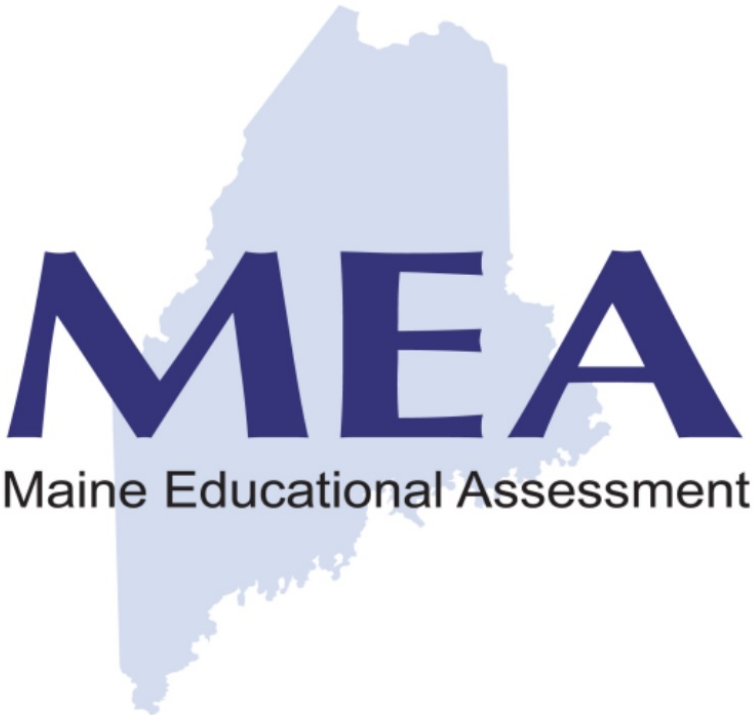

eMPowerME Assessment ELA/Literacy & Mathematics

2016–17 Technical Report

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CHAPTER 1 OVERVIEW OF MEA MATHEMATICS AND ENGLISH LANGUAGE ARTS/LITERACY

The Maine Educational Assessment (MEA) includes the eMPowerME assessments in mathematics and English language arts (ELA)/literacy administered to all students in grades 3 through 8 via standard administration and/or administration with accommodations. The tests were administered to approximately 78,000 students during March–April 2017. Third-year high school students were administered the SAT in April 2017.

eMPowerME is designed to be the measure of Maine's academic content standards in mathematics and ELA/literacy, the *2011 Maine Learning Results* (*MLR*s), and to identify the knowledge and skills essential to prepare Maine students for college and career readiness. These academic content standards express what students *should know* and *should be able to do* at various checkpoints during their education. They were developed in reference to the Common Core State Standards (CCSS) for mathematics and ELA.

1.1 PURPOSE OF THE ASSESSMENT SYSTEM

The purpose of Maine's Comprehensive Assessment System is to provide point-in-time information about the academic achievement and progress of Maine students. eMPowerME is one portion of this system and provides information for mathematics and ELA/literacy. Student results are reported according to academic achievement descriptors utilizing cut scores established in standard setting for each of four achievement levels: Well Below State Expectations, Below State Expectations, At State Expectations, and Above State Expectations. The results from this assessment and others provide educators and the public with information to guide future educational practices to meet the needs of students, while monitoring the continuous improvement efforts of schools, school administrative units (SAUs), and the state of Maine in achieving a world-class education system for all students.

1.2 ORGANIZATION OF THIS REPORT

This report includes data and analyses for the operational forms and content for the spring 2017 administration and for the spring 2017 Essay pilot. It begins with a description of the Maine content standards, which are described in sections 3.2.1 (reading), 3.3.1 (writing and language), and 3.5.1 (mathematics). (See Appendix A for the comprehensive set of content standards.) All operational and field-test items for eMPowerME spring 2017 were subjected to reviews by the Maine Department of Education (Maine DOE). A description of the item development process, along with a description of the alignment process and test development, is presented in complete detail in Chapter 3 –Test Design and Development. A detailed description of the administration processes is found in Chapter 4 – Test Administration, and a

discussion of the operational population as well as the research samples utilized in the analysis is found in Section 3.6 – Test Development Process. Chapter 5 of this report describes in detail the processes that were implemented to monitor the quality of the hand-scoring of student responses for short-answer and constructed-response items.

The spring 2017 eMPowerME scores for mathematics and ELA tests were based on a post-equating design. A complete description of the operational and field-test item analyses as well as the calibration/scaling and equating analyses is found in Chapter 6 – Classical Item Analysis and Chapter 7 – Item Response Theory Scaling and Equating. A summary of reliability and validity for different levels of analyses is found in Chapter 8 – Reliability and Chapter 9 – Validity.

CHAPTER 2 CURRENT YEAR UPDATES

In school year 2016–2017, the MEA was administered for the second time by Measured Progress for mathematics, reading, and writing and language using their eMPower product forms. The forms contained operational items from the previous year's administration and field-test items.

The Maine-owned Essay assessment that had been administered the previous year underwent major revisions to test designs and rubrics to prescribe specific modes of writing and Common Core State Standards for each grade level as follows:

- Grade 3, Informational (W2)
- Grade 4, Informational (W2)
- Grade 5, Opinion (W1)
- Grade 6, Argument (W1)
- Grade 7, Informational (W2)
- Grade 8, Argument (W1)

The paired passages used to support the writing prompts were changed from permissioned sources to commissioned. Previously, the Essay was part of the Reading Session 2 form and used paired passages shared with the reading test. In 2016–2017, the Essay was made into a separate form and session with passages independent of reading. The Essay assessment administered as a pilot in 2016–2017 included multiple forms at each grade level in an effort to generate operational forms for use over the next 10 years.

While the 2016–2017 MEA testing durations remained untimed, the ancillaries advised longer testing durations than had been used in 2015–2016. The longer testing durations were derived from post-administration extract data from the eMetric iTester platform showing students' actual time on test. Measured Progress and the Maine DOE then analyzed the data and compared durations by average, mean, median, and various percentiles. The Maine DOE determined that the most equitable durations were the longer testing times corresponding to students in the 90^{th} percentile, and those durations were included in the administration ancillaries. Appendix B provides the data used for the analysis of testing durations.

CHAPTER 3 TEST DESIGN AND DEVELOPMENT

3.1 TEST SPECIFICATIONS

3.1.1 Criterion-Referenced Test

Items on the eMPower tests are developed specifically to assess Maine's Learning Results in mathematics and English language arts (ELA)/literacy (i.e., Common Core State Standards adopted in 2011). These standards are the basis for the reporting categories developed for each content area and are used to help guide the development of test items. Although each item is designed to measure a specific standard, an item may address several standards. In addition, many mathematics items assess a mathematical practice standard in addition to a conceptual or procedural standard. Essay prompts developed specifically for eMPowerME assess a number of writing and language standards. For the full complement of content standards, see Appendix A.

3.1.2 Item Types

The item types used and the functions of each are described below.

Selected-response items are administered in grades 3 through 8 in mathematics, reading, and writing and language to provide breadth of coverage of the standards. Because each selected-response item requires approximately 45 to 90 seconds for most students to answer, these items make efficient use of limited testing time and allow coverage of a wide range of knowledge and skills.

Evidence-based selected-response items are administered in grades 3 through 8 in reading to assess students' comprehension and analysis of literary and informational text and have the students select evidence that supports their understanding or analysis. They are administered in writing and language to assess students' application of writing skills and language conventions and have the students select evidence that supports the application of such skills. Each evidence-based selected-response item consists of two parts and requires a total of approximately $1\frac{1}{2}$ to $2\frac{1}{2}$ minutes for most students to answer. The advantages of this item type are (1) that it requires students to read deeply into a text and think critically in order to support text-based ideas, inferences, and conclusions, and (2) that it requires students to evaluate the content and context of the text in order to correctly apply the targeted writing skill or language convention.

Constructed-response items typically require students to use higher-order thinking skills, such as summary, evaluation, and analysis, in constructing a satisfactory response. Each constructed-response item

requires approximately 5 minutes for most students to complete. These items are administered in grades 3 through 8 in mathematics and reading.

An **essay prompt** is administered in grades 3 through 8. Students are given 60 minutes (plus additional time if necessary) to respond to an essay prompt by crafting pieces of writing that state an opinion or are informative or argumentative. Students' pieces of writing are scored by independent readers both on quality of the stylistic and rhetorical aspects of the writing and on the use of standard English conventions.

Representative items equivalent to 25% of the selected-response and 40% of the constructed-response items found on the spring 2016 eMPowerME operational tests were released to the public in winter 2016. A similar release plan is in place for the 2017 eMPowerME assessment. Additionally, 100% of the actual essay prompts were released. These items are posted on a website hosted by Measured Progress and linked from the Maine DOE website. Schools are encouraged to incorporate the use of sample items in their instructional activities so that students will be familiar with the types of questions found on the eMPowerME tests.

3.1.3 Description of Test Design

The spring 2017 eMPowerME tests were structured using both common and matrix items. Common items were taken by all students in a given grade level. Student scores were based only on common items. Matrix items were either new items included on the test for field-test purposes or vertical linking items to be used to help maintain a vertical scale. Matrix items were divided among the multiple forms of the test for each grade and content area. (For more detail on the positions of common versus matrix items, see Appendix C: Test Blueprints.) The number of test forms varied by content area and ranged from 10 to 12 forms. Each student took only one form of the test and therefore encountered a fraction of the matrix items. Matrix items are not distinguishable to students and have a small impact on testing time.

3.2 READING TEST SPECIFICATIONS

3.2.1 Standards

The test framework for reading at grades 3 through 8 is based on a set of college and career readiness reading standards. Items address literary and/or informational texts.

Each reading item is designed to measure either (1) students' comprehension of what they have read or (2) students' ability to analyze and/or interpret what they have read. The items at grades 3 through 8 are organized into three main clusters:

- **Key Ideas and Details** (comprehension or analysis/interpretation): In grades 3 through 8, students refer to texts explicitly to demonstrate understanding. At increasing levels of complexity through the grades, students also draw inferences from texts; show their ability to

comprehend or analyze the central events, central ideas, and/or themes of texts, and analyze and interpret the relationships between aspects of a text (e.g., causes and effects in informational texts or character traits and the plot of literary text).

- **Craft and Structure** (comprehension or analysis/interpretation): At increasing levels of complexity through the grades, students demonstrate the ability to comprehend and analyze the meanings of words and phrases in texts. This includes figurative language in grades 5 through 8, as well as analysis of the impact of an author's words in grades 6 through 8.
- **Integration of Knowledge and Ideas** (analysis/interpretation): At increasing levels of complexity through the grades, students integrate knowledge and ideas in texts. Specifically, students integrate:
    - visual information (e.g., pictures) and textual information;
    - evidence provided in informational texts to support ideas and/or claims; and
    - important aspects (e.g., main ideas, characters, settings, themes, structures) of paired texts.

3.2.2 Item Types

The eMPower reading tests include selected-response, evidence-based selected-response, and constructed-response items.

Selected-response items require students to demonstrate a wide range of knowledge and skills, requiring approximately 1 minute of response time per item. Evidence-based selected-response items are selected-response items with two parts requiring approximately 2 minutes of response time per item. The second part of an evidence-based selected-response item asks students to select evidence that supports the response in the first part. Constructed-response items are more complex, requiring approximately 5 minutes of response time per item.

Each type of item is worth a specific number of points in the student's total reading score, as shown in Tables 3-1 and 3-2.

Table 3-1. 2016–17 eMPowerME: Reading Item Types Grades 3–5

Item Type	*Maximum Number of Points Available*
SR	1
EBSR	2
CR	2 or 3

SR = selected-response, EBSR = evidence-based selected-response, CR = constructed-response

Table 3-2. 2016–17 eMPowerME: Reading Item Types Grades 6–8

Item Type	*Maximum Number of Points Available*
SR	1
EBSR	2
CR	2 or 4

SR = selected-response, EBSR = evidence-based selected-response, CR = constructed-response

3.2.3 Test Design

Table 3-3 summarizes the numbers and types of items that are found on the 2017 eMPowerME reading tests for grades 3 through 8. All students received the common items in their forms. Each selected-response item is worth 1 point, and evidence-based selected-response items are also worth 2 points. In grades 3 through 5, constructed-response items are worth either 2 or 3 points. In grades 6 through 8, constructed-response items are worth either 2 or 4 points.

Table 3-3. 2016–17 eMPowerME: Item Type and Number of Items—Reading Grades 3–8

Common			*Matrix*			*Total per Student*		
SR	*EBSR*	*CR*	*SR*	*EBSR*	*CR*	*SR*	*EBSR*	*CR*
19	3	4	50	10	10	24	4	5

3.2.4 Blueprints

The distribution of emphasis for eMPowerME standards clusters in reading is shown in Table 3-4.

Table 3-4. 2016–17 eMPowerME: Distribution of Emphasis Across Clusters in Terms of Targeted Approximate Percentage of Total Test Points of the Common and Field Test by Grade—Reading Grades 3–8

Clusters	*Grade Tested*					
	3	*4*	*5*	*6*	*7*	*8*
Key Ideas and Details (reading literature)	32	32	32	19	19	19
Craft and Structure (reading literature)	14	14	14	10	10	10
Integration of Knowledge and Ideas (reading literature)	11	11	11	14	14	14
Key Ideas and Details (reading informational text)	18	18	18	27	27	27
Craft and Structure (reading informational text)	11	11	11	14	14	14
Integration of Knowledge and Ideas (reading informational text)	14	14	14	16	16	16

Table 3-5 shows the reporting categories for reading in the eMPower test design and the maximum possible number of raw score points that students could earn in each reporting category. Note: Because only common items are counted toward students' scaled scores, only common items are reflected in this table.

Table 3-5. 2016–17 eMPowerME: Distribution of Raw Score Points Across Reporting Categories by Grade—Reading Grades 3–8

Reporting Category	*Grade Tested*					
	3	*4*	*5*	*6*	*7*	*8*
Comprehension of Literary Text	9	8	8	4	4	5
Analysis & Interpretation of Literary Text	13	14	14	10	10	9
Comprehension of Informational Text	4	4	4	6	9	9
Analysis & Interpretation of Informational Text	9	9	9	17	14	14

3.2.5 Depth of Knowledge

Each item on the eMPowerME test in reading is assigned a Depth of Knowledge (DOK) level according to the cognitive demand of the item. DOK is not synonymous with difficulty. The DOK level rates the complexity of the mental processing a student must use to respond to an item. Each of the three levels is described in Table 3-6.

Table 3-6. 2017 eMPowerME: Depth of Knowledge—Reading

Level 1 (Recall)	This level includes reading that does not involve analysis of text and instead is comprised of basic comprehension. Items require only a shallow understanding of text presented and often consist of verbatim recall from text or simple understanding of a single word or phrase.
Level 2 (Skill/Concept)	This level includes the engagement of mental processing beyond recalling or reproducing a response; it requires both comprehension and subsequent processing of text or portions of text. Intersentence analysis and inference are required.
Level 3 (Strategic Thinking)	This level requires students to go beyond the text; however, they are still required to show understanding of the ideas in the text. Students may be encouraged to explain, generalize, or connect ideas. Standards and items involve reasoning and a deep level of analysis. Items may involve analyzing how an author achieves his/her purpose, inference across an entire passage, or connections between texts.

Table 3-7 lists the target percentages of score points assigned to each DOK level in reading.

Table 3-7. 2016–17 eMPowerME: Depth of Knowledge in Terms of Target Percentage of Test by Grade—Reading Grades 3–8

DOK	*Grade*					
	3	*4*	*5*	*6*	*7*	*8*
Level 1	0–20	0–20	0–20	0–20	0–20	0–20
Level 2	50–70	50–70	50–70	50–70	50–70	50–70
Level 3	20–40	20–40	20–40	20–40	20–40	20–40
TOTAL	100	100	100	100	100	100

3.2.6 Passage Types

The reading passages for eMPowerME are broken down into the following categories:

- Literary passages, representing a variety of forms including drama, poetry, excerpts from novels, short stories, and traditional narratives such as fables and folktales.
- Informational passages, often about science- and social studies–related topics. These passages are often from newspapers, magazines, and book excerpts. The passages are authentic texts selected from grade-level-appropriate reading sources that students would be likely to encounter in the classroom and when reading independently.

All passages are collected from published works.

3.3 WRITING AND LANGUAGE TEST SPECIFICATIONS

3.3.1 Standards

The test framework for writing and language at grades 3 through 8 is based on a set of College- and Career-Readiness (CCR) writing and language standards. Items address argument, informative/explanatory, and/or narrative texts.

Each writing and language item is designed to measure students' ability to evaluate the content and context of text in order to correctly apply the targeted writing skill or language convention. The items at grades 3 through 8 are organized into two main categories. Each category contains a unique set of clusters:

Writing

- **Text Types and Purposes**: In grades 3 through 8, students interact with a variety of texts to demonstrate increasing sophistication with demanding content and sources. At increasing levels of complexity across the grades, students write informative/explanatory texts to examine a topic and convey ideas and information clearly or write argumentative or opinion pieces on topics or texts, supporting a point of view with reasons and information.

Language

- **Conventions of Standard English**: In grades 3 through 8, students demonstrate command of the conventions of standard English grammar and usage. At increasing levels of complexity across the grades, students move from simple identification of conventions (e.g., identifying

uppercase and lowercase letters or applying the rules of capitalization) to more complex applications of conventions (e.g., recognizing and correcting inappropriate shifts in pronoun number or recognizing and correcting misplaced and dangling modifiers).

- **Knowledge of Language**: In grades 3 through 8, students apply knowledge of language and conventions to convey ideas or create a specific effect. At increasing levels of complexity across the grades, students move from conveying ideas or creating a desired effect to focusing on developing and maintaining style and tone by choosing language that expresses ideas precisely and concisely.
- **Vocabulary Acquisition and Use**: In grades 3 through 8, students apply knowledge of vocabulary structure (e.g., affixes and roots) to understanding of the meaning of grade-level vocabulary. At increasing levels of complexity across the grades, students use the context of passage text to determine the concrete and inferred meaning of vocabulary. Additionally, students move from using basic reference materials (e.g., glossary and dictionary) to using more complex references (e.g., thesaurus).

3.3.2 Item Types

The eMPower writing and language tests include selected-response and evidence-based selected-response items. Grades 3 through 8 eMPower writing and language tests use an embedded error format, in which deliberate errors are identified or introduced into passage text. Items developed address the specific errors identified or introduced into the passage text.

Selected-response items require students to demonstrate a wide range of knowledge and skills, requiring approximately 45 seconds of response time per item. Evidence-based selected-response items are selected-response items with two parts requiring approximately 1½ minutes of response time per item. The second part of an evidence-based selected-response item asks students to select evidence that supports the response in the first part.

Each type of item is worth a specific number of points in the student's total writing and language score, as shown in Table 3-8.

Table 3-8. 2016–17 eMPowerME: Writing and Language: Writing Item Types

Item Type	*Maximum Number of Points Available*
SR	1
EBSR	2

3.3.3 Test Design

Table 3-9 summarizes the numbers and types of items that are found on the 2016–17 eMPower writing and language tests for grades 3 through 8. All students received the common items in their forms. Each selected-response item is worth 1 point, and evidence-based selected-responses are worth 2 points.

Table 3-9. 2016–17 eMPowerME: Item Type and Number of Items—Writing and Language Grades 3–8

Common		*Matrix*		*Total per student*	
SR	*EBSR*	*SR*	*EBSR*	*SR*	*EBSR*
20	3	100	20	30	5

3.3.4 Blueprints

Writing and Language

The distribution of emphasis for eMPower standards clusters in writing and language is shown in Table 3-10.

Table 3-10. 2016–17 eMPowerME: Distribution of Emphasis Across Reporting Clusters in Terms of Targeted Approximate Percentage of Total Test Points of the Common and Field Test by Grade—Writing and Language Grades 3–8

Clusters	*Grade Tested*					
	3	*4*	*5*	*6*	*7*	*8*
Revising Narrative Text	36	36	28			
Revising Expository/Informational Text	28	28	36	36	28	28
Revising Argument Text				28	36	36
English Language and Conventions	36	36	36	36	36	36

Table 3-11 shows the reporting categories for writing and language in the eMPower test design and the maximum possible number of raw score points that students could earn in each reporting category. Note: Because only common items are counted toward students' scaled scores, only common items are reflected in this table.

Table 3-11. 2016–17 eMPowerME: Reporting Categories and Targeted Possible Raw Score Points by Grade—Writing and Language Grades 3–8

Reporting Category	*Grade Tested*					
	3	*4*	*5*	*6*	*7*	*8*
Revising Narrative Text	10	10	8			
Revising Expository/Informational Text	8	8	10	10	8	8
Revising Argument Text				8	10	10
English Language and Conventions	8	8	8	8	8	8
Total	26	26	26	26	26	26

3.4 ESSAY PROMPTS

In 2017, a pilot of new essay prompts was administered (see Chapter 2: Current Year Updates). The essay prompts addressed informative/explanatory or argument/opinion commissioned pairs of texts. In addition, structures of language and writing conventions are assessed through the prompts. The essay passages and prompts were developed with the following criteria as guidelines:

- The passages and prompts should be interesting to students.
- The passages and prompts must be accessible to all students (i.e., all students would have something to write about the topic).
- The prompts must generate sufficient text to be effectively scored.

The development of an essay requires students to explain and analyze information to compose focused, organized, coherent, and purposeful prose supported by evidence from multiple sources. Essay prompts are therefore developed to be classified as Depth of Knowledge Level 3. The category reporting structure for grades 3 through 8 essays is shown in Table 3-12. The table provides the maximum possible number of raw score points that students could earn.

Table 3-12. 2016–17 eMPowerME: Reporting Subcategory and Possible Maximum Raw Score Points Possible by Grade—Essay Grades 3–8

Sub-category	*Grade Tested*					
	3	*4*	*5*	*6*	*7*	*8*
Development & Elaboration of Ideas	4	4	4	4	4	4
Organization	4	4	4	4	4	4
Language Use & Vocabulary	4	4	4	4	4	4
Command of Conventions	4	4	4	4	4	4
Total	16	16	16	16	16	16

3.4.1 Depth of Knowledge

Each item on the eMPower test in writing and language is assigned a DOK level according to the cognitive demand of the item. DOK is not synonymous with difficulty. The DOK level rates the complexity of the mental processing a student must use to respond to an item. Each of the three levels is described in Tables 3-13 and 3-14 for writing and language, respectively.

Table 3-13. 2016–17 eMPowerME: Depth of Knowledge—Writing Skills

Level 1	This level requires the student to write or recite simple facts. This writing or recitation does not include complex synthesis or analysis but basic ideas.
Level 2	This level requires some mental processing. Students are beginning to connect ideas using a simple organizational structure. For example, students may be engaged in note-taking, outlining, or simple summaries.
Level 3	This level requires some higher-level mental processing. Students are engaged in developing compositions that include multiple paragraphs. These compositions may include complex sentence structure and may demonstrate some synthesis and analysis. Students show awareness of their audience and purpose through focus, organization, and the use of appropriate compositional elements. The use of appropriate compositional elements includes such things as addressing chronological order in a narrative or including supporting facts and details in an informational report.

Table 3-14. 2016–17 eMPowerME: Depth of Knowledge—Language Conventions

Level 1	This level requires the student to use simple spelling or vocabulary and/or write simple sentences. The student applies basic language conventions correctly including applying appropriate grammar, punctuation, and capitalization.
Level 2	This level requires the student to construct and edit simple and compound sentence structures. The student applies more complex language conventions correctly including applying appropriate grammar, punctuation, and capitalization.
Level 3	This level requires the student to construct and edit a variety of complex sentence structures. The student applies more complex language conventions correctly including applying appropriate grammar, punctuation, and capitalization.

Table 3-15 lists the target percentages of score points assigned to each DOK level in writing and language.

Table 3-15. 2016–17 eMPowerME: Depth of Knowledge in Terms of Target Percentage of Total Test Points by Grade—Writing & Language Grades 3–8

DOK	*Grade*					
	3	*4*	*5*	*6*	*7*	*8*
Level 1	15–35	15–35	15–35	15–35	15–35	15–35
Level 2	40–60	40–60	40–60	40–60	40–60	40–60
Level 3	15–35	15–35	15–35	15–35	15–35	15–35
TOTAL	100	100	100	100	100	100

3.4.2 Passage Types

Writing and Language

The writing and language passages for eMPower are broken down into the following categories:

- Narrative passages, representing a variety of forms including drama, poetry, excerpts from novels, short stories, and traditional narratives such as fables and folktales. Narrative passages succinctly and lucidly describe a fictional event and feature many or all of the hallmarks of the narrative form—plot/conflict, climax/epiphany, conclusion, dialogue, characters' thoughts, action, description.
- Informational/Explanatory passages, representing one of three subject areas: social studies/history; science/social science/technical subjects; and, to a lesser extent, the humanities. Although written with the general reader in mind, passages strive to present compelling information that responds to relevant issues in each field—a new interpretation of an event or phenomenon; an examination of an overlooked (or misunderstood) movement, moment, or figure; an introduction to foundational knowledge in any of the three disciplines, etc.
- Argument passages, representing cogent argumentation. Argument passages tend to be informed by issues in the social sciences or current events. Argument passages establish a position; provide claims, supported by evidence, that develop that position; introduce and rebut a counterclaim (in grades 7 and 8); and, throughout, use rhetorical techniques (persuasive transitions, rhetorical questions, appeals to reason or personal experience, etc.) to advance the position.

All embedded-error passages are commissioned texts, which are passages developed specifically for the purpose of the assessment.

Essay Prompts

The passages and prompts used for the Essay pilot were broken down into the following categories:

- Grade 3, Informational
- Grade 4, Informational
- Grade 5, Opinion
- Grade 6, Argument
- Grade 7, Informational
- Grade 8, Argument

In 2017, all passages were commissioned texts composed specifically for the associated writing prompts and grade levels.

3.5 MATHEMATICS TEST SPECIFICATIONS

3.5.1 Standards

The test framework for mathematics at grades 3 through 8 is based on a set of CCR mathematics standards, and each item on the grades 3 through 8 eMPower tests is designed to measure a specific mathematics concepts and procedures content standard or standards and most items also measure a mathematical practices process standard.

The mathematics items at grades 3 through 5 are organized into three concepts and procedures reporting categories:

- Operations and Algebraic Thinking: Students represent and solve problems, understand and apply the properties of operations, and generate and analyze patterns and relationships.
- Numbers & Operations in Base Ten and Fractions: Students understand and demonstrate a sense of what whole numbers, fractions, and decimal numbers mean and how they are used. Students understand and demonstrate computation skills.
- Measurement & Data and Geometry: Students understand and demonstrate measurement skills, including geometric measurement, by accurately measuring and estimating, solving problems, and converting between units within a measurement system. Students represent and interpret data using picture graphs, bar graphs, and line plots. Students reason with shapes and their attributes, classify shapes based on their properties, and graph points on the coordinate plane to solve problems.

The mathematics items at grades 6 and 7 are organized into three concepts and procedures reporting categories:

- Ratios and Proportional Relationships: Students understand ratio concepts and proportional relationships and use them to solve real-world problems.
- The Number System and Expressions & Equations: Students extend their previous number sense and computation of whole numbers, fractions, and decimal numbers to the entire system of rational numbers. Students write and evaluate expressions, apply the properties of operations to generate equivalent expressions, and solve problems using algebraic expressions, equations, and inequalities.
- Geometry and Statistics & Probability: Students solve problems involving area, surface area, volume, and angle measures. Students draw, construct, and describe geometric figures and describe the relationships between figures. Students understand statistical variability, summarize and describe distributions, use random sampling to draw inferences about a population or comparative inferences between populations. Students develop an understanding of probability and use and evaluate probability models.

The mathematics items at grade 8 are organized into three concepts and procedures reporting categories:

- Functions: Students define, evaluate, and compare functions and use functions to model relationships between quantities.
- The Number System and Expressions & Equations: Students extend their previous number sense to include the system of irrational numbers. Students work with radicals and integer exponents, understand the connections between proportional relationships, lines, and linear equations, and analyze and solve linear equations and pairs of simultaneous linear equations.
- Geometry and Statistics & Probability: Students understand congruence and similarity, understand and apply the Pythagorean Theorem, and solve problems involving volume of three-dimensional figures. Students investigate the patterns of association in bivariate data.

Additionally, the mathematics items at each of the grades 3 through 8 have the processes and proficiencies associated with mathematical practices process strands of problem solving, reasoning and argument, modeling, and patterns and structure embedded into them.

3.5.2 Item Types

The eMPower mathematics tests include selected-response and constructed-response items. There are two varieties of constructed-response items. The 2-point constructed-response items require students to perform a computation, write an expression, equation, or inequality, and/or solve a simple problem and can include having the student provide written evidence of the understanding of the standard(s) being assessed, requiring approximately 3 minutes of response time per item. The 4-point constructed-response items are more complex in what is asked of the students and require students to provide written evidence of the understanding of the standard(s) being assessed, requiring approximately 7 minutes of response time per item. Selected-response items require approximately 1½ minutes of response time. Each type of item is worth a specific number of points in the student's total mathematics score, as shown in Table 3-16.

Table 3-16. 2016–17 eMPowerME: Mathematics Item Types

Item Type	*Maximum Number of Points Available*
SR	1
CR	2 or 4

SR = selected-response; CR = constructed-response

3.5.3 Test Design

Table 3-17 summarizes the numbers and types of items that are found on the 2017 eMPower mathematics tests for each of the grades 3 through 8, respectively. All students receive the common items in their forms. Each selected-response item is worth 1 point, and each constructed-response item is worth either 2 or 4 points. Score points within a grade level are divided so that selected-response items represent approximately 75% of the possible score points and constructed-response items together represent approximately 25% of the possible score points.

Table 3-17. 2016–17 eMPowerME: Item Type and Number of Items—Mathematics

Grade	*Common*		*Matrix*		*Total per Student*	
	SR	*CR*	*SR*	*CR*	*SR*	*CR*
3	33	4	50	5	38	5
4	32	4	50	5	37	5
5	33	4	50	5	38	5
6	36	4	50	5	41	5
7	36	4	50	5	41	5
8	37	4	50	5	42	5

3.5.4 Blueprints

The distribution of emphasis for eMPower content strands for mathematics is shown in Table 3-18.

Table 3-18. 2016–17 eMPowerME: Distribution of Emphasis for Content Strands in Terms of Target Percentage of Test Points by Grade—Mathematics Grades 3–8

Content Strand	*Grade Tested*					
	3	*4*	*5*	*6*	*7*	*8*
Operations and Algebraic Thinking	33	24	21			
Numbers and Operations in Base Ten and Numbers and Operations−Fractions	26	43	34			
Measurement and Data and Geometry	41	33	45			
Ratios and Proportional Relationships				17	17	
Functions						20
The Number System				25	12	8
Expressions and Equations				20	21	27
Geometry				17	21	20
Statistics and Probability				21	29	25
TOTAL	100	100	100	100	100	100

Table 3-19 shows the concepts and procedures reporting categories for mathematics in the eMPower test design and the maximum possible number of raw score points that students can earn. The goal for distribution of score points or balance of representation across the reporting categories varies from grade to grade. Note: Only common items are reflected in this table, as only they are counted toward students' scaled scores.

Table 3-19. 2016–17 eMPowerME: Concepts and Procedures Reporting Categories and Targeted Possible Raw Score Points by Grade—Mathematics Grades 3–8

Reporting Category	*Grade Tested*					
	3	*4*	*5*	*6*	*7*	*8*
Operations and Algebraic Thinking	14	12	12			
Numbers & Operations in Base Ten Fractions	12	18	14			
Measurement & Data and Geometry	19	14	19			

continued

Reporting Category	*Grade Tested*					
	3	*4*	*5*	*6*	*7*	*8*
Ratios & Proportional Relationships				8	8	
Functions						10
Number System				12	6	4
Expressions & Equations				12	10	13
Geometry				8	10	10
Statistics & Probability				8	14	12

Table 3-20 shows mathematical processes reporting categories for mathematics and the maximum possible number of raw score points by item type that students can earn. Note: Only common items are reflected in this table, as only they are counted toward students' scaled scores, and not every item in each grade assessed a process strand.

Table 3-20. 2016–17 eMPowerME: Mathematical Processes Reporting Categories and Possible Raw Score Points by Grade—Mathematics Grades 3–8

Reporting Category	*3*	*4*	*5*	*6*	*7*	*8*
Problem Solving & Modeling	19	16	16	16	16	27
Reasoning, Patterns & Structure	18	20	23	22	26	16

3.5.5 Depth of Knowledge

Each item on the eMPower test in mathematics is assigned a DOK level according to the cognitive demand of the item. DOK is not synonymous with difficulty. The DOK level rates the complexity of the mental processing a student must use to solve a problem. Each of the three levels is described in Table 3-21.

Table 3-21. 2016–17 eMPowerME: Depth of Knowledge—Mathematics

Level 1 (Recall)	This level is defined by the rote recall of information or performance of a simple, routine procedure. It includes repeating a memorized fact, definition, or term, performing a simple algorithm, rounding a number, or applying a formula.

Level 2 (Skill/Concept)	This level is defined by engaging in some mental processing beyond a habitual response as well as decision-making about how to approach the problem or activity. This level can require conceptual understanding and/or demonstrating conceptual knowledge by explaining thinking in terms of concepts. It includes distinguishing among mathematical ideas, processing information about the underlying structure, drawing relationships among ideas, deciding among and performing appropriate skills, applying properties or conventions within a relevant and necessary context, transforming among different representations, and interpreting and solving problems and /or graphs. continued
Level 3 (Strategic Thinking)	This level is defined by reasoning and analyzing using mathematical principles, ideas, structure, and practices. It includes solving involved problems; conjecturing; creating novel solutions and forms of representation; devising original proofs, mathematical arguments, and critiques of arguments; constructing mathematical models; and forming robust inferences and predictions.

Table 3-22 lists the target percentages of total score points assigned to each level of DOK in mathematics.

Table 3-22. 2016–17 eMPowerME: Depth of Knowledge in Terms of Target Percentage of Test by Grade—Mathematics Grades 3–8

DOK	*Grade*					
	3	*4*	*5*	*6*	*7*	*8*
Level 1	5–25	5–25	5–25	5–25	0–20	0–20
Level 2	40–60	40–60	40–60	40–60	40–60	40–60
Level 3	25–45	25–45	25–45	25–45	30–50	30–50
TOTAL	100	100	100	100	100	100

3.5.6 Use of Calculators and Reference Sheets

While the eMPower team of specialists who designed the mathematics test acknowledge the importance of mastering arithmetic algorithms, they understand that the use of calculators is a necessary and important skill. Calculators can save time and prevent error in the measurement of some higher-order thinking skills and, in turn, allow students to work on more sophisticated and intricate problems. For these reasons, it was decided that at grades 3 through 8 calculators should be prohibited in the first of the two sessions of the eMPower mathematics tests and permitted in the second session.

Reference sheets are not provided to students at grades 3 through 8. To properly assess the set of CCR standards, some items are written such that students will need to know the formulas to answer the question whereas other items are written such that knowledge of the formula is not being assessed, so the formulas may be provided within the item.

3.6 TEST DEVELOPMENT PROCESS

3.6.1 Item Development

Items used on eMPowerME tests are developed to assess CCR standards and, as such, are closely aligned with Maine content standards. Measured Progress test developers ensure this alignment, and ongoing independent evaluations are held to verify alignment. In addition, independent reviews are scheduled to ensure that items and passages conform to bias and sensitivity guidelines.

3.6.2 Item Reviews at Measured Progress

The test developers at Measured Progress review newly developed items for

- alignment to the intended content standard;
- item integrity, including content and structure, format, clarity, and possible ambiguity;
- desired correct responses;
- appropriateness and quality of graphics;
- appropriateness of scoring guide descriptions and distinctions;
- completeness of associated item documentation (e.g., scoring guide, content codes, key, grade level, DOK); and
- appropriateness for the designated grade level.

3.6.3 Independent Item Reviews

Newly developed eMPower items will regularly undergo review by nationally representative panels of content and assessment experts. Maine educators will be included in upcoming panels. The purpose of the review is to evaluate items and determine their suitability for assessment by answering the following four questions:

- Does the item align with the assigned content standard?
- Is the content accurate?
- Are the content and context grade-level appropriate?
- Does the item provide maximum accessibility for all students?

3.6.4 Bias and Sensitivity Review

Bias and sensitivity review is an essential component of the development process. During the eMPower bias and sensitivity review process, items are reviewed by a diverse, nationally representative committee of persons who represent various student subgroups. Items are examined for content and context that might cause the test to be inaccessible for these subgroups of students or that might generally offend or dismay students, teachers, parents, or community members. Awareness of these considerations in the development of assessment items and materials helps to avoid many unduly controversial issues, and concerns can be resolved before the test forms are produced.

Additionally, all Measured Progress test developers receive training in bias and sensitivity issues. Controversial and biased topics are avoided in the test development process. Internal reviews include review of not only content but context, with an awareness of bias and sensitivity issues. Since no one person is well versed in the full spectrum of possible concerns, the bias and sensitivity review committee helps to ensure that all potential issues are identified. All passages and items underwent bias and sensitivity prior to field-testing except for the passages and prompts from the Essay pilot, which underwent bias and sensitivity review after the pilot administration.

3.6.5 Reviewing and Refining

Recommendations from committee reviews and from Measured Progress's own internal reviews help to refine eMPower items and passages being developed. Measured Progress test developers carefully evaluate these recommendations and apply edits as appropriate.

3.6.6 Item Editing

Measured Progress editors review and edit eMPower items and commissioned passages to ensure adherence to sound testing principles and to style guidelines in the Chicago Manual of Style, 16th edition. These principles include the stipulations that items and commissioned passages

- demonstrate correct grammar, punctuation, usage, and spelling;
- are written in a clear, concise style;
- contain unambiguous explanations that tell students what is required to attain a maximum score;
- are written at a reading level that allows students to demonstrate their knowledge of the subject matter being tested regardless of reading ability;
- exhibit high technical quality regarding psychometric characteristics;
- have appropriate answer options or score point descriptors; and
- are free of potentially insensitive content.

3.6.7 Item Selection and Operational Test Assembly

Measured Progress test developers carefully select the items that will appear in the eMPower operational tests. In consultation with Measured Progress psychometricians, test developers consider the following in selecting sets of items for the operational test:

- **Content coverage/match to test design and blueprints.** The test designs and blueprints stipulate a specific number of items by item type.
- **Item difficulty and complexity.** Item statistics are evaluated to ensure quality psychometric characteristics as well as similar levels of difficulty and complexity from year to year.
- **"Cueing" items.** Items are reviewed for any information that might "cue" or provide information that would help to answer another item.

Test developers sort and lay out passages and items into test forms. During assembly of the test forms, the following criteria are considered:

- **Key patterns.** The sequence of keys (correct answers) is reviewed to ensure that their order appears random.
- **Option balance.** Selected-response items are balanced across forms so that key options are not markedly disproportionate.
- **Page fit.** For paper forms, item placement is analyzed to ensure the best fit and arrangement of items on any given page. For computer-based test (CBT) forms, items always appear one per screen. In ELA, the passage always appears to the left of the item.
- **Visual appeal.** For paper forms, the visual accessibility of each page is always taken into consideration, including such aspects as the amount of "white space," the density of the test, and the number of graphics. For CBT forms, every effort is made to make each item as accessible as possible. However, each item's presentation may differ a bit depending on the delivery method and size of the screen.

3.6.8 Operational Test Draft Review

Paper forms are laid out as they would appear in the final test booklets, and the forms are again thoroughly reviewed by Measured Progress editors to ensure that items and passages appear exactly as intended. Any changes made during test construction are reviewed and approved by the test developer. For CBT forms, editors also ensure that the items, graphics, and passages are in the order intended and are rendering correctly. Any content or sequence changes made to the items during paper forms production are also made during CBT production, and vice versa.

3.6.9 Alternative Presentations

The Form 1 test for each grade was translated into Braille by National Braille Press, a subcontractor that specializes in test materials for blind and visually impaired students. In addition, Form 1 for each grade was adapted into a large-print version.

CHAPTER 4 TEST ADMINISTRATION

4.1 RESPONSIBILITY FOR ADMINISTRATION

As indicated in the *School Test Coordinator Manual*, District Assessment Coordinators and/or their designated School Test Coordinators were responsible for the proper administration of the eMPowerME assessments. Manuals were used to ensure the uniformity of administration procedures from school to school. These manuals—the *School Test Coordinator Manual* and the *Test Administration Manual*—stress the importance of test security and ethical administration while the tests are in the schools and contain explicit directions and scripts for test administrators to read aloud to test takers. These documents may be accessed on the Maine DOE's eMPowerME website at www.maine.gov/doe/assessment/math-ela/administration/index.html.

4.2 ADMINISTRATION PROCEDURES

In addition to distributing the *School Test Coordinator Manual* and the *Test Administration Manual*, the Maine DOE, along with Measured Progress, provided statewide training workshops and statewide test administration webinars to train and inform school personnel about the eMPowerME testing procedures. Trainings were posted on the Maine DOE website at www.maine.gov/doe/assessment/math-ela/training/index.html.

4.3 PARTICIPATION REQUIREMENTS AND DOCUMENTATION

The intent is for all students in grades 3 through 8 to participate in eMPowerME assessments and for all third-year high school students to participate in the SAT through standard administration and/or administration with accommodations. Any student who is absent during any session of the eMPowerME, SAT, or alternate assessment is expected to take a makeup test within the testing window.

On those occasions where it was deemed necessary to exclude a student from sections of the assessment or from the assessment as a whole because of special considerations (e.g., hospitalization or a death in the family), schools were asked to seek the approval of the Maine DOE's Special Considerations Review Team. The names of the excluded students were forwarded to Measured Progress so these students would not be included in any reports or as part of the denominator representing the total number of students. Appendix D presents student participation in eMPowerME for all students by demographic group.

4.3.1 Students With Disabilities

All students were expected to participate in the eMPowerME assessments or the SAT, unless they completed the alternate assessment during the 2016–17 school year.

Large-print versions of the tests were created using Form 1 of the tests at all grade levels enlarged to 16-point font for students with visual impairments. At all grades, Form 1 of the tests was translated into Braille.

4.4 Documentation of Accommodations

The approved accommodations for eligible students were listed in the *MEA Accessibility Guide* and on page 2 of the student answer booklet. This information was coded in by the appropriate staff before testing was completed. The *MEA Portal User Guide* and the *School Test Coordinator Manual* provided directions for coding the information related to accommodations.

All students who were considered for accommodations on the MEA should have had their individual situations reviewed by a team within the school prior to the time of testing. For every student with an identified exceptionality requiring an Individualized Education Program (IEP), schools were required to hold an IEP team meeting that addressed that student's needs for accommodations. For other students needing test accommodations who did not have an identified exceptionality, a meeting was required that included one of the student's teachers, the building principal, related services personnel, and, whenever possible, the student's parents/guardians. If it was not possible for the parents/guardians to attend the meeting, they were notified of the committee's recommendations for accommodations prior to the time of testing.

Recommended accommodations were to be consistent with those accommodations already being used in the student's instructional program. Any such accommodations were reflected either in the minutes of the IEP team meeting (for students requiring an IEP) or in a statement prepared for the cumulative folders of students not requiring IEPs. Schools were given the following statement as a "model": *The student will participate in the [__]th grade Maine Educational Assessment as scheduled during March–April 2017 with the following accommodations*.

Table 4-1. 2016–17 eMPowerME: Numbers of Students Tested With and Without Accommodations by Subject and Grade

Subject	*Grade*	*Number of Students Tested*	
		Without Accommodations	*With Accommodations*
Mathematics	3	10,045	2,908
	4	10,269	2,986
	5	10,041	3,024
	6	10,638	2,598
	7	10,798	2,469
	8	10,497	2,432
ELA	3	10,016	2,881
	4	10,254	2,968
	5	10,010	2,994
	6	10,602	2,569
	7	10,758	2,451
	8	10,473	2,404

Table 4-1 and Appendix E show the accommodation frequencies observed for the 2017 eMPowerME administration. The *MEA Accessibility Guide*, which includes detailed descriptions of approved accommodations and their proper application, is presented in Appendix F.

4.5 TEST SECURITY

Maintaining test security is critical to the success of eMPowerME. The *School Test Coordinator Manual* and the *Test Administration Manual* explain in detail all test security measures and test administration procedures. A training webinar on test security was also posted on the Maine DOE website at www.maine.gov/doe/assessment/math-ela/training/index.html. School personnel were informed that any concerns about breaches in test security were to be reported to the School Test Coordinator (STC) and/or principal immediately. The STC and/or principal were responsible for immediately reporting the concern to the District Assessment Coordinator and the Maine DOE Assessment Coordinator. Test security was also strongly emphasized at the test administration workshops. Principals or STCs were required to log on to a website to complete the School Test Coordinator Test Security & Data Privacy Agreement or the Test Administrator/Proctor Test Security & Data Privacy Agreement (as applicable). Schools that administer paper-pencil tests also had to provide the number of secure tests received from Measured Progress, the number of tests administered to students, and the number of secure test materials that they were returning to Measured Progress. By signing and submitting the agreement, STCs, test administrators (TAs), or proctors certified that the tests were administered according to the test administration procedures outlined in the *School Test Coordinator Manual* and the *Test Administration Manual*; that the security of the tests was maintained; that no secure material was duplicated or in any way retained in the school; and that all test materials had been accounted for and returned to Measured Progress.

4.6 TEST AND ADMINISTRATION IRREGULARITIES

Test sessions invalidated by client request due to testing irregularities in the 2017 administration totaled 69, including 49 students total. The following table breaks down the reasons for invalidating a test session:

Table 4-2. 2016–17 eMPowerME: Test Invalidations by Reason

Invalidation Reason	*Number of Students*	*Number of Sessions*
TA/Proctor Error	26 students	26 sessions
Student Cheating	11 students	11 sessions
Wrong Grade	4 students	17 sessions
Wrong Student/SSID	8 students	15 sessions
TOTAL	49 students	69 sessions

4.7 TEST ADMINISTRATION WINDOW

The operational test administration window was March 20–April 14, 2017. The Essay pilot window was May 8–19, 2017.

4.8 SERVICE CENTER

To provide additional support to schools before, during, and after testing, Measured Progress established the Maine Service Center. The support of this service center is essential to the successful administration of any statewide test program. This service center provides a centralized location that individuals in the field can call using a toll-free number or email to ask specific questions or report any problems they may be experiencing. Representatives are responsible for receiving, responding to and tracking calls and emails, and then routing issues to the appropriate person(s) for resolution. All calls and emails are logged into a database that includes notes regarding the issue and resolution of each call.

The Maine Service Center was open to receive calls from 6:30 a.m. to 6:00 p.m., Monday through Friday, beginning two weeks before the start of testing and ending two weeks after the conclusion of testing. The Maine Service Center was open to receive calls from 7:30 a.m. to 4:30 p.m., Monday through Friday, outside the testing window.

CHAPTER 5 SCORING

5.1 MACHINE-SCORED ITEMS

Selected-response item responses were compared to scoring keys using item analysis software. Correct answers were assigned a score of 1 point and incorrect answers were assigned 0 points. Student responses with multiple marks and blank responses were also assigned 0 points.

The hardware elements of the scanners monitor themselves continuously for correct read, and the software that drives these scanners also monitors correct data reads. Standard checks include recognition of a sheet that does not belong or is upside down or backward, identification of critical data that are missing (e.g., a student ID number), test forms that are out of range or missing, and page or document sequence errors. When a problem is detected, the scanner stops and displays an error message directing the operator to investigate and correct the situation.

5.2 PERSON-SCORED ITEMS

The images of student responses to constructed-response items were hand-scored through the iScore system. The majority of students submitted their tests online, using a computer-based testing system. A small portion of students took a paper-based test, which was scanned and a digital image was created. Regardless of the method of test administration, all scoring was done through the iScore system. Student confidentiality was easily maintained since all Maine scoring was conducted through a scoring engine that did not provide scorers with access to student, school, or school district information. The iScore system identified responses and students through unique booklet identifiers that were connected back to the proper student during data analysis and reporting.

Through iScore, qualified scorers at computers accessed digital images of student responses. Scorers evaluated and scored each response via keypad or mouse entry through the iScore system. When a scorer finished one response, the next response appeared immediately on the computer screen.

Imaged responses from all students were sorted into item-specific groups for scoring purposes. Scorers reviewed responses from only one item at a time; however, imaged responses from all the student's work were always available to leadership for viewing when necessary, and the physical booklet (for paper-based tests) was also available to the Scoring Content Specialist on-site. (Scoring Content Specialist and other scoring roles are described in Section 5.2.1.)

The use of iScore also helped ensure that access to student response images was limited to only those who had legitimate need to access them.

5.2.1 Scoring Location and Staff

Scoring Location

The iScore database, its operation, and its administrative controls are all based in Dover, New Hampshire. Table 5-1 presents the locations where 2016–17 Maine test item responses by content area and grade were scored.

Table 5-1. 2016–17 eMPowerME: Operational Scoring Locations by Content Area and Grade

Content Area	*Grade*	*Dover, NH*	*Menands, NY*	*Longmont, CO*
Mathematics	3			x
	4			x
	5			x
	6			x
	7			x
	8			x
Reading	3			x
	4			x
	5			x
	6			x
	7			x
	8			x

The iScore system monitored accuracy, reliability, and consistency across all scoring sites. Constant daily communication and coordination were accomplished in person or through email, telephone, and secure websites to ensure that critical information and scoring modifications were shared and implemented across all scoring sites.

Staff Positions

The following staff members were involved with scoring the 2016–17 Maine responses:

- The Scoring Project Manager oversaw communication and coordination of scoring across all scoring sites and communicated with other departments outside of Scoring to ensure timely handoffs to meet deliverables.
- The iScore Operational Manager coordinated technical communication across all scoring sites and managed access to student images based on assignments.
- A Scoring Content Specialist in each content area (mathematics and reading) ensured consistency of scoring across all scoring sites for all grades tested in that content area. Scoring Content Specialists also provided read-behind activities (defined in Section 5.2.7) for Scoring Supervisors.
- Numerous Scoring Supervisors, selected from a pool of experienced Scoring Team Leaders for their ability to score accurately and to instruct and train scorers, participated in benchmarking activities for each specific grade and content area. Scoring Supervisors

provided read-behind activities (defined in Section 5.2.7) for Scoring Team Leaders at their sites. The ratio of Scoring Supervisors and Scoring Team Leaders to scorers was approximately 1:11.

- Numerous Scoring Team Leaders, selected from a pool of skilled and experienced scorers, provided read-behind activities (defined in Section 5.2.7) for the scorers at their scoring tables.
- Scorers at scoring sites scored operational student responses. Recruitment of scorers is described in Section 5.2.3.

5.2.2 Benchmarking Meetings

Essays were administered as a stand-alone field test, both as an out of state assessment in the winter, and a spring state-wide assessment. As a result of limited student involvement in the winter field test, and lower than expected student performance, Maine decided to replace the operational Essay test with a state-wide field test. This allowed all 12 prompts per grade to be administered to Maine students in sufficient number to determine the suitability of the items to appear on future operational tests.

Benchmarking meetings were held at Measured Progress's Dover, New Hampshire facility June 12–22. Concurrent meetings were held in grade spans, with grades 3–5 in one meeting and grades 6–8 in the other. Each meeting consisted of one Maine DOE representative and one Measured Progress Scoring Services representative for the entire duration of the grade span meeting. Test development staff from Enterprise Product Development participated in the meetings remotely or in-person as needed.

During these meetings, all 72 prompts and their associated passages were reviewed while accompanied by sample student work that demonstrated the entire range of available student performance. Anchor sets for each item were agreed upon in the meetings. There were prompts in each grade that were determined to be unsuitable for use. These items did not have anchor packs agreed upon and did not go forward to field-test scoring.

5.2.3 Scorer Recruitment and Qualifications

For scoring the 2016–17 Maine tests, Measured Progress actively sought a diverse scoring pool. The broad range of scorer backgrounds included scientists, business professionals, educators, graduate school students, and retired professionals. Demographic information (e.g., gender, race, educational background) about scorers was electronically captured for reporting.

Although a four-year college degree or higher was preferred, scorers were required to have successfully completed at least a two-year college degree and to have demonstrated knowledge of the content area they scored. In all cases, potential scorers were required to submit documentation (e.g., résumé and/or transcripts) of their qualifications.

Table 5-2 summarizes the qualifications of the 2016–17 Maine English language arts (ELA) and mathematics scoring leadership and scorers.

Table 5-2. 2016–17 eMPowerME: Qualifications of Scoring Leadership and Scorers—Spring Operational Administration

Scoring Responsibility	*Educational Credentials*				*Total*
	Doctorate	*Master's*	*Bachelor's*	*Associate's*	
Scoring Leadership	5	12	21	2	40
Scorers	11	55	108	21	195

Scoring Leadership = Scoring Supervisors and Scoring Team Leaders

Scorers were either temporary Measured Progress employees or were secured through temporary employment agencies. All scorers were required to sign a nondisclosure/confidentiality agreement.

5.2.4 Methodology for Scoring Polytomous Items

Possible Score Points

The ranges of possible score points for the different polytomous items are shown in Table 5-3.

Table 5-3. 2016–17 eMPowerME: Possible Score Points for Polytomous Item Types

Polytomous Item Type	*Possible Score Point Range*
Essay Prompt	Not Included for Student Reports
Constructed-response	0–2, 0–3, or 0–4 points

In addition, mathematics items were also scored on a mathematical practices scale. The point options for this scale were 0–2 points for constructed-response items, and 0–1 points for short-answer items.

Nonscorable Items

Scorers could designate a response as nonscorable for any of the following reasons:

- Blank: Response was blank (no attempt to respond to the question).
- Unreadable: Response was illegible, too faint to see, or only partially legible/visible. Unreadable responses were extremely rare, since most students completed the test online. Any unreadable paper test books are reviewed by leadership, including a review of the physical test book, to make all attempts to read and score the student response.
- Wrong Location: Student clearly provided a response to a different question in the wrong answer space. This is only possible on paper-based test books. Any responses marked "wrong location" are reviewed by scoring leadership, and the correct scores for each question are assigned in the system.
- Off Topic: A response that is completely off topic and makes no attempt to answer the question.
- No Score: Any response that cannot be scored for other reasons. This may include artwork irrelevant to the prompt, or other writing that is unrelated to the task.

Scoring Procedures

Scoring procedures for polytomous items included both single scoring and double-blind scoring. Single-scored items were scored by one scorer. Double-blind scored items were scored independently by two scorers, whose scores were tracked for interrater agreement. A minimum of 20% of all responses were scored by two scorers. Essay responses were not part of the operational test this year, but will return to a 25% double scored rate in future administrations.

5.2.5 Scorer Training

Scorer training began with an introduction of the on-site scoring staff and an overview of the purpose and goals of the test, including discussion about the security, confidentiality, and proprietary nature of testing materials, scoring materials, and procedures.

Next, scorers thoroughly reviewed and discussed the scoring guides for each item to be scored. Each item-specific scoring guide included the item itself and score point descriptions.

Following review of an item's scoring guide, Scoring Supervisors led a training on the anchor set. Scorers then applied their training to score a practice set, followed by a group review of this set. At the conclusion of training, each scorer independently took a qualification set to demonstrate that he or she had understood the item training and was able to consistently and accurately apply the scoring standards to student work.

Anchor Set

Scorers first reviewed an anchor set of exemplary responses for an item. This set represents clear examples of each score point.

Responses were read aloud to the room of scorers in descending score order. Announcing the true score of each anchor response, trainers facilitated group discussion of responses in relation to score point descriptions to help scorers internalize the typical characteristics of score points.

This anchor set continued to serve as a reference for scorers as they went on to calibration, scoring, and recalibration activities for that item.

Practice Set

Next, scorers practiced applying the scoring guide and anchors to responses in the practice set. The practice set typically included 8 to 15 student responses designed to help establish both the full score point range and the range of possible responses within each score point. The practice set often included unusual responses that were less clear or solid (shorter than normal, employing atypical approaches, simultaneously containing very low and very high attributes, and written in ways difficult to decipher). Responses in the training set were presented in randomized score point order.

After scorers independently read and scored the practice set responses, trainers would poll scorers or use online training system reports to record their initial range of scores. Trainers then led a group discussion of responses, directing scorers' attention to difficult scoring issues. Throughout the training, trainers modeled how to discuss scores by referring to the anchor set and to scoring guides.

Qualifying Set

After the practice set had been completed, scorers were required to score responses accurately and reliably in qualifying sets. The 10 responses in each qualifying set were selected from an array of responses that clearly illustrated the range of score points for that item as reviewed and approved by scoring leadership.

To be eligible to live-score reading and mathematics items, scorers were required to demonstrate scoring accuracy rates of at least 80% exact and at least 90% exact plus adjacent agreement. For mathematics items, qualification was based on the primary content scoring scale, and not the mathematical practices scale. In other words, scorers were allowed one discrepant score (one score of 10 that was more than 1 score point from the predetermined score) provided they had at least eight exact scores. Essays were not included on the operational test this year, but will return to a 70% exact and 90% exact plus adjacent rate in future years.

Retraining

Scorers who did not pass the first qualifying set were retrained as a group by reviewing their performance with scoring leadership and then scoring a second qualifying set of responses. If they achieved the required accuracy rate on the second qualifying set, they were allowed to score operational responses.

Scorers who did not achieve the required scoring accuracy rates on the second qualifying set were not allowed to score responses for that item. Instead, they either began training on a different item or were dismissed from scoring for that day.

5.2.6 Leadership Training

Scoring Supervisors and select Scoring Team Leaders were trained in a separate training session immediately prior to scorer training. In addition to a discussion of the items and their responses, Scoring Supervisor and Scoring Team Leader training included greater detail on the rationale behind the score points than that covered with regular scorers in order to better equip Scoring Supervisors and Scoring Team Leaders to handle questions from the scorers.

5.2.7 Monitoring of Scoring Quality Control

Scorers were monitored for continued accuracy and consistency throughout the scoring process, using the following methods and tools (which are defined in this section):

- embedded committee-reviewed responses (CRRs)

- read-behind procedures
- double-blind scoring
- recalibration sets

It should be noted that any scorer whose accuracy rate fell below the expected rate for a particular item and monitoring method was retrained on that item. Upon approval by the Scoring Supervisor or Scoring Content Specialist, the scorer was allowed to resume scoring. Scorers who met or exceeded the expected accuracy rates continued scoring.

Embedded CRRs

CRRs are previously scored responses that are loaded ("embedded") by scoring leadership into iScore and distributed blindly to scorers during scoring. Embedded CRRs may be chosen either before or during scoring and are inserted into the scoring queue so that they appear the same as all other live student responses.

Embedded CRRs were distributed at random points throughout the first full day of scoring to ensure that scorers were sufficiently calibrated at the beginning of the scoring period. Each scorer received the embedded set in a random order, mixed in with live student images.

Any scorer who fell below the required scoring accuracy rate was retrained before being allowed by the Scoring Supervisor to continue scoring. Once allowed to resume scoring, scoring leadership carefully monitored these scorers by increasing the number of read-behinds (defined next in Read-Behind Scoring Procedures).

Read-Behind Scoring Procedures

Read-behind scoring refers to scoring leadership (usually a Scoring Team Leader) scoring a response after a scorer has already scored the response. The practice was applied to all constructed-response item types.

Responses placed into the read-behind queue were randomly selected by scoring leadership; scorers were not aware which of their responses would be reviewed by their Scoring Team Leader.

The Scoring Team Leader entered his or her score into iScore before being allowed to see the scorer's score. The Scoring Team Leader then compared the two scores and the score of record was determined as follows:

- If there was exact agreement between the scores, no action was necessary; the regular scorer's score remained.
- If the scores were adjacent (differed by 1 point), the Scoring Team Leader's score became the score of record. A significant number of adjacent scores for a scorer triggered an individual scoring consultation with scoring leadership, after which the Scoring Supervisor determined whether or when the scorer could resume scoring.
- If the scores were discrepant (differed by more than 1 point), the Scoring Team Leader's score became the score of record. This triggered an individual consultation for the scorer with

scoring leadership, after which the Scoring Supervisor determined whether or when the scorer could resume scoring on that item.

Table 5-4 illustrates how scores were resolved by read-behind.

Table 5-4. 2016–17 eMPowerME: Examples of Read-Behind Scoring Resolutions

Scorer Score	*Scoring Supervisor/SR Score*	*Score of Record*
4	4	4
4	3	3
1	3	3

Scoring Team Leaders were tasked with conducting, at a minimum, five read-behinds per scorer per day; however, Scoring Team Leaders routinely performed more read-behinds than the minimum threshold and focused additional attention on scorers who were at the lower end of the acceptable performance threshold.

Scoring Supervisors and Content Specialists have the ability to review the read-behinds conducted by Scoring Team Leaders to ensure that they are in agreement with the Scoring Team Leaders as an additional level of quality control.

Double-Blind Scoring

Double-blind scoring refers to two scorers independently scoring a response without knowing whether the response was to be double-blind scored. The practice was applied to all constructed-response item types. Table 5-5 shows by which method(s) the responses to both common and equating constructed-response item types for each operational test were scored.

Table 5-5. 2016–17 eMPowerME: Frequency of Double-Blind Scoring by Grade and Content

Grade	*Content Area*	*Responses Double-Blind Scored*
3–8	Reading	20%
	Mathematics	20%

If there was a discrepancy (a difference greater than one score point) between double-blind scores, the response was placed into an arbitration queue. Arbitration responses were reviewed by scoring leadership (Scoring Team Leader or Scoring Supervisor) without knowledge of the two scorers' scores. Scoring leadership assigned the final score.

Scoring leadership consulted individually with any scorer whose scoring rate fell below the required accuracy rate, and the Scoring Supervisor determined whether or when the scorer could resume scoring on

that item. Once the scorer was allowed to resume scoring, scoring leadership carefully monitored the scorer's accuracy by increasing the number of read-behinds.

Recalibration Sets

To determine whether scorers were still calibrated to the scoring standard, they were required to take an online recalibration set starting with the second day of scoring each item.

Each recalibration set consisted of five items and could include any possible score points for the item. Every score point did not always appear in each set, to prevent having a predictable score point distribution.

Any scorer who did not perform well on the recalibration set was counseled prior to being allowed to start scoring. Scoring Team Leaders conducted additional early read-behinds on these scorers to ensure that they were scoring accurately.

Recalibration sets were employed for all constructed-response items.

Scoring Reports

Measured Progress's electronic scoring software, iScore, generated multiple reports that were used by scoring leadership to measure and monitor scorers for scoring accuracy, consistency, and productivity. These reports were used in conjunction with scoring leadership input of scorer performance to determine if scorers were scoring at acceptable levels of accuracy. When scorers were not accurate, their work for the day was voided and was rescored by other qualified scorers.

CHAPTER 6 CLASSICAL ITEM ANALYSIS

As noted in Brown (1983), "A test is only as good as the items it contains." A complete evaluation of a test's quality must include an evaluation of each item. Both *Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 2014) and *Code of Fair Testing Practices in Education* (Joint Committee on Testing Practices, 2004) include standards for identifying quality items. Items should assess only knowledge or skills that are identified as part of the domain being tested and should avoid assessing irrelevant factors. Items should also be unambiguous and free of grammatical errors, potentially insensitive content or language, and other confounding characteristics. In addition, items must not unfairly disadvantage students, in particular racial, ethnic, or gender groups.

Both qualitative and quantitative analyses are conducted to ensure that eMPowerME items meet these standards. Qualitative analyses are described in earlier chapters of this report; this chapter focuses on quantitative evaluations. Statistical evaluations are presented in four parts: (1) difficulty indices, (2) item-test correlations, (3) differential item functioning (DIF) statistics, and (4) dimensionality analyses. The item analyses presented here are based on the statewide administration of eMPowerME in spring 2017. Note that the information presented in this chapter is based on the items common to all forms, since those are the items on which student scores are calculated. (Item analyses are also performed for field-test items, and the statistics are then used during the item review process and form assembly for future administrations.)

6.1 CLASSICAL DIFFICULTY AND DISCRIMINATION INDICES

All selected-response, evidence-based selected-response, and constructed-response items are evaluated in terms of item difficulty according to standard classical test theory practices. Difficulty is defined as the average proportion of points achieved on an item and is measured by obtaining the average score on an item and dividing it by the maximum possible score for the item. Selected-response items are scored dichotomously (correct versus incorrect), so, for these items, the difficulty index is simply the proportion of students who correctly answered the item. Polytomously scored items include evidence-based selected-response items, for which students can receive scores of 0, 1, or 2, and constructed-response items, which are worth 2, 3, or 4 points total. By computing the difficulty index as the average proportion of points achieved, the indices for the different item types are placed on a similar scale, ranging from 0.0 to 1.0 regardless of the item type. Although this index is traditionally described as a measure of difficulty, it is properly interpreted as an easiness index, because larger values indicate easier items. An index of 0.0 indicates that all students received no credit for the item, and an index of 1.0 indicates that all students received full credit for the item.

Items that are answered correctly by almost all students provide little information about differences in student abilities but do indicate knowledge or skills that have been mastered by most students. Similarly, items that are correctly answered by very few students provide little information about differences in student

abilities but may indicate knowledge or skills that have not yet been mastered by most students. In general, to provide the best measurement, difficulty indices should range from near-chance performance of 0.25 (for four-option selected-response items or essentially 0 for constructed-response items) to 0.90, with the majority of items generally falling between approximately 0.2 and 0.8 for English language arts (ELA) and mathematics items. However, on a standards-referenced assessment such as eMPowerME, it may be appropriate to include some items with very low or very high item difficulty values to ensure sufficient content coverage.

A desirable characteristic of an item is for higher-ability students to perform better on the item than lower-ability students do. The correlation between student performance on a single item and total test score is a commonly used measure of this characteristic of the item. Within classical test theory, the item-test correlation is referred to as the item's discrimination because it indicates the extent to which successful performance on an item discriminates between high and low scores on the test. For constructed-response items, the item discrimination index used was the Pearson product-moment correlation; for selected-response items, the corresponding statistic is commonly referred to as a point-biserial correlation. The theoretical range of these statistics is –1.0 to 1.0, with a typical observed range from 0.2 to 0.6.

Discrimination indices can be thought of as measures of how closely an item assesses the same knowledge and skills assessed by other items contributing to the criterion total score. That is, the discrimination index can be thought of as a measure of construct consistency.

A summary of the item difficulty and item discrimination statistics for each content area and grade is presented in Table 6-1. Note that the statistics are presented for all items as well as by item type (selected-response and constructed-response). For the classical statistics of the essay writing, refer to Appendix G. The mean difficulty and discrimination values shown in the table are within generally acceptable and expected ranges.

Table 6-1. 2016–17 eMPowerME: Summary of Item Difficulty and Discrimination Statistics by Grade

Content Area	*Grade*	*Item Type*	*Number of Items*	*p-Value*		*Discrimination*	
				Mean	*Standard Deviation*	*Mean*	*Standard Deviation*
Mathematics	3	ALL	41	0.50	0.17	0.39	0.11
		SR	33	0.55	0.16	0.35	0.08
		CR	8	0.32	0.12	0.53	0.11
	4	ALL	40	0.46	0.19	0.36	0.12
		SR	32	0.50	0.15	0.33	0.10
		CR	8	0.32	0.29	0.50	0.05
	5	ALL	41	0.42	0.15	0.37	0.13
		SR	33	0.44	0.14	0.33	0.11
		CR	8	0.33	0.18	0.52	0.08

continued

Content Area	Grade	Item Type	Number of Items	p-Value		Discrimination	
				Mean	Standard Deviation	Mean	Standard Deviation
Mathematics	6	ALL	44	0.44	0.18	0.34	0.12
		SR	36	0.50	0.15	0.31	0.08
		CR	8	0.21	0.15	0.46	0.21
	7	ALL	44	0.45	0.19	0.37	0.12
		SR	36	0.50	0.17	0.33	0.10
		CR	8	0.24	0.17	0.50	0.12
	8	ALL	45	0.42	0.21	0.30	0.14
		SR	37	0.48	0.19	0.26	0.11
		CR	8	0.17	0.10	0.51	0.09
ELA	3	ALL	49	0.54	0.16	0.41	0.07
		SR	39	0.59	0.12	0.40	0.07
		CR	10	0.32	0.13	0.46	0.06
	4	ALL	49	0.54	0.17	0.37	0.10
		SR	39	0.59	0.13	0.35	0.09
		CR	10	0.33	0.13	0.42	0.13
	5	ALL	49	0.56	0.15	0.38	0.10
		SR	39	0.59	0.14	0.36	0.09
		CR	10	0.42	0.15	0.47	0.10
	6	ALL	49	0.59	0.16	0.38	0.11
		SR	39	0.63	0.14	0.35	0.09
		CR	10	0.46	0.17	0.49	0.12
	7	ALL	49	0.57	0.16	0.38	0.09
		SR	39	0.61	0.13	0.36	0.07
		CR	10	0.41	0.17	0.49	0.10
	8	ALL	49	0.57	0.16	0.39	0.10
		SR	39	0.61	0.14	0.37	0.08
		CR	10	0.43	0.15	0.49	0.12

A comparison of indices across grade levels is complicated because these indices are population dependent. Direct comparisons would require that either the items or students were common across groups. Since that is not the case, it cannot be determined whether differences in performance across grade levels are because of differences in student abilities, differences in item difficulties, or both. With this caveat in mind, it appears generally that, for mathematics, students in higher grade levels found their items more difficult than students in lower grades found their items, while, for ELA, difficulty indices were more consistent across grades.

Comparing the difficulty indices of selected-response items and constructed-response (evidence-based selected-response or constructed-response) items is inappropriate because selected-response items can be answered correctly by guessing. Thus, it is not surprising that the difficulty indices for selected-response items tend to be higher (indicating that students performed better on these items) than the difficulty indices for constructed-response items. Similarly, discrimination indices for the constructed-response items were larger than those for the dichotomous items because of the greater variability of the former (i.e., the partial

credit these items allow) and the tendency for correlation coefficients to be higher given greater variances of the correlates.

In addition to the item difficulty and discrimination summaries, item-level classical statistics and item-level score point distributions were also calculated. Item-level classical statistics are provided in Appendix H where item difficulty and discrimination values are presented for each item. The item difficulty and discrimination indices are within generally acceptable and expected ranges. Very few items were answered correctly at near-chance or near-perfect rates. Similarly, the positive discrimination indices indicate that students who performed well on individual items tended to perform well overall. There were a small number of items with low or negative discrimination indices. While it is not inappropriate to include items with low discrimination values or with very high or very low item difficulty values to ensure that content is appropriately covered, there were very few such cases on the eMPowerME. Item-level score point distributions are provided for constructed-response items in Appendix I; for each item, the percentage of students who received each score point is presented.

6.2 DIFFERENTIAL ITEM FUNCTIONING

Code of Fair Testing Practices in Education (Joint Committee on Testing Practices, 2004) explicitly states that subgroup differences in performance should be examined when sample sizes permit and that actions should be taken to ensure that differences in performance are because of construct-relevant, rather than construct-irrelevant, factors. The *Standards for Educational and Psychological Testing* (AERA et al., 2014) includes similar guidelines. As part of the effort to identify such problems, an evaluation of the eMPowerME items was conducted in terms of DIF statistics.

For eMPowerME, the standardization DIF procedure (Dorans & Kulick, 1986) was employed to evaluate subgroup differences. The standardization DIF procedure is designed to identify items for which subgroups of interest perform differently, beyond the impact of differences in overall achievement. The DIF procedure calculates the difference in item performance for two groups of students (at a time) matched for achievement on the total test. Specifically, average item performance is calculated for students at every total score. Then an overall average is calculated, weighting the total score distribution so that it is the same for the two groups. In order to calculate DIF statistics, a minimum of 200 students must be in each comparison group.

When differential performance between two groups occurs on an item (i.e., a DIF index in the "low" or "high" categories, explained in the following paragraph), it may or may not be indicative of item bias. Course-taking patterns or differences in school curricula can lead to DIF, but for construct-relevant reasons. On the other hand, if subgroup differences in performance could be traced to differential experience (such as geographical living conditions or access to technology), the inclusion of such items should be reconsidered.

Computed DIF indices have a theoretical range from –1.0 to 1.0 for selected-response items, and the index is adjusted to the same scale for constructed-response items. Dorans and Holland (1993) suggested that

index values between –0.05 and 0.05 should be considered negligible. The preponderance of eMPowerME items fell within this range. Dorans and Holland further stated that items with values between –0.10 and –0.05 and between 0.05 and 0.10 (i.e., "low" DIF) should be inspected to ensure that no possible effect is overlooked, and that items with values outside the –0.10 to 0.10 range (i.e., "high" DIF) are more unusual and should be examined very carefully.[1]

For the 2016–17 eMPowerME tests, seven subgroup comparisons were evaluated for DIF:

- male versus female
- no disability versus disability
- non-economically disadvantaged versus economically disadvantaged
- non-LEP versus LEP
- White versus Asian
- White versus Black
- White versus Hispanic

The tables in Appendix J present the numbers of items classified, overall and by group favored, as either "low" or "high" DIF.

6.3 DIMENSIONALITY ANALYSIS

Because tests are constructed with multiple content area subcategories, and their associated knowledge and skills, the potential exists for a large number of dimensions being invoked beyond the common primary dimension. Generally, the subcategories are highly correlated with each other; therefore, the primary dimension they share typically explains an overwhelming majority of variance in test scores. In fact, the presence of just such a dominant primary dimension is the psychometric assumption that provides the foundation for the unidimensional IRT models that are used for calibrating, linking, scaling, and equating the 2016–17 eMPowerME forms.

The purpose of dimensionality analysis is to investigate whether violation of the assumption of test unidimensionality is statistically detectable and, if so, (a) the degree to which unidimensionality is violated and (b) the nature of the multidimensionality. Findings from dimensionality analyses performed on the 2016–17 eMPowerME common items for mathematics and ELA (which includes reading and writing) in grades 3 through 8 are reported below in Table 6-2. (Note: only common items were analyzed since they are used for score reporting.)

[1] All items are reviewed at the time of development for possible bias issues that could affect subgroup performance. When DIF statistics become available, the content specialist performs an additional review of any items that display a high DIF flag. This subsequent careful examination is completed in order to ensure that the items do not contain any context that could advantage or disadvantage any population for which DIF statistics are calculated.

The dimensionality analyses were conducted using the nonparametric IRT-based methods DIMTEST (Stout, 1987; Stout, Froelich, & Gao, 2001) and DETECT (Zhang & Stout, 1999). Both of these methods use as their basic statistical building block the estimated average conditional covariances for item pairs. A conditional covariance is the covariance between two items conditioned on expected total score for the rest of the test, and the average conditional covariance is obtained by averaging over all possible conditioning scores. When a test is strictly unidimensional, all conditional covariances are expected to take on values within random noise of zero, indicating statistically independent item responses for examinees with equal expected total test scores. Non-zero conditional covariances are essentially violations of the principle of local independence, and local *dependence* implies multidimensionality. Thus, non-random patterns of positive and negative conditional covariances are indicative of multidimensionality.

DIMTEST is a hypothesis-testing procedure for detecting violations of local independence. The data are first divided into a training sample and a cross-validation sample.

Then an exploratory analysis of the conditional covariances is conducted on the training sample data to find the cluster of items that displays the greatest evidence of local dependence. The cross-validation sample is then used to test whether the conditional covariances of the selected cluster of items displays local dependence, conditioning on total score on the non-clustered items. The DIMTEST statistic follows a standard normal distribution under the null hypothesis of unidimensionality.

DETECT is an effect-size measure of multidimensionality. As with DIMTEST, the data are first divided into a training sample and a cross-validation sample (these samples are drawn independently of those used with DIMTEST). The training sample is used to find a set of mutually exclusive and collectively exhaustive clusters of items that best fit a systematic pattern of positive conditional covariances for pairs of items from the same cluster and negative conditional covariances for pairs composed of items from different clusters. Next, the clusters from the training sample are used with the cross-validation sample data to average the conditional covariances: within-cluster conditional covariances are summed, from this sum the between-cluster conditional covariances are subtracted, this difference is divided by the total number of item pairs, and this average is multiplied by 100 to yield an index of the average violation of local independence for an item pair. DETECT values less than 0.2 indicate very weak multidimensionality (or near unidimensionality); values of 0.2 to 0.4, weak to moderate multidimensionality; values of 0.4 to 1.0, moderate to strong multidimensionality; and values greater than 1.0 very strong multidimensionality (Roussos & Ozbek, 2006).

DIMTEST and DETECT were applied to the 2016–17 eMPowerME assessments. The data for each grade and content area were split into a training sample and a cross-validation sample. Every grade/content area test had at least 12,800 student examinees, so every training sample and cross-validation sample had at least 6,400 students. DIMTEST was then applied to every grade/content area. DETECT was applied to each dataset for which the DIMTEST null hypothesis was rejected in order to estimate the effect size of the multidimensionality.

Because of the large sample sizes for the eMPowerME tests, DIMTEST would be expected to be sensitive to even quite small violations of unidimensionality. Thus, it was not surprising to find that the DIMTEST null hypothesis of unidimensionality was strongly rejected for every dataset (p d 0.00005). Because of the large sample sizes employed in the datasets, it was important to use DETECT to estimate the effect size of the violations of local independence found by DIMTEST. Table 6-2 displays the multidimensional effect size estimates from DETECT for the eMPowerME tests.

All 12 DETECT values indicated either weak or very weak multidimensionality. The DETECT values for ELA tended to be slightly lower than the values for mathematics. We also investigated how DETECT divided the tests into clusters to see if there were any discernable patterns with respect to item type or subcategory content. In all the tests, there was no strong evidence of separation of selected-response and constructed-response items. In the ELA tests, there was strong evidence of separation of reading and writing only for grades 3, 6, and 8. Last year, this occurred for grades 7 and 8; thus, only grade 8 is consistent in this regard with last year. There was some evidence of separation of reading and writing for the other ELA grades, but there was also evidence of them mixing together.

Table 6-2. 2016–17 eMPowerME: Multidimensional Effect Sizes by Content Area and Grade

Content Area	*Grade*	*Multidimensionality Effect Size*	
		2015–16	*2016–17*
ELA	3	0.16	0.17
	4	0.17	0.20
	5	0.17	0.16
	6	0.17	0.15
	7	0.16	0.15
	8	0.16	0.18
	Average	0.17	0.17
Mathematics	3	0.19	0.27
	4	0.18	0.20
	5	0.29	0.28
	6	0.18	0.12
	7	0.24	0.30
	8	0.19	0.17
	Average	0.21	0.22

In summary, the dimensionality analyses indicated that all the tests exhibited rejection of the null hypothesis of unidimensionality, but also that the violations of local independence were all weak in magnitude. The violations of local independence did not show strong evidence for being related to the differences between selected-response and constructed-response items; however, for the ELA tests, there was strong evidence of reading and writing being separate dimensions for the three grade levels, 3, 6, and 8; although, even in these cases, the violations of local independence were very weak in magnitude and were detectable only because of the large sample sizes. A more in-depth substantive analysis of the results by

content experts would be needed to more precisely describe a fuller picture of the multidimensionality in all these tests.

CHAPTER 7 ITEM RESPONSE THEORY SCALING AND EQUATING

This chapter describes the procedures used to calibrate and scale the eMPowerME tests. During the course of these psychometric analyses, a number of quality-control procedures and checks on the processes were implemented. These procedures included evaluations of the calibration processes (e.g., checking the number of Newton cycles required for convergence for reasonableness, checking item parameters and their standard errors for reasonableness, examination of Test Characteristic Curves [TCCs] and Test Information Functions [TIFs] for reasonableness); evaluation of model fit; and evaluation of the scaling results (e.g., parallel processing by the Psychometrics and Research Department and Data and Reporting Services Department; comparing look-up tables).

Table 7-1 lists items that required intervention either during item calibration or as a result of the evaluations of the equating items. For each flagged item, the table shows the reason it was flagged and what action was taken. The number of items identified for evaluation was very typical across the grades. Descriptions of the evaluations and results are included in Section 7.2 Item Response Theory Results and Section 7.4 Equating Results.

Table 7-1. 2016–17 eMPowerME: Items That Required Intervention During IRT Calibration and Equating

Content Area	*Grade*	*Item*	*Reason*	*Action*
Mathematics	3	124364A	delta analysis	removed from equating
		412628	c-parameter	set c = 0
	4	400778	c-parameter	set c = 0
	5	400300	c-parameter	set c = 0.2
	6	127166A	c-parameter	set c = 0
		408317	delta analysis	removed from equating
		412431	delta analysis	removed from equating
		413996	b/b analysis	removed from equating
		551474A	a-parameter	a set to initial
	7	124510A	b/b analysis	removed from equating
		408567	a/a analysis	removed from equating
	8	400191	c-parameter	set c = 0.2
		400345	c-parameter	set c = 0
		400780	a-parameter	a set to initial
		400780	c-parameter	set c = 0.1
		401024	c-parameter	set c = 0.25
		408518	c-parameter	set c = 0
		408795	c-parameter	set c = 0
		412756	delta analysis	removed from equating

continued

Content Area	*Grade*	*Item*	*Reason*	*Action*
Mathematics	8	413229	c-parameter	set c = 0
		413335	c-parameter	set c = 0
ELA	3	410639	delta analysis	removed from equating
		418629	c-parameter	set c = 0
		421651	c-parameter	set c = 0
		421676	c-parameter	set c = 0
	4	130675A	c-parameter	set c = 0
		130706A	c-parameter	set c = 0
		130712A	c-parameter	set c = 0
		410911	b/b analysis	removed from equating
		420785	c-parameter	set c = 0
	5	129011A	c-parameter	set c = 0
		401443	c-parameter	set c = 0
		402284	c-parameter	set c = 0
		419298	b/b analysis	removed from equating
		419298	delta analysis	removed from equating
		419302	c-parameter	set c = 0
	6	129252A	c-parameter	set c = 0
		129379A	b/b analysis	removed from equating
		401886	c-parameter	set c = 0
		402013	c-parameter	set c = 0
		419741	c-parameter	set c = 0
		420260	c-parameter	set c = 0
	7	401802	c-parameter	set c = 0
		401814	c-parameter	set c = 0
		402696	c-parameter	set c = 0
		407741	delta analysis	removed from equating
		407760	c-parameter	set c = 0
		409628	c-parameter	set c = 0
		416739	rescore analysis	removed from equating
	8	131192A	c-parameter	set c = 0
		131194A	a/a analysis	removed from equating
		402111	c-parameter	set c = 0
		402116	c-parameter	set c = 0
		402125	c-parameter	set c = 0
		420872	c-parameter	set c = 0
		420905	c-parameter	set c = 0
		420929	a/a analysis	removed from equating
		420970	c-parameter	set c = 0

7.1 ITEM RESPONSE THEORY

All eMPowerME items were calibrated using item response theory (IRT). IRT uses mathematical models to define a relationship between an unobserved measure of student proficiency, usually referred to as theta (θ), and the probability (p) of getting a dichotomous item correct or of getting a particular score on a

polytomous item. In IRT, all items are assumed to be independent measures of the same construct (i.e., of the same θ). Another way to think of θ is as a mathematical representation of the latent trait of interest. Several common IRT models are used to specify the relationship between θ and p (Hambleton & van der Linden, 1997; Hambleton & Swaminathan, 1985). The process of determining the specific mathematical relationship between θ and p is called item calibration. After items are calibrated, they are defined by a set of parameters that specify a nonlinear, monotonically increasing relationship between θ and p. Once the item parameters are known, an estimate of θ for each student can be calculated. This estimate, $\hat{\theta}$, is considered to be an estimate of the student's true score or a general representation of student performance. It has characteristics that may be preferable to those of raw scores for equating purposes.

For the 2016–17 eMPowerME tests, the three-parameter logistic (3PL) model was used for dichotomous (selected-response) items and the Graded-Response Model (GRM) was used for polytomous (constructed-response) items. The 3PL model for dichotomous items can be defined as:

$$P_i(\theta_j) = c_i + (1 - c_i)\frac{\exp[Da_i(-b_i)]}{1+\exp[Da_i(\theta_j - b_i)]},$$

where
i indexes the items,
j indexes students,
α represents item discrimination,
b represents item difficulty,
c is the pseudoguessing parameter, and
D is a normalizing constant equal to 1.701.

In the GRM for polytomous items, an item is scored in a $k + 1$ graded category that can be viewed as a set of k dichotomies. At each point of dichotomization (i.e., at each threshold), a two-parameter model can be used. This implies that a polytomous item with a $k + 1$ category can be characterized by k Item Category Threshold Curves (ICTCs) of the two-parameter logistic form:

$$P_{ik}^{*}\left(k\middle|\theta_j\right) = \frac{\exp[Da_i(\theta_j - b_i + d_{ik})]}{1+\exp[Da_i(\theta_j - b_i + d_{ik})]},$$

where
i indexes the items,
j indexes students,
k indexes threshold,
α represents item discrimination,
b represents item difficulty,
d represents threshold, and
D is a normalizing constant equal to 1.701.

After computing k ICTCs in the GRM, $k + 1$ Item Category Characteristic Curves (ICCCs) are derived by subtracting adjacent ICTCs:

$$P_{ik}(\theta_j) = P_{i(k-1)}^{*}(\theta_j) - P_{ik}^{*}(\theta_j),$$

where

P_{ik} represents the probability that the score on item *i* falls in category *k*, and

P^*_{ik} represents the probability that the score on item *i* falls above the threshold *k* (P^*_{i0} = 1 and $P^*_{i(m+1)}$ = 0).

The GRM is also commonly expressed as:

$$P_{ik}(k|\theta_j) = \frac{\exp[Da_i(\theta_j - b_i + d_k)]}{1+\exp[Da_i(\theta_j - b_i + d_k)]} - \frac{\exp[Da_i(\theta_j - b_i + d_{k+1})]}{1+\exp[Da_i(\theta_j - b_i + d_{k+1})]},$$

where

i indexes the items,

j indexes students,

k indexes threshold,

α represents item discrimination,

b represents item difficulty,

d represents threshold, and

D is a normalizing constant equal to 1.701.

Finally, the Item Characteristic Curve (ICC) for polytomous items is computed as a weighted sum of ICCCs, where each ICCC is weighted by a score assigned to a corresponding category:

$$P_i(\theta_j) = \sum_k^{m+1} w_{ik} P_{ik}(\theta_j)$$

For more information about item calibration and determination, the reader is referred to Lord and Novick (1968), Hambleton and Swaminathan (1985), or Baker and Kim (2004).

7.2 ITEM RESPONSE THEORY RESULTS

The tables in Appendix K give the IRT item parameters of all common items on the 2016–17 eMPowerME tests by grade and content area. In addition, Appendix L shows graphs of the TCCs and TIFs, which are defined below.

TCCs display the expected (average) raw score associated with each θ_j value between –4.0 and 4.0. Mathematically, the TCC is computed by summing the ICCs of all items that contribute to the raw score. Using the notation introduced in Section 7.1, the expected raw score at a given value of θ_j is

$$E(X|\theta_j) = \sum_{i=1}^{n} P_i(\theta_j),$$

where

i indexes the items (and *n* is the number of items contributing to the raw score),

j indexes students (here, θ_j runs from –4 to 4), and

$E(X|\theta_j)$ is the expected raw score for a student of ability θ_j.

The expected raw score monotonically increases with θ_j, consistent with the notion that students of high ability tend to earn higher raw scores than do students of low ability. Most TCCs are "S-shaped"—flatter at the ends of the distribution and steeper in the middle.

The TIF displays the amount of statistical information the test provides at each value of θ_j. Information functions depict test precision across the entire latent trait continuum. There is an inverse relationship between the information of a test and its standard error of measurement (SEM). For long tests, the SEM at a given θ_j is approximately equal to the inverse of the square root of the statistical information at θ_j (Hambleton, Swaminathan, & Rogers, 1991), as follows:

$$SEM(\theta_j) = \frac{1}{\sqrt{I(\theta_j)}}$$

Compared to the tails, TIFs are often higher near the middle of the θ distribution where most students are located and where most items are sensitive by design.

Table 7-1 lists items that were flagged based on the quality-control checks implemented during the calibration process. (Note that some items were flagged as a result of the evaluations of the equating items; those results are described below.) In all cases, items flagged during this step were identified because of the pseudo-guessing parameter (*c* parameter) being poorly estimated. Difficulty in estimating the *c* parameter is not at all unusual and is well documented in psychometric literature (see, e.g., Nering & Ostini, 2010), especially when the item's discrimination is below 0.50. In all cases, fixing the *c* parameter resulted in reasonable and stable item parameter estimates and improved model fit.

The number of Newton cycles required for convergence for each grade and content area during the IRT analysis can be found in Table 7-2. The number of cycles required fell within acceptable ranges.

Table 7-2. 2016–17 eMPowerME: Number of Newton Cycles Required for Convergence

Content Area	*Grade*	*Cycles*
Mathematics	3	43
	4	107
	5	63
	6	83
	7	64
	8	50
ELA	3	66
	4	60
	5	41
	6	91
	7	39
	8	37

7.3 EQUATING

The purpose of equating is to ensure that scores obtained from different forms of a test are equivalent to each other. Equating may be used if multiple test forms are administered in the same year, as well as to equate one year's forms to those given in the previous year. Equating ensures that students are not given an unfair advantage or disadvantage because the test form they took is easier or harder than those taken by other students.

The 2016–17 administration of the eMPowerME tests used a raw score-to-theta equating procedure in which test forms were equated to the theta scale established on the reference form (i.e., the form used in the most recent standard setting). This is accomplished through the chained linking design, in which every new form is equated back to the theta scale of the previous year's test form. It can therefore be assumed that the theta scale of every new test form is the same as the theta scale of the reference form since this is where the chain originated.

The groups of students who took the equating items on the 2016–17 eMPowerME tests are not equivalent to the groups who took them in the reference years. IRT is particularly useful for equating scenarios that involve nonequivalent groups (Allen & Yen, 1979). Equating for eMPowerME uses the anchor-test-*nonequivalent-groups* design described by Petersen, Kolen, and Hoover (1989). In this equating design, no assumption is made about the equivalence of the examinee groups taking different test forms (that is, naturally occurring groups are assumed). Comparability is instead evaluated by utilizing a set of anchor items (also called equating items). However, the equating items are designed to mirror the common test in terms of item types and distribution of emphasis. Subsets of the equating items are distributed across forms.

Item parameter estimates for the 2016–17 eMPowerME tests were placed on the 2015–16 scale by using the method of Stocking and Lord (1983), which is based on the IRT principle of item parameter invariance. According to this principle, the equating items for both the 2015–16 and 2016–17 eMPowerME tests should have the same item parameters. After the item parameters for each 2016–17 test were estimated using PARSCALE (Muraki & Bock, 2003), the Stocking and Lord method was employed to find the linear transformation (slope and intercept) that adjusted the equating items' parameter estimates such that the 2016–17 eMPowerME tests' TCC for the equating items was as close as possible to that of the 2015–16 eMPowerME tests.

7.4 EQUATING RESULTS

Prior to calculating the Stocking and Lord transformation constants, a variety of evaluations of the equating items were conducted. Equating items that were flagged for evaluation as a result of these procedures are listed in the Table 7-1. These items were scrutinized and a decision was made as to whether to include the item as an equating item or to discard it. The procedures used to evaluate the equating items are described below.

Appendix M presents the results from the delta analysis and the rescore analysis. The delta procedure was used to evaluate adequacy of equating items; the discard status presented in the appendix indicates whether the item was flagged as potentially inappropriate for use in equating. With the rescore analysis, 200 random papers from the previous year were interspersed with this year's papers to evaluate scorer consistency from one year to the next. All effect sizes were well below the criterion value for excluding an item as an equating item, 0.50 in absolute value.

Finally, α-plots and *b*-plots, which show IRT parameters for 2016–17 plotted against the values for 2015–16, are presented in Appendix N. Any items that appeared as outliers in the plots were evaluated in terms of suitability for use as equating items.

Once all evaluations of the equating items were complete, the Stocking and Lord method of equating was used to place the item parameters onto the previous year's scale, as described above. The Stocking and Lord transformation constants are presented in Table 7-3.

Table 7-3. 2016–17 eMPowerME: Stocking and Lord Transformation Constants

Content Area	*Grade*	*α-slope*	*b-intercept*
Mathematics	3	1.03	-0.03
	4	0.94	0.08
	5	1.00	0.03
	6	1.01	-0.07
	7	1.00	0.01
	8	0.90	0.06
ELA	3	0.97	-0.01
	4	0.97	0.04
	5	1.02	0.09
	6	0.99	0.04
	7	0.98	0.15
	8	1.01	0.09

7.5 ACHIEVEMENT STANDARDS

The eMPowerME standards to establish achievement-level cut scores in English language arts (ELA) and mathematics for grades 3 through 8 were set in August 2016. Details of the standard setting procedures can be found in the *eMPowerME ELA/Literacy and Mathematics Assessment Standard Setting Report* (Measured Progress, 2016).

The cuts on the theta scale that were established via standard setting are presented in Table 7-4. Also shown in the table are the cutpoints on the reporting score scale (described below). These cutpoints will remain fixed throughout the assessment program unless standards are reset for any reason.

Table 7-4. 2016–17 eMPowerME ELA & Mathematics: Cutpoints on the Theta Metric and Reporting Scale by Content Area and Grade

Content Area	Grade	Theta			Scaled Score				
		Cut 1	Cut 2	Cut 3	Minimum	Cut 1	Cut 2	Cut 3	Maximum
Mathematics	3	-0.764	0.103	1.329	300	347	360	378	390
	4	-0.782	0.248	1.276	400	445	460	475	490
	5	-0.777	0.416	1.345	500	544	560	573	590
	6	-0.580	0.416	1.226	600	646	660	671	690
	7	-0.628	0.332	1.353	700	747	760	774	790
	8	-0.405	0.406	1.218	800	849	860	871	890
ELA	3	-0.788	0.071	0.850	300	347	360	371	390
	4	-0.747	-0.015	0.906	400	449	460	474	490
	5	-0.784	-0.025	1.048	500	549	560	576	590
	6	-0.995	0.100	1.115	600	644	660	675	690
	7	-0.910	0.085	1.183	700	745	760	776	790
	8	-1.026	0.057	1.273	800	844	860	878	890

7.6 REPORTED SCALED SCORES

Because the θ scale used in IRT calibrations is not readily understood by most stakeholders, reporting scales were developed for eMPowerME. The reporting scales are simple linear transformations of the underlying θ scale. The reporting scales are developed such that they range from *x*00 through *x*90 (where *x* is grade level). In other words, grade 3 scaled scores ranged from 300 to 390, grade 4 from 400 through 490, and so forth through grade 8, where scores ranged from 800 through 890. The lowest scaled score in the At State Expectations range is fixed at *x*60 for each grade level. For example, to be classified in the At State Expectations achievement level or above, a minimum scaled score of 360 was required at grade 3, 460 at grade 4, and so forth.

By providing information that is more specific about the position of a student's results, scaled scores supplement achievement-level scores. School- and district-level scaled scores are calculated by computing the average of student-level scaled scores. Students' raw scores (i.e., total number of points) on the 2016–17 eMPowerME tests were translated to scaled scores using a data analysis process called *scaling*. Scaling simply converts from one scale to another scale. In the same way that a given temperature can be expressed on either Fahrenheit or Celsius scales, or the same distance can be expressed in either miles or kilometers, student scores on the 2016–17 eMPowerME tests can be expressed in raw or scaled scores.

It is important to note that converting from raw scores to scaled scores does not change students' achievement-level classifications. Given the relative simplicity of raw scores, it is fair to question why scaled scores for eMPowerME are reported instead of raw scores. Scaled scores make consistent the reporting of results. To illustrate, standard setting typically results in different raw cut scores across grades and content areas. The raw cut score between Below State Expectations and At State Expectations could be, say, 35 in mathematics and 33 in ELA, yet both of these raw scores would be transformed to scaled scores of *x*60. It is

this uniformity across scaled scores that facilitates the understanding of student performance. The psychometric advantage of scaled scores over raw scores comes from their being linear transformations of θ. Since the θ scale is used for equating, scaled scores are comparable from one year to the next. Raw scores are not.

The scaled scores are obtained by a simple translation of ability estimates ($\hat{\theta}$) using the linear relationship between threshold values on the θ metric and their equivalent values on the scaled score metric. Students' ability estimates are based on their raw scores and are found by mapping through the TCC. Scaled scores are calculated using the linear equation:

$$SS = m\hat{\theta} + b,$$

where
m is the slope, and
b is the intercept.

A separate linear transformation is used for each grade and content area combination. For eMPowerME, the transformation function is determined by fixing the Below State Expectations / At State Expectations cut score and the bottom of the scale—that is, the *x*60 and the *x*00 values (e.g., 460 and 400 for grade 4). The *x*00 location on the θ scale is beyond (i.e., below) the scaling of all items. To determine this location, a chance score (approximately equal to a student's expected performance by guessing) is mapped to a value of –4.0 on the θ scale. A raw score of 0 is also assigned a scaled score of *x*00. The maximum possible raw score is assigned a scaled score of *x*90 (e.g., 490 in the case of grade 4). Because only two points within the θ scaled score space are fixed, the scaled score cutpoints between Well Below State Expectations and Below State Expectations and between At State Expectations and Above State Expectations are free to vary across the grade and content area combinations.

Table 7-5 shows the slope and intercept terms used to calculate the scaled scores for each content area and grade. Note that the values in Table 7-5 will not change unless the standards are reset.

Table 7-5. 2016–17 eMPowerME: Scaled Score Slope and Intercept by Content Area and Grade

Content Area	*Grade*	*Slope*	*Intercept*
Mathematics	3	14.62345	358.4938
	4	14.12429	456.4972
	5	13.58696	554.3478
	6	13.58696	654.3478
	7	13.85042	755.4017
	8	13.61779	854.4712
ELA	3	14.73839	358.9536
	4	15.05646	460.2258
	5	15.09434	560.3774
	6	14.63415	658.5366
	7	14.68788	758.7515
	8	14.78925	859.1570

Appendix O contains raw score to scaled score look-up tables for the 2016–17 eMPowerME tests. These are the actual tables used to determine student scaled scores, error bands, and achievement levels.

Appendix P contains scaled score distribution graphs for each grade and content area. These distributions were calculated using the sparse data matrix files that were used in the IRT calibrations.

CHAPTER 8 RELIABILITY

Although an individual item's performance is an important focus for evaluation, a complete evaluation of an assessment must also address the way items function together and complement one another. Tests that function well provide a dependable assessment of the student's level of ability. Unfortunately, no test can do this perfectly. A variety of factors can contribute to a given student's score being either higher or lower than his or her true ability. For example, a student may misread an item, or mistakenly fill in the wrong bubble when he or she knew the answer. Collectively, extraneous factors that affect a student's score are referred to as "measurement error." Any assessment includes some amount of measurement error; that is, no measurement is perfect. This is true of all academic assessments—some students will receive scores that underestimate their true ability, and other students will receive scores that overestimate their true ability. When tests have a high amount of measurement error, student scores are very unstable. Students with high ability may get low scores, or vice versa. Consequently, one cannot reliably measure a student's true level of ability with such a test. Assessments that have less measurement error (i.e., errors made are small on average and student scores on such a test will consistently represent their ability) are described as reliable.

There are a number of ways to estimate an assessment's reliability. One possible approach is to give the same test to the same students at two different points in time. If students receive the same scores on each test, the extraneous factors affecting performance are small and the test is reliable. (This is referred to as "test-retest reliability.") A potential problem with this approach is that students may remember items from the first administration or may have gained (or lost) knowledge or skills in the interim between the two administrations. A solution to the remembering items problem is to give a different but parallel test at the second administration. If student scores on each test correlate highly, the test is considered reliable. (This is known as "alternate forms reliability" because an alternate form of the test is used in each administration.) This approach, however, does not address the problem that students may have gained (or lost) knowledge or skills in the interim between the two administrations. In addition, the practical challenges of developing and administering parallel forms generally preclude the use of parallel forms reliability indices. One way to address the latter two problems is to split the test in half and then correlate students' scores on the two half-tests; this in effect treats each half-test as a complete test. By doing this, the problems associated with an intervening time interval and with creating and administering two parallel forms of the test are alleviated. This is known as a "split-half estimate of reliability." If the two half-test scores correlate highly, items on the two half-tests must be measuring very similar knowledge or skills. This is evidence that the items complement one another and function well as a group. This also suggests that measurement error will be minimal.

The split-half method requires psychometricians to select items that contribute to each half-test score. This decision may have an impact on the resulting correlation, since each different possible split of the test into halves will result in a different correlation. Another problem with the split-half method of calculating

reliability is that it underestimates reliability, because test length is cut in half. All else being equal, a shorter test is less reliable than a longer test. Cronbach (1951) provided a statistic, α (alpha), that eliminates the problem of the split-half method by comparing individual item variances to total test variance. Cronbach's α was used to assess the reliability of the 2016–17 eMPowerME tests:

$$\alpha \equiv \frac{n}{n-1}\left[1 - \frac{\sum_{i=1}^{n} \sigma^2_{(Y_i)}}{\sigma^2_x}\right],$$

where
i indexes the item,
n is the total number of items,
$\sigma^2_{(Y_i)}$ represents individual item variance, and
σ^2_x represents the total test variance.

8.1 Reliability and Standard Errors of Measurement

Table 8-1 presents descriptive statistics, Cronbach's α coefficient, and the raw score standard errors of measurement (SEMs) for each grade and content area. (Statistics are based on common items only.) The reliability of a test can also be exhibited in terms of the SEMs. SEMs can facilitate the interpretation of individual scores. With any given observed raw score point, the reasonable limits of the true score for the examinees can be calculated by using the SEMSs. With any given observed raw score point, the reasonable limits of the true score for the examinees can be calculated by using the SEMs. For more detailed description about the use of SEMs, the reader is referred to Gulliksen (1950) or Anastasi and Urbina (1997). SEM was also used to assess the reliability of the 2016–17 eMPowerME tests:

$$SEM \equiv \sigma_x\sqrt{1-\alpha},$$

where
σ_x represents the total test standard deviation, and
α represents the reliability coefficient, Cronbach's alpha.

Table 8-1. 2016–17 eMPowerME: Raw Score Descriptive Statistics, Cronbach's Alpha, and SEMs by Grade

Content Area	*Grade*	*Number of Students*	*Raw Score*			*Alpha*	*SEM*
			Maximum	*Mean*	*Standard Deviation*		
Mathematics	3	12,953	51	23.85	9.85	0.89	3.23
	4	13,255	50	20.84	8.65	0.87	3.06
	5	13,065	51	19.95	9.53	0.88	3.29
	6	13,236	54	22.54	9.27	0.87	3.30
	7	13,267	54	22.92	9.80	0.88	3.33
	8	12,929	55	21.29	8.41	0.85	3.28
ELA	3	12,897	61	29.78	11.59	0.91	3.40
	4	13,222	61	30.00	11.05	0.89	3.60

continued

Content Area	Grade	Number of Students	Raw Score			Alpha	SEM
			Maximum	Mean	Standard Deviation		
ELA	5	13,004	61	31.89	11.55	0.90	3.62
	6	13,171	63	34.51	11.26	0.90	3.56
	7	13,209	63	32.98	11.71	0.90	3.62
	8	12,877	63	33.30	12.08	0.91	3.66

Because different grades and content areas have different test designs (e.g., the number of items varies by test), it is inappropriate to make inferences about the quality of one test by comparing its reliability to that of another test from a different grade and/or content area.

8.2 SUBGROUP RELIABILITY

The reliability coefficients discussed in the previous section were based on the overall population of students who took the 2016–17 eMPowerME test. Appendix Q presents reliabilities for various subgroups of interest. Subgroup Cronbach's α's were calculated using the formula defined earlier in this chapter only on the members of the subgroup in question in the computations; values are calculated only for subgroups with 10 or more students.

For several reasons, the results of this section should be interpreted with caution. First, inherent differences between grades and content areas preclude making valid inferences about the quality of a test based on statistical comparisons with other tests. Second, reliabilities are dependent not only on the measurement properties of a test but on the statistical distribution of the studied subgroup. For example, it can be readily seen in Appendix Q that subgroup sample sizes may vary considerably, which results in natural variation in reliability coefficients. Or α, which is a type of correlation coefficient, may be artificially depressed for subgroups with little variability (Draper & Smith, 1998). Third, there is no industry standard to interpret the strength of a reliability coefficient, and this is particularly true when the population of interest is a single subgroup.

8.3 SUBCATEGORY RELIABILITY

Of even more interest are reliabilities for the reporting subcategories within eMPowerME content areas, as described in Chapter 3. Cronbach's α coefficients for subcategories were calculated via the same formula defined previously using just the items of a given subcategory in the computations. Results are presented in Appendix Q. Because results are based on a subset of items rather than the full test, once again, as expected, computed subcategory reliabilities were lower (sometimes substantially so) than were overall test reliabilities, and interpretations should take this into account. The subcategory reliabilities were lower than those based on the total test and approximately to the degree one would expect based on classical test theory.

Qualitative differences between grades and content areas once again preclude valid inferences about the quality of the full test based on statistical comparisons among subcategories.

8.4 INTERRATER CONSISTENCY

Chapter 5 of this report describes in detail the processes that were implemented to monitor the quality of the hand-scoring of student responses for constructed-response items. One of these processes was double-blind scoring: 20% of student short constructed-responses and 25% of student extended-responses were randomly selected and scored independently by two different scorers. Results of the double-blind scoring were used during the scoring process to identify scorers who required retraining or other intervention and are presented here as evidence of the reliability of the eMPowerME tests. A summary of the interrater consistency results is presented in Table 8-2. Results in the table are collapsed across the hand-scored items by grade and content area. The table shows the number of score categories, number of included scores, percent exact agreement, percent adjacent agreement, correlation between the first two sets of scores, and percentage of responses that required a third score. This same information is provided at the item level in Appendix R.

Table 8-2. 2016–17 eMPowerME: Summary of Interrater Consistency Statistics Collapsed Across Items by Grade

Content Area	*Grade*	*Number of*			*Percent*		*Correlation*	*Percent of Third Scores*
		Items	*Score Categories*	*Included Scores*	*Exact*	*Adjacent*		
Mathematics	3	2	2	5,134	94.68	5.32	0.88	0.60
		4	3	10,308	92.83	6.75	0.92	0.73
		2	5	5,174	90.68	8.70	0.96	0.85
	4	2	2	5,322	96.30	3.70	0.93	0.09
		4	3	10,790	93.17	6.66	0.94	0.70
		2	5	5,468	90.03	8.94	0.94	1.28
	5	2	2	5,140	96.11	3.89	0.92	0.29
		4	3	10,365	94.77	4.94	0.95	0.81
		2	5	5,225	86.55	12.38	0.94	1.32
	6	2	2	5,214	98.71	1.29	0.79	0.10
		4	3	10,393	93.44	6.45	0.90	0.60
		2	5	5,179	87.39	11.59	0.95	1.10
	7	2	2	5,169	98.08	1.92	0.79	0.06
		4	3	10,353	95.46	4.44	0.95	0.52
		2	5	5,184	89.12	9.93	0.96	0.98
	8	2	2	4,951	97.82	2.18	0.81	0.04
		4	3	9,974	94.55	5.34	0.92	0.31
		2	5	5,023	90.78	8.82	0.96	0.58
ELA	3	2	3	4,744	71.84	27.34	0.52	0.82
		2	4	4,723	78.57	20.86	0.68	0.57
	4	2	3	4,804	79.45	20.00	0.72	0.56
		2	4	4,916	78.07	20.71	0.73	1.22
	5	2	3	4,979	82.08	17.47	0.81	0.44
		2	4	4,934	66.11	31.86	0.73	2.03
	6	2	3	5,151	74.28	25.04	0.73	0.68
		2	5	5,229	61.77	35.86	0.71	2.37
	7	2	3	4,863	72.49	27.16	0.63	0.33

continued

Content Area	Grade	Number of			Percent		Correlation	Percent of Third Scores
		Items	Score Categories	Included Scores	Exact	Adjacent		
ELA	7	2	5	4,967	59.92	36.98	0.71	3.08
	8	2	3	4,833	75.48	24.31	0.66	0.21
		2	5	4,712	59.63	37.99	0.75	2.38

8.5 RELIABILITY OF ACHIEVEMENT-LEVEL CATEGORIZATION

While related to reliability, the accuracy and consistency of classifying students into achievement categories are even more important statistics in a standards-based reporting framework (Livingston & Lewis, 1995). After the achievement levels were specified and students were classified into those levels, empirical analyses were conducted to determine the statistical accuracy and consistency of the classifications. For eMPowerME, students are classified into one of four achievement levels: Well Below State Expectations, Below State Expectations, At State Expectations, or Above State Expectations. (See Appendix S for the achievement level score distributions.) This section of the report explains the methodologies used to assess the reliability of classification decisions, and results are given.

Accuracy refers to the extent to which decisions based on test scores match decisions that would have been made if the scores did not contain any measurement error. Accuracy must be estimated, because errorless test scores do not exist. Consistency measures the extent to which classification decisions based on test scores match the decisions based on scores from a second, parallel form of the same test. Consistency can be evaluated directly from actual responses to test items if two complete and parallel forms of the test are given to the same group of students. In operational test programs, however, such a design is usually impractical. Instead, techniques have been developed to estimate both the accuracy and consistency of classification decisions based on a single administration of a test. The Livingston and Lewis (1995) technique was used for the 2016-17 eMPowerME tests because it is easily adaptable to all types of testing formats, including mixed-format tests.

The accuracy and consistency estimates reported in Appendix T make 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. Of course, true scores cannot be observed and so must be estimated. In the Livingston and Lewis (1995) method, estimated true scores are used to categorize students into their "true" classifications.

For the 2016–17 eMPowerME tests, after various technical adjustments (described in Livingston & Lewis, 1995), a four-by-four contingency table of accuracy was created for each grade and content area, 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 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 statistical adjustments per Livingston and Lewis (1995), a

new four-by-four contingency table was created for each grade and content area 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.

Another way to measure consistency is to use Cohen's (1960) coefficient κ (kappa), which 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:

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

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 κ is corrected for chance, its values are lower than are other consistency estimates.

8.5.1 Accuracy and Consistency

The accuracy and consistency analyses described above are provided in Table T-1 of Appendix T. The table includes overall accuracy and consistency indices, including kappa. 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, if the conditional accuracy value is 0.85 for any achievement level, this figure indicates that among the students whose true scores placed them in this classification, 85% would be expected to be in this classification when categorized according to their observed scores. Similarly, a consistency value of 0.80 indicates that 80% of students with observed scores in any achievement level would be expected to score in this classification again if a second, parallel test form were used.

For some testing situations, the greatest concern may be decisions around level thresholds. For example, in testing done for Elementary and Secondary Education Act (ESEA) accountability purposes, the primary concern is distinguishing between students who are proficient and those who are not yet proficient. In this case, the accuracy of the Below State Expectations–At State Expectations threshold is of greatest interest. For the 2016–17 eMPowerME tests, Table T-2 in Appendix T provides accuracy and consistency estimates 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 cutpoint and whose true scores were below the cutpoint. A false negative is the proportion of students whose observed scores were below the cutpoint and whose true scores were above the cutpoint.)

Note that, as with other methods of evaluating reliability, accuracy, and consistency, statistics calculated based on small groups can be expected to be lower than those calculated based on larger groups. For this reason, the values presented in Appendix T should be interpreted with caution. In addition, it is important to remember that it is inappropriate to compare accuracy and consistency statistics between grades and content areas.

CHAPTER 9 VALIDITY

Because interpretations of test scores, and not a test itself, are evaluated for validity, the purpose of the *2016–17 eMPowerME Technical Report* is to describe several technical aspects of the eMPowerME tests in support of score interpretations. Each chapter contributes an important component in the investigation of score validation: test development and design; test administration; scoring, scaling, and equating; item analyses; reliability; and score reporting.

The *Standards for Educational and Psychological Testing* (AERA et al., 2014) provides a framework for describing sources of evidence that should be considered when constructing a validity argument. The evidence around test content, response processes, internal structure, relationship to other variables, and consequences of testing speaks to different aspects of validity but those aspects are not distinct *types* of validity. Instead, each aspect of validity contributes to a body of evidence about the comprehensive validity of score interpretations.

Evidence on test content validity is meant to determine how well the assessment tasks represent the curriculum and standards for each grade level and content area. Content validation is informed by the item development process, including how the test blueprints and test items align to the curriculum and standards. (See Appendix C for the comprehensive set of test blueprints.) Viewed through this lens provided by the standards, evidence based on test content was extensively described in Chapters 3 and 4. Item alignment with Maine's academic content standards; item bias, sensitivity, and content appropriateness review processes; adherence to the test blueprint; use of multiple item types; use of standardized administration procedures with accommodated options for participation; and appropriate test administration training are all components of validity evidence based on test content. As discussed earlier, all eMPowerME questions were reviewed for alignment to specific Maine's academic content standards by educators from Maine who participated in the Item Review Committees. The items also underwent several rounds of review for content fidelity and appropriateness. Items are presented to students in multiple formats (constructed-response, short-answer, multiple-choice, and evidence-based selected-response). Finally, tests are administered according to state-mandated standardized procedures, with allowable accommodations, and all test coordinators and administrators are required to familiarize themselves with and adhere to all of the procedures outlined in the *School Test Coordinator Manual* and the *Test Administration Manual*. These documents may be accessed on the Maine DOE's website at www.maine.gov/doe/assessment/math-ela/administration/index.html.

The scoring information in Chapter 5 describes the steps taken to train and monitor hand-scorers, as well as quality-control procedures related to scanning and machine scoring.

Evidence based on internal structure is presented in great detail in the discussions of item analyses, scaling and equating, and reliability in Chapters 6 through 8. Technical characteristics of the internal structure of the assessments are presented in terms of classical item statistics (e.g., item difficulty, item-test

correlation), differential item functioning (DIF) analyses, dimensionality analyses, reliability, standard error of measurement (SEM), and item response theory (IRT) parameters and procedures. Each test is equated to the same grade and content area test from the prior year in order to preserve the meaning of scores over time. In general, item difficulty and discrimination indices were in acceptable and expected ranges. Very few items were answered correctly at near-chance or near-perfect rates. Similarly, the positive discrimination indices indicate that most items were assessing consistent constructs, and students who performed well on individual items tended to perform well overall.

Evidence based on the consequences of testing is addressed in the scaled score information in Chapter 7. Scaled scores offer the advantage of simplifying the reporting of results across content areas, grade levels, and subsequent years. Achievement levels provide users with reference points for mastery at each grade and content area, which is another useful and simple way to interpret scores. Several different standard reports are provided to stakeholders. Additional evidence of the consequences of testing could be supplemented with broader investigation of the effect of testing on student learning.

To further support the validation of the assessment program, additional studies might be considered to provide evidence regarding the relationship of eMPowerME results to other variables, including the extent to which scores from eMPowerME converge with other measures of similar constructs, and the extent to which they diverge from measures of different constructs. Relationships among measures of the same or similar constructs can sharpen the meaning of scores and appropriate interpretations by refining the definition of the construct.

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APPENDICES

APPENDIX A—CONTENT STANDARDS

Table A-1. 2016–17 eMPowerME: Reading Standards- Grade 3

Grade 3			
Domain	**Anchor Standard**	**Standard**	**Standard Text**
RL	Key Ideas and Details	RL.3.1	Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
		RL.3.2	Recount stories, including fables, folktales, and myths from diverse cultures; determine the central message, lesson, or moral and explain how it is conveyed through key details in the text.
		RL.3.3	Describe characters in a story (e.g., their traits, motivations, or feelings) and explain how their actions contribute to the sequence of events.
	Craft and Structure	RL.3.4	Determine the meaning of words and phrases as they are used in a text, distinguishing literal from nonliteral language.
		RL.3.5	Refer to parts of stories, dramas, and poems when writing or speaking about a text, using terms such as chapter, scene, and stanza; describe how each successive part builds on earlier sections.
		RL.3.6	Distinguish their own point of view from that of the narrator or those of the characters.
	Integration of Knowledge and Ideas	RL.3.7	Explain how specific aspects of a text's illustrations contribute to what is conveyed by the words in a story (e.g., create mood, emphasize aspects of a character or setting).
		RL.3.9	Compare and contrast the themes, settings, and plots of stories written by the same author about the same or similar characters (e.g., in books from a series).
RI	Key Ideas and Details	RI.3.1	Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
		RI.3.2	Determine the main idea of a text; recount the key details and explain how they support the main idea.
		RI.3.3	Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.
RI	Craft and Structure	RI.3.4	Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 3 topic or subject area.

continued

Grade 3			
Domain	**Anchor Standard**	**Standard**	**Standard Text**
		RI.3.5	Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic efficiently.
		RI.3.6	Distinguish their own point of view from that of the author of a text.
	Integration of Knowledge and Ideas	RI.3.7	Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).
		RI.3.8	Describe the logical connection between particular sentences and paragraphs in a text(e.g., comparison, cause/effect, first/second/third in a sequence).
		RI.3.9	Compare and contrast the most important points and key details presented in two texts on the same topic.

Table A-2. 2016–17 eMPowerME: Reading Standards- Grade 4

Grade 4			
Domain	**Anchor Standard**	**Standard**	**Standard Text**
RL	Key Ideas and Details	RL.4.1	Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.
		RL.4.2	Determine a theme of a story, drama, or poem from details in the text; summarize the text.
		RL.4.3	Describe in depth a character, setting, or event in a story or drama, drawing on specific details in the text (e.g., a character's thoughts, words, or actions).
	Craft and Structure	RL.4.4	Determine the meaning of words and phrases as they are used in a text, including those that allude to significant characters found in mythology (e.g., Herculean).
		RL.4.5	Explain major differences between poems, drama, and prose, and refer to the structural elements of poems (e.g., verse, rhythm, meter) and drama (e.g., casts of characters, settings, descriptions, dialogue, stage directions) when writing or speaking about a text.
		RL.4.6	Compare and contrast the point of view from which different stories are narrated, including the difference between first- and third-person narrations.
	Integration of Knowledge and Ideas	RL.4.7	Make connections between the text of a story or drama and a visual or oral presentation of the text, identifying where each version reflects specific descriptions and directions in the text.
		RL.4.9	Compare and contrast the treatment of similar themes and topics (e.g., opposition of good and evil) and patterns of events (e.g., the quest) in stories, myths, and traditional literature from different cultures.
RI	Key Ideas and Details	RI.4.1	Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.
		RI.4.2	Determine the main idea of a text and explain how it is supported by key details; summarize the text.
		RI.4.3	Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.
RI	Craft and Structure	RI.4.4	Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area.

continued

Grade 4			
Domain	**Anchor Standard**	**Standard**	**Standard Text**
		RI.4.5	Describe the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in a text or part of a text.
		RI.4.6	Compare and contrast a firsthand and secondhand account of the same event or topic; describe the differences in focus and the information provided.
	Integration of Knowledge and Ideas	RI.4.7	Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.
		RI.4.8	Explain how an author uses reasons and evidence to support particular points in a text.
		RI.4.9	Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.

Table A-3. 2016–17 eMPowerME: Reading Standards- Grade 5

Grade 5			
Domain	**Anchor Standard**	**Standard**	**Standard Text**
RL	Key Ideas and Details	RL.5.1	Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.
		RL.5.2	Determine a theme of a story, drama, or poem from details in the text, including how characters in a story or drama respond to challenges or how the speaker in a poem reflects upon a topic; summarize the text.
		RL.5.3	Compare and contrast two or more characters, settings, or events in a story or drama, drawing on specific details in the text (e.g., how characters interact).
	Craft and Structure	RL.5.4	Determine the meaning of words and phrases as they are used in a text, including figurative language such as metaphors and similes.
		RL.5.5	Explain how a series of chapters, scenes, or stanzas fits together to provide the overall structure of a particular story, drama, or poem.
		RL.5.6	Describe how a narrator's or speaker's point of view influences how events are described.
	Integration of Knowledge and Ideas	RL.5.7	Analyze how visual and multimedia elements contribute to the meaning, tone, or beauty of a text (e.g., graphic novel, multimedia presentation of fiction, folktale, myth, poem).
		RL.5.9	Compare and contrast stories in the same genre (e.g., mysteries and adventure stories) on their approaches to similar themes and topics.
RI	Key Ideas and Details	RI.5.1	Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.
		RI.5.2	Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.
		RI.5.3	Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.
RI	Craft and Structure	RI.5.4	Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area.

continued

Grade 5			
Domain	**Anchor Standard**	**Standard**	**Standard Text**
		RI.5.5	Compare and contrast the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in two or more texts.
		RI.5.6	Analyze multiple accounts of the same event or topic, noting important similarities and differences in the point of view they represent.
	Integration of Knowledge and Ideas	RI.5.7	Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.
		RI.5.8	Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s).
		RI.5.9	Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.

Table A-4. 2016–17 eMPowerME: Reading Standards- Grade 6

Grade 6			
Domain	**Anchor Standard**	**Standard**	**Standard Text**
RL	Key Ideas and Details	RL.6.1	Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
		RL.6.2	Determine a theme or central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.
		RL.6.3	Describe how a particular story's or drama's plot unfolds in a series of episodes as well as how the characters respond or change as the plot moves toward a resolution.
	Craft and Structure	RL.6.4	Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of a specific word choice on meaning and tone.
		RL.6.5	Analyze how a particular sentence, chapter, scene, or stanza fits into the overall structure of a text and contributes to the development of the theme, setting, or plot.
		RL.6.6	Explain how an author develops the point of view of the narrator or speaker in a text.
	Integration of Knowledge and Ideas	RL.6.7	Compare and contrast the experience of reading a story, drama, or poem to listening to or viewing an audio, video, or live version of the text, including contrasting what they "see" and "hear" when reading the text to what they perceive when they listen or watch.
		RL.6.9	Compare and contrast texts in different forms or genres (e.g., stories and poems; historical novels and fantasy stories) in terms of their approaches to similar themes and topics.
RI	Key Ideas and Details	RI.6.1	Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
		RI.6.2	Determine a central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.
		RI.6.3	Analyze in detail how a key individual, event, or idea is introduced, illustrated, and elaborated in a text (e.g., through examples or anecdotes).
RI	Craft and Structure	RI.6.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.

continued

Grade 6			
Domain	**Anchor Standard**	**Standard**	**Standard Text**
		RI.6.5	Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas.
		RI.6.6	Determine an author's point of view or purpose in a text and explain how it is conveyed in the text.
	Integration of Knowledge and Ideas	RI.6.7	Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.
		RI.6.8	Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not.
		RI.6.9	Compare and contrast one author's presentation of events with that of another (e.g., a memoir written by and a biography on the same person).

Table A-5. 2016–17 eMPowerME: Reading Standards- Grade 7

Grade 7			
Domain	**Anchor Standard**	**Standard**	**Standard Text**
RL	Key Ideas and Details	RL.7.1	Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
		RL.7.2	Determine a theme or central idea of a text and analyze its development over the course of the text; provide an objective summary of the text.
		RL.7.3	Analyze how particular elements of a story or drama interact (e.g., how setting shapes the characters or plot).
	Craft and Structure	RL.7.4	Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of rhymes and other repetitions of sounds (e.g., alliteration) on a specific verse or stanza of a poem or section of a story or drama.
		RL.7.5	Analyze how a drama's or poem's form or structure (e.g., soliloquy, sonnet) contributes to its meaning.
		RL.7.6	Analyze how an author develops and contrasts the points of view of different characters or narrators in a text.
	Integration of Knowledge and Ideas	RL.7.7	Compare and contrast a written story, drama, or poem to its audio, filmed, staged, or multimedia version, analyzing the effects of techniques unique to each medium (e.g., lighting, sound, color, or camera focus and angles in a film).
		RL.7.9	Compare and contrast a fictional portrayal of a time, place, or character and a historical account of the same period as a means of understanding how authors of fiction use or alter history.
RI	Key Ideas and Details	RI.7.1	Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
		RI.7.2	Determine two or more central ideas in a text and analyze their development over the course of the text; provide an objective summary of the text.
		RI.7.3	Analyze the interactions between individuals, events, and ideas in a text (e.g., how ideas influence individuals or events, or how individuals influence ideas or events).
RI	Craft and Structure	RI.7.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of a specific word choice on meaning and tone.

continued

Grade 7			
Domain	**Anchor Standard**	**Standard**	**Standard Text**
		RI.7.5	Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to the development of the ideas.
		RI.7.6	Determine an author's point of view or purpose in a text and analyze how the author distinguishes his or her position from that of others.
	Integration of Knowledge and Ideas	RI.7.7	Compare and contrast a text to an audio, video, or multimedia version of the text, analyzing each medium's portrayal of the subject (e.g., how the delivery of a speech affects the impact of the words).
		RI.7.8	Trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims.
		RI.7.9	Analyze how two or more authors writing about the same topic shape their presentations of key information by emphasizing different evidence or advancing different interpretations of facts.

Table A-6. 2016–17 eMPowerME: Reading Standards- Grade 8

Grade 8			
Domain	**Anchor Standard**	**Standard**	**Standard Text**
RL	Key Ideas and Details	RL.8.1	Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.
		RL.8.2	Determine a theme or central idea of a text and analyze its development over the course of the text, including its relationship to the characters, setting, and plot; provide an objective summary of the text.
		RL.8.3	Analyze how particular lines of dialogue or incidents in a story or drama propel the action, reveal aspects of a character, or provoke a decision.
	Craft and Structure	RL.8.4	Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.
		RL.8.5	Compare and contrast the structure of two or more texts and analyze how the differing structure of each text contributes to its meaning and style.
		RL.8.6	Analyze how differences in the points of view of the characters and the audience or reader (e.g., created through the use of dramatic irony) create such effects as suspense or humor.
	Integration of Knowledge and Ideas	RL.8.7	Analyze the extent to which a filmed or live production of a story or drama stays faithful to or departs from the text or script, evaluating the choices made by the director or actors.
		RL.8.9	Analyze how a modern work of fiction draws on themes, patterns of events, or character types from myths, traditional stories, or religious works such as the Bible, including describing how the material is rendered new.
RI	Key Ideas and Details	RI.8.1	Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.
		RI.8.2	Determine a central idea of a text and analyze its development over the course of the text, including its relationship to supporting ideas; provide an objective summary of the text.
		RI.8.3	Analyze how a text makes connections among and distinctions between individuals, ideas, or events (e.g., through comparisons, analogies, or categories).
RI	Craft and Structure	RI.8.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.

continued

Grade 8			
Domain	**Anchor Standard**	**Standard**	**Standard Text**
		RI.8.5	Analyze in detail the structure of a specific paragraph in a text, including the role of particular sentences in developing and refining a key concept.
		RI.8.6	Determine an author's point of view or purpose in a text and analyze how the author acknowledges and responds to conflicting evidence or viewpoints.
	Integration of Knowledge and Ideas	RI.8.7	Evaluate the advantages and disadvantages of using different mediums (e.g., print or digital text, video, multimedia) to present a particular topic or idea.
		RI.8.8	Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced.
		RI.8.9	Analyze a case in which two or more texts provide conflicting information on the same topic and identify where the texts disagree on matters of fact or interpretation.

Table A-7. 2016–17 eMPowerME: Writing Standards- Grade 3

Grade 3				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
WR	Text Types and Purposes	WR.3.1	Write opinion pieces on topics or texts, supporting a point of view with reasons.	a. Introduce the topic or text they are writing about, state an opinion, and create an organizational structure that lists reasons. b. Provide reasons that support the opinion. c. Use linking words and phrases (e.g., because, therefore, since, for example) to connect opinion and reasons. d. Provide a concluding statement or section.
		WR.3.2	Write informative/explanatory texts to examine a topic and convey ideas and information clearly.	a. Introduce a topic and group related information together; include illustrations when useful to aiding comprehension. b. Develop the topic with facts, definitions, and details. c. Use linking words and phrases (e.g., also, another, and, more, but) to connect ideas within categories of information. d. Provide a concluding statement or section.

continued

Grade 3				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
WR	Text Types and Purposes	WR.3.3	Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.	a. Establish a situation and introduce a narrator and/or characters; organize an event sequence that unfolds naturally. b. Use dialogue and descriptions of actions, thoughts, and feelings to develop experiences and events or show the response of characters to situations. c. Use temporal words and phrases to signal event order. d. Provide a sense of closure.
	Production and Distribution of Writing	WR.3.4	With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose. (Grade-specific expectations for writing types are defined in standards 1–3 above.)	
		WR.3.5	With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 3 on page 29.)	
		WR.3.6	With guidance and support from adults, use technology to produce and publish writing (using keyboarding skills) as well as to interact and collaborate with others.	

continued

Grade 3				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
WR	Research to Build and Present Knowledge	WR.3.7	Conduct short research projects that build knowledge about a topic.	
		WR.3.8	Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.	
		WR.3.9	(Begins in grade 4)	
	Range of Writing	WR.3.10	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	

continued

Grade 3				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
LG	Conventions of Standard English	LG.3.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.	a. Explain the function of nouns, pronouns, verbs, adjectives, and adverbs in general and their functions in particular sentences. b. Form and use regular and irregular plural nouns. c. Use abstract nouns (e.g., childhood). d. Form and use regular and irregular verbs. e. Form and use the simple (e.g., I walked; I walk; I will walk) verb tenses. f. Ensure subject-verb and pronoun-antecedent agreement.* g. Form and use comparative and superlative adjectives and adverbs, and choose between them depending on what is to be modified. h. Use coordinating and subordinating conjunctions. i. Produce simple, compound, and complex sentences.
		LG.3.2	Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.	Capitalize appropriate words in titles. b. Use commas in addresses. c. Use commas and quotation marks in dialogue. d. Form and use possessives. e. Use conventional spelling for high-frequency and other studied words and for adding suffixes to base words (e.g., sitting, smiled, cries, happiness). continued

Grade 3				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
LG	Conventions of Standard English	LG.3.2		f. Use spelling patterns and generalizations (e.g., word families, position-based spellings, syllable patterns, ending rules, meaningful word parts) in writing words. g. Consult reference materials, including beginning dictionaries, as needed to check and correct spellings.
	Knowledge of Language	LG.3.3	Use knowledge of language and its conventions when writing, speaking, reading, or listening.	a. Choose words and phrases for effect.* b. Recognize and observe differences between the conventions of spoken and written standard English.
	Vocabulary Acquisition and Use	LG.3.4	Determine or clarify the meaning of unknown and multiple-meaning word and phrases based on grade 3 reading and content, choosing flexibly from a range of strategies.	a. Use sentence-level context as a clue to the meaning of a word or phrase. b. Determine the meaning of the new word formed when a known affix is added to a known word (e.g., agreeable/disagreeable, comfortable/uncomfortable, care/careless, heat/preheat). c. Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., company, companion). continued

Grade 3				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
LG	Vocabulary Acquisition and Use	LG.3.4		d. Use glossaries or beginning dictionaries, both print and digital, to determine or clarify the precise meaning of key words and phrases.
		LG.3.5	Demonstrate understanding of word relationships and nuances in word meanings.	Distinguish the literal and nonliteral meanings of words and phrases in context (e.g., take steps). b. Identify real-life connections between words and their use (e.g., describe people who are friendly or helpful). c. Distinguish shades of meaning among related words that describe states of mind or degrees of certainty (e.g., knew, believed, suspected, heard, wondered).
		LG.3.6	Acquire and use accurately grade-appropriate conversational, general academic, and domain-specific words and phrases, including those that signal spatial and temporal relationships (e.g., After dinner that night we went looking for them).	

Table A-8. 2016–17 eMPowerME: Writing Standards- Grade 4

Grade 4				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
WR	Text Types and Purposes	WR.4.1	Write opinion pieces on topics or texts, supporting a point of view with reasons.	a. Introduce a topic or text clearly, state an opinion, and create an organizational structure in which related ideas are grouped to support the writer's purpose. b. Provide reasons that are supported by facts and details. c. Link opinion and reasons using words and phrases (e.g., for instance, in order to, in addition). d. Provide a concluding statement or section related to the opinion presented.
		WR.4.2	Write informative/explanatory texts to examine a topic and convey ideas and information clearly.	a. Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension. continued

Grade 4				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
WR	Text Types and Purposes	WR.4.2		b. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic. c. Link ideas within categories of information using words and phrases (e.g., another, for example, also, because). d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Provide a concluding statement or section related to the information or explanation presented. continued

Grade 4				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
WR	Text Types and Purposes	WR.4.3	Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.	a. Orient the reader by establishing a situationand introducing a narrator and/or characters; organize an event sequence that unfolds naturally. b. Use dialogue and description to develop experiences and events or show the responses of characters to situations. c. Use a variety of transitional words and phrases to manage the sequence of events. d. Use concrete words and phrases and sensory details to convey experiences and events precisely. e. Provide a conclusion that follows from the narrated experiences or events.
	Production and Distribution of Writing	WR.4.4	Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)	

continued

Grade 4				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
WR	Production and Distribution of Writing	WR.4.5	With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 3 on page 29.)	
		WR.4.6	With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of one page in a single sitting.	
	Research to Build and Present Knowledge	WR.4.7	Conduct short research projects that build knowledge through investigation of different aspects of a topic.	
		WR.4.8	Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.	
		WR.4.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.	a. Apply grade 4 Reading standards to literature (e.g., "Describe in depth a character, setting, or event in a story or drama, drawing on specific details in the text [e.g., a character's thoughts, words, or actions].").

continued

Grade 4				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
WR	Research to Build and Present Knowledge	WR.4.9		b. Apply grade 4 Reading standards to informational texts (e.g., "Explain how an author uses reasons and evidence to support particular points in a text").
	Range of Writing	WR.4.10	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	
LG	Conventions of Standard English	LG.4.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.	a. Use relative pronouns (who, whose, whom, which, that) and relative adverbs (where, when, why). b. Form and use the progressive (e.g., I was walking; I am walking; I will be walking) verb tenses. c. Use modal auxiliaries (e.g., can, may, must) to convey various conditions. continued

Grade 4				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
LG	Conventions of Standard English	LG.4.1		d. Order adjectives within sentences according to conventional patterns (e.g., a small red bag rather than a red small bag). e. Form and use prepositional phrases. f. Produce complete sentences, recognizing and correcting inappropriate fragments and run-ons.* g. Correctly use frequently confused words (e.g., to, too, two; there, their).*
		LG.4.2	Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.	a. Use correct capitalization. b. Use commas and quotation marks to mark direct speech and quotations from a text. c. Use a comma before a coordinating conjunction in a compound sentence. d. Spell grade-appropriate words correctly, consulting references as needed.

continued

Grade 4				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
LG	Knowledge of Language	LG.4.3	Use knowledge of language and its conventions when writing, speaking, reading, or listening.	Choose words and phrases to convey ideas precisely.* b. Choose punctuation for effect.* c. Differentiate between contexts that call for formal English (e.g., presenting ideas) and situations where informal discourse is appropriate (e.g., small-group discussion).
	Vocabulary Acquisition and Use	LG.4.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 4 reading and content, choosing flexibly from a range of strategies.	a. Use context (e.g., definitions, examples, or restatements in text) as a clue to the meaning of a word or phrase. b. Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., telegraph, photograph, autograph).

continued

Grade 4				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
LG	Vocabulary Acquisition and Use	LG.4.4		c. Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases.
	Vocabulary Acquisition and Use	LG.4.5	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	a. Explain the meaning of simple similes and metaphors (e.g., as pretty as a picture) in context. b. Recognize and explain the meaning of common idioms, adages, and proverbs. c. Demonstrate understanding of words by relating them to their opposites (antonyms) and to words with similar but not identical meanings (synonyms).

continued

Grade 4				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
LG	Vocabulary Acquisition and Use	LG.4.6	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal precise actions, emotions, or states of being (e.g., quizzed, whined, stammered) and that are basic to a particular topic (e.g., wildlife, conservation, and endangered when discussing animal preservation).	

Table A-9. 2016–17 eMPowerME: Writing Standards- Grade 5

Grade 5				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
WR	Text Types and Purposes	WR.5.1	Write opinion pieces on topics or texts, supporting a point of view with reasons.	a. Introduce a topic or text clearly, state an opinion, and create an organizational structure in which ideas are logically grouped to support the writer's purpose. b. Provide logically ordered reasons that are supported by facts and details. c. Link opinion and reasons using words, phrases, and clauses (e.g., consequently, specifically). d. Provide a concluding statement or section related to the opinion presented.

continued

Grade 5				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
WR	Text Types and Purposes	WR.5.2	Write informative/explanatory texts to examine a topic and convey ideas and information clearly.	a. Introduce a topic clearly, provide a general observation and focus, and group related information logically; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension. b. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic. c. Link ideas within and across categories of information using words, phrases, and clauses (e.g., in contrast, especially). d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Provide a concluding statement or section related to the information or explanation presented. continued

Grade 5				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
WR	Text Types and Purposes	WR.5.3	Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.	a. Orient the reader by establishing a situation and introducing a narrator and/or characters; organize an event sequence that unfolds naturally. b. Use narrative techniques, such as dialogue, description, and pacing, to develop experiences and events or show the responses of characters to situations. c. Use a variety of transitional words, phrases, and clauses to manage the sequence of events. d. Use concrete words and phrases and sensory details to convey experiences and events precisely. e. Provide a conclusion that follows from the narrated experiences or events.
WR	Production and Distribution of Writing	WR.5.4	Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)	continued

Grade 5				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
		WR.5.5	With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 5 on page 29.)	
		WR.5.6	With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of two pages in a single sitting.	
	Research to Build and Present Knowledge	WR.5.7	Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.	
		WR.5.8	Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.	
WR	Research to Build and Present Knowledge	WR.5.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.	a. Apply grade 5 Reading standards to literature (e.g., "Compare and contrast two or more characters, settings, or events in a story or a drama, drawing on specific details in the text [e.g., how characters interact]").

continued

Grade 5				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
				b. Apply grade 5 Reading standards to informational texts (e.g., "Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point[s]").
	Range of Writing	WR.5.10	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	
LG	Conventions of Standard English	LG.5.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.	a. Explain the function of conjunctions, prepositions, and interjections in general and their function in particular sentences. b. Form and use the perfect (e.g., I had walked; I have walked; I will have walked) verb tenses. c. Use verb tense to convey various times, sequences, states, and conditions. d. Recognize and correct inappropriate shifts in verb tense.* e. Use correlative conjunctions (e.g., either/or, neither/nor).

continued

Grade 5				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
		LG.5.2	Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.	a. Use punctuation to separate items in a series.* b. Use a comma to separate an introductory element from the rest of the sentence.
LG	Conventions of Standard English	LG.5.2		c. Use a comma to set off the words yes and no (e.g., Yes, thank you), to set off a tag question from the rest of the sentence (e.g., It's true, isn't it?), and to indicate direct address (e.g., Is that you, Steve?). d. Use underlining, quotation marks, or italics to indicate titles of works. e. Spell grade-appropriate words correctly, consulting references as needed.
	Knowledge of Language	LG.5.3	Use knowledge of language and its conventions when writing, speaking, reading, or listening.	a. Expand, combine, and reduce sentences for meaning, reader/listener interest, and style. b. Compare and contrast the varieties of English (e.g., dialects, registers) used in stories, dramas, or poems. continued

Grade 5				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
LG	Vocabulary Acquisition and Use	LG.5.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 5 reading and content, choosing flexibly from a range of strategies.	a. Use context (e.g., cause/effect relationships and comparisons in text) as a clue to the meaning of a word or phrase. b. Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., photograph, photosynthesis). c. Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases.
		LG.5.5	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	a. Interpret figurative language, including similes and metaphors, in context. b. Recognize and explain the meaning of common idioms, adages, and proverbs.

continued

Grade 5				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
LG	Vocabulary Acquisition and Use	LG.5.5		c. Use the relationship between particular words (e.g., synonyms, antonyms, homographs) to better understand each of the words.
		LG.5.6	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal contrast, addition, and other logical relationships (e.g., however, although, nevertheless, similarly, moreover, in addition).	

Table A-10. 2016–17 eMPowerME: Writing Standards- Grade 6

Grade 6				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
WR	Text Types and Purposes	WR.6.1	Write arguments to support claims with clear reasons and relevant evidence.	a. Introduce claim(s) and organize the reasons and evidence clearly. b. Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text. c. Use words, phrases, and clauses to clarify the relationships among claim(s) and reasons. d. Establish and maintain a formal style. e. Provide a concluding statement or section that follows from the argument presented.
		WR.6.2	Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.	a. Introduce a topic; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples. c. Use appropriate transitions to clarify the relationships among ideas and concepts.

continued

Grade 6				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
WR	Text Types and Purposes	WR.6.2		d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Establish and maintain a formal style. f. Provide a concluding statement or section that follows from the information or explanation presented.
		WR.6.3	Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.	a. Engage and orient the reader by establishing a context and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically. b. Use narrative techniques, such as dialogue, pacing, and description, to develop experiences, events, and/or characters. c. Use a variety of transition words, phrases, and clauses to convey sequence and signal shifts from one time frame or setting to another.

continued

Grade 6				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
WR	Text Types and Purposes	WR.6.3		d. Use precise words and phrases, relevant descriptive details, and sensory language to convey experiences and events. e. Provide a conclusion that follows from the narrated experiences or events.
	Production and Distribution of Writing	WR.6.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)	
		WR.6.5	With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 6 on page 53.)	
		WR.6.6	Use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of three pages in a single sitting.	

continued

Grade 6				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
WR	Research to Build and Present Knowledge	WR.6.7	Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate.	
		WR.6.8	Gather relevant information from multiple print and digital sources; assess the credibility of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and providing basic bibliographic information for sources.	
		WR.6.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.	a. Apply grade 6 Reading standards to literature (e.g., "Compare and contrast texts in different forms or genres [e.g., stories and poems; historical novels and fantasy stories] in terms of their approaches to similar themes and topics"). b. Apply grade 6 Reading standards to literary nonfiction (e.g., "Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not").
	Range of Writing	WR.6.10	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	

continued

Grade 6				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
LG	Conventions of Standard English	LG.6.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.	a. Ensure that pronouns are in the proper case (subjective, objective, possessive). b. Use intensive pronouns (e.g., myself, ourselves). c. Recognize and correct inappropriate shifts in pronoun number and person.* d. Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents).* e. Recognize variations from standard English in their own and others' writing and speaking, and identify and use strategies to improve expression in conventional language.*
		LG.6.2	Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.	a. Use punctuation (commas, parentheses, dashes) to set off nonrestrictive/parenthetical elements.* b. Spell correctly.

continued

Grade 6				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
LG	Knowledge of Language	LG.6.3	Use knowledge of language and its conventions when writing, speaking, reading, or listening.	a. Vary sentence patterns for meaning, reader/ listener interest, and style.* b. Maintain consistency in style and tone.*
	Vocabulary Acquisition and Use	LG.6.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 6 reading and content, choosing flexibly from a range of strategies.	a. Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. b. Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., audience, auditory, audible). c. Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech. d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).
LG	Knowledge of Language	LG.6.5	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	a. Interpret figures of speech (e.g., personification) in context. b. Use the relationship between particular words (e.g., cause/effect, part/whole, item/category) to better understand each of the words.

continued

Grade 6				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
				c. Distinguish among the connotations (associations) of words with similar denotations (definitions) (e.g., stingy, scrimping, economical, unwasteful, thrifty).
		LG.6.6	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.	

Table A-11. 2016–17 eMPowerME: Writing Standards- Grade 7

Grade 7				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
WR	Text Types and Purposes	WR.7.1	Write arguments to support claims with clear reasons and relevant evidence.	a. Introduce claim(s), acknowledge alternate or opposing claims, and organize the reasons and evidence logically. b. Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text. c. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), reasons, and evidence. d. Establish and maintain a formal style. e. Provide a concluding statement or section that follows from and supports the argument presented.
WR	Text Types and Purposes	WR.7.2	Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.	a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples. continued

Grade 7				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
				c. Use appropriate transitions to create cohesion and clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Establish and maintain a formal style. f. Provide a concluding statement or section that follows from and supports the information or explanation presented. continued

Grade 7				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
		WR.7.3	Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.	a. Engage and orient the reader by establishing a context and point of view and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically. b. Use narrative techniques, such as dialogue, pacing, and description, to develop experiences, events, and/or characters. c. Use a variety of transition words, phrases, and clauses to convey sequence and signal shifts from one time frame or setting to another. d. Use precise words and phrases, relevant descriptive details, and sensory language to capture the action and convey experiences and events. e. Provide a conclusion that follows from and reflects on the narrated experiences or events.
WR	Production and Distribution of Writing	WR.7.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)	
		WR.7.5	With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 7 on page 53.)	

continued

Grade 7				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
		WR.7.6	Use technology, including the Internet, to produce and publish writing and link to and cite sources as well as to interact and collaborate with others, including linking to and citing sources.	
	Research to Build and Present Knowledge	WR.7.7	Conduct short research projects to answer a question, drawing on several sources and generating additional related, focused questions for further research and investigation.	
		WR.7.8	Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.	
WR	Research to Build and Present Knowledge	WR.7.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.	a. Apply grade 7 Reading standards to literature (e.g., "Compare and contrast a fictional portrayal of a time, place, or character and a historical account of the same period as a means of understanding how authors of fiction use or alter history"). b. Apply grade 7 Reading standards to literary nonfiction (e.g. "Trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims").
	Range of Writing	WR.7.10	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	

continued

Grade 7				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
LG	Conventions of Standard English	LG.7.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.	a. Explain the function of phrases and clauses in general and their function in specific sentences. b. Choose among simple, compound, complex, and compound-complex sentences to signal differing relationships among ideas. c. Place phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.*
		LG.7.2	Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.	a. Use a comma to separate coordinate adjectives (e.g., It was a fascinating, enjoyable movie but not He wore an old[,] green shirt). b. Spell correctly.
	Knowledge of Language	LG.7.3	Use knowledge of language and its conventions when writing, speaking, reading, or listening.	a. Choose language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.*

continued

Grade 7				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
LG	Vocabulary Acquisition and Use	LG 7.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 7 reading and content, choosing flexibly from a range of strategies.	a. Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. b. Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., belligerent, bellicose, rebel). c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech. d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).
		LG.7.5	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	a. Interpret figures of speech (e.g., literary, biblical, and mythological allusions) in context. b. Use the relationship between particular words (e.g., synonym/antonym, analogy) to better understand each of the words. continued

Grade 7				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
LG	Vocabulary Acquisition and Use	LG.7.5		c. Distinguish among the connotations (associations) of words with similar denotations (definitions) (e.g., refined, respectful, polite, diplomatic, condescending).
		LG.7.6	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.	

Table A-12. 2016–17 eMPowerME: Writing Standards - Grade 8

Grade 8				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
WR	Text Types and Purposes	WR.8.1	Write arguments to support claims with clear reasons and relevant evidence.	a. Introduce claim(s), acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically. b. Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text. c. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence. d. Establish and maintain a formal style. e. Provide a concluding statement or section that follows

continued

Grade 8				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
WR	Text Types and Purposes	WR.8.2	Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.	a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples. c. Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Establish and maintain a formal style. f. Provide a concluding statement or section that follows from and supports the information or explanation presented. continued

Grade 8				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
	Text Types and Purposes	WR.8.3	Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.	Engage and orient the reader by establishing a context and point of view and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically. b. Use narrative techniques, such as dialogue, pacing, description, and reflection, to develop experiences, events, and/or characters. c. Use a variety of transition words, phrases, and clauses to convey sequence, signal shifts from one time frame or setting to another, and show the relationships among experiences and events. d. Use precise words and phrases, relevant descriptive details, and sensory language to capture the action and convey experiences and events. e. Provide a conclusion that follows from and reflects on the narrated experiences or events.

continued

Grade 8				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
WR	Production and Distribution of Writing	WR.8.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)	
		WR.8.5	With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 8 on page 53.)	
		WR.8.6	Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas efficiently as well as to interact and collaborate with others.	
	Research to Build and Present Knowledge	WR.8.7	Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.	

continued

Grade 8				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
WR	Research to Build and Present Knowledge	WR.8.8	Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.	
		WR.8.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.	a. Apply grade 8 Reading standards to literature (e.g., "Analyze how a modern work of fiction draws on themes, patterns of events, or character types from myths, traditional stories, or religious works such as the Bible, including describing how the material is rendered new"). b. Apply grade 8 Reading standards to literary nonfiction (e.g., "Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced").
WR	Range of Writing	WR.8.10	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	

continued

Grade 8				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
LG	Conventions of Standard English	LG.8.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.	a. Explain the function of verbals (gerunds, participles, infinitives) in general and their function in particular sentences. b. Form and use verbs in the active and passive voice. c. Form and use verbs in the indicative, imperative, interrogative, conditional, and subjunctive mood. d. Recognize and correct inappropriate shifts in verb voice and mood.*
LG	Conventions of Standard English	LG.8.2	Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.	a. Use punctuation (comma, ellipsis, dash) to indicate a pause or break. b. Use an ellipsis to indicate an omission. c. Spell correctly.
	Knowledge of Language	LG.8.3	Use knowledge of language and its conventions when writing, speaking, reading, or listening.	a. Use verbs in the active and passive voice and in the conditional and subjunctive mood to achieve particular effects (e.g., emphasizing the actor or the action; continued

Grade 8				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
				expressing uncertainty or describing a state contrary to fact).
LG	Vocabulary Acquisition and Use	LG 8.4	Determine or clarify the meaning of unknown and multiple-meaning words or phrases based on grade 8 reading and content, choosing flexibly from a range of strategies.	a. Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. b. Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., precede, recede, secede). c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech. d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary). continued

Grade 8				
Domain	**Anchor Standard**	**Standard**	**Standard Text**	**Objective Text**
LG	Vocabulary Acquisition and Use	LG.8.5	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	a. Interpret figures of speech (e.g. verbal irony, puns) in context. b. Use the relationship between particular words to better understand each of the words. c. Distinguish among the connotations (associations) of words with similar denotations (definitions) (e.g., bullheaded, willful, firm, persistent, resolute).
		LG.8.6	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.	

Table A-13. 2016-17 eMPowerME: Mathematics Standards – Grade 3

Domain	Cluster	Standard	Standard Code
Operations & Algebraic Thinking	Represent and solve problems involving multiplication and division.	Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each.	03.OA.01.01
		Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each.	03.OA.01.02
		Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.	03.OA.01.03
	Understand properties of multiplication and the relationship between multiplication and division.	Apply properties of operations as strategies to multiply and divide.	03.OA.02.05
		Understand division as an unknown-factor problem.	03.OA.02.06
	Multiply and divide within 100.	Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.	03.OA.03.07
	Solve problems involving the four operations, and identify and explain patterns in arithmetic.	Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.	03.OA.04.08
Number & Operations: Base Ten	Use place value understanding and properties of operations to perform multi-digit arithmetic.	Use place value understanding to round whole numbers to the nearest 10 or 100.	03.NBT.01.01
		Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.	03.NBT.01.02
		Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.	03.NBT.01.03
Number & Operations: Fractions	Develop understanding of fractions as numbers.	Understand a fraction 1/*b* as the quantity formed by 1 part when a whole is partitioned into *b* equal parts; understand a fraction *a*/*b* as the quantity formed by *a* parts of size 1/*b*.	03.NF.01.01

continued

Domain	Cluster	Standard	Standard Code
		Represent a fraction 1/*b* on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into *b* equal parts. Recognize that each part has size 1/*b* and that the endpoint of the part based at 0 locates the number 1/*b* on the number line.	03.NF.01.02.a
		Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.	03.NF.01.03.a
		Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.	03.NF.01.03.c
		Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.	03.NF.01.03.d
Measurement & Data	Solve problems involving measurement and estimation.	Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.	03.MD.01.01
		Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.	03.MD.01.02
	Represent and interpret data.	Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs.	03.MD.02.03
		Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.	03.MD.02.04
	Geometric measurement: understand concepts of area and relate area to multiplication and to addition.	Recognize area as an attribute of plane figures and understand concepts of area measurement.	03.MD.03.05
		Relate area to the operations of multiplication and addition. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths *a* and *b* + *c* is the sum of *a* × *b* and a × *c*. Use area models to represent the distributive property in mathematical reasoning.	03.MD.03.07.c

continued

Domain	Cluster	Standard	Standard Code
		Relate area to the operations of multiplication and addition. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.	03.MD.03.07.d
	Geometric measurement: recognize perimeter.	Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.	03.MD.04.08
Geometry	Reason with shapes and their attributes.		03.G.01
		Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.	03.G.01.01
		Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole.	03.G.01.02

Table A-14. 2016-17 eMPowerME: Mathematics Standards – Grade 4

Domain	Cluster	Standard	Standard Code
Operations & Algebraic Thinking	Use the four operations with whole numbers to solve problems.	Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.	04.OA.01.01
		Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.	04.OA.01.02
		Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.	04.OA.01.03
	Gain familiarity with factors and multiples.	Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.	04.OA.02.04
	Generate and analyze patterns.	Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.	04.OA.03.05
Number & Operations: Base Ten	Generalize place value understanding for multi-digit whole numbers.	Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.	04.NBT.01.01
		Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	04.NBT.01.02
		Use place value understanding to round multi-digit whole numbers to any place.	04.NBT.01.03
	Use place value understanding and properties of operations to perform multi-digit arithmetic.	Fluently add and subtract multi-digit whole numbers using the standard algorithm.	04.NBT.02.04
		Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	04.NBT.02.05

continued

Domain	Cluster	Standard	Standard Code
		Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	04.NBT.02.06
Number & Operations: Fractions	Extend understanding of fraction equivalence and ordering.	Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.	04.NF.01.01
		Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.	04.NF.01.02
	Build fractions from unit fractions.	Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$.	04.NF.02.03
		Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.	04.NF.02.03.d
		Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem.	04.NF.02.04.c
	Understand decimal notation for fractions, and compare decimal fractions.	Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100	04.NF.03.05
		Use decimal notation for fractions with denominators 10 or 100.	04.NF.03.06
		Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model.	04.NF.03.07
Measurement & Data	Solve problems involving measurement and conversion of measurements.	Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two column table.	04.MD.01.01

continued

Domain	Cluster	Standard	Standard Code
		Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.	04.MD.01.02
		Apply the area and perimeter formulas for rectangles in real world and mathematical problems.	04.MD.01.03
	Represent and interpret data.	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots.	04.MD.02.04
	Geometric measurement: understand concepts of angle and measure angles.	An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees.	04.MD.03.05.b
		Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.	04.MD.03.06
		Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.	04.MD.03.07
Geometry	Draw and identify lines and angles, and classify shapes by properties of their lines and angles.	Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.	04.G.01.01
		Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.	04.G.01.02
		Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.	04.G.01.03

Table A-15. 2016-17 eMPowerME: Mathematics Standards – Grade 5

Domain	Cluster	Standard	Standard Code
Operations & Algebraic Thinking	Write and interpret numerical expressions.	Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.	05.OA.01.01
		Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.	05.OA.01.02
	Analyze patterns and relationships.	Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.	05.OA.02.03
Number & Operations: Base Ten	Understand the place value system.	Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.	05.NBT.01.01
		Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.	05.NBT.01.02
		Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000).	05.NBT.01.03.a
	Perform operations with multi-digit whole numbers and with decimals to hundredths.	Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	05.NBT.02.06
		Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	05.NBT.02.07
Number & Operations: Fractions	Use equivalent fractions as a strategy to add and subtract fractions.	Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.	05.NF.01.01

continued

Domain	Cluster	Standard	Standard Code
		Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.	05.NF.01.02
	Apply and extend previous understandings of multiplication and division.	Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem.	05.NF.02.03
		Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.	05.NF.02.04.b
		Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.	05.NF.02.05.b
		Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.	05.NF.02.06
Measurement & Data	Convert like measurement units within a given measurement system.	Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.	05.MD.01.01
	Represent and interpret data.	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots.	05.MD.02.02
	Geometric measurement: understand concepts of volume.	Recognize volume as an attribute of solid figures and understand concepts of volume measurement.	05.MD.03.03
		A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.	05.MD.03.03.b

continued

Domain	Cluster	Standard	Standard Code
		Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.	05.MD.03.05.b
Geometry	Graph points on the coordinate plane to solve real-world and mathematical problems.	Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., *x*-axis and *x*-coordinate, *y*-axis and *y*-coordinate).	05.G.01.01
		Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.	05.G.01.02
	Classify two-dimensional figures into categories based on their properties.	Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.	05.G.02.03
		Classify two-dimensional figures in a hierarchy based on properties.	05.G.02.04

Table A-16. 2016-17 eMPowerME: Mathematics Standards – Grade 6

Domain	Cluster	Standard	Standard Code
Ratios & Proportional Relationships	Understand ratio concepts and use ratio reasoning to solve problems.	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.	06.RP.01.01
		Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship.	06.RP.01.02
		Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.	06.RP.01.03
		Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.	06.RP.01.03.c
		Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.	06.RP.01.03.d
The Number System	Apply and extend previous understandings of multiplication and division to divide fractions by fractions.	Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.	06.NS.01.01
	Compute fluently with multi-digit numbers and find common factors and multiples.	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.	06.NS.02.03
		Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor.	06.NS.02.04

continued

Domain	Cluster	Standard	Standard Code
	Apply and extend previous understandings of numbers to the system of rational numbers.	Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.	06.NS.03.05
		Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.	06.NS.03.06.c
		Write, interpret, and explain statements of order for rational numbers in real-world contexts.	06.NS.03.07.b
		Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.	06.NS.03.08
Expressions & Equations	Apply and extend previous understandings of arithmetic to algebraic expressions.	Write and evaluate numerical expressions involving whole-number exponents.	06.EE.01.01
		Write expressions that record operations with numbers and with letters standing for numbers.	06.EE.01.02.a
		Apply the properties of operations to generate equivalent expressions.	06.EE.01.03
	Reason about and solve one-variable equations and inequalities.	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.	06.EE.02.05
		Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.	06.EE.02.06
		Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.	06.EE.02.07

continued

Domain	Cluster	Standard	Standard Code
		Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.	06.EE.02.08
	Represent and analyze quantitative relationships between dependent and independent variables.	Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.	06.EE.03.09
Geometry	Solve real-world and mathematical problems involving area, surface area, and volume.	Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.	06.G.01.01
		Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = l\ w\ h$ and $V = b\ h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.	06.G.01.02
		Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.	06.G.01.03
		Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.	06.G.01.04
Statistics & Probability	Develop understanding of statistical variability.	Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.	06.SP.01.01

continued

Domain	Cluster	Standard	Standard Code
		Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.	06.SP.01.02
		Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.	06.SP.01.03
	Summarize and describe distributions.	Display numerical data in plots on a number line, including dot plots, histograms, and box plots.	06.SP.02.04
		Summarize numerical data sets in relation to their context.	06.SP.02.05
		Summarize numerical data sets in relation to their context by giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.	06.SP.02.05.c

Table A-17. 2016-17 eMPowerME: Mathematics Standards – Grade 7

Domain	Cluster	Standard	Standard Code
Ratios & Proportional Relationships	Analyze proportional relationships and use them to solve real-world and mathematical problems.	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.	07.RP.01.01
		Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.	07.RP.01.02.a
		Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.	07.RP.01.02.b
		Represent proportional relationships by equations.	07.RP.01.02.c
		Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.	07.RP.01.03
The Number System	Apply and extend previous understandings of operations with fractions.	Describe situations in which opposite quantities combine to make 0	07.NS.01.01.a
		Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.	07.NS.01.02
		Solve real-world and mathematical problems involving the four operations with rational numbers.	07.NS.01.03
Expressions & Equations	Use properties of operations to generate equivalent expressions.	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.	07.EE.01.01
		Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.	07.EE.01.02
	Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.	07.EE.02.03
		Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.	07.EE.02.04

continued

Domain	Cluster	Standard	Standard Code
		Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.	07.EE.02.04.a
		Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.	07.EE.02.04.b
Geometry	Draw, construct, and describe geometrical figures and describe the relationships between them.	Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.	07.G.01.01
		Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.	07.G.01.02
	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.	07.G.02.04
		Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.	07.G.02.05
		Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.	07.G.02.06
Statistics & Probability	Use random sampling to draw inferences about a population.	Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.	07.SP.01.01
		Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.	07.SP.01.02

continued

Domain	Cluster	Standard	Standard Code
	Draw informal comparative inferences about two populations.	Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.	07.SP.02.03
		Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.	07.SP.02.04
	Investigate chance processes and develop, use, and evaluate probability models.	Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	07.SP.03.05
		Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.	07.SP.03.07
		Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.	07.SP.03.07.a
		Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.	07.SP.03.08.a
		Design and use a simulation to generate frequencies for compound events.	07.SP.03.08.c

Table A-18. 2016-17 eMPowerME: Mathematics Standards – Grade 8

Domain	Cluster	Standard	Standard Code
The Number System	Know that there are numbers that are not rational, and approximate them by rational numbers.	Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2).	08.NS.01.02
Expressions & Equations	Work with radicals and integer exponents.	Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other.	08.EE.01.03
		Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.	08.EE.01.04
	Understand the connections between proportional relationships, lines, and linear equations.	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.	08.EE.02.05
		Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation y = mx for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b.	08.EE.02.06
	Analyze and solve linear equations and pairs of simultaneous linear equations.	Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).	08.EE.03.07.a
		Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	08.EE.03.07.b
		Analyze and solve pairs of simultaneous linear equations.	08.EE.03.08
		Solve real-world and mathematical problems leading to two linear equations in two variables.	08.EE.03.08.c

continued

Domain	Cluster	Standard	Standard Code
Functions	Define, evaluate, and compare functions.	Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.	08.F.01.01
		Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	08.F.01.02
	Use functions to model relationships between quantities.	Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (*x*, *y*) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.	08.F.02.04
		Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	08.F.02.05
Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	Verify experimentally the properties of rotations, reflections, and translations: Angles are taken to angles of the same measure.	08.G.01.01.b
		Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.	08.G.01.02
		Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	08.G.01.03
		Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.	08.G.01.05
	Understand and apply the Pythagorean Theorem.	Explain a proof of the Pythagorean Theorem and its converse.	08.G.02.06
		Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.	08.G.02.07

continued

Domain	Cluster	Standard	Standard Code
	Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.	Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	08.G.03.09
Statistics & Probability	Investigate patterns of association in bivariate data.	Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	08.SP.01.01
		Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.	08.SP.01.02
		Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.	08.SP.01.03
		Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables.	08.SP.01.04

APPENDIX B—Testing Times

Table B-1. 2016–17 eMPowerME: 2017 Testing Times

Test Name	*Total Users*	*Total Time Spent*	*Average Time Spent (in Min)*	*Median Time Spent (in Min)*	*75th Percentile Time Spent (in Min)*	*90th Percentile Time Spent (in Min)*	*TAM Time Recommended 2017 (not inc. 10 extra min)*
Spring16 G3 Math	13146	1463723	111	98	129	168	130
Spring16 G3 Reading	13102	2299586	175	162	213	271	140
Spring16 G3 Writing and Language	13038	672852	51	46	60	79	50
Spring16 G4 Math	12923	1486032	114	107	136	170	130
Spring16 G4 Reading	12874	2235381	173	160	205	258	140
Spring16 G4 Writing and Language	12823	678359	52	49	62	79	50
Spring16 G5 Math	13150	1647215	125	117	150	187	130
Spring16 G5 Reading	13128	2244398	170	161	205	257	140
Spring16 G5 Writing and Language	13080	684241	52	49	61	76	50
Spring16 G6 Math	13106	1431240	109	101	126	157	130
Spring16 G6 Reading	13104	1994366	152	144	185	227	140
Spring16 G6 Writing and Language	12985	615174	47	44	56	69	50
Spring16 G7 Math	12923	1470840	113	104	132	167	130
Spring16 G7 Reading	12984	2026788	156	143	183	231	140
Spring16 G7 Writing and Language	12813	617003	48	44	55	69	50
Spring16 G8 Math	12994	1467862	112	105	136	174	130
Spring16 G8 Reading	13021	1984006	152	140	181	227	140
Spring16 G8 Writing and Language	12838	597234	46	42	53	66	50

APPENDIX C—TEST BLUEPRINTS

Table C-1. 2016–17 eMPowerME: Spring 2017 Blueprints—Mathematics Grades 3 and 5

Spring 2017		*Mathematics Grades 3, 5 Maine*													
Session	**Position**	**Position in Session**	**Item Type: Oper'l.**	**Item Type: Matrix**	Form 1	Form 2	Form 3	Form 4	Form 5	Form 6	Form 7	Form 8	Form 9	Form 10
1	1	1	SR											
1	2	2	SR											
1	3	3	SR											
1	4	4	SR											
1	5	5	SR											
1	6	6	SR											
1	7	7	CR											
1	8	8	SR											
1	9	9	SR											
1	10	10	SR											
1	11	11	SR											
1	12	12	SR											
1	13	13	SR											
1	14	14	CR											
1	15	15	SR											
1	16	16	SR											

continued

Spring 2017		*Mathematics Grades 3, 5 Maine*													
Session	**Position**	**Position in Session**	**Item Type: Oper'l.**	**Item Type: Matrix**	Form 1	Form 2	Form 3	Form 4	Form 5	Form 6	Form 7	Form 8	Form 9	Form 10
1	17	17	SR											
1	18	18	SR											
2	19	1	SR											
2	20	2	SR											
2	21	3	SR											
2	22	4	SR											
2	23	5	SR											
2	24	6	SR											
2	25	7	CR											
2	26	8	SR											
2	27	9	SR											
2	28	10	SR											
2	29	11	SR											
2	30	12	SR											
2	31	13	SR											
2	32	14	CR											

continued

Spring 2017		*Mathematics Grades 3, 5 Maine*												
Session	**Position**	**Position in Session**	**Item Type: Oper'l.**	**Item Type: Matrix**	Form 1	Form 2	Form 3	Form 4	Form 5	Form 6	Form 7	Form 8	Form 9	Form 10
2	33	15	SR											
2	34	16	SR											
2	35	17	SR											
2	36	18	SR											
2	37	19	SR											

Table C-2. 2016–17 eMPowerME: Spring 2017 Blueprints—Mathematics Grade 4

Spring 2017		*Mathematics Grade 4 Maine*												
Session	**Position**	**Position in Session**	**Item Type: Oper'l.**	**Item Type: Matrix**	Form 1	Form 2	Form 3	Form 4	Form 5	Form 6	Form 7	Form 8	Form 9	Form 10
1	1	1	SR											
1	2	2	SR											
1	3	3	SR											
1	4	4	SR											
1	5	5	SR											
1	6	6	SR											
1	7	7	CR											
1	8	8	SR											
1	9	9	SR											
1	10	10	SR											
1	11	11	SR											
1	12	12	SR											
1	13	13	SR											
1	14	14	CR											
1	15	15	SR											
1	16	16	SR											

continued

Spring 2017		*Mathematics Grade 4 Maine*													
Session	**Position**	**Position in Session**	**Item Type: Oper'l.**	**Item Type: Matrix**	Form 1	Form 2	Form 3	Form 4	Form 5	Form 6	Form 7	Form 8	Form 9	Form 10
1	17	17	SR											
1	18	18	SR											
2	19	1	SR											
2	20	2	SR											
2	21	3	SR											
2	22	4	SR											
2	23	5	SR											
2	24	6	SR											
2	25	7	CR											
2	26	8	SR											
2	27	9	SR											
2	28	10	SR											
2	29	11	SR											
2	30	12	SR											
2	31	13	SR											
2	32	14	CR											

continued

Spring 2017		*Mathematics Grade 4 Maine*												
Session	**Position**	**Position in Session**	**Item Type: Oper'l.**	**Item Type: Matrix**	Form 1	Form 2	Form 3	Form 4	Form 5	Form 6	Form 7	Form 8	Form 9	Form 10
2	33	15	SR											
2	34	16	SR											
2	35	17	SR											
2	36	18	SR											

Table C-3. 2016–17 eMPowerME: Spring 2017 Blueprints—Mathematics Grades 6 and 7

Spring 2017		*Mathematics Grades 6, 7 Maine*												
Session	**Position**	**Position in Session**	**Item Type: Oper'l.**	**Item Type: Matrix**	Form 1	Form 2	Form 3	Form 4	Form 5	Form 6	Form 7	Form 8	Form 9	Form 10
1	1	1	SR											
1	2	2	SR											
1	3	3	SR											
1	4	4	SR											
1	5	5	SR											
1	6	6	SR											
1	7	7	SR											
1	8	8	CR											
1	9	9	SR											
1	10	10	SR											
1	11	11	SR											
1	12	12	SR											
1	13	13	SR											
1	14	14	SR											
1	15	15	CR											
1	16	16	SR											

continued

Spring 2017		*Mathematics Grades 6, 7 Maine*													
Session	**Position**	**Position in Session**	**Item Type: Oper'l.**	**Item Type: Matrix**	Form 1	Form 2	Form 3	Form 4	Form 5	Form 6	Form 7	Form 8	Form 9	Form 10
1	17	17	SR											
1	18	18	SR											
1	19	19	SR											
1	20	20	SR											
2	21	1	SR											
2	22	2	SR											
2	23	3	SR											
2	24	4	SR											
2	25	5	SR											
2	26	6	SR											
2	27	7	SR											
2	28	8	CR											
2	29	9	SR											
2	30	10	SR											
2	31	11	SR											
2	32	12	SR											

continued

Spring 2017		*Mathematics Grades 6, 7 Maine*													
Session	**Position**	**Position in Session**	**Item Type: Oper'l.**	**Item Type: Matrix**	Form 1	Form 2	Form 3	Form 4	Form 5	Form 6	Form 7	Form 8	Form 9	Form 10
2	33	13	SR											
2	34	14	SR											
2	35	15	CR											
2	36	16	SR											
2	37	17	SR											
2	38	18	SR											
2	39	19	SR											
2	40	20	SR											

Table C-4. 2016–17 eMPowerME: Spring 2017 Blueprints—Mathematics Grade 8

Spring 2017		*Mathematics Grade 8 Maine*												
Session	**Position**	**Position in Session**	**Item Type: Oper'l.**	**Item Type: Matrix**	Form 1	Form 2	Form 3	Form 4	Form 5	Form 6	Form 7	Form 8	Form 9	Form 10
1	1	1	SR											
1	2	2	SR											
1	3	3	SR											
1	4	4	SR											
1	5	5	SR											
1	6	6	SR											
1	7	7	SR											
1	8	8	CR											
1	9	9	SR											
1	10	10	SR											
1	11	11	SR											
1	12	12	SR											
1	13	13	SR											
1	14	14	SR											
1	15	15	CR											
1	16	16	SR											

continued

Spring 2017		*Mathematics Grade 8 Maine*													
Session	**Position**	**Position in Session**	**Item Type: Oper'l.**	**Item Type: Matrix**	Form 1	Form 2	Form 3	Form 4	Form 5	Form 6	Form 7	Form 8	Form 9	Form 10
1	17	17	SR											
1	18	18	SR											
1	19	19	SR											
1	20	20	SR											
2	21	1	SR											
2	22	2	SR											
2	23	3	SR											
2	24	4	SR											
2	25	5	SR											
2	26	6	SR											
2	27	7	SR											
2	28	8	CR											
2	29	9	SR											
2	30	10	SR											
2	31	11	SR											
2	32	12	SR											

continued

Spring 2017		*Mathematics Grade 8 Maine*													
Session	**Position**	**Position in Session**	**Item Type: Oper'l.**	**Item Type: Matrix**	Form 1	Form 2	Form 3	Form 4	Form 5	Form 6	Form 7	Form 8	Form 9	Form 10
2	33	13	SR											
2	34	14	SR											
2	35	15	CR											
2	36	16	SR											
2	37	17	SR											
2	38	18	SR											
2	39	19	SR											
2	40	20	SR											
2	41	21	SR											

Table C-5. 2016–17 eMPowerME: Spring 2017 Blueprints—Reading

Spring 2017		*Reading Maine*												
Session	**Position**	**Position in Session**	**Item Type: Oper'l.**	**Item Type: Matrix**	Form 1	Form 2	Form 3	Form 4	Form 5	Form 6	Form 7	Form 8	Form 9	Form 10
1	1	1	Passage Pair 6 SR 1 EBSR 2 CR											
1	2	2												
1	3	3												
1	4	4												
1	5	5												
1	6	6												
1	7	7												
1	8	8												
1	9	9												
2	10	1	Passage Pair 8 SRs 1 EBSR 1 CR											
2	11	2												
2	12	3												
2	13	4												
2	14	5												
2	15	6												
2	16	7												

continued

Spring 2017		*Reading Maine*												
Session	**Position**	**Position in Session**	**Item Type: Oper'l.**	**Item Type: Matrix**	Form 1	Form 2	Form 3	Form 4	Form 5	Form 6	Form 7	Form 8	Form 9	Form 10
2	17	8	Passage Pair											
2	18	9	8 SRs											
2	19	10	1 EBSR 1 CR											
2	20	11	Single Passage 5 SR 1 EBSR 1 CR											
2	21	12												
2	22	13												
2	23	14												
2	24	15												
2	25	16												
2	26	17												

Table C-6. 2016–17 eMPowerME: Spring 2017 Blueprints—Writing & Language

Spring 2017		*Writing & Language Maine*												
Session	**Position**	**Position in Session**	**Item Type: Oper'l.**	**Item Type: Matrix**	Form 1	Form 2	Form 3	Form 4	Form 5	Form 6	Form 7	Form 8	Form 9	Form 10
1	1	1	Passage 5 SR 1 EBSR											
1	2	2												
1	3	3												
1	4	4												
1	5	5												
1	6	6												
1	7	7	Passage 5 SR											
1	8	8												
1	9	9												
1	10	10												
1	11	11												
2	12	1	Passage 5 SR 1 EBSR											
2	13	2												
2	14	3												
2	15	4												

continued

Spring 2017		*Writing & Language Maine*													
Session	**Position**	**Position in Session**	**Item Type: Oper'l.**	**Item Type: Matrix**	Form 1	Form 2	Form 3	Form 4	Form 5	Form 6	Form 7	Form 8	Form 9	Form 10
2	16	5	Passage 5 SR 1 EBSR											
2	17	6												
2	18	7	Passage 5 SR 1 EBSR											
2	19	8												
2	20	9												
2	21	10												
2	22	11												
2	23	12												

APPENDIX D—PARTICIPATION RATES

Table D-1. 2016–17 eMPowerME: Summary of Participation by Demographic Category—Mathematics

Description	*Tested*	
	Number	*Percent*
All Students	78705	100.00
Male	40464	51.41
Female	38225	48.57
Gender Not Reported	16	0.02
Hispanic or Latino	1788	2.27
American Indian or Alaskan Native	673	0.86
Asian	1226	1.56
Black or African American	2755	3.50
Native Hawaiian or Pacific Islander	74	0.09
White (non-Hispanic)	70272	89.29
Two or More Races (non-Hispanic)	1901	2.42
Currently receiving LEP services	2639	3.35
Former LEP student - monitoring year 1	216	0.27
Former LEP student - monitoring year 2	210	0.27
LEP: All Other Students	75640	96.11
Students with an IEP	14004	17.79
IEP: All Other Students	64701	82.21
Economically Disadvantaged Students	34837	44.26
SES: All Other Students	43868	55.74
Migrant Students		0.00
Migrant: All Other Students	78705	100.00
Students receiving Title 1 Services	9089	11.55
Title 1: All Other Students	69616	88.45
Plan 504	3272	4.16
Plan 504: All Other Students	75433	95.84
Race not reported	16	0.02
All Students	78705	100.00

Table D-2. 2016–17 eMPowerME: Summary of Participation by Demographic Category—ELA

Description	*Tested*	
	Number	*Percent*
All Students	78380	100.00
Male	40276	51.39
Female	38084	48.59
Gender Not Reported	20	0.03
Hispanic or Latino	1766	2.25
American Indian or Alaskan Native	672	0.86
Asian	1194	1.52
Black or African American	2515	3.21
Native Hawaiian or Pacific Islander	74	0.09
White (non-Hispanic)	70240	89.61
Two or More Races (non-Hispanic)	1899	2.42
Currently receiving LEP services	2305	2.94
Former LEP student - monitoring year 1	216	0.28
Former LEP student - monitoring year 2	210	0.27
LEP: All Other Students	75649	96.52
Students with an IEP	13998	17.86
IEP: All Other Students	64382	82.14
Economically Disadvantaged Students	34601	44.15
SES: All Other Students	43779	55.85
Migrant Students		0.00
Migrant: All Other Students	78380	100.00
Students receiving Title 1 Services	9091	11.60
Title 1: All Other Students	69289	88.40
Plan 504	3268	4.17
Plan 504: All Other Students	75112	95.83
Race not reported	20	0.03

APPENDIX E—ACCOMMODATION FREQUENCIES BY CONTENT AREA

Table E-1. 2016–17 eMPowerME: Numbers of Students Tested with Accommodations by Accommodation Type and Subject—Mathematics

Accommodation Code	*Grade 3*	*Grade 4*	*Grade 5*	*Grade 6*	*Grade 7*	*Grade 8*
AccomTexttoSpeechELA	811	887	885	719	667	583
AccomTexttoSpeechMAT	845	953	964	733	656	586
AccomColorContrast	21	14	46	42	36	29
AccomCalculator	0	0	0	0	0	0
AccomNoTools	342	204	176	96	35	29
AccomNE01	637	652	632	483	389	286
AccomNE02	889	866	847	703	504	446
AccomNE03	4	7	1	1	3	1
AccomNE04	1	2	4	2	1	0
AccomNE05	253	269	224	172	124	111
AccomNE06	49	43	56	45	82	59
AccomNE07	8	5	12	16	12	34
AccomNE08	388	357	334	306	222	179
AccomNE09	2067	2137	2241	2022	1924	1874
AccomNE10	1858	2011	2111	1875	1788	1757
AccomNE11	1334	1290	1273	1206	1058	886
AccomNE12	0	0	1	0	0	1
AccomNE13	0	0	0	0	0	0
AccomNE14	1	1	0	0	4	1
AccomNE15	16	12	23	12	7	4
Accom01	0	0	0	0	0	0

Table E-2. 2016–17 eMPowerME: Numbers of Students Tested with Accommodations by Accommodation Type and Subject—ELA

Accommodation Code	*Grade 3*	*Grade 4*	*Grade 5*	*Grade 6*	*Grade 7*	*Grade 8*
AccomTexttoSpeechELA	803	885	881	718	666	581
AccomTexttoSpeechMAT	837	952	959	732	655	584
AccomColorContrast	21	15	46	42	36	29
AccomCalculator	0	0	0	0	0	0
AccomNoTools	339	204	171	96	35	29
AccomNE01	634	656	636	483	389	287
AccomNE02	883	866	844	701	504	445
AccomNE03	4	7	1	1	3	0
AccomNE04	0	3	3	2	1	0
AccomNE05	251	270	226	174	124	106
AccomNE06	49	43	56	45	82	59
AccomNE07	5	4	7	5	8	15
AccomNE08	388	359	338	305	221	180
AccomNE09	2044	2121	2211	1998	1914	1861
AccomNE10	1855	1997	2102	1866	1779	1739
AccomNE11	1326	1281	1269	1200	1055	890
AccomNE12	0	1	0	0	0	1
AccomNE13	0	0	0	0	0	0
AccomNE14	1	1	0	0	4	1
AccomNE15	16	12	23	12	7	4
Accom01	0	0	0	0	0	0

APPENDIX F—MEA ACCESSIBILITY GUIDE

Maine Educational Assessments (MEA)

For Mathematics and English Language Arts/Literacy

eMPowerME (Grades 3-8)

2017 Accessibility Guide

Universal Tools/Supports/Accommodations

Embedded & Non-embedded

measured progress

February 2017

Maine Educational Assessment for Mathematics and English Language Arts/Literacy Grades 3-8 eMPowerME Tools, Supports & Accommodations

Introduction

Universal tools are available to all students for all items, unless designated as item specific. All support(s) and accommodation(s) used for the assessment of an individual student will be the result of a team decision made at the local level, with teams having variances in decision-making capacities. All decisions regarding the use of supports and accommodations must be made on an individual student basis. Supports and accommodations must be consistent with the student's normal routine during instruction and assessment.

Accommodations do not alter what the test measures or the comparability of results. When used properly, accommodations remove the barriers to participation in the assessment and provide students with diverse learning needs an equitable opportunity to demonstrate their knowledge and skills.

Scrap/scratch paper may be made available to all students during testing sessions. NO pre-authored aids such as templates, graphic organizers, reference sheets, multiplication tables, etc. are allowed.

Terminology & Definitions

Accommodations = Changes in procedures or materials that increase equitable access during assessment for students for whom there is a documentation of the need on an Individualized Education Program/Plan (IEP) or 504 Plan.

Embedded = Computer-delivered features that are a constructed part of the test delivery platform system.

Non-Embedded = Provisions outside of the computer-based test administration system. This may include the provision of an outside person or thing, change in setting or time.

Read-Aloud = For students with documented (IEP/504 only) reading-related disabilities, or students who are blind/visually impaired and do not have adequate braille skills, text is read aloud to the student via a (non-embedded) human reader. Read-Aloud should be consistent with the student's normal routine during instruction and assessments. Read-Aloud content should be provided for specific text as outlined in Table 1 on page 9.

Scribe = Students with documented (IEP/504) dysgraphia difficulties may dictate answers to a scribe in an individual setting. The human scribe records verbatim what a student dictates

and must give the student an opportunity to review scribed text. If a scribe is an approved accommodation in a student's IEP/504 plan, a scribe is allowed for **all test sessions including** the essay. Scribed text must be entered into the online testing platform—no paper submissions accepted.

Supports = In addition to IEP/504 documentation, support(s) may be provided as determined on an individual basis by a team such as Response to Intervention (RtI) and/or Student Assistance Team, and are consistent with the student's normal routine during instruction. Provision of supports does not alter the construct of any test item.

"Team" (other than IEP/504) = Local authoritative teams such as Response to Intervention (RtI) and or Student Assistance Teams.

Text-To-Speech (TTS) = For students with documented (IEP/504 only) reading-related disabilities, or students who are blind/visually impaired and do not have adequate braille skills, text is read aloud to the student via (embedded) TTS technology. TTS should be consistent with the student's normal routine during instruction and assessment. Headphones/earbuds are necessary unless tested individually in a separate setting. TTS is available only for specific text outlined in Table 1 on page 9.

Universal Tool = Functions that are available to all students for all items, including some that are designated as item-specific tools.

For more information, see the *MEA Portal User Guide*, which is available on the MEA Help & Support page: http://maine.onlinehelp.measuredprogress.org

If you have any questions or concerns, contact the Measured Progress Service Center at maineservicedesk@measuredprogress.org or (855) 652-8929

OR

Nancy Godfrey, Assessment Coordinator at nancy.godfrey@maine.gov (207) 624-6775

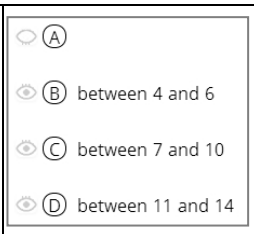
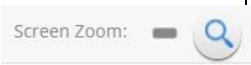
Embedded Universal Tools – Available to All

Students testing within the MEA kiosk will have access to a number of tools as described in the table below. These tools are available on all supported testing devices. Universal tools are available to all students for all items, unless designated as item specific tools.

Tool	Tool Icon	Description	All Items?
Ruler		The vector-based, partially translucent ruler is rotatable, draggable and resizable by the student.	item specific Math only
Protractor		The vector-based, partially translucent protractor is rotatable, draggable and resizable by the student.	item specific Math only
Calculators		Two calculator modes are available: 1) Basic, and 2) Scientific. • The Basic calculator will be available for students Grades 3-6 taking the Mathematics test. • The Scientific calculator will be available for students Grades 7-8 taking the Mathematics tests.	item specific Math only
Sketch & Highlight		The sketch pad provides the following functionalities: • Sketch or draw using black, red or blue brushes • Highlight using a semi-transparent yellow highlighter brush • Erase drawings and highlighting using the eraser brush.	Yes
Notepad		A notepad is provided for students to write different notes for different items, meaning it uniquely persists per item. The notepad is resizable, draggable, and displays a timestamp for when the student last edited content.	Yes

Notepad Details:

- The notepad is retained per item. If the student writes notes on Item 1, navigates to Item 2, returns to Item 1, notes will still be there.
- Notes on passages are not viewable for all items pertaining to the passage. They will only appear for the item that they were written on.
- Notes **DO NOT** remain if a test is paused.
- Notes are **NOT** retained if a student submits a test session and then has state-approved reactivation.
- Students should **NOT** use the notepad to construct rough drafts.

The following features require a student action to activate the feature—e.g., Reverse Contrast enabled does not automatically set the screen as black with white letters; it simply gives the student the ability to switch back and forth. Likewise, Custom Masking and Zoom require a student action to activate the feature.			
Answer Masking		The student "hides" possible answer choices (for multiple - choice items only).	Yes
Guideline Tool		The student uses an onscreen tool to assist in reading by raising and lowering the tool for each line of text onscreen. This can be moved anywhere within the item.	Yes
Jump To Item		Student can access list of item numbers in a session and jump to a specific item number by clicking the down arrow next to the question number.	Yes
Formatting Tools		Students are able to cut, copy, paste, undo, redo, bold, italicize, underline.	Yes
Bookmark/ Star Item		Student can bookmark or star  an item as a reminder to return.	Yes
Custom Masking		Provides the ability to mask certain parts of the test interface or question.	Yes
Screen Zoom		Students can magnify the entire screen up to 150 percent. This is a full-vector zoom of the entire screen. Text can be enlarged in 5 increments: 100%, 112%, 125%, 137%, 150%.	Yes
Reverse Contrast		Inverts all color values in the user interface.	Yes
* Denotes a feature that will be automatically enabled for all students. If Universal Tools are disabled ("Turn Off All Universal Tools"), these six tools are turned off.			

Non-Embedded Universal Tool Available to All

Tool	Description
Scrap/Scratch Paper	Scrap/scratch paper available to students during testing sessions. NO pre-authored aids such as templates, graphic organizers, reference sheets, multiplication tables, etc. **Scrap/Scratch Paper Protocol:** Following the conclusion of each test session, it is the School Test Coordinator's (STC) responsibility to ensure that all scratch paper is collected, inventoried, and immediately shredded to maintain test security.

Accommodations & Supports Enabled in System by DAC/ITC/STC (Documentation: IEP / 504 / RtI / SAT)

Approved users will assign accommodations to students within the Administration component. Accommodations are entered and edited via the Student Profile by the District Assessment Coordinator (DAC), IT Coordinator (ITC) or the School Test Coordinator (STC) users.

Embedded Accommodations Requiring IEP/504 Documentation

The following Accommodations are determined by an appropriate team, documented in an IEP and/or 504 Plan, and enabled in the testing system by a School Test Coordinator or District Assessment Coordinator. Embedded accommodations will be available to students testing using the MEA kiosk.

Accommodation	Tool Icon	Description
****Text-to-Speech (TTS) (IEP/504 documented)** **MATHMATICS & ESSAY**		Students can play, pause, or stop audio. Items support default and on-demand load playback orders. Text-to-Speech is assigned by content area and designated allowable text (directions vs. test questions, vs. answer choices vs. passages). **See Table 1 page 9, which outlines allowable text. *NOTE: Speed of TTS is not adjustable. Voice Pac is the voice set as the default on the device the student is using for testing. See Kiosk Installation Guide.* • Text-to-Speech Math • Text-to-Speech Essay
Color Contrast (IEP/504 documented)		Students have the ability to choose a text and background color from a set of 12 predefined color combinations.

Embedded Supports Requiring "Team" Documentation (e.g., Response to Intervention (RtI) Team, Student Assistance Team)

Support	Description
Turn off universal tools (team-documented)	**NEW:** Selecting this accommodation will turn off the sketch and highlight tool, the guideline tool, screen zoom, the reverse contrast tool, custom masking, and the answer masking tool.

Accommodations & Supports (cont'd.)
Enabled in System by DAC/ITC/STC
(Documentation: IEP / 504 / RtI / SAT)

Non-Embedded Accommodations – IEP/504 Documentation

Users will assign accommodations to students within the Administration component; however, these accommodations require persons/things outside of the testing platform. The following Accommodations are determined by the appropriate educational team, documented in an IEP and/or 504 Plan, and must be provided in the testing environment/session by a School Test Coordinator and/or Test Administrator.

Accommodation	Description
Scribe **(IEP/504 documented)**	The student may dictate answers to scribe in an individual setting. Human scribe records verbatim what a student dictates, and must give the student an opportunity to review scribed text. If scribe is an approved accommodation in a student's IEP/504 plan, a scribe is allowed for the essay. Scribed text must be entered into the online testing platform—no paper submissions accepted.
****Read-Aloud** **(IEP/504 documented)** **MATH & ESSAY**	Text is read aloud to student by Test Administrator human reader as documented in the IEP/504 plan. Read-Aloud is restricted to designated content areas and text within item. **See Table 1 page 9, which outlines allowable text.
****American Sign Language** **(IEP/504 documented)** **MATH & ESSAY**	Trained personnel may use sign language to administer the test for deaf or hearing-impaired students as documented in the IEP/504 plan. **Sign language may be used only for content selected to match availability for Text-To-Speech. See Table 1page 9, which outlines allowable text.
Braille **(IEP/504 documented)**	Assessment provided via paper in the braille code (UEB, UEB with Nemeth and/or EBAE/Nemeth) in which the student is most proficient as documented in the IEP/504 plan.
Accommodation 01	An IEP team or other appropriate accommodation team may request that a student be provided an accommodation not included on this standard list of accommodations. Like all other accommodations, these should be consistent with the student's normal routine during instruction and assessment. Requests should be made to the DOE when accommodation plans are being made for a student prior to testing. DOE approval must be received for the requested accommodation to be coded as an 01 accommodation. Without pre-approval, use of an 01 accommodation will result in no credit being given.

Non-Embedded Supports Requiring "Team" Documentation

(e.g., Response to Intervention (RtI) Team, Student Assistance, Language Acquisition Team)

Users will assign supports to students within the Administration component; however, these accommodations require persons/things outside of the testing platform. The following supports are determined by the appropriate educational team, documented in an RtI, SAT Plan and/or Language Acquisition Plan, and must be provided in the testing environment/session by a School Test Coordinator and/or Test Administrator.

Support	Description
Distraction Reduction (team-documented)	As documented in the support plan (e.g., study carrel, noise buffer, etc.)
Alternative/Assistive Aids & Devices (team-documented)	Visual, auditory and communication supports or aids used regularly for instruction as documented in the support plan.
External Calculator (for calculator-allowable items/sections ONLY) (team-documented)	Non-embedded calculator for students needing a special calculator such as large display or talking calculator unavailable within the assessment platform. USE IN CALCULATOR ALLOWABLE ITEMS/SECTIONS ONLY.
Color Overlays (team-documented)	Students may use personal color overlays to place on the computer screen if the 12 embedded Color Contrasts do not meet the student's needs.
Individual Separate Setting (team-documented)	Individual test setting to minimize distractions for students whose test is administered out of the classroom as documented in the support plan.
Small Group Separate Setting (team-documented)	Small group testing to minimize distractions for students whose test is administered out of the classroom as documented in the support plan.
Extended Time (team-documented)	Extended time beyond standard administration testing schedule. Individual scheduling may be used for a student whose school performance is noticeably affected by the time of day or day of the week on which it is administered.
Breaks (team-documented)	Multiple or frequent breaks for attention, distractibility, physical and/or medical conditions as documented in the support plan.
Bilingual Word Translation (Language Acquisition Team)	**MATHEMATICS ONLY:** Word-to-word translation dictionary with NO definitions as determined by *Language Acquisition Committee/Team* for English Learners (ELs).

Text-To-Speech / Read-Aloud / American Sign Language Specifications Requiring IEP/504 Documentation

The following chart outlines the components of grade-level, content-level, and specific text that will be accessed within the test platform system by students who have IEP/504 documented approval for Text-To-Speech (TTS). The same chart guidelines should follow for non-embedded accommodations documented by IEP/504 with approval for a human reader (Read-Aloud) and an interpreter (Sign Language). TTS and/or Read-Aloud must be made available to all students who are blind/visually impaired who do not have braille reading skills.

Table 1

TTS/Read-Aloud/ASL		
Content Area/Sessions	**Item**	**Gr. 3 - 8**
Reading 1&2	Test Directions	No
Reading 1&2	Test Questions	No
Reading 1&2	Answer Choices	No
Reading 1&2	Reading Passages	No
Mathematics 1&2	Test Directions	Yes
Mathematics 1&2	Test Questions	Yes
Mathematics 1&2	Answer Choices	Yes
Mathematics 1&2	Passages	Yes
Writing & Language 1&2	Test Directions	No
Writing & Language 1&2	Test Questions	No
Writing & Language 1&2	Answer Choices	No
NEW: Essay	Directions/Passages/ Prompt	Yes

Reading Example – NO TTS/Read Aloud/ASL

Practice Test

Directions

You will now read two related passages and answer the questions that follow. Some of these questions will ask you to compare the two passages.

No Directions

Selection 1

Pioneering in the Ozarks

by William Anderson

1 Early on the morning of July 17, 1894, Laura and Manly and Rose said good-bye to Pa and Ma and Mary and Carrie and Grace. They left De Smet in a covered wagon and headed south.

2 For a month the Wilders drove through South Dakota, Nebraska, and Kansas. Each night they camped in a new spot, and Laura cooked over a campfire. She told Rose they were on one long

NO Passage

Read Passage 2. Then answer the questions that follow.

No Directions

Laura Ingalls Wilder, her husband, Almanzo, and their daughter, Rose, journeyed West during the summer of 1894. They were to begin a new life growing apples. They decided to settle in a place called Mansfield, Missouri. Mansfield was called "The Gem City of the Ozarks," and "The Land of the Big Red Apple."

NO Passage

Selection 2

On the Way Home

by Laura Ingalls Wilder

August 22

1 A good start at 7:15 and this morning we are driving through pretty country. Crops look good. Oats are running 30 to 60 bushels to the acre, wheat from 10 to 30. All the wood you want can be had for the hauling and coal is delivered at the house for $1.25 a ton. Land is worth from

NO Passage

1. In **Selection 1**, how does Rose feel about leaving Rocky Ridge Farm?

A She thinks life will be easier in the city.

B She is excited to live in a place with more people and jobs.

C She is worried about moving far away from the farm.

D She hopes her parents will take care of the farm while she is away.

NO Question

NO Answer Choices

Writing & Language Example
NO TTS/Read Aloud/ASL

Sample Items

Directions

Read the passage. Then answer the questions that follow.

NO Directions

Gray Wolves

1. Gray wolves are large, dog-like animals. **2.** They have long, bushy tails, and their bodies are covered in thick fur. **3.** Their fur is usually a mix of gray and brown colors. **4.** Just because they are all called gray wolves, some have coats that are all black, brown, or white.

5. Most gray wolves live in North America and Asia. **6.** They usually travels together in packs of six to ten wolves. **7.** A wolf pack is usually made up of a mother and a father, their young pups, and the pups' older brothers and sisters. **8.** Gray wolves are also called timber wolves.

NO Passage

1. How should the underlined word in sentence 2 be changed?

A NO CHANGE

B bodes

C bodys

D bodees

NO Question

NO Answer Choices

Mathematics Example

Use the information below to answer questions 5 and 6.

YES
Directions

Look at this problem.

Samira went jogging on Saturday. She ran a total of 8.5 miles in 1.75 hours. Samira burned a total of 1,050 calories while jogging. Assume that she burned the same number of calories each hour while jogging.

Lucas also went jogging. He ran a total of 10 miles in 2.25 hours.

At what rate, in calories per hour, did Samira burn calories while jogging?

YES
Passage

5. Which values from the given information are needed to answer the problem?

YES
Question

A 10 and 2.25

B 1.75 and 8.5

C 1.75 and 1,050

D 2.25 and 1,050

YES
Answer Choices

NEW 2017: Essay Example

Directions Read the passage summaries. Then answer the question that follows.

YES
Directions

From the Mixed-Up Files of Mrs. Basil E. Frankweiler*

YES
Passage

Jamie and Claudia are given one hour to find a mysterious secret file about Michelangelo's Angel without making a mess of the many files. Claudia and Jamie devise a plan and make a list of 11 related categories to search. They divide the list but do not find the secret file. When Jamie exclaims, "Boloney," Claudia remembers that the statue was bought in Bologna, Italy, which leads them to the secret file.

The Missing Mystery Writer*

YES
Passage

Someone has disappeared while backpacking in the wilderness. A group of amateur detectives are surprised when they learn the identity of the missing person: a popular crime writer. They are familiar with his books, some of which have been made into a series for television. They are excited when the writer's agent reveals that the author's most recent book is based on members of their organization.

Write your answer to question 1 in the space provided in your Student Answer Booklet.

YES
Directions

1. You have read two passages with characters following a process to solve a mystery. Write an essay explaining ways that people solve mysteries. Your essay should explain two or three main ideas you want readers to learn about solving mysteries. Be sure to
    a. introduce the topic of your essay and the main ideas in the first paragraph.
    b. use facts, definitions, and details from the passages to develop each idea.
    c. use quotations from each passage to give examples of your main ideas.
    d. use linking words and phrases to help ideas flow across sentences and paragraphs.
    e. write a concluding statement or paragraph that restates the ideas you want the readers to learn from your essay.

APPENDIX G—ESSAY DATA

eMPower Maine Writing

General Overview

Reading Passages

The passages that support the direct writing prompts include a range of high quality, appropriately complex literary and informational texts. The passages are all previously-published materials that conform to a high standard of quality and expose students to a range of contexts that reflect the rigors of a variety of reading texts.

For all grade levels, the passages are longer, paired passages that are intended to function in tandem to present multiple perspectives on a similar topic or theme. The passages connect to each other in a meaningful, important way that requires students to make use of information and ideas in both passages simultaneously.

The passages focus on the content areas of literature, history/social studies, and science. Literary passages have been selected based upon the qualities of good narratives, including a clear story structure, realistic character development, one or more well-developed themes, and vivid language. Informational passages exhibit all the qualities of good writing, including evident key concepts and supporting details, familiar organizational structures, and clear explanations with no gaps or redundancies in the information.

The passages are reviewed by grade and content area specialists to ensure they are interesting, appropriate, and conceptually accessible to all students at the target grade level. Specialists use word counts, readability formulas, and commonly accepted word lists in their review to ensure that the vocabulary, length, and sentence structure of each passage is appropriate for the specified grade level. During their review, content specialists also evaluate readability by considering the text's levels of meaning or purpose; clarity, elaboration, and organization of ideas; language conventionality or clarity; and familiarity of the topic and concepts.

Direct Writing Prompts

The direct writing assessment focuses primarily on the Narrative writing standards at grades 3 and 4, the Informative writing standards at grades 5 and 6, and the Argument writing standards at grades 7 and 8. Students read the paired passages, and then are presented with a prompt that relates in some way to the topic of the passages. The students are asked to draft an essay in response to the question and use the passages to help develop and support their response. After students have completed their draft essay, they have the opportunity to use a checklist, developed in accordance with the writing standards at each grade level, to help them revise their writing, if necessary.

The student responses are scored using a rubric with four dimensions: Development and Elaboration of Ideas, Organization, Writing Style and Vocabulary, and Writing Knowledge of Language and Conventions. The students are then given one composite score distilled from their performance in these categories.

Psychometric Characteristics

In this section we describe the psychometric characteristics of the writing prompts as determined from the scored field-test student responses.

Each writing prompt is scored on four dimensions: Developing and Elaboration of Ideas (D), Organization (O), Writing Style and Vocabulary (S), and Knowledge of Language and Conventions (L); and each dimension is scored on a scale of 0 to 4. Although the four dimensions are scored independent of each other (see description of scoring), because the same writing prompt is being scored on each dimension, some degree of positive correlation would be expected due to the common stimulus and the single holistic response the student gives to that stimulus.

Table X-1 displays for each writing prompt the observed correlations between the student scores on the four dimensions. Each row in the table presents the correlation of student scores on each of the four dimensions (D, O, S, L as described above) to scores on each of the other dimensions, within the specified grade. A value of 1.00 is reported when a dimension is correlated with itself.

For every grade, correlations between student performance on dimensions was positive; with the exception of grade 5, the majority of correlations were very strong (25 out of 30 were 0.87 or greater). The correlations for grade 5 were slightly lower but still strong, with an average of about 0.77. These correlations are indicators of the strength of the relationship between underlying measurement constructs corresponding to each dimension. If we could measure these constructs without measurement error, the correlations would be even higher. Thus, the results in Table X-1 indicate that the constructs underlying each dimension are strongly related to each other under the given circumstances of how they were measured using independent measures of a single holistic response to a common stimulus.

Table G-1. 2015–16 eMPowerME: WRP Rubric Statistics- Correlation

Grade	*Item*	*Rubric*	*D*	*O*	*S*	*L*
03	190361AA	Development and Elaboration of Ideas	1.00	0.90	0.88	0.80
	190361AB	Organization	0.90	1.00	0.91	0.87
	190361AC	Writing Style and Vocabulary	0.88	0.91	1.00	0.89
	190361AD	Writing Knowledge of Language and Conventions	0.80	0.87	0.89	1.00
04	190417AA	Development and Elaboration of Ideas	1.00	0.91	0.90	0.86
	190417AB	Organization	0.91	1.00	0.92	0.90
	190417AC	Writing Style and Vocabulary	0.90	0.92	1.00	0.92
	190417AD	Writing Knowledge of Language and Conventions	0.86	0.90	0.92	1.00

continued

Grade	Item	Rubric	D	O	S	L
05	190420AA	Development and Elaboration of Ideas	1.00	0.80	0.70	0.65
	190420AB	Organization	0.80	1.00	0.80	0.77
	190420AC	Writing Style and Vocabulary	0.70	0.80	1.00	0.88
	190420AD	Writing Knowledge of Language and Conventions	0.65	0.77	0.88	1.00
06	190422AA	Development and Elaboration of Ideas	1.00	0.90	0.86	0.84
	190422AB	Organization	0.90	1.00	0.90	0.87
	190422AC	Writing Style and Vocabulary	0.86	0.90	1.00	0.94
	190422AD	Writing Knowledge of Language and Conventions	0.84	0.87	0.94	1.00
07	190423AA	Development and Elaboration of Ideas	1.00	0.93	0.88	0.87
	190423AB	Organization	0.93	1.00	0.90	0.89
	190423AC	Writing Style and Vocabulary	0.88	0.90	1.00	0.97
	190423AD	Writing Knowledge of Language and Conventions	0.87	0.89	0.97	1.00
08	190426AA	Development and Elaboration of Ideas	1.00	0.90	0.88	0.85
	190426AB	Organization	0.90	1.00	0.89	0.87
	190426AC	Writing Style and Vocabulary	0.88	0.89	1.00	0.93
	190426AD	Writing Knowledge of Language and Conventions	0.85	0.87	0.93	1.00

*D=Developing & Elaboration of Ideas; O=Organization; S=Writing Style and Vocabulary; L=Writing Knowledge of Language and Conventions

In addition to describing the correlational structure of the rubric dimensions, we also present results describing the difficulty and discrimination of each of the dimensions. While the average score for each dimension has been calculated and presented, because each dimension is scored 0 to 4, the most complete description of difficulty for each dimension is simply a presentation of the frequency distribution, showing the percentage of students who earned each of the possible score points. Discrimination of each dimension is here presented as the correlation of student performance on each dimension with the total score achieved on the other three dimensions. These results indicate the degree to which performance on a given dimension is related to the underlying construct as represented by the other dimensions. These descriptive statistics and frequency distributions are displayed in Table X-2.

As shown in the table, all grades except grade 4 had mean scores lower than 2.0, indicating that the students tended to score more in the lower score points than in the upper ones. Grade 4 easily had the highest proportion of students achieving score point of 4, whereas grade 5 had the lowest. Indeed, in grade 5, the mean dimension scores were only a few tenths of a point above 1.0 for two of the dimensions and only about 1.5 for the other two dimensions, indicating that the grade 5 writing prompt dimensions were experienced at the highest difficulty level compared to the other grades.

The correlations reported between dimension scores and remaining total dimension scores are all generally strong, ranging 0.77 to 0.95. This suggests that students who are high performing on one dimension tend to score high on the other dimensions, further lending to the idea of a single underlying construct.

Note that this increased difficulty for grade 5 could have played a role in the lower discrimination values shown in Table F-2; additionally, this phenomenon may have contributed to correlations

between the dimensions being smaller for grade 5 compared to the other grade levels (see Table F-1). In general, it must be noted that it is inappropriate to draw conclusions about item difficulty or student ability by comparing score distributions and means across grades. For example, the lower score means for grade 5 compared to other grades could be due to the writing prompts being more difficult to respond to or because the students at this particular grade were less proficient in writing, or some combination of both. It is impossible to know from these data which caused the lower mean, and readers are cautioned against drawing a conclusion in either direction without having further evidence with which to inform such an inference.

Table G-2. 2015–16 eMPowerME: WRP Rubric Statistics- Stats

Grade	*Item Number*	*Total Possible Points*	*Avg. Score*	*CorrWTotal*	*Percent of Students at Score Point*				
					0	*1*	*2*	*3*	*4*
3	190361AA	4	1.81	0.89	0.03	40.09	41.51	15.37	2.99
	190361AB	4	1.65	0.94	11.74	31.67	39.38	14.42	2.80
	190361AC	4	1.70	0.94	8.41	33.14	41.55	13.79	3.11
	190361AD	4	1.64	0.89	10.48	31.86	43.30	11.67	2.69
4	190417AA	4	2.21	0.92	0.07	21.29	44.76	25.05	8.83
	190417AB	4	2.14	0.94	3.79	18.74	45.60	23.67	8.20
	190417AC	4	2.21	0.95	2.40	17.72	45.81	24.82	9.26
	190417AD	4	2.16	0.92	3.39	18.79	45.03	23.65	9.13
5	190420AA	4	1.25	0.77	24.56	35.34	31.26	7.80	1.04
	190420AB	4	1.28	0.87	22.48	36.45	32.94	7.27	0.87
	190420AC	4	1.52	0.87	8.53	41.15	41.00	8.27	1.05
	190420AD	4	1.53	0.83	8.99	39.90	41.71	8.27	1.13
6	190422AA	4	1.54	0.90	12.65	36.84	36.32	12.14	2.05
	190422AB	4	1.47	0.93	15.71	36.09	35.68	10.82	1.70
	190422AC	4	1.57	0.94	10.50	37.88	38.04	11.69	1.89
	190422AD	4	1.57	0.92	9.86	38.45	38.04	11.69	1.96
7	190423AA	4	1.66	0.92	15.42	30.12	32.06	17.50	4.90
	190423AB	4	1.67	0.94	13.37	31.62	33.80	16.77	4.44
	190423AC	4	1.84	0.95	7.16	30.65	38.51	18.74	4.94
	190423AD	4	1.84	0.94	7.06	30.75	38.45	18.78	4.95
8	190426AA	4	1.90	0.91	3.03	31.42	42.00	19.25	4.29
	190426AB	4	1.81	0.92	7.37	29.50	42.36	16.71	4.05
	190426AC	4	1.90	0.94	4.36	29.40	42.51	18.99	4.74
	190426AD	4	1.89	0.92	6.06	27.25	42.70	19.39	4.59

Finally, the writing prompt psychometric characteristics are described at the “test” level by summing the four dimension scores to arrive at a total test score for each writing prompt. Because each dimension is scored 0-4, the total score for a writing prompt ranges from 0-16. Table F-3 presents four summary statistics for each writing prompt: mean, standard deviation, first quartile, and third quartile. The difference in the first and third quartiles is the interquartile range.

As expected from the above score distributions, only grade 4 had a mean that was greater than 8, and grade 5 had the lowest mean. The grade 5 standard deviation was the smallest, and this was likely highly influenced by the lower scores, especially the greater percentage at a score of 0 and the lower percentage at a score of 4 (as evidenced in Table F-2). Such floor and ceiling effects are known to reduce correlations between variables (between dimension scores in this case, as evidence in Table F-1) and to reduce standard deviations of such variables (as evidenced by the grade 5 dimension scores in Table F-3).

Table G-3. 2015–16 eMPowerME: WRP Rubric Statistics- Summary

Grade	*N_Rubric*	*PvMax*	*AvgTotScore*	*stdTotScore*	*Q1*	*Q3*
3	4	16	6.80	3.42	4	8
4	4	16	8.72	3.55	7	12
5	4	16	5.58	3.17	3	8
6	4	16	6.15	3.50	4	8
7	4	16	7.01	3.93	4	9
8	4	16	7.50	3.53	4	9

Interrater Consistency

Chapter 5 of this report describes in detail the processes that were implemented to monitor the quality of the hand-scoring of student responses for constructed-response items. One of these processes was double-blind scoring: Approximately 25% of student responses were randomly selected and scored independently by two different scorers. Results of the double-blind scoring were used during the scoring process to identify scorers who required retraining or other intervention and are presented here as evidence of the reliability of the eMPowerME tests. A summary of the interrater consistency results is presented in Table F-4. Results in the table are collapsed across the hand-scored items by grade and content area. The table shows the number of score categories, number of included scores, percent exact agreement, percent adjacent agreement, correlation between the first two sets of scores, and percentage of responses that required a third score for each item.

Table G-4. 2015–16 eMPowerME: Item-Level Interrater Agreement Statistics—Writing

Grade	*Item*	*Number of*		*Percent*		*Correlation*	*Percent of Third Scores*
		Score Categories	*Responses Scored Twice*	*Exact*	*Adjacent*		
3	190361AA	5	2,818	71.72	27.50	0.76	4.40
	190361AB	5	2,818	61.14	36.69	0.74	4.40

continued

Grade	Item	Number of		Percent		Correlation	Percent of Third Scores
		Score Categories	Responses Scored Twice	Exact	Adjacent		
3	190361AC	5	2,818	60.72	37.76	0.72	4.40
	190361AD	5	2,818	58.41	39.39	0.70	4.40
4	190417AA	5	2,687	66.65	32.49	0.77	3.91
	190417AB	5	2,687	62.37	35.91	0.76	3.91
	190417AC	5	2,687	62.86	35.69	0.75	3.91
	190417AD	5	2,687	59.47	38.74	0.75	3.91
5	190420AA	5	2,917	61.06	35.89	0.73	7.20
	190420AB	5	2,917	53.93	43.02	0.67	7.20
	190420AC	5	2,917	55.47	42.44	0.60	7.20
	190420AD	5	2,917	56.32	41.79	0.61	7.20
6	190422AA	5	3,167	64.19	34.13	0.77	4.96
	190422AB	5	3,167	61.16	36.98	0.75	4.96
	190422AC	5	3,167	60.63	38.05	0.73	4.96
	190422AD	5	3,167	60.21	38.27	0.73	4.96
7	190423AA	5	2,928	58.67	38.56	0.78	4.68
	190423AB	5	2,928	56.73	41.19	0.77	4.68
	190423AC	5	2,928	58.88	39.45	0.75	4.68
	190423AD	5	2,928	58.47	39.96	0.75	4.68
8	190426AA	5	3,017	69.80	29.47	0.79	2.62
	190426AB	5	3,017	66.09	33.18	0.79	2.62
	190426AC	5	3,017	63.24	35.66	0.75	2.62
	190426AD	5	3,017	61.05	37.45	0.75	2.62

Scoring Rubrics

All writing items were scored against a four-trait analytic rubric (see tables below). The scoring scale options of 0, 1, 2, 3, and 4 were applied to each trait. When a response did not conform to score point parameters, scorers could designate the response as one of the following:

- **Blank:** There is no attempt to respond to the item; no uploaded material is provided and no response has been typed.
- **Unreadable:** The text on the scorer's computer screen is indecipherable or too faint to read accurately.
- **Escalate:** The response requires clarification or adjudication by Scoring Leadership. A score is assigned by leadership after reviewing
- **Off Topic:** The response is totally irrelevant or does not address the prompt
- **No Score:** The response is otherwise unscorable (artwork, random marks, etc.)

Table G-5. 2015–16 eMPowerME: Scoring Resolution Process

Designation	Resolution Process
Blank	Responses scored Blank were sent to another scorer for a second read. Responses scored Blank twice were converted to zeros (‘0’s) for reporting purposes. Any discrepancies were resolved by the Scoring Leadership.
Unreadable	Those responses judged unreadable were forwarded to special queue within *iScore* to be reviewed by a Scoring Supervisor who resolved the student score. (If the response remained unreadable after review, the Scoring Supervisor assigned a score of “0”). Unreadable responses are limited to paper-based tests
Off Topic	Responses that were irrelevant or unrelated to the prompt or otherwise was not an attempt to respond to the prompt.
Escalation	Responses that were unusual and were not able to be scored based on the training material without further consultation with Scoring Leadership and/or the DOE. Scoring leadership reviewed and provided final scores for responses in the escalation queue and provided feedback to the scorers as needed.
No Score	Responses that were unable to be scored for any other reason, which could include drawings, stray marks, or other non-blank responses that could not receive a numeric score.

Scorers also had the option of flagging a response as a “Crisis” (sometimes referred to as Alert paper) requiring immediate review and possible immediate action by scoring leadership. Crisis papers were reviewed by the Scoring Project Manager. When papers were confirmed as being Crisis papers, the response and student demographic information was provided to the Maine DOE for further action.

Crisis responses could include but were not limited to one or more of the following:

- Thoughts of suicide
- Criminal activity
- Alcohol or drug use
- Extreme depression
- Violence
- Rape, sexual or physical abuse
- Self-harm or intent to harm others

- Neglect
- Any indication that the author or another child was in danger or under threat of danger.

Informative Writing Rubric for Measured Progress Assessments (Grades 3-5)

Construct Measured	Level 4	Level 3	Level 2	Level 1	Level 0
	The student response:				
Development and Elaboration of Ideas[1]	• provides thorough development of ideas in support of the task • demonstrates consistently maintained focus • achieves substantial depth and specificity • provides relevant and specific evidence to thoroughly support the main idea • includes effective use of sources, facts, details and quotations	• provides general development of ideas in support of the task • demonstrates generally maintained focus • achieves depth and specificity • provides relevant but general evidence to support the main idea • includes use of sources, facts, details and quotations	• provides limited development of ideas in support of the task • demonstrates partially consistent focus • achieves little depth • provides some relevant evidence to support main idea, or evidence only partially supports the main idea • includes uneven use of sources, facts, details and quotations	• provides minimal development of ideas in support of the task • demonstrates unclear focus • lacks depth • provides minimally relevant evidence to support the main idea, or evidence minimally supports the main idea • includes little use of sources, facts, details and quotations	• fails to develop ideas in support of the task • does not maintain focus • does not provide evidence to support main idea
Organization	• demonstrates strong coherence and clarity • presents a well-executed and logical progression of ideas • integrates evidence smoothly	• demonstrates coherence and clarity • presents a clear and logical progression of ideas • integrates evidence	• demonstrates uneven coherence or clarity • presents a clear progression of ideas • integrates evidence unevenly	• demonstrates minimal coherence or clarity • presents ideas that are disjointed • minimally integrates evidence	• does not demonstrate intentional coherence • does not present progression of ideas

continued

[1] The type of textual evidence required is grade- and task-specific and is included in the training notes.

Construct Measured	Level 4	Level 3	Level 2	Level 1	Level 0
	The student response:				
Organization	• includes a strong and engaging introduction and provides an effective concluding statement • uses smooth and effective transitions between ideas	• includes a clear introduction and provides a concluding statement • uses effective transitions between ideas	• includes an introduction and may provide an unclear concluding statement • uses partially effective transitions between ideas	• may include an introduction that is not clearly identifiable and may lack a concluding statement • may attempt using transitions between ideas	
Writing Style and Vocabulary	• uses precise and effective language, including a wide variety of words and phrases, linking and transitional words, and domain-specific vocabulary	• uses generally appropriate language including a variety of words and phrases, linking and transitional words, and domain-specific vocabulary	• uses some appropriate language, including limited variety of words and phrases, linking and transitional words; may include domain-specific vocabulary	• uses imprecise language, including minimal variety of words and phrases, linking and transitional words; includes little to no domain-specific vocabulary	• uses confusing or inappropriate language
Writing Knowledge of Language and Conventions	• demonstrates consistent command of the basic conventions of standard English • may contain few minor errors in grammar, usage, or mechanics that do not interfere with comprehension	• demonstrates general command of the basic conventions of standard English • contains minor errors in grammar, usage, or mechanics that do not interfere with comprehension	• demonstrates partial command of the basic conventions of standard English • contains errors or patterns of errors in grammar, usage, and/or mechanics that may partially interfere with comprehension	• demonstrates minimal command of the basic conventions of standard English • contains frequent distracting errors in grammar, usage, and mechanics that interfere with comprehension	• does not demonstrate command of the basic conventions of standard English • contains numerous distracting errors in grammar, usage, and mechanics that impede comprehension

Opinion Writing Rubric for Measured Progress Assessments (Grades 3–5)

Construct Measured	Level 4	Level 3	Level 2	Level 1	Level 0
	The student response:				
Development and Elaboration of Ideas[1]	• provides an opinion in support of the task and thoroughly explains the reasons for the opinion • demonstrates strongly maintained focus • provides specific and convincing evidence that thoroughly supports the opinion • effectively uses a variety of sources, facts, and details • achieves substantial depth, specificity, and relevance • includes highly relevant and accurate quotes (if required)	• provides an opinion in support of the task and generally explains the reasons for the opinion • demonstrates consistently maintained focus • provides relevant evidence that supports the opinion • uses sources, facts, and details • achieves depth, specificity, and relevance • includes relevant and mostly accurate quotes (if required)	• may provide an opinion in support of the task and partially explain the reasons for the opinion • demonstrates an inconsistently maintained focus • provides some relevant evidence or evidence only partially supports the opinion • includes uneven use of sources, facts, and details • achieves some depth • includes mostly relevant quotes (if required)	• may provide a confusing or ambiguous opinion in support of the task and may minimally explain the reasons for the opinion • does not demonstrate ability to maintain focus • provides little to no evidence in support of the opinion • includes minimal use of sources, facts, and/or details • lacks depth • may include mostly irrelevant quotes (if required)	• fails to provide an opinion in support of the task and does not provide reasons
Organization	• demonstrates strong coherence and clarity • includes a strong and engaging introduction and a logical and effective concluding statement • presents a well-executed and logical progression of ideas • uses smooth and effective transitions between ideas	• demonstrates coherence and clarity • includes a clear introduction and provides a logical concluding statement • presents a clear and logical progression of ideas • uses effective transitions between ideas	• demonstrates uneven coherence or clarity • includes an introduction and may provide a concluding statement • presents an uneven progression of ideas • uses partially effective transitions between ideas	• demonstrates minimal coherence or clarity • may include an introduction that is not clearly identifiable and may lack a concluding statement • presents an unclear progression of ideas • may attempt using transitions between ideas	• does not demonstrate intentional coherence and clarity

continued

Construct Measured	Level 4	Level 3	Level 2	Level 1	Level 0
	The student response:				
Writing Style and Vocabulary	• uses precise and effective language, including a wide variety of words and phrases, linking and transitional words, and domain-specific vocabulary	• uses generally appropriate language including a variety of words and phrases, linking and transitional words, and domain-specific vocabulary	• uses some appropriate language, including limited variety of words and phrases, linking and transitional words; may include domain-specific vocabulary	• uses imprecise language, including minimal variety of words and phrases, linking and transitional words; includes little to no domain-specific vocabulary	• uses confusing or inappropriate language
Writing Knowledge of Language and Conventions	• demonstrates consistent command of the basic conventions of standard English • may contain few minor errors in grammar, usage, or mechanics that do not interfere with comprehension	• demonstrates general command of the basic conventions of standard English • contains minor errors in grammar, usage, or mechanics that do not interfere with comprehension	• demonstrates partial command of the basic conventions of standard English • contains errors or patterns of errors in grammar, usage, and/or mechanics that may partially interfere with comprehension	• demonstrates minimal command of the basic conventions of standard English • contains frequent distracting errors in grammar, usage, and mechanics that interfere with comprehension	• does not demonstrate command of the basic conventions of standard English • contains numerous distracting errors in grammar, usage, and mechanics that impede comprehension

Informative Writing Rubric for Measured Progress Assessments (Grades 6–8)

Construct Measured	Level 4	Level 3	Level 2	Level 1	Level 0
	The student response:				
Development and Elaboration of Ideas[2]	• provides thorough development of ideas in support of the task • demonstrates consistently maintained focus • provides relevant and specific evidence to thoroughly support the main idea • evidence achieves substantial depth and specificity • includes effective use of sources, well-chosen facts, and concrete details	• provides general development of ideas in support of the task • demonstrates generally maintained focus • provides relevant but general evidence to support the main idea, or evidence generally supports the main idea • evidence achieves depth and specificity • includes use of sources, facts, and details	• provides limited development of ideas in in support of the task • demonstrates partially consistent focus • provides some relevant evidence to support main idea, or evidence only partially supports the main idea • evidence achieves little depth • includes uneven use of sources, facts, and details	• provides minimal development of ideas in in support of the task • demonstrates unclear focus • provides minimally relevant evidence to support the main idea, or evidence minimally supports the main idea • evidence lacks depth • includes little use of sources, facts, and/or details	• fails to develop ideas in support of the task • does not maintain focus • does not provide evidence to support a main idea
Organization	• demonstrates strong coherence and clarity • includes a strong and engaging introduction and provides an effective concluding statement	• demonstrates general coherence and clarity • includes a clear introduction and provides a concluding statement • presents a logical progression of ideas • supporting evidence is logically integrated	• demonstrates limited coherence and clarity • includes an introduction and may provide a concluding statement • presents an uneven progression of ideas • supporting evidence is unevenly integrated	• demonstrates minimal coherence and clarity • may include an introduction that is not clearly identifiable and may provide an unclear concluding statement • presents an unclear progression of ideas	• does not demonstrate intentional coherence • presents no progression of ideas

continued

[2] The type of textual evidence required is grade- and task-specific and included in the training notes.

Construct Measured	Level 4	Level 3	Level 2	Level 1	Level 0
	The student response:				
Organization	• presents a logical, well-executed progression of ideas • supporting evidence is smoothly and skillfully integrated • uses a variety of precise and effective transitions between ideas	• uses effective transitions between ideas	• uses partially effective transitions between ideas	• supporting evidence, if provided, is minimally integrated • may attempts using transitions between ideas	•
Writing Style and Vocabulary	• establishes and consistently maintains a formal style • uses precise and effective language, including a wide variety of words and phrases, linking and transitional words and effective domain-specific vocabulary	• establishes and mostly maintains a formal style • uses generally appropriate language including a variety of words and phrases, linking and transitional words and/or generally appropriate domain-specific vocabulary	• establishes a partially formal style • uses some appropriate language, including limited variety of words and phrases, linking and transitional words and limited domain-specific vocabulary	• establishes minimal formality in style • uses imprecise language, including minimal variety of words and phrases and little to no domain-specific vocabulary	• does not establish a formal style • uses confusing or inappropriate language
Writing Knowledge of Language and Conventions	• demonstrates consistent command of the conventions of standard English • may contain few minor errors in grammar, usage, or mechanics that do not interfere with comprehension	• demonstrates general command of the conventions of standard English • contains minor errors in grammar, usage, or mechanics that do not interfere with comprehension	• demonstrates partial command of the conventions of standard English • contains errors or patterns of errors in grammar, usage, and/or mechanics that may partially interfere with comprehension	• demonstrates minimal command of the conventions of standard English • contains frequent distracting errors in grammar, usage, and mechanics that interfere with comprehension	• does not demonstrate command of the conventions of standard English • contains numerous distracting errors in grammar, usage, and mechanics that impede comprehension

Narrative Writing Rubric for Measured Progress Assessments (Grades 3–5)

Construct Measured	Level 4	Level 3	Level 2	Level 1	Level 0
	The student response:				
Development and Elaboration of Ideas[3]	• provides thorough development of ideas in support of the task • demonstrates consistently maintained focus of ideas • provides relevant and specific details • uses a variety of narrative techniques (dialogue, description, and/or sequencing) to effectively advance the story or illustrate the experience	• provides sufficient development of ideas in support of the task • demonstrates generally maintained focus of ideas • provides relevant but general details • successfully uses narrative techniques (dialogue, description, and/or sequencing) to generally advance the story or illustrate the experience	• provides limited development of ideas in support of the task • demonstrates inconsistent focus of ideas • provides limited details • uses narrative techniques (dialogue, description, and/or sequencing) to partially advance the story or assist in illustrating the experience	• provides an attempt to develop ideas in support of the task • demonstrates unclear focus of ideas • provides minimal details • attempts to use narrative techniques (dialogue, description, and/or sequencing) to advance the story or illustrate the experience	• fails to develop ideas in support of the task • does not demonstrate focus of ideas • does not provide details • does not use narrative techniques (dialogue, description, and/or sequencing) to advance the story or illustrate the experience
Organization	• demonstrates strong coherence and clarity • includes a strong and engaging introduction and provides and effective conclusion • presents a well-executed sequence of events • uses smooth and effective transitions between events	• demonstrates coherence and clarity • includes a clear introduction and provides a conclusion • presents a logical sequence of events • uses effective transitions between events	• demonstrates uneven coherence and clarity • includes an introduction and may provide a conclusion • presents a sequence of events • uses partially effective transitions between events	• demonstrates minimal coherence and clarity • may include an introduction that is not clearly identifiable and may lack a conclusion • may include events that are disjointed • may attempt using transitions between events	• does not demonstrate intentional coherence or clarity • does not present sequence of events

continued

[3] Per the CCSS, narrative elements in grades 3–5 may include establishing a situation; organizing a logical event sequence; describing scenes, objects or people; developing characters' personalities; and using dialogue as appropriate.

Construct Measured	Level 4	Level 3	Level 2	Level 1	Level 0
	The student response:				
Writing Style And Vocabulary	• uses precise and effective language, including a wide variety of words and phrases, descriptive, and linking and transitional words	• uses generally appropriate language including a variety of words and phrases, descriptive, and linking and transitional words	• uses some appropriate language, including limited variety of words and phrases, descriptive, and linking and transitional words	• uses imprecise language, including minimal variety of words and phrases, descriptive, and linking and transitional words	• uses confusing or inappropriate language
Writing Knowledge of Language and Conventions	• demonstrates consistent command of the basic conventions of standard English • may contain few minor errors in grammar, usage, or mechanics that do not interfere with comprehension	• demonstrates general command of the basic conventions of standard English • contains minor errors in grammar, usage, or mechanics that do not interfere with comprehension	• demonstrates partial command of the basic conventions of standard English • contains errors or patterns of errors in grammar, usage, and/or mechanics that may partially interfere with comprehension	• demonstrates minimal command of the basic conventions of standard English • contains frequent distracting errors in grammar, usage, and mechanics that interfere with comprehension	• does not demonstrate command of the basic conventions of standard English • contains numerous distracting errors in grammar, usage, and mechanics that impede comprehension

Argumentative Writing Rubric for Measured Progress Assessments (Grades 6–8)

Construct Measured	Level 4	Level 3	Level 2	Level 1	Level 0
	The student response:				
Development and Elaboration of Ideas[4]	• establishes precise and credible claim(s) in support of the task • provides a thoroughly developed argument that is consistently maintained and effectively incorporates counterclaim(s)[5] • achieves substantial depth, specificity, and relevance • provides clear and convincing text-based evidence[4] to support the claim(s); provides evidence to elaborate on counterclaim(s) • effectively uses a variety of sources, facts, and details[5]	• establishes reasonable claim(s) in support of the task • provides a generally developed argument that is mostly maintained and acknowledges counterclaim(s) • achieves depth, specificity, and relevance • provides clear text-based evidence to support the claim(s); may provide evidence to explain counterclaim(s) • uses sources, facts, and details	• establishes superficial claim(s) in support of the task • provides a partially developed argument that is inconsistently maintained • achieves some depth • provides text-based evidence to support the claim(s) • includes uneven use of sources, facts, and details	• attempts to establish claim(s) in support of the task; claim(s) may be ambiguous or flawed • provides a minimally developed argument • lacks depth • provides minimal text-based evidence to support the claim • includes minimal use of sources, facts, and details	• fails to establish claim(s) in support of the task • does not provide an argument or evidence
Organization	• demonstrates strong coherence and clarity • includes an introduction effectively stating the claim(s) • provides a logical and effective concluding statement that strengthens the claim(s) and counterclaim(s)[5]	• demonstrates general coherence and clarity • includes an introduction clearly stating the claim(s)	• demonstrates limited coherence and clarity • includes an introduction stating the claim(s)	• demonstrates minimal coherence and clarity • may include an introduction that is not clearly identifiable	• does not demonstrate intentional coherence or clarity

continued

[4] The type of textual evidence required is grade- and task-specific and included in the training notes.
[5] Counterclaims - alternate or opposing claims - are not expected at grade 6.

Construct Measured	Level 4	Level 3	Level 2	Level 1	Level 0
	The student response:				
Organization	• presents a logical, well-executed progression of arguments, and smoothly and skillfully integrates supporting evidence, counterclaim(s), and reasoning[5] • uses a variety of precise and effective transitions between claim(s)	• provides a logical concluding statement that restates the claim; may include counterclaim(s)[5] • presents a logical progression of arguments and logically integrates supporting evidence, counterclaim(s), and reasoning[5] • uses effective transitions between claim(s)	• provides a concluding statement that may restate the claim(s) • presents a progression of arguments and may unevenly integrate supporting evidence • uses partially effective transitions between claim(s)	• may attempt to provide a concluding statement; may be unclear or inferred • presents an unclear progression of arguments and may lack supporting evidence • may attempt using transitions between claim(s)	
Writing Style and Vocabulary	• establishes and consistently maintains a formal style • uses precise and effective language, including a wide variety of words and phrases, linking and transitional words, words to indicate point of view, and effective domain-specific vocabulary	• establishes and mostly maintains a formal style • uses generally appropriate language including a variety of words and phrases, linking and transitional words, and words to indicate point of view, and/or generally appropriate domain-specific vocabulary	• establishes a partially formal style • uses some appropriate language, including limited variety of words and phrases, linking and transitional words, and/or words to indicate point of view; limited domain-specific vocabulary	• establishes minimal formality in style • uses imprecise language, including minimal variety of words and phrases and few words to indicate point of view; little to no domain-specific vocabulary	• does not establish a formal style • uses confusing or inappropriate language
Writing Knowledge of Language and Conventions	• demonstrates consistent command of the conventions of standard English • may contain few minor errors in grammar, usage, or mechanics that do not interfere with comprehension	• demonstrates general command of the conventions of standard English • contains minor errors in grammar, usage, or mechanics that do not interfere with comprehension	• demonstrates partial command of the conventions of standard English • contains errors or patterns of errors in grammar, usage, and/or mechanics that may partially interfere with comprehension	• demonstrates minimal command of the conventions of standard English • contains frequent distracting errors in grammar, usage, and mechanics that interfere with comprehension	• does not demonstrate command of the conventions of standard English • contains numerous distracting errors in grammar, usage, and mechanics that impede comprehension

[5] Counterclaims - alternate or opposing claims - are not expected at grade 6.

Narrative Writing Rubric for Measured Progress Assessments (Grades 6–8)

Construct Measured	Level 4	Level 3	Level 2	Level 1	Level 0
	The student response:				
Development and Elaboration of Ideas[6]	• provides thorough development of ideas in support of the task • demonstrates consistently maintained focus of ideas • provides relevant and specific details • uses a variety of narrative techniques (dialogue, description, and/or sequencing) to effectively advance the story or illustrate the experience	• provides sufficient development of ideas in support of the task • demonstrates generally maintained focus of ideas • provides relevant but general details • successfully uses narrative techniques (dialogue, description, and/or sequencing) to generally advance the story or illustrate the experience	• provides limited development of ideas in support of the task • demonstrates inconsistent focus of ideas • provides limited details • uses narrative techniques (dialogue, description, and/or sequencing) to partially advance the story or assist in illustrating the experience	• provides an attempt to develop ideas in support of the task • demonstrates unclear focus of ideas • provides minimal details • attempts to use narrative techniques (dialogue, description, and/or sequencing) to advance the story or illustrate the experience	• fails to develop ideas in support of the task • does not demonstrate focus of ideas • does not provide details • does not use narrative techniques (dialogue, description, and/or sequencing) to advance the story or illustrate the experience
Organization	• demonstrates strong coherence and clarity • includes a strong and engaging introduction and provides an effective concluding statement • presents a well-executed sequence of events; • uses a variety of precise and effective transitions between events	• demonstrates coherence and clarity • includes a clear introduction and provides a concluding statement • presents a logical sequence of events • uses effective transitions between events	• demonstrates uneven coherence and clarity • includes an introduction and may provide a concluding statement • presents a sequence of events • uses partially effective transitions between events	• demonstrates minimal coherence and clarity • may include an introduction that is not clearly identifiable and may lack a concluding statement • may include events that are disjointed • may attempt using transitions between events	• does not demonstrate intentional coherence and clarity • does not present sequence of events

continued

[6] Per the CCSS, narrative elements in grades 3–5 may include: establishing a situation; organizing a logical event sequence; describing scenes, objects or people; developing characters' personalities; and using dialogue as appropriate. In grades 6–8, narrative elements may include, in addition to the grades 3–5 elements, establishing a context, situating events in a time and place, developing a point of view, and developing characters' motives.

Construct Measured	Level 4	Level 3	Level 2	Level 1	Level 0
	The student response:				
Writing Style and Vocabulary	• establishes and consistently maintains a strongly effective narrative style • uses precise and effective language, including a wide variety of words and phrases, descriptive, and linking and transitional words	• establishes and maintains a generally effective narrative style • uses generally appropriate language including a variety of words and phrases, descriptive, and linking and transitional words	• establishes a partially effective narrative style • uses some appropriate language, including limited variety of words and phrases, descriptive, and linking and transitional words	• establishes minimally effective narrative style • uses imprecise language, including minimal variety of words and phrases, descriptive, and linking and transitional words	• does not establish or maintain a narrative style • uses confusing or inappropriate language
Writing Knowledge of Language and Conventions	• demonstrates consistent command of the conventions of standard English • may contain few minor errors in grammar, usage, or mechanics that do not interfere with comprehension	• demonstrates general command of the conventions of standard English • contains minor errors in grammar, usage, or mechanics that do not interfere with comprehension	• demonstrates partial command of the conventions of standard English • contains errors or patterns of errors in grammar, usage, and/or mechanics that may partially interfere with comprehension	• demonstrates minimal command of the conventions of standard English • contains frequent distracting errors in grammar, usage, and mechanics that interfere with comprehension	• does not demonstrate command of the conventions of standard English • contains numerous distracting errors in grammar, usage, and mechanics that impede comprehension

APPENDIX H—ITEM-LEVEL CLASSICAL STATISTICS

Table H-1. 2016–17 eMPowerME: Item-Level Classical Test Theory Statistics
Mathematics Grade 3

Item		*Difficulty*	*Discrimination*	*Percent Omitted*
Number	*Type*			
123976A	MC	0.46	0.32	1
124364A	MC	0.68	0.42	0
124395A	MC	0.72	0.42	0
124663A	MC	0.38	0.40	0
125052A	MC	0.34	0.31	0
125231A	MC	0.46	0.26	0
125235A	MC	0.43	0.26	0
126293A	MC	0.74	0.38	0
126321A	MC	0.44	0.26	0
400021	MC	0.57	0.38	0
400044	MC	0.67	0.40	0
400358	MC	0.38	0.32	0
400432	MC	0.27	0.27	0
400434	MC	0.64	0.35	0
400614	MC	0.57	0.39	0
405588	MC	0.52	0.35	0
407640	MC	0.43	0.17	0
407672	MC	0.34	0.17	0
409896	MC	0.53	0.32	0
411093	MC	0.79	0.39	0
411097	MC	0.68	0.34	0
411145	MC	0.76	0.40	0
411231	MC	0.37	0.42	0
411254	MC	0.57	0.45	0
411494	MC	0.81	0.39	0
411623	MC	0.81	0.44	0
411633	MC	0.80	0.37	0
411729	MC	0.44	0.32	0
412628	MC	0.54	0.23	0
413222	MC	0.56	0.38	0
414589	MC	0.43	0.46	0
417030	MC	0.54	0.43	0
527940	MC	0.45	0.42	1
551257A	OR	0.38	0.67	1
551257B	OR	0.25	0.57	1
551311A	OR	0.26	0.41	1
551311B	OR	0.54	0.43	1
551320A	OR	0.30	0.66	1
551320B	OR	0.41	0.58	1
551328A	OR	0.29	0.54	1
551328B	OR	0.14	0.37	1

Table H-2. 2016–17 eMPowerME: Item-Level Classical Test Theory Statistics
Mathematics Grade 4

Item		*Difficulty*	*Discrimination*	*Percent Omitted*
Number	*Type*			
124741A	MC	0.57	0.46	0
124779A	MC	0.55	0.44	0
124969A	MC	0.42	0.25	0
126060A	MC	0.40	0.28	0
127117A	MC	0.53	0.25	0

continued

Item		Difficulty	Discrimination	Percent Omitted
Number	Type			
127584A	MC	0.47	0.27	0
127588A	MC	0.27	0.15	0
127705A	MC	0.45	0.48	0
400066	MC	0.49	0.34	0
400447	MC	0.66	0.42	0
400449	MC	0.64	0.42	0
400466	MC	0.46	0.42	0
400468	MC	0.38	0.29	0
400748	MC	0.47	0.25	0
400778	MC	0.84	0.22	0
400789	MC	0.61	0.49	0
400815	MC	0.38	0.23	0
400839	MC	0.40	0.26	0
400920	MC	0.52	0.29	0
405630	MC	0.48	0.40	0
407852	MC	0.25	0.22	0
407867	MC	0.56	0.29	1
408032	MC	0.68	0.48	0
408040	MC	0.42	0.34	0
408261	MC	0.27	0.15	0
408276	MC	0.36	0.25	0
409954	MC	0.28	0.23	0
411024	MC	0.43	0.28	0
411117	MC	0.54	0.34	0
411163	MC	0.61	0.48	0
411858	MC	0.86	0.27	0
413801	MC	0.63	0.48	0
551336A	OR	0.16	0.51	1
551336B	OR	0.16	0.47	1
551340A	OR	0.70	0.49	0
551340B	OR	0.85	0.43	0
551343A	OR	0.18	0.48	2
551343B	OR	0.14	0.53	2
551361A	OR	0.26	0.59	1
551361B	OR	0.10	0.46	1

Table H-3. 2016–17 eMPowerME: Item-Level Classical Test Theory Statistics
Mathematics Grade 5

Item		Difficulty	Discrimination	Percent Omitted
Number	Type			
124038A	MC	0.38	0.34	0
124675A	MC	0.46	0.39	0
125104A	MC	0.40	0.42	0
125106A	MC	0.37	0.34	0
128316A	MC	0.41	0.32	0
400228	MC	0.49	0.34	0
400300	MC	0.29	0.04	0
400302	MC	0.33	0.25	0
400373	MC	0.25	0.16	0
400385	MC	0.48	0.26	0
400515	MC	0.86	0.34	0
400520	MC	0.50	0.48	0
400523	MC	0.50	0.44	0
400662	MC	0.25	0.21	0
400682	MC	0.40	0.32	0
400718	MC	0.50	0.47	0
408471	MC	0.42	0.30	0
408477	MC	0.35	0.22	0
408493	MC	0.67	0.43	0

continued

Item		Difficulty	Discrimination	Percent Omitted
Number	Type			
408496	MC	0.33	0.23	0
408514	MC	0.35	0.31	0
411240	MC	0.44	0.50	0
411270	MC	0.61	0.40	0
411804	MC	0.57	0.43	0
411976	MC	0.35	0.33	0
412026	MC	0.61	0.52	0
413850	MC	0.46	0.32	0
414837	MC	0.46	0.29	0
414953	MC	0.67	0.43	0
415106	MC	0.33	0.40	0

Item		Difficulty	Discrimination	Percent Omitted
Number	Type			
415122	MC	0.28	0.30	0
415335	MC	0.45	0.20	0
415373	MC	0.27	0.14	1
551230A	OR	0.52	0.50	1
551230B	OR	0.57	0.51	1
551415A	OR	0.35	0.67	2
551415B	OR	0.07	0.47	2
551422A	OR	0.43	0.42	3
551422B	OR	0.30	0.43	3
551428A	OR	0.24	0.58	4
551428B	OR	0.14	0.54	4

Table H-4. 2016–17 eMPowerME: Item-Level Classical Test Theory Statistics
Mathematics Grade 6

Item		Difficulty	Discrimination	Percent Omitted
Number	Type			
125468A	MC	0.41	0.28	0
127166A	MC	0.73	0.31	0
127167A	MC	0.35	0.35	0
128195A	MC	0.36	0.37	0
400114	MC	0.41	0.17	0
400197	MC	0.60	0.28	0
400206	MC	0.52	0.46	0
400411	MC	0.44	0.19	0
400617	MC	0.37	0.19	0
400628	MC	0.52	0.20	0
400685	MC	0.45	0.32	0
400695	MC	0.70	0.41	0
406039	MC	0.39	0.31	0
406067	MC	0.83	0.40	0
406090	MC	0.42	0.43	0
406099	MC	0.44	0.25	0
408317	MC	0.36	0.23	0

Item		Difficulty	Discrimination	Percent Omitted
Number	Type			
408319	MC	0.60	0.35	0
408332	MC	0.36	0.18	0
411844	MC	0.77	0.37	0
412060	MC	0.72	0.26	0
412115	MC	0.48	0.36	0
412144	MC	0.49	0.38	0
412302	MC	0.73	0.38	0
412320	MC	0.63	0.46	0
412431	MC	0.33	0.30	0
412455	MC	0.37	0.34	0
413996	MC	0.20	0.17	0
414004	MC	0.62	0.33	0
414013	MC	0.50	0.39	0
414022	MC	0.51	0.27	0
414079	MC	0.55	0.38	0
414094	MC	0.32	0.27	0

continued

Item		Difficulty	Discrimination	Percent Omitted
Number	Type			
415259	MC	0.56	0.31	0
415351	MC	0.38	0.28	0
417061	MC	0.40	0.34	0
551235A	OR	0.49	0.63	2
551235B	OR	0.18	0.53	2
551245A	OR	0.25	0.69	3
551245B	OR	0.24	0.60	3
551449A	OR	0.33	0.52	1
551449B	OR	0.06	0.36	1
551474A	OR	0.12	0.18	3
551474B	OR	0.01	0.13	3

Table H-5. 2016–17 eMPowerME: Item-Level Classical Test Theory Statistics
Mathematics Grade 7

Item		Difficulty	Discrimination	Percent Omitted
Number	Type			
123969A	MC	0.45	0.29	0
123993A	MC	0.47	0.33	0
123999A	MC	0.43	0.33	0
124136A	MC	0.34	0.52	0
124343A	MC	0.32	0.45	0
124351A	MC	0.62	0.46	0
124358A	MC	0.49	0.53	0
124505A	MC	0.20	0.31	0
124508A	MC	0.77	0.36	0
124510A	MC	0.46	0.33	0
124647A	MC	0.58	0.36	0
124715A	MC	0.75	0.37	0
400168	MC	0.63	0.43	0
400323	MC	0.27	0.17	0
400873	MC	0.42	0.29	0
400898	MC	0.38	0.45	0
400958	MC	0.50	0.39	0
400979	MC	0.53	0.27	0
400983	MC	0.77	0.35	0
400990	MC	0.59	0.22	0
406163	MC	0.43	0.41	0
408567	MC	0.35	0.19	0
408597	MC	0.56	0.39	0
408632	MC	0.27	0.23	0
408640	MC	0.29	0.17	0
408731	MC	0.85	0.30	0
408734	MC	0.69	0.40	0
408770	MC	0.64	0.38	0
408783	MC	0.40	0.17	0
408790	MC	0.22	0.18	0
410223	MC	0.54	0.30	0
410239	MC	0.69	0.25	0
412082	MC	0.45	0.40	0
412118	MC	0.53	0.36	0
412147	MC	0.45	0.35	0
412513	MC	0.69	0.36	0
551403A	OR	0.41	0.58	1
551403B	OR	0.49	0.62	1
551426A	OR	0.28	0.51	4
551426B	OR	0.02	0.24	4
551445A	OR	0.31	0.57	2
551445B	OR	0.08	0.44	2
551465A	OR	0.20	0.57	4
551465B	OR	0.10	0.50	4

Table H-6. 2016–17 eMPowerME: Item-Level Classical Test Theory Statistics
Mathematics Grade 8

Item		*Difficulty*	*Discrimination*	*Percent Omitted*
Number	*Type*			
126030A	MC	0.38	0.22	0
126395A	MC	0.74	0.31	0
126885A	MC	0.78	0.29	0
127148A	MC	0.23	0.25	0
127737A	MC	0.76	0.36	0
400177	MC	0.33	0.25	0
400191	MC	0.29	0.09	0
400319	MC	0.57	0.26	0
400345	MC	0.32	0.23	0
400730	MC	0.24	0.35	0
400771	MC	0.55	0.21	0
400780	MC	0.30	-0.01	0
400803	MC	0.77	0.38	0
400985	MC	0.37	0.12	0
401024	MC	0.25	0.06	0
401027	MC	0.24	0.17	0
401030	MC	0.33	0.11	1
401033	MC	0.35	0.22	0
401035	MC	0.30	0.26	0
406428	MC	0.41	0.26	0
408518	MC	0.48	0.15	0
408651	MC	0.27	0.12	0
408795	MC	0.33	0.24	0
409239	MC	0.77	0.38	0
412449	MC	0.67	0.40	0
412646	MC	0.48	0.21	0
412662	MC	0.43	0.24	0
412703	MC	0.54	0.34	0
412756	MC	0.69	0.43	0
412946	MC	0.47	0.20	0
413229	MC	0.82	0.29	0
413290	MC	0.70	0.39	0
413314	MC	0.54	0.46	0
413335	MC	0.69	0.30	0
414370	MC	0.38	0.20	0
414805	MC	0.54	0.45	0
414880	MC	0.40	0.29	0
551249A	OR	0.13	0.51	5
551249B	OR	0.08	0.44	5
551332A	OR	0.18	0.63	4
551332B	OR	0.16	0.56	4
551366A	OR	0.25	0.52	3
551366B	OR	0.04	0.33	3
551387A	OR	0.35	0.55	4
551387B	OR	0.16	0.52	4

Table H-7. 2016–17 eMPowerME: Item-Level Classical Test Theory Statistics
ELA Grade 3

Item		*Difficulty*	*Discrimination*	*Percent Omitted*
Number	*Type*			
129850A	OR	0.38	0.47	0
129871A	OR	0.22	0.52	1
129875A	MC	0.50	0.49	0
401179	MC	0.61	0.42	0
401182	MC	0.73	0.48	0
401685	MC	0.47	0.46	0
401701	MC	0.76	0.40	0
402448	MC	0.66	0.51	0
402452	MC	0.46	0.32	0
402511	MC	0.45	0.37	0
402513	MC	0.79	0.46	0
406766	OR	0.20	0.44	2
406771	MC	0.60	0.38	0
406787	MC	0.59	0.33	0
406898	MC	0.78	0.43	0
410374	MC	0.48	0.40	0
410387	MC	0.70	0.36	0
410396	OR	0.30	0.38	0
410415	MC	0.69	0.53	0
410420	MC	0.62	0.43	0
410432	MC	0.72	0.50	0
410639	MC	0.64	0.44	0
410703	MC	0.88	0.47	0
410708	MC	0.54	0.32	0
410723	OR	0.51	0.39	0
410735	OR	0.21	0.49	3
418618	MC	0.80	0.52	0
418622	MC	0.48	0.38	0
418629	MC	0.52	0.24	0
418639	MC	0.47	0.43	0
418643	MC	0.71	0.40	0
418646	MC	0.71	0.47	0
418652	MC	0.58	0.35	0
418659	MC	0.43	0.34	0
418677	OR	0.40	0.44	0
418699	OR	0.16	0.51	1
421611	MC	0.49	0.40	0
421614	MC	0.50	0.44	0
421623	MC	0.58	0.38	0
421651	MC	0.59	0.31	0
421656	MC	0.47	0.36	0
421661	OR	0.51	0.53	0
421672	MC	0.63	0.40	0
421674	MC	0.44	0.38	0
421676	MC	0.59	0.28	0
421681	MC	0.46	0.30	0
421683	MC	0.54	0.36	0
421895	OR	0.34	0.39	0
545188	MC	0.38	0.30	0

Table H-8. 2016–17 eMPowerME: Item-Level Classical Test Theory Statistics
ELA Grade 4

Item		*Difficulty*	*Discrimination*	*Percent Omitted*
Number	*Type*			
128683A	MC	0.48	0.28	0
128686A	MC	0.41	0.17	0
128687A	MC	0.62	0.44	0
128689A	MC	0.44	0.31	0
128690A	MC	0.36	0.22	0
128692A	OR	0.29	0.22	0
128768A	OR	0.23	0.52	1
129528A	OR	0.22	0.53	1
130668A	OR	0.54	0.53	0
130675A	MC	0.55	0.28	0
130704A	MC	0.60	0.48	0
130706A	MC	0.60	0.28	0
130709A	MC	0.71	0.43	0
130710A	MC	0.81	0.33	0
130712A	MC	0.68	0.18	0
130728A	OR	0.18	0.46	3
401190	MC	0.48	0.33	0
401736	MC	0.51	0.42	0
401750	OR	0.46	0.55	0
401759	MC	0.59	0.46	0
401765	MC	0.59	0.44	0
401771	MC	0.83	0.42	0
402538	MC	0.69	0.43	0
402540	MC	0.45	0.38	0
402583	MC	0.40	0.30	0
402587	MC	0.70	0.43	0
402594	MC	0.39	0.35	0
410868	OR	0.29	0.49	1
410911	MC	0.61	0.33	0
411246	OR	0.34	0.27	0
411251	MC	0.62	0.49	0
411256	MC	0.48	0.31	0
411261	MC	0.56	0.39	0
411268	MC	0.63	0.31	0
411283	MC	0.55	0.40	0
412876	MC	0.79	0.46	0
412895	MC	0.38	0.27	0
420633	MC	0.61	0.50	0
420639	MC	0.64	0.22	0
420642	MC	0.80	0.40	0
420656	MC	0.58	0.37	0
420671	MC	0.76	0.47	0
420675	OR	0.25	0.25	0
420698	MC	0.44	0.30	0
420714	MC	0.59	0.35	0
420723	OR	0.49	0.36	0
420785	MC	0.82	0.30	0
420820	MC	0.52	0.26	0
422664	MC	0.72	0.35	0

Table H-9. 2016–17 eMPowerME: Item-Level Classical Test Theory Statistics
ELA Grade 5

Item		*Difficulty*	*Discrimination*	*Percent Omitted*
Number	*Type*			
129003A	MC	0.58	0.38	0
129009A	MC	0.38	0.25	0
129011A	MC	0.65	0.21	0
129012A	MC	0.58	0.40	0
129015A	OR	0.64	0.43	0
129019A	OR	0.46	0.45	1
129174A	MC	0.59	0.47	0
129178A	MC	0.53	0.35	0
129179A	MC	0.58	0.35	0
129193A	MC	0.40	0.17	0
129195A	OR	0.42	0.46	0
129196A	OR	0.19	0.54	2
129198A	MC	0.51	0.33	0
129201A	MC	0.73	0.36	
129760A	MC	0.47	0.26	0
401394	MC	0.58	0.48	0
401398	MC	0.70	0.50	0
401400	MC	0.76	0.37	0
401440	MC	0.72	0.37	0
401443	MC	0.70	0.28	0
402196	MC	0.87	0.37	0
402211	MC	0.66	0.52	0
402279	MC	0.61	0.36	0
402284	MC	0.63	0.27	0
402286	MC	0.56	0.35	0
402288	OR	0.47	0.24	0
402908	OR	0.30	0.43	0

Item		*Difficulty*	*Discrimination*	*Percent Omitted*
Number	*Type*			
410413	OR	0.49	0.51	0
410428	MC	0.64	0.45	0
410440	MC	0.80	0.40	0
410563	MC	0.45	0.37	0
410584	MC	0.55	0.43	0
410588	MC	0.45	0.37	0
416506	MC	0.69	0.44	0
416518	MC	0.59	0.48	0
416527	OR	0.34	0.52	1
419292	OR	0.62	0.58	0
419298	MC	0.61	0.41	0
419302	MC	0.53	0.16	0
419309	MC	0.46	0.35	
419311	MC	0.59	0.42	
419321	MC	0.78	0.39	0
419405	MC	0.79	0.39	0
419416	MC	0.26	0.27	0
419419	MC	0.34	0.35	0
419421	MC	0.78	0.35	0
419423	MC	0.59	0.26	0
422629	OR	0.25	0.54	1
504241	MC	0.44	0.22	0

Table H-10. 2016–17 eMPowerME: Item-Level Classical Test Theory Statistics
ELA Grade 6

Item		*Difficulty*	*Discrimination*	*Percent Omitted*
Number	*Type*			
129251A	MC	0.55	0.44	0
129252A	MC	0.64	0.34	0
129254A	MC	0.88	0.43	0
129255A	MC	0.79	0.41	0
129257A	MC	0.89	0.45	0
129258A	OR	0.43	0.31	0
129259A	MC	0.44	0.33	0
129379A	MC	0.52	0.33	0
131520A	OR	0.39	0.59	1
132116A	MC	0.63	0.39	0
132117A	MC	0.73	0.38	0
132118A	MC	0.53	0.40	0
132119A	MC	0.60	0.38	0
132122A	OR	0.26	0.58	1
401202	MC	0.66	0.43	0
401205	OR	0.73	0.53	0
401231	MC	0.53	0.38	0
401568	OR	0.30	0.61	2
401876	MC	0.66	0.33	0
401882	MC	0.62	0.23	0
401886	MC	0.73	0.31	0
401890	MC	0.88	0.40	0
401980	MC	0.74	0.33	0
401982	MC	0.82	0.45	0
401986	MC	0.75	0.27	0
402013	MC	0.59	0.24	0
402019	MC	0.46	0.15	0
402027	OR	0.51	0.54	0
409362	MC	0.75	0.32	0
409385	MC	0.40	0.39	0
409396	MC	0.58	0.40	
409447	MC	0.37	0.31	0
409458	OR	0.47	0.41	0
409472	MC	0.58	0.36	0
409541	MC	0.46	0.39	0
409546	MC	0.63	0.42	0
409551	MC	0.58	0.42	0
409556	MC	0.65	0.43	0
409568	MC	0.62	0.22	0
419741	MC	0.52	0.14	0
419743	MC	0.55	0.21	0
419745	MC	0.94	0.37	0
419747	MC	0.64	0.40	0
419750	OR	0.35	0.25	0
419754	MC	0.54	0.37	0
420218	OR	0.75	0.50	0
420235	MC	0.63	0.42	0
420260	MC	0.33	0.17	0
420298	OR	0.36	0.53	1

Table H-11. 2016–17 eMPowerME: Item-Level Classical Test Theory Statistics
ELA Grade 7

Item		Difficulty	Discrimination	Percent Omitted
Number	Type			
128730A	MC	0.79	0.44	0
128731A	MC	0.59	0.43	0
128753A	MC	0.76	0.45	0
128756A	MC	0.74	0.40	0
128757A	MC	0.63	0.51	0
129214A	OR	0.27	0.57	3
129219A	MC	0.38	0.27	0
401318	OR	0.63	0.49	0
401320	MC	0.74	0.36	0
401802	MC	0.46	0.18	0
401808	MC	0.59	0.39	0
401814	MC	0.69	0.29	0
401816	MC	0.59	0.42	0
402637	MC	0.64	0.43	0
402696	MC	0.68	0.37	0
402702	MC	0.51	0.30	0
402708	MC	0.56	0.41	0
402755	MC	0.49	0.35	0
402757	MC	0.63	0.38	0
402759	MC	0.30	0.30	0
402763	MC	0.59	0.41	0
402765	MC	0.41	0.39	0
402767	OR	0.45	0.53	0
402784	MC	0.72	0.40	0
407724	MC	0.63	0.34	0
407738	MC	0.51	0.32	0
407741	OR	0.72	0.35	0
407754	MC	0.78	0.35	0
407760	MC	0.67	0.29	0
407765	MC	0.69	0.31	0
407798	OR	0.24	0.49	1
407845	OR	0.24	0.62	2
409401	MC	0.56	0.31	0
409409	MC	0.49	0.37	0
409464	MC	0.42	0.33	0
409493	MC	0.57	0.33	0
409501	MC	0.61	0.38	0
409517	OR	0.46	0.38	0
409613	OR	0.30	0.37	0
409622	MC	0.75	0.31	0
409628	MC	0.73	0.31	0
409639	MC	0.79	0.44	0
409660	MC	0.91	0.41	0
409672	MC	0.41	0.20	0
416739	MC	0.60	0.33	0
416762	MC	0.47	0.33	0
416766	MC	0.72	0.32	0
416774	OR	0.49	0.53	0
416793	OR	0.30	0.59	2

Table H-12. 2016–17 eMPowerME: Item-Level Classical Test Theory Statistics
ELA Grade 8

Item		*Difficulty*	*Discrimination*	*Percent Omitted*
Number	*Type*			
130644A	OR	0.43	0.62	2
131175A	MC	0.74	0.34	0
131191A	MC	0.55	0.35	0
131192A	MC	0.74	0.40	0
131193A	MC	0.60	0.39	0
131194A	MC	0.40	0.23	0
131195A	MC	0.75	0.33	0
131197A	OR	0.29	0.63	3
131198A	OR	0.36	0.53	1
401369	OR	0.70	0.47	0
401373	MC	0.53	0.36	0
401742	MC	0.76	0.51	0
401746	MC	0.72	0.49	0
401748	MC	0.48	0.47	0
401754	MC	0.76	0.46	0
402075	MC	0.59	0.22	1
402077	MC	0.34	0.30	0
402079	OR	0.51	0.47	0
402111	MC	0.84	0.28	0
402116	MC	0.78	0.41	0
402118	MC	0.64	0.45	0
402125	MC	0.78	0.25	0
402129	MC	0.75	0.39	0
402133	MC	0.50	0.41	0
402160	MC	0.71	0.44	0
402164	MC	0.72	0.41	0
402174	OR	0.42	0.41	0
402209	MC	0.66	0.41	0
402213	MC	0.58	0.35	0
402246	MC	0.83	0.37	0
402250	MC	0.43	0.29	0
402254	MC	0.53	0.42	0
409754	MC	0.55	0.50	0
409773	MC	0.46	0.46	0
409789	MC	0.44	0.39	0
409803	MC	0.51	0.28	0
409826	MC	0.51	0.19	0
409832	OR	0.20	0.24	0
418826	OR	0.53	0.44	0
420872	MC	0.67	0.36	0
420905	MC	0.39	0.29	0
420913	MC	0.42	0.38	0
420925	MC	0.52	0.39	0
420929	MC	0.48	0.22	0
420946	MC	0.65	0.41	0
420952	MC	0.71	0.32	0
420970	MC	0.67	0.41	0
420986	OR	0.54	0.42	0
420990	OR	0.31	0.64	3

APPENDIX I—ITEM-LEVEL SCORE POINT DISTRIBUTIONS

Table I-1. 2016–17 eMPowerME: Item-Level Score Distributions for Constructed-Response Items—Mathematics

Grade	Item Number	Total Possible Points	Percent of Students at Score Point				
			0	1	2	3	4
3	551257A	4	32.78	11.02	28.71	21.65	4.41
	551257B	2	67.04	14.01	17.52		
	551311A	2	49.70	47.04	2.50		
	551311B	1	45.30	53.94			
	551320A	4	29.90	31.27	26.39	8.36	2.72
	551320B	2	28.48	57.96	12.20		
	551328A	2	63.84	11.25	23.57		
	551328B	1	84.70	13.96			
4	551336A	2	71.19	22.66	4.72		
	551336B	1	82.98	15.59			
	551340A	2	15.44	28.32	55.78		
	551340B	1	14.87	84.68			
	551343A	4	55.62	21.28	12.79	5.95	2.11
	551343B	2	75.45	17.11	5.20		
	551361A	4	34.88	30.14	27.86	4.23	1.56
	551361B	2	82.87	11.63	4.18		
5	551230A	2	41.58	10.06	47.44		
	551230B	1	42.40	56.69			
	551415A	4	32.36	13.14	36.43	11.15	4.78
	551415B	2	89.61	2.91	5.36		
	551422A	2	32.51	44.18	20.74		
	551422B	1	67.82	29.61			
	551428A	4	46.92	23.38	9.88	12.96	3.28
	551428B	2	74.12	17.10	5.20		
6	551235A	4	17.85	21.65	18.31	23.31	17.07
	551235B	2	67.73	24.71	5.73		
	551245A	4	38.03	32.30	17.44	6.40	2.94
	551245B	2	52.44	41.72	2.94		
	551449A	2	43.03	46.61	9.74		
	551449B	1	93.68	5.70			
	551474A	2	74.80	20.69	1.65		
	551474B	1	96.49	0.66			
7	551403A	4	26.86	25.12	12.91	20.81	12.99
	551403B	2	32.67	33.70	32.32		
	551426A	2	41.94	52.37	2.00		
	551426B	1	93.96	2.35			
	551445A	2	47.39	39.15	11.70		
	551445B	1	90.19	8.04			
	551465A	4	54.21	16.82	14.34	8.54	2.45
	551465B	2	78.81	14.98	2.56		
8	551249A	2	76.80	9.57	8.54		
	551249B	1	86.82	8.09			
	551332A	4	61.85	15.77	5.75	7.62	5.07
	551332B	2	69.68	21.34	5.05		
	551366A	2	56.35	31.51	9.07		
	551366B	1	93.27	3.67			

continued

Grade	Item Number	Total Possible Points	Percent of Students at Score Point				
			0	1	2	3	4
8	551387A	4	20.85	30.59	28.33	14.22	2.26
	551387B	2	67.58	24.38	4.29		

Table I-2. 2016–17 eMPowerME: Item-Level Score Distributions for Constructed-Response Items—ELA

Grade	Item Number	Total Possible Points	Percent of Students at Score Point				
			0	1	2	3	4
3	129850A	2	54.39	13.97	31.34		
	129871A	2	57.97	37.40	3.30		
	406766	2	61.90	32.52	3.55		
	410396	2	56.54	27.41	15.99		
	410723	2	39.71	17.56	42.63		
	410735	3	38.82	53.59	4.20	0.55	
	418677	2	37.59	44.85	17.47		
	418699	3	55.03	39.64	3.76	0.27	
	421661	2	38.07	21.65	40.15		
	421895	2	41.08	49.54	9.33		
4	128692A	2	66.89	7.27	25.78		
	128768A	3	43.75	42.25	10.17	2.37	
	129528A	2	60.43	31.97	6.49		
	130668A	2	43.26	5.50	51.10		
	130728A	2	68.86	20.23	7.80		
	401750	2	49.63	8.49	41.78		
	410868	3	24.83	63.24	8.88	1.75	
	411246	2	56.78	17.57	25.20		
	420675	2	67.43	14.19	18.35		
	420723	2	38.90	23.54	37.53		
5	129015A	2	19.67	32.43	47.87		
	129019A	2	25.97	55.71	17.67		
	129195A	2	45.51	25.25	29.01		
	129196A	3	54.12	33.96	8.55	1.75	
	402288	2	45.81	15.11	39.06		
	402908	2	62.98	14.81	22.17		
	410413	2	41.37	18.51	40.01		
	416527	3	33.56	34.45	24.84	5.96	
	419292	2	34.64	6.77	58.27		
	422629	2	61.96	24.15	12.81		
6	129258A	2	39.00	35.15	25.81		
	131520A	2	37.66	45.26	15.91		
	132122A	4	32.07	38.54	21.63	5.63	1.26
	401205	2	19.72	15.18	65.09		
	401568	4	19.77	43.11	28.54	6.83	0.07
	402027	2	38.94	19.92	41.12		
	409458	2	42.35	20.43	37.17		
	419750	2	41.39	46.83	11.75		
	420218	2	20.40	9.89	69.69		
	420298	2	43.54	39.01	16.48		

continued

Grade	Item Number	Total Possible Points	Percent of Students at Score Point				
			0	1	2	3	4
7	129214A	2	50.51	38.13	8.04		
	401318	2	30.70	11.82	57.41		
	402767	2	40.71	27.94	31.25		
	407741	2	18.02	19.61	62.35		
	407798	2	54.78	39.08	4.91		
	407845	4	33.28	39.25	18.71	4.72	1.61
	409517	2	48.66	11.33	39.97		
	409613	2	62.68	14.84	22.45		
	416774	2	45.27	11.90	42.75		
8	416793	4	21.63	44.71	24.13	6.50	1.46
	130644A	2	28.17	52.32	17.25		
	131197A	4	27.06	35.79	23.69	7.82	2.82
	131198A	2	32.79	59.95	5.86		
	401369	2	23.88	11.27	64.83		
	402079	2	37.86	22.61	39.46		
	402174	2	50.12	16.11	33.75		
	409832	2	73.25	13.19	13.45		
	418826	2	43.61	6.83	49.30		
	420986	2	40.47	10.09	49.44		

APPENDIX J—DIFFERENTIAL ITEM FUNCTIONING RESULTS

Table J-1. 2016–17 eMPowerME: Number of Items Classified as "Low" or "High" DIF Overall and by Grade and Group Favored—Mathematics

Grade	Group		Item Type	Number of Items	Number "Low"			Number "High"		
					Total	Favoring		Total	Favoring	
	Reference	Focal				Reference	Focal		Reference	Focal
3	Male	Female	MC	33	2	1	1	0	0	0
			OR	8	0	0	0	0	0	0
	No Disability	Disability	MC	33	9	9	0	0	0	0
			OR	8	0	0	0	0	0	0
	Non-EconDis	EconDis	MC	33	0	0	0	0	0	0
			OR	8	0	0	0	0	0	0
	Non-LEP	LEP	MC	33	8	7	1	1	0	1
			OR	8	0	0	0	1	1	0
	White	Black	MC	33	8	5	3	0	0	0
			OR	8	3	1	2	0	0	0
		Hispanic	MC	33	3	2	1	0	0	0
			OR	8	0	0	0	0	0	0
4	Male	Female	MC	32	2	1	1	0	0	0
			OR	8	0	0	0	0	0	0
	No Disability	Disability	MC	32	8	8	0	0	0	0
			OR	8	2	2	0	0	0	0
	Non-EconDis	EconDis	MC	32	0	0	0	0	0	0
			OR	8	0	0	0	0	0	0
	Non-LEP	LEP	MC	32	10	8	2	2	2	0
			OR	8	1	1	0	0	0	0
	White	Asian	MC	32	7	5	2	2	2	0
			OR	8	1	1	0	0	0	0
		Black	MC	32	0	0	0	0	0	0
			OR	8	0	0	0	0	0	0
		Hispanic	MC	33	2	1	1	0	0	0
			OR	8	0	0	0	0	0	0
5	Male	Female	MC	33	2	2	0	0	0	0
			OR	8	0	0	0	0	0	0

continued

Grade	Group		Item Type	Number of Items	Number "Low"			Number "High"		
	Reference	Focal			Total	Favoring		Total	Favoring	
						Reference	Focal		Reference	Focal
5	No Disability	Disability	MC	33	7	7	0	1	1	0
			OR	8	1	1	0	0	0	0
	Non-EconDis	EconDis	MC	33	1	1	0	0	0	0
			OR	8	0	0	0	0	0	0
	Non-LEP	LEP	MC	33	10	8	2	5	5	0
			OR	8	0	0	0	1	0	1
	White	Black	MC	33	4	3	1	0	0	0
			OR	8	2	0	2	0	0	0
		Hispanic	MC	33	13	11	2	0	0	0
			OR	8	0	0	0	0	0	0
6	Male	Female	MC	33	3	3	0	0	0	0
			OR	8	0	0	0	0	0	0
	No Disability	Disability	MC	36	4	3	1	0	0	0
			OR	8	0	0	0	0	0	0
	Non-EconDis	EconDis	MC	36	2	2	0	0	0	0
			OR	8	1	1	0	0	0	0
	Non-LEP	LEP	MC	36	0	0	0	0	0	0
			OR	8	0	0	0	0	0	0
	White	Asian	MC	36	6	4	2	5	5	0
			OR	8	0	0	0	1	1	0
		Black	MC	36	10	8	2	0	0	0
			OR	8	1	1	0	0	0	0
		Hispanic	MC	36	3	1	2	0	0	0
			OR	8	0	0	0	0	0	0
7	Male	Female	MC	36	4	3	1	0	0	0
			OR	8	2	0	2	0	0	0
	No Disability	Disability	MC	36	7	7	0	0	0	0
			OR	8	2	2	0	0	0	0
	Non-EconDis	EconDis	MC	36	1	1	0	0	0	0
			OR	8	0	0	0	0	0	0
	Non-LEP	LEP	MC	36	11	6	5	0	0	0
			OR	8	3	3	0	0	0	0

continued

Grade	Group		Item Type	Number of Items	Number "Low"			Number "High"		
	Reference	Focal			Total	Favoring		Total	Favoring	
						Reference	Focal		Reference	Focal
7	White	Black	MC	36	7	3	4	0	0	0
			OR	8	0	0	0	0	0	0
		Hispanic	MC	36	4	2	2	0	0	0
			OR	8	1	1	0	0	0	0
8	Male	Female	MC	36	4	2	2	0	0	0
			OR	8	0	0	0	0	0	0
	No Disability	Disability	MC	37	0	0	0	0	0	0
			OR	8	0	0	0	0	0	0
	Non-EconDis	EconDis	MC	37	12	11	1	2	2	0
			OR	8	0	0	0	0	0	0
	Non-LEP	LEP	MC	37	0	0	0	0	0	0
			OR	8	0	0	0	0	0	0
	White	Black	MC	37	10	7	3	3	3	0
			OR	8	1	1	0	0	0	0
		Hispanic	MC	37	8	5	3	1	1	0
			OR	8	1	1	0	0	0	0

Table J-2. 2016–17 eMPowerME: Number of Items Classified as "Low" or "High" DIF Overall and by Grade and Group Favored—ELA

Grade	Group		Item Type	Number of Items	Number "Low"			Number "High"		
					Total	Favoring		Total	Favoring	
	Reference	Focal				Reference	Focal		Reference	Focal
3	Male	Female	MC	39	1	1	0	0	0	0
			OR	10	0	0	0	0	0	0
	No Disability	Disability	MC	39	6	6	0	0	0	0
			OR	10	0	0	0	0	0	0
	Non-EconDis	EconDis	MC	39	0	0	0	0	0	0
			OR	10	0	0	0	0	0	0
	Non-LEP	LEP	MC	39	7	5	2	3	3	0
			OR	10	1	0	1	0	0	0
	White	Black	MC	39	6	4	2	2	2	0
			OR	10	1	0	1	0	0	0
		Hispanic	MC	39	3	3	0	0	0	0
			OR	10	0	0	0	0	0	0
4	Male	Female	MC	39	2	0	2	0	0	0
			OR	10	0	0	0	0	0	0
	No Disability	Disability	MC	39	6	6	0	0	0	0
			OR	10	1	1	0	0	0	0
	Non-EconDis	EconDis	MC	39	0	0	0	0	0	0
			OR	10	0	0	0	0	0	0
	Non-LEP	LEP	MC	39	12	12	0	1	1	0
			OR	10	1	1	0	0	0	0
	White	Asian	MC	39	5	3	2	1	1	0
			OR	10	1	1	0	0	0	0
		Black	MC	39	3	1	2	0	0	0
			OR	10	0	0	0	0	0	0
		Hispanic	MC	39	1	1	0	0	0	0
			OR	10	2	0	2	0	0	0
5	Male	Female	MC	39	6	6	0	0	0	0
			OR	10	3	3	0	0	0	0
	No Disability	Disability	MC	39	1	1	0	0	0	0
			OR	10	0	0	0	0	0	0

continued

Grade	Group		Item Type	Number of Items	Number "Low"			Number "High"		
	Reference	Focal			Total	Favoring		Total	Favoring	
						Reference	Focal		Reference	Focal
5	Non-EconDis	EconDis	MC	39	1	1	0	0	0	0
			OR	10	0	0	0	0	0	0
	Non-LEP	LEP	MC	39	10	10	0	5	5	0
			OR	10	2	0	2	1	1	0
	White	Black	MC	39	11	7	4	1	0	1
			OR	10	0	0	0	0	0	0
		Hispanic	MC	39	8	6	2	1	1	0
			OR	10	0	0	0	0	0	0
6	Male	Female	MC	39	3	2	1	0	0	0
			OR	10	0	0	0	0	0	0
	No Disability	Disability	MC	39	4	3	1	0	0	0
			OR	10	2	0	2	0	0	0
	Non-EconDis	EconDis	MC	39	3	3	0	0	0	0
			OR	10	2	2	0	0	0	0
	Non-LEP	LEP	MC	39	1	1	0	0	0	0
			OR	10	0	0	0	0	0	0
	White	Asian	MC	39	14	11	3	4	3	1
			OR	10	2	2	0	0	0	0
		Black	MC	39	4	1	3	2	2	0
			OR	10	0	0	0	0	0	0
		Hispanic	MC	39	2	1	1	0	0	0
			OR	10	1	1	0	0	0	0
7	Male	Female	MC	39	1	1	0	0	0	0
			OR	10	2	1	1	0	0	0
	No Disability	Disability	MC	39	7	6	1	0	0	0
			OR	10	2	2	0	0	0	0
	Non-EconDis	EconDis	MC	39	0	0	0	0	0	0
			OR	10	0	0	0	0	0	0
	Non-LEP	LEP	MC	39	5	5	0	2	2	0
			OR	10	1	1	0	0	0	0
	White	Black	MC	36	6	3	3	1	1	0
			OR	10	2	1	1	0	0	0

continued

Grade	Group		Item Type	Number of Items	Number "Low"			Number "High"		
	Reference	Focal			Total	Favoring		Total	Favoring	
						Reference	Focal		Reference	Focal
7	White	Hispanic	MC	39	6	5	1	0	0	0
			OR	10	0	0	0	0	0	0
8	Male	Female	MC	39	2	1	1	0	0	0
			OR	10	0	0	0	0	0	0
	No Disability	Disability	MC	39	3	2	1	0	0	0
			OR	10	2	0	2	1	1	0
	Non-EconDis	EconDis	MC	39	5	4	1	0	0	0
			OR	10	3	3	0	0	0	0
	Non-LEP	LEP	MC	39	1	1	0	0	0	0
			OR	10	0	0	0	0	0	0
	White	Black	MC	39	13	12	1	3	3	0
			OR	10	2	1	1	1	1	0
		Hispanic	MC	39	7	7	0	0	0	0
			OR	10	0	0	0	0	0	0

APPENDIX K—ITEM RESPONSE THEORY CALIBRATION RESULTS

Table K-1. 2016–17 eMPowerME: IRT Parameters for Dichotomous Items
Mathematics Grade 3

IREF	*Parameters and Measures of Standard Error*					
	a	*SE (a)*	*b*	*SE (b)*	*c*	*SE (c)*
411623	1.08393	0.03189	-1.13526	0.04003	0.10982	0.02287
400021	0.90822	0.03886	0.33728	0.03800	0.27195	0.01377
411097	0.61621	0.03035	-0.42492	0.09621	0.23182	0.03179
405588	0.69201	0.03277	0.40665	0.05051	0.19342	0.01747
413222	0.99119	0.04208	0.41418	0.03371	0.29035	0.01223
411145	1.02232	0.04017	-0.54421	0.05022	0.34275	0.02062
400432	0.72289	0.04208	1.61173	0.04125	0.12350	0.00903
400434	0.65058	0.03074	-0.19381	0.07680	0.21939	0.02610
527940	0.97584	0.03637	0.55867	0.02631	0.16362	0.01018
411494	0.90857	0.03013	-1.20535	0.05897	0.14674	0.03059
417030	0.84534	0.03075	0.14601	0.03576	0.14761	0.01443
400044	0.78769	0.03087	-0.38670	0.05733	0.20636	0.02278
123976A	0.67789	0.03552	0.77646	0.04601	0.19403	0.01528
125052A	1.07805	0.05055	1.22978	0.02580	0.18561	0.00718
126321A	0.61355	0.04116	1.15668	0.05387	0.23579	0.01584
124395A	0.91063	0.03253	-0.56353	0.04918	0.21187	0.02178
411633	0.80002	0.03153	-1.07089	0.08033	0.22890	0.03503
124663A	1.13044	0.04398	0.87428	0.02196	0.16922	0.00767
400358	0.76724	0.03901	1.08691	0.03488	0.17285	0.01104
411729	0.83256	0.04242	0.95423	0.03519	0.23543	0.01128
407640	0.66502	0.06155	1.84011	0.06740	0.32172	0.01187
407672	0.79282	0.06759	1.99557	0.06369	0.26326	0.00868
412628	0.31177	0.01102	-0.32054	0.03553	0.00000	0.00000
414589	0.88842	0.02953	0.45809	0.02517	0.08446	0.00988
409896	0.49545	0.02263	0.04952	0.07710	0.08250	0.02439
411231	0.96640	0.03580	0.81129	0.02332	0.11521	0.00829
126293A	0.74076	0.02839	-0.80747	0.07227	0.17353	0.03018
125235A	0.70720	0.04395	1.17762	0.04456	0.24935	0.01295
411093	0.80677	0.02641	-1.16886	0.06255	0.11669	0.03029
411254	0.93658	0.03205	0.02350	0.03277	0.16024	0.01396
124364A	0.79893	0.02761	-0.54340	0.05123	0.13366	0.02224
400614	0.79594	0.03312	0.18222	0.04424	0.20727	0.01648
125231A	0.85934	0.04946	1.11331	0.03728	0.29382	0.01068
551311B	0.64569	0.01395	-0.21311	0.01825	0.00000	0.00000
551328B	0.80110	0.02089	1.72053	0.03385	0.00000	0.00000

Table K-2. 2016–17 eMPowerME: IRT Parameters for Polytomous Items
Mathematics Grade 3

IREF	*Parameters and Measures of Standard Error*													
	a	*SE (a)*	*b*	*SE (b)*	*D0*	*SE (D0)*	*D1*	*SE (D1)*	*D2*	*SE (D2)*	*d3*	*SE(d3)*	*d4*	*SE(d4)*
551257A	1.18507	0.01171	0.57662	0.00874	1.15368	0.01168	0.76681	0.01107	-0.25005	0.01217	-1.67044	0.02354	0.00000	0.00000
551257B	1.11858	0.01695	0.93379	0.01261	0.30738	0.01225	-0.30738	0.01438	0.00000	0.00000	n/a	n/a	n/a	n/a
551311A	0.59777	0.00805	2.00834	0.01890	2.02301	0.01912	-2.02301	0.05600	0.00000	0.00000	n/a	n/a	n/a	n/a
551320A	1.20042	0.01156	0.95026	0.00861	1.63291	0.01187	0.56367	0.01115	-0.62111	0.01579	-1.57548	0.02848	0.00000	0.00000

continued

IREF	Parameters and Measures of Standard Error													
	a	*SE (a)*	*b*	*SE (b)*	*D0*	*SE (D0)*	*D1*	*SE (D1)*	*D2*	*SE (D2)*	*d3*	*SE(d3)*	*d4*	*SE(d4)*
551320B	1.06962	0.01231	0.40471	0.01082	1.17901	0.01317	-1.17901	0.01701	0.00000	0.00000	n/a	n/a	n/a	n/a
551328A	0.94607	0.01501	0.78234	0.01408	0.24283	0.01362	-0.24283	0.01494	0.00000	0.00000	n/a	n/a	n/a	n/a

Table K-3. 2016–17 eMPowerME: IRT Parameters for Dichotomous Items
Mathematics Grade 4

IREF	Parameters and Measures of Standard Error					
	a	*SE (a)*	*b*	*SE (b)*	*c*	*SE (c)*
411858	0.66186	0.02249	-1.71147	0.08873	0.10146	0.04086
400815	0.78078	0.05227	1.52304	0.04390	0.24610	0.01107
127705A	1.48798	0.04784	0.53857	0.01631	0.16391	0.00777
400789	1.27147	0.03810	-0.02208	0.02238	0.15132	0.01208
400920	0.48268	0.02468	0.21011	0.08738	0.09153	0.02780
407852	1.14258	0.06677	1.75489	0.03483	0.17055	0.00592
411117	0.73210	0.03398	0.35274	0.05041	0.18981	0.01917
409954	0.78507	0.05128	1.77656	0.04612	0.16669	0.00912
124779A	0.90398	0.02986	0.09427	0.03105	0.09932	0.01438
411163	1.56895	0.04954	0.09601	0.01904	0.22701	0.01053
126060A	0.67351	0.03914	1.12255	0.04431	0.17904	0.01489
127584A	0.64484	0.04033	0.96420	0.05501	0.23249	0.01790
407867	0.65923	0.03771	0.48434	0.06664	0.25929	0.02187
411024	0.50167	0.03038	0.85946	0.06961	0.10709	0.02278
405630	1.11735	0.04380	0.63656	0.02477	0.21667	0.01034
124969A	0.86867	0.05134	1.28831	0.03704	0.26348	0.01069
400778	0.47391	0.01635	-2.24043	0.07210	0.00000	0.00000
413801	1.40304	0.04258	-0.04222	0.02130	0.18592	0.01188

IREF	Parameters and Measures of Standard Error					
	a	*SE (a)*	*b*	*SE (b)*	*c*	*SE (c)*
400748	0.54774	0.03797	0.95913	0.07193	0.20506	0.02250
408261	0.79329	0.07034	2.28814	0.07698	0.20098	0.00805
408276	1.39543	0.07346	1.37765	0.02497	0.25702	0.00639
400839	0.80645	0.04873	1.31274	0.03929	0.24402	0.01146
400449	1.09965	0.03828	-0.03884	0.03172	0.21733	0.01536
400066	0.92414	0.04314	0.73344	0.03364	0.25273	0.01253
408032	1.44881	0.04309	-0.22575	0.02214	0.18490	0.01303
127117A	0.56693	0.03888	0.73413	0.08067	0.25331	0.02424
124741A	1.48010	0.04918	0.26885	0.01958	0.23354	0.01000
400447	1.07292	0.03640	-0.16536	0.03357	0.19563	0.01667
400466	1.04371	0.03723	0.52247	0.02427	0.14977	0.01071
400468	1.42807	0.06758	1.18708	0.02207	0.25460	0.00674
408040	1.24673	0.05471	0.98001	0.02298	0.24428	0.00815
127588A	1.24792	0.08721	1.93964	0.04104	0.21171	0.00552
551340B	1.71609	0.03631	-1.05890	0.01345	0.00000	0.00000
551336B	1.16925	0.02612	1.35822	0.01954	0.00000	0.00000

Table K-4. 2016–17 eMPowerME: IRT Parameters for Polytomous Items
Mathematics Grade 4

IREF	*Parameters and Measures of Standard Error*													
	a	*SE (a)*	*b*	*SE (b)*	*D0*	*SE (D0)*	*D1*	*SE (D1)*	*D2*	*SE (D2)*	*d3*	*SE(d3)*	*d4*	*SE(d4)*
551336A	1.02531	0.01526	1.62863	0.01470	0.75986	0.01308	-0.75986	0.02536	0.00000	0.00000	n/a	n/a	n/a	n/a
551340A	1.11619	0.01428	-0.64140	0.01055	0.56832	0.01469	-0.56832	0.01121	0.00000	0.00000	n/a	n/a	n/a	n/a
551343A	0.69166	0.00793	2.01125	0.01621	1.66267	0.01639	0.63378	0.01906	-0.48418	0.02782	-1.81226	0.05259	0.00000	0.00000
551343B	1.07393	0.01708	1.66244	0.01586	0.59203	0.01339	-0.59203	0.02326	0.00000	0.00000	n/a	n/a	n/a	n/a
551361A	1.01517	0.01001	1.41062	0.01001	1.80887	0.01242	0.77766	0.01239	-0.83230	0.02316	-1.75423	0.04245	0.00000	0.00000
551361B	1.07445	0.01936	1.91310	0.01972	0.51216	0.01506	-0.51216	0.02587	0.00000	0.00000	n/a	n/a	n/a	n/a
551336A	1.02531	0.01526	1.62863	0.01470	0.75986	0.01308	-0.75986	0.02536	0.00000	0.00000	n/a	n/a	n/a	n/a

Table K-5. 2016–17 eMPowerME: IRT Parameters for Dichotomous Items
Mathematics Grade 5

IREF	*Parameters and Measures of Standard Error*					
	a	*SE (a)*	*b*	*SE (b)*	*c*	*SE (c)*
411270	0.81324	0.03146	-0.06348	0.04739	0.18016	0.01938
415122	1.36195	0.06664	1.47795	0.02391	0.18126	0.00549
400718	1.22474	0.04033	0.39254	0.02135	0.17534	0.00947
400515	1.00286	0.03674	-1.25665	0.06715	0.22081	0.03714
400520	0.92561	0.02664	0.14232	0.02431	0.05600	0.01053
400523	0.86750	0.02948	0.24985	0.03075	0.10338	0.01301
408496	0.89927	0.05695	1.67344	0.03988	0.22078	0.00811
124038A	0.83482	0.03885	1.04402	0.03126	0.16466	0.01045
400300	0.28337	0.03071	4.66411	0.44863	0.20000	0.00000
415106	0.99913	0.03965	1.06899	0.02353	0.12136	0.00759
400662	1.04449	0.06967	1.95170	0.04357	0.18112	0.00598
415373	1.21152	0.09459	2.09726	0.04806	0.21931	0.00536
412026	1.32094	0.03669	-0.11873	0.02025	0.11984	0.01073
414837	0.65985	0.03816	0.93165	0.05045	0.21889	0.01623
411804	1.43634	0.05271	0.41022	0.02168	0.29102	0.00931
400302	1.30996	0.07275	1.53798	0.02759	0.23850	0.00603
408493	0.95497	0.03207	-0.35339	0.04010	0.16498	0.01896
125104A	0.84768	0.03176	0.69795	0.02761	0.10214	0.01055

IREF	*Parameters and Measures of Standard Error*					
	a	*SE (a)*	*b*	*SE (b)*	*c*	*SE (c)*
411240	1.22545	0.03797	0.48194	0.01881	0.12345	0.00814
408471	0.60012	0.03379	0.95785	0.05121	0.14831	0.01707
400373	1.55876	0.10592	1.91528	0.03255	0.20327	0.00463
400385	0.66325	0.04402	1.11790	0.05358	0.28240	0.01560
400682	0.76760	0.03934	1.06267	0.03655	0.18836	0.01199
124675A	0.82149	0.03341	0.59026	0.03353	0.14995	0.01286
408514	1.27793	0.06075	1.28334	0.02378	0.22321	0.00657
400228	0.63995	0.03089	0.47976	0.05453	0.14959	0.01920
408477	0.44238	0.03636	1.62762	0.07330	0.12540	0.02124
125106A	1.39758	0.06176	1.15269	0.02108	0.22719	0.00646
414953	1.09377	0.03801	-0.19711	0.03462	0.23875	0.01610
128316A	0.96117	0.04697	1.10890	0.02985	0.23061	0.00933
415335	0.87407	0.06254	1.52855	0.04409	0.34446	0.00964
413850	0.73355	0.03835	0.86395	0.04291	0.21850	0.01436
411976	1.47529	0.06804	1.24910	0.02104	0.22884	0.00601
551422B	0.70752	0.01587	0.94722	0.02201	0.00000	0.00000
551230B	0.99252	0.01842	-0.20669	0.01299	0.00000	0.00000
411240	1.22545	0.03797	0.48194	0.01881	0.12345	0.00814

Table K-6. 2016–17 eMPowerME: IRT Parameters for Polytomous Items
Mathematics Grade 5

IREF	*Parameters and Measures of Standard Error*													
	a	*SE (a)*	*b*	*SE (b)*	*D0*	*SE (D0)*	*D1*	*SE (D1)*	*D2*	*SE (D2)*	*D3*	*SE (D3)*	*D4*	*SE (D4)*
551230A	0.92717	0.01446	-0.04893	0.01240	0.18638	0.01334	-0.18638	0.01322	0.00000	0.00000	n/a	n/a	n/a	n/a
551415A	1.26822	0.01263	0.73098	0.00828	1.20838	0.01093	0.78601	0.01039	-0.54950	0.01327	-1.44488	0.02143	0.00000	0.00000
551415B	1.61510	0.03811	1.79713	0.01842	0.13107	0.01451	-0.13107	0.01717	0.00000	0.00000	n/a	n/a	n/a	n/a
551422A	0.59775	0.00687	0.41906	0.01685	1.15266	0.01971	-1.15266	0.02249	0.00000	0.00000	n/a	n/a	n/a	n/a
551428A	0.92816	0.01001	1.31267	0.01173	1.28253	0.01311	0.37030	0.01434	-0.14969	0.01671	-1.50315	0.03264	0.00000	0.00000
551428B	1.04687	0.01664	1.69536	0.01632	0.61423	0.01401	-0.61423	0.02405	0.00000	0.00000	n/a	n/a	n/a	n/a

Table K-7. 2016–17 eMPowerME: IRT Parameters for Dichotomous Items
Mathematics Grade 6

IREF	*Parameters and Measures of Standard Error*					
	a	*SE (a)*	*b*	*SE (b)*	*c*	*SE (c)*
406067	1.01901	0.02932	-1.33768	0.04401	0.08942	0.02542
417061	0.99699	0.04574	0.94629	0.02725	0.21516	0.00897
415259	0.48336	0.02114	-0.21957	0.08391	0.07909	0.02651
414079	0.82941	0.03512	0.23660	0.04124	0.22273	0.01548
414094	1.15159	0.06108	1.37462	0.02803	0.21202	0.00662
400197	0.55558	0.03381	0.12659	0.09747	0.24765	0.02851
412060	0.46234	0.02467	-1.00920	0.17079	0.17147	0.05129
400411	0.29530	0.02107	0.86027	0.14404	0.08046	0.03103
412455	0.93047	0.04345	1.03928	0.02816	0.18202	0.00893
412144	0.66356	0.02707	0.23621	0.04551	0.09682	0.01703
400617	0.79676	0.06097	1.68053	0.05075	0.26799	0.00952
400628	0.39648	0.03741	0.77804	0.15222	0.23114	0.03647
127166A	0.53458	0.01386	-1.34519	0.03383	0.00000	0.00000
406039	0.90561	0.04487	1.04451	0.03045	0.21021	0.00956
412302	0.72183	0.02437	-0.92969	0.06376	0.10202	0.02809
127167A	1.13145	0.04858	1.04063	0.02307	0.17912	0.00722
125468A	1.25198	0.06219	1.11960	0.02486	0.27254	0.00719
411844	0.78535	0.02881	-1.01498	0.07136	0.16560	0.03247
406090	1.12356	0.04052	0.61261	0.02176	0.16611	0.00853
412431	1.15257	0.05476	1.21181	0.02494	0.19633	0.00684
413996	0.56868	0.05534	2.51971	0.11174	0.11245	0.00989
414004	0.72063	0.03537	0.04085	0.06342	0.27798	0.02118
128195A	1.04306	0.04382	0.96973	0.02395	0.16516	0.00787
400206	1.15507	0.03914	0.26316	0.02358	0.19186	0.01026
408317	0.41555	0.03237	1.35562	0.07813	0.10249	0.02296
400685	0.62935	0.03312	0.66011	0.05054	0.16024	0.01727
414022	0.48479	0.03108	0.39747	0.09785	0.16498	0.02873
408319	0.98657	0.04408	0.31957	0.03711	0.33650	0.01307
412320	1.17537	0.03842	-0.12494	0.02740	0.21452	0.01290
412115	0.83752	0.03628	0.51902	0.03517	0.19975	0.01301
406099	0.52026	0.03642	0.99136	0.06813	0.18075	0.02094
400114	0.63888	0.05784	1.73590	0.06475	0.29135	0.01289
400695	0.98206	0.03719	-0.35745	0.04438	0.28042	0.01866

continued

IREF	Parameters and Measures of Standard Error					
	a	*SE (a)*	*b*	*SE (b)*	*c*	*SE (c)*
414013	0.74434	0.02930	0.24427	0.03974	0.12173	0.01544

IREF	Parameters and Measures of Standard Error					
	a	*SE (a)*	*b*	*SE (b)*	*c*	*SE (c)*
415351	0.71382	0.04238	1.20399	0.04043	0.19747	0.01208

Table K-8. 2016–17 eMPowerME: IRT Parameters for Polytomous Items
Mathematics Grade 6

IREF	Parameters and Measures of Standard Error													
	a	*SE (a)*	*b*	*SE (b)*	*D0*	*SE (D0)*	*D1*	*SE (D1)*	*D2*	*SE (D2)*	*D3*	*SE (D3)*	*D4*	*SE (D4)*
551235A	1.06912	0.00997	-0.01904	0.00897	1.23344	0.01441	0.33391	0.01173	-0.30382	0.01170	-1.26354	0.01474	0.00000	0.00000
551235B	0.99322	0.01415	1.42080	0.01433	0.76117	0.01331	-0.76117	0.02368	0.00000	0.00000	n/a	n/a	n/a	n/a
551245A	1.53925	0.01572	1.00137	0.00715	1.32849	0.00938	0.31252	0.00989	-0.49138	0.01373	-1.14964	0.02184	0.00000	0.00000
551245B	1.36697	0.01862	1.19030	0.00972	1.07980	0.01008	-1.07980	0.02453	0.00000	0.00000	n/a	n/a	n/a	n/a
551449A	0.80815	0.00939	0.83613	0.01352	1.16603	0.01481	-1.16603	0.02282	0.00000	0.00000	n/a	n/a	n/a	n/a
551474A	0.33783	0.00000	4.84454	0.05936	2.51858	0.03771	-2.51858	0.12073	0.00000	0.00000	n/a	n/a	n/a	n/a

Table K-9. 2016–17 eMPowerME: IRT Parameters for Dichotomous Items
Mathematics Grade 7

IREF	Parameters and Measures of Standard Error					
	a	*SE (a)*	*b*	*SE (b)*	*c*	*SE (c)*
124508A	0.80709	0.03208	-0.80760	0.07354	0.23057	0.03119
123993A	0.82004	0.03956	0.75382	0.03578	0.22160	0.01273
400898	1.39767	0.04789	0.77407	0.01656	0.14902	0.00656
408640	1.51824	0.09977	1.73791	0.03156	0.23382	0.00515
408783	1.80280	0.12072	1.53777	0.02611	0.33975	0.00547
408770	0.81864	0.03356	-0.10686	0.05096	0.22854	0.01982
124136A	1.47758	0.04320	0.71150	0.01364	0.08067	0.00521
400979	1.11378	0.06367	1.02233	0.03161	0.39351	0.00908
408790	0.85522	0.06484	2.16102	0.06490	0.14682	0.00658
124351A	1.25011	0.04102	0.01413	0.02515	0.22712	0.01188
412082	1.49448	0.05732	0.76144	0.01813	0.24013	0.00726
400323	0.68783	0.06086	2.22550	0.08084	0.18111	0.00920
124505A	0.98850	0.04774	1.63582	0.03212	0.08315	0.00538
412147	0.95645	0.04324	0.82189	0.02874	0.22602	0.01035
124343A	1.38442	0.04759	0.92011	0.01621	0.11651	0.00572

IREF	Parameters and Measures of Standard Error					
	a	*SE (a)*	*b*	*SE (b)*	*c*	*SE (c)*
400168	1.36764	0.05034	0.20611	0.02453	0.31877	0.01067
410239	0.42360	0.02007	-0.89324	0.14465	0.11306	0.04205
400873	1.41830	0.06951	1.14301	0.02225	0.28406	0.00679
412513	0.67070	0.02520	-0.65289	0.07109	0.11604	0.02870
406163	1.51544	0.05689	0.77361	0.01744	0.22292	0.00701
408731	0.72542	0.02362	-1.61701	0.08017	0.10751	0.03901
408734	0.85500	0.02874	-0.53646	0.04776	0.13431	0.02178
410223	0.55152	0.03132	0.32468	0.08032	0.17166	0.02557
400958	0.77017	0.03109	0.33691	0.03863	0.13921	0.01512
408597	0.83275	0.03387	0.22702	0.03998	0.19506	0.01566
124358A	1.34893	0.03865	0.27446	0.01692	0.11900	0.00800
408567	0.86384	0.06332	1.75684	0.04873	0.25377	0.00853

continued

IREF	Parameters and Measures of Standard Error					
	a	*SE (a)*	*b*	*SE (b)*	*c*	*SE (c)*
400983	0.77194	0.02910	-0.95194	0.07581	0.17419	0.03370
400990	0.59810	0.04838	0.88216	0.08032	0.39628	0.01995
123999A	1.46511	0.06456	0.96513	0.02011	0.27491	0.00703
408632	1.04259	0.06265	1.69706	0.03699	0.18089	0.00646
124510A	0.90843	0.04375	0.85001	0.03166	0.24432	0.01103
412118	0.70974	0.03153	0.27606	0.04891	0.16507	0.01813

IREF	Parameters and Measures of Standard Error					
	a	*SE (a)*	*b*	*SE (b)*	*c*	*SE (c)*
124715A	0.85770	0.03457	-0.60382	0.06415	0.27155	0.02621
123969A	0.95845	0.05106	1.06370	0.03153	0.28093	0.00983
124647A	0.78063	0.03396	0.16093	0.04809	0.21709	0.01796
551426B	1.19647	0.04976	2.60958	0.06155	0.00000	0.00000
551445B	1.54909	0.04125	1.64795	0.02093	0.00000	0.00000

Table K-10. 2016–17 eMPowerME: IRT Parameters for Polytomous Items
Mathematics Grade 7

IREF	Parameters and Measures of Standard Error													
	a	*SE (a)*	*b*	*SE (b)*	*D0*	*SE (D0)*	*D1*	*SE (D1)*	*D2*	*SE (D2)*	*D3*	*SE (D3)*	*D4*	*SE (D4)*
551403A	1.02651	0.00989	0.37939	0.00948	1.15124	0.01330	0.22426	0.01186	-0.20872	0.01228	-1.16678	0.01638	0.00000	0.00000
551403B	1.09773	0.01316	0.07284	0.00974	0.58872	0.01216	-0.58872	0.01206	0.00000	0.00000	n/a	n/a	n/a	n/a
551426A	0.91003	0.01191	1.50329	0.01303	1.64381	0.01348	-1.64381	0.04125	0.00000	0.00000	n/a	n/a	n/a	n/a
551445A	1.02471	0.01230	0.81266	0.01109	0.83331	0.01219	-0.83331	0.01724	0.00000	0.00000	n/a	n/a	n/a	n/a
551465A	1.01705	0.01146	1.43019	0.01142	1.13650	0.01218	0.51328	0.01323	-0.26155	0.01744	-1.38822	0.03406	0.00000	0.00000
551465B	1.11996	0.01937	1.93777	0.01735	0.69544	0.01401	-0.69544	0.03054	0.00000	0.00000	n/a	n/a	n/a	n/a

Table K-11. 2016–17 eMPowerME: IRT Parameters for Dichotomous Items
Mathematics Grade 8

IREF	Parameters and Measures of Standard Error					
	a	*SE (a)*	*b*	*SE (b)*	*c*	*SE (c)*
413335	0.59562	0.01548	-0.91122	0.02738	0.00000	0.00000
400319	1.26240	0.07007	0.86128	0.03031	0.42494	0.00940
414370	0.37209	0.02965	1.30656	0.10186	0.08583	0.02787
413229	0.76223	0.01931	-1.41423	0.03102	0.00000	0.00000
126030A	0.90993	0.05997	1.43429	0.03965	0.26544	0.00981
400177	0.88187	0.05379	1.46514	0.03772	0.19591	0.00939
400730	0.80515	0.03528	1.30973	0.02959	0.05054	0.00762
409239	0.96818	0.03058	-0.86153	0.04688	0.10215	0.02650
412662	0.42718	0.02532	0.73274	0.08379	0.07255	0.02494
413290	0.88752	0.02854	-0.58440	0.04429	0.08903	0.02276

IREF	Parameters and Measures of Standard Error					
	a	*SE (a)*	*b*	*SE (b)*	*c*	*SE (c)*
401024	1.35763	0.20632	2.75229	0.13031	0.25000	0.00000
401030	1.11475	0.10915	2.09458	0.06471	0.29286	0.00649
401027	1.22947	0.08731	1.89806	0.04277	0.18233	0.00548
400345	0.38466	0.01375	1.28271	0.04886	0.00000	0.00000
414805	1.35049	0.04660	0.29872	0.02072	0.20505	0.01043
127148A	0.93499	0.05616	1.73293	0.04091	0.12806	0.00698
400985	1.07258	0.10244	2.01002	0.06192	0.31725	0.00702
412703	0.62968	0.02339	0.00172	0.04874	0.05785	0.01910

continued

IREF	Parameters and Measures of Standard Error					
	a	*SE (a)*	*b*	*SE (b)*	*c*	*SE (c)*
126885A	0.68537	0.02265	-1.17063	0.06979	0.08278	0.03205
412449	1.36672	0.05023	-0.04499	0.02750	0.30159	0.01393
400771	0.52181	0.04410	0.76984	0.10548	0.28797	0.02918
400780	0.06755	0.00000	0.05833	0.16963	0.10000	0.00000
127737A	0.89507	0.02734	-0.88097	0.04705	0.08077	0.02530
412756	1.26189	0.04016	-0.32854	0.02849	0.17438	0.01634
412946	0.44788	0.04267	1.10765	0.11237	0.21690	0.03149
400803	0.99350	0.03153	-0.81693	0.04536	0.10837	0.02581
408651	1.05953	0.10168	2.19720	0.07038	0.23298	0.00627
400191	0.49666	0.03566	2.75572	0.15185	0.20000	0.00000
401033	0.61533	0.04758	1.57156	0.05491	0.18103	0.01512

IREF	Parameters and Measures of Standard Error					
	a	*SE (a)*	*b*	*SE (b)*	*c*	*SE (c)*
401035	1.30224	0.07030	1.42383	0.02726	0.20822	0.00634
408795	0.40843	0.01379	1.11652	0.04183	0.00000	0.00000
126395A	0.69273	0.02959	-0.78319	0.09105	0.15562	0.03930
412646	0.88423	0.06147	1.24716	0.04292	0.35298	0.01143
414880	0.75014	0.04225	1.02417	0.03958	0.18561	0.01393
408518	0.29069	0.01230	0.24431	0.03735	0.00000	0.00000
413314	1.03696	0.02908	0.00426	0.02194	0.05012	0.01084
406428	0.97976	0.05738	1.23374	0.03390	0.27021	0.00974
551249B	1.48575	0.03869	1.61675	0.02209	0.00000	0.00000
551366B	1.39337	0.04733	2.13895	0.03765	0.00000	0.00000
401033	0.61533	0.04758	1.57156	0.05491	0.18103	0.01512

Table K-12. 2016–17 eMPowerME: IRT Parameters for Polytomous Items
Mathematics Grade 8

IREF	Parameters and Measures of Standard Error													
	a	*SE (a)*	*b*	*SE (b)*	*D0*	*SE (D0)*	*D1*	*SE (D1)*	*D2*	*SE (D2)*	*D3*	*SE (D3)*	*D4*	*SE (D4)*
551249A	1.31409	0.02308	1.37297	0.01474	0.27972	0.01230	-0.27972	0.01626	0.00000	0.00000	n/a	n/a	n/a	n/a
551332A	1.52583	0.01906	1.15701	0.00872	0.68554	0.00920	0.15372	0.01070	-0.12080	0.01220	-0.71845	0.01799	0.00000	0.00000
551332B	1.26121	0.01906	1.39777	0.01241	0.62793	0.01132	-0.62793	0.02083	0.00000	0.00000	n/a	n/a	n/a	n/a
551366A	0.96835	0.01277	1.09859	0.01264	0.76308	0.01265	-0.76308	0.02007	0.00000	0.00000	n/a	n/a	n/a	n/a
551387A	1.00478	0.00925	0.85936	0.00974	1.74807	0.01384	0.68363	0.01197	-0.44390	0.01533	-1.98780	0.03623	0.00000	0.00000
551387B	1.05904	0.01579	1.53366	0.01406	0.78696	0.01265	-0.78696	0.02568	0.00000	0.00000	n/a	n/a	n/a	n/a

Table K-13. 2016–17 eMPowerME: IRT Parameters for Dichotomous Items
ELA Grade 3

IREF	*Parameters and Measures of Standard Error*					
	a	*SE (a)*	*b*	*SE (b)*	*c*	*SE (c)*
410639	1.13024	0.04275	0.01919	0.03254	0.28341	0.01391
410703	1.98246	0.06404	-1.24980	0.02428	0.13703	0.02060
406898	0.90549	0.02486	-1.09487	0.04234	0.06475	0.02251
406771	0.81543	0.03632	0.09730	0.04977	0.23919	0.01876
410708	0.67019	0.03602	0.40069	0.06015	0.21646	0.02051
406787	0.55933	0.02941	-0.09956	0.09441	0.15103	0.03151
418646	1.19682	0.04169	-0.35356	0.03432	0.26078	0.01663
418622	0.61520	0.02281	0.20608	0.04376	0.05126	0.01600
418659	1.55069	0.06591	0.88994	0.01905	0.26574	0.00689
418639	1.13133	0.04179	0.52265	0.02325	0.18873	0.00962
418629	0.33254	0.01165	-0.19421	0.03275	0.00000	0.00000
418618	1.56953	0.04668	-0.83452	0.02604	0.16240	0.01738
418643	0.73719	0.02442	-0.80807	0.05992	0.08887	0.02717
418652	0.86139	0.04102	0.33046	0.04460	0.29177	0.01584
401179	0.86213	0.03382	-0.07116	0.04472	0.19109	0.01859
401182	1.10448	0.03623	-0.58514	0.03839	0.18460	0.02004
401685	1.36138	0.04675	0.49469	0.01896	0.19276	0.00825
129875A	1.54988	0.04999	0.36930	0.01693	0.19490	0.00796
401701	0.78405	0.02780	-0.96133	0.06936	0.12903	0.03314
410374	0.87182	0.03513	0.43078	0.03281	0.16016	0.01315
410387	0.62404	0.02151	-0.82420	0.07059	0.08014	0.02853
410415	1.19182	0.03292	-0.52958	0.02671	0.09196	0.01473
410420	0.85071	0.03204	-0.17857	0.04566	0.16334	0.01959
410432	1.04966	0.02700	-0.76295	0.02939	0.05326	0.01565
402448	1.26118	0.03909	-0.25380	0.02625	0.17907	0.01359
402511	1.08338	0.04468	0.71043	0.02489	0.21288	0.00948
402513	1.30691	0.04471	-0.70728	0.03690	0.26516	0.02024
402452	1.04541	0.04932	0.85769	0.02792	0.26054	0.00967
545188	0.88747	0.04604	1.10764	0.03116	0.20128	0.00991
421676	0.40547	0.01226	-0.59435	0.03092	0.00000	0.00000
421672	0.77008	0.03175	-0.21335	0.05720	0.17650	0.02307
421683	0.69064	0.03263	0.23036	0.05563	0.16777	0.02044
421681	0.70466	0.03970	0.82812	0.04531	0.21087	0.01547
421674	1.07627	0.04371	0.70486	0.02458	0.20118	0.00943
421611	1.16913	0.04633	0.57223	0.02429	0.24028	0.00965
421614	1.23118	0.04387	0.43599	0.02200	0.20497	0.00945
421623	0.83705	0.03597	0.15078	0.04481	0.22089	0.01735
421651	0.45747	0.01263	-0.50474	0.02670	0.00000	0.00000
421656	0.64612	0.02998	0.42787	0.04941	0.10803	0.01829

Table K-14. 2016–17 eMPowerME: IRT Parameters for Polytomous Items
ELA Grade 3

IREF	*Parameters and Measures of Standard Error*											
	a	*SE (a)*	*b*	*SE (b)*	*D0*	*SE (D0)*	*D1*	*SE (D1)*	*D2*	*SE (D2)*	*D3*	*SE (D3)*
129850A	0.67778	0.01094	0.48911	0.01665	0.32372	0.01704	-0.32372	0.01802	0.00000	0.00000	n/a	n/a
129871A	0.93754	0.01272	1.52128	0.01357	1.18171	0.01340	-1.18171	0.03232	0.00000	0.00000	n/a	n/a
406766	0.72721	0.01031	1.85463	0.01787	1.27503	0.01664	-1.27503	0.03927	0.00000	0.00000	n/a	n/a
410396	0.53577	0.00754	1.20650	0.02151	0.87169	0.02095	-0.87169	0.02756	0.00000	0.00000	n/a	n/a

continued

IREF	Parameters and Measures of Standard Error											
	a	*SE (a)*	*b*	*SE (b)*	*D0*	*SE (D0)*	*D1*	*SE (D1)*	*D2*	*SE (D2)*	*D3*	*SE (D3)*
410723	0.51361	0.00830	-0.14036	0.01997	0.47158	0.02208	-0.47158	0.02171	0.00000	0.00000	n/a	n/a
410735	0.80731	0.00940	2.22929	0.01415	2.56915	0.01508	-0.44136	0.03132	-2.12780	0.08723	0.00000	0.00000
418677	0.63990	0.00742	0.57251	0.01615	1.13641	0.01836	-1.13641	0.02273	0.00000	0.00000	n/a	n/a
418699	0.87457	0.01118	2.49503	0.01397	2.26220	0.01402	-0.17171	0.03136	-2.09048	0.11347	0.00000	0.00000
421661	0.78201	0.01091	-0.06897	0.01354	0.43833	0.01554	-0.43833	0.01529	0.00000	0.00000	n/a	n/a
421895	0.55615	0.00645	1.16287	0.01906	1.58866	0.02045	-1.58866	0.03341	0.00000	0.00000	n/a	n/a

Table K-15. 2016–17 eMPowerME: IRT Parameters for Dichotomous Items
ELA Grade 4

IREF	Parameters and Measures of Standard Error					
	a	*SE (a)*	*b*	*SE (b)*	*c*	*SE (c)*
130710A	0.65294	0.02118	-1.40556	0.07769	0.08914	0.03491
130712A	0.27702	0.01195	-1.67549	0.07878	0.00000	0.00000
130675A	0.39995	0.01209	-0.24951	0.02791	0.00000	0.00000
130706A	0.41391	0.01235	-0.60454	0.03094	0.00000	0.00000
130709A	0.88670	0.03041	-0.56025	0.05035	0.14724	0.02445
130704A	1.19612	0.03910	0.05049	0.02606	0.19805	0.01259
412876	1.14025	0.03329	-0.92542	0.03733	0.10997	0.02292
128683A	0.70881	0.04121	0.89616	0.04804	0.24586	0.01577
128687A	0.91316	0.03238	-0.09945	0.03962	0.16380	0.01784
410911	0.55162	0.02315	-0.28260	0.08093	0.09197	0.02869
128690A	1.01915	0.06138	1.50927	0.03384	0.25032	0.00780
128689A	0.53589	0.02948	0.70271	0.06403	0.10362	0.02155
128686A	1.17498	0.07923	1.57585	0.03503	0.32972	0.00707
412895	0.87465	0.04741	1.26231	0.03286	0.21065	0.00981
401765	0.93266	0.03293	0.01680	0.03606	0.16198	0.01611
401736	1.09200	0.04009	0.45678	0.02578	0.20055	0.01090
401771	1.19201	0.04134	-0.88579	0.04608	0.24640	0.02645
401759	1.36094	0.04668	0.21718	0.02285	0.25377	0.01068
401190	0.83034	0.04018	0.75408	0.03726	0.22724	0.01334
420698	0.49880	0.02739	0.68465	0.06934	0.08778	0.02253
420714	0.59814	0.02570	-0.14163	0.07310	0.10631	0.02690

IREF	Parameters and Measures of Standard Error					
	a	*SE (a)*	*b*	*SE (b)*	*c*	*SE (c)*
422664	0.71484	0.03222	-0.50841	0.08524	0.23068	0.03293
420785	0.60510	0.01675	-1.72581	0.04232	0.00000	0.00000
420820	0.61459	0.04163	0.84036	0.06796	0.27905	0.02035
402538	0.92244	0.03237	-0.42076	0.04677	0.17519	0.02220
402587	0.99750	0.03546	-0.37697	0.04364	0.21829	0.02071
402540	0.79595	0.03325	0.58970	0.03500	0.13762	0.01369
402583	0.73952	0.03956	1.05551	0.03815	0.18036	0.01298
402594	0.88953	0.03901	0.93331	0.02842	0.15652	0.01026
411251	1.32615	0.04219	-0.00291	0.02372	0.21132	0.01200
411256	0.59690	0.03261	0.60428	0.06204	0.15276	0.02125
411261	0.97516	0.03983	0.36591	0.03425	0.24888	0.01361
411268	0.55308	0.02888	-0.24624	0.10802	0.16825	0.03590
411283	0.72153	0.02738	0.05750	0.04695	0.09943	0.01911
420633	1.12496	0.03407	-0.09981	0.02662	0.13438	0.01343
420656	0.95271	0.04140	0.37869	0.03758	0.28410	0.01420
420639	0.36700	0.01923	-0.61392	0.16379	0.10715	0.04214
420642	0.86150	0.02555	-1.11421	0.05184	0.08425	0.02771
420671	1.09544	0.03127	-0.77897	0.03507	0.09731	0.02042

Table K-16. 2016–17 eMPowerME: IRT Parameters for Polytomous Items

ELA Grade 4

IREF	*Parameters and Measures of Standard Error*											
	a	*SE (a)*	*b*	*SE (b)*	*D0*	*SE (D0)*	*D1*	*SE (D1)*	*D2*	*SE (D2)*	*D3*	*SE (D3)*
128692A	0.28856	0.00733	1.89806	0.05455	0.37447	0.03846	-0.37447	0.04120	0.00000	0.00000	n/a	n/a
128768A	0.86802	0.00942	1.59609	0.01253	1.73576	0.01383	-0.17087	0.01933	-1.56490	0.04009	0.00000	0.00000
129528A	0.98034	0.01299	1.33766	0.01304	0.87411	0.01284	-0.87411	0.02304	0.00000	0.00000	n/a	n/a
130668A	0.88982	0.01513	-0.12505	0.01319	0.10354	0.01367	-0.10354	0.01354	0.00000	0.00000	n/a	n/a
130728A	0.89110	0.01327	1.52703	0.01658	0.63758	0.01466	-0.63758	0.02290	0.00000	0.00000	n/a	n/a
401750	0.92883	0.01482	0.16996	0.01240	0.15648	0.01307	-0.15648	0.01317	0.00000	0.00000	n/a	n/a
410868	0.84113	0.00852	1.48802	0.01324	2.42505	0.01586	-0.46938	0.02126	-1.95567	0.04725	0.00000	0.00000
411246	0.34663	0.00603	1.26355	0.03292	0.72227	0.03079	-0.72227	0.03475	0.00000	0.00000	n/a	n/a
420675	0.34314	0.00662	2.06311	0.04261	0.68956	0.03277	-0.68956	0.03926	0.00000	0.00000	n/a	n/a
420723	0.49376	0.00720	0.07679	0.02002	0.65217	0.02254	-0.65217	0.02265	0.00000	0.00000	n/a	n/a

Table K-17. 2016–17 eMPowerME: IRT Parameters for Dichotomous Items

ELA Grade 5

IREF	*Parameters and Measures of Standard Error*					
	a	*SE (a)*	*b*	*SE (b)*	*c*	*SE (c)*
129011A	0.29133	0.01133	-1.24792	0.06028	0.00000	0.00000
129009A	0.76893	0.04787	1.47025	0.03903	0.21742	0.01070
129003A	0.57008	0.02003	-0.18557	0.05799	0.05912	0.02048
416506	0.73942	0.02226	-0.62535	0.04892	0.06766	0.02128
416518	1.16237	0.03813	0.17061	0.02598	0.19910	0.01169
129012A	0.94816	0.03789	0.33909	0.03581	0.24816	0.01381
129193A	0.30122	0.03548	1.82621	0.16108	0.14047	0.03789
129174A	0.99455	0.03355	0.10920	0.03148	0.16962	0.01371
129198A	0.65166	0.03349	0.58530	0.05545	0.18686	0.01883
129178A	0.56144	0.02596	0.22232	0.06892	0.10130	0.02344
504241	1.04692	0.06363	1.40599	0.03252	0.31986	0.00835
129201A	0.62486	0.02490	-0.82075	0.09382	0.13458	0.03681
129760A	0.47469	0.03475	0.91029	0.09122	0.17628	0.02657
129179A	0.83227	0.03802	0.41972	0.04463	0.27138	0.01568
401400	0.65597	0.02126	-1.05204	0.07183	0.08610	0.03063
401440	0.62577	0.02270	-0.81300	0.08069	0.10252	0.03223
401398	1.11039	0.03442	-0.35618	0.03299	0.16970	0.01647
401443	0.40862	0.01242	-1.25448	0.04432	0.00000	0.00000
401394	1.19876	0.03944	0.20147	0.02504	0.20755	0.01127
402279	0.53645	0.01981	-0.33331	0.07050	0.06808	0.02420
402196	0.90792	0.03147	-1.41477	0.07419	0.16209	0.04157
402284	0.37763	0.01177	-0.83808	0.03842	0.00000	0.00000
402211	1.23601	0.03742	-0.17433	0.02649	0.17880	0.01329
402286	0.58579	0.02827	0.17444	0.07310	0.13692	0.02485
419416	1.31002	0.05952	1.47644	0.02212	0.14249	0.00535
419423	0.39204	0.02242	-0.17725	0.15149	0.11517	0.03976
419419	1.18078	0.04827	1.16192	0.02103	0.16008	0.00678
419405	0.75579	0.02520	-1.09684	0.07115	0.11424	0.03379
419421	0.67797	0.02597	-1.06140	0.09403	0.14856	0.04027

continued

IREF	Parameters and Measures of Standard Error					
	a	*SE (a)*	*b*	*SE (b)*	*c*	*SE (c)*
419298	0.79388	0.03108	0.02065	0.04844	0.17783	0.01910
419302	0.20963	0.01051	-0.26927	0.05289	0.00000	0.00000
419309	0.90717	0.04049	0.83646	0.03102	0.21767	0.01112
419311	0.96905	0.03620	0.20554	0.03496	0.22409	0.01421
419321	0.72447	0.02512	-1.05508	0.07672	0.12102	0.03503

IREF	Parameters and Measures of Standard Error					
	a	*SE (a)*	*b*	*SE (b)*	*c*	*SE (c)*
410428	1.21444	0.04329	0.13921	0.02866	0.28288	0.01234
410440	0.79231	0.02499	-1.11373	0.06299	0.10096	0.03106
410563	1.05875	0.04390	0.86554	0.02532	0.21724	0.00927
410584	0.87466	0.03225	0.26783	0.03542	0.16065	0.01437
410588	0.82934	0.03587	0.75705	0.03305	0.17283	0.01220

Table K-18. 2016–17 eMPowerME: IRT Parameters for Polytomous Items

ELA Grade 5

IREF	Parameters and Measures of Standard Error											
	a	*SE (a)*	*b*	*SE (b)*	*D0*	*SE (D0)*	*D1*	*SE (D1)*	*D2*	*SE (D2)*	*D3*	*SE (D3)*
129015A	0.56254	0.00728	-0.69837	0.01869	0.92674	0.02442	-0.92674	0.01994	0.00000	0.00000	n/a	n/a
129019A	0.63790	0.00686	0.37582	0.01635	1.43993	0.02012	-1.43993	0.02263	0.00000	0.00000	n/a	n/a
129195A	0.62936	0.00867	0.52959	0.01659	0.61444	0.01818	-0.61444	0.01965	0.00000	0.00000	n/a	n/a
129196A	0.94663	0.01111	1.83637	0.01260	1.52242	0.01319	-0.10137	0.01948	-1.42103	0.04249	0.00000	0.00000
402288	0.29190	0.00553	0.34065	0.03426	0.65140	0.03644	-0.65140	0.03704	0.00000	0.00000	n/a	n/a
402908	0.59937	0.00988	1.11669	0.02089	0.42424	0.01936	-0.42424	0.02198	0.00000	0.00000	n/a	n/a
410413	0.71298	0.01038	0.09823	0.01483	0.40553	0.01664	-0.40553	0.01653	0.00000	0.00000	n/a	n/a
416527	0.76493	0.00770	1.01350	0.01315	1.57096	0.01618	0.11264	0.01624	-1.68361	0.02950	0.00000	0.00000
419292	0.99227	0.01600	-0.35736	0.01295	0.13137	0.01339	-0.13137	0.01296	0.00000	0.00000	n/a	n/a
422629	0.99765	0.01366	1.14675	0.01288	0.56512	0.01290	-0.56512	0.01729	0.00000	0.00000	n/a	n/a

Table K-19. 2016–17 eMPowerME: IRT Parameters for Dichotomous Items
ELA Grade 6

IREF	*Parameters and Measures of Standard Error*					
	a	*SE (a)*	*b*	*SE (b)*	*c*	*SE (c)*
401882	0.35118	0.02323	-0.39790	0.21524	0.14526	0.05065
401876	0.52304	0.01970	-0.65065	0.08357	0.07856	0.02893
401890	1.05296	0.03739	-1.40550	0.06587	0.19588	0.03951
401202	0.70961	0.02081	-0.54766	0.04407	0.05312	0.01835
401231	0.78090	0.03291	0.35102	0.04212	0.17798	0.01611
401886	0.48289	0.01350	-1.33792	0.03944	0.00000	0.00000
129251A	0.77312	0.02522	-0.00276	0.03648	0.06975	0.01523
129252A	0.50944	0.01302	-0.72022	0.02706	0.00000	0.00000
129254A	1.14940	0.03495	-1.44774	0.04652	0.10690	0.03055
129255A	0.79417	0.02641	-1.06823	0.06577	0.11503	0.03212
129379A	0.51561	0.02207	0.13873	0.06702	0.06889	0.02211
129257A	1.31538	0.04195	-1.37523	0.04264	0.13990	0.02968
129259A	0.55544	0.02639	0.61664	0.05340	0.07821	0.01836
420260	0.23668	0.01156	1.92369	0.09756	0.00000	0.00000
420235	0.86570	0.03300	-0.07610	0.04467	0.20275	0.01848
132118A	0.88026	0.03405	0.35451	0.03430	0.17764	0.01380
132117A	0.66194	0.02456	-0.86234	0.08018	0.11618	0.03341
132119A	0.95277	0.03901	0.25771	0.03739	0.27134	0.01446
132116A	0.62223	0.02060	-0.45515	0.05583	0.06241	0.02146
402013	0.32613	0.01144	-0.64747	0.03935	0.00000	0.00000
401980	0.59336	0.02823	-0.84385	0.12259	0.19482	0.04398
402019	0.26889	0.03331	1.48761	0.24738	0.16447	0.04826
401982	1.10698	0.03765	-0.94077	0.04850	0.21515	0.02659
401986	0.43507	0.01816	-1.37729	0.14019	0.10826	0.04365
409541	1.00955	0.03872	0.64522	0.02589	0.18201	0.01022
409546	1.08130	0.04078	0.11773	0.03305	0.28029	0.01377
409551	0.80055	0.02954	-0.00953	0.04322	0.13758	0.01793
409556	1.38751	0.05090	0.16675	0.02531	0.33093	0.01111
409568	0.33824	0.02318	-0.33164	0.22477	0.14499	0.05108
419745	1.41857	0.05654	-1.67403	0.05974	0.25259	0.04385
419741	0.18799	0.01052	-0.24629	0.05737	0.00000	0.00000
419743	0.30528	0.02012	0.09951	0.18746	0.10323	0.04019
419747	0.69976	0.02675	-0.34742	0.06144	0.12149	0.02481
419754	1.07977	0.04450	0.55118	0.02878	0.27784	0.01100
409362	0.63925	0.03197	-0.67141	0.11392	0.26027	0.03929
409385	1.06738	0.03973	0.81427	0.02214	0.14794	0.00840
409396	0.93120	0.03708	0.26252	0.03646	0.23766	0.01444
409447	0.87606	0.04176	1.12666	0.02964	0.17354	0.00964
409472	0.82855	0.03721	0.32473	0.04495	0.26063	0.01631

Table K-20. 2016–17 eMPowerME IRT Parameters for Polytomous Items
ELA Grade 6

IREF	*Parameters and Measures of Standard Error*													
	a	*SE (a)*	*b*	*SE (b)*	*D0*	*SE (D0)*	*D1*	*SE (D1)*	*D2*	*SE (D2)*	*D3*	*SE (D3)*	*D4*	*SE (D4)*
129258A	0.40353	0.00511	0.54655	0.02425	1.20045	0.02717	-1.20045	0.03009	0.00000	0.00000	n/a	n/a	n/a	n/a
131520A	1.04142	0.01205	0.53903	0.01054	0.88215	0.01243	-0.88215	0.01548	0.00000	0.00000	n/a	n/a	n/a	n/a
132122A	0.99016	0.00954	1.44404	0.01032	2.02266	0.01326	0.60598	0.01333	-0.71867	0.02207	-1.90995	0.04806	0.00000	0.00000

continued

IREF	Parameters and Measures of Standard Error													
	a	*SE (a)*	*b*	*SE (b)*	*D0*	*SE (D0)*	*D1*	*SE (D1)*	*D2*	*SE (D2)*	*D3*	*SE (D3)*	*D4*	*SE (D4)*
401205	0.88859	0.01336	-0.90185	0.01496	0.35868	0.01670	-0.35868	0.01422	0.00000	0.00000	n/a	n/a	n/a	n/a
401568	1.02065	0.00972	1.66480	0.00997	2.73069	0.01462	1.09085	0.01253	-0.46554	0.02165	-3.35601	0.19273	0.00000	0.00000
402027	0.83442	0.01159	0.00215	0.01278	0.39215	0.01460	-0.39215	0.01437	0.00000	0.00000	n/a	n/a	n/a	n/a
409458	0.55226	0.00827	0.17689	0.01834	0.52198	0.02029	-0.52198	0.02061	0.00000	0.00000	n/a	n/a	n/a	n/a
419750	0.32247	0.00372	1.66461	0.03121	2.27228	0.03325	-2.27228	0.05020	0.00000	0.00000	n/a	n/a	n/a	n/a
420218	0.85979	0.01426	-1.00422	0.01700	0.24507	0.01700	-0.24507	0.01512	0.00000	0.00000	n/a	n/a	n/a	n/a
420298	0.86911	0.01035	0.68783	0.01242	0.84256	0.01393	-0.84256	0.01768	0.00000	0.00000	n/a	n/a	n/a	n/a

Table K-21. 2016–17 eMPowerME: IRT Parameters for Dichotomous Items

ELA Grade 7

IREF	Parameters and Measures of Standard Error					
	a	*SE (a)*	*b*	*SE (b)*	*c*	*SE (c)*
407724	0.57875	0.02839	-0.14903	0.09679	0.15960	0.03355
407738	0.56662	0.03116	0.55093	0.07408	0.15410	0.02453
407765	0.52677	0.02694	-0.54667	0.13531	0.16992	0.04496
407754	0.66409	0.02194	-1.09129	0.07571	0.09157	0.03389
407760	0.43344	0.01283	-0.90998	0.03671	0.00000	0.00000
416739	0.68503	0.03464	0.26806	0.06882	0.24385	0.02352
416766	0.54104	0.01955	-0.86241	0.08844	0.08496	0.03278
128731A	0.87326	0.03191	0.11626	0.03995	0.15940	0.01733
129219A	0.98747	0.05116	1.37521	0.03002	0.23087	0.00861
128756A	0.77617	0.02478	-0.77409	0.05768	0.09072	0.02780
416762	0.86226	0.04011	0.88243	0.03475	0.22372	0.01244
128757A	1.12034	0.03250	-0.11289	0.02649	0.10991	0.01378
128753A	0.95837	0.02834	-0.74158	0.04270	0.09089	0.02334
128730A	1.02588	0.03164	-0.83667	0.04519	0.11927	0.02610
401802	0.25069	0.01107	0.52714	0.04454	0.00000	0.00000
401808	0.81036	0.03316	0.21236	0.04684	0.19390	0.01872
401814	0.43942	0.01305	-1.04467	0.03910	0.00000	0.00000
401816	1.20588	0.04523	0.39833	0.02730	0.28266	0.01161
401320	0.65234	0.02362	-0.82916	0.08130	0.10718	0.03474
409401	0.50567	0.02546	0.14033	0.09359	0.10921	0.03022
409409	0.58643	0.02005	0.32195	0.04214	0.04184	0.01483

IREF	Parameters and Measures of Standard Error					
	a	*SE (a)*	*b*	*SE (b)*	*c*	*SE (c)*
409464	0.74369	0.03650	1.02092	0.03775	0.16566	0.01334
409493	0.70934	0.03555	0.44642	0.05886	0.23929	0.02034
409501	0.65324	0.02630	-0.13508	0.06644	0.11255	0.02602
402696	0.59138	0.01431	-0.74997	0.02547	0.00000	0.00000
402702	0.81567	0.04231	0.89087	0.04138	0.27459	0.01383
402708	0.91422	0.03513	0.32298	0.03651	0.19841	0.01517
402755	0.79257	0.03596	0.69960	0.03989	0.19629	0.01479
402637	0.85172	0.03027	-0.15617	0.04609	0.14499	0.02078
409622	0.56758	0.02390	-0.94304	0.11759	0.13741	0.04486
409628	0.50390	0.01394	-1.13773	0.03654	0.00000	0.00000
409639	1.12824	0.03907	-0.62694	0.04490	0.23585	0.02420
409660	1.61090	0.05467	-1.27286	0.03694	0.16433	0.02975
409672	0.70398	0.05240	1.66571	0.05026	0.27537	0.01240
402757	0.85722	0.03681	0.18958	0.04870	0.26473	0.01868
402759	0.62042	0.03313	1.49028	0.03939	0.07774	0.01185
402784	0.76902	0.02552	-0.65258	0.05851	0.09864	0.02749
402763	0.85171	0.03322	0.18675	0.04285	0.18761	0.01774
402765	1.58821	0.05938	0.96559	0.01710	0.21352	0.00654

Table K-22. 2016–17 eMPowerME: IRT Parameters for Polytomous Items
ELA Grade 7

IREF	*Parameters and Measures of Standard Error*													
	a	*SE (a)*	*b*	*SE (b)*	*D0*	*SE (D0)*	*D1*	*SE (D1)*	*D2*	*SE (D2)*	*D3*	*SE (D3)*	*D4*	*SE (D4)*
129214A	1.05360	0.01323	1.18577	0.01138	0.90294	0.01196	-0.90294	0.01999	0.00000	0.00000	n/a	n/a	n/a	n/a
401318	0.80342	0.01280	-0.41989	0.01485	0.24914	0.01576	-0.24914	0.01480	0.00000	0.00000	n/a	n/a	n/a	n/a
402767	0.82782	0.01062	0.32353	0.01254	0.55614	0.01449	-0.55614	0.01510	0.00000	0.00000	n/a	n/a	n/a	n/a
407741	0.48295	0.00766	-1.21381	0.02568	0.68923	0.02855	-0.68923	0.02314	0.00000	0.00000	n/a	n/a	n/a	n/a
407798	0.82105	0.01063	1.59713	0.01452	1.21138	0.01454	-1.21138	0.03037	0.00000	0.00000	n/a	n/a	n/a	n/a
407845	1.07990	0.01064	1.52190	0.00964	1.86509	0.01210	0.47202	0.01294	-0.70892	0.02124	-1.62818	0.03942	0.00000	0.00000
409517	0.50799	0.00922	0.33548	0.02052	0.30666	0.02157	-0.30666	0.02188	0.00000	0.00000	n/a	n/a	n/a	n/a
409613	0.49275	0.00848	1.27986	0.02517	0.48614	0.02268	-0.48614	0.02580	0.00000	0.00000	n/a	n/a	n/a	n/a
416774	0.82758	0.01286	0.17347	0.01330	0.23280	0.01436	-0.23280	0.01438	0.00000	0.00000	n/a	n/a	n/a	n/a
416793	0.99642	0.00924	1.35573	0.01013	2.22160	0.01427	0.54582	0.01299	-0.78239	0.02064	-1.98504	0.04395	0.00000	0.00000

Table K-23. 2016–17 eMPowerME: IRT Parameters for Dichotomous Items
ELA Grade 8

IREF	*Parameters and Measures of Standard Error*					
	a	*SE (a)*	*b*	*SE (b)*	*c*	*SE (c)*
131191A	0.56254	0.02578	0.12795	0.07156	0.10342	0.02452
131175A	0.56363	0.02224	-0.97088	0.10299	0.11453	0.03853
131192A	0.64941	0.01515	-1.05888	0.02680	0.00000	0.00000
131193A	0.70836	0.03059	0.04403	0.05871	0.17563	0.02189
131195A	0.55487	0.02205	-1.05011	0.10850	0.11762	0.04039
131194A	0.91677	0.05551	1.45049	0.03581	0.26965	0.00916
420925	0.70739	0.02971	0.33658	0.04658	0.13212	0.01759
420929	0.53568	0.04260	1.21721	0.07382	0.26103	0.02089
420946	0.81381	0.03233	-0.12790	0.05244	0.20619	0.02097
420872	0.53417	0.01338	-0.79209	0.02759	0.00000	0.00000
420952	0.53626	0.02108	-0.84526	0.09895	0.10062	0.03532
420905	0.40545	0.01227	0.80755	0.03276	0.00000	0.00000
420970	0.65039	0.01457	-0.71060	0.02237	0.00000	0.00000
420913	0.95202	0.03831	0.82362	0.02655	0.16462	0.00996
401373	0.82596	0.03658	0.52674	0.03971	0.22090	0.01460
401746	1.53673	0.05097	-0.18842	0.02449	0.29065	0.01271
401754	0.95686	0.02896	-0.77069	0.04324	0.10599	0.02246
401748	1.10430	0.03623	0.46191	0.02237	0.13908	0.00964
401742	1.53859	0.04890	-0.45134	0.02579	0.25171	0.01471
402246	0.79651	0.02932	-1.24414	0.08411	0.16672	0.04128
402250	0.88982	0.04681	1.16182	0.03298	0.24470	0.01030
402164	0.93633	0.03760	-0.26418	0.05152	0.29862	0.02067
402160	0.82001	0.02755	-0.58839	0.05269	0.11953	0.02420

continued

IREF	Parameters and Measures of Standard Error					
	a	*SE (a)*	*b*	*SE (b)*	*c*	*SE (c)*
402254	0.88653	0.03446	0.38519	0.03461	0.18237	0.01380
402125	0.41757	0.01355	-1.81495	0.05925	0.00000	0.00000
402129	0.78017	0.03147	-0.63896	0.07354	0.21657	0.03056
402209	0.85855	0.03400	-0.10293	0.04941	0.23091	0.01981
402213	0.63923	0.03024	0.13420	0.06788	0.17023	0.02377
402133	0.94377	0.03681	0.53237	0.03034	0.19065	0.01201
402075	0.33657	0.01835	-0.29448	0.15946	0.09432	0.03756
402111	0.54337	0.01601	-1.96494	0.05246	0.00000	0.00000

IREF	Parameters and Measures of Standard Error					
	a	*SE (a)*	*b*	*SE (b)*	*c*	*SE (c)*
402077	0.93274	0.04619	1.34184	0.02921	0.17382	0.00835
402118	0.91768	0.03230	-0.10808	0.03981	0.17484	0.01741
402116	0.77028	0.01716	-1.16222	0.02467	0.00000	0.00000
409754	1.06891	0.03327	0.16936	0.02514	0.12787	0.01147
409773	1.04172	0.03541	0.55089	0.02323	0.13224	0.00966
409826	0.35185	0.03678	1.00353	0.18826	0.21114	0.04221
409789	0.82096	0.03346	0.70873	0.03155	0.13589	0.01201
409803	0.75368	0.04263	0.90714	0.04553	0.28140	0.01443

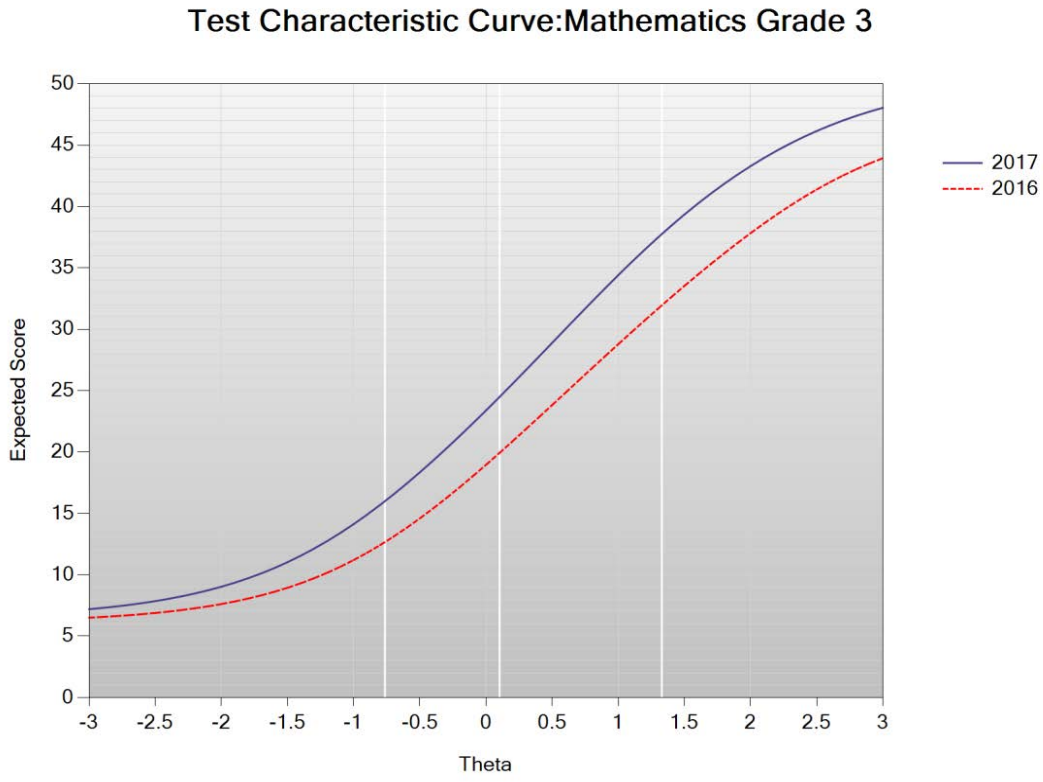
Table K-24. 2016–17 eMPowerME: IRT Parameters for Polytomous Items

ELA Grade 8

IREF	Parameters and Measures of Standard Error													
	a	*SE (a)*	*b*	*SE (b)*	*D0*	*SE (D0)*	*D1*	*SE (D1)*	*D2*	*SE (D2)*	*D3*	*SE (D3)*	*D4*	*SE (D4)*
130644A	1.12411	0.01298	0.39557	0.01004	0.97615	0.01256	-0.97615	0.01455	0.00000	0.00000	n/a	n/a	n/a	n/a
131197A	1.07338	0.01025	1.13437	0.00953	1.77157	0.01299	0.49007	0.01223	-0.65801	0.01749	-1.60361	0.03080	0.00000	0.00000
131198A	0.88636	0.01032	0.98279	0.01322	1.50251	0.01464	-1.50251	0.02660	0.00000	0.00000	n/a	n/a	n/a	n/a
401369	0.78078	0.01286	-0.82451	0.01728	0.27107	0.01771	-0.27107	0.01599	0.00000	0.00000	n/a	n/a	n/a	n/a
402079	0.64830	0.00921	0.02281	0.01597	0.52047	0.01828	-0.52047	0.01798	0.00000	0.00000	n/a	n/a	n/a	n/a
402174	0.53865	0.00878	0.45639	0.01968	0.43064	0.02079	-0.43064	0.02164	0.00000	0.00000	n/a	n/a	n/a	n/a
409832	0.31630	0.00651	2.88449	0.05583	0.82397	0.03789	-0.82397	0.04855	0.00000	0.00000	n/a	n/a	n/a	n/a
418826	0.62363	0.01164	-0.07670	0.01787	0.16079	0.01858	-0.16079	0.01839	0.00000	0.00000	n/a	n/a	n/a	n/a
420986	0.59447	0.01055	-0.17043	0.01846	0.24596	0.01953	-0.24596	0.01913	0.00000	0.00000	n/a	n/a	n/a	n/a
420990	1.13739	0.01078	1.07000	0.00904	1.89288	0.01311	0.52551	0.01163	-0.77800	0.01762	-1.64040	0.03041	0.00000	0.00000

APPENDIX L—TEST CHARACTERISTIC CURVES AND TEST INFORMATION FUNCTIONS

Figure L-1. 2016–17 eMPowerME: Mathematics Grade 3 Plots
Top: Test Characteristic Curve Bottom: Test Information Function



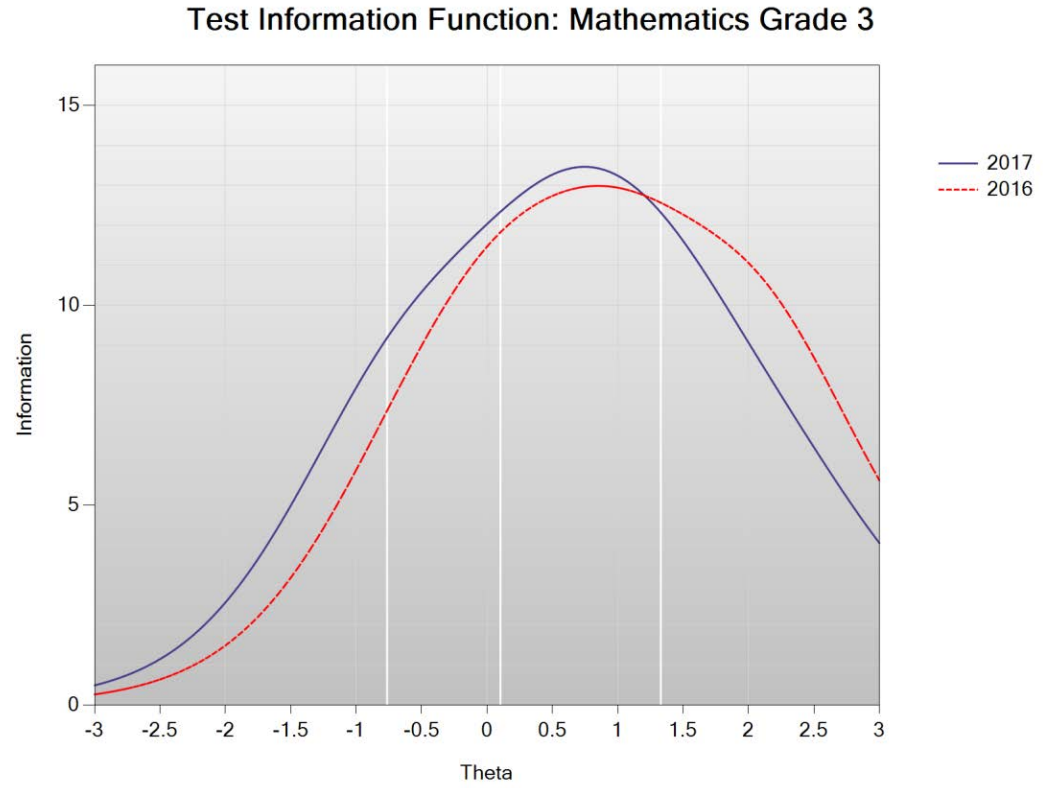
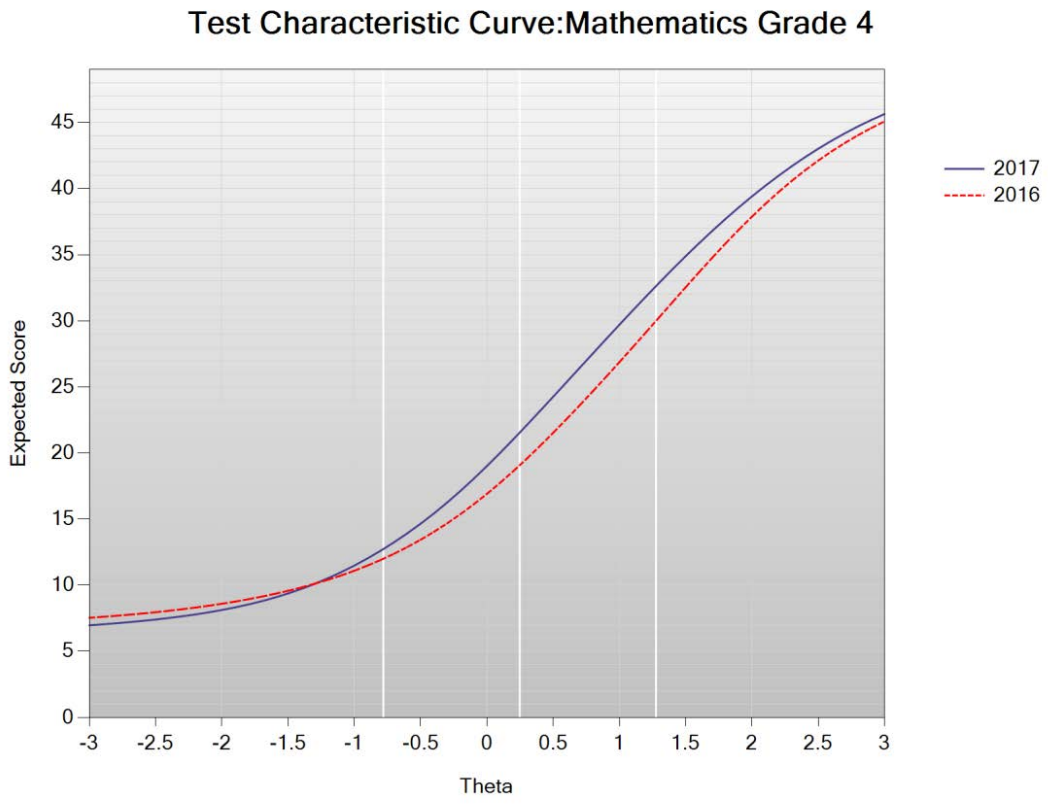


Figure L-2. 2016–17 eMPowerME: Mathematics Grade 4 Plots
Top: Test Characteristic Curve Bottom: Test Information Function



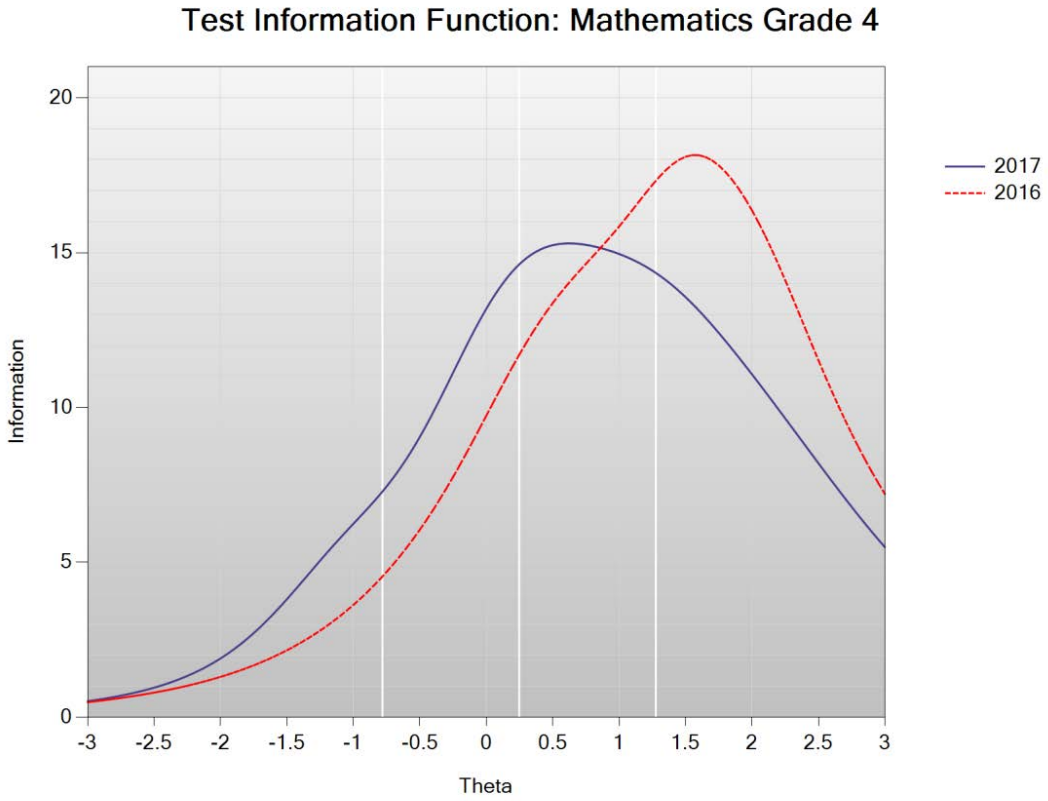
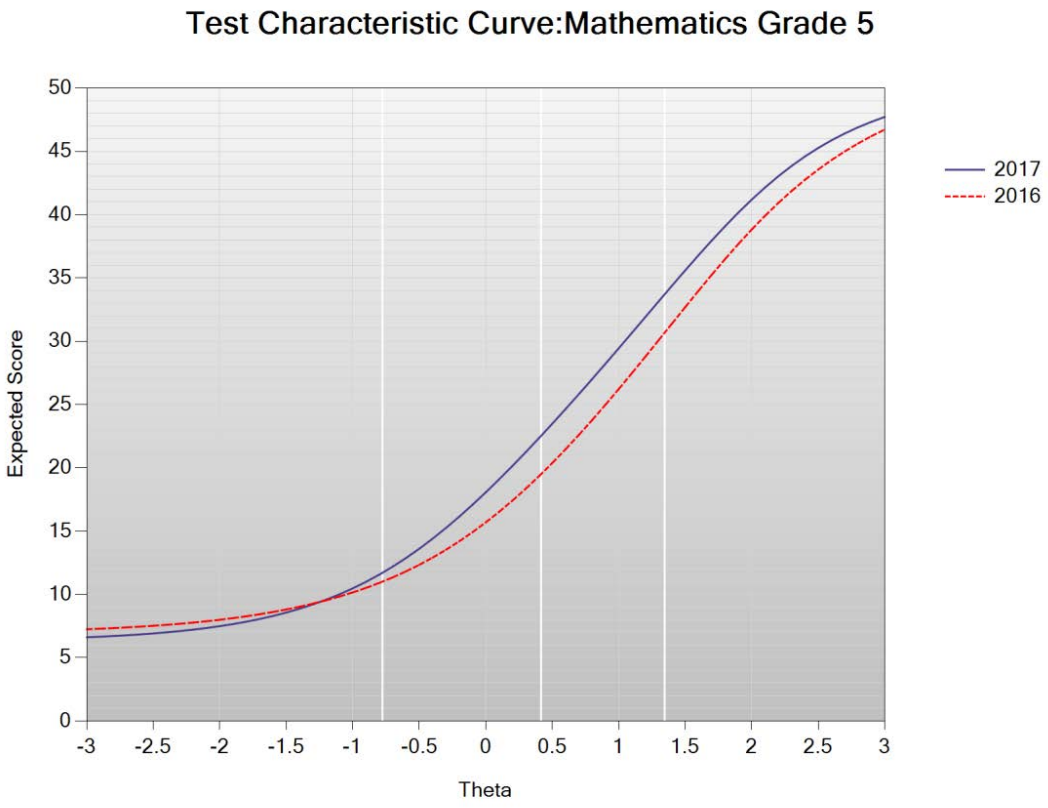


Figure L-3. 2016–17 eMPowerME: Mathematics Grade 5 Plots
Top: Test Characteristic Curve Bottom: Test Information Function



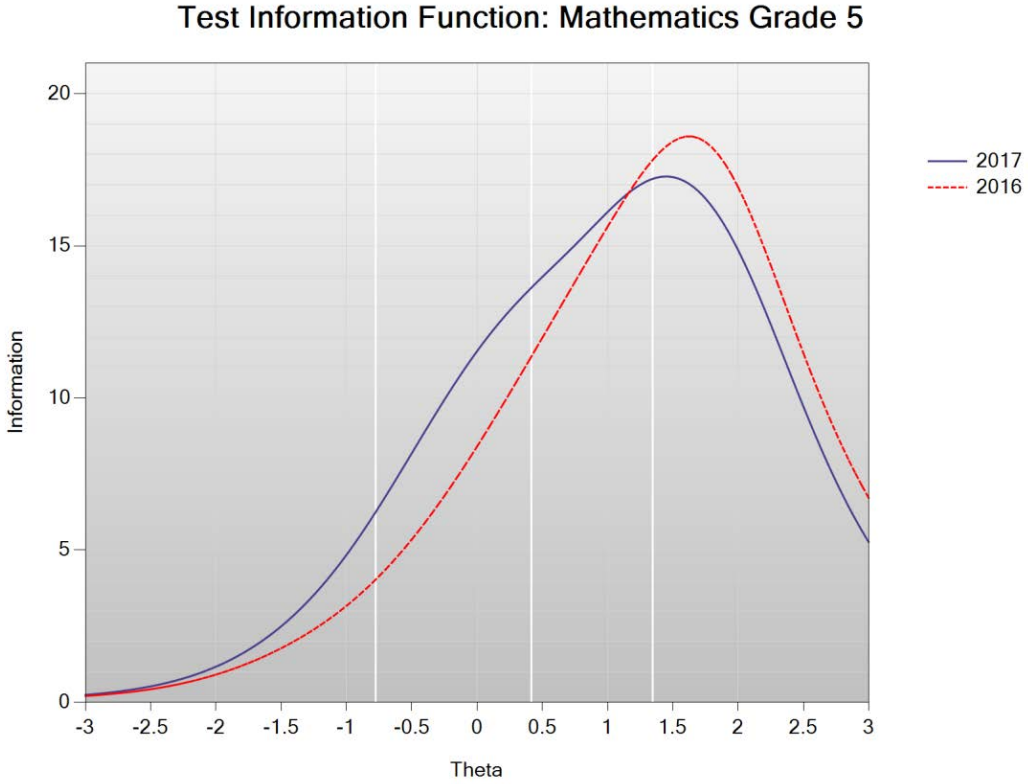
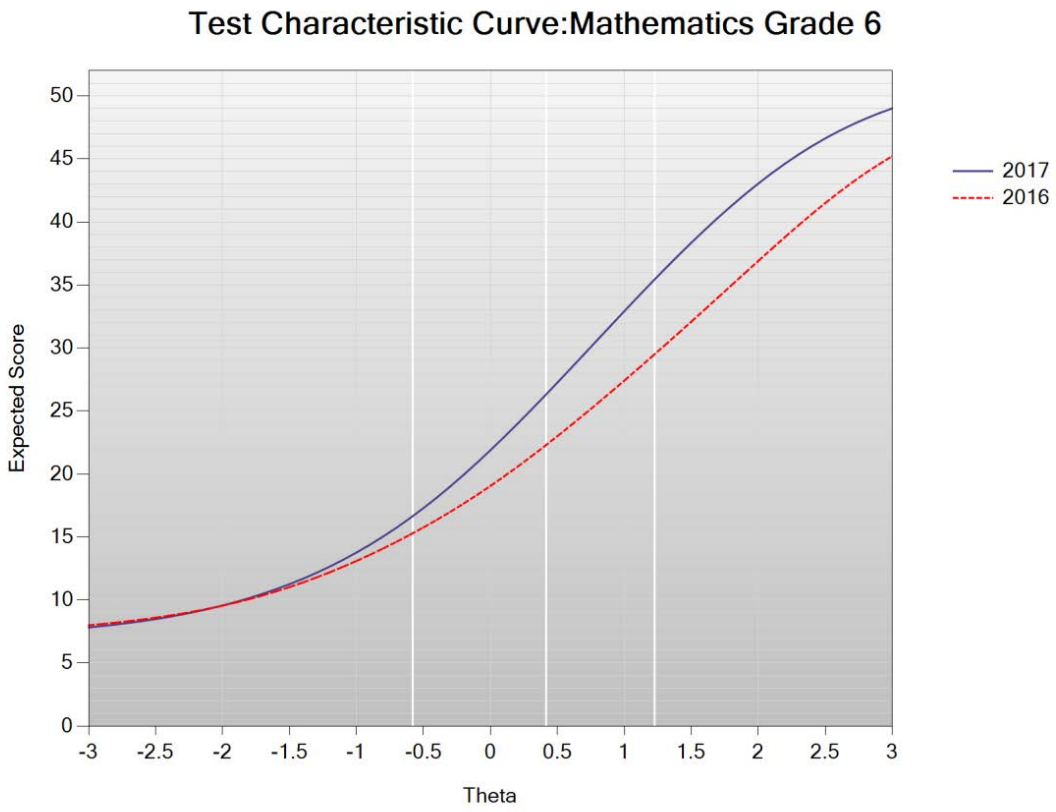


Figure L-4. 2016–17 eMPowerME: Mathematics Grade 6 Plots
Top: Test Characteristic Curve Bottom: Test Information Function



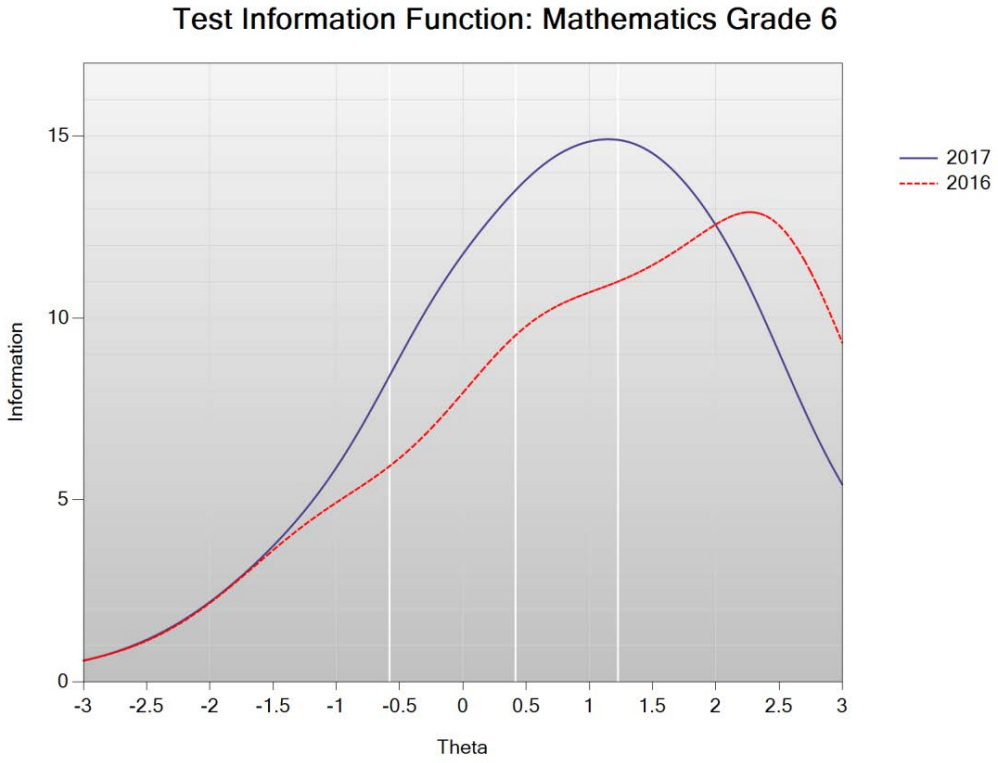
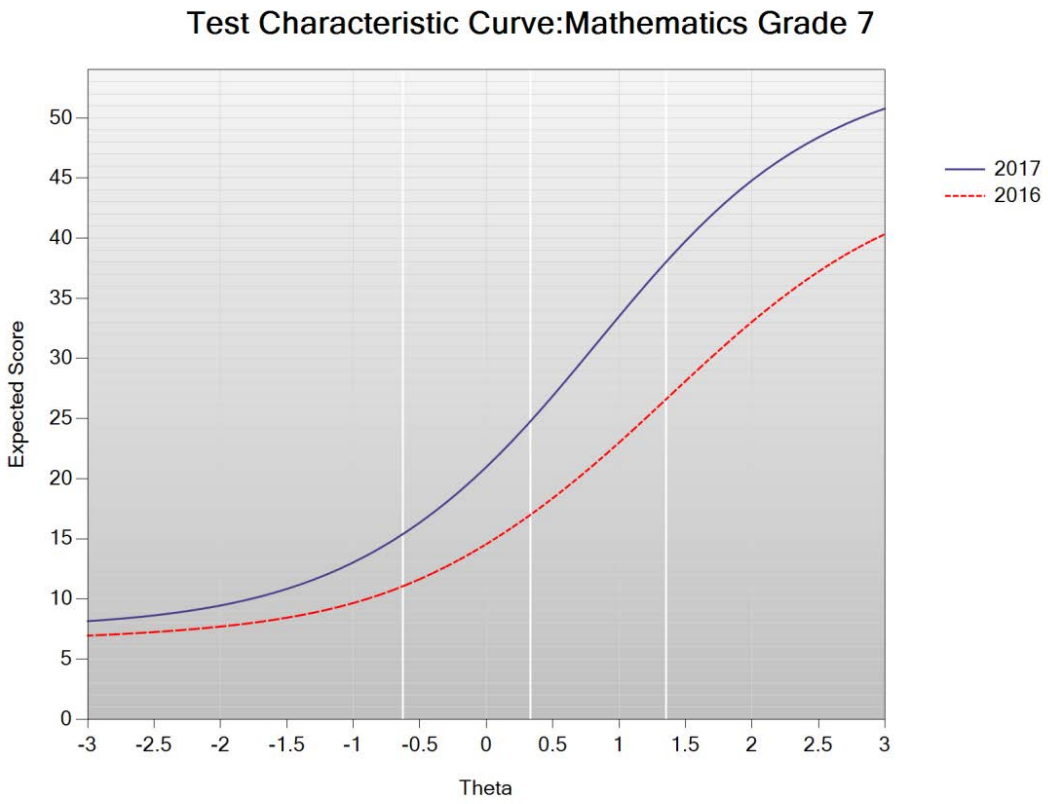


Figure L-5. 2016–17 eMPowerME: Mathematics Grade 7 Plots
Top: Test Characteristic Curve Bottom: Test Information Function



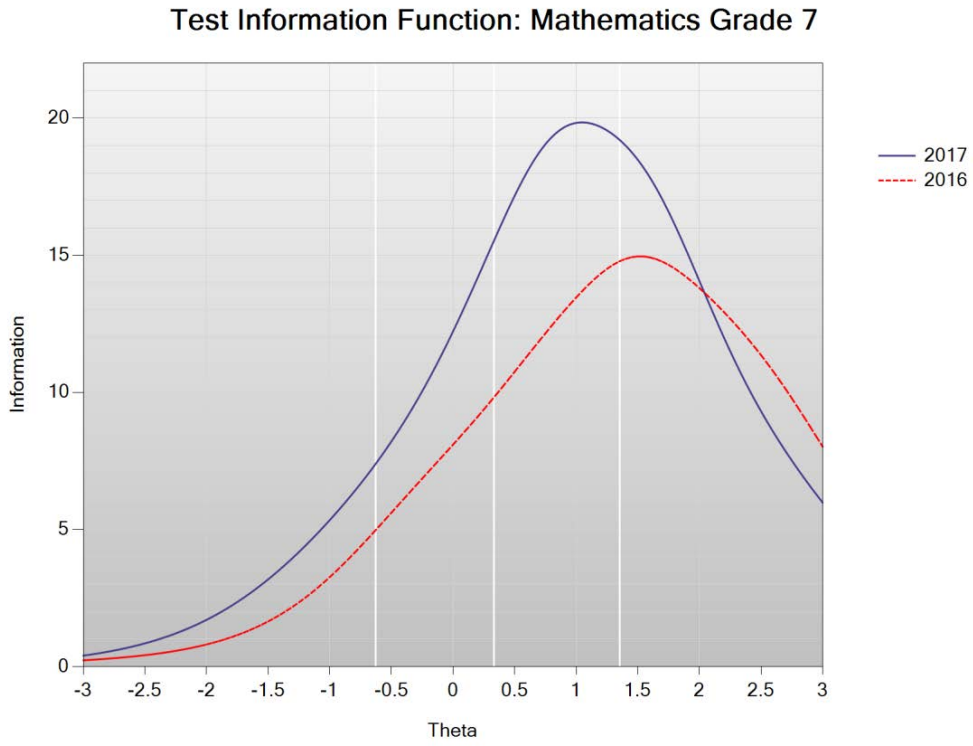
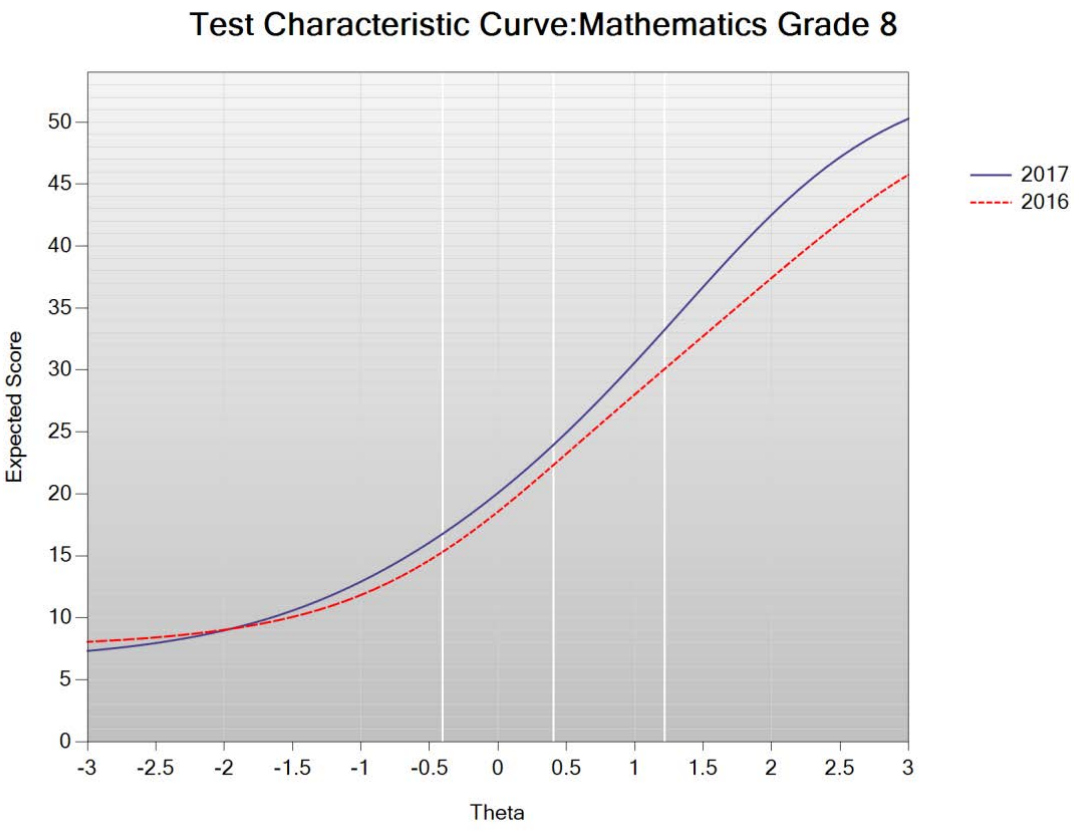


Figure L-6. 2016–17 eMPowerME: Mathematics Grade 8 Plots
Top: Test Characteristic Curve Bottom: Test Information Function



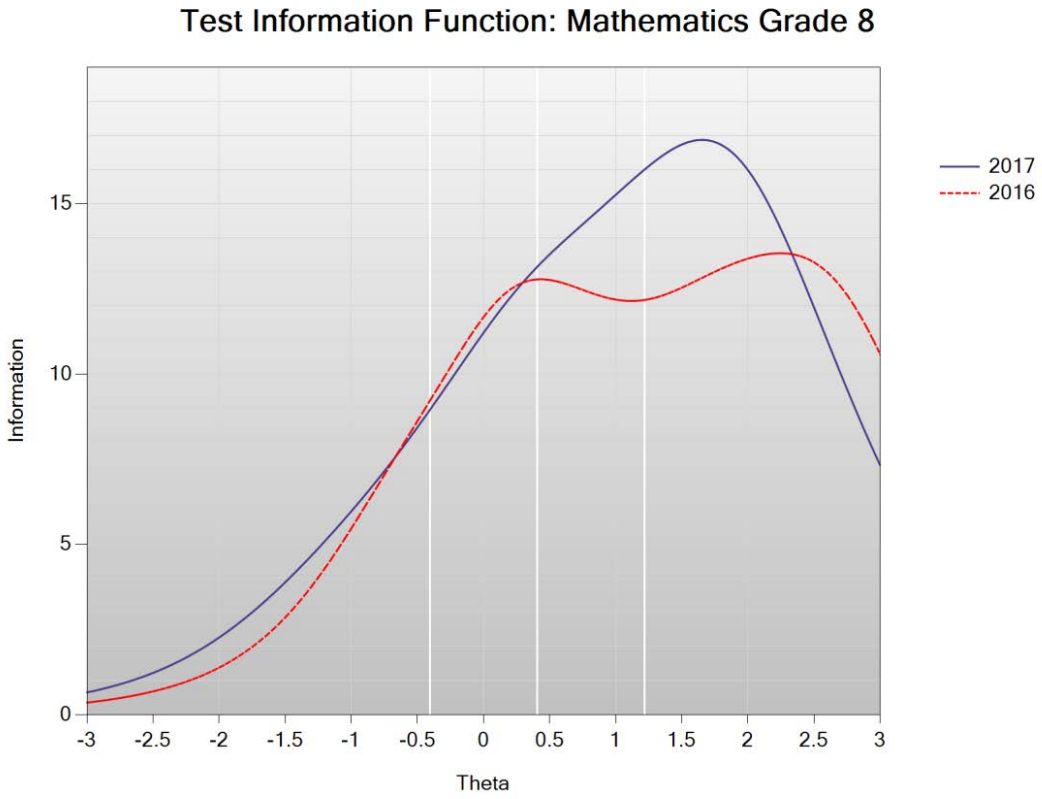
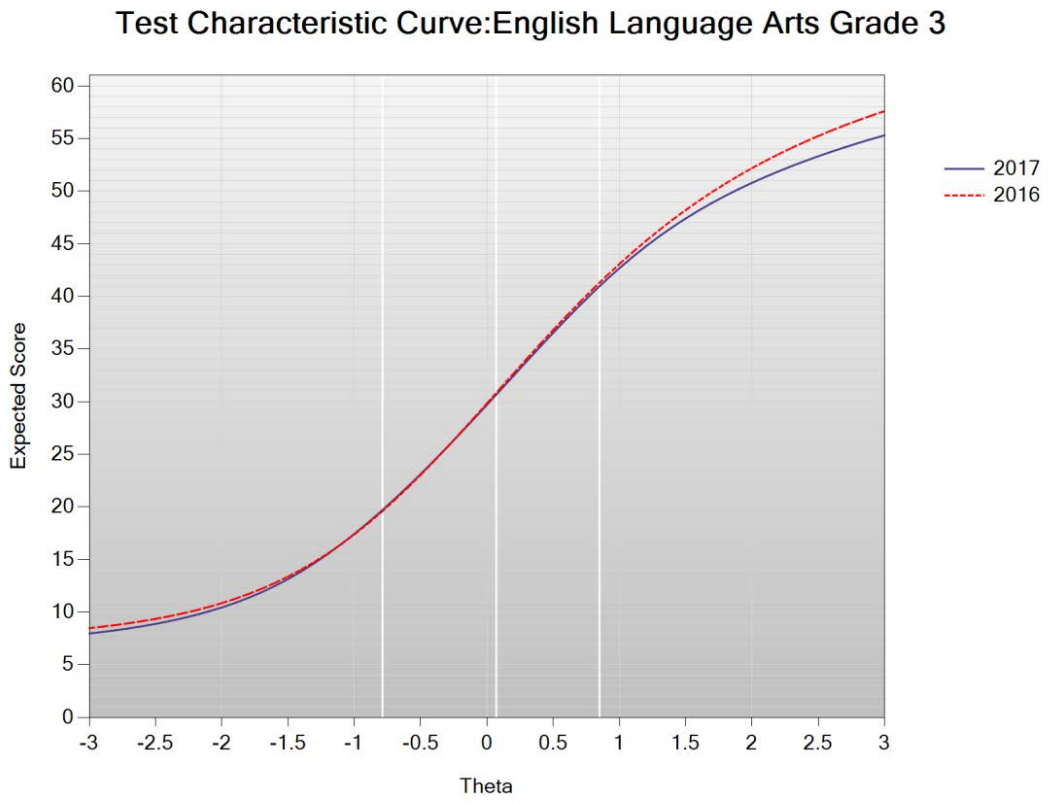


Figure L-7. 2016–17 eMPowerME: ELA Grade 3 Plots
Top: Test Characteristic Curve Bottom: Test Information Function



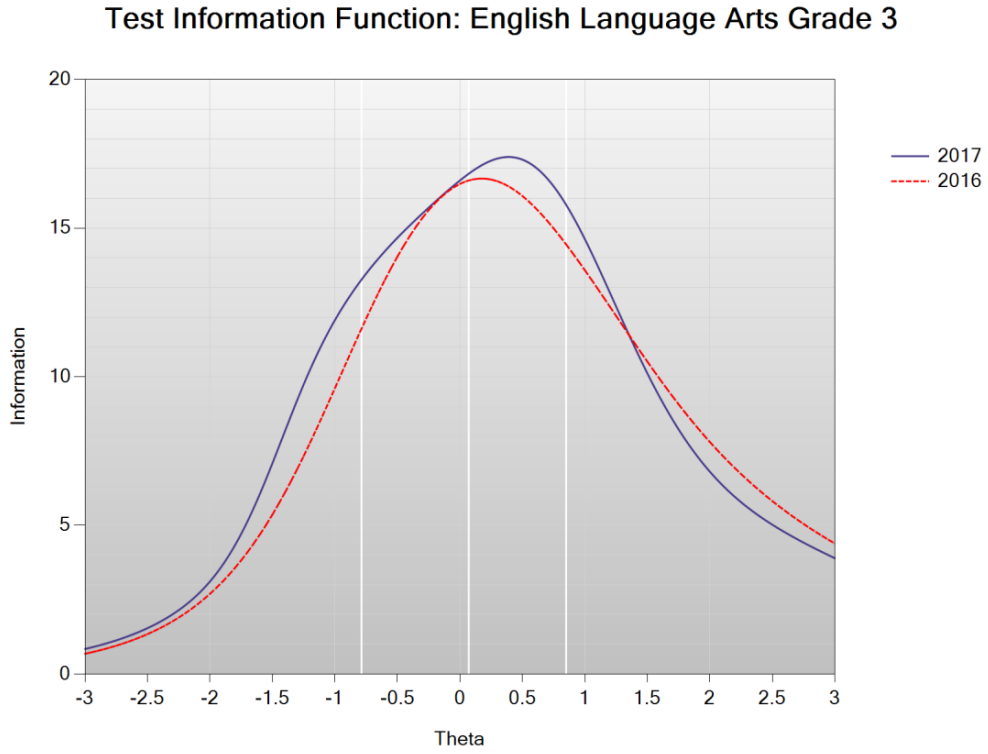
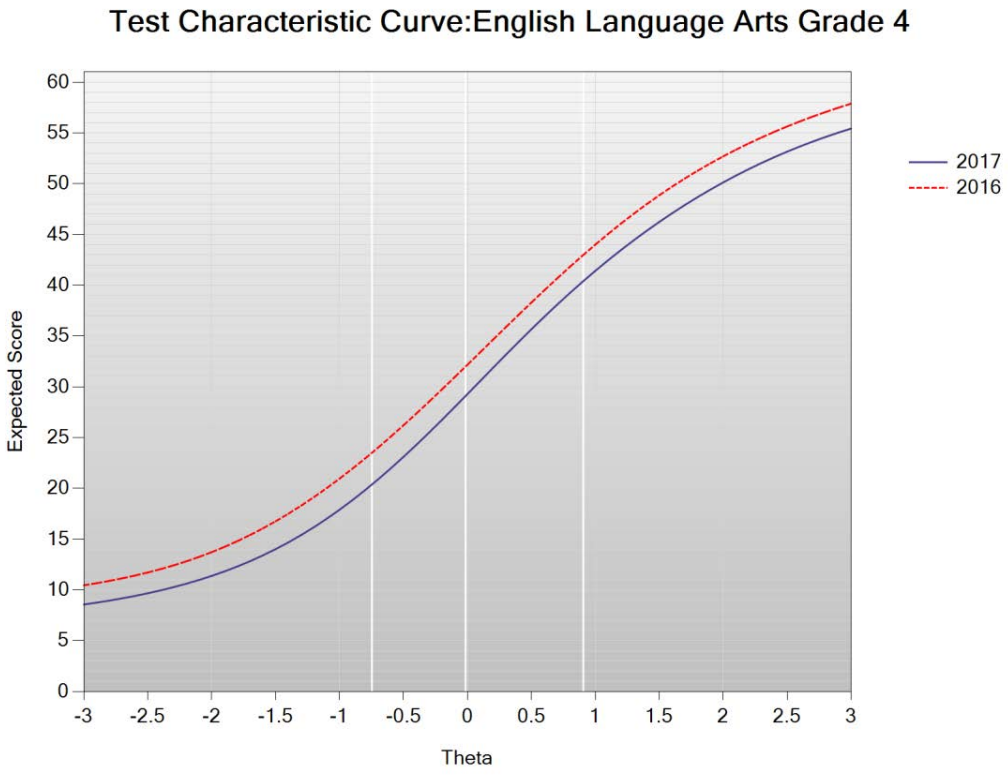


Figure L-8. 2016–17 eMPowerME: ELA Grade 4 Plots
Top: Test Characteristic Curve Bottom: Test Information Function



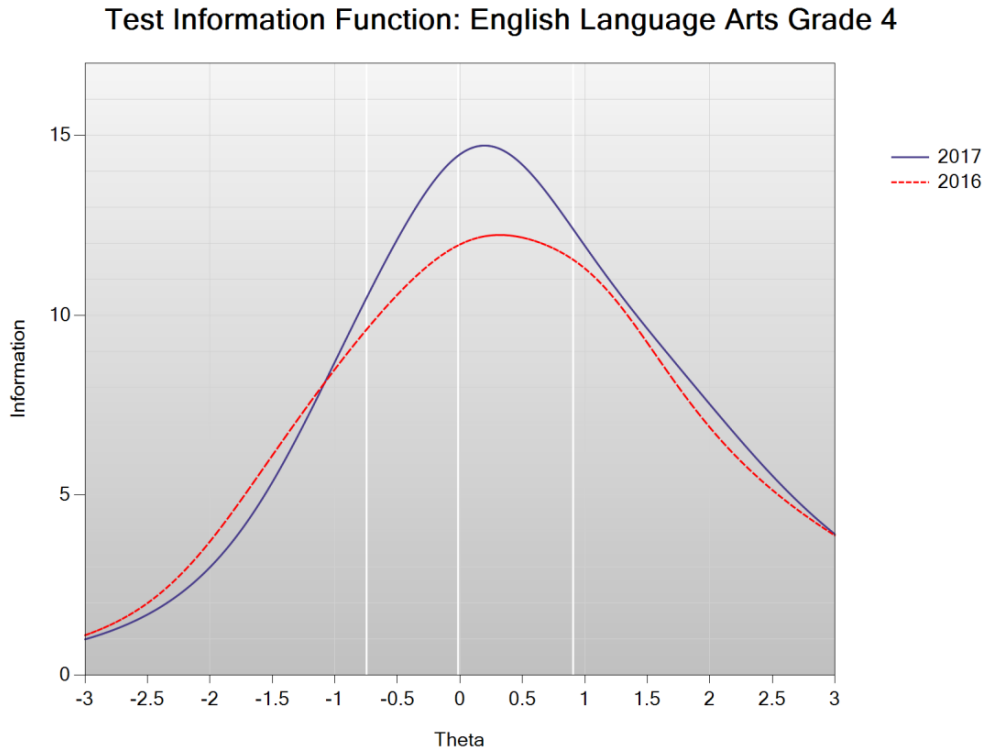
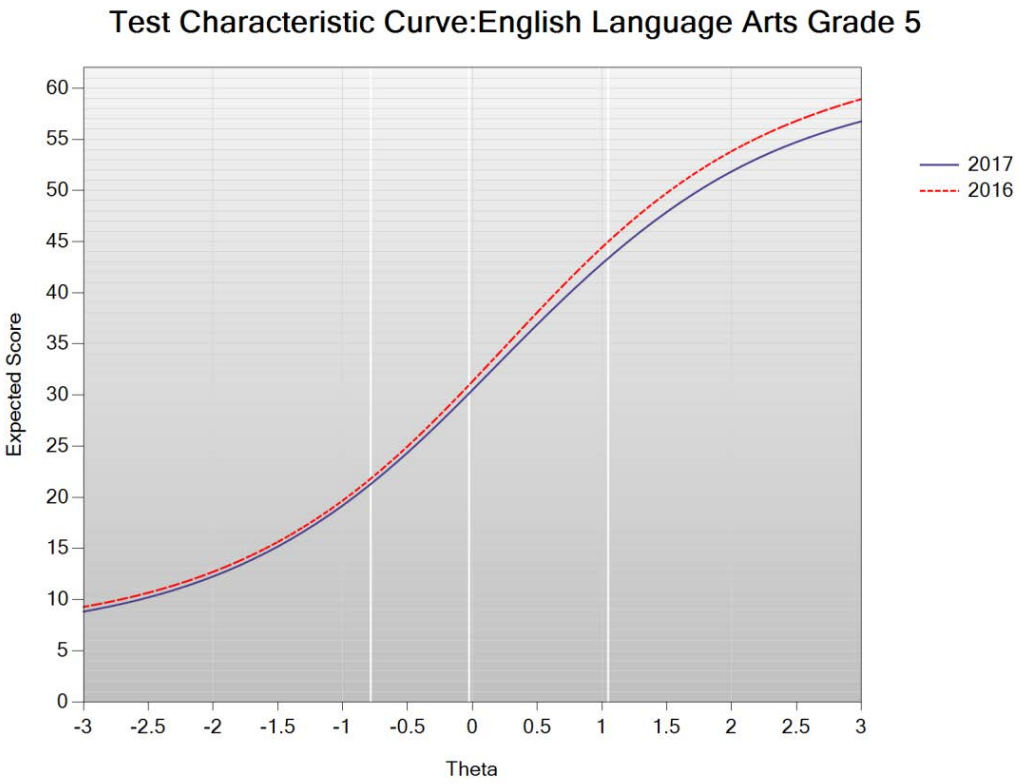


Figure L-9. 2016–17 eMPowerME: ELA Grade 5 Plots
Top: Test Characteristic Curve Bottom: Test Information Function



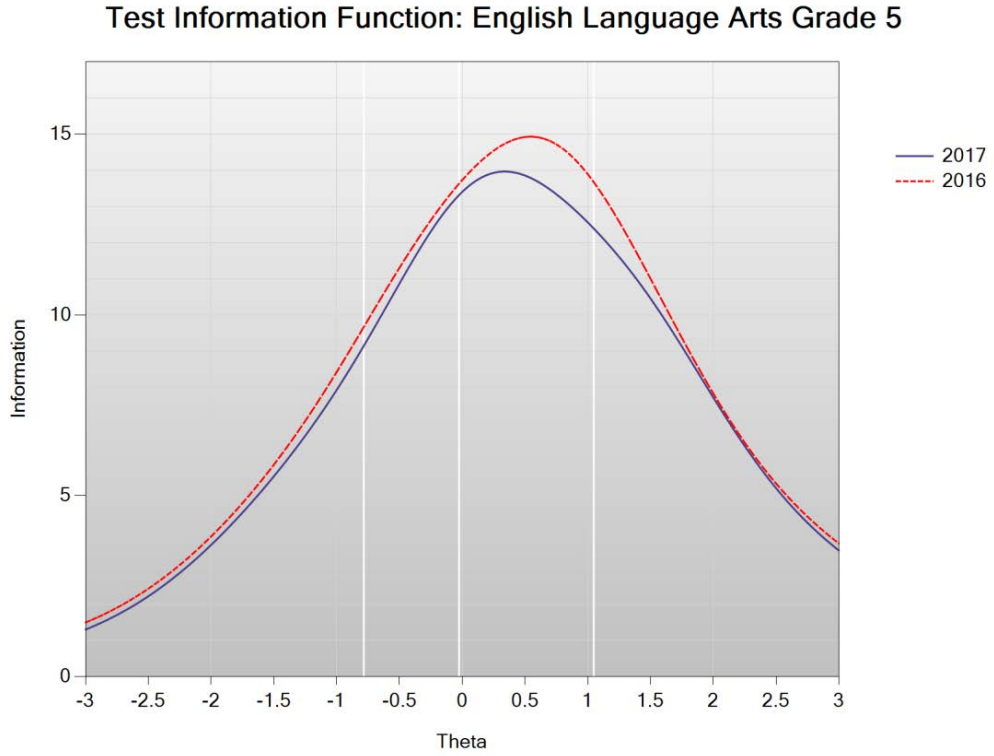
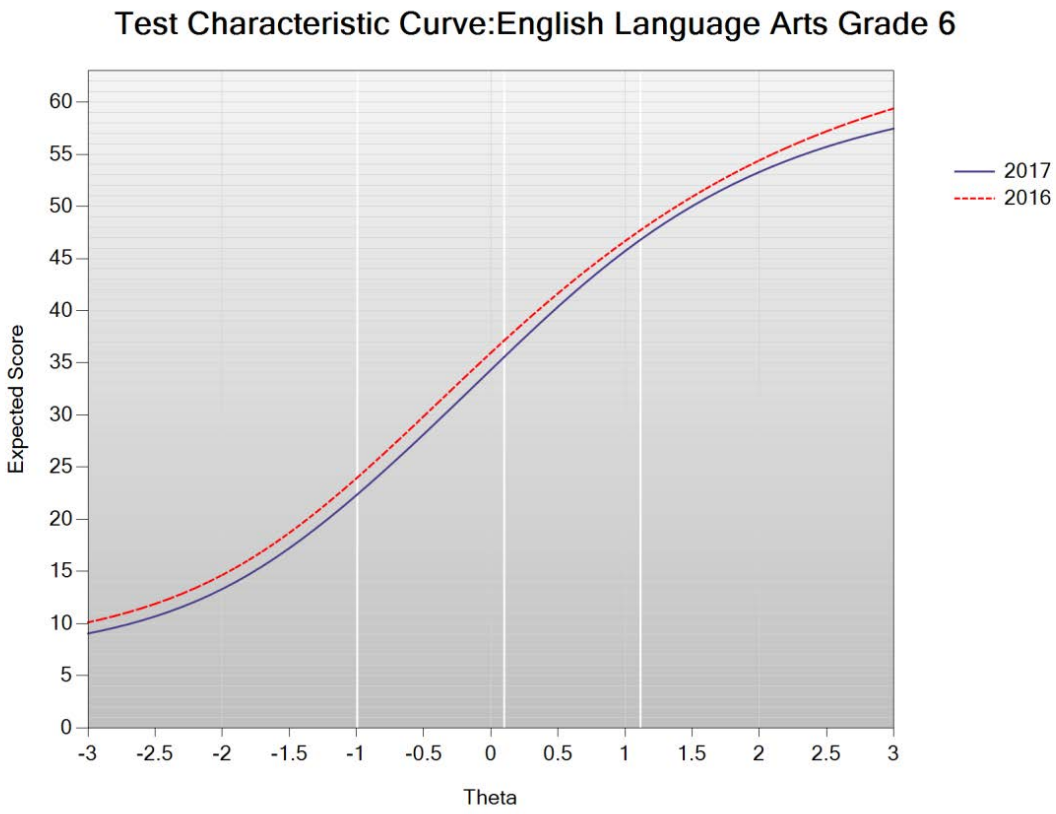


Figure L-10. 2016–17 eMPowerME: ELA Grade 6 Plots
Top: Test Characteristic Curve Bottom: Test Information Function



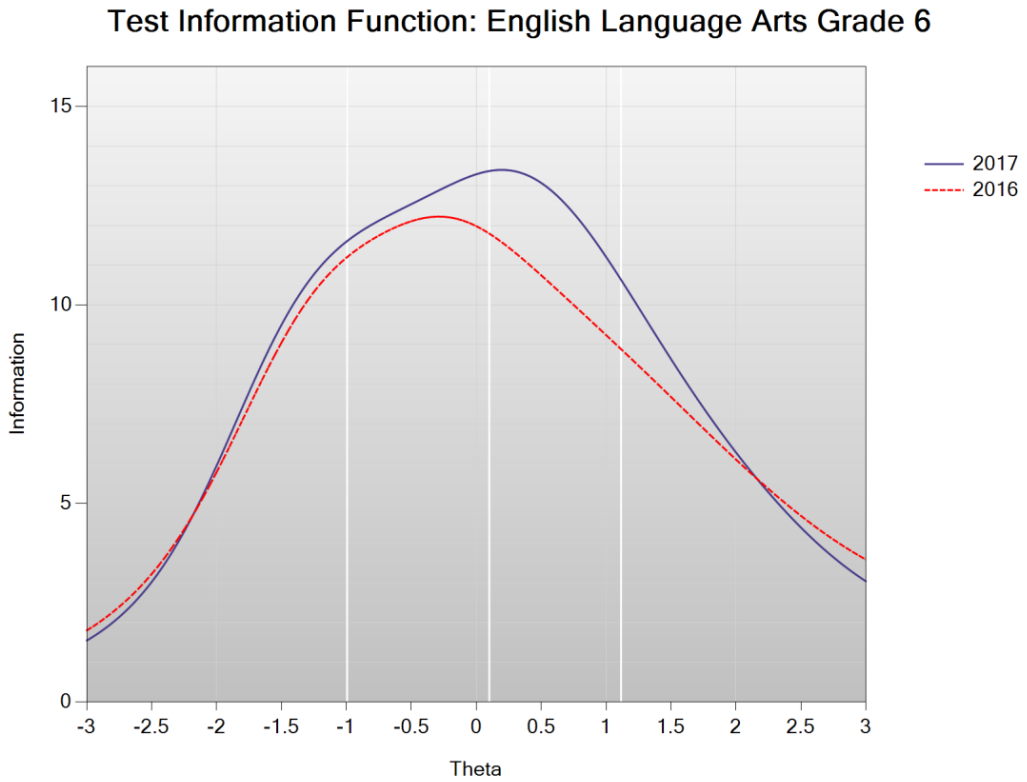
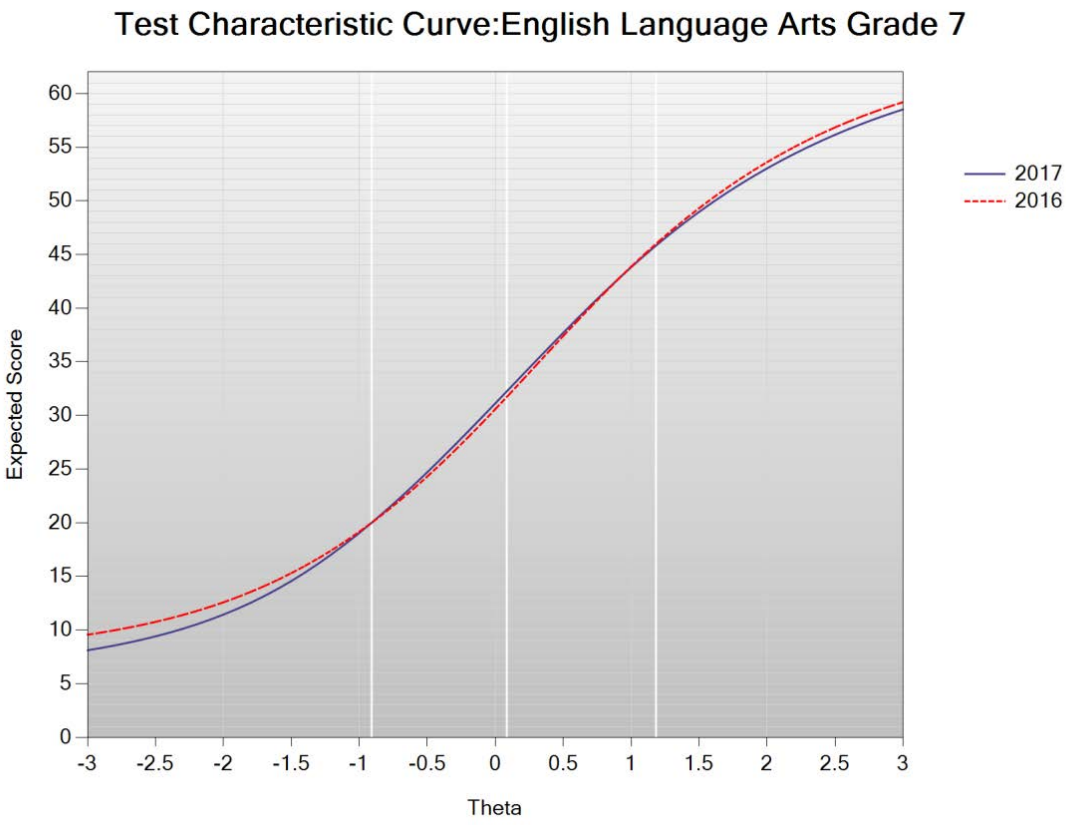


Figure L-11. 2016–17 eMPowerME: ELA Grade 7 Plots
Top: Test Characteristic Curve Bottom: Test Information Function



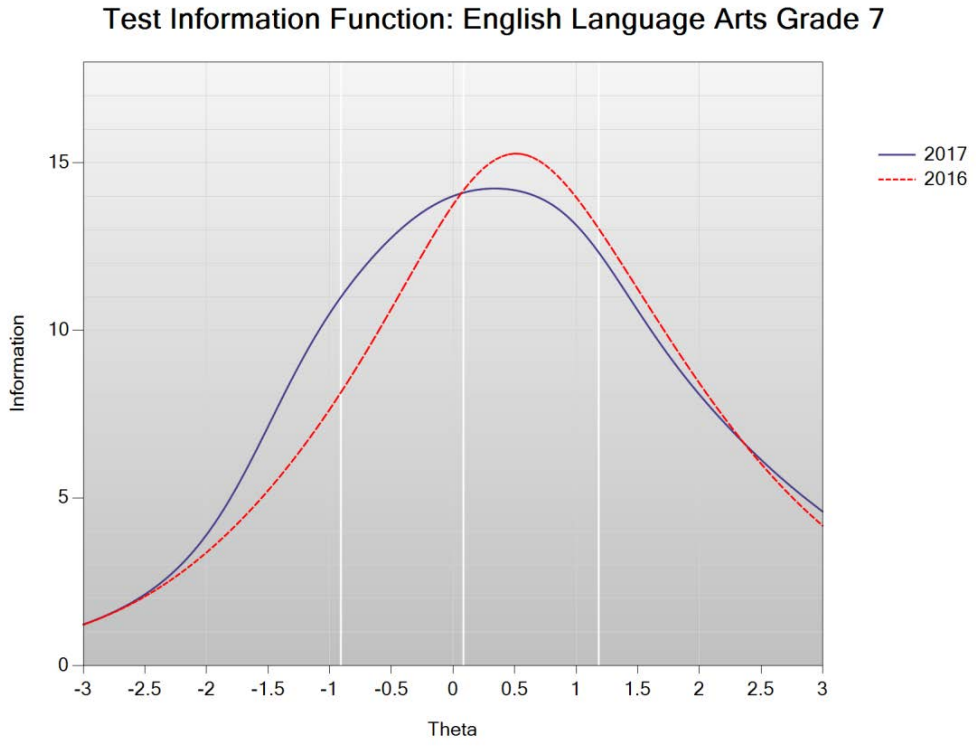
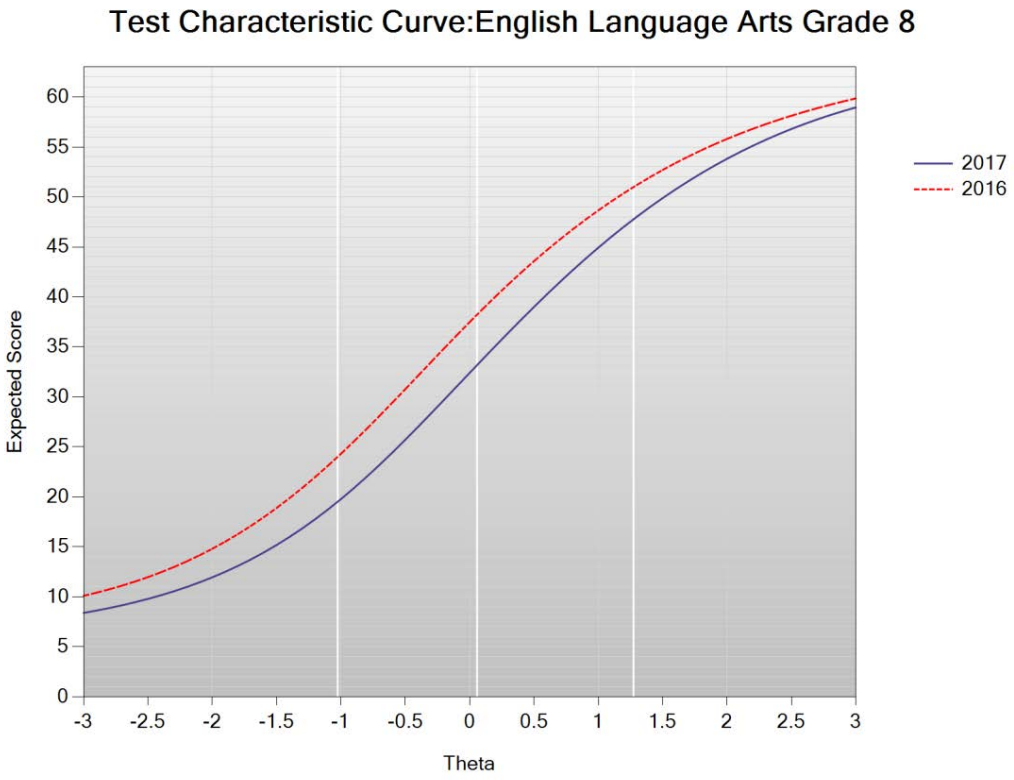
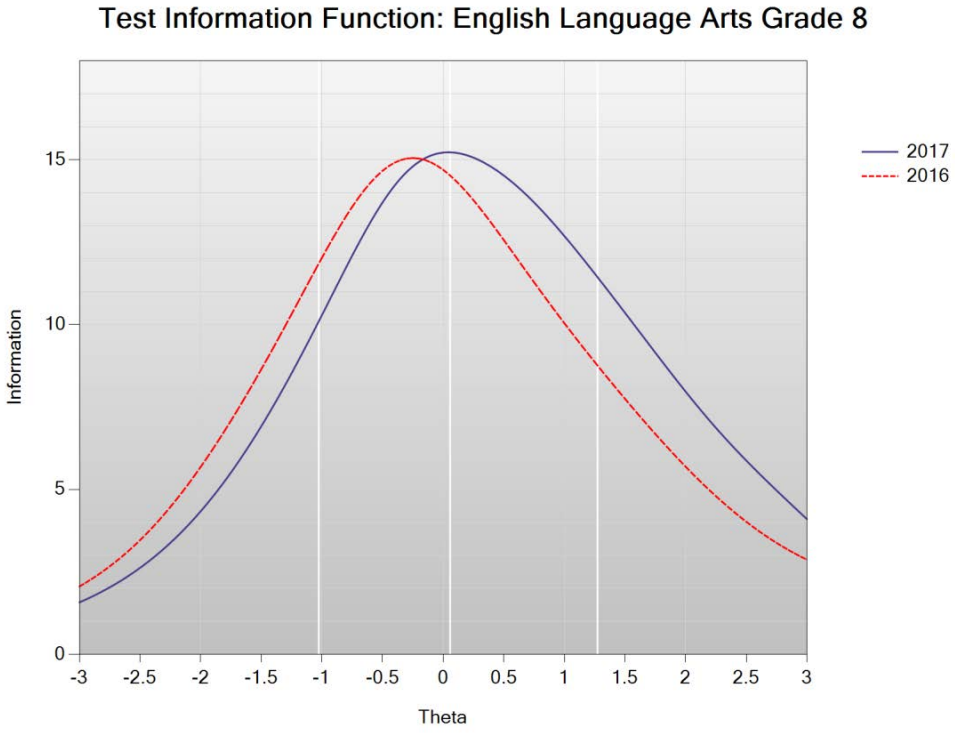


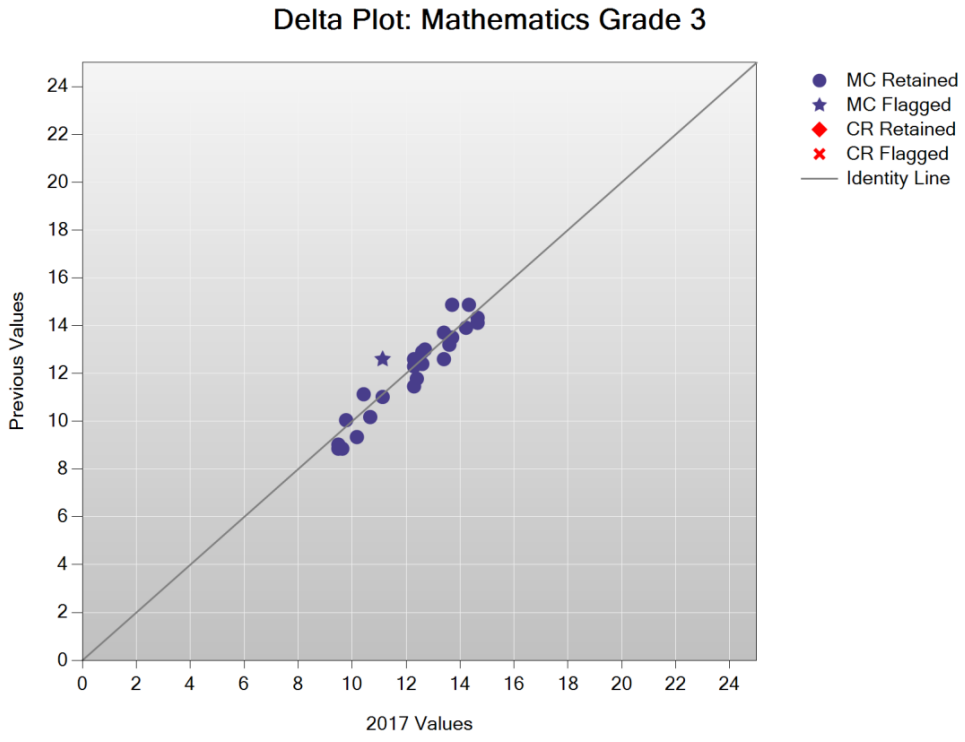
Figure L-12. 2016–17 eMPowerME: ELA Grade 8 Plots
Top: Test Characteristic Curve Bottom: Test Information Function





APPENDIX M—DELTA AND RESCORE ANALYSES

Figure M-1. 2016–17 eMPowerME: Delta Analysis Plots—Mathematics
Top: Grade 3 Bottom: Grade 4



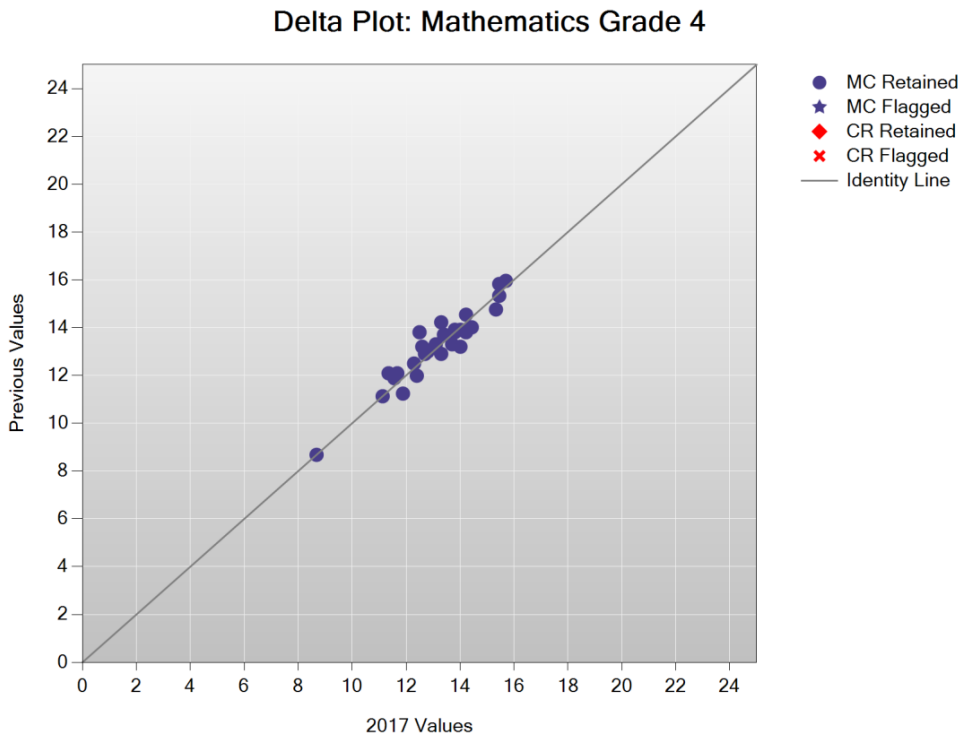
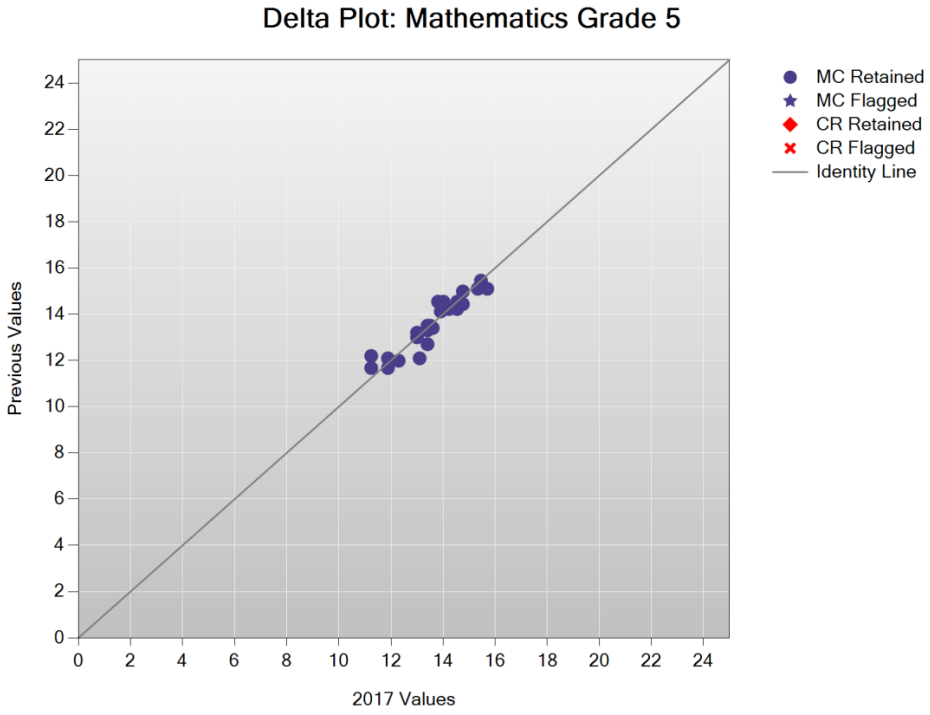


Figure M-2. 2016–17 eMPowerME: Delta Analysis Plots—Mathematics
Top: Grade 5 Bottom: Grade 6



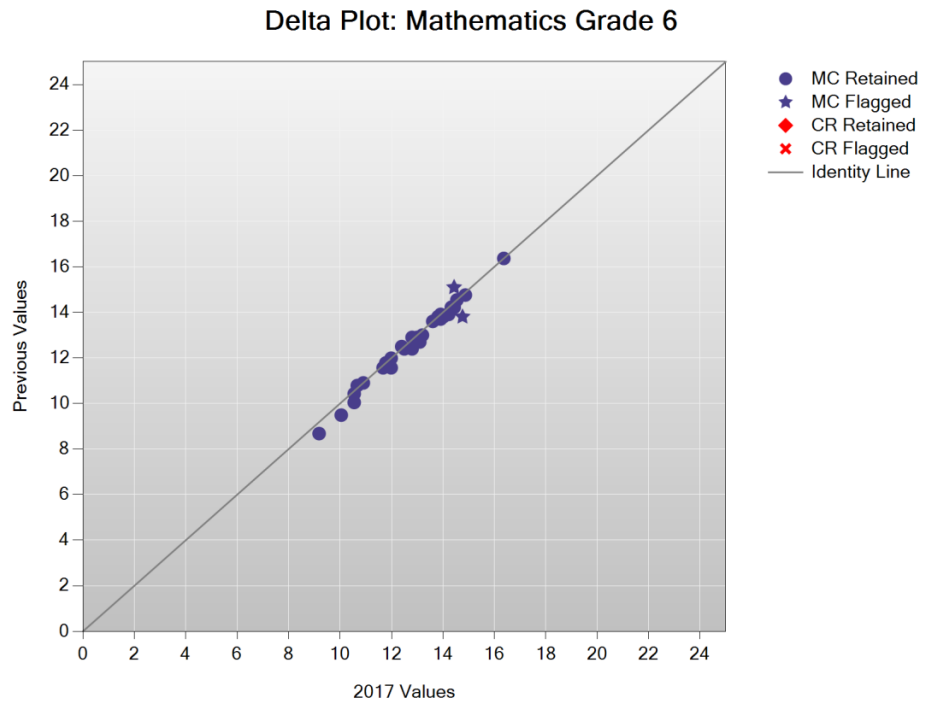
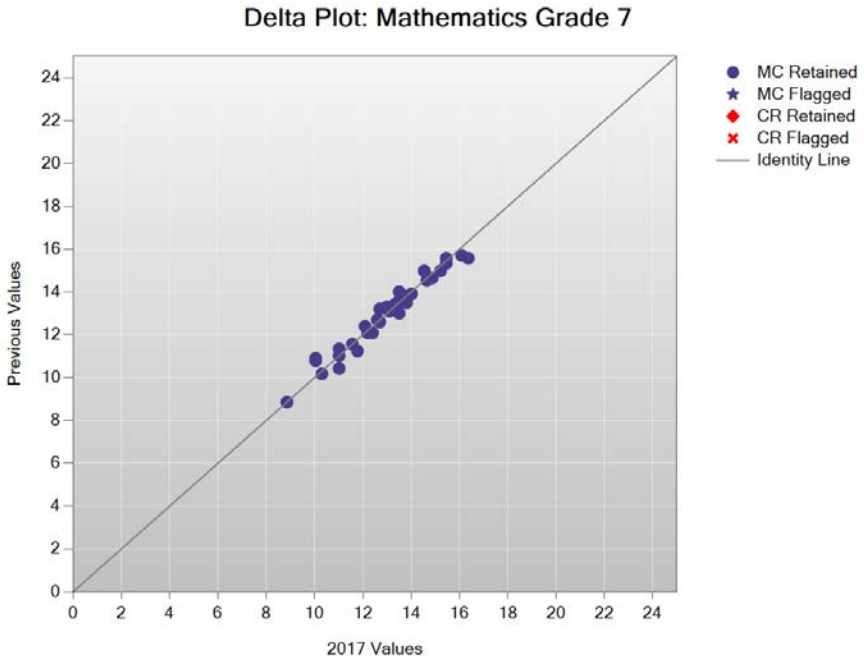


Figure M-3. 2016–17 eMPowerME: Delta Analysis Plots—Mathematics
Top: Grade 7 Bottom: Grade 8



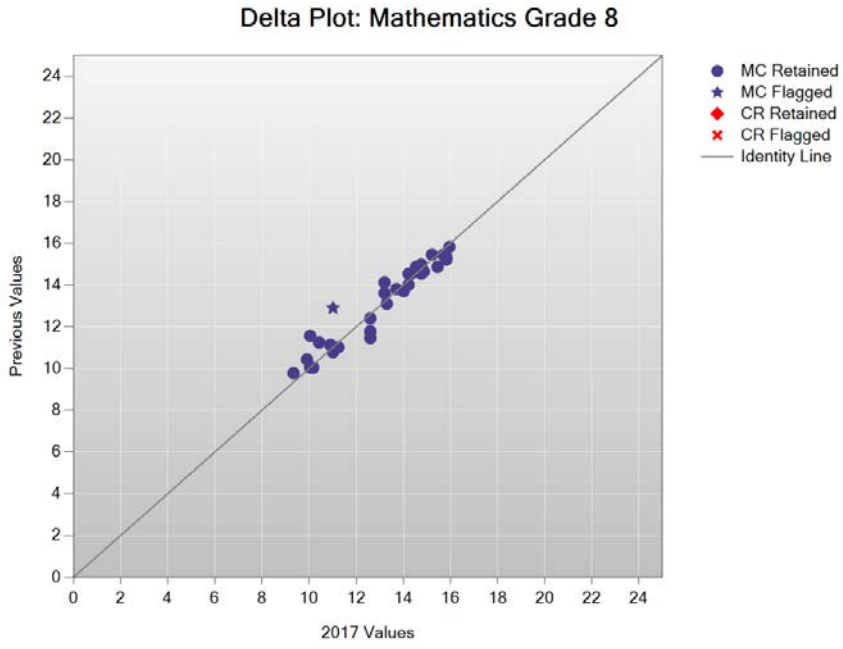
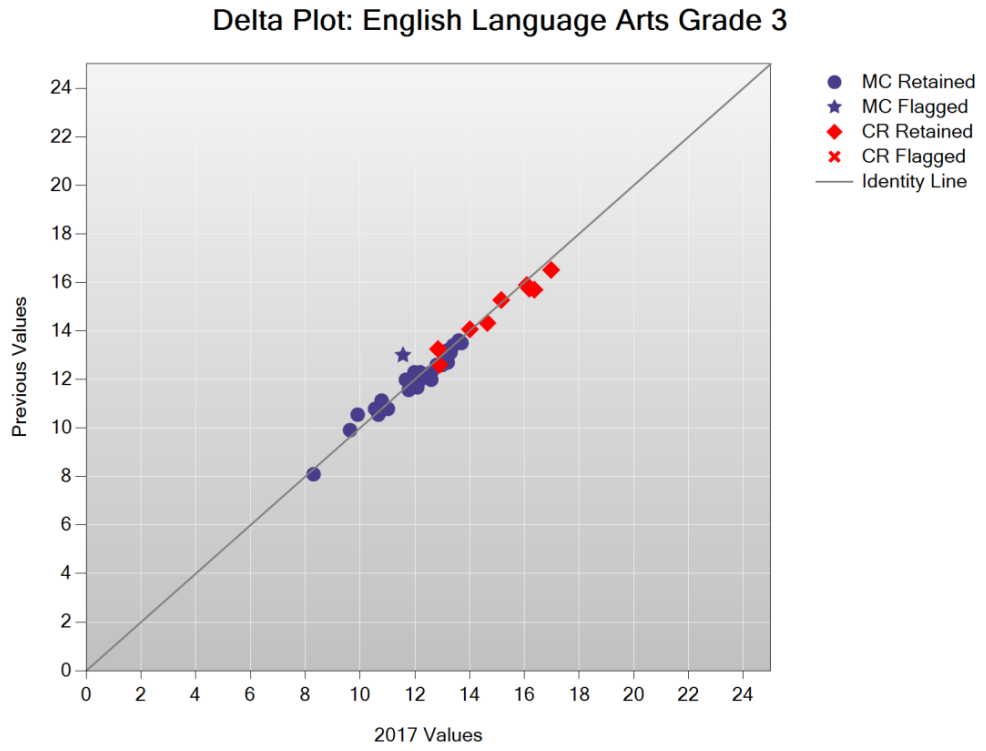


Figure M-4. 2016–17 eMPowerME: Delta Analysis Plots—ELA
Top: Grade 3 Bottom: Grade 4



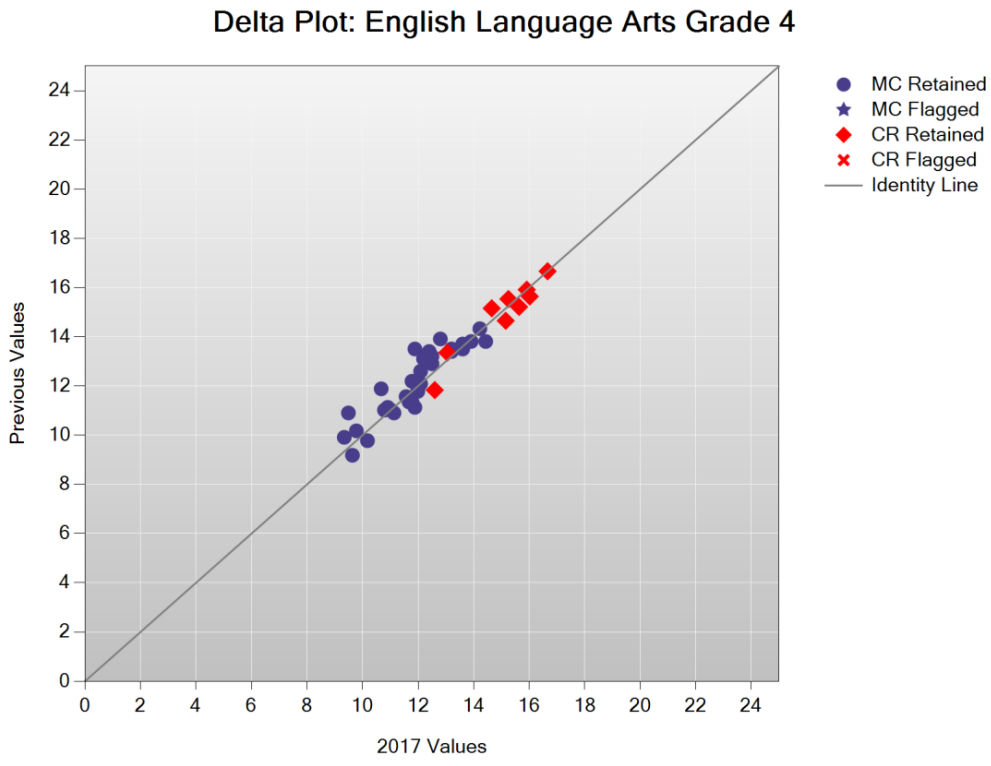
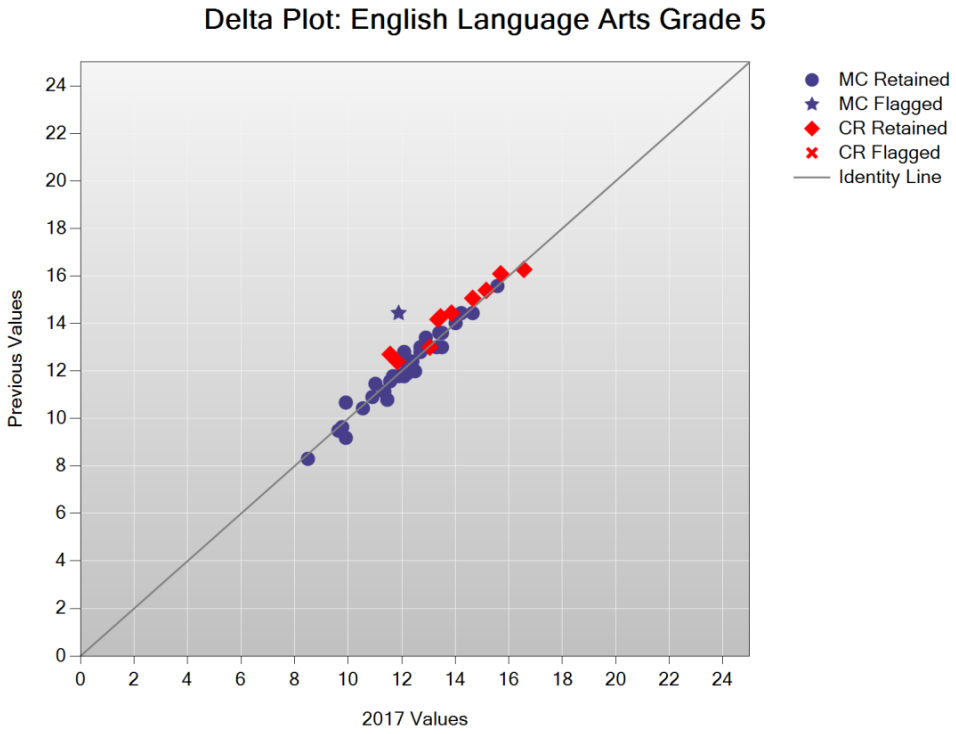


Figure M-5. 2016–17 eMPowerME: Delta Analysis Plots—ELA
Top: Grade 5 Bottom: Grade 6



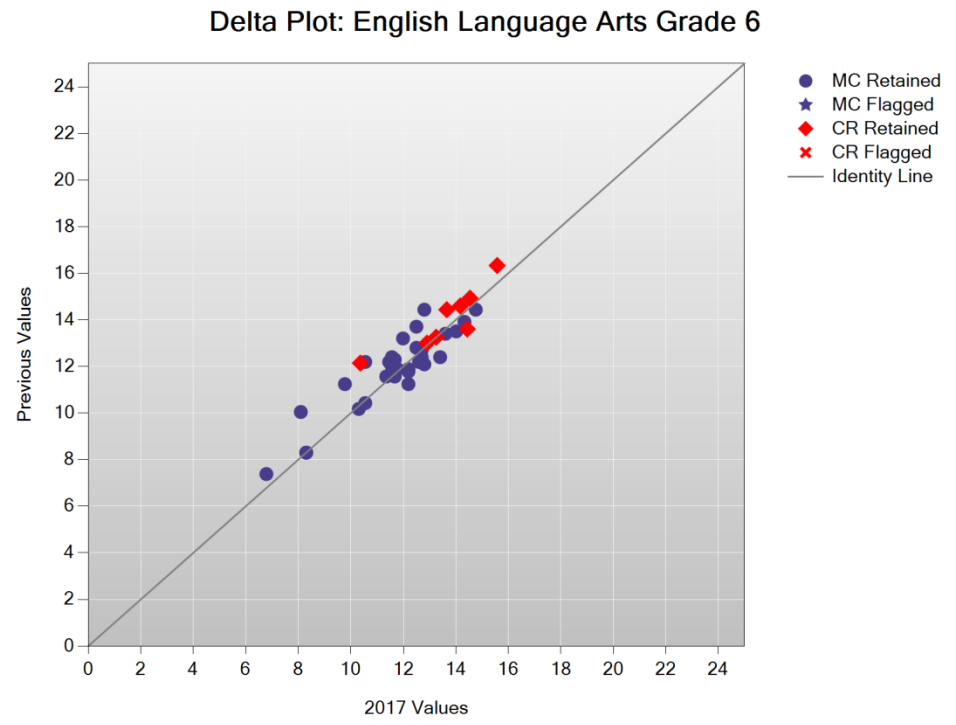
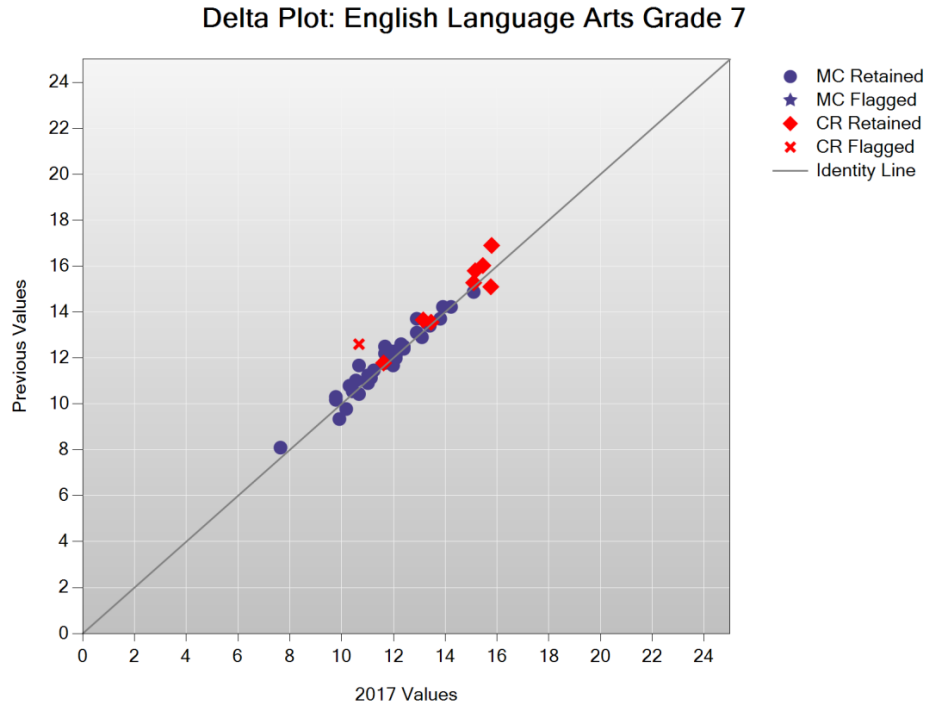


Figure M-6. 2016–17 eMPowerME: Delta Analysis Plots—ELA
Top: Grade 7 Bottom: Grade 8



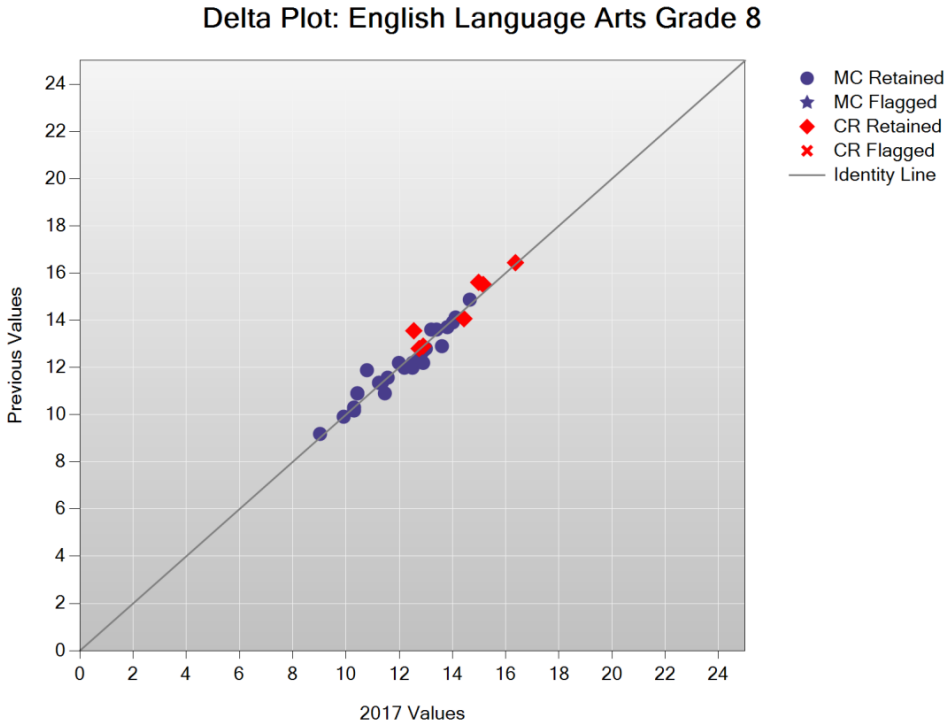


Table M-1. 2016–17 eMPowerME: Delta Analysis Results—Mathematics Grade 3

Item Number	Mean		Delta		Discard	Standardized Difference
	Old	New	Old	New		
123976A	0.54000	0.46000	12.59827	13.40173	False	0.94191
124364A	0.54000	0.68000	12.59827	11.12920	True	3.24144
124395A	0.76000	0.72000	10.17479	10.66863	False	-0.68763
124663A	0.41000	0.38000	13.91018	14.22192	False	-0.19682
125052A	0.39000	0.34000	14.11728	14.64985	False	0.53819
125231A	0.43000	0.46000	13.70550	13.40173	False	-0.64110
126293A	0.68000	0.74000	11.12920	10.42662	False	1.30474
400021	0.54000	0.57000	12.59827	12.29450	False	-0.33018
400614	0.65000	0.57000	11.45872	12.29450	False	0.72096
407640	0.45000	0.43000	13.50265	13.70550	False	-0.64501
407672	0.37000	0.34000	14.32741	14.64985	False	-0.04687
409896	0.50000	0.53000	13.00000	12.69892	False	-0.45121
411093	0.77000	0.79000	10.04461	9.77432	False	0.28435
411097	0.69000	0.68000	11.01660	11.12920	False	-1.16219
411145	0.82000	0.76000	9.33854	10.17479	False	0.12701
411231	0.32000	0.37000	14.87080	14.32741	False	-0.23390
411254	0.57000	0.57000	12.29450	12.29450	False	-1.17590
411494	0.84000	0.81000	9.02217	9.48841	False	-1.09588
411623	0.85000	0.81000	8.85427	9.48841	False	-0.62842
411633	0.85000	0.80000	8.85427	9.63352	False	-0.18369
411729	0.48000	0.44000	13.20061	13.60388	False	-0.11557
412628	0.51000	0.54000	12.89972	12.59827	False	-0.42189
413222	0.62000	0.56000	11.77808	12.39612	False	0.14328
414589	0.32000	0.43000	14.87080	13.70550	False	1.67226
417030	0.56000	0.54000	12.39612	12.59827	False	-0.95791

Table M-2. 2016–17 eMPowerME: Delta Analysis Results—Mathematics Grade 4

Item Number	Mean		Delta		Discard	Standardized Difference
	Old	New	Old	New		
124741A	0.55000	0.57000	12.49735	12.29450	False	-0.91941
124779A	0.42000	0.55000	13.80757	12.49735	False	2.89361
124969A	0.41000	0.42000	13.91018	13.80757	False	-1.17104
126060A	0.48000	0.40000	13.20061	14.01339	False	1.70791
127117A	0.51000	0.53000	12.89972	12.69892	False	-0.90173
127584A	0.51000	0.47000	12.89972	13.30108	False	0.33938
127588A	0.28000	0.27000	15.33137	15.45125	False	-0.75799
400066	0.47000	0.49000	13.30108	13.10028	False	-0.87722
400447	0.59000	0.66000	12.08982	11.35015	False	0.86535
400449	0.61000	0.64000	11.88272	11.56616	False	-0.57363
400466	0.43000	0.46000	13.70550	13.40173	False	-0.50544
400468	0.35000	0.38000	14.54128	14.22192	False	-0.40181
400748	0.38000	0.47000	14.22192	13.30108	False	1.60631

continued

Item Number	Mean		Delta		Discard	Standardized Difference
	Old	New	Old	New		
400815	0.42000	0.38000	13.80757	14.22192	False	0.32773
400839	0.41000	0.40000	13.91018	14.01339	False	-0.72741
400920	0.50000	0.52000	13.00000	12.79939	False	-0.89625
407852	0.23000	0.25000	15.95539	15.69796	False	-0.52421
407867	0.60000	0.56000	11.98661	12.39612	False	0.42264
408032	0.68000	0.68000	11.12920	11.12920	False	-0.90547
408040	0.42000	0.42000	13.80757	13.80757	False	-1.06906
408261	0.24000	0.27000	15.82521	15.45125	False	-0.13934
408276	0.40000	0.36000	14.01339	14.43384	False	0.33572
409954	0.33000	0.28000	14.75965	15.33137	False	0.80006
411024	0.47000	0.43000	13.30108	13.70550	False	0.32519
411117	0.48000	0.54000	13.20061	12.59827	False	0.47027
411163	0.67000	0.61000	11.24035	11.88272	False	1.25322
411858	0.86000	0.86000	8.67872	8.67872	False	-0.75580
413801	0.59000	0.63000	12.08982	11.67259	False	-0.22160

Table M-3. 2016–17 eMPowerME: Delta Analysis Results—Mathematics Grade 5

Item Number	Mean		Delta		Discard	Standardized Difference
	Old	New	Old	New		
124038A	0.38000	0.38000	14.22192	14.22192	False	-0.89319
124675A	0.45000	0.46000	13.50265	13.40173	False	-0.68334
128316A	0.39000	0.41000	14.11728	13.91018	False	-0.20477
400228	0.59000	0.49000	12.08982	13.10028	False	2.58203
400373	0.30000	0.25000	15.09760	15.69796	False	0.61460
400523	0.50000	0.50000	13.00000	13.00000	False	-1.04386
400682	0.35000	0.40000	14.54128	14.01339	False	0.97175
400718	0.48000	0.50000	13.20061	13.00000	False	-0.39921
408471	0.35000	0.42000	14.54128	13.80757	False	1.67544
408477	0.38000	0.35000	14.22192	14.54128	False	-0.18159
408493	0.63000	0.67000	11.67259	11.24035	False	0.10556
408496	0.31000	0.33000	14.98340	14.75965	False	0.01494
408514	0.36000	0.35000	14.43384	14.54128	False	-0.94596
411240	0.46000	0.44000	13.40173	13.60388	False	-0.42822
411270	0.63000	0.61000	11.67259	11.88272	False	-0.07591
411804	0.60000	0.57000	11.98661	12.29450	False	0.19931
411976	0.35000	0.35000	14.54128	14.54128	False	-0.83317
412026	0.59000	0.61000	12.08982	11.88272	False	-0.58581
413850	0.53000	0.46000	12.69892	13.40173	False	1.41571
414837	0.47000	0.46000	13.30108	13.40173	False	-0.75629
414953	0.58000	0.67000	12.19243	11.24035	False	1.98063
415106	0.36000	0.33000	14.43384	14.75965	False	-0.19933
415122	0.30000	0.28000	15.09760	15.33137	False	-0.63882
415335	0.45000	0.45000	13.50265	13.50265	False	-1.02836
415373	0.27000	0.27000	15.45125	15.45125	False	-0.66215

Table M-4. 2016–17 eMPowerME: Delta Analysis Results—Mathematics Grade 6

Item Number	Mean		Delta		Discard	Standardized Difference
	Old	New	Old	New		
125468A	0.41000	0.41000	13.91018	13.91018	False	-0.42369
127166A	0.74000	0.73000	10.42662	10.54875	False	-0.32789
127167A	0.35000	0.35000	14.54128	14.54128	False	-0.56635
128195A	0.38000	0.36000	14.22192	14.43384	False	-0.39590
400114	0.43000	0.41000	13.70550	13.91018	False	-0.55358
400197	0.60000	0.60000	11.98661	11.98661	False	0.01115
400206	0.56000	0.52000	12.39612	12.79939	False	0.27508
400411	0.44000	0.44000	13.60388	13.60388	False	-0.35445
400617	0.39000	0.37000	14.11728	14.32741	False	-0.42961
400628	0.51000	0.52000	12.89972	12.79939	False	0.37300
400695	0.70000	0.70000	10.90240	10.90240	False	0.25624
406067	0.86000	0.83000	8.67872	9.18334	False	0.00875
406090	0.42000	0.42000	13.80757	13.80757	False	-0.40049
408317	0.30000	0.36000	15.09760	14.43384	True	3.06713
408319	0.64000	0.60000	11.56616	11.98661	False	0.18478
408332	0.38000	0.36000	14.22192	14.43384	False	-0.39590
411844	0.81000	0.77000	9.48841	10.04461	False	0.48392
412060	0.71000	0.72000	10.78646	10.66863	False	0.94976
412115	0.50000	0.48000	13.00000	13.20061	False	-0.73611
412144	0.53000	0.49000	12.69892	13.10028	False	0.33272
412302	0.77000	0.73000	10.04461	10.54875	False	0.31480
412320	0.64000	0.63000	11.56616	11.67259	False	-0.49653
412431	0.42000	0.33000	13.80757	14.75965	True	3.70237
412455	0.38000	0.37000	14.22192	14.32741	False	-0.99862
413996	0.20000	0.20000	16.36648	16.36648	False	-0.97896
414004	0.62000	0.62000	11.77808	11.77808	False	0.05829
414013	0.51000	0.50000	12.89972	13.00000	False	-0.76318
414022	0.52000	0.51000	12.79939	12.89972	False	-0.74086
414079	0.56000	0.55000	12.39612	12.49735	False	-0.65475
414094	0.33000	0.32000	14.75965	14.87080	False	-0.84505
415259	0.55000	0.56000	12.49735	12.39612	False	0.46901
415351	0.41000	0.38000	13.91018	14.22192	False	0.09902
417061	0.42000	0.40000	13.80757	14.01339	False	-0.52410

Table M-5. 2016–17 eMPowerME: Delta Analysis Results—Mathematics Grade 7

Item Number	Mean		Delta		Discard	Standardized Difference
	Old	New	Old	New		
123969A	0.40000	0.45000	14.01339	13.50265	False	1.28222
123993A	0.46000	0.47000	13.40173	13.30108	False	-0.68268
124136A	0.35000	0.34000	14.54128	14.64985	False	-1.18915
124343A	0.34000	0.32000	14.64985	14.87080	False	-0.72032
124351A	0.67000	0.62000	11.24035	11.77808	False	1.53761
124358A	0.49000	0.49000	13.10028	13.10028	False	-1.20309
124505A	0.26000	0.20000	15.57338	16.36648	False	1.57337

continued

Item Number	Mean		Delta		Discard	Standardized Difference
	Old	New	Old	New		
124508A	0.71000	0.77000	10.78646	10.04461	False	1.48954
124510A	0.47000	0.46000	13.30108	13.40173	False	-0.91159
124647A	0.59000	0.58000	12.08982	12.19243	False	-0.59775
124715A	0.76000	0.75000	10.17479	10.30204	False	-0.00637
400323	0.28000	0.27000	15.33137	15.45125	False	-1.17025
400873	0.45000	0.42000	13.50265	13.80757	False	-0.06040
400958	0.47000	0.50000	13.30108	13.00000	False	0.17694
400979	0.48000	0.53000	13.20061	12.69892	False	1.03745
400983	0.70000	0.77000	10.90240	10.04461	False	2.03068
400990	0.56000	0.59000	12.39612	12.08982	False	-0.02803
406163	0.42000	0.43000	13.80757	13.70550	False	-0.57413
408567	0.31000	0.35000	14.98340	14.54128	False	1.22363
408597	0.59000	0.56000	12.08982	12.39612	False	0.30168
408632	0.26000	0.27000	15.57338	15.45125	False	-0.04063
408640	0.31000	0.29000	14.98340	15.21354	False	-0.76377
408731	0.85000	0.85000	8.85427	8.85427	False	-0.23551
408734	0.66000	0.69000	11.35015	11.01660	False	-0.17129
408770	0.64000	0.64000	11.56616	11.56616	False	-0.91886
408783	0.41000	0.40000	13.91018	14.01339	False	-1.05380
408790	0.25000	0.22000	15.69796	16.08877	False	-0.23435
410223	0.53000	0.54000	12.69892	12.59827	False	-0.85978
410239	0.69000	0.69000	11.01660	11.01660	False	-0.78038
412082	0.50000	0.45000	13.00000	13.50265	False	0.93929
412118	0.54000	0.53000	12.59827	12.69892	False	-0.73449
412147	0.44000	0.45000	13.60388	13.50265	False	-0.62920
412513	0.74000	0.69000	10.42662	11.01660	False	1.97338

Table M-6. 2016–17 eMPowerME: Delta Analysis Results—Mathematics Grade 8

Item Number	Mean		Delta		Discard	Standardized Difference
	Old	New	Old	New		
126030A	0.35000	0.38000	14.54128	14.22192	False	-0.17791
126395A	0.67000	0.74000	11.24035	10.42662	False	0.28445
126885A	0.74000	0.78000	10.42662	9.91123	False	-0.62116
127148A	0.24000	0.23000	15.82521	15.95539	False	-0.98193
127737A	0.77000	0.76000	10.04461	10.17479	False	0.09196
400177	0.33000	0.33000	14.75965	14.75965	False	-0.90404
400191	0.27000	0.29000	15.45125	15.21354	False	-0.17279
400345	0.34000	0.32000	14.64985	14.87080	False	-0.71627
400730	0.28000	0.24000	15.33137	15.82521	False	-0.20630
400803	0.77000	0.77000	10.04461	10.04461	False	-0.22390
400985	0.35000	0.37000	14.54128	14.32741	False	-0.43387
401024	0.27000	0.25000	15.45125	15.69796	False	-0.83273
401027	0.29000	0.24000	15.21354	15.82521	False	0.10591
401030	0.35000	0.33000	14.54128	14.75965	False	-0.69827
401033	0.32000	0.35000	14.87080	14.54128	False	-0.07968
408518	0.39000	0.48000	14.11728	13.20061	False	1.17670

continued

Item Number	Mean		Delta		Discard	Standardized Difference
	Old	New	Old	New		
408651	0.32000	0.27000	14.87080	15.45125	False	0.10672
408795	0.31000	0.33000	14.98340	14.75965	False	-0.31116
409239	0.64000	0.77000	11.56616	10.04461	False	2.07469
412449	0.69000	0.67000	11.01660	11.24035	False	0.10194
412646	0.44000	0.48000	13.60388	13.20061	False	-0.18367
412662	0.42000	0.43000	13.80757	13.70550	False	-0.86898
412703	0.65000	0.54000	11.45872	12.59827	False	2.22530
412756	0.51000	0.69000	12.89972	11.01660	True	3.24983
412946	0.49000	0.47000	13.10028	13.30108	False	-0.41908
413229	0.79000	0.82000	9.77432	9.33854	False	-0.96002
413290	0.68000	0.70000	11.12920	10.90240	False	-1.01645
413314	0.62000	0.54000	11.77808	12.59827	False	1.37909
413335	0.71000	0.69000	10.78646	11.01660	False	0.16883
414370	0.40000	0.38000	14.01339	14.22192	False	-0.60424
414805	0.56000	0.54000	12.39612	12.59827	False	-0.25857
414880	0.43000	0.40000	13.70550	14.01339	False	-0.29440

Table M-7. 2016–17 eMPowerME: Delta Analysis Results—ELA Grade 3

Item Number	Mean		Delta		Discard	Standardized Difference
	Old	New	Old	New		
129871A	0.23500	0.22000	15.88992	16.08877	False	-0.62522
401182	0.71000	0.73000	10.78646	10.54875	False	-0.34011
401685	0.49000	0.47000	13.10028	13.30108	False	-0.71936
406766	0.25000	0.20000	15.69796	16.36648	False	0.40326
406771	0.57000	0.60000	12.29450	11.98661	False	0.36870
406787	0.63000	0.59000	11.67259	12.08982	False	0.54888
406898	0.73000	0.78000	10.54875	9.91123	False	1.18407
410374	0.53000	0.48000	12.69892	13.20061	False	0.59294
410387	0.71000	0.70000	10.78646	10.90240	False	-0.39844
410396	0.28500	0.29500	15.27221	15.15534	False	0.45595
410415	0.71000	0.69000	10.78646	11.01660	False	0.05626
410420	0.64000	0.62000	11.56616	11.77808	False	-0.23832
410432	0.73000	0.72000	10.54875	10.66863	False	-0.31503
410639	0.50000	0.64000	13.00000	11.56616	True	5.05261
410703	0.89000	0.88000	8.09389	8.30005	False	0.72748
410708	0.60000	0.54000	11.98661	12.59827	False	1.23357
410723	0.47500	0.51500	13.25083	12.84957	False	1.01275
410735	0.24667	0.21333	15.74007	16.17963	False	-0.52034
418618	0.78000	0.80000	9.91123	9.63352	False	-0.43006
418622	0.48000	0.48000	13.20061	13.20061	False	-0.59919
418629	0.54000	0.52000	12.59827	12.79939	False	-0.57516
418639	0.48000	0.47000	13.20061	13.30108	False	-0.99920
418643	0.68000	0.71000	11.12920	10.78646	False	0.17567
418646	0.70000	0.71000	10.90240	10.78646	False	-0.79196
418652	0.57000	0.58000	12.29450	12.19243	False	-0.45077
418659	0.45000	0.43000	13.50265	13.70550	False	-0.82578

continued

Item Number	Mean		Delta		Discard	Standardized Difference
	Old	New	Old	New		
418677	0.39500	0.40000	14.06524	14.01339	False	-0.14654
418699	0.19000	0.16000	16.51159	16.97783	False	-0.63380
421611	0.52000	0.49000	12.79939	13.10028	False	-0.23518
421614	0.54000	0.50000	12.59827	13.00000	False	0.22360
421623	0.60000	0.58000	11.98661	12.19243	False	-0.38231
421651	0.62000	0.59000	11.77808	12.08982	False	0.09883
421656	0.48000	0.47000	13.20061	13.30108	False	-0.99920
421661	0.54000	0.51000	12.59827	12.89972	False	-0.17565
421672	0.60000	0.63000	11.98661	11.67259	False	0.30545
421674	0.44000	0.44000	13.60388	13.60388	False	-0.48437
421676	0.61000	0.59000	11.88272	12.08982	False	-0.34763
421681	0.46000	0.46000	13.40173	13.40173	False	-0.54193
421683	0.57000	0.54000	12.29450	12.59827	False	-0.07999
421895	0.37000	0.34000	14.32741	14.64985	False	-0.58447

Table M-8. 2016–17 eMPowerME: Delta Analysis Results—ELA Grade 4

Item Number	Mean		Delta		Discard	Standardized Difference
	Old	New	Old	New		
128683A	0.46000	0.48000	13.40173	13.20061	False	-1.05854
128686A	0.42000	0.41000	13.80757	13.91018	False	-0.59902
128687A	0.66000	0.62000	11.35015	11.77808	False	0.52919
128689A	0.45000	0.44000	13.50265	13.60388	False	-0.57339
128690A	0.42000	0.36000	13.80757	14.43384	False	0.83573
128692A	0.34000	0.29500	14.64985	15.15534	False	0.42365
128768A	0.23333	0.23333	15.91165	15.91165	False	-1.08294
129528A	0.25500	0.22500	15.63535	16.02166	False	0.00212
130668A	0.61500	0.54000	11.83050	12.59827	False	1.41399
130675A	0.51000	0.55000	12.89972	12.49735	False	-0.55553
130704A	0.61000	0.60000	11.88272	11.98661	False	-0.40998
130706A	0.62000	0.60000	11.77808	11.98661	False	-0.11317
130709A	0.69000	0.71000	11.01660	10.78646	False	-1.20892
130710A	0.70000	0.81000	10.90240	9.48841	False	2.02365
130712A	0.70000	0.68000	10.90240	11.12920	False	0.02129
130728A	0.18000	0.18000	16.66146	16.66146	False	-1.15522
401759	0.59000	0.59000	12.08982	12.08982	False	-0.71458
402538	0.69000	0.69000	11.01660	11.01660	False	-0.61113
402587	0.68000	0.70000	11.12920	10.90240	False	-1.20720
410868	0.26333	0.28667	15.53241	15.25260	False	-0.63756
410911	0.45000	0.61000	13.50265	11.88272	False	2.83852
411246	0.29500	0.34000	15.15534	14.64985	False	-0.05558
411251	0.58000	0.62000	12.19243	11.77808	False	-0.59088
411256	0.45000	0.48000	13.50265	13.20061	False	-0.77233
411261	0.46000	0.56000	13.40173	12.39612	False	1.14566
411268	0.66000	0.63000	11.35015	11.67259	False	0.24016
411283	0.48000	0.55000	13.20061	12.49735	False	0.29787
412876	0.76000	0.79000	10.17479	9.77432	False	-0.82336

continued

Item Number	Mean		Delta		Discard	Standardized Difference
	Old	New	Old	New		
412895	0.37000	0.38000	14.32741	14.22192	False	-1.21928
420633	0.68000	0.61000	11.12920	11.88272	False	1.44256
420639	0.64000	0.64000	11.56616	11.56616	False	-0.66410
420642	0.83000	0.80000	9.18334	9.63352	False	0.79899
420656	0.49000	0.58000	13.10028	12.19243	False	0.84875
420671	0.79000	0.76000	9.77432	10.17479	False	0.60585
420675	0.29000	0.25500	15.21354	15.63535	False	0.14005
420698	0.43000	0.44000	13.70550	13.60388	False	-1.14873
420714	0.54000	0.59000	12.59827	12.08982	False	-0.29395
420723	0.46500	0.49500	13.35138	13.05013	False	-0.78906
420785	0.78000	0.82000	9.91123	9.33854	False	-0.37692
420820	0.41000	0.52000	13.91018	12.79939	False	1.48286
422664	0.61000	0.72000	11.88272	10.66863	False	1.57046

Table M-9. 2016–17 eMPowerME: Delta Analysis Results—ELA Grade 5

Item Number	Mean		Delta		Discard	Standardized Difference
	Old	New	Old	New		
129003A	0.57000	0.58000	12.29450	12.19243	False	-0.85597
129009A	0.36000	0.38000	14.43384	14.22192	False	-0.77657
129011A	0.71000	0.65000	10.78646	11.45872	False	0.90486
129012A	0.61000	0.58000	11.88272	12.19243	False	0.14712
129015A	0.53000	0.64000	12.69892	11.56616	False	1.64152
129019A	0.37500	0.45500	14.27456	13.45215	False	0.56307
129174A	0.61000	0.59000	11.88272	12.08982	False	-0.12037
129178A	0.50000	0.53000	13.00000	12.69892	False	-0.57809
129179A	0.56000	0.58000	12.39612	12.19243	False	-0.72873
129193A	0.40000	0.40000	14.01339	14.01339	False	-0.29600
129195A	0.36000	0.41500	14.43384	13.85881	False	-0.10905
129196A	0.20667	0.18667	16.27217	16.56099	False	0.84310
129198A	0.46000	0.51000	13.40173	12.89972	False	-0.12296
129201A	0.74000	0.73000	10.42662	10.54875	False	-0.59081
129760A	0.50000	0.47000	13.00000	13.30108	False	0.31565
401394	0.60000	0.58000	11.98661	12.19243	False	-0.10595
401398	0.70000	0.70000	10.90240	10.90240	False	-0.82786
402196	0.88000	0.87000	8.30005	8.49444	False	-0.76601
402211	0.68000	0.66000	11.12920	11.35015	False	-0.21310
402279	0.62000	0.61000	11.77808	11.88272	False	-0.40534
402284	0.62000	0.63000	11.77808	11.67259	False	-0.87908
402286	0.56000	0.56000	12.39612	12.39612	False	-0.57249
402288	0.38500	0.46500	14.16950	13.35138	False	0.56987
402908	0.27500	0.29500	15.39104	15.15534	False	-0.67493
410413	0.50000	0.49500	13.00000	13.05013	False	-0.33855
410428	0.64000	0.64000	11.56616	11.56616	False	-0.71438
410440	0.81000	0.80000	9.48841	9.63352	False	-0.69132
410563	0.44000	0.45000	13.60388	13.50265	False	-0.62992
129003A	0.57000	0.58000	12.29450	12.19243	False	-0.85597

continued

Item Number	Mean		Delta		Discard	Standardized Difference
	Old	New	Old	New		
410584	0.60000	0.55000	11.98661	12.49735	False	0.68898
410588	0.50000	0.45000	13.00000	13.50265	False	0.84112
416506	0.65000	0.69000	11.45872	11.01660	False	0.05309
416518	0.62000	0.59000	11.77808	12.08982	False	0.13455
416527	0.30333	0.34000	15.05935	14.64985	False	-0.64752
419292	0.56000	0.61500	12.39612	11.83050	False	0.21480
419298	0.36000	0.61000	14.43384	11.88272	True	5.04251
419302	0.52000	0.53000	12.79939	12.69892	False	-0.76546
419309	0.44000	0.46000	13.60388	13.40173	False	-0.89299
419311	0.53000	0.59000	12.69892	12.08982	False	0.27638
419321	0.72000	0.78000	10.66863	9.91123	False	1.01010
419405	0.80000	0.79000	9.63352	9.77432	False	-0.67773
410584	0.60000	0.55000	11.98661	12.49735	False	0.68898
410588	0.50000	0.45000	13.00000	13.50265	False	0.84112
419416	0.26000	0.26000	15.57338	15.57338	False	-0.02930
419419	0.36000	0.34000	14.43384	14.64985	False	0.33903
419421	0.83000	0.78000	9.18334	9.91123	False	0.77582
419423	0.52000	0.59000	12.79939	12.08982	False	0.52111
422629	0.22000	0.25000	16.08877	15.69796	False	-0.87222

Table M-10. 2016–17 eMPowerME: Delta Analysis Results—ELA Grade 6

Item Number	Mean		Delta		Discard	Standardized Difference
	Old	New	Old	New		
129251A	0.43000	0.55000	13.70550	12.49735	False	0.93612
129252A	0.56000	0.64000	12.39612	11.56616	False	-0.15066
129254A	0.88000	0.88000	8.30005	8.30005	False	-0.23834
129255A	0.67000	0.79000	11.24035	9.77432	False	1.13737
129257A	0.77000	0.89000	10.04461	8.09389	False	2.06821
129258A	0.36000	0.43500	14.43384	13.65463	False	0.05932
129259A	0.46000	0.44000	13.40173	13.60388	False	-0.59011
129379A	0.36000	0.52000	14.43384	12.79939	False	2.04099
131520A	0.34500	0.38500	14.59542	14.16950	False	-0.73328
132116A	0.57000	0.63000	12.29450	11.67259	False	-0.64904
132117A	0.58000	0.73000	12.19243	10.54875	False	1.70204
132118A	0.56000	0.53000	12.39612	12.69892	False	-0.19522
132119A	0.48000	0.60000	13.20061	11.98661	False	0.86853
132122A	0.20250	0.26000	16.33090	15.57338	False	0.31405
401202	0.64000	0.66000	11.56616	11.35015	False	-1.26393
401231	0.53000	0.53000	12.69892	12.69892	False	-0.94550
401886	0.74000	0.73000	10.42662	10.54875	False	-0.29722
401890	0.88000	0.88000	8.30005	8.30005	False	-0.23834
402027	0.50000	0.51000	13.00000	12.89972	False	-1.22625
409362	0.76000	0.75000	10.17479	10.30204	False	-0.24487
409385	0.45000	0.40000	13.50265	14.01339	False	0.10872
409396	0.62000	0.58000	11.77808	12.19243	False	0.16261
409447	0.41000	0.37000	13.91018	14.32741	False	-0.17347

continued

Item Number	Mean		Delta		Discard	Standardized Difference
	Old	New	Old	New		
409458	0.47500	0.47500	13.25083	13.25083	False	-1.03423
409472	0.67000	0.58000	11.24035	12.19243	False	1.49501
409541	0.56000	0.46000	12.39612	13.40173	False	1.43325
409546	0.64000	0.63000	11.56616	11.67259	False	-0.51681
409551	0.61000	0.58000	11.88272	12.19243	False	-0.09669
409556	0.58000	0.65000	12.19243	11.45872	False	-0.40642
409568	0.61000	0.62000	11.88272	11.77808	False	-1.05677
419741	0.59000	0.52000	12.08982	12.79939	False	0.79653
419743	0.52000	0.55000	12.79939	12.49735	False	-1.30907
419745	0.92000	0.94000	7.37971	6.78091	False	-1.47787
419747	0.60000	0.64000	11.98661	11.56616	False	-1.16536
419750	0.31500	0.35000	14.92691	14.54128	False	-0.77336
419754	0.58000	0.54000	12.19243	12.59827	False	0.07628
420218	0.58500	0.74500	12.14119	10.36465	False	2.00167
420235	0.63000	0.63000	11.67259	11.67259	False	-0.78051
420260	0.36000	0.33000	14.43384	14.75965	False	-0.46947
420298	0.44000	0.36000	13.60388	14.43384	False	0.83209

Table M-11. 2016–17 eMPowerME: Delta Analysis Results—ELA Grade 7

Item Number	Mean		Delta		Discard	Standardized Difference
	Old	New	Old	New		
128730A	0.75000	0.79000	10.30204	9.77432	False	0.00544
128731A	0.58000	0.59000	12.19243	12.08982	False	-0.64314
128753A	0.79000	0.76000	9.77432	10.17479	False	0.86543
128756A	0.73000	0.74000	10.54875	10.42662	False	-0.77902
128757A	0.55000	0.63000	12.49735	11.67259	False	0.86201
129214A	0.22500	0.27000	16.02166	15.45125	False	-0.11200
129219A	0.38000	0.38000	14.22192	14.22192	False	-0.22319
401318	0.62000	0.63500	11.77808	11.61950	False	-0.84140
401320	0.73000	0.74000	10.54875	10.42662	False	-0.77902
401802	0.46000	0.46000	13.40173	13.40173	False	-0.25969
401808	0.59000	0.59000	12.08982	12.08982	False	-0.31808
401814	0.70000	0.69000	10.90240	11.01660	False	-0.00405
401816	0.57000	0.59000	12.29450	12.08982	False	-0.96653
402696	0.68000	0.68000	11.12920	11.12920	False	-0.36083
402702	0.49000	0.51000	13.10028	12.89972	False	-0.91740
402708	0.55000	0.56000	12.49735	12.39612	False	-0.62516
402757	0.62000	0.63000	11.77808	11.67259	False	-0.67085
402759	0.32000	0.30000	14.87080	15.09760	False	0.53433
402763	0.60000	0.59000	11.98661	12.08982	False	0.00889
402784	0.74000	0.72000	10.42662	10.66863	False	0.38540
407724	0.58000	0.63000	12.19243	11.67259	False	-0.10403
407738	0.43000	0.51000	13.70550	12.89972	False	0.74721
407741	0.54000	0.72000	12.59827	10.66863	True	4.40699
407754	0.82000	0.78000	9.33854	9.91123	False	1.39929
407760	0.65000	0.67000	11.45872	11.24035	False	-1.03988

continued

Item Number	Mean		Delta		Discard	Standardized Difference
	Old	New	Old	New		
407765	0.67000	0.69000	11.24035	11.01660	False	-1.01288
407798	0.30000	0.24500	15.09760	15.76124	False	1.94777
407845	0.16500	0.24250	16.89646	15.79313	False	1.56111
409401	0.56000	0.56000	12.39612	12.39612	False	-0.30445
409409	0.51000	0.49000	12.89972	13.10028	False	0.36226
409464	0.43000	0.42000	13.70550	13.80757	False	0.08176
409493	0.54000	0.57000	12.59827	12.29450	False	-0.81627
409501	0.57000	0.61000	12.29450	11.88272	False	-0.45573
409517	0.44500	0.45500	13.55322	13.45215	False	-0.57762
409613	0.28500	0.30000	15.27221	15.09760	False	-0.73738
409622	0.71000	0.75000	10.78646	10.30204	False	-0.15525
409628	0.69000	0.73000	11.01660	10.54875	False	-0.21872
409639	0.76000	0.79000	10.17479	9.77432	False	-0.39771
409660	0.89000	0.91000	8.09389	7.63698	False	-0.12380
409672	0.38000	0.41000	14.22192	13.91018	False	-0.86289
416739	0.63000	0.60000	11.67259	11.98661	False	0.67219
416762	0.45000	0.47000	13.50265	13.30108	False	-0.90275
416766	0.63000	0.72000	11.67259	10.66863	False	1.47436
416774	0.43500	0.48500	13.65463	13.15043	False	-0.21935
416793	0.24250	0.29500	15.79313	15.15534	False	0.11464

Table M-12. 2016–17 eMPowerME: Delta Analysis Results—ELA Grade 8

Item Number	Mean		Delta		Discard	Standardized Difference
	Old	New	Old	New		
131175A	0.70000	0.74000	10.90240	10.42662	False	0.54504
131191A	0.58000	0.55000	12.19243	12.49735	False	0.13218
131192A	0.70000	0.74000	10.90240	10.42662	False	0.54504
131193A	0.58000	0.60000	12.19243	11.98661	False	-0.44021
131194A	0.41000	0.40000	13.91018	14.01339	False	-0.56815
131195A	0.76000	0.75000	10.17479	10.30204	False	-0.53187
131197A	0.26500	0.29500	15.51202	15.15534	False	0.05638
131198A	0.39500	0.36000	14.06524	14.43384	False	0.38549
402077	0.32000	0.34000	14.87080	14.64985	False	-0.42176
402079	0.51000	0.51000	12.89972	12.89972	False	-0.95173
402111	0.83000	0.84000	9.18334	9.02217	False	-0.56007
402116	0.78000	0.78000	9.91123	9.91123	False	-0.99167
402118	0.64000	0.64000	11.56616	11.56616	False	-0.96955
402129	0.75000	0.75000	10.30204	10.30204	False	-0.98645
402133	0.52000	0.50000	12.79939	13.00000	False	-0.23374
402209	0.66000	0.66000	11.35015	11.35015	False	-0.97244
402213	0.60000	0.58000	11.98661	12.19243	False	-0.22595
409754	0.60000	0.55000	11.98661	12.49735	False	0.86741
409773	0.44000	0.46000	13.60388	13.40173	False	-0.47224
409789	0.51000	0.44000	12.89972	13.60388	False	1.57311
409803	0.58000	0.51000	12.19243	12.89972	False	1.57494
409826	0.53000	0.51000	12.69892	12.89972	False	-0.23440

continued

Item Number	Mean		Delta		Discard	Standardized Difference
	Old	New	Old	New		
409832	0.19500	0.20000	16.43847	16.36648	False	-0.97682
418826	0.52000	0.52500	12.79939	12.74917	False	-1.00625
420872	0.66000	0.67000	11.35015	11.24035	False	-0.77322
420905	0.39000	0.39000	14.11728	14.11728	False	-0.93546
420913	0.43000	0.42000	13.70550	13.80757	False	-0.57495
420925	0.56000	0.52000	12.39612	12.79939	False	0.48750
420929	0.44000	0.48000	13.60388	13.20061	False	0.24891
420946	0.70000	0.65000	10.90240	11.45872	False	1.01634
420952	0.61000	0.71000	11.88272	10.78646	False	2.75677
420970	0.66000	0.67000	11.35015	11.24035	False	-0.77322
420986	0.44500	0.54500	13.55322	12.54785	False	2.40853
420990	0.25750	0.31000	15.60429	14.98340	False	1.00250

Table M-13. 2016–17 eMPowerME: Rescore Analysis Results—ELA Grade 3

Item Number	Max	Mean		Standard Deviation		Effect Size	Discard
		Old	New	Old	New		
129871A	2	0.55941	0.56436	0.52683	0.54482	0.00940	False
406766	2	0.50495	0.37624	0.57517	0.53442	-0.22378	False
410735	3	0.81951	0.79512	0.58712	0.53042	-0.04154	False
418699	3	0.64356	0.57426	0.61627	0.62846	-0.11246	False

Table M-14. 2016–17 eMPowerME: Rescore Analysis Results—ELA Grade 4

Item Number	Max	Mean		Standard Deviation		Effect Size	Discard
		Old	New	Old	New		
128768A	3	0.76355	0.78818	0.86359	0.75088	0.02852	False
129528A	2	0.52195	0.56098	0.71109	0.66601	0.05488	False
130728A	2	0.46907	0.57216	0.70643	0.70340	0.14594	False
410868	3	0.94581	1.02956	0.48951	0.59629	0.17108	False

Table M-15. 2016–17 eMPowerME: Rescore Analysis Results—ELA Grade 5

Item Number	Max	Mean		Standard Deviation		Effect Size	Discard
		Old	New	Old	New		
129019A	2	0.70244	0.78049	0.56381	0.59045	0.13843	False
129196A	3	0.52683	0.68293	0.65343	0.81767	0.23889	False
416527	3	0.95122	0.94146	0.90617	0.90559	-0.01077	False
422629	2	0.52970	0.55446	0.70648	0.72586	0.03504	False

Table M-16. 2016–17 eMPowerME: Rescore Analysis Results—ELA Grade 6

Item Number	*Max*	*Mean*		*Standard Deviation*		*Effect Size*	*Discard*
		Old	*New*	*Old*	*New*		
131520A	2	0.78537	0.91707	0.70208	0.69870	0.18759	False
132122A	4	1.07960	0.98010	0.81464	0.98975	-0.12214	False
401568	4	1.24390	1.27805	0.80988	0.72474	0.04216	False
420298	2	0.76961	0.79902	0.74335	0.63850	0.03957	False

Table M-17. 2016–17 eMPowerME: Rescore Analysis Results—ELA Grade 7

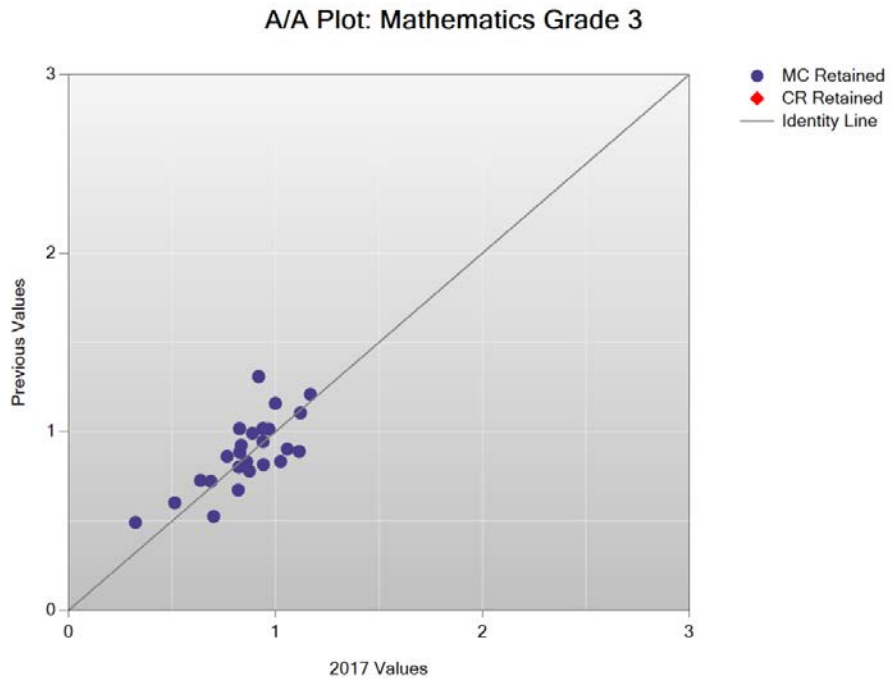
Item Number	*Max*	*Mean*		*Standard Deviation*		*Effect Size*	*Discard*
		Old	*New*	*Old*	*New*		
129214A	2	0.56585	0.66341	0.65064	0.67073	0.14995	False
407845	4	0.67317	0.87317	0.88313	0.98693	0.22647	False
416793	4	1.03415	1.48293	0.81878	0.94762	0.54811	True
407798	2	0.55610	0.36098	0.62074	0.53910	-0.31434	False

Table M-18. 2016–17 eMPowerME: Rescore Analysis Results—ELA Grade 8

Item Number	*Max*	*Mean*		*Standard Deviation*		*Effect Size*	*Discard*
		Old	*New*	*Old*	*New*		
130644A	2	1.02439	0.97561	0.64503	0.68912	-0.07562	False
131197A	4	0.90686	0.95588	0.82220	0.87269	0.05962	False
131198A	2	0.84236	0.77833	0.51201	0.61750	-0.12507	False
420990	4	1.05366	0.95122	0.81171	0.83288	-0.12620	False

APPENDIX N—α-PLOTS AND b-PLOTS

Figure N-1. 2016–17 eMPowerME: Grade 3 Mathematics Plots
Top: *a*-Plot Bottom: *b*-Plot



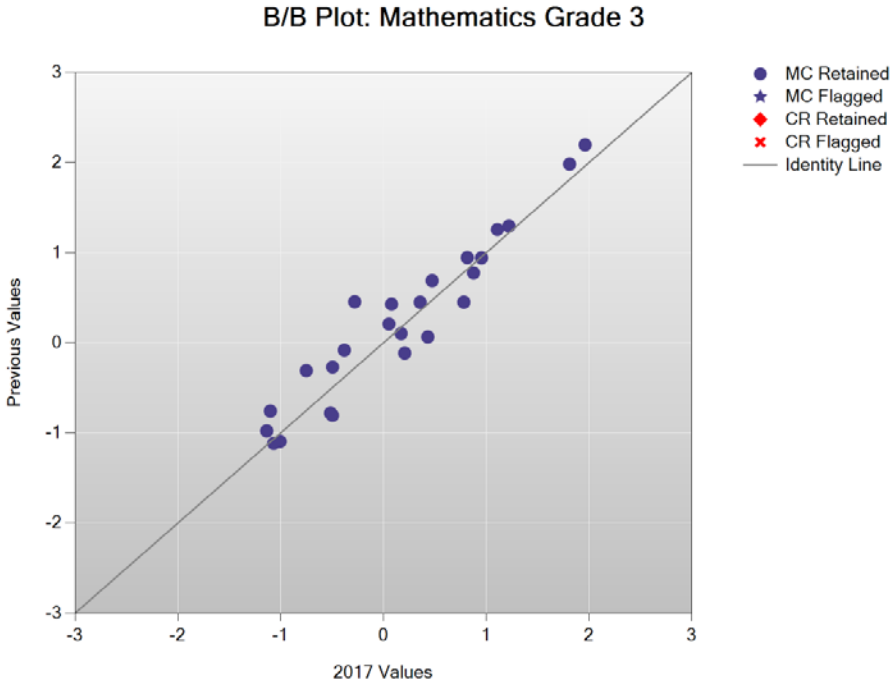
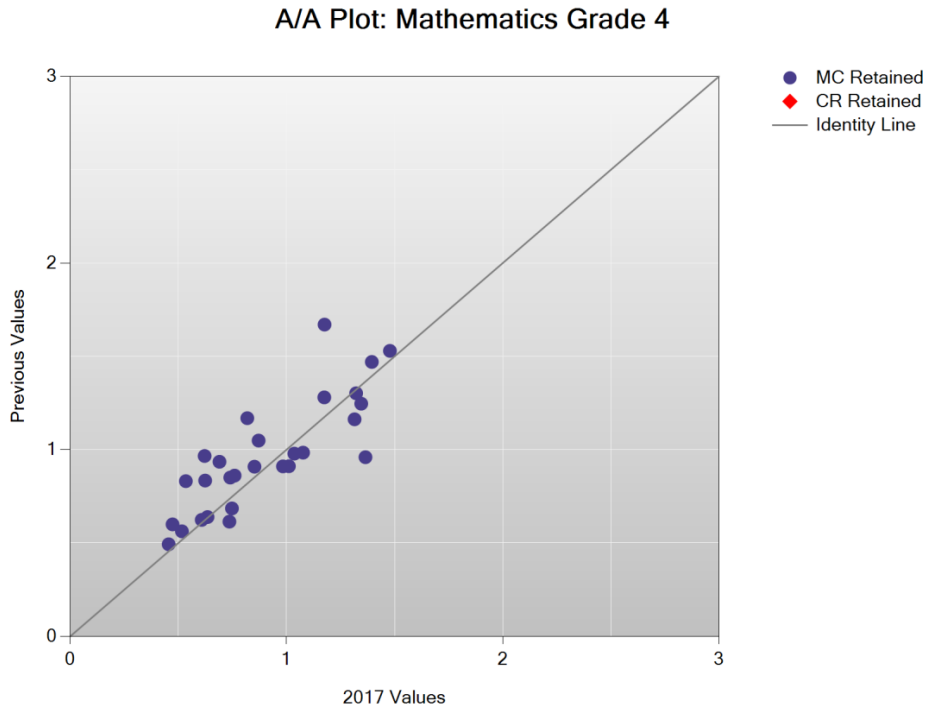


Figure N-2. 2016–17 eMPowerME: Grade 4 Mathematics Plots
Top: *α*-Plot Bottom: *b*-Plot



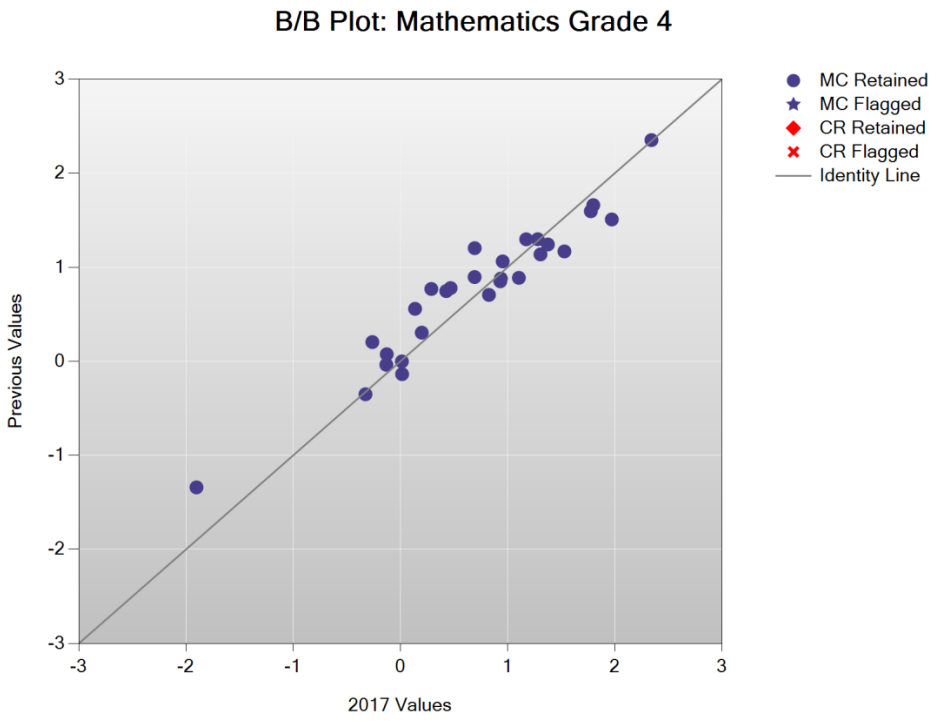
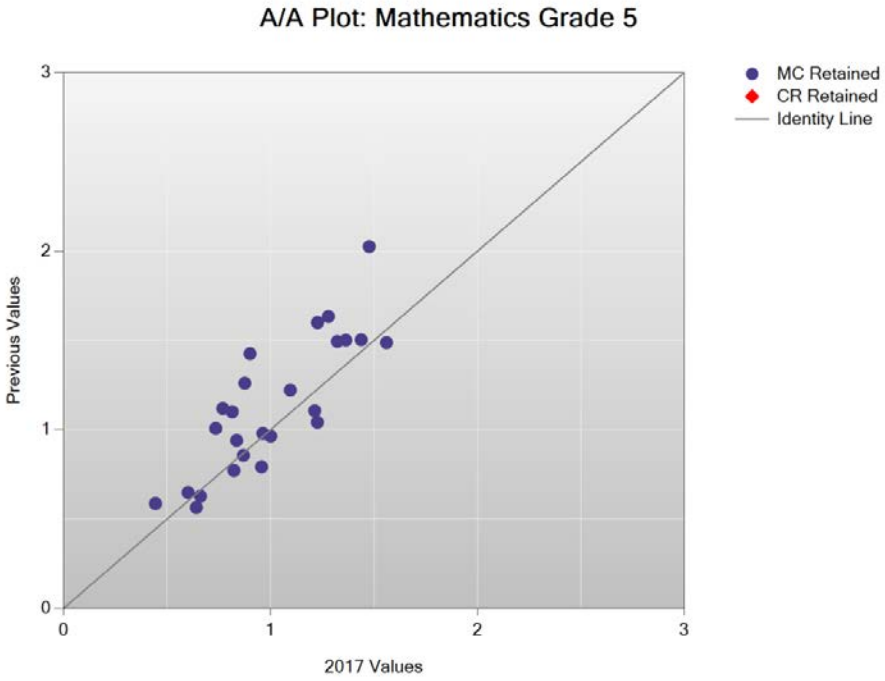


Figure N-3. 2016–17 eMPowerME: Grade 5 Mathematics Plots
Top: *α*-Plot Bottom: *b*-Plot



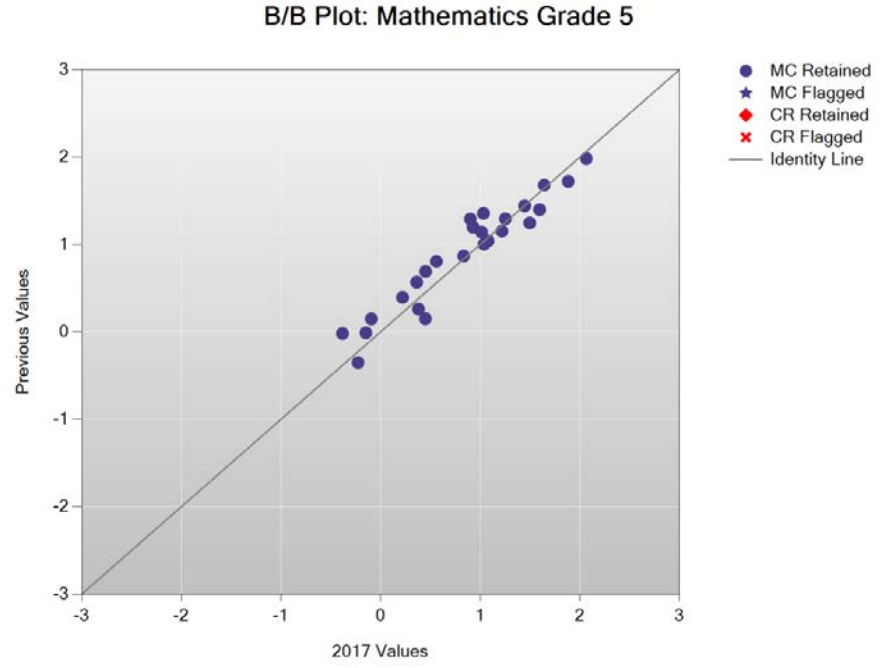
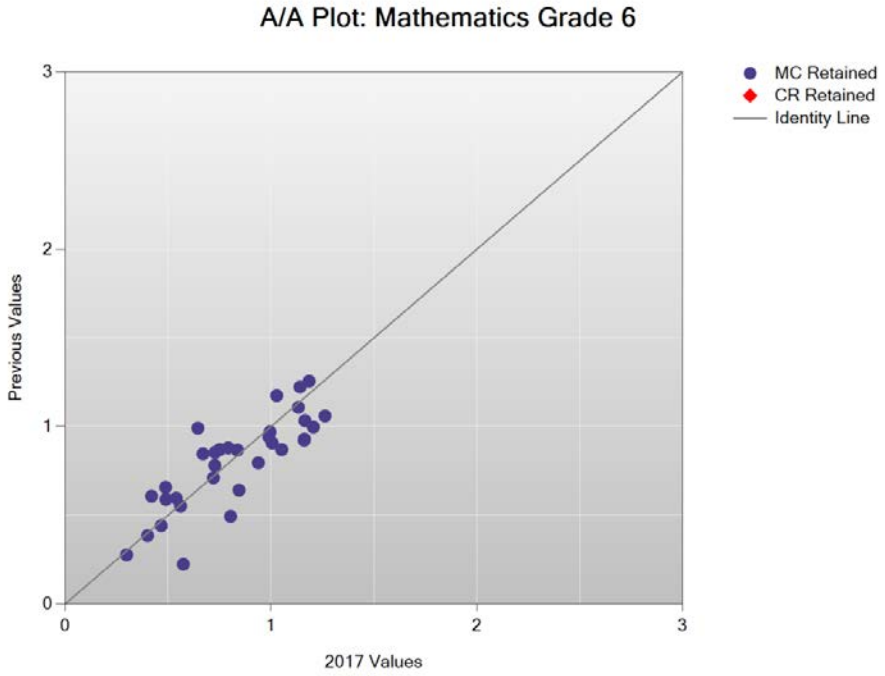


Figure N-4. 2016–17 eMPowerME: Grade 6 Mathematics Plots
Top: *α*-Plot Bottom: *b*-Plot



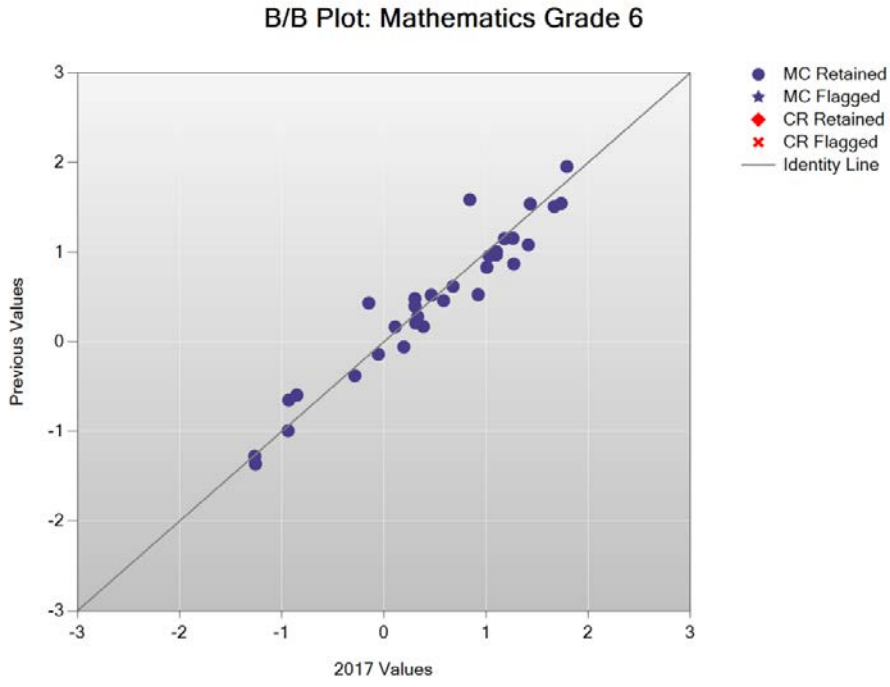
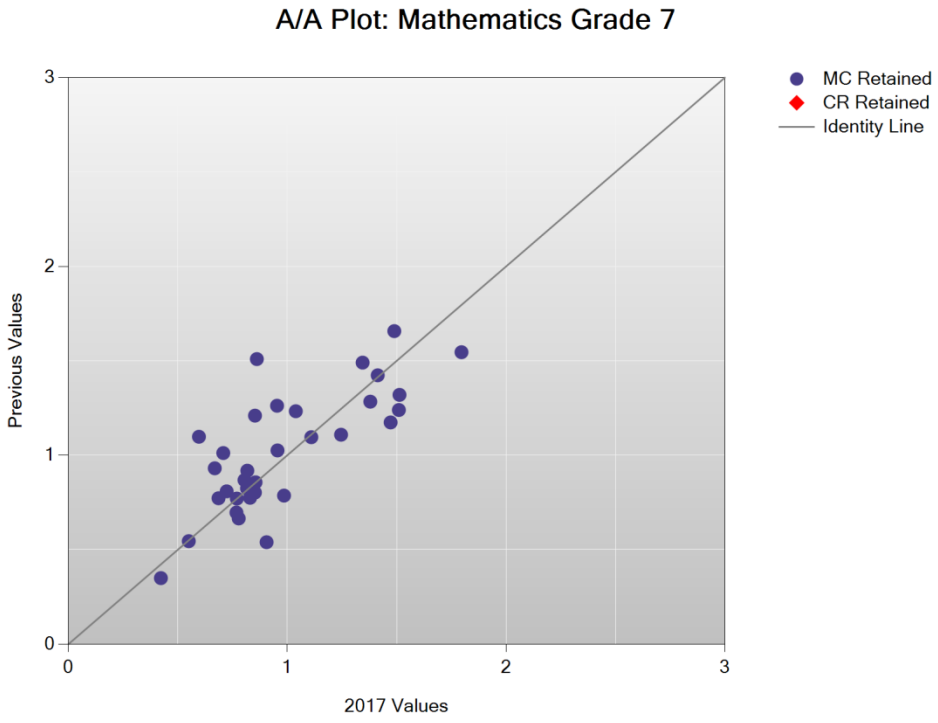


Figure N-5. 2016–17 eMPowerME: Grade 7 Mathematics Plots
Top: *a*-Plot Bottom: *b*-Plot



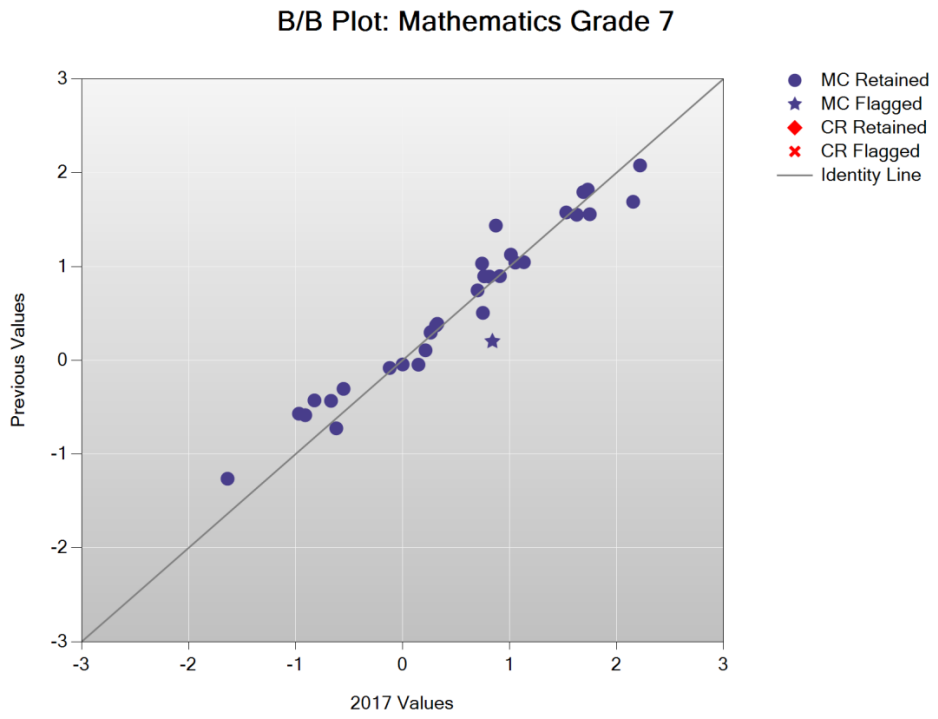
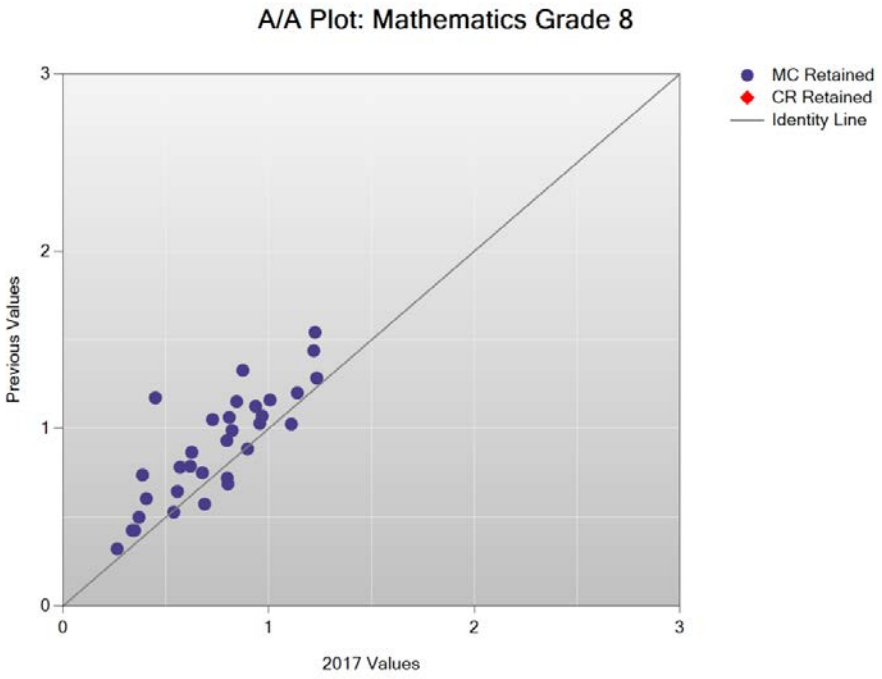


Figure N-6. 2016–17 eMPowerME: Grade 8 Mathematics Plots
Top: *α*-Plot Bottom: *b*-Plot



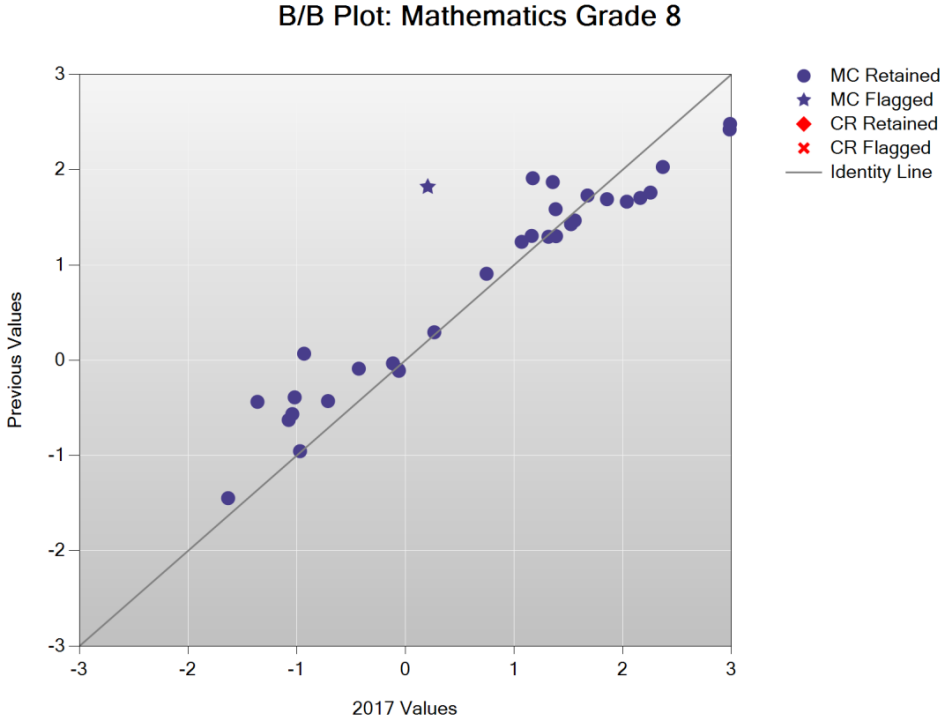
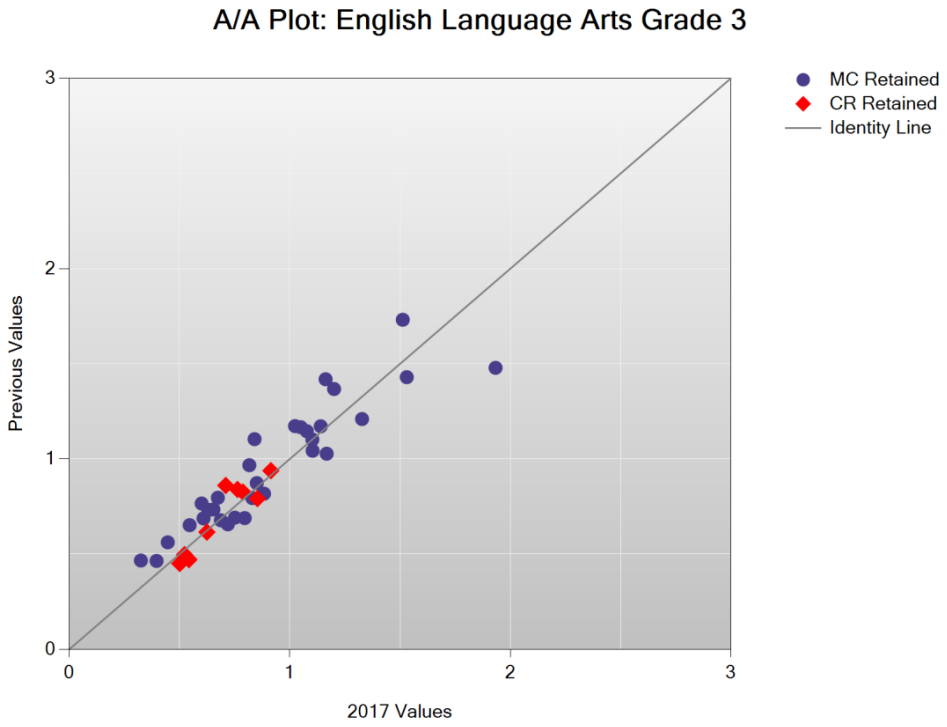


Figure N-7. 2016–17 eMPowerME: Grade 3 ELA Plots
Top: *a*-Plot Bottom: *b*-Plot



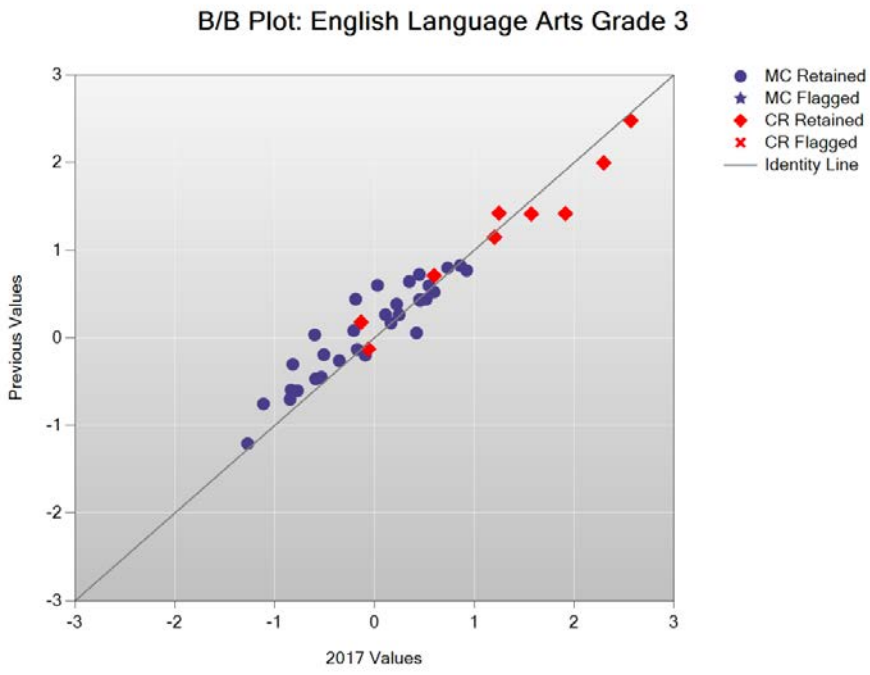
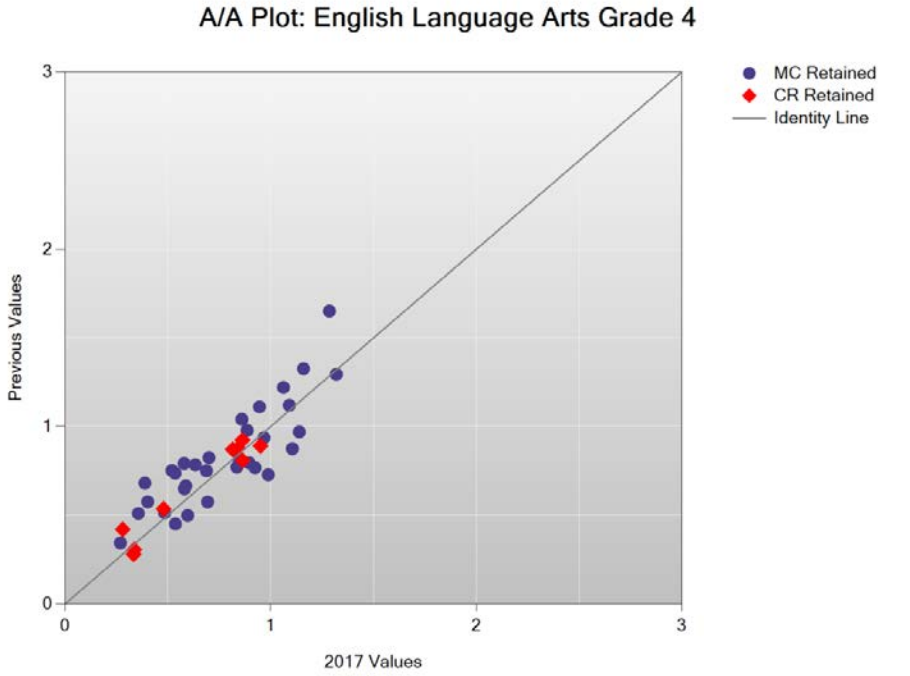


Figure N-8. 2016–17 eMPowerME: Grade 4 ELA Plots
Top: *a*-Plot Bottom: *b*-Plot



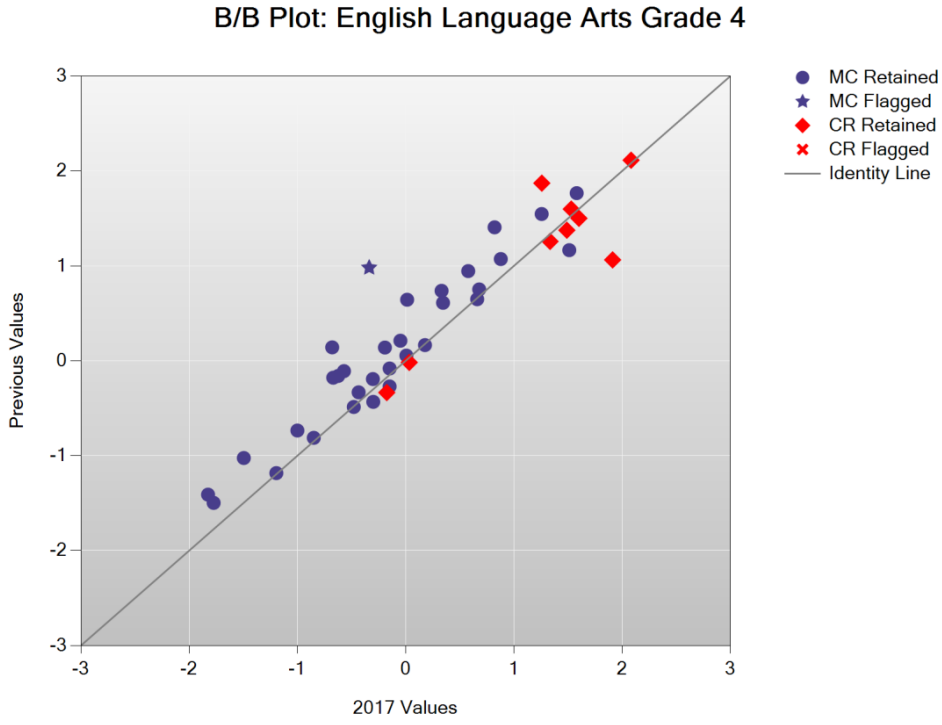
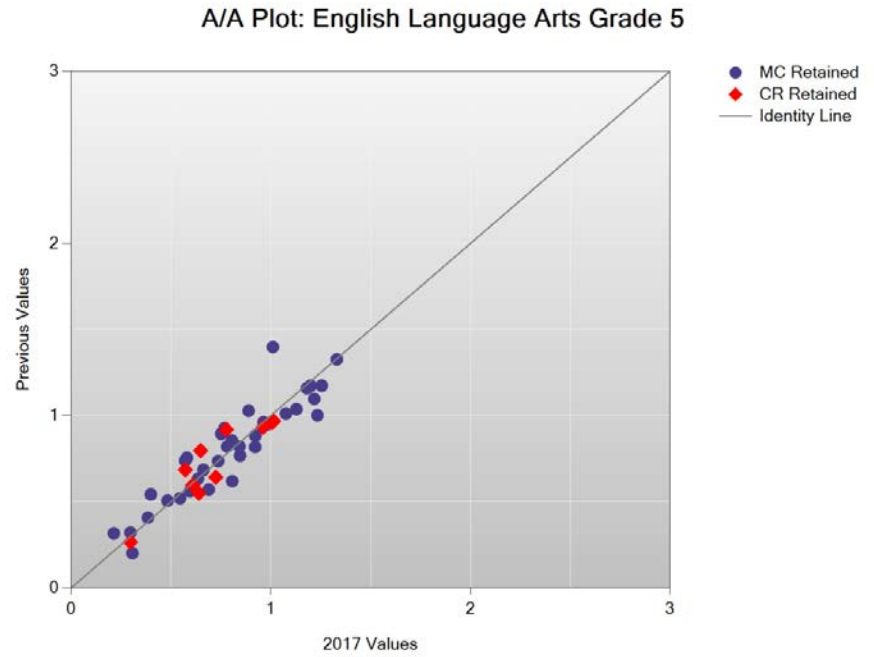


Figure N-9. 2016–17 eMPowerME: Grade 5 ELA Plots
Top: *a*-Plot Bottom: *b*-Plot



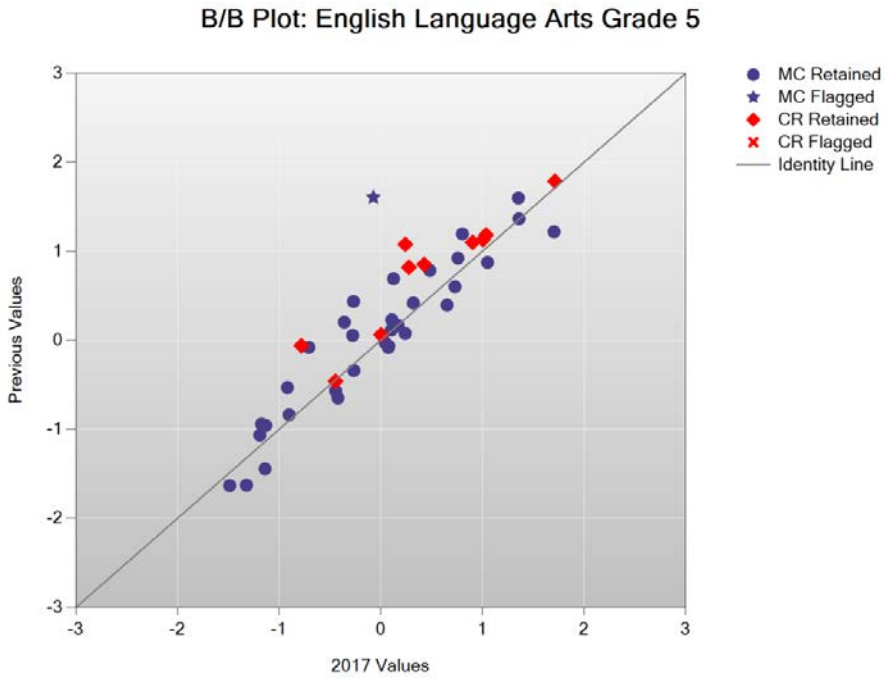
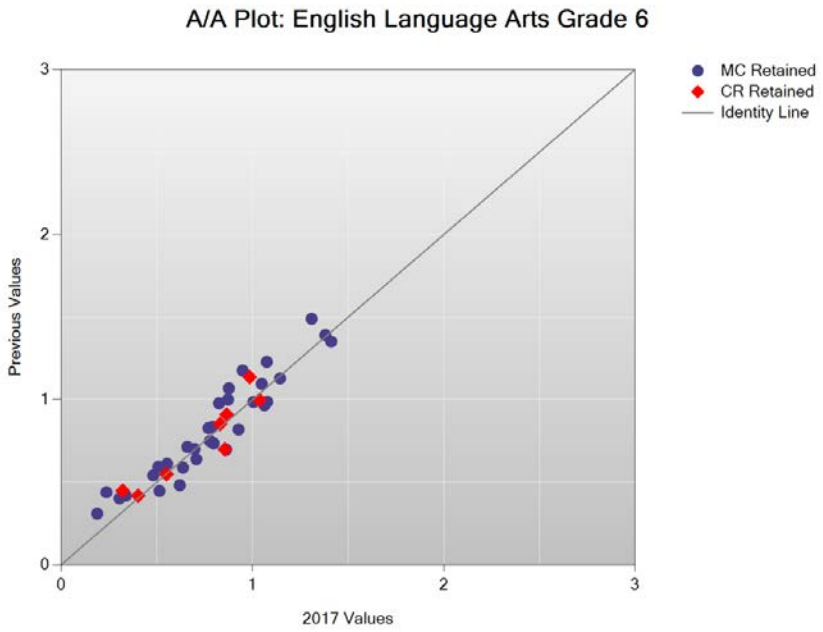


Figure N-10. 2016–17 eMPowerME: Grade 6 ELA Plots
Top: *α*-Plot Bottom: *b*-Plot



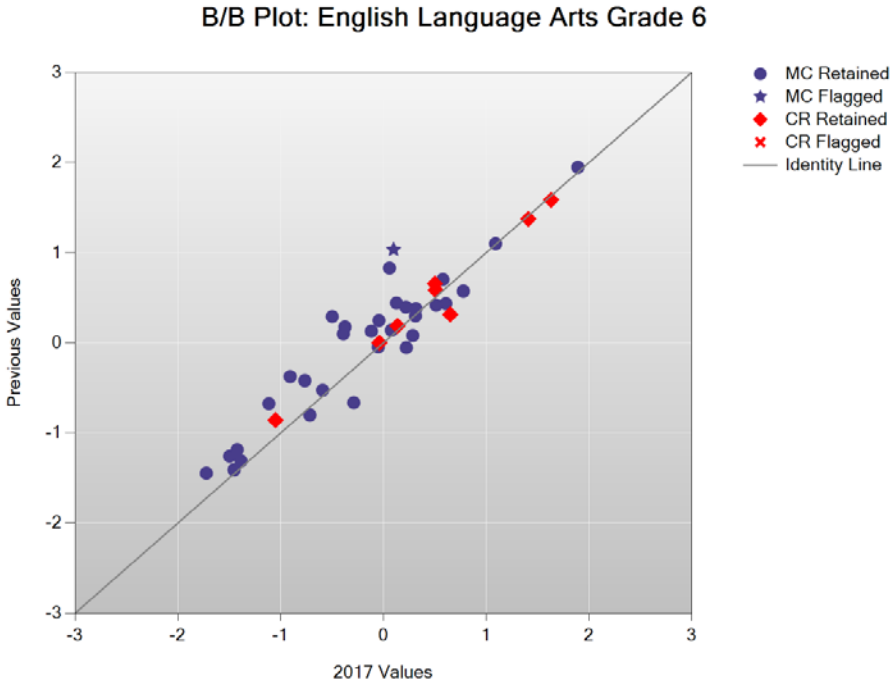
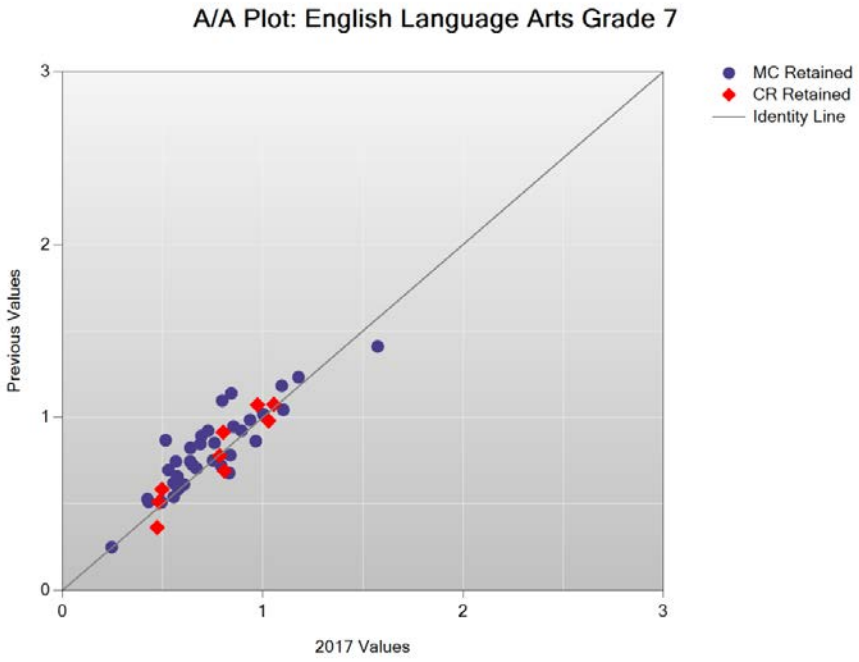


Figure N-11. 2016–17 eMPowerME: Grade 7 ELA Plots
Top: *a*-Plot Bottom: *b*-Plot



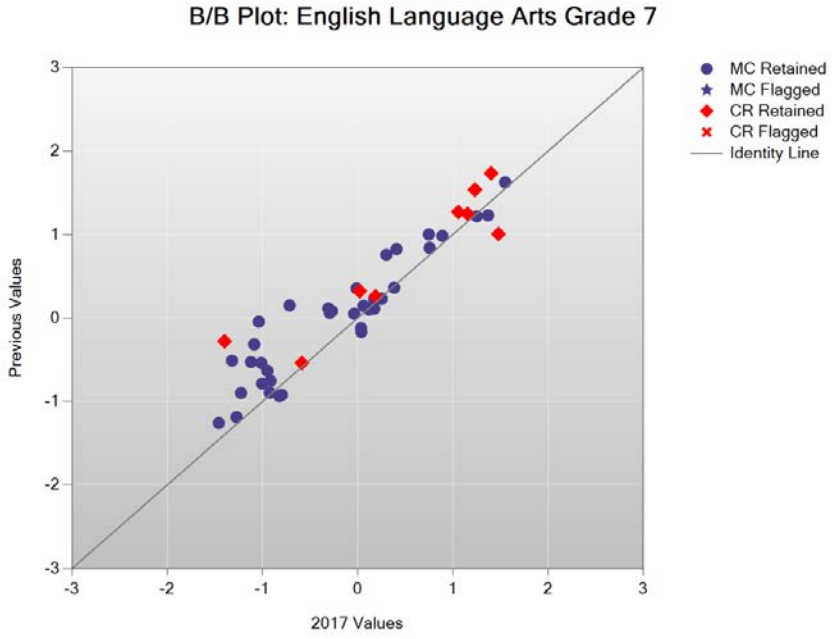
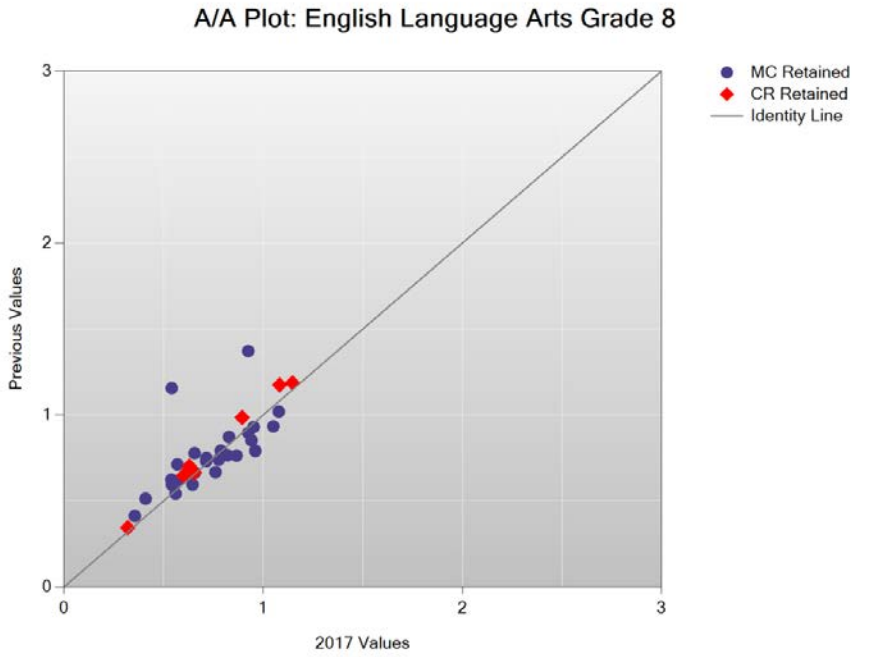
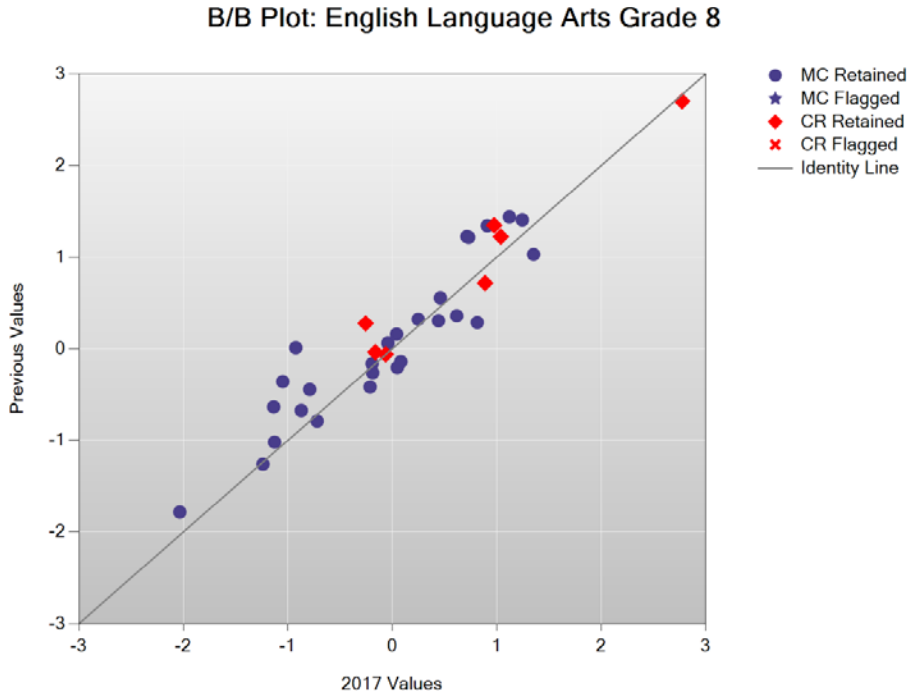


Figure N-12. 2016–17 eMPowerME: Grade 8 ELA Plots
Top: *α*-Plot Bottom: *b*-Plot





APPENDIX O—RAW TO SCALED SCORE LOOK-UP TABLES

Table O-1. 2016–17 eMPowerME: Raw to Scaled Score Correspondence
Mathematics Grade 3

Raw Score	2016–17			2015–16		
	Scaled Score	Standard Error	Performance Level	Scaled Score	Standard Error	Performance Level
0	300	10.0	1	300	10.0	1
1	300	10.0	1	300	10.0	1
2	300	10.0	1	300	10.0	1
3	300	10.0	1	300	10.0	1
4	300	10.0	1	300	10.0	1
5	300	10.0	1	300	10.0	1
6	300	10.0	1	300	10.0	1
7	311	10.0	1	324	10.0	1
8	323	10.0	1	332	10.0	1
9	329	9.2	1	337	8.1	1
10	333	7.5	1	340	6.9	1
11	337	6.6	1	343	6.1	1
12	339	5.9	1	346	5.6	1
13	342	5.5	1	348	5.3	2
14	344	5.2	1	350	5.0	2
15	346	5.0	1	352	4.8	2
16	347	4.8	2	354	4.6	2
17	349	4.7	2	355	4.5	2
18	351	4.6	2	357	4.4	2
19	352	4.5	2	359	4.3	2
20	354	4.4	2	360	4.2	3
21	355	4.3	2	362	4.2	3
22	357	4.3	2	363	4.2	3
23	358	4.2	2	365	4.1	3
24	359	4.2	2	366	4.1	3
25	361	4.1	3	368	4.1	3
26	362	4.1	3	369	4.1	3
27	363	4.1	3	370	4.1	3
28	365	4.0	3	372	4.1	3
29	366	4.0	3	373	4.1	3
30	367	4.0	3	375	4.1	3
31	369	4.0	3	376	4.1	3
32	370	4.0	3	378	4.1	4
33	371	4.0	3	380	4.2	4
34	373	4.0	3	381	4.2	4
35	374	4.0	3	383	4.2	4
36	375	4.1	3	385	4.3	4
37	377	4.1	3	386	4.3	4
38	378	4.2	4	388	4.4	4
39	380	4.3	4	390	4.5	4
40	382	4.4	4	390	4.7	4
41	383	4.5	4	390	4.9	4
42	385	4.6	4	390	5.2	4
43	387	4.8	4	390	5.6	4
44	389	5.0	4	390	6.2	4

continued

Raw Score	2016–17			2015–16		
	Scaled Score	Standard Error	Performance Level	Scaled Score	Standard Error	Performance Level
45	390	5.3	4	390	7.3	4
46	390	5.7	4	390	9.4	4
47	390	6.3	4	390	10.0	4
48	390	7.2	4	390	10.0	4
45	390	9.1	4	390	7.3	4
46	390	10.0	4	390	9.4	4
47	390	10.0	4	390	10.0	4
48	390	5.3	4	390	10.0	4
49	390	5.7	4	N/A	N/A	N/A
50	390	6.3	4	N/A	N/A	N/A
51	390	7.2	4	N/A	N/A	N/A

Table O-2. 2016–17 eMPowerME: Raw to Scaled Score Correspondence
Mathematics Grade 4

Raw Score	2016–17			2015–16		
	Scaled Score	Standard Error	Performance Level	Scaled Score	Standard Error	Performance Level
0	400	10.0	1	400	10.0	1
1	400	10.0	1	400	10.0	1
2	400	10.0	1	400	10.0	1
3	400	10.0	1	400	10.0	1
4	400	10.0	1	400	10.0	1
5	400	10.0	1	400	10.0	1
6	400	10.0	1	400	10.0	1
7	415	10.0	1	400	10.0	1
8	427	10.0	1	422	10.0	1
9	434	7.8	1	432	10.0	1
10	438	6.5	1	438	8.8	1
11	441	5.9	1	442	7.5	1
12	444	5.5	1	445	6.6	2
13	446	5.2	2	448	6.0	2
14	448	4.9	2	451	5.5	2
15	450	4.6	2	453	5.1	2
16	452	4.4	2	455	4.8	2
17	453	4.2	2	457	4.5	2
18	455	4.0	2	458	4.3	2
19	456	3.9	2	459	4.1	2
20	458	3.8	2	461	4.0	3
21	459	3.7	2	463	3.9	3
22	461	3.7	3	464	3.8	3
23	462	3.6	3	466	3.8	3
24	463	3.6	3	467	3.7	3
25	465	3.6	3	468	3.6	3
26	466	3.6	3	470	3.6	3
27	467	3.6	3	471	3.5	3
28	468	3.6	3	472	3.5	3
29	470	3.6	3	473	3.4	3

continued

Raw Score	2016–17			2015–16		
	Scaled Score	Standard Error	Performance Level	Scaled Score	Standard Error	Performance Level
30	471	3.7	3	475	3.4	4
31	472	3.7	3	476	3.4	4
32	474	3.7	3	477	3.3	4
33	475	3.7	4	478	3.3	4
34	476	3.8	4	480	3.3	4
35	478	3.8	4	481	3.3	4
36	479	3.9	4	482	3.4	4
37	481	4.0	4	483	3.4	4
38	482	4.1	4	485	3.5	4
39	484	4.2	4	486	3.6	4
40	486	4.3	4	488	3.7	4
41	488	4.5	4	490	3.9	4
42	490	4.7	4	490	4.1	4
43	490	4.9	4	490	4.4	4
44	490	5.2	4	490	4.8	4
45	490	5.7	4	490	5.2	4
46	490	6.3	4	490	5.8	4
47	490	7.2	4	490	6.8	4
48	490	8.8	4	490	8.7	4
49	490	10.0	4	490	9.1	4
50	490	10.0	4	490	9.1	4

Table O-3. 2016–17 eMPowerME: Raw to Scaled Score Correspondence
Mathematics Grade 5

Raw Score	2016–17			2015–16		
	Scaled Score	Standard Error	Performance Level	Scaled Score	Standard Error	Performance Level
0	500	10.0	1	500	10.0	1
1	500	10.0	1	500	10.0	1
2	500	10.0	1	500	10.0	1
3	500	10.0	1	500	10.0	1
4	500	10.0	1	500	10.0	1
5	500	10.0	1	500	10.0	1
6	500	10.0	1	500	10.0	1
7	522	10.0	1	502	10.0	1
8	531	10.0	1	527	10.0	1
9	536	7.8	1	535	9.7	1
10	539	6.6	1	540	7.8	1
11	542	5.8	1	544	6.8	2
12	544	5.3	2	547	6.1	2
13	546	4.9	2	549	5.6	2
14	548	4.6	2	551	5.2	2
15	550	4.4	2	553	4.9	2
16	551	4.3	2	555	4.6	2
17	553	4.1	2	556	4.4	2
18	554	4.0	2	558	4.2	2
19	556	3.9	2	559	4.1	2

continued

Raw Score	2016–17			2015–16		
	Scaled Score	Standard Error	Performance Level	Scaled Score	Standard Error	Performance Level
20	557	3.8	2	561	4.0	3
21	558	3.8	2	562	3.9	3
22	559	3.7	2	563	3.8	3
23	561	3.7	3	564	3.7	3
24	562	3.6	3	565	3.6	3
25	563	3.6	3	567	3.5	3
26	564	3.5	3	568	3.5	3
27	565	3.5	3	569	3.4	3
28	566	3.4	3	570	3.3	3
29	567	3.4	3	571	3.3	3
30	569	3.4	3	572	3.2	3
31	570	3.3	3	573	3.2	4
32	571	3.3	3	574	3.2	4
33	572	3.3	3	575	3.2	4
34	573	3.3	4	576	3.2	4
35	574	3.3	4	577	3.2	4
36	575	3.3	4	578	3.2	4
37	576	3.3	4	579	3.2	4
38	577	3.3	4	581	3.2	4
39	579	3.4	4	582	3.3	4
40	580	3.4	4	583	3.4	4
41	581	3.5	4	584	3.5	4
42	583	3.6	4	586	3.7	4
43	584	3.8	4	587	3.9	4
44	586	4.0	4	589	4.1	4
45	588	4.3	4	590	4.4	4
46	590	4.7	4	590	4.9	4
47	590	5.3	4	590	5.4	4
48	590	6.3	4	590	6.2	4
49	590	8.2	4	590	7.4	4
50	590	10.0	4	590	9.3	4
51	590	10.0	4	590	9.3	4
52	N/A	N/A	N/A	590	9.3	4

Table O-4. 2016–17 eMPowerME: Raw to Scaled Score Correspondence
Mathematics Grade 6

Raw Score	2016–17			2015–16		
	Scaled Score	Standard Error	Performance Level	Scaled Score	Standard Error	Performance Level
0	600	10.0	1	600	10.0	1
1	600	10.0	1	600	10.0	1
2	600	10.0	1	600	10.0	1
3	600	10.0	1	600	10.0	1
4	600	10.0	1	600	10.0	1
5	600	10.0	1	600	10.0	1
6	600	10.0	1	600	10.0	1
7	600	10.0	1	600	10.0	1

continued

Raw Score	2016–17			2015–16		
	Scaled Score	Standard Error	Performance Level	Scaled Score	Standard Error	Performance Level
8	616	10.0	1	614	10.0	1
9	624	10.0	1	624	10.0	1
10	629	8.4	1	630	8.3	1
11	633	7.3	1	634	7.2	1
12	636	6.5	1	637	6.5	1
13	639	5.9	1	640	6.2	1
14	641	5.5	1	643	5.9	1
15	643	5.1	1	645	5.6	1
16	645	4.8	1	648	5.4	2
17	647	4.6	2	650	5.2	2
18	649	4.4	2	652	5.0	2
19	650	4.3	2	654	4.8	2
20	652	4.1	2	656	4.7	2
21	653	4.0	2	658	4.5	2
22	654	4.0	2	659	4.4	2
23	656	3.9	2	661	4.3	3
24	657	3.8	2	663	4.3	3
25	658	3.8	2	664	4.2	3
26	659	3.7	2	666	4.2	3
27	661	3.7	3	667	4.2	3
28	662	3.6	3	669	4.1	3
29	663	3.6	3	670	4.1	3
30	664	3.6	3	672	4.1	4
31	666	3.6	3	673	4.1	4
32	667	3.5	3	675	4.0	4
33	668	3.5	3	676	4.0	4
34	669	3.5	3	677	3.9	4
35	670	3.5	3	679	3.9	4
36	672	3.5	4	680	3.9	4
37	673	3.5	4	682	3.8	4
38	674	3.6	4	683	3.8	4
39	676	3.6	4	685	3.8	4
40	677	3.6	4	686	3.8	4
41	678	3.7	4	688	3.8	4
42	680	3.7	4	689	3.9	4
43	681	3.8	4	690	4.0	4
44	683	3.9	4	690	4.1	4
45	685	4.1	4	690	4.4	4
46	687	4.3	4	690	4.7	4
47	689	4.7	4	690	5.3	4
48	690	5.1	4	690	6.0	4
49	690	5.8	4	690	6.9	4
50	690	6.9	4	690	7.4	4
51	690	8.5	4	690	7.4	4
52	690	9.8	4	690	7.4	4
53	690	9.8	4	690	7.4	4
54	690	9.8	4	690	7.4	4

Table O-5. 2016–17 eMPowerME: Raw to Scaled Score Correspondence
Mathematics Grade 7

Raw Score	2016–17			2015–16		
	Scaled Score	Standard Error	Performance Level	Scaled Score	Standard Error	Performance Level
0	700	10.0	1	700	10.0	1
1	700	10.0	1	700	10.0	1
2	700	10.0	1	700	10.0	1
3	700	10.0	1	700	10.0	1
4	700	10.0	1	700	10.0	1
5	700	10.0	1	700	10.0	1
6	700	10.0	1	700	10.0	1
7	700	10.0	1	715	10.0	1
8	711	10.0	1	731	10.0	1
9	724	10.0	1	738	9.0	1
10	731	9.2	1	743	7.2	1
11	735	7.6	1	746	6.2	1
12	739	6.6	1	749	5.7	2
13	741	6.0	1	752	5.3	2
14	744	5.6	1	754	5.0	2
15	746	5.2	1	756	4.8	2
16	748	4.9	2	758	4.6	2
17	750	4.7	2	760	4.4	3
18	751	4.5	2	762	4.3	3
19	753	4.3	2	763	4.1	3
20	754	4.1	2	765	4.0	3
21	755	4.0	2	766	3.9	3
22	757	3.8	2	768	3.8	3
23	758	3.7	2	769	3.8	3
24	759	3.6	2	771	3.7	3
25	760	3.5	3	772	3.7	3
26	761	3.4	3	773	3.6	3
27	762	3.3	3	775	3.6	4
28	764	3.3	3	776	3.6	4
29	765	3.2	3	777	3.6	4
30	766	3.2	3	779	3.6	4
31	767	3.1	3	780	3.6	4
32	768	3.1	3	782	3.7	4
33	769	3.1	3	783	3.7	4
34	770	3.1	3	785	3.8	4
35	771	3.1	3	786	3.9	4
36	772	3.1	3	788	4.0	4
37	773	3.1	3	790	4.1	4
38	773	3.2	3	790	4.2	4
39	775	3.2	4	790	4.4	4
40	776	3.2	4	790	4.8	4
41	778	3.3	4	790	5.2	4
42	779	3.4	4	790	6.0	4
43	780	3.5	4	790	7.4	4
44	782	3.6	4	790	8.7	4
45	783	3.7	4	790	8.7	4

continued

Raw Score	2016–17			2015–16		
	Scaled Score	Standard Error	Performance Level	Scaled Score	Standard Error	Performance Level
46	785	3.9	4	790	8.7	4
47	787	4.1	4	790	8.7	4
48	789	4.4	4	790	8.7	4
49	790	4.8	4	N/A	N/A	N/A
50	790	5.2	4	N/A	N/A	N/A
51	790	5.8	4	N/A	N/A	N/A
52	790	6.9	4	N/A	N/A	N/A
53	790	9.5	4	N/A	N/A	N/A
54	790	10.0	4	N/A	N/A	N/A

Table O-6. 2016–17 eMPowerME: Raw to Scaled Score Correspondence
Mathematics Grade 8

Raw Score	2016–17			2015–16		
	Scaled Score	Standard Error	Performance Level	Scaled Score	Standard Error	Performance Level
0	800	10.0	1	800	10.0	1
1	800	10.0	1	800	10.0	1
2	800	10.0	1	800	10.0	1
3	800	10.0	1	800	10.0	1
4	800	10.0	1	800	10.0	1
5	800	10.0	1	800	10.0	1
6	800	10.0	1	800	10.0	1
7	808	10.0	1	800	10.0	1
8	821	10.0	1	812	10.0	1
9	827	9.0	1	827	10.0	1
10	832	7.5	1	834	8.2	1
11	835	6.6	1	838	6.6	1
12	838	6.0	1	841	5.7	1
13	841	5.5	1	844	5.2	1
14	843	5.2	1	846	4.8	1
15	846	4.9	1	848	4.6	1
16	848	4.7	1	850	4.3	2
17	849	4.5	2	852	4.2	2
18	851	4.3	2	854	4.0	2
19	853	4.2	2	855	3.9	2
20	854	4.1	2	857	3.9	2
21	856	4.0	2	858	3.8	2
22	857	3.9	2	859	3.8	2
23	859	3.8	2	861	3.8	3
24	860	3.8	3	862	3.8	3
25	861	3.7	3	864	3.8	3
26	863	3.7	3	865	3.9	3
27	864	3.6	3	867	3.9	3
28	865	3.6	3	868	3.9	3
29	866	3.5	3	869	3.9	3
30	867	3.5	3	870	3.9	3
31	869	3.5	3	872	3.9	4

continued

Raw Score	2016–17			2015–16		
	Scaled Score	Standard Error	Performance Level	Scaled Score	Standard Error	Performance Level
32	870	3.4	3	874	3.9	4
33	870	3.4	3	875	3.8	4
34	872	3.4	4	877	3.8	4
35	873	3.4	4	878	3.8	4
36	874	3.3	4	880	3.8	4
37	875	3.3	4	881	3.7	4
38	876	3.3	4	883	3.7	4
39	877	3.3	4	884	3.7	4
40	879	3.3	4	886	3.7	4
41	880	3.3	4	887	3.7	4
42	881	3.4	4	889	3.7	4
43	882	3.4	4	890	3.8	4
44	884	3.5	4	890	3.9	4
45	885	3.6	4	890	4.0	4
46	887	3.7	4	890	4.2	4
47	888	3.9	4	890	4.6	4
48	890	4.1	4	890	5.1	4
49	890	4.4	4	890	6.0	4
50	890	4.9	4	890	7.4	4
51	890	5.5	4	890	7.5	4
52	890	6.7	4	890	7.5	4
53	890	9.2	4	890	7.5	4
54	890	9.8	4	890	7.5	4
55	890	9.8	4	N/A	N/A	N/A

Table O-7. 2016–17 eMPowerME: Raw to Scaled Score Correspondence
ELA Grade 3

Raw Score	2016–17			2015–16		
	Scaled Score	Standard Error	Performance Level	Scaled Score	Standard Error	Performance Level
0	300	10.0	1	300	10.0	1
1	300	10.0	1	300	10.0	1
2	300	10.0	1	300	10.0	1
3	300	10.0	1	300	10.0	1
4	300	10.0	1	300	10.0	1
5	300	10.0	1	300	10.0	1
6	300	10.0	1	300	10.0	1
7	300	10.0	1	300	10.0	1
8	315	10.0	1	308	10.0	1
9	323	10.0	1	320	10.0	1
10	328	9.1	1	326	10.0	1
11	331	7.5	1	330	8.8	1
12	334	6.4	1	333	7.5	1
13	337	5.6	1	336	6.6	1
14	339	5.1	1	338	6.0	1
15	340	4.7	1	340	5.5	1

continued

Raw Score	2016–17			2015–16		
	Scaled Score	Standard Error	Performance Level	Scaled Score	Standard Error	Performance Level
16	342	4.5	1	342	5.1	1
17	344	4.3	1	344	4.9	1
18	345	4.2	1	345	4.6	1
19	346	4.1	1	346	4.4	1
20	348	4.0	2	348	4.3	2
21	349	4.0	2	349	4.1	2
22	350	3.9	2	350	4.0	2
23	351	3.9	2	352	3.9	2
24	353	3.8	2	353	3.9	2
25	354	3.8	2	354	3.8	2
26	355	3.7	2	355	3.7	2
27	356	3.7	2	356	3.7	2
28	357	3.7	2	357	3.7	2
29	358	3.6	2	358	3.6	2
30	359	3.6	2	359	3.6	2
31	360	3.6	3	360	3.6	3
32	361	3.6	3	361	3.6	3
33	362	3.5	3	362	3.6	3
34	364	3.5	3	363	3.6	3
35	365	3.5	3	364	3.6	3
36	366	3.5	3	365	3.7	3
37	367	3.5	3	367	3.7	3
38	368	3.6	3	368	3.7	3
39	369	3.6	3	369	3.8	3
40	370	3.7	3	370	3.8	3
41	372	3.7	4	370	3.9	3
42	373	3.8	4	372	3.9	4
43	374	3.9	4	374	4.0	4
44	376	4.0	4	375	4.1	4
45	377	4.2	4	376	4.2	4
46	379	4.3	4	378	4.3	4
47	380	4.5	4	379	4.4	4
48	382	4.8	4	381	4.5	4
49	384	5.1	4	382	4.7	4
50	386	5.4	4	384	4.8	4
51	389	5.7	4	386	5.0	4
52	390	6.1	4	388	5.2	4
53	390	6.5	4	390	5.5	4
54	390	6.9	4	390	5.7	4
55	390	7.3	4	390	6.0	4
56	390	7.9	4	390	6.4	4
57	390	8.6	4	390	6.8	4
58	390	9.5	4	390	7.2	4
59	390	9.6	4	390	7.8	4
60	390	9.6	4	390	8.5	4
61	390	9.6	4	390	9.3	4
62	N/A	N/A	N/A	390	9.3	4

continued

Raw Score	2016–17			2015–16		
	Scaled Score	Standard Error	Performance Level	Scaled Score	Standard Error	Performance Level
63	N/A	N/A	N/A	390	9.3	4
64	N/A	N/A	N/A	390	9.3	4

Table O-8. 2016–17 eMPowerME: Raw to Scaled Score Correspondence
ELA Grade 4

Raw Score	2016–17			2015–16		
	Scaled Score	Standard Error	Performance Level	Scaled Score	Standard Error	Performance Level
0	400	10.0	1	400	10.0	1
1	400	10.0	1	400	10.0	1
2	400	10.0	1	400	10.0	1
3	400	10.0	1	400	10.0	1
4	400	10.0	1	400	10.0	1
5	400	10.0	1	400	10.0	1
6	400	10.0	1	400	10.0	1
7	400	10.0	1	400	10.0	1
8	410	10.0	1	400	10.0	1
9	418	10.0	1	400	10.0	1
10	424	10.0	1	411	10.0	1
11	429	9.2	1	419	10.0	1
12	432	8.0	1	424	10.0	1
13	435	7.2	1	428	8.6	1
14	438	6.5	1	431	7.6	1
15	440	6.0	1	434	6.9	1
16	442	5.6	1	436	6.4	1
17	444	5.3	1	438	6.0	1
18	445	5.1	1	440	5.7	1
19	447	4.9	1	442	5.5	1
20	448	4.7	1	444	5.3	1
21	450	4.6	2	445	5.2	1
22	451	4.4	2	447	5.0	1
23	453	4.3	2	448	4.9	1
24	454	4.2	2	450	4.8	2
25	455	4.2	2	451	4.7	2
26	456	4.1	2	452	4.6	2
27	458	4.0	2	454	4.6	2
28	459	4.0	2	455	4.5	2
29	459	4.0	2	456	4.5	2
30	461	3.9	3	458	4.4	2
31	462	3.9	3	459	4.4	2
32	463	3.9	3	460	4.4	3
33	465	3.9	3	461	4.3	3
34	466	3.9	3	462	4.3	3
35	467	4.0	3	464	4.3	3
36	468	4.0	3	465	4.3	3
37	469	4.1	3	466	4.3	3
38	471	4.1	3	467	4.3	3
39	472	4.2	3	469	4.3	3
40	473	4.2	3	470	4.3	3
41	475	4.3	4	471	4.4	3
42	476	4.4	4	473	4.4	3
43	478	4.5	4	474	4.4	4
44	479	4.6	4	475	4.5	4
45	481	4.7	4	477	4.5	4

continued

Raw Score	2016–17			2015–16		
	Scaled Score	Standard Error	Performance Level	Scaled Score	Standard Error	Performance Level
46	482	4.8	4	478	4.6	4
47	484	5.0	4	480	4.7	4
48	486	5.1	4	481	4.8	4
49	488	5.3	4	483	5.0	4
50	490	5.5	4	485	5.1	4
51	490	5.7	4	487	5.3	4
52	490	6.0	4	489	5.6	4
53	490	6.3	4	490	5.8	4
54	490	6.8	4	490	6.1	4
55	490	7.3	4	490	6.4	4
56	490	8.0	4	490	6.8	4
57	490	9.0	4	490	7.2	4
58	490	10.0	4	490	7.7	4
59	490	10.0	4	490	8.4	4
60	490	10.0	4	490	9.4	4
61	490	10.0	4	490	10.0	4
62	N/A	N/A	N/A	490	10.0	4
63	N/A	N/A	N/A	490	10.0	4
64	N/A	N/A	N/A	490	10.0	4

Table O-9. 2016–17 eMPowerME: Raw to Scaled Score Correspondence
ELA Grade 5

Raw Score	2016–17			2015–16		
	Scaled Score	Standard Error	Performance Level	Scaled Score	Standard Error	Performance Level
0	500	10.0	1	500	10.0	1
1	500	10.0	1	500	10.0	1
2	500	10.0	1	500	10.0	1
3	500	10.0	1	500	10.0	1
4	500	10.0	1	500	10.0	1
5	500	10.0	1	500	10.0	1
6	500	10.0	1	500	10.0	1
7	500	10.0	1	500	10.0	1
8	509	10.0	1	504	10.0	1
9	516	10.0	1	513	10.0	1
10	522	10.0	1	519	10.0	1
11	526	9.1	1	524	9.3	1
12	529	8.1	1	528	8.2	1
13	532	7.4	1	531	7.5	1
14	535	6.9	1	534	6.9	1
15	537	6.5	1	536	6.5	1
16	539	6.1	1	539	6.1	1
17	541	5.9	1	541	5.8	1
18	543	5.6	1	542	5.6	1
19	545	5.4	1	544	5.3	1
20	547	5.2	1	546	5.1	1
21	548	5.0	1	547	5.0	1

continued

Raw Score	2016–17			2015–16		
	Scaled Score	Standard Error	Performance Level	Scaled Score	Standard Error	Performance Level
22	550	4.9	2	549	4.8	2
23	551	4.7	2	550	4.7	2
24	552	4.6	2	552	4.6	2
25	554	4.5	2	553	4.5	2
26	555	4.4	2	554	4.4	2
27	556	4.3	2	555	4.3	2
28	557	4.3	2	557	4.3	2
29	559	4.2	2	558	4.2	2
30	559	4.1	2	559	4.1	2
31	561	4.1	3	560	4.1	3
32	562	4.1	3	561	4.0	3
33	563	4.1	3	562	4.0	3
34	564	4.0	3	563	4.0	3
35	566	4.0	3	564	4.0	3
36	567	4.0	3	566	3.9	3
37	568	4.1	3	567	3.9	3
38	569	4.1	3	568	3.9	3
39	570	4.1	3	569	3.9	3
40	572	4.1	3	570	3.9	3
41	573	4.2	3	571	3.9	3
42	574	4.2	3	572	4.0	3
43	575	4.3	3	574	4.0	3
44	577	4.3	4	575	4.0	3
45	579	4.4	4	576	4.1	4
46	580	4.5	4	578	4.2	4
47	582	4.6	4	579	4.2	4
48	583	4.7	4	580	4.3	4
49	585	4.8	4	582	4.4	4
50	587	5.0	4	583	4.6	4
51	589	5.2	4	585	4.7	4
52	590	5.5	4	587	4.9	4
53	590	5.8	4	589	5.2	4
54	590	6.2	4	590	5.4	4
55	590	6.8	4	590	5.8	4
56	590	7.4	4	590	6.2	4
57	590	8.3	4	590	6.6	4
58	590	9.6	4	590	7.2	4
59	590	10.0	4	590	7.9	4
60	590	10.0	4	590	8.9	4
61	590	10.0	4	590	10.0	4
62	N/A	N/A	N/A	590	10.0	4
63	N/A	N/A	N/A	590	10.0	4
64	N/A	N/A	N/A	590	10.0	4

Table O-10. 2016–17 eMPowerME: Raw to Scaled Score Correspondence
ELA Grade 6

Raw Score	2016–17			2015–16		
	Scaled Score	Standard Error	Performance Level	Scaled Score	Standard Error	Performance Level
0	600	10.0	1	600	10.0	1
1	600	10.0	1	600	10.0	1
2	600	10.0	1	600	10.0	1
3	600	10.0	1	600	10.0	1
4	600	10.0	1	600	10.0	1
5	600	10.0	1	600	10.0	1
6	600	10.0	1	600	10.0	1
7	600	10.0	1	600	10.0	1
8	607	10.0	1	600	10.0	1
9	614	10.0	1	608	10.0	1
10	619	9.6	1	614	10.0	1
11	623	8.0	1	619	9.3	1
12	626	6.9	1	622	8.0	1
13	629	6.2	1	625	7.1	1
14	631	5.7	1	628	6.4	1
15	633	5.3	1	630	5.9	1
16	635	5.0	1	632	5.5	1
17	636	4.8	1	634	5.2	1
18	638	4.6	1	635	5.0	1
19	639	4.5	1	637	4.8	1
20	641	4.4	1	639	4.7	1
21	642	4.4	1	640	4.6	1
22	643	4.3	1	641	4.5	1
23	645	4.3	2	643	4.4	1
24	646	4.2	2	644	4.4	2
25	647	4.2	2	645	4.3	2
26	649	4.2	2	647	4.3	2
27	650	4.2	2	648	4.3	2
28	651	4.1	2	649	4.2	2
29	652	4.1	2	650	4.2	2
30	653	4.1	2	651	4.2	2
31	655	4.1	2	653	4.2	2
32	656	4.1	2	654	4.2	2
33	657	4.0	2	655	4.2	2
34	658	4.0	2	656	4.2	2
35	659	4.0	2	657	4.2	2
36	661	4.0	3	659	4.2	2
37	662	4.0	3	659	4.3	2
38	663	4.0	3	661	4.3	3
39	664	4.0	3	662	4.3	3
40	665	4.0	3	664	4.4	3
41	667	4.1	3	665	4.4	3
42	668	4.1	3	666	4.5	3
43	669	4.2	3	668	4.5	3
44	671	4.2	3	669	4.6	3

continued

Raw Score	2016–17			2015–16		
	Scaled Score	Standard Error	Performance Level	Scaled Score	Standard Error	Performance Level
45	672	4.3	3	671	4.7	3
46	674	4.4	3	672	4.8	3
47	675	4.5	4	674	4.8	3
48	677	4.6	4	675	4.9	4
49	679	4.8	4	677	5.0	4
50	680	5.0	4	679	5.2	4
51	682	5.2	4	681	5.3	4
52	685	5.4	4	683	5.4	4
53	687	5.7	4	685	5.6	4
54	690	6.1	4	687	5.8	4
55	690	6.6	4	689	6.1	4
56	690	7.2	4	690	6.4	4
57	690	8.0	4	690	6.7	4
58	690	9.0	4	690	7.1	4
59	690	10.0	4	690	7.5	4
60	690	10.0	4	690	8.1	4
61	690	10.0	4	690	8.6	4
62	690	10.0	4	690	9.4	4
63	690	10.0	4	690	9.9	4
64	N/A	N/A	N/A	690	9.9	4
65	N/A	N/A	N/A	690	9.9	4
66	N/A	N/A	N/A	690	9.9	4

Table O-11. 2016–17 eMPowerME: Raw to Scaled Score Correspondence
ELA Grade 7

Raw Score	2016–17			2015–16		
	Scaled Score	Standard Error	Performance Level	Scaled Score	Standard Error	Performance Level
0	700	10.0	1	700	10.0	1
1	700	10.0	1	700	10.0	1
2	700	10.0	1	700	10.0	1
3	700	10.0	1	700	10.0	1
4	700	10.0	1	700	10.0	1
5	700	10.0	1	700	10.0	1
6	700	10.0	1	700	10.0	1
7	704	10.0	1	700	10.0	1
8	714	10.0	1	700	10.0	1
9	720	10.0	1	710	10.0	1
10	725	9.1	1	718	10.0	1
11	728	7.9	1	723	9.8	1
12	731	6.9	1	727	8.5	1
13	733	6.3	1	731	7.7	1
14	736	5.7	1	734	7.0	1
15	738	5.3	1	736	6.6	1
16	739	5.1	1	738	6.2	1
17	741	4.8	1	740	5.8	1
18	743	4.7	1	742	5.6	1

continued

Raw Score	2016–17			2015–16		
	Scaled Score	Standard Error	Performance Level	Scaled Score	Standard Error	Performance Level
19	744	4.5	1	744	5.3	1
20	745	4.4	2	745	5.1	2
21	747	4.3	2	747	5.0	2
22	748	4.3	2	748	4.8	2
23	749	4.2	2	750	4.7	2
24	751	4.1	2	751	4.5	2
25	752	4.1	2	752	4.4	2
26	753	4.1	2	754	4.3	2
27	754	4.0	2	755	4.2	2
28	755	4.0	2	756	4.1	2
29	756	4.0	2	757	4.1	2
30	757	3.9	2	758	4.0	2
31	759	3.9	2	759	3.9	2
32	759	3.9	2	760	3.9	3
33	761	3.9	3	761	3.8	3
34	762	3.9	3	762	3.8	3
35	763	3.9	3	764	3.8	3
36	764	3.9	3	765	3.8	3
37	765	3.9	3	766	3.8	3
38	766	3.9	3	767	3.8	3
39	768	3.9	3	768	3.8	3
40	769	3.9	3	769	3.8	3
41	770	3.9	3	770	3.8	3
42	771	4.0	3	771	3.8	3
43	772	4.0	3	772	3.9	3
44	774	4.1	3	774	3.9	3
45	775	4.1	3	775	4.0	3
46	776	4.2	4	776	4.1	4
47	778	4.3	4	777	4.1	4
48	779	4.4	4	779	4.2	4
49	781	4.5	4	780	4.3	4
50	782	4.7	4	782	4.5	4
51	784	4.8	4	783	4.6	4
52	786	5.0	4	785	4.8	4
53	788	5.2	4	787	4.9	4
54	790	5.4	4	789	5.1	4
55	790	5.6	4	790	5.4	4
56	790	5.9	4	790	5.7	4
57	790	6.2	4	790	6.0	4
58	790	6.6	4	790	6.5	4
59	790	7.1	4	790	7.1	4
60	790	7.9	4	790	7.8	4
61	790	9.3	4	790	9.0	4
62	790	10.0	4	790	10.0	4
63	790	10.0	4	790	10.0	4
64	N/A	N/A	N/A	790	10.0	4

Table O-12. 2016–17 eMPowerME: Raw to Scaled Score Correspondence
ELA Grade 8

Raw Score	2016–17			2015–16		
	Scaled Score	Standard Error	Performance Level	Scaled Score	Standard Error	Performance Level
0	800	10.0	1	800	10.0	1
1	800	10.0	1	800	10.0	1
2	800	10.0	1	800	10.0	1
3	800	10.0	1	800	10.0	1
4	800	10.0	1	800	10.0	1
5	800	10.0	1	800	10.0	1
6	800	10.0	1	800	10.0	1
7	802	10.0	1	800	10.0	1
8	812	10.0	1	800	10.0	1
9	818	10.0	1	808	10.0	1
10	823	8.9	1	814	10.0	1
11	827	7.8	1	819	9.0	1
12	830	7.1	1	822	7.9	1
13	832	6.5	1	825	7.2	1
14	835	6.0	1	828	6.6	1
15	837	5.7	1	830	6.1	1
16	838	5.4	1	832	5.8	1
17	840	5.1	1	834	5.5	1
18	842	4.9	1	836	5.2	1
19	843	4.7	1	837	5.0	1
20	845	4.6	2	839	4.8	1
21	846	4.4	2	840	4.7	1
22	847	4.3	2	841	4.5	1
23	849	4.2	2	843	4.4	1
24	850	4.1	2	844	4.3	2
25	851	4.0	2	845	4.2	2
26	852	4.0	2	846	4.1	2
27	853	3.9	2	848	4.0	2
28	854	3.9	2	849	4.0	2
29	855	3.8	2	850	3.9	2
30	857	3.8	2	851	3.9	2
31	858	3.8	2	852	3.9	2
32	859	3.8	2	853	3.8	2
33	859	3.8	2	854	3.8	2
34	861	3.8	3	855	3.8	2
35	862	3.8	3	856	3.8	2
36	863	3.8	3	857	3.8	2
37	864	3.8	3	859	3.8	2
38	865	3.9	3	859	3.9	2
39	867	3.9	3	861	3.9	3
40	868	3.9	3	862	4.0	3
41	869	3.9	3	863	4.0	3
42	870	4.0	3	865	4.1	3
43	871	4.0	3	866	4.1	3
44	873	4.1	3	867	4.2	3
45	874	4.2	3	868	4.3	3

continued

Raw Score	2016–17			2015–16		
	Scaled Score	Standard Error	Performance Level	Scaled Score	Standard Error	Performance Level
46	875	4.2	3	870	4.4	3
47	877	4.3	3	871	4.5	3
48	878	4.4	4	873	4.6	3
49	880	4.5	4	874	4.7	3
50	882	4.6	4	876	4.8	3
51	883	4.7	4	878	5.0	4
52	885	4.9	4	880	5.2	4
53	887	5.1	4	882	5.4	4
54	889	5.3	4	884	5.6	4
55	890	5.5	4	887	5.9	4
56	890	5.8	4	889	6.3	4
57	890	6.2	4	890	6.7	4
58	890	6.6	4	890	7.3	4
59	890	7.3	4	890	8.0	4
60	890	8.6	4	890	8.9	4
61	890	10.0	4	890	9.8	4
62	890	10.0	4	890	10.0	4
63	890	10.0	4	890	10.0	4
64	N/A	N/A	N/A	890	10.0	4
65	N/A	N/A	N/A	890	10.0	4
66	N/A	N/A	N/A	890	10.0	4

APPENDIX P—SCALED SCORE DISTRIBUTIONS

Figure P-1. 2016–17 eMPowerME: Cumulative Score Distribution
Mathematics Grade 3

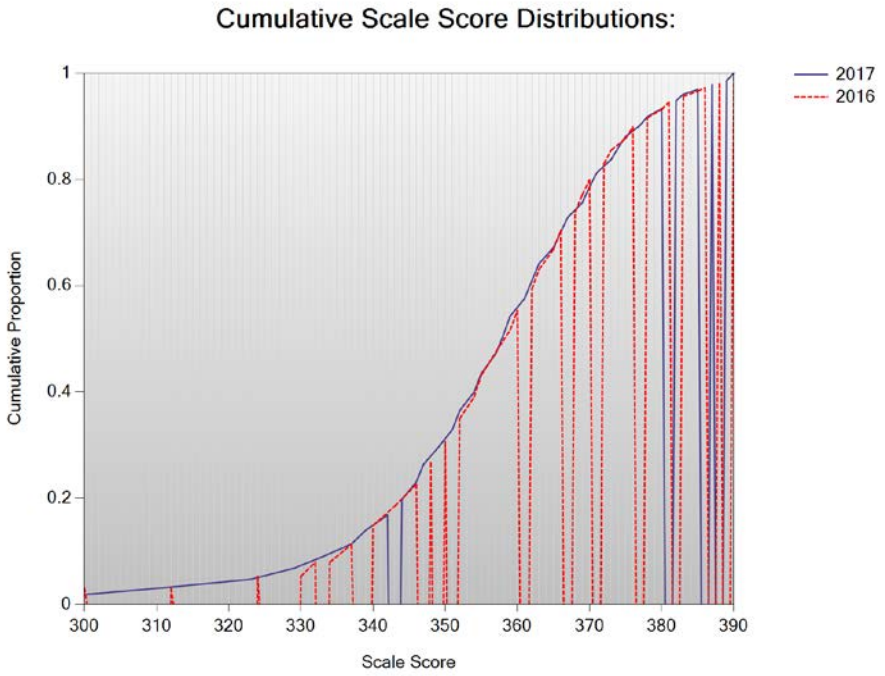


Figure P-2. 2016–17 eMPowerME: Cumulative Score Distribution
Mathematics Grade 4

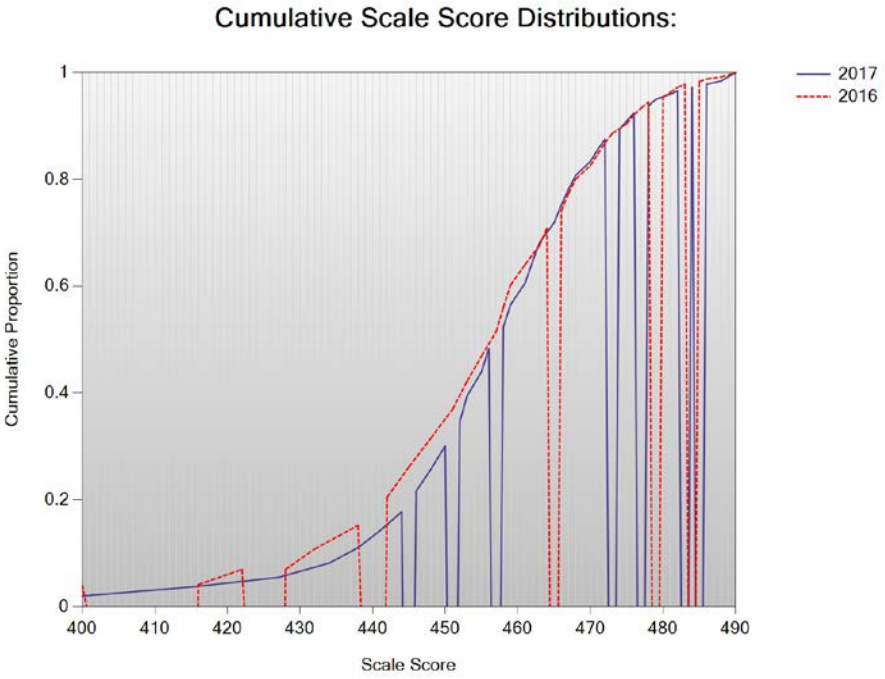


Figure P-3. 2016–17 eMPowerME: Cumulative Score Distribution
Mathematics Grade 5

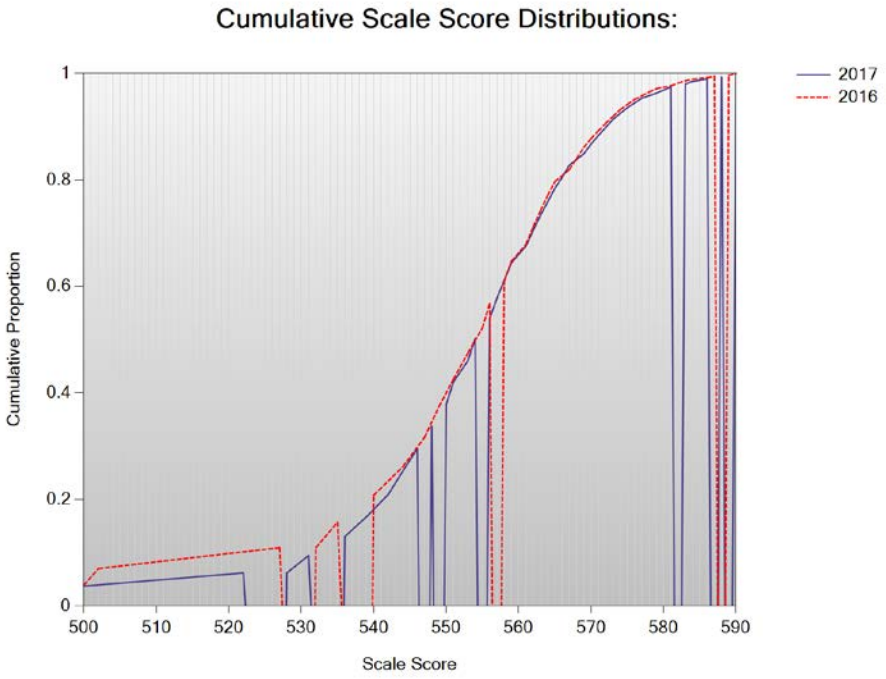


Figure P-4. 2016–17 eMPowerME: Cumulative Score Distribution
Mathematics Grade 6

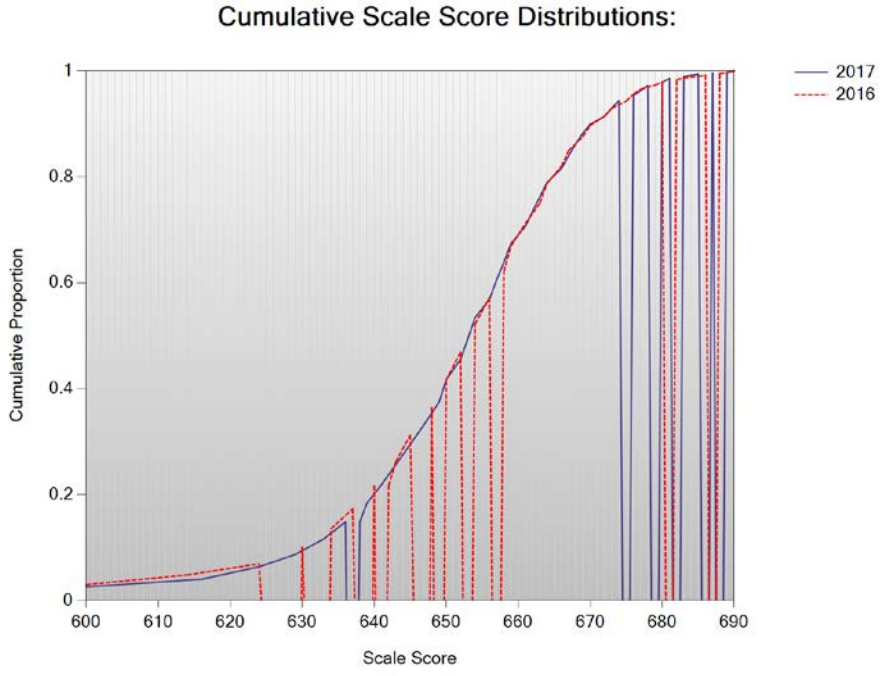


Figure P-5. 2016–17 eMPowerME: Cumulative Score Distribution
Mathematics Grade 7

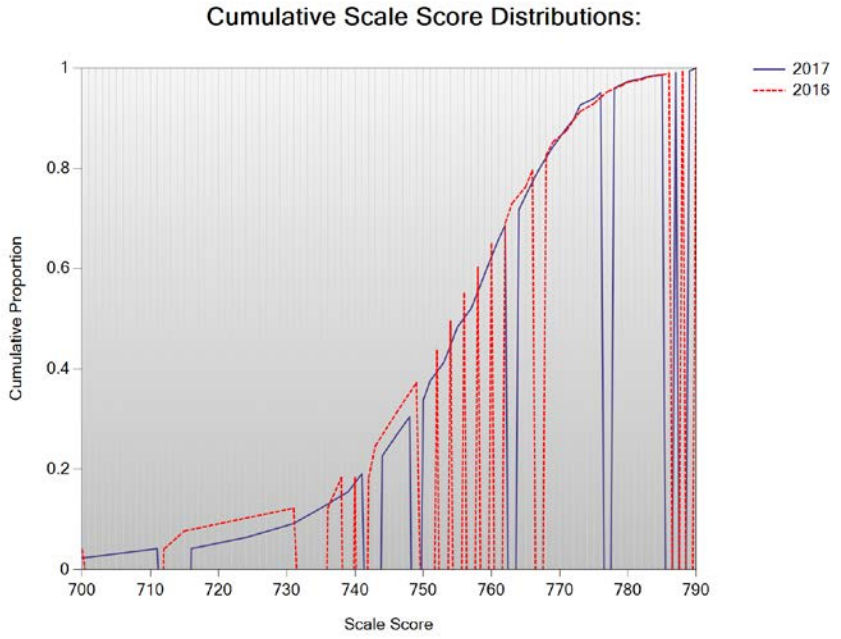


Figure P-6. 2016–17 eMPowerME: Cumulative Score Distribution
Mathematics Grade 8

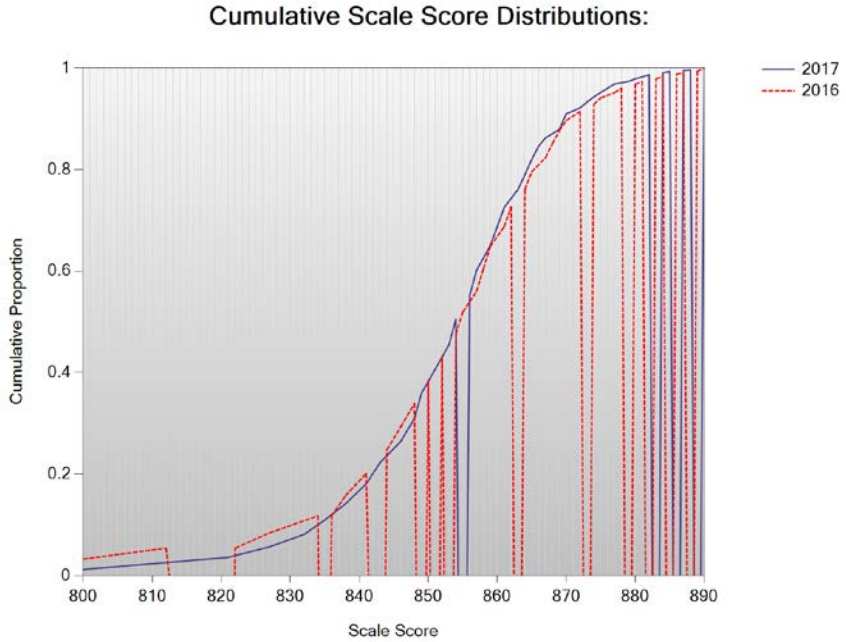


Figure P-7. 2016–17 eMPowerME: Cumulative Score Distribution
ELA Grade 3

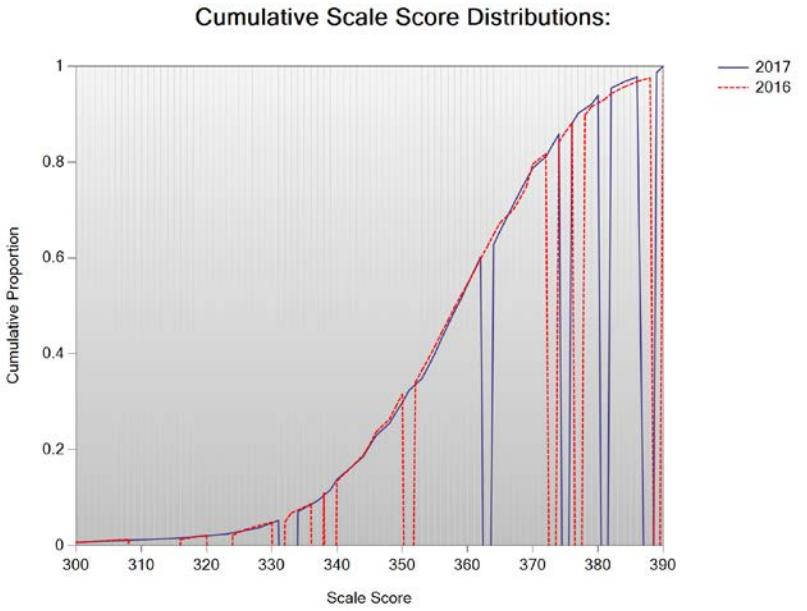


Figure P-8. 2016–17 eMPowerME: Cumulative Score Distribution
ELA Grade 4

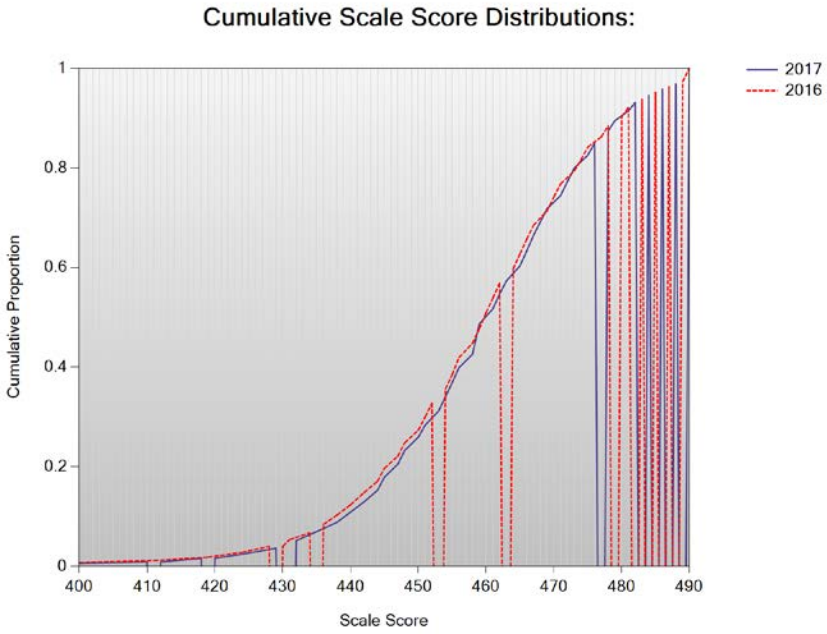


Figure P-9. 2016–17 eMPowerME: Cumulative Score Distribution
ELA Grade 5

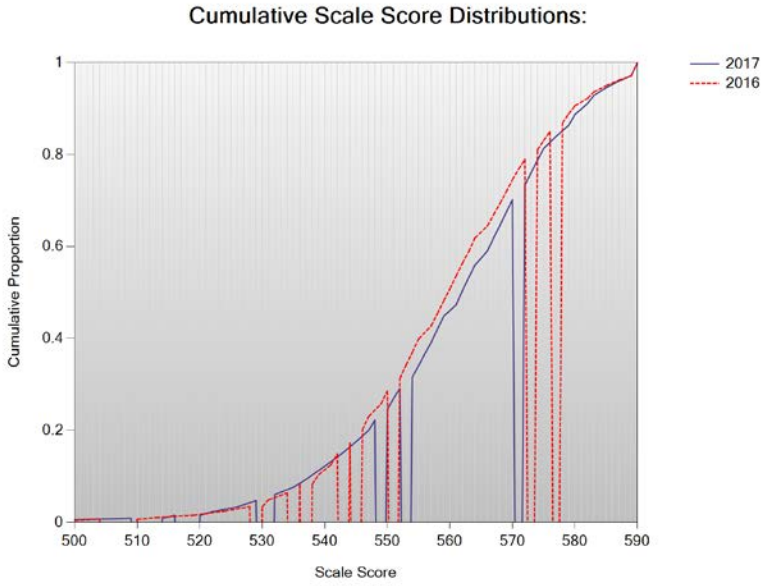


Figure P-10. 2016–17 eMPowerME: Cumulative Score Distribution
ELA Grade 6

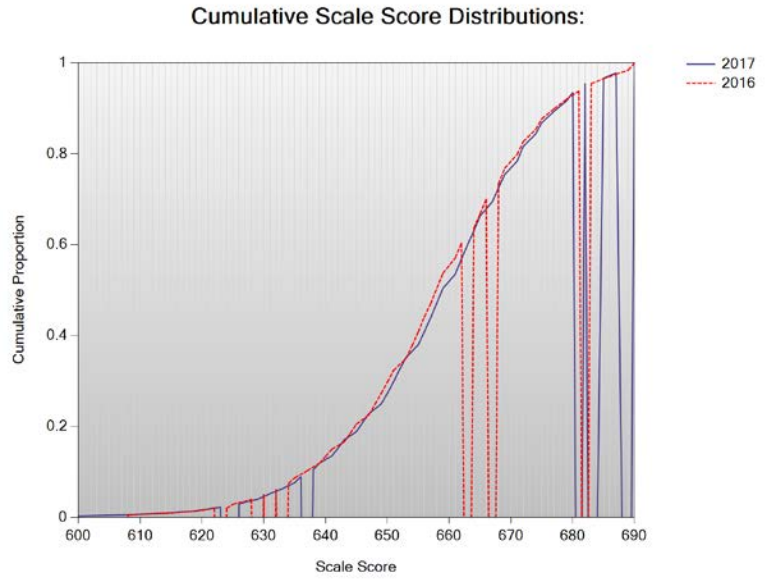


Figure P-11. 2016–17 eMPowerME: Cumulative Score Distribution
ELA Grade 7

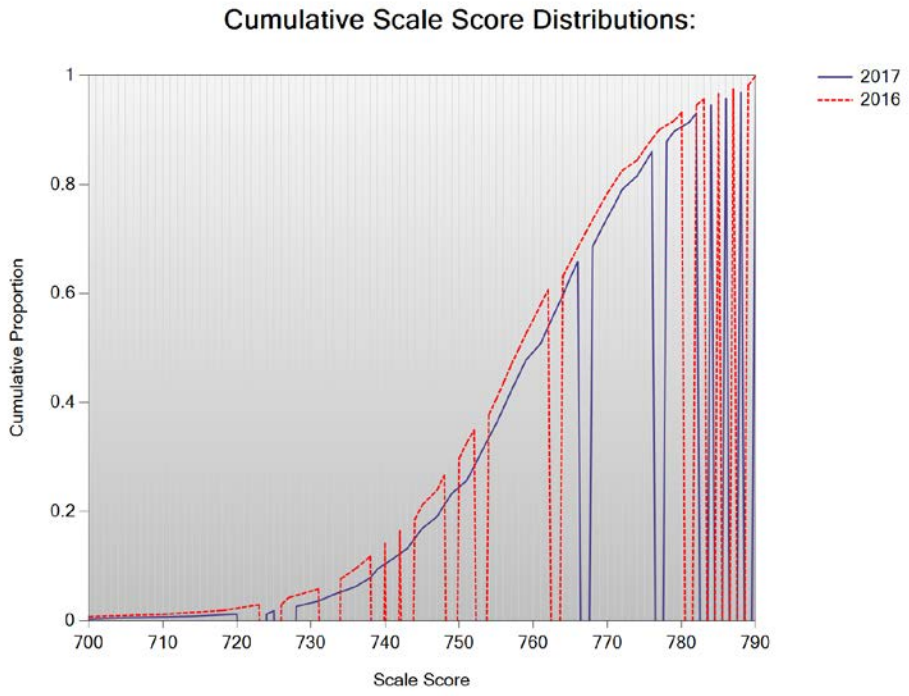
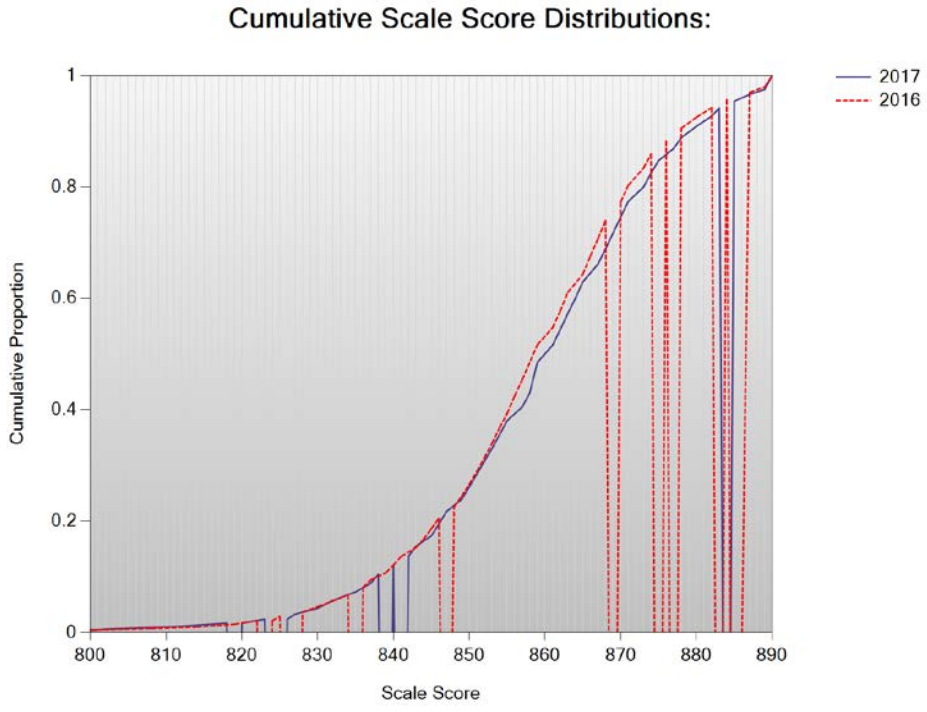


Figure P-12. 2016–17 eMPowerME: Cumulative Score Distribution
ELA Grade 8



APPENDIX Q—CLASSICAL RELIABILTIES

Table Q-1. 2016–17 eMPowerME: Subgroup Reliabilities
Mathematics

Grade	Description	Number of Students	Raw Score			Alpha	Standard Error
			Maximum	Mean	Standard Deviation		
3	All Students	12953	51	23.85	9.85	0.89	3.23
	Male	6713	51	23.68	9.91	0.90	3.20
	Female	6237	51	24.04	9.78	0.89	3.25
	Gender Not Reported	3	51				
	Hispanic or Latino	322	51	20.74	9.87	0.90	3.19
	American Indian or Alaskan Native	118	51	20.14	9.10	0.87	3.26
	Asian	183	51	26.97	11.04	0.91	3.23
	Black or African American	434	51	17.71	8.79	0.87	3.11
	Native Hawaiian or Pacific Islander	11	51	23.27	7.36	0.82	3.13
	White (non-Hispanic)	11492	51	24.15	9.79	0.89	3.23
	Two or More Races (non-Hispanic)	390	51	24.17	9.36	0.88	3.25
	Race not reported	3	51				
	Currently receiving LEP services	540	51	17.77	9.08	0.88	3.13
	Former LEP student - monitoring year 1	19	51	34.53	7.18	0.81	3.13
	Former LEP student - monitoring year 2	4	51				
	LEP: All Other Students	12390	51	24.10	9.79	0.89	3.23
	Students with an IEP	2329	51	15.96	8.08	0.86	3.07
	IEP: All Other Students	10624	51	25.58	9.34	0.88	3.23
	Economically Disadvantaged Students	6144	51	20.67	9.12	0.88	3.20
	SES: All Other Students	6809	51	26.73	9.59	0.89	3.22
	Migrant Students	0	51				
	Migrant: All Other Students	12953	51	23.85	9.85	0.89	3.23
	Students Receiving Title 1 Services	1820	51	18.59	7.60	0.83	3.17
	Title 1: All Other Students	11133	51	24.71	9.91	0.89	3.23
	Plan 504	402	51	23.31	9.32	0.88	3.20
	Plan 504: All Other Students	12551	51	23.87	9.87	0.89	3.23
4	All Students	13255	50	20.84	8.65	0.87	3.06
	Male	6781	50	20.99	8.91	0.88	3.04
	Female	6469	50	20.69	8.37	0.87	3.07
	Gender Not Reported	5	50				
	Hispanic or Latino	331	50	18.40	7.85	0.85	3.02
	American Indian or Alaskan Native	113	50	17.46	7.41	0.84	2.98
	Asian	198	50	23.05	10.04	0.91	3.05
	Black or African American	496	50	15.39	7.49	0.85	2.94
	Native Hawaiian or Pacific Islander	16	50	17.13	9.28	0.89	3.09
	White (non-Hispanic)	11711	50	21.15	8.59	0.87	3.06
	Two or More Races (non-Hispanic)	385	50	20.60	9.19	0.89	3.09
	Race not reported	5	50				
	Currently receiving LEP services	507	50	14.34	6.82	0.82	2.91
	Former LEP student - monitoring year 1	87	50	24.22	8.06	0.85	3.07
	Former LEP student - monitoring year 2	11	50	29.82	8.99	0.89	3.00
	LEP: All Other Students	12650	50	21.07	8.61	0.87	3.06
	Students with an IEP	2380	50	13.94	6.56	0.80	2.92
	IEP: All Other Students	10875	50	22.35	8.31	0.86	3.07
	Economically Disadvantaged Students	6141	50	17.96	7.59	0.84	3.01

continued

Grade	Description	Number of Students	Raw Score			Alpha	Standard Error
			Maximum	Mean	Standard Deviation		
4	SES: All Other Students	7114	50	23.32	8.74	0.88	3.09
	Migrant Students	0	50				
	Migrant: All Other Students	13255	50	20.84	8.65	0.87	3.06
	Students Receiving Title 1 Services	1958	50	16.31	6.38	0.78	2.97
	Title 1: All Other Students	11297	50	21.62	8.75	0.88	3.07
	Plan 504	470	50	20.79	8.54	0.87	3.02
	Plan 504: All Other Students	12785	50	20.84	8.65	0.87	3.06
	All Students	13065	51	19.95	9.53	0.88	3.29
	Male	6698	51	20.10	9.94	0.89	3.29
	Female	6364	51	19.80	9.07	0.87	3.30
	Gender Not Reported	3	51				
	Hispanic or Latino	313	51	18.04	8.85	0.86	3.30
	American Indian or Alaskan Native	92	51	16.20	7.88	0.83	3.28
	Asian	227	51	22.44	11.14	0.91	3.32
	Black or African American	469	51	13.32	7.00	0.81	3.04
	Native Hawaiian or Pacific Islander	9	51				
	White (non-Hispanic)	11631	51	20.25	9.47	0.88	3.30
	Two or More Races (non-Hispanic)	321	51	19.82	10.43	0.90	3.28
	Race not reported	3	51				
5	Currently receiving LEP services	435	51	11.56	5.92	0.75	2.95
	Former LEP student - monitoring year 1	47	51	22.79	9.29	0.88	3.21
	Former LEP student - monitoring year 2	69	51	22.96	9.80	0.88	3.37
	LEP: All Other Students	12514	51	20.21	9.49	0.88	3.30
	Students with an IEP	2440	51	12.68	6.65	0.80	3.01
	IEP: All Other Students	10625	51	21.62	9.30	0.87	3.32
	Economically Disadvantaged Students	5841	51	16.58	8.22	0.85	3.21
	SES: All Other Students	7224	51	22.67	9.64	0.88	3.33
	Migrant Students	0	51				
	Migrant: All Other Students	13065	51	19.95	9.53	0.88	3.29
	Students Receiving Title 1 Services	1659	51	15.26	6.80	0.78	3.17
	Title 1: All Other Students	11406	51	20.63	9.68	0.88	3.30
	Plan 504	498	51	19.38	9.05	0.87	3.26
	Plan 504: All Other Students	12567	51	19.97	9.55	0.88	3.29
	All Students	13236	54	22.54	9.27	0.87	3.30
	Male	6763	54	22.41	9.37	0.88	3.28
	Female	6472	54	22.68	9.15	0.87	3.32
	Gender Not Reported	1	54				
	Hispanic or Latino	287	54	19.86	8.84	0.86	3.30
	American Indian or Alaskan Native	132	54	17.42	8.16	0.84	3.22
	Asian	204	54	25.86	9.71	0.88	3.38
6	Black or African American	463	54	15.65	7.55	0.83	3.11
	Native Hawaiian or Pacific Islander	15	54	24.73	9.32	0.87	3.34
	White (non-Hispanic)	11853	54	22.91	9.20	0.87	3.30
	Two or More Races (non-Hispanic)	281	54	21.25	9.02	0.87	3.30
	Race not reported	1	54				
	Currently receiving LEP services	411	54	13.87	6.60	0.79	3.01
	Former LEP student - monitoring year 1	40	54	20.73	5.94	0.70	3.27
	Former LEP student - monitoring year 2	54	54	23.50	7.12	0.78	3.37

continued

Grade	Description	Number of Students	Raw Score			Alpha	Standard Error
			Maximum	Mean	Standard Deviation		
6	LEP: All Other Students	12731	54	22.82	9.22	0.87	3.30
	Students with an IEP	2336	54	14.34	6.38	0.77	3.04
	IEP: All Other Students	10900	54	24.30	8.83	0.86	3.31
	Economically Disadvantaged Students	5881	54	19.10	8.03	0.84	3.25
	SES: All Other Students	7355	54	25.29	9.27	0.87	3.31
	Migrant Students	0	54				
	Migrant: All Other Students	13236	54	22.54	9.27	0.87	3.30
	Students Receiving Title 1 Services	1525	54	17.78	6.84	0.78	3.20
	Title 1: All Other Students	11711	54	23.16	9.36	0.88	3.31
	Plan 504	572	54	22.00	8.44	0.85	3.30
	Plan 504: All Other Students	12664	54	22.57	9.30	0.87	3.30
	All Students	13267	54	22.92	9.80	0.88	3.33
	Male	6863	54	22.76	9.94	0.89	3.31
	Female	6402	54	23.09	9.64	0.88	3.33
	Gender Not Reported	2	54				
	Hispanic or Latino	275	54	20.68	9.55	0.88	3.33
	American Indian or Alaskan Native	112	54	18.79	8.55	0.85	3.26
	Asian	215	54	25.94	10.83	0.90	3.37
	Black or African American	485	54	15.91	8.29	0.86	3.11
	Native Hawaiian or Pacific Islander	13	54	23.92	11.54	0.92	3.34
	White (non-Hispanic)	11879	54	23.25	9.72	0.88	3.33
	Two or More Races (non-Hispanic)	286	54	22.32	9.84	0.89	3.33
	Race not reported	2	54				
7	Currently receiving LEP services	385	54	13.7	7.41	0.84	2.97
	Former LEP student - monitoring year 1	10	54	26.5	9.76	0.87	3.49
	Former LEP student - monitoring year 2	57	54	21.95	8.31	0.84	3.35
	LEP: All Other Students	12815	54	23.19	9.73	0.88	3.33
	Students with an IEP	2294	54	14.16	6.52	0.78	3.03
	IEP: All Other Students	10973	54	24.75	9.37	0.87	3.33
	Economically Disadvantaged Students	5547	54	19.23	8.44	0.85	3.26
	SES: All Other Students	7720	54	25.56	9.86	0.88	3.34
	Migrant Students	0	54				
	Migrant: All Other Students	13267	54	22.92	9.80	0.88	3.33
	Students Receiving Title 1 Services	1240	54	17.85	7.51	0.82	3.23
	Title 1: All Other Students	12027	54	23.44	9.86	0.89	3.33
	Plan 504	651	54	22.80	9.05	0.86	3.34
	Plan 504: All Other Students	12616	54	22.92	9.84	0.89	3.33
	All Students	12929	55	21.29	8.41	0.85	3.28
	Male	6646	55	21.09	8.60	0.85	3.28
	Female	6281	55	21.50	8.19	0.84	3.27
	Gender Not Reported	2	55				
	Hispanic or Latino	260	55	18.37	7.88	0.84	3.15
8	American Indian or Alaskan Native	106	55	17.13	7.05	0.81	3.07
	Asian	199	55	25.67	10.42	0.89	3.46
	Black or African American	408	55	15.44	6.94	0.81	3.02
	Native Hawaiian or Pacific Islander	10	55	24.50	7.53	0.81	3.28
	White (non-Hispanic)	11706	55	21.52	8.34	0.85	3.28
	Two or More Races (non-Hispanic)	238	55	21.17	7.51	0.81	3.27

continued

Grade	Description	Number of Students	Raw Score			Alpha	Standard Error
			Maximum	Mean	Standard Deviation		
	Race not reported	2	55				
	Currently receiving LEP services	361	55	13.88	6.15	0.77	2.95
	Former LEP student - monitoring year 1	13	55	25.54	9.74	0.86	3.60
	Former LEP student - monitoring year 2	15	55	19.60	6.54	0.76	3.21
	LEP: All Other Students	12540	55	21.50	8.37	0.85	3.28
	Students with an IEP	2225	55	13.99	5.55	0.72	2.96
	IEP: All Other Students	10704	55	22.81	8.10	0.83	3.31
8	Economically Disadvantaged Students	5283	55	18.12	7.04	0.80	3.14
	SES: All Other Students	7646	55	23.47	8.58	0.85	3.34
	Migrant Students	0	55				
	Migrant: All Other Students	12929	55	21.29	8.41	0.85	3.28
	Students Receiving Title 1 Services	887	55	17.34	6.32	0.76	3.11
	Title 1: All Other Students	12042	55	21.58	8.47	0.85	3.29
	Plan 504	679	55	20.77	7.88	0.83	3.27
	Plan 504: All Other Students	12250	55	21.32	8.43	0.85	3.28

Table Q-2. 2016–17 eMPowerME: Subgroup Reliabilities

ELA

Grade	Description	Number of Students	Raw Score			Alpha	Standard Error
			Maximum	Mean	Standard Deviation		
3	All Students	12897	61	29.78	11.59	0.91	3.40
	Male	6675	61	28.19	11.43	0.91	3.40
	Female	6219	61	31.50	11.52	0.91	3.39
	Gender Not Reported	3	61				
	Hispanic or Latino	319	61	26.97	11.46	0.91	3.42
	American Indian or Alaskan Native	117	61	26.56	10.31	0.89	3.42
	Asian	177	61	32.15	11.47	0.91	3.42
	Black or African American	395	61	23.21	10.76	0.90	3.42
	Native Hawaiian or Pacific Islander	11	61	31.36	12.17	0.92	3.36
	White (non-Hispanic)	11484	61	30.08	11.56	0.91	3.40
	Two or More Races (non-Hispanic)	391	61	29.88	11.36	0.91	3.41
	Race not reported	3	61				
	Currently receiving LEP services	487	61	22.78	9.79	0.88	3.45
	Former LEP student - monitoring year 1	19	61	40.89	6.15	0.71	3.29
	Former LEP student - monitoring year 2	4	61				
	LEP: All Other Students	12387	61	30.04	11.57	0.91	3.40
	Students with an IEP	2324	61	18.96	9.07	0.86	3.34
	IEP: All Other Students	10573	61	32.16	10.70	0.90	3.40
	Economically Disadvantaged Students	6105	61	26.02	10.90	0.90	3.42
	SES: All Other Students	6792	61	33.17	11.14	0.91	3.38
	Migrant Students	0	61				
	Migrant: All Other Students	12897	61	29.78	11.59	0.91	3.40
	Students Receiving Title 1 Services	1821	61	23.42	9.40	0.87	3.43
	Title 1: All Other Students	11076	61	30.83	11.58	0.91	3.39
	Plan 504	401	61	30.08	10.93	0.90	3.41
	Plan 504: All Other Students	12496	61	29.77	11.61	0.91	3.40
4	All Students	13222	61	30.00	11.05	0.89	3.60
	Male	6760	61	28.89	11.03	0.89	3.59
	Female	6456	61	31.16	10.94	0.89	3.62
	Gender Not Reported	6	61				
	Hispanic or Latino	328	61	27.26	10.54	0.88	3.61
	American Indian or Alaskan Native	114	61	26.59	10.16	0.87	3.60
	Asian	195	61	31.70	11.85	0.91	3.59
	Black or African American	471	61	23.35	9.92	0.87	3.54
	Native Hawaiian or Pacific Islander	16	61	24.50	11.81	0.92	3.38
	White (non-Hispanic)	11708	61	30.37	10.99	0.89	3.61
	Two or More Races (non-Hispanic)	384	61	29.46	11.13	0.89	3.62
	Race not reported	6	61				
	Currently receiving LEP services	468	61	21.1	8.62	0.83	3.51
	Former LEP student - monitoring year 1	88	61	35.17	8.13	0.80	3.67
	Former LEP student - monitoring year 2	11	61	42.73	5.10	0.57	3.33
	LEP: All Other Students	12655	61	30.28	11.00	0.89	3.61
	Students with an IEP	2381	61	19.68	8.81	0.85	3.45
	IEP: All Other Students	10841	61	32.26	10.16	0.87	3.62
	Economically Disadvantaged Students	6124	61	26.39	10.38	0.88	3.60
	SES: All Other Students	7098	61	33.11	10.65	0.89	3.60

continued

Grade	Description	Number of Students	Raw Score			Alpha	Standard Error
			Maximum	Mean	Standard Deviation		
4	Migrant Students	0	61				
	Migrant: All Other Students	13222	61	30.00	11.05	0.89	3.60
	Students Receiving Title 1 Services	1958	61	24.10	8.74	0.83	3.60
	Title 1: All Other Students	11264	61	31.02	11.08	0.89	3.60
	Plan 504	469	61	30.49	10.52	0.88	3.61
	Plan 504: All Other Students	12753	61	29.98	11.06	0.89	3.60
5	All Students	13004	61	31.89	11.55	0.90	3.62
	Male	6669	61	30.25	11.42	0.90	3.60
	Female	6333	61	33.64	11.42	0.90	3.63
	Gender Not Reported	2	61				
	Hispanic or Latino	310	61	29.98	11.28	0.89	3.66
	American Indian or Alaskan Native	91	61	26.91	11.22	0.90	3.55
	Asian	217	61	33.91	11.43	0.90	3.65
	Black or African American	419	61	23.48	10.57	0.89	3.53
	Native Hawaiian or Pacific Islander	9	61				
	White (non-Hispanic)	11634	61	32.27	11.44	0.90	3.62
	Two or More Races (non-Hispanic)	322	61	31.06	12.06	0.91	3.60
	Race not reported	2	61				
	Currently receiving LEP services	366	61	19.78	8.58	0.84	3.48
	Former LEP student - monitoring year 1	46	61	35.98	7.41	0.76	3.64
	Former LEP student - monitoring year 2	69	61	36.06	10.17	0.87	3.65
	LEP: All Other Students	12523	61	32.21	11.45	0.90	3.62
	Students with an IEP	2447	61	20.68	9.08	0.85	3.49
	IEP: All Other Students	10557	61	34.50	10.45	0.88	3.63
	Economically Disadvantaged Students	5797	61	27.69	11.00	0.89	3.62
	SES: All Other Students	7207	61	35.28	10.85	0.89	3.60
	Migrant Students	0	61				
	Migrant: All Other Students	13004	61	31.89	11.55	0.90	3.62
	Students Receiving Title 1 Services	1659	61	26.23	9.46	0.85	3.64
	Title 1: All Other Students	11345	61	32.72	11.59	0.90	3.61
	Plan 504	500	61	31.44	9.97	0.87	3.65
	Plan 504: All Other Students	12504	61	31.91	11.61	0.90	3.62
6	All Students	13171	63	34.51	11.26	0.90	3.56
	Male	6724	63	32.71	11.29	0.90	3.54
	Female	6446	63	36.39	10.92	0.89	3.55
	Gender Not Reported	1	63				
	Hispanic or Latino	283	63	32.56	10.74	0.89	3.61
	American Indian or Alaskan Native	132	63	29.35	10.20	0.87	3.61
	Asian	199	63	36.52	11.15	0.90	3.59
	Black or African American	421	63	28.20	10.81	0.89	3.60
	Native Hawaiian or Pacific Islander	15	63	37.87	12.13	0.92	3.49
	White (non-Hispanic)	11839	63	34.82	11.22	0.90	3.55
	Two or More Races (non-Hispanic)	281	63	33.72	11.21	0.90	3.57
	Race not reported	1	63				
	Currently receiving LEP services	351	63	23.72	9.36	0.85	3.58
	Former LEP student - monitoring year 1	40	63	35.25	9.06	0.84	3.67
	Former LEP student - monitoring year 2	54	63	35.78	8.68	0.83	3.62
	LEP: All Other Students	12726	63	34.80	11.18	0.90	3.55

continued

Grade	Description	Number of Students	Raw Score			Alpha	Standard Error
			Maximum	Mean	Standard Deviation		
6	Students with an IEP	2334	63	22.68	9.31	0.86	3.52
	IEP: All Other Students	10837	63	37.06	9.94	0.87	3.53
	Economically Disadvantaged Students	5841	63	30.47	10.78	0.89	3.59
	SES: All Other Students	7330	63	37.72	10.58	0.89	3.51
	Migrant Students	0	63				
	Migrant: All Other Students	13171	63	34.51	11.26	0.90	3.56
	Students Receiving Title 1 Services	1524	63	29.32	9.68	0.86	3.63
	Title 1: All Other Students	11647	63	35.19	11.28	0.90	3.54
	Plan 504	569	63	33.85	10.38	0.88	3.56
	Plan 504: All Other Students	12602	63	34.54	11.30	0.90	3.56
7	All Students	13209	63	32.98	11.71	0.90	3.62
	Male	6833	63	31.11	11.69	0.91	3.60
	Female	6372	63	34.99	11.39	0.90	3.63
	Gender Not Reported	4	63				
	Hispanic or Latino	271	63	31.21	11.36	0.90	3.60
	American Indian or Alaskan Native	112	63	28.35	10.63	0.88	3.61
	Asian	213	63	35.45	12.24	0.91	3.60
	Black or African American	442	63	25.85	10.78	0.89	3.59
	Native Hawaiian or Pacific Islander	13	63	32.38	12.75	0.92	3.62
	White (non-Hispanic)	11869	63	33.30	11.64	0.90	3.62
	Two or More Races (non-Hispanic)	285	63	32.45	12.17	0.91	3.63
	Race not reported	4	63				
	Currently receiving LEP services	332	63	22.48	9.38	0.86	3.55
	Former LEP student - monitoring year 1	10	63	39.50	7.82	0.79	3.60
	Former LEP student - monitoring year 2	56	63	34.29	8.65	0.82	3.67
	LEP: All Other Students	12811	63	33.24	11.65	0.90	3.62
	Students with an IEP	2287	63	21.25	9.27	0.86	3.50
	IEP: All Other Students	10922	63	35.43	10.63	0.88	3.62
	Economically Disadvantaged Students	5499	63	28.71	10.92	0.89	3.62
	SES: All Other Students	7710	63	36.02	11.30	0.90	3.60
	Migrant Students	0	63				
	Migrant: All Other Students	13209	63	32.98	11.71	0.90	3.62
	Students Receiving Title 1 Services	1240	63	26.70	9.74	0.86	3.64
	Title 1: All Other Students	11969	63	33.63	11.71	0.90	3.62
	Plan 504	650	63	32.93	10.67	0.88	3.63
	Plan 504: All Other Students	12559	63	32.98	11.76	0.91	3.62
8	All Students	12877	63	33.30	12.08	0.91	3.66
	Male	6615	63	30.94	11.98	0.91	3.62
	Female	6258	63	35.80	11.67	0.90	3.66
	Gender Not Reported	4	63				
	Hispanic or Latino	255	63	30.39	12.17	0.91	3.65
	American Indian or Alaskan Native	106	63	26.57	11.95	0.91	3.64
	Asian	193	63	37.15	11.89	0.90	3.69
	Black or African American	367	63	25.29	11.47	0.90	3.63
	Native Hawaiian or Pacific Islander	10	63	37.30	11.37	0.89	3.69
	White (non-Hispanic)	11706	63	33.60	11.99	0.91	3.66
	Two or More Races (non-Hispanic)	236	63	33.62	11.32	0.89	3.73
	Race not reported	4	63				

continued

Grade	Description	Number of Students	Raw Score			Alpha	Standard Error
			Maximum	Mean	Standard Deviation		
8	Currently receiving LEP services	301	63	21.45	9.29	0.85	3.57
	Former LEP student - monitoring year 1	13	63	38.00	10.64	0.89	3.51
	Former LEP student - monitoring year 2	16	63	31.88	14.17	0.94	3.54
	LEP: All Other Students	12547	63	33.58	12.00	0.91	3.66
	Students with an IEP	2225	63	21.27	9.49	0.86	3.52
	IEP: All Other Students	10652	63	35.81	11.00	0.89	3.66
	Economically Disadvantaged Students	5235	63	28.97	11.43	0.90	3.67
	SES: All Other Students	7642	63	36.25	11.62	0.90	3.63
	Migrant Students	0	63				
	Migrant: All Other Students	12877	63	33.30	12.08	0.91	3.66
	Students Receiving Title 1 Services	889	63	27.14	9.99	0.87	3.67
	Title 1: All Other Students	11988	63	33.75	12.10	0.91	3.66
	Plan 504	679	63	32.51	11.61	0.90	3.67
	Plan 504: All Other Students	12198	63	33.34	12.11	0.91	3.66

Table Q-3. 2016–17 eMPowerME: Reliabilities by Reporting Category—Mathematics

Grade	Reporting Category	Number of Items	Raw Score			Alpha	Standard Error
			Maximum	*Mean*	*Standard Deviation*		
3	Geometry, Measurement & Data	15	19	8	3.65	0.71	1.96
	Mathematical Processes	35	37	18.79	7.06	0.86	2.66
	Numbers & Operations - Base 10 & Fractions	11	12	6	2.75	0.68	1.55
	Numbers, Operations & Algebraic Thinking	22	26	13.86	5.54	0.82	2.35
	Operations & Algebraic Thinking	11	14	7.86	3.31	0.72	1.76
	Problem-Solving & Modeling	18	19	9.32	3.76	0.74	1.9
	Reasoning, Patterns & Structure	17	18	9.46	3.77	0.76	1.86
4	Geometry, Measurement & Data	11	14	5.99	2.78	0.64	1.67
	Mathematical Processes	34	36	16.41	6.5	0.84	2.57
	Numbers & Operations - Base 10 & Fractions	16	18	8.49	3.4	0.69	1.9
	Numbers, Operations & Algebraic Thinking	25	30	13.37	5.52	0.8	2.45
	Operations & Algebraic Thinking	9	12	4.89	2.6	0.64	1.55
	Problem-Solving & Modeling	15	16	7.17	2.92	0.68	1.65
	Reasoning, Patterns & Structure	19	20	9.24	4.08	0.77	1.96
5	Geometry, Measurement & Data	14	19	7.55	3.96	0.7	2.16
	Mathematical Processes	37	39	15.71	7.09	0.85	2.71
	Numbers & Operations - Base 10 & Fractions	14	14	7.17	3.21	0.74	1.63
	Numbers, Operations & Algebraic Thinking	23	26	11.12	5.12	0.79	2.34
	Operations & Algebraic Thinking	9	12	3.96	2.44	0.53	1.68
	Problem-Solving & Modeling	16	16	7.24	3.22	0.7	1.77
	Reasoning, Patterns & Structure	21	23	8.47	4.36	0.78	2.06
6	Expressions & Equations	9	12	5.14	2.61	0.64	1.56
	Geometry	7	8	3.64	1.78	0.51	1.24
	Geometry, Statistics & Probability	14	16	6.24	2.75	0.59	1.75
	Mathematical Processes	36	38	16.98	6.43	0.83	2.65
	Number System	9	12	6.17	2.83	0.6	1.79
	Numbers, Operations & Algebraic Thinking	26	32	15.4	6.39	0.82	2.69
	Problem-Solving & Modeling	16	16	7.03	2.92	0.63	1.78
	Ratio & Proportional Relationship	8	8	4.09	1.9	0.55	1.27
	Reasoning, Patterns & Structure	20	22	9.95	4.06	0.76	1.97
	Statistics & Probability	7	8	2.6	1.53	0.36	1.22
7	Expressions & Equations	9	10	4.62	2.22	0.62	1.37
	Geometry	7	10	3.12	2.09	0.48	1.51
	Geometry, Statistics & Probability	17	24	9.83	4.58	0.72	2.42
	Mathematical Processes	40	42	19.26	7.52	0.86	2.79
	Number System	6	6	3.4	1.57	0.57	1.03
	Numbers, Operations & Algebraic Thinking	23	24	11.8	4.85	0.81	2.1
	Problem-Solving & Modeling	16	16	8.28	3.05	0.69	1.69
	Ratio & Proportional Relationship	8	8	3.78	1.88	0.57	1.23

continued

Grade	Reporting Category	Number of Items	Raw Score			Alpha	Standard Error
			Maximum	*Mean*	*Standard Deviation*		
7	Reasoning, Patterns & Structure	24	26	10.99	4.95	0.8	2.22
	Statistics & Probability	10	14	6.71	3.11	0.63	1.89
8	Expressions & Equations	10	13	5.16	2.43	0.51	1.71
	Functions	9	10	4.66	2.07	0.53	1.42
	Geometry	9	10	3.14	1.75	0.33	1.43
	Geometry, Statistics & Probability	18	22	9.09	3.59	0.65	2.13
	Mathematical Processes	41	43	18.43	6.3	0.8	2.82
	Number System	4	4	1.61	1.11	0.38	0.87
	Numbers, Operations & Algebraic Thinking	23	27	11.44	4.61	0.73	2.38
	Problem-Solving & Modeling	25	27	12.32	4.35	0.75	2.17
	Reasoning, Patterns & Structure	16	16	6.11	2.62	0.53	1.79
	Statistics & Probability	9	12	5.95	2.47	0.6	1.55

Table Q-4. 2016–17 eMPowerME: Reliabilities by Reporting Category—ELA

Grade	Reporting Category	Number of Items	Raw Score			Alpha	Standard Error
			Maximum	*Mean*	*Standard Deviation*		
3	Analysis & Interpretation of Informational Text	7	9	3.67	1.88	0.58	1.22
	Analysis & Interpretation of Literary Text	9	13	6.1	2.87	0.67	1.65
	Comprehension of Informational Text	3	4	2.3	1.14	0.48	0.82
	Comprehension of Literary Text	7	9	4.24	1.95	0.67	1.12
	English language and conventions	9	9	5.68	2.34	0.71	1.26
	Reading	26	35	16.31	6.62	0.86	2.48
	Revising Expository/Informational Text	6	7	3.08	1.79	0.55	1.21
	Revising Narrative Text	8	10	4.72	2.45	0.63	1.48
	Writing & Language	23	26	13.48	5.58	0.83	2.31
4	Analysis & Interpretation of Informational Text	6	9	2.86	1.84	0.4	1.42
	Analysis & Interpretation of Literary Text	8	14	5.32	3.13	0.71	1.7
	Comprehension of Informational Text	4	4	2.49	1.15	0.44	0.86
	Comprehension of Literary Text	8	8	5.25	1.93	0.62	1.19
	English language and conventions	12	12	7.97	2.78	0.73	1.45
	Reading	26	35	15.92	6.58	0.83	2.69
	Revising Expository/Informational Text	6	7	2.93	1.78	0.51	1.24
	Revising Narrative Text	5	7	3.18	1.8	0.39	1.41
	Writing & Language	23	26	14.08	5.16	0.79	2.39
5	Analysis & Interpretation of Informational Text	6	9	4.36	2.19	0.65	1.3
	Analysis & Interpretation of Literary Text	10	14	5.81	2.94	0.69	1.64
	Comprehension of Informational Text	3	4	2.31	1.11	0.21	0.99
	Comprehension of Literary Text	7	8	4.35	1.97	0.53	1.35
	English language and conventions	10	10	6.25	2.24	0.65	1.32

continued

Grade	Reporting Category	Number of Items	Raw Score			Alpha	Standard Error
			Maximum	*Mean*	*Standard Deviation*		
5	Reading	26	35	16.83	6.73	0.84	2.68
	Revising Expository/Informational Text	5	6	3.05	1.57	0.37	1.25
	Revising Narrative Text	8	10	5.76	2.68	0.65	1.58
	Writing & Language	23	26	15.06	5.46	0.8	2.42
6	Analysis & Interpretation of Informational Text	11	17	8.08	3.6	0.73	1.88
	Analysis & Interpretation of Literary Text	6	10	4.52	2.12	0.63	1.29
	Comprehension of Informational Text	6	6	4.15	1.39	0.55	0.93
	Comprehension of Literary Text	3	4	2.99	1.16	0.42	0.88
	English language and conventions	9	9	5.73	1.93	0.57	1.26
	Reading	26	37	19.73	6.98	0.86	2.64
	Revising Argument Text	3	4	2.08	1.27	0.37	1.01
	Revising Expository/Informational Text	11	13	6.97	2.8	0.63	1.71
	Writing & Language	23	26	14.78	5.01	0.78	2.36
7	Analysis & Interpretation of Informational Text	9	14	6.48	3.01	0.7	1.64
	Analysis & Interpretation of Literary Text	6	10	4.2	2	0.58	1.3
	Comprehension of Informational Text	8	9	5.59	2.29	0.62	1.4
	Comprehension of Literary Text	3	4	2.58	1.18	0.33	0.97
	English language and conventions	9	9	5.26	1.99	0.58	1.28
	Reading	26	37	18.85	7.03	0.85	2.71
	Revising Argument Text	0					
	Revising Expository/Informational Text	14	17	8.86	3.82	0.72	2.01
	Writing & Language	23	26	14.12	5.34	0.8	2.39
8	Analysis & Interpretation of Informational Text	9	14	7.02	3.07	0.71	1.65
	Analysis & Interpretation of Literary Text	6	9	3.89	2.03	0.58	1.32
	Comprehension of Informational Text	7	9	5.17	2.26	0.61	1.41
	Comprehension of Literary Text	4	5	2.91	1.5	0.39	1.17
	English language and conventions	9	9	5.64	1.99	0.57	1.3
	Reading	26	37	18.99	7.51	0.86	2.78
	Revising Argument Text	3	4	2.08	1.31	0.4	1.02
	Revising Expository/Informational Text	11	13	6.59	2.91	0.67	1.66
	Writing & Language	23	26	14.31	5.27	0.8	2.35

APPENDIX R—INTERRATER AGREEMENT

Table R-1. 2016–17 eMPowerME: Item-Level Interrater Agreement Statistics—Mathematics

Grade	Item	Number of		Percent		Correlation	Percent of Third Scores
		Score Categories	Responses Scored Twice	Exact	Adjacent		
3	551257A	5	2580	92.25	7.33	0.97	0.89
	551257B	3	2580	89.57	9.96	0.90	0.89
	551311A	3	2570	93.97	5.91	0.89	0.12
	551311B	2	2570	96.54	3.46	0.93	0.12
	551320A	5	2594	89.13	10.06	0.94	0.81
	551320B	3	2594	93.18	6.82	0.91	0.81
	551328A	3	2564	94.62	4.29	0.94	1.09
	551328B	2	2564	92.82	7.18	0.71	1.09
4	551336A	3	2684	94.67	5.29	0.92	0.04
	551336B	2	2684	95.86	4.14	0.85	0.04
	551340A	3	2638	93.56	6.29	0.94	0.15
	551340B	2	2638	96.74	3.26	0.87	0.15
	551343A	5	2852	86.54	11.75	0.91	1.89
	551343B	3	2852	91.41	8.45	0.85	1.89
	551361A	5	2616	93.85	5.89	0.96	0.61
	551361B	3	2616	93.16	6.50	0.84	0.61
5	551230A	3	2598	95.61	3.93	0.97	0.46
	551230B	2	2598	97.00	3.00	0.94	0.46
	551415A	5	2560	92.23	7.34	0.97	0.82
	551415B	3	2560	96.99	2.54	0.90	0.82
	551422A	3	2542	90.79	9.09	0.91	0.12
	551422B	2	2542	95.20	4.80	0.89	0.12
	551428A	5	2665	81.09	17.22	0.92	1.80
	551428B	3	2665	95.61	4.28	0.92	1.80
6	551235A	5	2604	84.60	13.90	0.94	1.65
	551235B	3	2604	89.75	10.10	0.85	1.65
	551245A	5	2575	90.21	9.24	0.95	0.54
	551245B	3	2575	89.63	10.25	0.82	0.54
	551449A	3	2635	98.14	1.86	0.98	0.00
	551449B	2	2635	98.18	1.82	0.83	0.00
	551474A	3	2579	96.16	3.64	0.90	0.19
	551474B	2	2579	99.26	0.74	0.48	0.19
7	551403A	5	2626	86.71	12.22	0.96	1.14
	551403B	3	2626	92.23	7.54	0.94	1.14
	551426A	3	2564	96.96	3.00	0.94	0.04
	551426B	2	2564	98.40	1.60	0.62	0.04
	551445A	3	2605	96.89	3.03	0.96	0.08
	551445B	2	2605	97.77	2.23	0.84	0.08
	551465A	5	2558	91.59	7.58	0.96	0.82
	551465B	3	2558	95.82	4.14	0.90	0.82
8	551249A	3	2445	96.52	3.39	0.95	0.08
	551249B	2	2445	98.16	1.84	0.89	0.08
	551332A	5	2514	92.80	6.68	0.97	0.76
	551332B	3	2514	89.50	10.26	0.83	0.76
	551366A	3	2506	96.89	3.11	0.96	0.00

continued

Grade	Item	Number of		Percent		Correlation	Percent of Third Scores
		Score Categories	Responses Scored Twice	Exact	Adjacent		
8	551366B	2	2506	97.49	2.51	0.64	0.00
	551387A	5	2509	88.76	10.96	0.95	0.40
	551387B	3	2509	95.34	4.54	0.92	0.40

Table R-2. 2016–17 eMPowerME: Item-Level Interrater Agreement Statistics—ELA

Grade	Item	Number of		Percent		Correlation	Percent of Third Scores
		Score Categories	Responses Scored Twice	Exact	Adjacent		
3	129871A	3	2374	76.37	23.34	0.62	0.29
	406766	3	2370	67.30	31.35	0.43	1.35
	410735	4	2350	73.53	25.70	0.59	0.77
	418699	4	2373	83.57	16.06	0.75	0.38
4	128768A	4	2442	75.47	23.71	0.76	0.82
	129528A	3	2495	77.15	22.32	0.69	0.56
	130728A	3	2309	81.94	17.50	0.75	0.56
	410868	4	2474	80.64	17.74	0.68	1.62
5	129019A	3	2535	75.94	23.75	0.70	0.32
	129196A	4	2459	67.55	30.62	0.66	1.83
	416527	4	2475	64.69	33.09	0.74	2.22
	422629	3	2444	88.46	10.97	0.87	0.57
6	131520A	3	2579	77.98	21.79	0.77	0.23
	132122A	5	2689	60.32	36.44	0.71	3.24
	401568	5	2540	63.31	35.24	0.70	1.46
	420298	3	2572	70.57	28.30	0.69	1.13
7	129214A	3	2321	72.3	27.32	0.65	0.39
	407798	3	2542	72.66	27.03	0.60	0.28
	407845	5	2454	56.89	38.71	0.69	4.36
	416793	5	2513	62.87	35.30	0.74	1.83
8	130644A	3	2380	73.57	26.34	0.68	0.08
	131197A	5	2399	58.73	38.56	0.76	2.71
	131198A	3	2453	77.33	22.34	0.62	0.33
	420990	5	2313	60.57	37.40	0.75	2.03

APPENDIX S—ACHIEVEMENT LEVEL SCORE DISTRIBUTIONS

Table S-1. 2016–17 eMPowerME: Achievement Level Distributions by Grade—Mathematics

Grade	*Performance Level*	*Percent in Level*	
		2016-17	*2015-16*
3	4	9.84	10.12
	3	35.94	38.28
	2	31.20	29.04
	1	23.03	22.56
4	4	10.64	11.41
	3	32.83	28.37
	2	38.81	39.74
	1	17.73	20.48
5	4	10.16	9.38
	3	25.41	25.90
	2	43.51	43.94
	1	20.91	20.78
6	4	10.06	10.32
	3	22.56	22.76
	2	37.93	35.70
	1	29.45	31.22
7	4	7.37	8.66
	3	33.73	31.10
	2	32.24	29.13
	1	26.66	31.12
8	4	9.02	10.33
	3	25.94	24.82
	2	34.10	30.99
	1	30.94	33.86

Table S-2. 2016–17 eMPowerME: Achievement Level Distributions by Grade—ELA

Grade	*Performance Level*	*Percent in Level*	
		2016-17	*2015-16*
3	4	21.25	20.44
	3	27.32	27.39
	2	28.44	28.45
	1	22.98	23.72
4	4	20.03	20.64
	3	31.33	31.70
	2	25.43	22.92
	1	23.21	24.75
5	4	18.66	16.94
	3	36.54	34.91
	2	22.59	25.16
	1	22.21	22.98
6	4	15.66	14.68
	3	33.98	31.64

continued

Grade	Performance Level	Percent in Level	
		2016-17	2015-16
6	2	33.36	37.13
	1	17.00	16.54
7	4	16.22	13.52
	3	36.01	33.85
	2	32.68	34.09
	1	15.09	18.54
8	4	13.08	11.74
	3	38.44	36.61
	2	32.97	36.40
	1	15.51	15.26

APPENDIX T—DECISION ACCURACY AND CONSISTENCY RESULTS

Table T-1. 2016–17 eMPowerME: Summary of Decision Accuracy (and Consistency) Results by Content Area and Grade—Overall and Conditional on Performance Level

Content Area	*Grade*	*Overall*	*Kappa*	*Conditional on Level*			
				Substantially Below Proficient	*Partially Proficient*	*Proficient*	*Proficient with Distinction*
Mathematics	3	0.75 (0.66)	0.53	0.86 (0.78)	0.62 (0.51)	0.76 (0.68)	0.81 (0.66)
	4	0.73 (0.64)	0.50	0.84 (0.74)	0.67 (0.57)	0.71 (0.61)	0.81 (0.66)
	5	0.74 (0.64)	0.51	0.85 (0.77)	0.68 (0.59)	0.65 (0.55)	0.81 (0.68)
	6	0.72 (0.63)	0.49	0.86 (0.78)	0.65 (0.55)	0.60 (0.48)	0.81 (0.67)
	7	0.74 (0.64)	0.51	0.86 (0.79)	0.62 (0.52)	0.69 (0.59)	0.81 (0.67)
	8	0.70 (0.61)	0.46	0.85 (0.77)	0.58 (0.47)	0.61 (0.50)	0.79 (0.63)
ELA	3	0.76 (0.67)	0.56	0.86 (0.79)	0.68 (0.58)	0.66 (0.55)	0.86 (0.78)
	4	0.74 (0.65)	0.52	0.85 (0.76)	0.58 (0.47)	0.70 (0.61)	0.84 (0.74)
	5	0.75 (0.67)	0.54	0.86 (0.78)	0.58 (0.46)	0.74 (0.65)	0.85 (0.75)
	6	0.77 (0.68)	0.56	0.84 (0.74)	0.73 (0.64)	0.75 (0.66)	0.83 (0.72)
	7	0.77 (0.68)	0.56	0.84 (0.74)	0.71 (0.61)	0.77 (0.69)	0.83 (0.72)
	8	0.79 (0.71)	0.59	0.85 (0.76)	0.73 (0.64)	0.80 (0.73)	0.83 (0.71)

Table T-2. 2016–17 eMPowerME: Summary of Decision Accuracy (and Consistency) Results by Content Area and Grade—Conditional on Cutpoint

Content Area	*Grade*	*Substantially Below Proficient / Partially Proficient*			*Partially Proficient / Proficient*			*Proficient / Proficient with Distinction*		
		Accuracy (consistency)	*False*		*Accuracy (consistency)*	*False*		*Accuracy (consistency)*	*False*	
			Positive	*Negative*		*Positive*	*Negative*		*Positive*	*Negative*
Mathematics	3	0.91 (0.88)	0.04	0.05	0.90 (0.85)	0.05	0.05	0.94 (0.92)	0.04	0.02
	4	0.91 (0.88)	0.04	0.05	0.89 (0.84)	0.06	0.05	0.93 (0.90)	0.04	0.02
	5	0.91 (0.87)	0.04	0.05	0.89 (0.85)	0.06	0.05	0.94 (0.91)	0.04	0.02
	6	0.90 (0.85)	0.05	0.06	0.89 (0.85)	0.06	0.05	0.93 (0.90)	0.04	0.02
	7	0.90 (0.87)	0.04	0.05	0.89 (0.85)	0.06	0.05	0.94 (0.91)	0.04	0.02
	8	0.88 (0.84)	0.05	0.06	0.88 (0.83)	0.07	0.05	0.93 (0.90)	0.05	0.02
ELA	3	0.93 (0.90)	0.03	0.04	0.91 (0.87)	0.05	0.05	0.92 (0.89)	0.05	0.03
	4	0.92 (0.89)	0.03	0.04	0.90 (0.86)	0.05	0.05	0.92 (0.88)	0.05	0.03
	5	0.93 (0.90)	0.03	0.04	0.90 (0.86)	0.05	0.05	0.92 (0.89)	0.05	0.03
	6	0.94 (0.91)	0.03	0.04	0.90 (0.86)	0.05	0.05	0.93 (0.90)	0.04	0.03
	7	0.94 (0.92)	0.02	0.04	0.90 (0.86)	0.05	0.05	0.93 (0.90)	0.04	0.03
	8	0.94 (0.92)	0.02	0.03	0.91 (0.87)	0.05	0.05	0.94 (0.92)	0.04	0.02

APPENDIX U—COMMITTEE MEMBERSHIP

Table U-1. 2016–17 eMPowerME: TAC Membership

Name
1. Brian Gong, Executive Director, NCIEA
2. Nathan Dadey, Postdoctoral Fellow, NCIEA
3. April Zenisky, Research Associate Professor, Department of Educational Policy, Research & Administration, University of Massachusetts Amherst
4. Martha Thurlow, Director, National Center on Educational Outcomes
5. Betsy Webb, Superintendent, Bangor School Department
Alternate: Nora Murray, Assistant Superintendent, MSAD 49