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TECHNICAL REPORT

Wyoming Alternate Assessment for Students with Significant Cognitive Disabilities

English Language Arts, Grade-Bands 3–5, 6–8, and 9–11
Mathematics, Grade-Bands 3–5, 6–8, and 9–11
Science, Grades 4, 8, and 9–11

Test Administrations
2/23–3/27, 2015

Submitted to:
Wyoming Department of Education (WDE)

Submitted by:
American Institutes for Research
1000 Thomas Jefferson Street, NW, Suite 200
Washington, DC 20007

October 5, 2015

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1. Introduction

This technical report provides information on the spring 2015 administration of Wyoming's Alternate Assessment (Wy-ALT) for Students with Significant Cognitive Disabilities for English language arts (ELA), mathematics, and science. It provides evidence to support the intended uses of test scores for high-stakes decisions.

1.1 WY-ALT

In spring 2015, the state of Wyoming adopted the Wy-ALT for ELA, mathematics, and science tests. The Wy-ALT is a performance-based assessment and is designed to allow students to demonstrate their knowledge and skills in an appropriately rigorous assessment.

The Wy-ALT is administered by grade-band: grades 3–5, grades 6–8, and grades 9–11. All students are assessed in ELA and mathematics. Students in grades 4, 8, and 9–11 are also assessed in science.

Table 1. Content Areas Administration Summary

Test Form	Student Grade	Content Areas to Be Administered to Each Student
3–5	3	ELA and mathematics
	4	ELA, mathematics, and science
	5	ELA and mathematics
6–8	6	ELA and mathematics
	7	ELA and mathematics
	8	ELA, mathematics, and science
9–11	9	ELA, mathematics, and science
	10	ELA, mathematics, and science
	11	ELA, mathematics, and science

1.2 ALTERNATE ASSESSMENT ELIGIBILITY

Most students with disabilities are able to participate in the general state assessments with allowable accommodations. However, some students may qualify to participate in the alternate assessment in its place. Decisions concerning a student's participation in statewide and district-wide assessments are made at least annually by each student's individualized education program (IEP) team. Approximately one percent of Wyoming's student population participates in the alternate assessment.

Wyoming's experience indicates that students with disabilities who participate in the Wy-ALT share all of the following characteristics: they have a significant cognitive disability documented in their evaluation team report, they require instruction focused on the application of state standards through essential life skills, they require instruction below age or grade level at multiple levels, and they are unlikely to provide valid and reliable measures of proficiency in content areas in traditional standardized assessment even with allowable accommodations.

1.3 KEY FEATURES OF THE WY-ALT

The primary purpose of the Wy-ALT is to assess students with significant cognitive disabilities who require extensive support across multiple settings (such as home, school, and community). It ensures that all students with disabilities are included in Wyoming's statewide assessment and accountability system and provides information, such as pedagogical expectations and data, for classroom instruction and decisions.

The Wy-ALT is designed to measure the performance of such a subpopulation of students against Wyoming Content and Performance Standard Extensions (WyCPSE), which are aligned to the Common Core State Standards (CCSS) for ELA and mathematics and to Wyoming's Content Standards for science. The test assists educators, parents, and related service providers in determining the level of academic skill the students have attained up to the point of assessment.

The Wy-ALT has the following key features:

- The content of the Wy-ALT is appropriately rigorous and aligned to the Wyoming Content and Performance Standard (WyCPS).
- The scores assess what students know, understand, and can do.
- Students respond to tasks/items or prompts during a one-on-one testing situation.
- The assessment will provide information that allows educators to build and maintain instruction aligned with academic expectations.

2. Test Development

2.1 WY-ALT CONTENT STANDARDS AND EXTENSIONS

The 2004 Standards and Assessments Peer Review Guidance by the U.S. Department of Education clearly indicates that content standards must specify what students are expected to know and be able to do. Standards should include coherent and rigorous content and encourage advanced skill teaching. The No Child Left Behind Act requires that students in grades 3–8 and one grade in high school be assessed yearly.

In June 2012, the state of Wyoming adopted the WyCPS. Recognizing the need to make the content standards accessible for all students, the state developed extended standards that define the essential knowledge and skills that allow students with the most significant cognitive disabilities to fulfill high academic expectations and to access the general academic curriculum.

For the development of the extensions, standards (academic skills) from the WyCPSwere identified in the following grade-bands: 3–5, 6–8, and 9–11. The extensions are designed to assist teachers in providing access to the general education curriculum for students with significant cognitive disabilities. These extended standards guide special educators in planning academic activities aligned to the state standards. Additionally, the extensions will be the basis of the Wy-ALT. Test items are aligned to the extensions.

Extensions are meant to provide a continuum of entry points related to each standard. They are organized by four levels, as indicated below:

- Level IV—overall extension plus: Students at this level over-achieve relative to what the standard requires.
- Level III—generally the standard extension: Students at this level meet the requirements of the standard.
- Level II—close to skill but not quite at level: Students at this level are close to but do not yet meet the requirements of the standard.
- Level I—simple T/F (generally): Students at this level are not close to meeting the standard.

The WyCPSE can be found at http://edu.wyoming.gov/educators/standards/extended-benchmarks/.

2.2 Development of Test Specifications

The test specifications delineate the content and skills that are going to be measured and the distribution of tasks or items across sub-content areas within a test for each task or item. The test specifications include the following sections:

- Test description
- Field-test plan
- Communication level
- Test blueprints, including number of tasks by domains or strands and breadth of coverage

Test blueprints outline the number of tasks, items, and points for each measured standard of the content areas and ensure that the standards are adequately represented in the operational assessments. The Wyoming Department of Education (WDE) approved the blueprints. The test blueprints were used for form construction for each subject area and grade or grade-band.

2.3 Similarities and Differences between AASCD and Wy-ALT

Based on the great similarities between the Wyoming and Ohio content standards and extensions, Wyoming decided to adopt Ohio's Alternate Assessment for Students with Significant Cognitive Disabilities (Ohio AASCD).

However, there are differences between AASCD and Wy-ALT. First, students in grades 10–12 are tested in AASCD; while students in grades 9–11 are tested in Wy-Alt for ELA and mathematics. The extensions are based on CCSS in both testing programs. The CCSS for mathematics are for the entire high school grade band; therefore, the extensions are for all high school students. The CCSS for ELA were different for grade band 9–10 and grade band 11–12. However, since many of the grade band 9–10 CCSS are similar to the grade band 11–12 CCSS (especially the lower standards to which the extensions were mostly written), content-wise, the standards alignment concerns related to grade 11 students taking AASCD high school ELA tests

are greatly weakened. In addition, though the performance standards were set based on students in grades 10–12 in Ohio, out of the 2219 high school students who took math high school test, only 38 were grade 12 students. As a result, the impact of the grade 12 students on the standard setting result for math high school test can be neglected. Similar case can be found for high school ELA test as well.

Second, grade 5 students are tested in Ohio and grade 4 students are tested in Wy-Alt in science elementary school tests. Though superficially the extensions for the two grades in the two states are not as well overlapped as expected, the actual alignment of items to the grade 4 WyCPSE may be acceptable. WDE will have a third-party alignment of the items to the grade 4 WyCPSE. In addition, WDE is considering holding a standard setting meeting for grade 4 science test.

3. Item Development

Based on the great extent that WyCPSE overlaps with the Ohio Academic Content Standards–Extended (OACS–E), an item sharing agreement was signed between Wyoming and Ohio. The items used in the Wy-ALT are borrowed from the AASCD.

The AASCD tasks and items were developed in a collaborative effort with AIR. The teams included both experienced item writers with a background in education and expertise in the assigned content area and specialists in alternate assessment with experience teaching students with significant disabilities. Team members were trained on aspects of task, item, and test design that are unique to students with significant cognitive disabilities. All team writers were monitored and supported by a team of senior test development specialists.

Draft items were reviewed at various stages by Ohio special education and general education teachers, staff in Ohio Department of Education (ODE), psychometricians, editors, and other specialists in alternate assessment and instruction for students with significant cognitive disabilities. Items developed and accepted through content review in 2012 were then included in the 2013 operational field-test. Items that passed 2013 item data review constitute the initial item pools. In 2014 and 2015, three field test tasks were developed for each test in each year. One field test task was embedded at the end of each of the three operational forms for each test.

Field-test items go through the following stages of review:

- **Group Review:** The group review was led by a content development lead, a special education specialist, and attended by other members of the alternate assessment content team. Tasks were revised to eliminate initial errors, meet content standards, meet the clarity expectations, and follow the Ohio Style Guide for Alternate Assessments..
- **Special Education Review:** Tasks were reviewed by an internal special education expert. The special education expert reviewed and revised tasks to make sure that they not only met the content standards but were also as accessible as possible to students across a wide spectrum of cognitive and physical disabilities. When appropriate, the special education expert designated tasks or items within a task as "Access Limited." This means that a task is inappropriate to administer to students with a specific physical disability (e.g., blindness).

- **Edit Review:** A content editor reviewed each task to make sure that language in the task conformed to standard editorial and style conventions outlined in item writing style guide.
- **Senior Review:** A senior content specialist reviewed each task. Tasks were vetted to ensure that they met the content standards to which they were written and were free of typographical and technical errors.
- **Content and Fairness Committee Review:** Tasks were brought to committees (one committee per grade-band) of stakeholders (special educators, general educators, etc.) for final review. During Content and Fairness Committee meetings, each task is reviewed to make sure it meets bias and sensitivity guidelines, is aligned to content standards, and abides by general test development principles (e.g., universal design).
- **Item Data Review:** The state department of education reviewed and approved the items. The detail of the review process can be found in Section 7.3 Item Data Review Committee Meeting.

3.1 ITEM REVIEW CRITERIA

The common criteria used for item review are listed below:

1. Content accuracy and clarity
2. Alignment to the content standards and grade-band extensions
3. Appropriate content and cognitive expectation for grade level
4. Appropriate scoring rubrics
5. Correct answer for each multiple-choice item
6. Appropriate item format for item content
7. Appropriate readability for grade level
8. Precision and clarity of wording in directions and items
9. Alignment of graphics to the items
10. Accessibility for all students
11. Appropriate, fair, and nonbiased content
12. Additional criteria are applied to specific content areas:
    a. ELA
        i. Engaging, age-appropriate reading passages and writing prompts
        ii. Appropriate number of items for each reading passage
    b. Math
        i. Accuracy of formulae, figures, and graphics
    c. Science
        i. Accuracy of tables and graphics

3.2 ITEM SCORING RUBRICS

In each test, there are three item types: engagement items, two-option multiple-choice items, and three-option multiple-choice items. Engagement items are given scores of 1 to 4 points based on a rubric. Points are given on the basis of the extent of student engagement during test administration. If a student answers a two-option multiple-choice item successfully on the first attempt, he or she is awarded a score of 1 point. A second try is not allowed. In three-option multiple-choice items, If the student answers a three-option multiple-choice item successfully on the first attempt, he or she is awarded a score of 2 points. If the student's first attempt is incorrect, the option associated with the incorrect response is removed, making the item a two-option multiple-choice question, and the student is asked the question again. If the student is successful on the second attempt, 1 point is awarded.

4. Field-Test Design

4.1 INTRODUCTION

The purpose of field test is to gather item statistics for operational form construction. The results of field tests provide important quantitative information about how well each newly developed item functions in an assessment situation. The data gained from field tests usually permit calibration of the item parameters.

In 2013, for ELA and mathematics, all items were concurrently calibrated to create the initial pool by subject. With vertical linking items between adjacent grade-bands and horizontal linking items within a grade-band, the baseline vertical scale in ELA or mathematics was established. For science, with horizontal linking items within grade, the baseline scale was set by concurrently calibrating all items within each grade.

In 2014 and 2015, three tasks were developed for each test each year. Each field test task was embedded at the end of each of the three operational forms. Anchoring on the operational items with good fit, concurrent calibration was conducted to put field test item parameters onto the exisiting scale.

4.2 AASCD OPERATIONAL FIELD-TEST DESIGN IN SPRING 2013

Spring 2013 was the first administration of Ohio AASCD and all test forms were operational field-test forms. Students were required to take all tasks and items in the operational field-test form. Each operational field-test form included nine tasks and each task contained six to eight items. For ELA and math, there are four, five, and three operational field-test forms at grade-bands 3–5, 6–8, and high school respectively. For science tests, there were two unique forms per grade.

4.2.1 Operational Field-Test Design with Horizontal and Vertical Linking in Spring 2013

Table 2 presents the design of an operational field-test form in ELA and mathematics. It ensures strong linkages between forms in each grade-band as well as providing secure linkages between forms across grade-bands to support the development of a vertical scale for measuring student growth. In Table 2, task labels "A," "B," and "C" refer to tasks designed to assess grade-band extensions. Tasks labeled "A" measure extensions for grade-band 3–5. Tasks labeled "B" measure extensions for grade-band 6–8. Tasks labeled "C" measure extensions in high school grade-band. Tasks labeled "AB" and "BC" are designed to measure the extensions that are common across their respective grade-band level and serve to link field-test forms across grade-bands. Tasks are ordered by communication level and difficulty, so that tasks and items accessible to students communicating at the pre-symbolic level appear early in each form, while tasks requiring communication via abstract symbols appear later in each form. Because tasks are ordered by communication level and difficulty, the linking tasks cover the full spectrum of communication levels and difficulties assessed. Moreover, tasks measuring the extensions that are common across grade-bands are used to link field-test forms across grade-bands.

Table 2. Common Item Design for Linking ELA and Mathematics Tasks Within and Across Grade-Bands

	ELA and Math Grade-Band Field Test Forms											
Task	**3–5**				**6–8**					**HS**		
1	A1	A7	A12	A17	B1	B7	B13	B1	B7	C1	C7	C12
2	A2	A2	A13	A18	AB1	AB1	AB1	B16	B19	BC1	BC1	BC1
3	AB1	AB1	AB1	AB1	B2	B8	BC1	BC1	BC1	C2	C2	C13
4	A3	A8	A8	A19	B3	B9	B14	B3	B9	C3	C8	C14
5	A4	A9	A14	A14	AB2	AB2	AB2	B17	B20	BC2	BC2	BC2
6	AB2	AB2	AB2	AB2	B4	B10	BC2	BC2	BC2	C4	C9	C9
7	A5	A10	A15	A20	B5	B11	B15	B5	B11	C5	C10	C15
8	A6	A11	A16	A6	AB3	AB3	AB3	B18	B18	BC3	BC3	BC3
9	AB3	AB3	AB3	AB3	B6	B12	BC3	BC3	BC3	C6	C11	C6

Note: "A," "B," and "C" refer to grade-bands 3–5, 6–8, and OGT tasks, respectively. "AB" indicates tasks common to the 3–5 and 6–8 grade-bands, while "BC" refers to tasks common to grade-band 6–8 and HS.

4.2.2 Operational Field-Test Design With Horizontal Linking Only for Science Tests in Spring 2013

Because assessments in science are administered to students only at selected grades, it is desirable to develop a set of independent within-grade scales rather than attempt to develop a single vertical scale. The operational field-test form design presented in Table 3 ensures strong linkages between forms within each grade.Table 3. Common Item Design for Linking Science Tasks Within Grade Level.

	Science Grade-Specific Field Test Forms					
Task	**Grade 5**		**Grade 8**		**HS**	
1	A1	A10	B1	B10	C1	C10
2	A2	A2	B2	B2	C2	C2
3	A3	A11	B3	B11	C3	C11
4	A4	A12	B4	B12	C4	C12
5	A5	A5	B5	B5	C5	C5
6	A6	A13	B6	B13	C6	C13
7	A7	A14	B7	B14	C7	C14
8	A8	A8	B8	B8	C8	C8
9	A9	A15	B9	B15	C9	C15

Note: "A," "B," and "C" refer to grade 5, grade 8, and HS tasks, respectively.

4.3 WY–ALT OPERATIONAL TEST

Spring 2015 was the third administration of Ohio AASCD and the first year of operational administration of the Wy-ALT. There were three operational forms for each operational test. Each form included a set of twelve identical operational tasks followed by a field-test task. Each operational task includes four to six items and each field-test task contains six to eight items. The forms are built so that items become increasingly more difficult in a task. The operational tasks are ordered by task difficulty in ascending order. The operational forms become increasingly more complex as students move through the grade-band test forms for ELA and mathematics. Each Wy-ALT test is only composed of the twelve operational tasks in the AASCD forms.

Students are required to take a section of the operational tasks according to their abilities, which are estimated using scores from the Student Placement Questionnaire (SPQ) administered by each student's teacher. Students with low abilities are required to take tasks 1–5, students with medium abilities are required to take tasks 3–9, and students with high abilities are required to take tasks 6–12. If a student who started on task 3 or 6 did not do well on the first task, that is, he or she earned less than three raw score points, the student is moved back to the previous starting task (task 1 or 3). If a student finished the required range of tasks and did well on the last task taken, that is, he or she earned six or more raw score points, the student continues to take the next task until he or she reaches the end of the test form. Detailed instructions for selecting a student's starting and concluding tasks are provided in the *Directions for Administration Manual*.

5. Test Administration

5.1 ADMINISTRATION MANUAL

The *Spring 2015 Wy-ALT Directions for Administration Manual* provides detailed guidelines and rules for test administrators to administer tests by subject and grade or grade-band. Before the operational test administration in spring 2015, WDE and AIR jointly conducted face-to-face comprehensive training sessions in which test administrators were required to participate.

The Wy-ALT is administered on a one-to-one basis. That is, one teacher administers the test to one student at a time. During test administration, the test administrator skips task(s) or item(s) that the student cannot access because of his or her disabilities, such as blindness. There is no time limitation during administration. If the student becomes tired, the test administrator can stop the test and continue testing later, but cannot test students on the items already completed. If the student is assigned a second scorer, the second scorer also scores the student during the same session.

Each 2015 form included 12 identical operational tasks. Each operational task included four to six items. Students are required to take a section of the operational tasks according to their abilities, which are estimated using scores on a Student Placement Questionnaire (SPQ) completed by each student's teacher. Students with low abilities were required to take tasks 1–5, students with medium abilities were required to take tasks 3–9, and students with high abilities were required to take tasks 6–12. If a student who started on task 3 or 6 did not do well on the first task, that is, he or she earned less than three raw score points, the student was moved back to the previous starting task (task 1 or 3). If a student finished the required range of tasks and did well on the last task taken, that is, he or she earned six or more raw score points, the student continued to take the next task until he or she reached the end of the test form. After a test administration was finished, the teacher entered all item responses in the online Data Entry Interface (DEI) for storage, processing, scoring, and reporting.

The Test Security Guidelines indicate that photocopying all or any part of a test booklet is *strictly prohibited.* All test booklets, reading passage booklets, stimuli, and printed response cards were secured materials. Each test booklet, reading passage booklet, and manipulatives pack was individually numbered with a unique bar code label. The building coordinators were responsible for ordering, receiving, and accounting for all test materials and returning them to the AIR Processing Center (APC). Any known violations of WDE regulations for test security were to be reported immediately.

5.2 2015 TEST WINDOW

The spring 2015 testing window opened February 23, 2015, and closed March 27, 2015.

5.3 STUDENT PARTICIPATION IN SPRING 2015

Tables 4 and 5 show students' participation in spring 2015 administrations in each grade/grade-band for ELA, math, and science.

Table 4. Participation by Grade and Gender

Subject	Grade	Total	Female		Male	
ELA	3	67	27	40.3%	40	59.7%
ELA	4	76	28	36.8%	48	63.2%
ELA	5	68	28	41.2%	40	58.8%
ELA	6	63	19	30.2%	44	69.8%
ELA	7	67	26	38.8%	41	61.2%
ELA	8	85	29	34.1%	56	65.9%

Subject	Grade	Total	Female		Male	
ELA	9	59	20	33.9%	39	66.1%
ELA	10	65	23	35.4%	42	64.6%
ELA	11	59	23	39.0%	36	61.0%
ELA	Total	609	223	36.6%	386	63.4%
Math	3	67	27	40.3%	40	59.7%
Math	4	75	27	36.0%	48	64.0%
Math	5	68	28	41.2%	40	58.8%
Math	6	63	19	30.2%	44	69.8%
Math	7	67	26	38.8%	41	61.2%
Math	8	85	29	34.1%	56	65.9%
Math	9	59	20	33.9%	39	66.1%
Math	10	65	23	35.4%	42	64.6%
Math	11	59	23	39.0%	36	61.0%
Math	Total	608	222	36.5%	386	63.5%
Science	4	77	29	37.7%	48	62.3%
Science	8	85	29	34.1%	56	65.9%
Science	9	59	20	33.9%	39	66.1%
Science	10	65	23	35.4%	42	64.6%
Science	11	58	23	39.7%	35	60.3%
Science	Total	344	124	36.0%	220	64.0%

Table 5. Participation by Form and Ethnicity

ELA		Grade 3–5		Grade 6–8		Grade 9–11	
	Ethnicity	**N**	**Pct.**	**N**	**Pct.**	**N**	**Pct.**
	American Indian	13	6	10	5	7	4
	Asian/Pacific Islander	2	1	1	0	1	1
	Black/African American	3	1	1	0	3	2
	Hispanic	16	8	7	3	2	1
	Multi-Racial	29	14	26	12	29	16
	Native Hawaiian or Other Pacific Islander	.	.	.	.	1	1
	Other/Unknown	2	1	.	.	.	.
	White	146	69	170	79	140	77
Math		**Grade 3–5**		**Grade 6–8**		**Grade 9–11**	
	Ethnicity	**N**	**Pct.**	**N**	**Pct.**	**N**	**Pct.**
	American Indian	13	6	10	5	7	4
	Asian/Pacific Islander	2	1	1	0	1	1
	Black/African American	3	1	1	0	3	2
	Hispanic	16	8	7	3	2	1
	Multi-Racial	29	14	26	12	29	16
	Native Hawaiian or Other Pacific Islander	.	.	.	.	1	1
	Other/Unknown	2	1	.	.	.	.
	White	145	69	170	79	140	77
Science		**Grade 4**		**Grade 8**		**Grade 9–11**	
	Ethnicity	**N**	**Pct.**	**N**	**Pct.**	**N**	**Pct.**
	American Indian	4	5	3	4	7	4
	Asian/Pacific Islander	1	1	.	.	1	1
	Black/African American	.	.	1	1	3	2
	Hispanic	5	6	5	6	2	1
	Multi-Racial	9	12	11	13	29	16
	Native Hawaiian or Other Pacific Islander	.	.	.	.	1	1
	Other/Unknown	1	1	.	.	.	.
	White	57	74	65	76	139	76

Demographic characteristics of the student population are relatively consistent across grades or grade-bands.

Approximately 30% to 41% of students are female in each grade and subject.

Among the participants, white students (69% to 79%) and multi-racial students (12% to 16%) make up the majority of the assessed students. Hispanic students make up 1% to 8%. American Indian students make up 4% to 6%. Asian students make up 1% of the assessed students in each grade or grade-band of the assessed student population.

6. Standard Setting

The state of Wyoming adopted the performance level standards of AASCD for Wy-ALT.

6.1 OVERVIEW

In AASCD, five performance levels are designed for grades 3–8 and High School (HS) assessments: Limited, Basic, Proficient, Accelerated, and Advanced.

On May 29 and 30, 2013, AIR, under contract to the Ohio Department of Education (ODE), convened a diverse panel of 75 teachers and administrators and one parent to recommend performance standards on the Ohio AASCD. Performance standards were recommended for ELA and mathematics (grade-bands 3–5, 6–8, and HS) and science (grades 5, 8, and HS).

Ohio used the ID Matching procedure (Ferrara, S., Perie, M. & Johnson, E., 2003), which has been used in other states to set standards on alternate assessments. In this process the panelists review test items ordered by item difficulty in an Ordered Item Booklet (OIB) and compare them to performance typical of students at the Limited, Basic, Proficient, Accelerated, and Advanced levels defined in the Performance Level Descriptors (PLDs). The OIB involves a subset of items that are representative of the forms within each grade or grade-band of a content area.

Developing a clear and meaningful description of each performance level is central to both establishing reliable performance standards and effectively communicating assessment results to parents, educators, and other stakeholders. AIR test development and ODE staff collaborated to draft PLDs, which were then submitted to ODE for review and subsequent approval. All PLDs were reviewed for sensitivity and lack of bias and were professionally edited. The PLDs were finalized before the standard setting meeting.

The PLDs are based on the AASCD Extended Standards at five levels of complexities. Each complexity is associated with a particular performance level. For ELA and mathematics the extended standards are aligned with the CCSS. Standard-setting panelists were initially provided with the Ohio Academic Content Standards – Extended (OACS-E) and PLDs. Panelists reviewed these documents to become familiar with the Content Standard Extensions and what students were specifically expected to know and be able to do at each level of performance. After matching each item to the appropriate performance level through PLD, the panelists recommended standards defining minimal performance at the Basic, Proficient, Accelerated, and Advanced levels for each grade or grade-band and subject.

The ID matching standard setting process is described in the standard setting plans submitted to ODE and reviewed and approved by the Ohio Technical Advisory Committee (OTAC) prior to the workshops.

6.2 PERFORMANCE STANDARDS

The final performance standards are summarized in the scaled score metric in Tables 6 through 8. The corresponding scale score region for each performance level by grade or grade-band and subject is listed in Table 9.

Table 6. Performance Standards in ELA

ELA Wyoming AASCD Performance Standards				
Grade-Band	**Basic**	**Proficient**	**Accelerated**	**Advanced**
3–5	363	382	411	430
6–8	377	400	422	449
9–11	393	413	437	456

Table 7. Performance Standards in Math

Math Wyoming AASCD Performance Standards				
Grade-Band	**Basic**	**Proficient**	**Accelerated**	**Advanced**
3–5	360	390	427	448
6–8	370	400	437	470
9–11	392	406	445	477

Table 8. Performance Standards in Science

Science Wyoming AASCD Performance Standards				
Grade	**Basic**	**Proficient**	**Accelerated**	**Advanced**
4	376	400	425	460
8	373	400	429	465
9–11	380	400	437	467

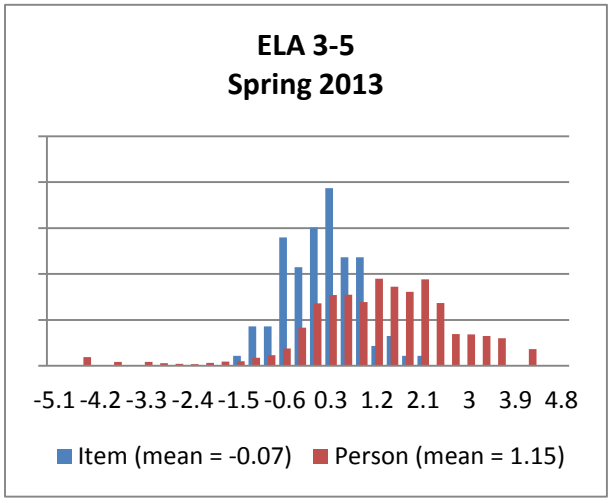
Table 9. Performance Level Regions

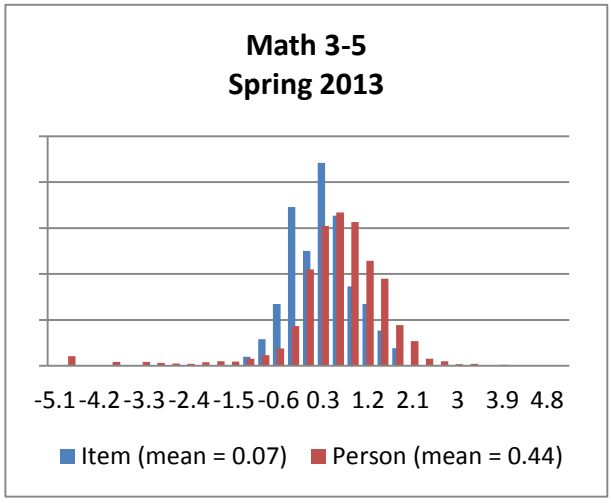
Subject/Grade	Limited	Basic	Proficient	Accelerated	Advanced
ELA (3–5)	200–362	363–381	382–410	411–429	430–575
ELA (6–8)	200–376	377–399	400–421	422–448	449–575
ELA (9–11)	200–392	393–412	413–436	437–455	456–575
Math (3–5)	200–359	360–389	390–426	427–447	448–575
Math (6–8)	200–369	370–399	400–436	437–469	470–575
Math (9–11)	200–391	392–405	406–444	445–476	477–575
Science (4)	200–375	376–399	400–424	425–459	460–575
Science (8)	200–372	373–399	400–428	429–464	465–575
Science (9–11)	200–379	380–399	400–436	437–466	467–575

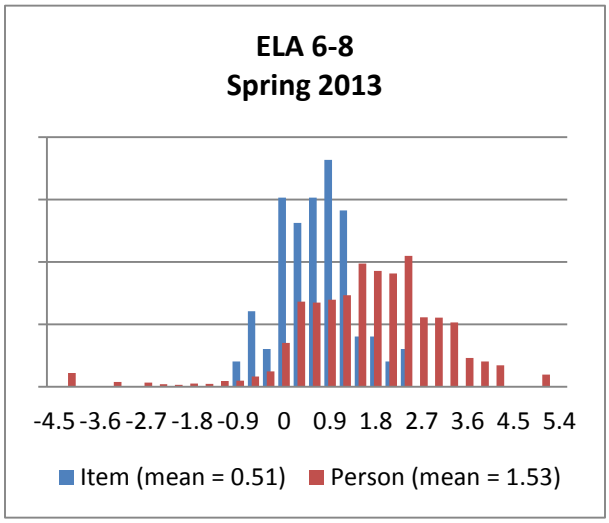
6.3 OIB FORM DIFFICULTIES

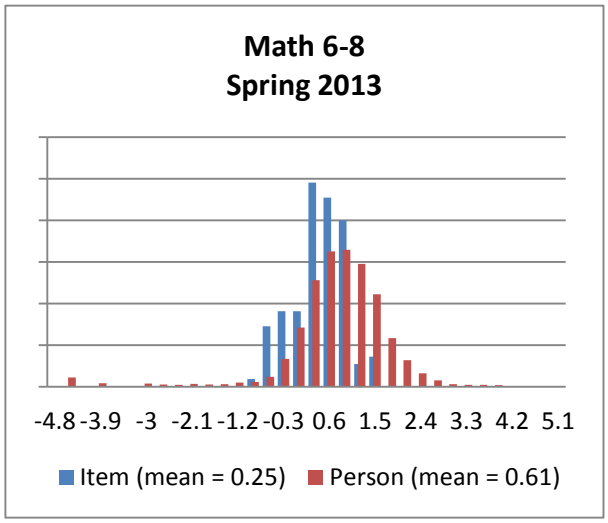
Figure 1 displays the comparison of item difficulties with student abilities in each grade or grade-band of each subject. The plots show that the items generally cover the lower half of the students' ability distributions.

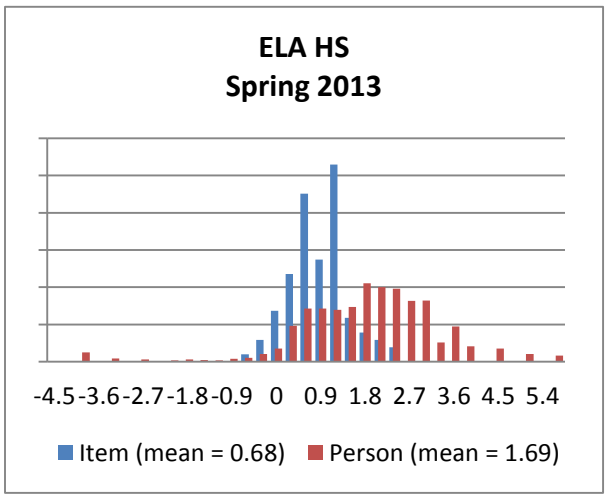
Figure 1. Person and Item Map for Each Subject

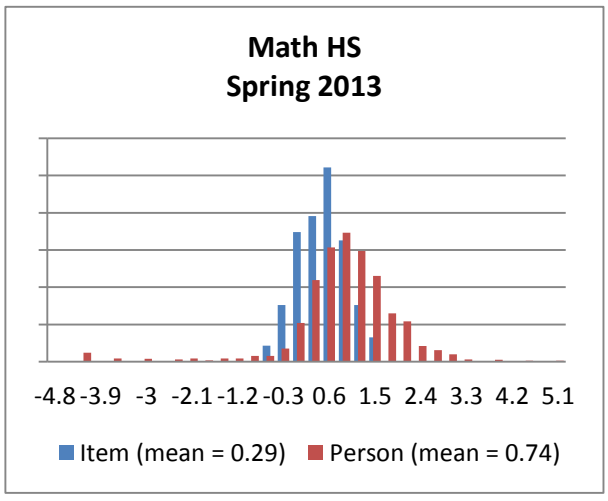


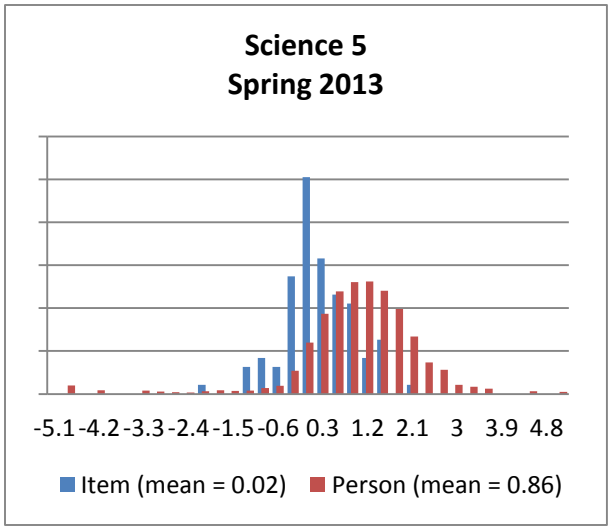


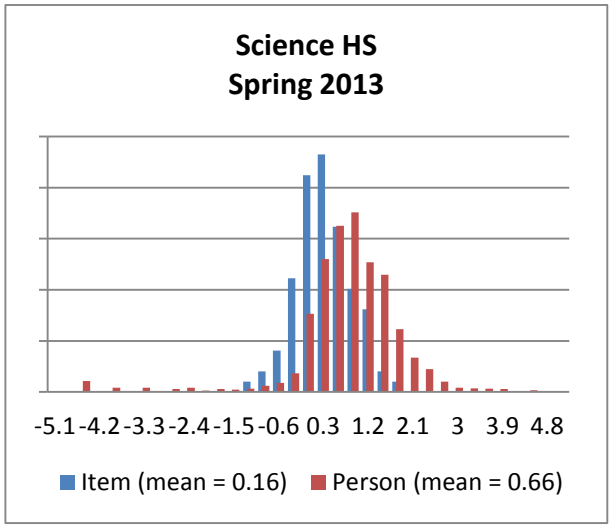


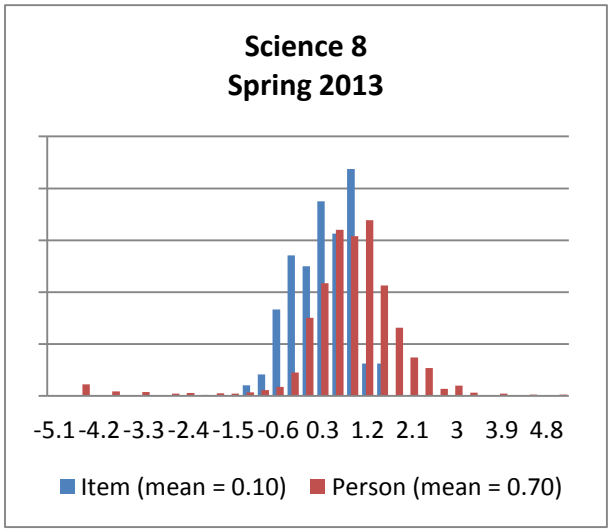












6.4 PERCENT OF STUDENTS AT AND ABOVE CUT SCORES

Figure 2 displays the percentages of students at and above each cut point by grade-band or grade and subject. The percentages were based on the distributional projection of impact data for each form. The impact data were estimated using student responses obtained in 2013 administration. The algorithm of projection is described as follows:

For each theta, θ_0, in the look-up table, one can estimate the probability of person *i*'s ability being above given $\hat{\theta}_i$ as

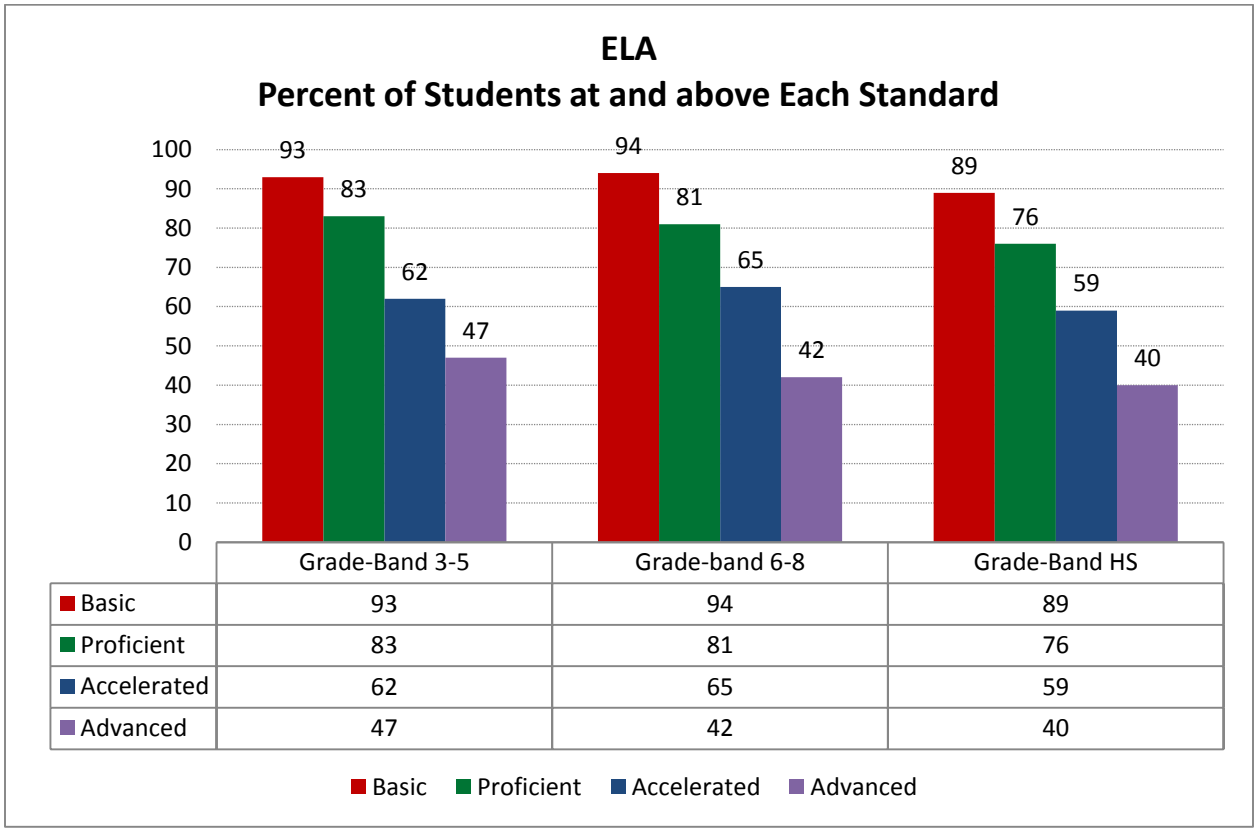
$$P(\theta_i > \theta_0 \mid \hat{\theta}_i) = 1 - \Phi\left(\frac{\theta_0 - \hat{\theta}_i}{se(\hat{\theta}_i)}\right) \quad (1)$$

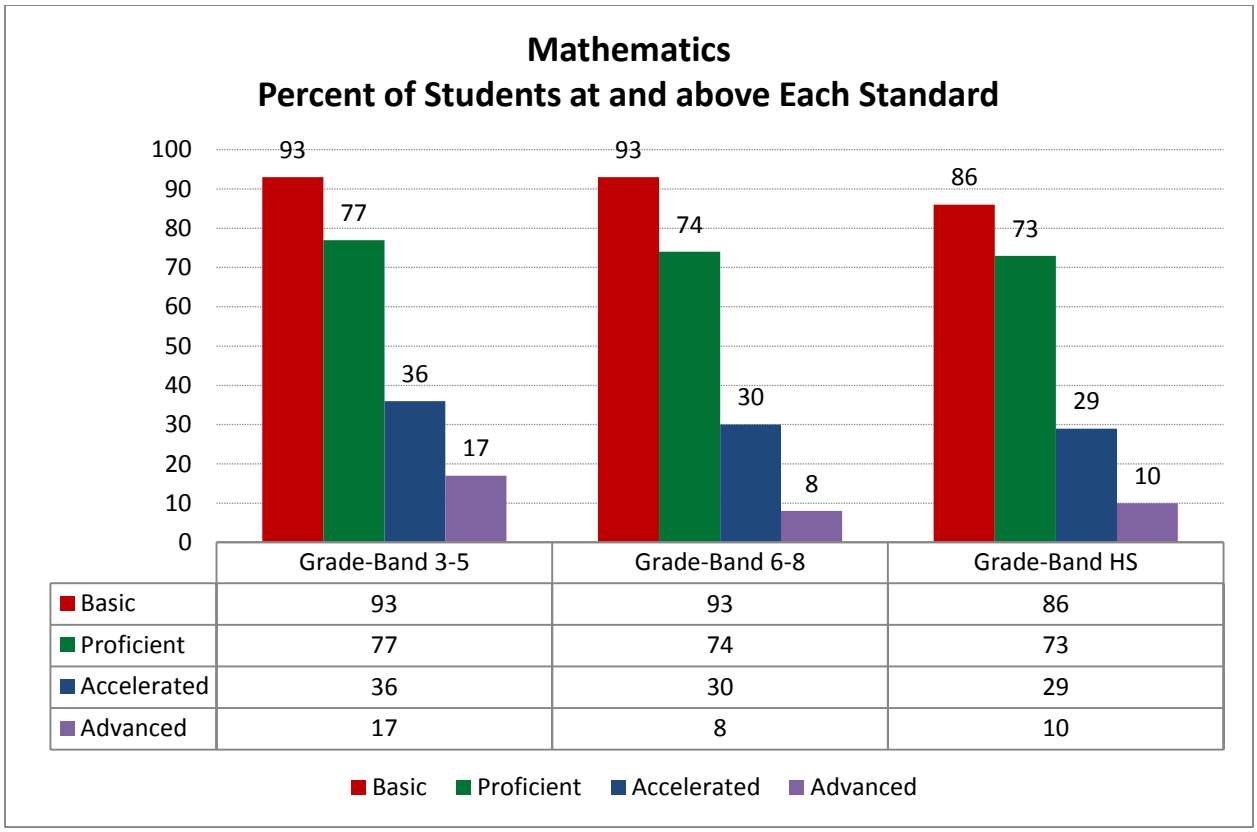
where Φ is the cumulative density function (CDF) of a standard normal distribution. The proportion of the population with ability higher than θ is then estimated by

$$P(\theta > \theta_0) = \int P(\theta_i > \theta_0 \mid \hat{\theta}_i) f(\hat{\theta}_i) d\hat{\theta}_i = \frac{1}{N} \sum_{i=1}^{N} P(\theta_i > \theta_0 \mid \hat{\theta}_i) = \frac{1}{N} \sum_{i=1}^{N} \left[1 - \Phi\left(\frac{\theta_0 - \hat{\theta}_i}{se(\hat{\theta}_i)} \right) \right] \quad (2)$$

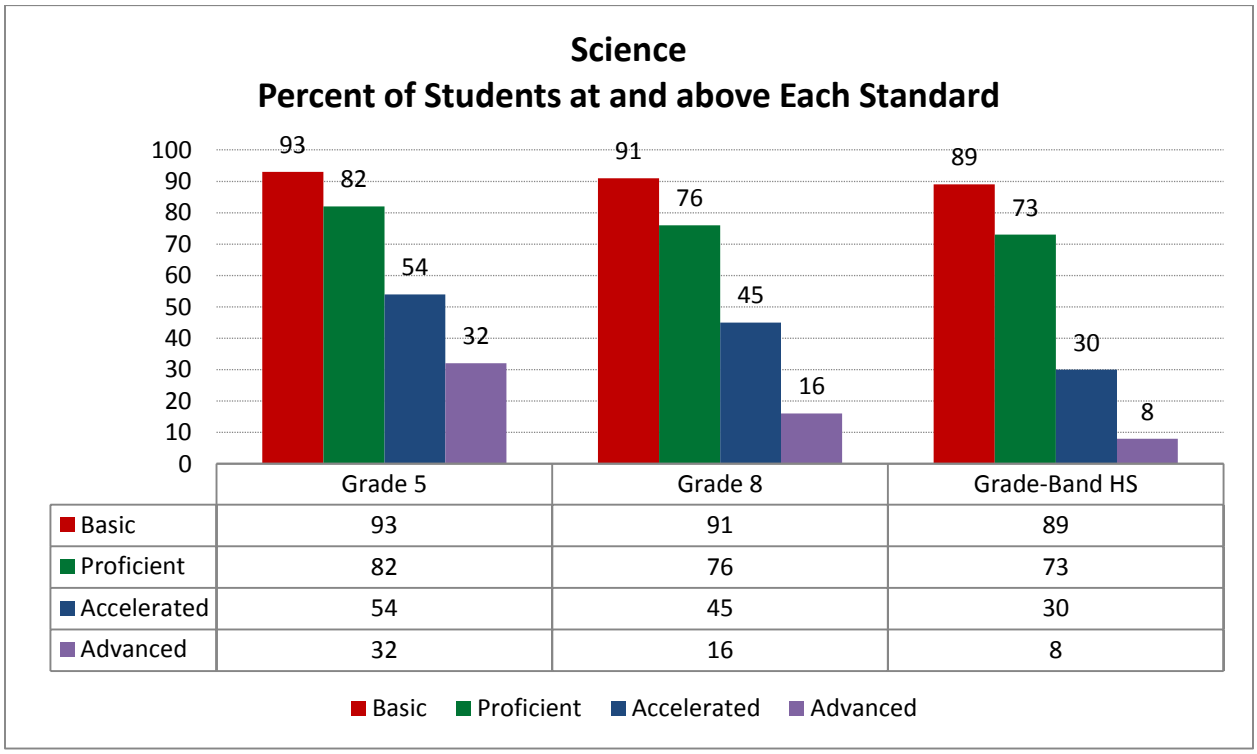
The projection is the integration of the inverse cumulative conditional distribution of theta obtained from the entire operational field test over the values of theta obtained from the OIB.

Figure 2. Percent of Students at and Above Each Cut Point





	Grade-Band 3-5	Grade-Band 6-8	Grade-Band HS
Basic	93	93	86
Proficient	77	74	73
Accelerated	36	30	29
Advanced	17	8	10



	Grade 5	Grade 8	Grade-Band HS
Basic	93	91	89
Proficient	82	76	73
Accelerated	54	45	30
Advanced	32	16	8

7. Item Analyses

Two sets of item analyses were conducted in 2015. One set of analysis used Ohio student responses. In this analysis, classical item analysis, differential item functioning (DIF) analysis, and item response theory (IRT) analysis were conducted. Field test items flagged in this analysis went through the item data review meeting held on May 21, 2015. Items that survived the item data review were added into their respective operational pool.

A second set of analysis used Wyoming student responses. Only classical item analysis and DIF analysis were conducted. The purpose is to show item performance in Wyoming.

7.1 Data Preparation and Quality Check

For the spring 2015 administrations, the test data were carefully examined to verify the accuracy of the values. The frequency distributions of item responses were examined to identify potential scoring problems, such as out-of-range values or unused response categories.

After the accuracy of the data file was verified, classical item analyses, DIF, and IRT analyses were performed. Several quality control procedures were undertaken to ensure the accuracy of these analyses. As an essential step, two psychometricians independently performed all analyses. Results of the parallel analyses were compared using commercially available statistical file comparison software (SAS PROC COMPARE). Finally, the analysis results were spot-checked using other commercially available statistical software (HTML Compare, UltraEdit, Excel DIFF) to ensure that the results were consistent across statistical software packages. These steps were highly effective in detecting any issues that might have influenced the interpretation of the item analysis results.

7.2 Item Analysis Overview

All classical item analysis calculations and DIF statistics were performed with the AM software (American Institutes for Research & Cohen, 2003). The following statistics were computed and evaluated:

- Percent of students in each score category
- Average score of students in each score category
- Adjusted polyserial correlation between item score and student raw score
- Proportion of correctness
- Fairness or DIF statistics
- Proportion of students with omitted responses
- Proportion of students with access limitation
- Total number of students administered
- Item infit and outfit
- Rasch difficulty (RP50) for each step

- Average Rasch step value

The total number of students with omitted responses, proportion of students with access limitation, and total number of students administered were summarized by grade or grade-band in each subject.

7.2.1 Classical Item Analysis

Classical item analysis procedures were employed to ensure that items functioned as intended with respect to the underlying scales. Computations were performed with the AM software. Key statistics that we computed and examined include those described in Sections 7.2.1.1 and 7.2.1.2.

7.2.1.1 Item Discrimination

The item discrimination statistic indicates the extent to which each item differentiates between those examinees who possess the skills being measured and those who do not. In general, the higher the value, the more discriminating the item is. The discrimination index is calculated as the adjusted polyserial correlation between item scores and scale scores. For the purpose of the item analysis, omitted items were treated as not presented. In addition, the average scale score of examinees at each item score point was estimated.

7.2.1.2 Item Difficulty

Items that were either extremely difficult or extremely easy underwent review but were not necessarily deleted if they aligned with the test specifications, as discussed in Section 7.3.

The proportion of students at each score point category was determined, with the item difficulty index being calculated both as the item's mean score and the average proportion correct (analogous to *p*-value and indicating the ratio of the item's mean score divided by the number of points possible).

7.2.2 Differential Item Functioning Analysis

Differential item functioning refers to items that appear to function differently across identifiable groups, typically across different demographic groups. Identifying DIF is important because it is often a clue that items contain a cultural or other bias. Not all items that exhibit DIF are biased. Characteristics of the educational system may also lead to DIF. For example, if schools in low-income areas are less likely to offer geometry classes, students at those schools may perform more poorly on geometry items than would be expected, given their proficiency on other types of items. In this example, the curriculum, not the item, exhibits bias. However, DIF can indicate bias. AIR therefore flags items that show DIF for further review.

For the Ohio AASCD, the following DIF comparisons were conducted using the data from the spring 2015 administration within each form and for each item:

- Female vs. male
- African American vs. white
- Hispanic vs. white

Owing to the small sample size in Wyoming, the DIF comparison was only conducted between male and female students.

AIR evaluated DIF by a generalized Mantel-Haenszel (MH) procedure ($MH-\chi^2$; Zwick & Thayer, 1996; Zwick, Donoghue, & Grima, 1993) and the standardized mean difference (SMD; Dorans & Kulick, 1986) via AM software. The application employs the Mantel-Haenszel procedure that (1) is generalized to polytomously scored items and (2) improves the variance estimation to render the test statistics valid under complex sample designs. The student scale scores were used as the achievement-matching variable. Those estimates were divided into five intervals in order to obtain the MH chi-square DIF statistics. In addition, the application also computed the log-odds ratio, the standard error of the log-odds ratio, the MH-delta (δ) for the dichotomously scored items, and the SMD and standard error of SMD (SD) for the polytomously scored items. The purification method described by Holland and Thayer (1988) is also implemented in the application.

Items were classified into three categories (A, B, or C) ranging from no DIF to mild DIF to severe DIF, according to the DIF classification convention listed in Table 10. Items were also categorized as positive DIF (i.e., +A, +B, or +C), signifying that the item favored the focal group (females, African American, or Hispanic), or negative DIF (i.e., –A, –B, or –C), signifying that the item favored the reference group (male or white). DIF results between female and male students in 2016 forms for Wy-ALT can be found in the DIF Analysis section in Appendix C. Since the sample sizes are often fewer than 50 for comparisons between African American students and white students and between Hispanic and white students, the results are not included. In addition, the C DIF with sample size larger than 50 in both groups are made italic.

In order to consider a DIF statistic, a minimum sample size of 50 was required in both the focal and the reference groups in both sets of analyses. Items flagged for DIF were subjected to additional review to ensure adherence to fairness and sensitivity guidelines discussed in Section 7.3.

Table 10. DIF Classification Convention

DIF Category	Rule
A	The *p*-value of $MH\chi^2$ is not significant at the .05 level or |SMD|/|SD| is less than or equal to 0.17.
B	The *p*-value of $MH\chi^2$ is less than .05 and |SMD|/|SD| is greater than 0.17 and less than or equal to 0.25.
C	The *p*-value of $MH\chi^2$ is less than .05 and |SMD|/|SD| is greater than 0.25.

7.2.3 IRT Parameter Estimation and Equating

This section introduces the IRT model and item parameter estimation that were used for the Ohio AASCD assessment.

7.2.3.1 IRT Model

The Ohio AASCD employs Masters' (1982) partial credit model for polytomous items. Under the partial credit model, the probability of a student responding with an item score, given the student's ability parameter θ, is

$$P(x_i|\theta)=\frac{\exp\sum_{k=1}^{x_i}(\theta-\delta_{ki})}{1+\sum_{j=1}^{m_i}\exp\sum_{k=1}^{j}(\theta-\delta_{ki})} \quad (3)$$

where

i is an index over items, so with R items, $i = 1, \ldots, R$,

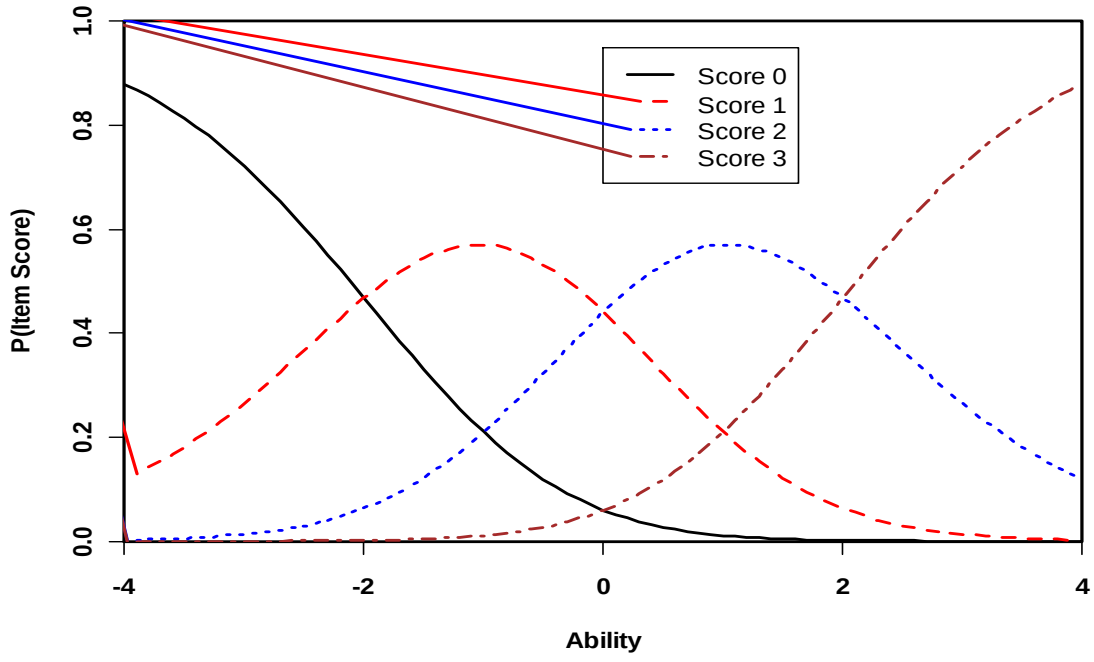
m_i is the number of response categories (minus 1) for item i,

x_i is the observed response to the item, and

δ_{ki} is the k-th step for item i with m_i total categories.

An example of the response probability functions of a partial credit item with the maximum score of 3 is shown in Figure 3.

Figure 3. Partial Credit Item Response Model With δ = (0, –2, 0, 2)



When $m_i = 1$, the partial credit model reduces to the Rasch model for dichotomously scored items with item difficulty β_i:

$$P(\theta|x = 1) = \frac{1}{1 + exp(-(\theta - \beta_i))} \quad (4)$$

7.2.3.2 Item Parameter Estimation

The item parameters were estimated by maximizing the joint likelihood function of the partial credit model:

$$\arg\max \delta\, L(\delta) = \prod_{i=1}^{R} \prod_{s=1}^{N} \frac{\exp \sum_{k=1}^{x_i} (\theta_s - \delta_{ki})}{1 + \sum_{j=1}^{m_i} \exp \sum_{k=1}^{j} (\theta_s - \delta_{ki})} \quad (5)$$

where R indexes the total number of items, N indexes the total number of students, θ_s is the person measure for the student s, and δ_{ki} is the step value for step k on item i. Each step parameter is located at the point where the likelihood function for that step is maximized along the ability scale.

The joint maximum likelihood method yields estimates of item parameters and examinee abilities simultaneously. The item parameters were centered at their mean. No further constraints were used. The estimation was conducted using Winsteps version 3.73.0 (Linacre, 2011).

7.2.3.3 IRT Calibration

In spring 2015, AIR employed a concurrent calibration for items in each subject and grade or grade-band. In concurrent calibration (Jodoin, Keller, & Swaminathan, 2003; Karkee et al., 2003; Kolen & Brennan, 1995; Petersen, Kolen & Hoover, 1989; Holmes, 1982), item parameters are estimated simultaneously in a joint estimation run that includes all operational field-test items and valid student responses.

Item fit was evaluated using the infit and outfit statistics, both chi-square-based, in Winsteps output. The outfit statistic is sensitive to the unexpected observations at locations away from the item difficulty parameters. The infit statistic, under which the observations are weighted by the model variance, is more sensitive to discrepant observations close to the item difficulty values. Both statistics have an expected value of 1.0. Values greater than 1.0 indicate noise and unmodeled variance in the data. Values less than 1.0 indicate that the data fit the measurement model better than expected for the sample size, which could, for instance, indicate some degree of local dependence among items. For the Ohio AASCD item data review, fit index within the range of 0.5 to 2.0 was adopted as the productive range for a measurement. When either statistic is out of this range, the item is flagged.

7.3 ITEM DATA REVIEW COMMITTEE MEETINGS

Following AIR's analysis of field-test items, items were flagged for additional review based on the following criteria:

- Polyserial correlation statistic is out of the critical value range.
- Proportion correct values are out of the critical value range.
- The item falls into the C category for any differential item functioning contrast.
- Item fit statistics are out of the critical value range.

Table 11. Flagging Criteria for Item Data Review

Item Statistic	Flagging Criteria
	Flag the item if:
Percent in category	p > 0.90 for a single score point
Percent non-response	Non-response > 10%
Score progression	Mean total score for a lower score point > Mean total score for a higher score point
Polyserial correlation with test	Polyserial correlation < 0.20
DIF	C category (see table 11)
IRT Mean Infit	Infit > 1.3
IRT Mean Outfit	Outfit > 1.3

7.3.1 AIR Review of Item Statistics

AIR psychometricians reviewed all flagged items to ensure that the data were accurate and properly analyzed, and the items presented no other problems. The psychometricians worked with item development specialists to determine why flagged items were not performing as intended.

7.3.2 Item Data Review Meeting

In the item data review meeting, psychometricans and content specialists at both AIR and the state department of eduction reviewed the flagged items, discussed these items, and explored the reasons for the flagged statistics. In addition, to determine whether to retain the item for student scoring and subsequent administration, the item review team considered these factors, among others:

- Item content designations
- Wording
- Whether the item was necessary to preserve the rest of the task
- Hypotheses about what may have given rise to the statistical flag
- How far out of line from the flagging criteria the item statistic was

After thorough discussions about flagged items, the state department of eduction decided whether the items should be rejected. During the process, if further information or consideration is needed to decide whether to accept or reject an item, the discussion between the state department of education and AIR can continue after the data review meeting until an agreement is reached.

8. Form Summary

The test form summary for Wy-ALT spring 2015 administrations can be found in Appendix A.

8.1 Scale Score summary and Distribution

The AIR scoring engine automatically computed student scores. Test information about either the state-level test frequencies and mean scores or the district and school levels of test frequencies and mean scores was updated daily online during the testing period. Individual student paper reports were available for printing and dissemination ot students and families according to the reporting schedule. Table 12 presents the summary statistics of the scale score by grade or grade-band for each subject.

Table 12. Scale Score Summary

Subject	Grade	*N*	Mean	SD	Min	Max
ELA	3–5	211	405	46	216	555
	6–8	215	423	47	226	572
	9–11	183	428	49	234	566
Math	3–5	210	398	43	200	575
	6–8	215	402	42	200	484
	9–11	183	411	44	200	520
Science	4	77	399	45	200	575
	8	85	402	42	254	477
	9–11	182	410	45	200	542

Appendix B lists the student scale score distribution by subject and grade.

8.2 Form Summary by Subgroups

The scale score summary by gender is listed in Table 13 and the scale score summary by Ethnicity, ELL, and Free Lunch is listed in Table 14.

Table 13. Scale Score Summary by Gender

Subject	Grade	Total	Female			Male		
			N	Mean	SD	*N*	Mean	SD
ELA	3	67	27	394	35.5	40	393	40.2
ELA	4	76	28	396	53.3	48	415	41.5
ELA	5	68	28	404	39.3	40	417	57.6

Subject	Grade	Total	Female			Male		
			N	Mean	SD	*N*	Mean	SD
ELA	6	63	19	403	63.1	44	420	41.4
ELA	7	67	26	436	44.3	41	424	53.5
ELA	8	85	29	433	34.5	56	419	44.6
ELA	9	59	20	426	38.2	39	427	53
ELA	10	65	23	435	50.5	42	434	48.2
ELA	11	59	23	429	40.2	36	417	54.3
Math	3	67	27	391	27.4	40	386	43.6
Math	4	75	27	390	51	48	407	39.9
Math	5	68	28	400	37.4	40	410	50.8
Math	6	63	19	382	63.3	44	400	41.2
Math	7	67	26	412	33.9	41	401	48.9
Math	8	85	29	412	26.5	56	401	38.5
Math	9	59	20	408	30.1	39	410	55.8
Math	10	65	23	410	31.3	42	414	43.2
Math	11	59	23	417	28.1	36	405	53.2
Science	4	77	29	382	51	48	409	38.5
Science	8	85	29	416	28.6	56	395	46.5
Science	9	59	20	411	38.6	39	415	54.3
Science	10	65	23	414	34.4	42	411	46.8
Science	11	58	23	409	26	35	403	50.8

Table 14. Scale Score Summary by Ethnicity, ELL, and Free Lunch

Ethnicity										
		Grade-Band 3–5			**Grade-Band 6–8**			**Grade-Band 9–11**		
	Ethnicity	***N***	**Mean**	**SD**	***N***	**Mean**	**SD**	**N**	**Mean**	**SD**
ELA	American Indian	13	398	35.5	10	415	29.1	7	–	–
	Asian/Pacific Islander	2	–	–	1	–	–	1	–	–
	Black/African American	3	–	–	1	–	–	3	–	–
	Hispanic	16	397	50.7	7	–	–	2	–	–
	Multi-Racial	29	405	41.6	26	427	40.7	29	430	39.4
	Native Hawaiian or Other Pacific Islander	.	.	.	.	.	.	1	–	–
	Other/Unknown	2	–	–	.	.	.	.	.	.
	White	146	404	47.8	170	424	48.7	140	428	51.5
		Grade-Band 3–5			**Grade-Band 6–8**			**Grade-Band 9–11**		

Ethnicity										
		Grade-Band 3–5			**Grade-Band 6–8**			**Grade-Band 9–11**		
	Ethnicity	***N***	**Mean**	**SD**	***N***	**Mean**	**SD**	**N**	**Mean**	**SD**
	Ethnicity	***N***	**Mean**	**SD**	***N***	**Mean**	**SD**	**N**	**Mean**	**SD**
Math	American Indian	13	395	30	10	398	19.6	7	–	–
	Asian/Pacific Islander	2	–	–	1	–	–	1	–	–
	Black/African American	3	–	–	1	–	–	3	–	–
	Hispanic	16	388	63.8	7	–	–	2	–	–
	Multi-Racial	29	405	36	26	403	51.9	29	419	43
	Native Hawaiian or Other Pacific Islander	.	.	.	.	.	.	1	–	–
	Other/Unknown	2	–	–	.	.	.	.	.	.
	White	145	397	43.4	170	403	42.3	140	409	45.4
		Grade 4			**Grade 8**			**Grade-Band 9–11**		
	Ethnicity	***N***	**Mean**	**SD**	***N***	**Mean**	**SD**	***N***	**Mean**	**SD**
Science	American Indian	4	–	–	3	–	–	7	–	–
	Asian/Pacific Islander	1	–	–	.	.	.	1	–	–
	Black/African American	.	.	.	1	–	–	3	–	–
	Hispanic	5	–	–	5	–	–	2	–	–
	Multi-Racial	9	–	–	11	416	34.5	29	411	35.5
	Native Hawaiian or Other Pacific Islander	.	.	.	.	.	.	1	–	–
	Other/Unknown	1	–	–	.	.	.	.	.	.
	White	57	399	47.4	65	400	43.2	139	411	47.6
ELL (English Language Learner)										
		Grade-Band 3–5			**Grade-Band 6–8**			**Grade-Band 9–11**		
	ELL	***N***	**Mean**	**SD**	***N***	**Mean**	**SD**	***N***	**Mean**	**SD**
ELA	Yes	16	423	30.6	11	428	27.4	3	-	-
	No	171	402	47.2	195	421	46.8	167	427	46.9
	Refused services	2	-	-	1	-		1	-	
	Unknown	22	413	43.3	8	-	-	12	440	73.8
		Grade-Band 3–5			**Grade-Band 6–8**			**Grade-Band 9–11**		
	ELL	***N***	**Mean**	**SD**	***N***	**Mean**	**SD**	***N***	**Mean**	**SD**
Math	Yes	16	422	29.5	11	418	26	3	-	-
	No	170	396	45	195	400	43.2	167	409	42.5
	Refused services	2	-	-	1	-		1	-	
	Unknown	22	398	35.5	8	-	-	12	427	64.3
		Grade 4			**Grade 8**			**Grade-Band 9–11**		

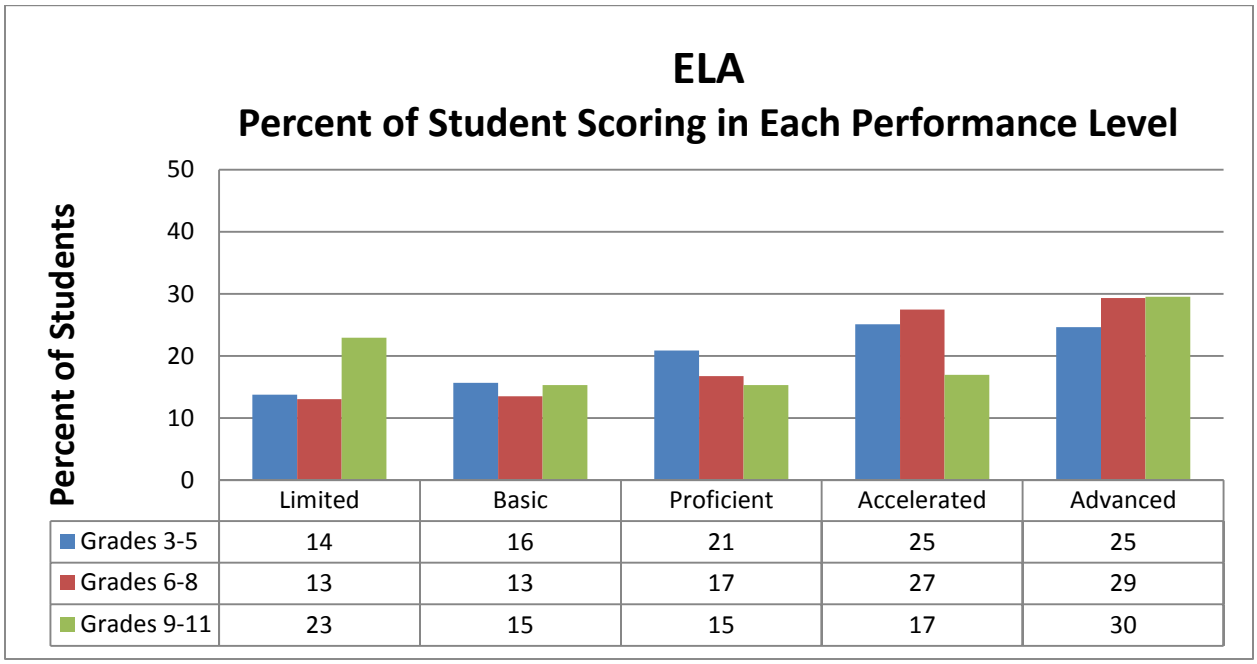
	ELL	*N*	Mean	SD	*N*	Mean	SD	*N*	Mean	SD
Science	Yes	7	-	-	2	-	-	3	-	-
	No	62	395	48	79	401	43	166	410	42.2
	Refused services	1	-	-	1	-	-	1	-	
	Unknown	7	-	-	3	-	-	12	411	74.9
ELIGIBLE FOR FREE OR REDUCED-PRICE LUNCH										
		Grade-Band 3–5			**Grade-Band 6–8**			**Grade-Band 9–11**		
	Free Lunch	***N***	**Mean**	**SD**	***N***	**Mean**	**SD**	***N***	**Mean**	**SD**
ELA	Free lunch eligible	68	407	39.6	76	422	45	63	440	54.1
	Not Eligible	83	407	50.8	86	420	41.7	70	417	39.6
	Reduced priced lunch eligible	26	387	47	29	437	57.7	26	424	39.4
	School provides all students free lunch	6	-	-	5	-	-	2	-	-
	School not participating	.	.	.	2	-	-	2	-	-
	Unknown	28	403	46.7	17	413	62.5	20	428	63.9
		Grade-Band 3–5			**Grade-Band 6–8**			**Grade-Band 9–11**		
	Free Lunch	***N***	**Mean**	**SD**	***N***	**Mean**	**SD**	***N***	**Mean**	**SD**
Math	Free lunch eligible	67	399	37.4	76	403	42.3	63	418	52.2
	Not Eligible	83	402	49.6	86	398	41.3	70	402	36.4
	Reduced priced lunch eligible	26	384	44.2	29	414	48	26	411	25.1
	School provides all students free lunch	6	-	-	5	-	-	2	-	-
	School not participating	.	.	.	2	-	-	2	-	-
	Unknown	28	395	36.4	17	391	42.9	20	414	57.2
		Grade 4			**Grade 8**			**Grade-Band 9–11**		
	Free Lunch	***N***	**Mean**	**SD**	***N***	**Mean**	**SD**	***N***	**Mean**	**SD**
Science	Free lunch eligible	25	396	23.7	23	410	42.3	63	417	53.5
	Not Eligible	36	403	49.4	37	400	43.8	69	402	32.8
	Reduced priced lunch eligible	9	-	-	15	403	19.4	26	415	33.9
	School provides all students free lunch	.	.	.	1	-	-	2	-	-
	School not participating	.	.	.	1	-	-	2	-	-
	Unknown	7	-	-	8	-	-	20	407	61.2

Note, the descriptive statistics for n count fewer than 10 are suppressed.

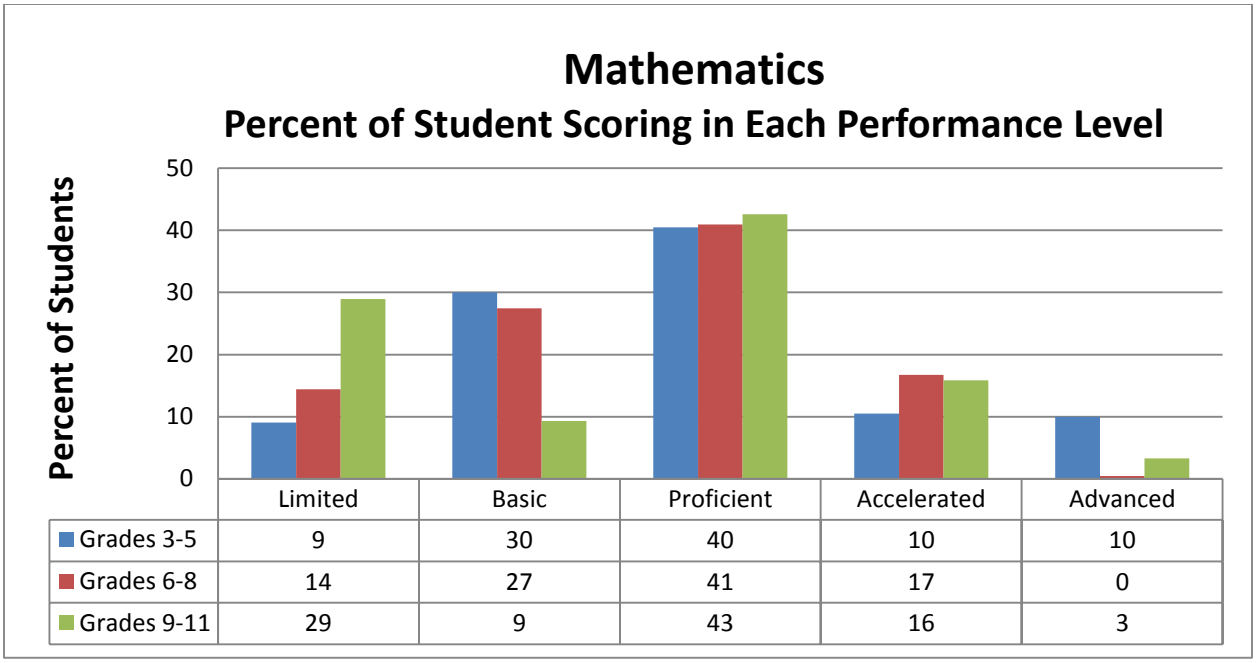
8.3 PERCENT OF STUDENTS AT EACH PERFORMANCE LEVEL

With the cut scores obtained from the standard setting and the scale scores produced by the scoring engine for spring 2015 Wy-ALT, the percent of students at each performance level by grade-band or grade and subject was calculated. The results are presented in Figure 4; the data indicate the percent of students in each performance level was comparable across grade or grade-band in ELA, math, and science.

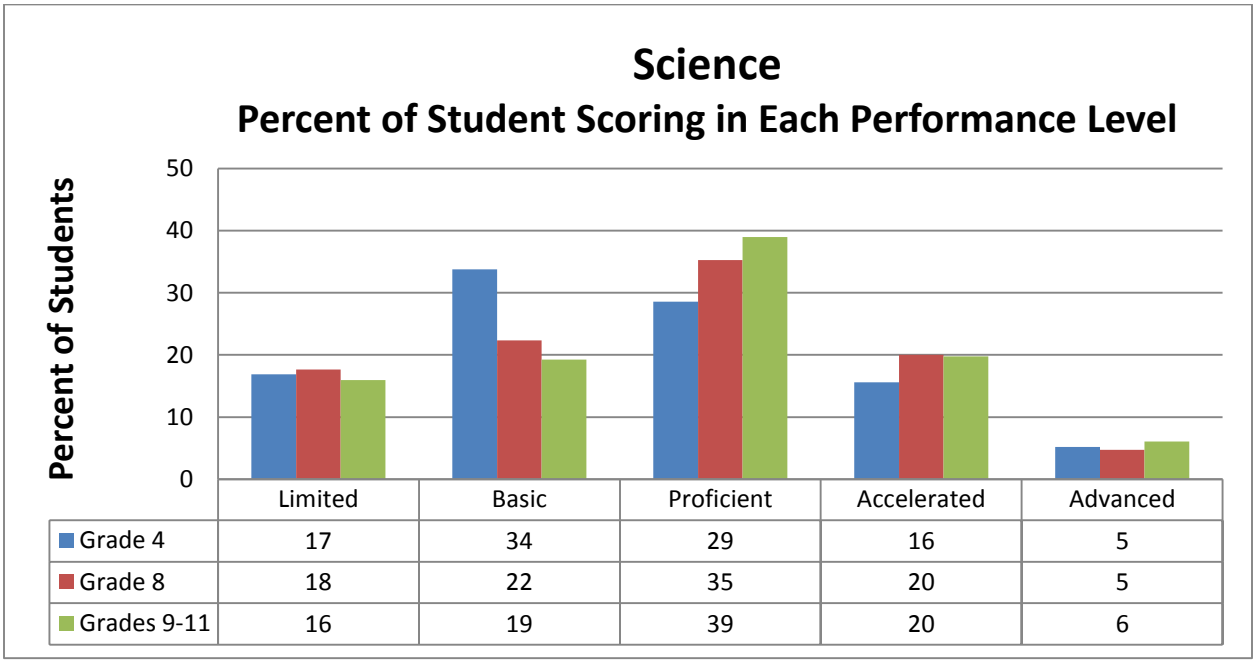
Figure 4. Percent of Students Scoring in Each Performance Level



	Limited	Basic	Proficient	Accelerated	Advanced
Grades 3-5	14	16	21	25	25
Grades 6-8	13	13	17	27	29
Grades 9-11	23	15	15	17	30



	Limited	Basic	Proficient	Accelerated	Advanced
Grades 3-5	9	30	40	10	10
Grades 6-8	14	27	41	17	0
Grades 9-11	29	9	43	16	3



	Limited	Basic	Proficient	Accelerated	Advanced
Grade 4	17	34	29	16	5
Grade 8	18	22	35	20	5
Grades 9-11	16	19	39	20	6

9. Technical Quality

Technical quality of the operational forms is discussed in this section. Test reliability, conditional standard error of measurement (CSEM), vertical scales, and score reliability are examined.

9.1 TEST RELIABILITY

This section provides the marginal reliability for each operational form in the spring 2015 administration.

9.1.1 Marginal Reliability and Marginal Standard Error of Measurement

Classical test theory-based reliability indices such as Cronbach's Alpha are not appropriate for Wy-ALT because (1) the length of the test may differ for each student, and (2) the test used IRT methods, where the measurement error is a function of student achievement ($\hat{\theta}$). The reliability coefficient for the Wy-ALT was, therefore, calculated as the *marginal reliability* (Sireci, Thissen, & Wainer, 1991), which is equivalent to internal consistency estimates of reliability.

First, we determine the marginal measurement error variance, $\bar{\sigma}^2_{e^*}$, across all examinees,

$$\bar{\sigma}^2_{e^*} = \int \sigma^2_{e^*} p(\theta) d\theta = \frac{\sum \sigma^2_{e^*}}{N} \quad (6)$$

where $\sigma^2_{e^*}$ is the square of the standard error of student achievement estimate, $\hat{\theta}$. Thus, the marginal measurement error variance can be estimated as the average of squared standard error of $\hat{\theta}$. Then we estimate the marginal reliability as

$$\bar{\rho} = \left(\sigma^2_{\hat{\theta}} - \bar{\sigma}^2_{e^*}\right) \Big/ \sigma^2_{\hat{\theta}} \quad (7)$$

where $\sigma^2_{\hat{\theta}}$ is the variance of the observed $\hat{\theta}$ estimates.

The marginal reliability estimate, $\bar{\rho}$, can be interpreted similarly to classical reliability indices such as Cronbach's Alpha.

The marginal standard error (MSEM) is computed as the square root of the assessment's marginal measurement error variance, computed by equation 1 above. In order to put it on the scale score metric to compare with the scale score standard deviation, $\sigma^2_{e^*}$, in equation 1 is the square of the standard error of student scale scores. Thus, the MSEM can be estimated as the average of squared standard error of scale scores.

Estimates of the marginal reliability, marginal SEM, and standard deviation of scale score by subject and grade or grade-band are listed in Table 15.

Table 15. Marginal Reliability, Marginal SEM, and Standard Deviation of Scale Score by Subject and Grade/Grade-Band

Subject		Form		
	Statistic	3–5	6–8	9–11

ELA	*N*	211	215	183
	Reliability	0.93	0.93	0.93
	MSEM (SD)	12(46)	13(47)	13(49)
Math	Statistic	3–5	6–8	9–11
	N	210	215	183
	Reliability	0.90	0.92	0.92
	MSEM (SD)	14(43)	12(42)	12(44)
Science	Statistic	4	8	9–11
	N	77	85	182
	Reliability	0.89	0.89	0.91
	MSEM (SD)	15(45)	14(42)	13(45)

Table 15 shows that form reliability estimate is at or above 0.89 for each operational form. In general, the reliability indices suggest that a great deal of the variability in performance is due to student achievement rather than sampling error. They indicate that the forms are statistically reliable.

The information in Table 15 also suggests that MSEM are usually one-quarter to one-third of the scale score standard deviation (SD) in each operational form.

9.1.2 Conditional Standard Errors of Measurement

In IRT-based estimation by the maximum likelihood method, the CSEM of a student score on the theta scale is generated as:

$$\mathrm{se}(\theta) = \frac{1}{\sqrt{-\left(\frac{\partial^2 \mathrm{lnL}(\theta)}{\partial^2 \theta}\right)}} \qquad (8)$$

Therefore, $\frac{\partial^2 \mathrm{lnL}(\theta)}{\partial^2 \theta}$ is the second derivative of the log-likelihood with respect to θ, computed in Masters' (1982) partial credit model as

$$\frac{\partial^2 \ln L(\theta)}{\partial^2 \theta} = \sum_{i=1}^{N} \left\{ \left[\frac{\sum_{j=1}^{m_i} j \exp \sum_{k=1}^{x_i} (\theta - \delta_{ki})}{1 + \sum_{j=1}^{m_i} \exp \sum_{k=1}^{j} (\theta - \delta_{ki})} \right]^2 - \left[\frac{\sum_{j=1}^{m_i} j^2 \exp \sum_{k=1}^{x_i} (\theta - \delta_{ki})}{1 + \sum_{j=1}^{m_i} \exp \sum_{k=1}^{j} (\theta - \delta_{ki})} \right] \right\} \qquad (9)$$

These standard errors are conditional on the set of items administered to the student and on the responses provided. Conditional standard errors can be expressed in the scaled score metric by multiplying them by the slope parameter of the (linear) transformation equation.

To demonstrate how the conditional standard errors of measurement vary by student, Figures 5 through 13 show the CSEMs plotted against students' scale scores by starting task for students taking each operational form. In each figure, the corresponding cut scores in scale score metrics were included as reference lines. The four cut scores along the scale score axis from left to right are for the "Basic," "Proficient," "Accelerated," and "Advanced" performance level, respectively.

Generally, the relationship between conditional standard error of measurement and scale score is U-shaped, with large CSEM values at the lower and upper ends of the scale score range and the smallest CSEMs in the middle, approximately at the cut points. The middle section of the scales has the most measurement information, and therefore, the conditional standard error of measurement remains low.

Figure 5. CSEM vs. Scale Score for ELA Grade 3–5

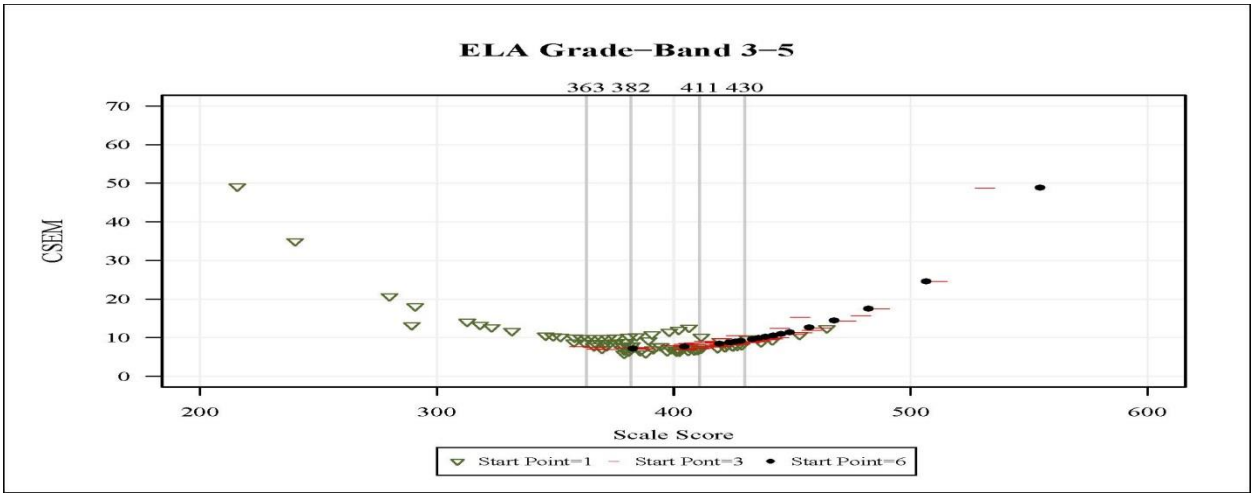


Figure 6. CSEM vs. Scale Score for ELA Grade 6–8

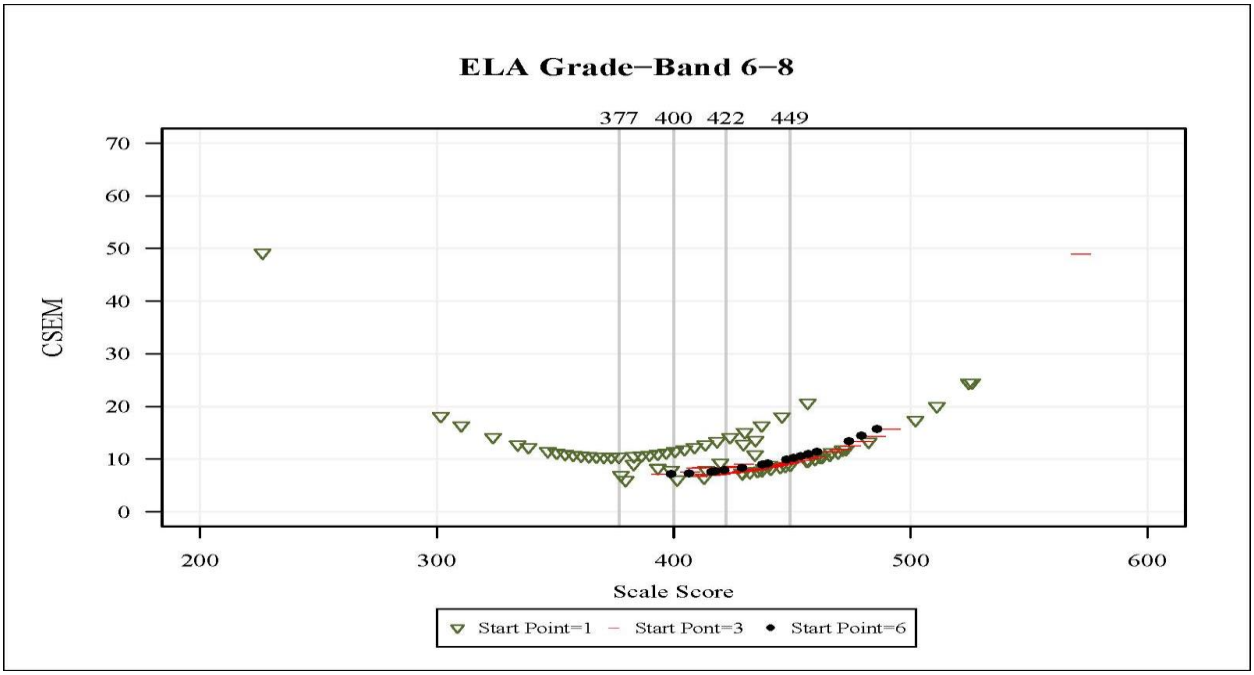


Figure 7. CSEM vs. Scale Score for ELA Grade 9–11

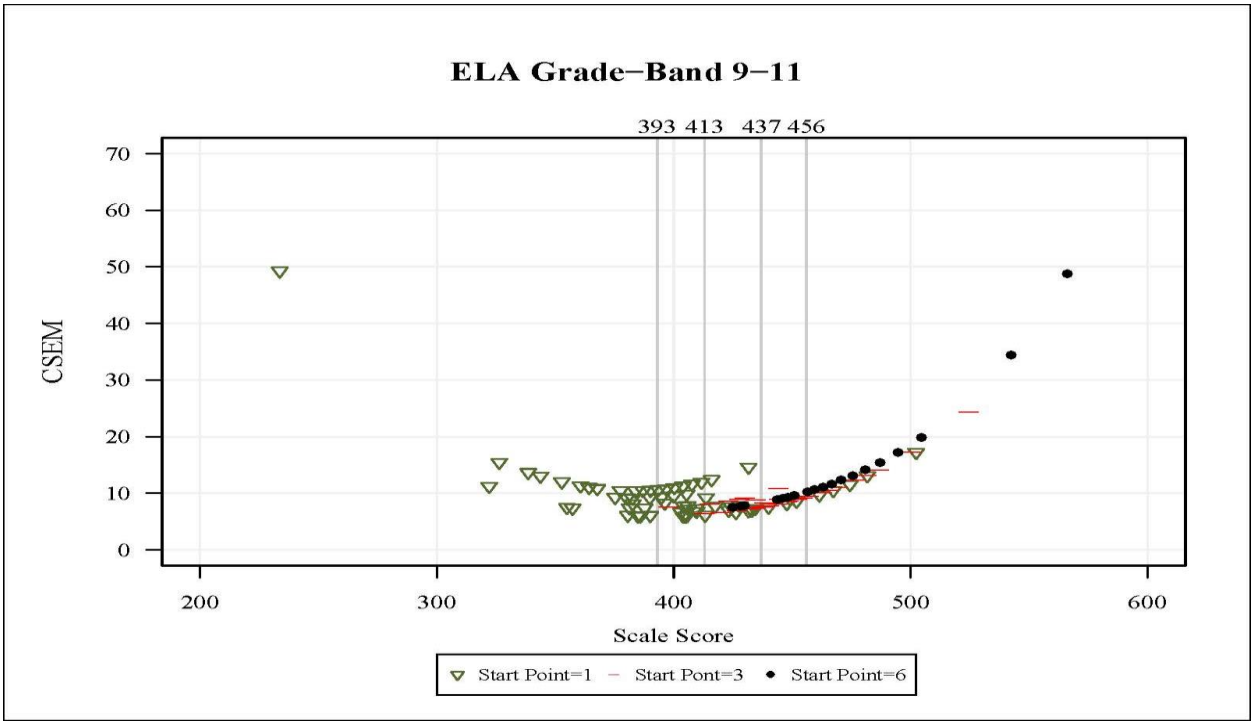


Figure 8. CSEM vs. Scale Score for Math Grade 3–5

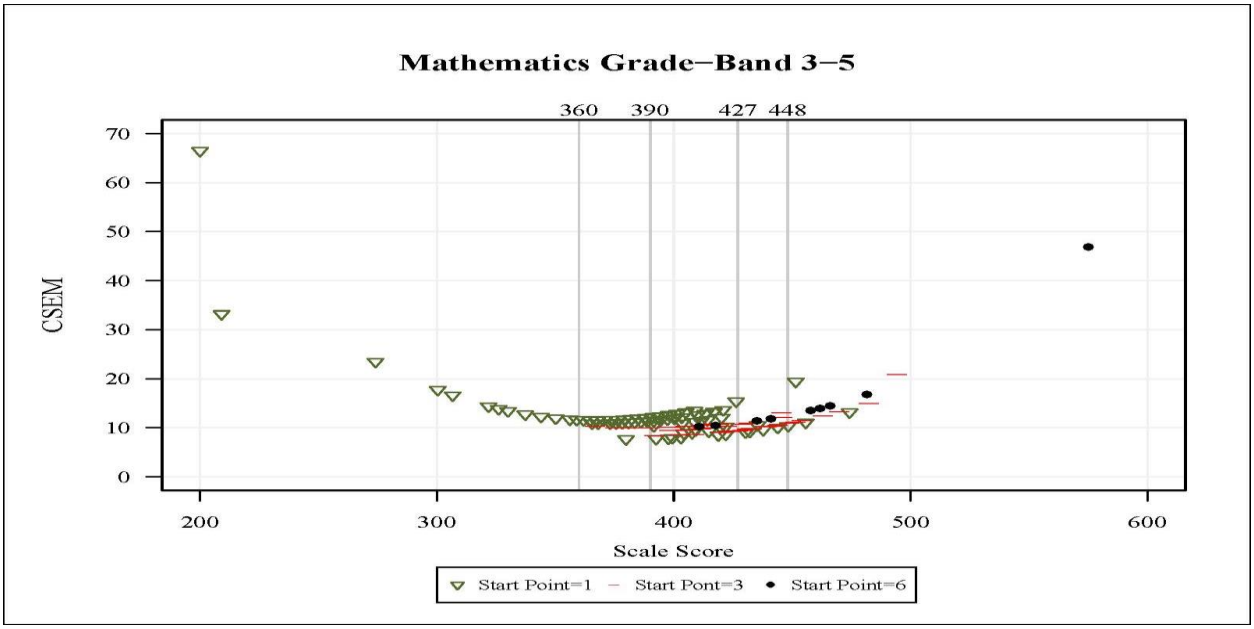


Figure 9. CSEM vs. Scale Score for Math Grade 6–8

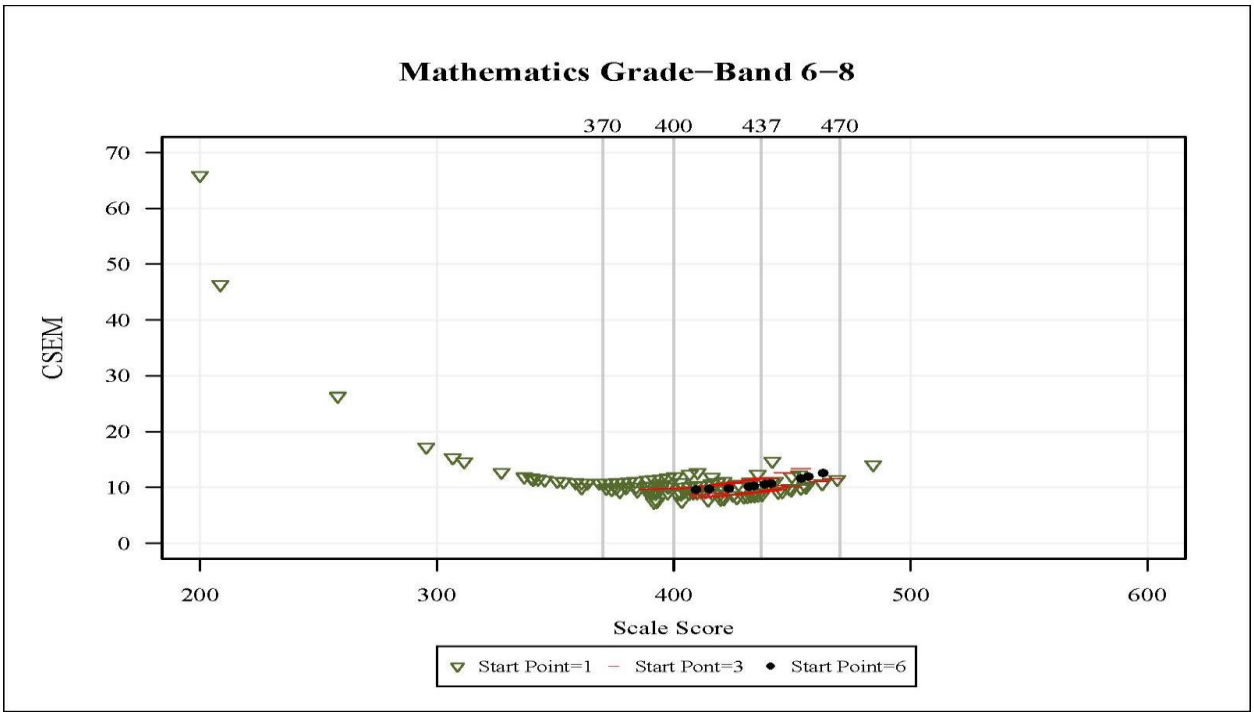


Figure 10. CSEM vs. Scale Score for Math Grade 9–11

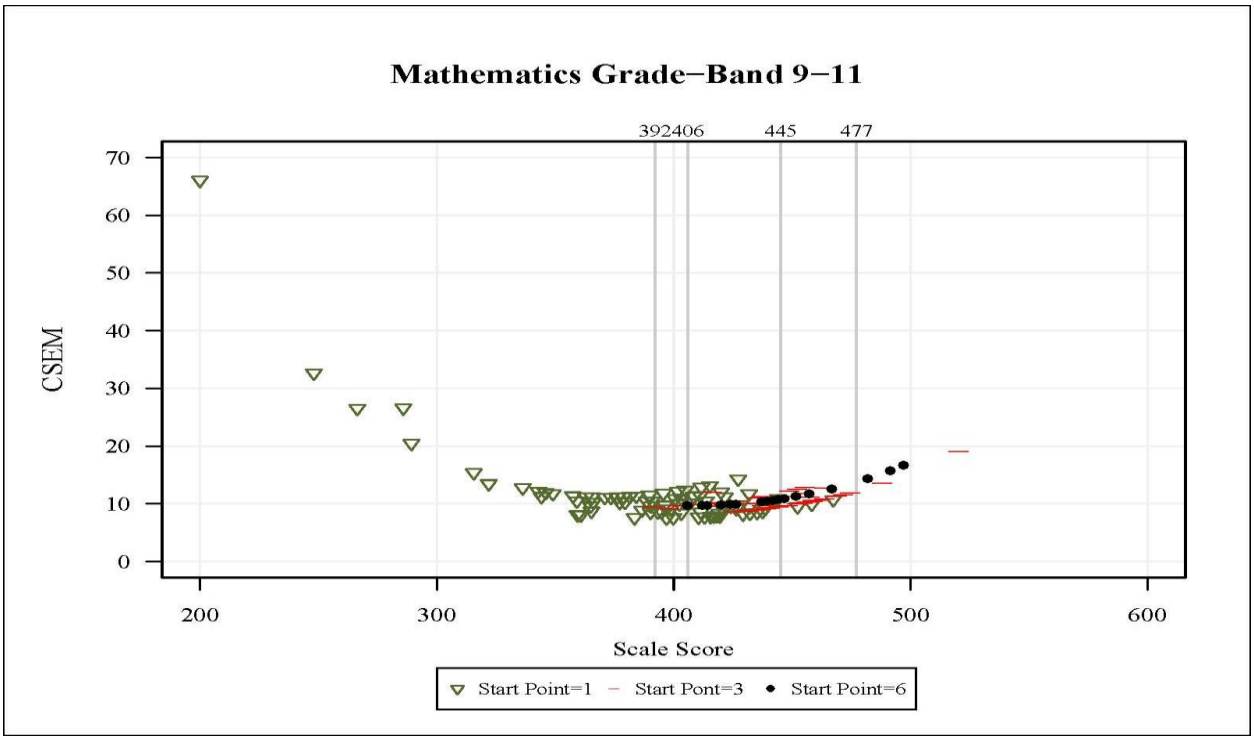


Figure 11. CSEM vs. Scale Score for Science Grade 4

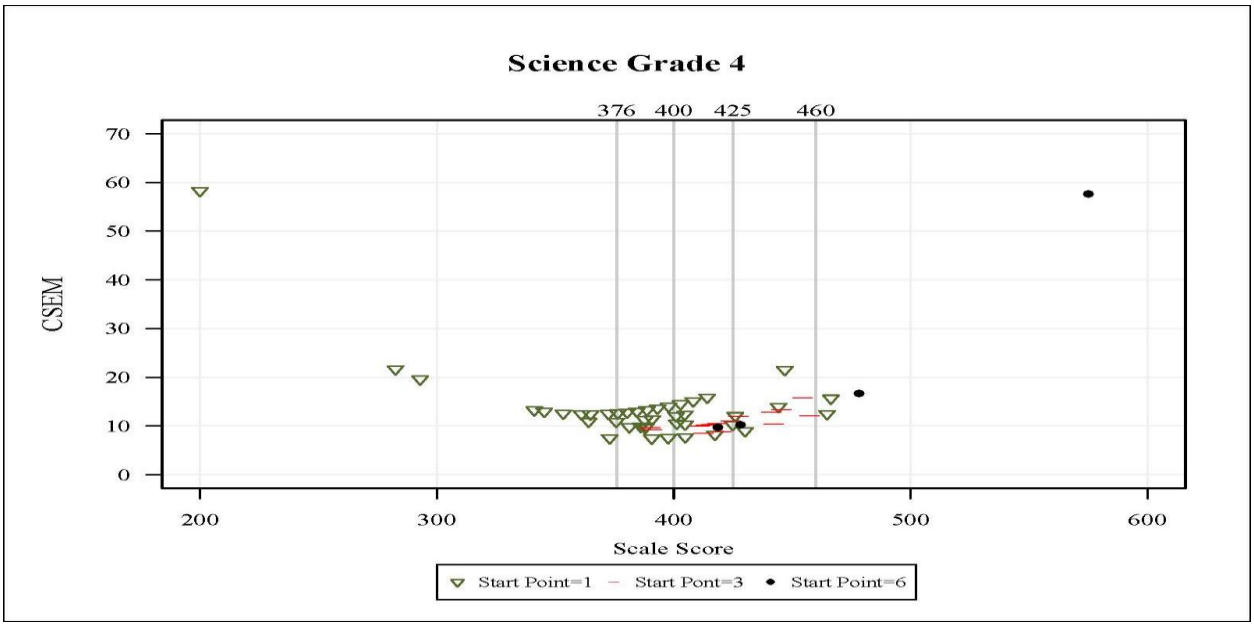


Figure 12. CSEM vs. Scale Score for Science Grade 8

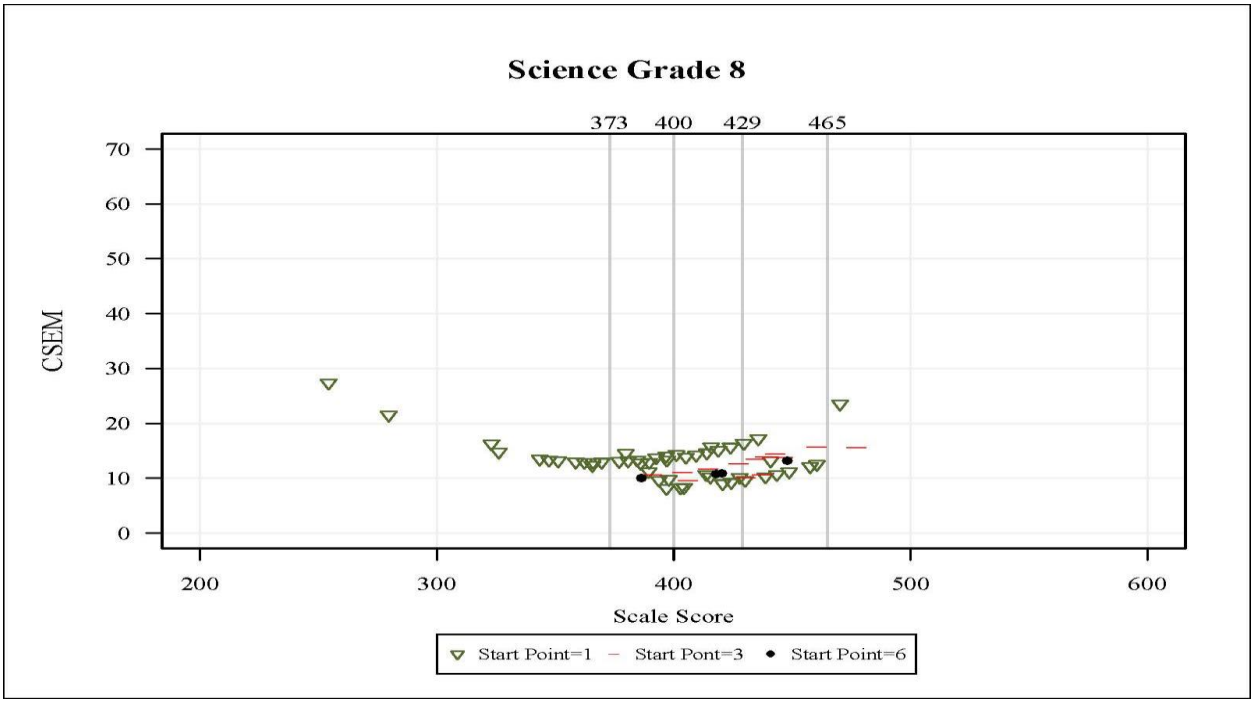
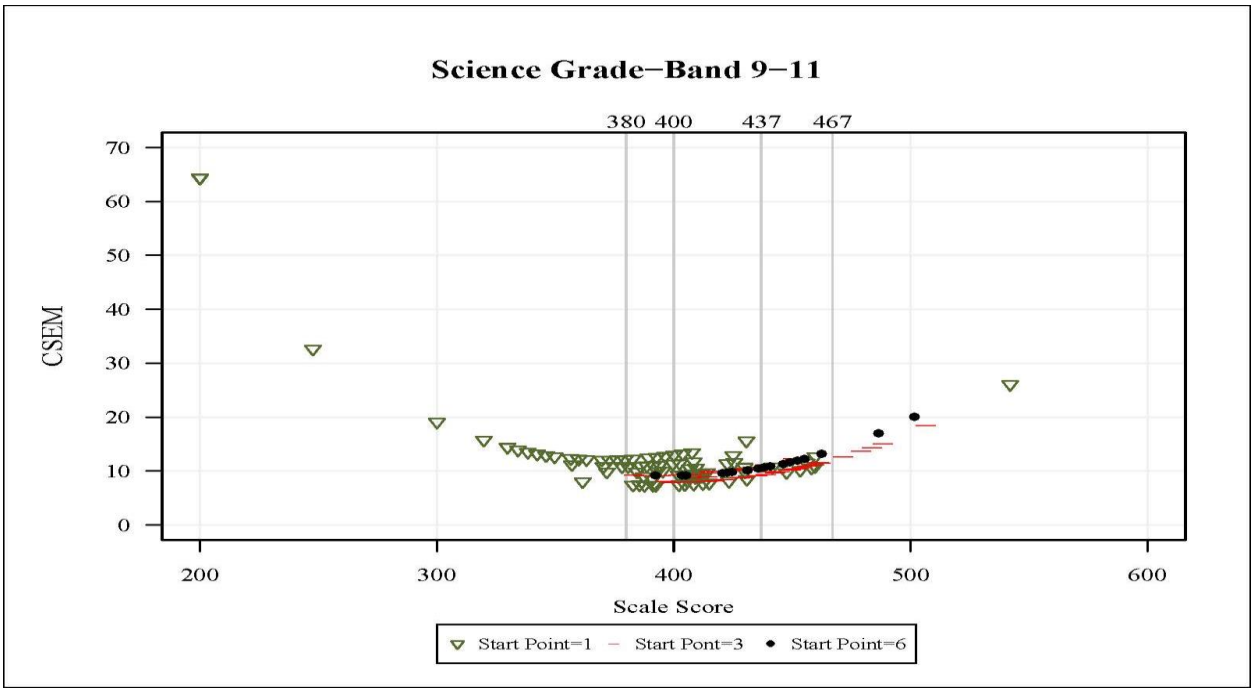


Figure 13. CSEM vs. Scale Score for Science Grade 9–11



9.2 CLASSIFICATION ACCURACY

The Rudner classification index (Rudner, 2005) is used to assess classification accuracy for the spring 2015 Wy-ALT. In the Rudner method, the classification accuracy of observed scores in a particular range, [c_k, c_{k+1}], is defined as the expected proportion of examinees who have true and observed scores in the range on the theta scale:

$$CA = \sum_{\theta=C_k}^{C_{k+1}} (\phi(\frac{c_{k+1} - \theta}{se(\theta)}) - \phi(\frac{c_k - \theta}{se(\theta)}))\, f(\theta) \tag{10}$$

where $\phi(z)$ is the cumulative normal distribution function with a mean of θ and a standard deviation of $se(\theta)$, and $f(\theta)$ is the expected proportion of examinees whose true score is θ. The value of $se(\theta)$ can be obtained using the reciprocal of the square root of the negative test information function:

$$se(\theta) = \frac{1}{\sqrt{-I_{test}(\theta)}} \tag{11}$$

and

$$I_{test}(\theta) = \sqrt{\sum_{i=1}^{n}\left[\sum_{k=0}^{m_i}((kP_{ik}(\theta))^2 - k^2 p_{ik}(\theta))\right]} \quad (12)$$

where m is the number of response categories (minus 1) for item i, and $p_{ik}(\theta)$ is probability of response k for item i using Masters' partial credit model:

$$P_{ik}(\theta) = \frac{\exp\sum_{j=1}^{k_i}(\theta - \delta_{ij})}{1 + \sum_{m=1}^{M}\exp\sum_{j=1}^{m}(\theta - \delta_{ij})} \quad (13)$$

In the computation, since the achievement distributions of students taking alternate assessments is usually negatively skewed, the density distribution of student abilities is a kernel smoothed distribution of the empirical theta estimates. The distribution is divided into more than 130 intervals along the theta scale, depending on the set of theta estimates. The expected proportion of examinees who have true score θ, $f(\theta)$ is obtained using the density at the θ point multiplied by the range of the interval into which the θ falls. The classification accuracy for a particular performance level is the sum of the CA in equation 18 where $[c_k, c_{k+1}]$ belongs to this performance level. The overall classification accuracy across all performance levels is the sum of the classification accuracy at each performance level. To increase the precision of the computation, the theta cuts are inserted into the density function. The density for each cut score is the mean of the densities at the two adjacent theta points.

Table 16 lists Rudner's classification accuracy index for each operational form. The result shows that the classification accuracy indices are between 0.79 and 0.83 for all tests. Students taking ELA and mathematics forms are better classified.

Table 16. Form Classification Accuracy

Subject	3–5	6–8	9–11
ELA	0.82	0.83	0.83
Math	0.81	0.83	0.82
Science	0.79	0.79	0.80

9.3 VALIDATION OF VERTICAL SCALES FOR ELA AND MATHEMATICS

Figure 14 and Figure 15 show that the scale score distributions consistently move to the right as the grade-band increases for both ELA and mathematics, although the distributions for grade-bands 6–8 and 9–11 are closer. The result is consistent with assessments for other states in that the extent of growth decreases as grade-band increases.

Figure 14. Scale Score Distribution for ELA

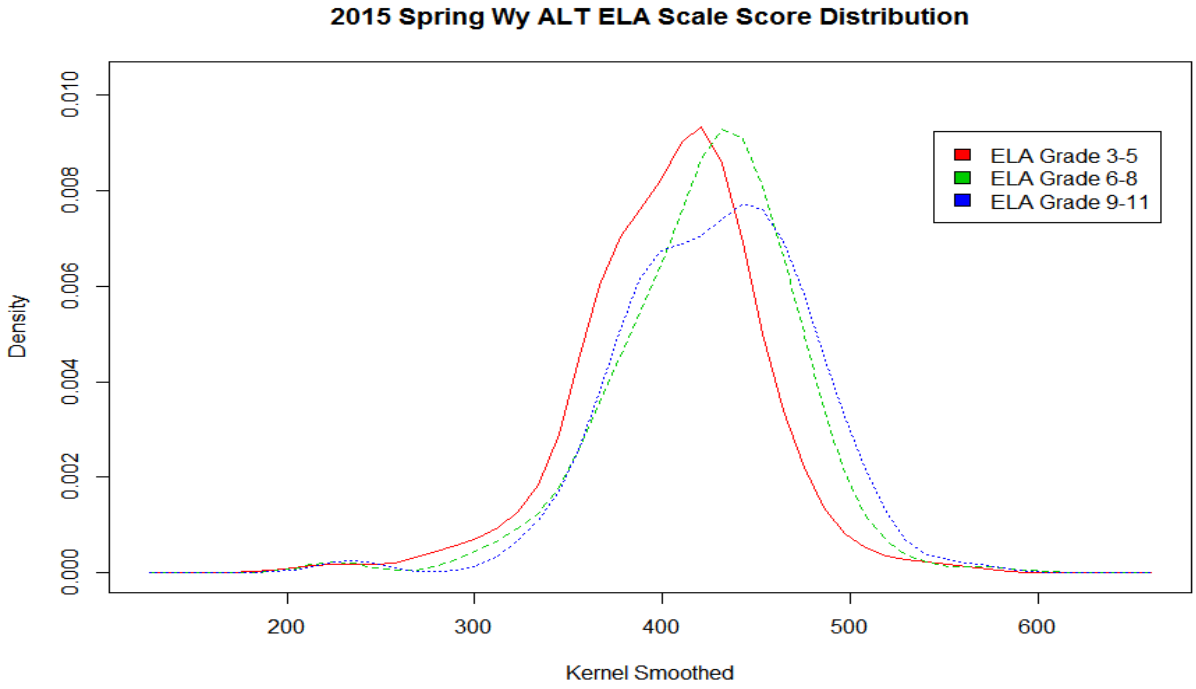
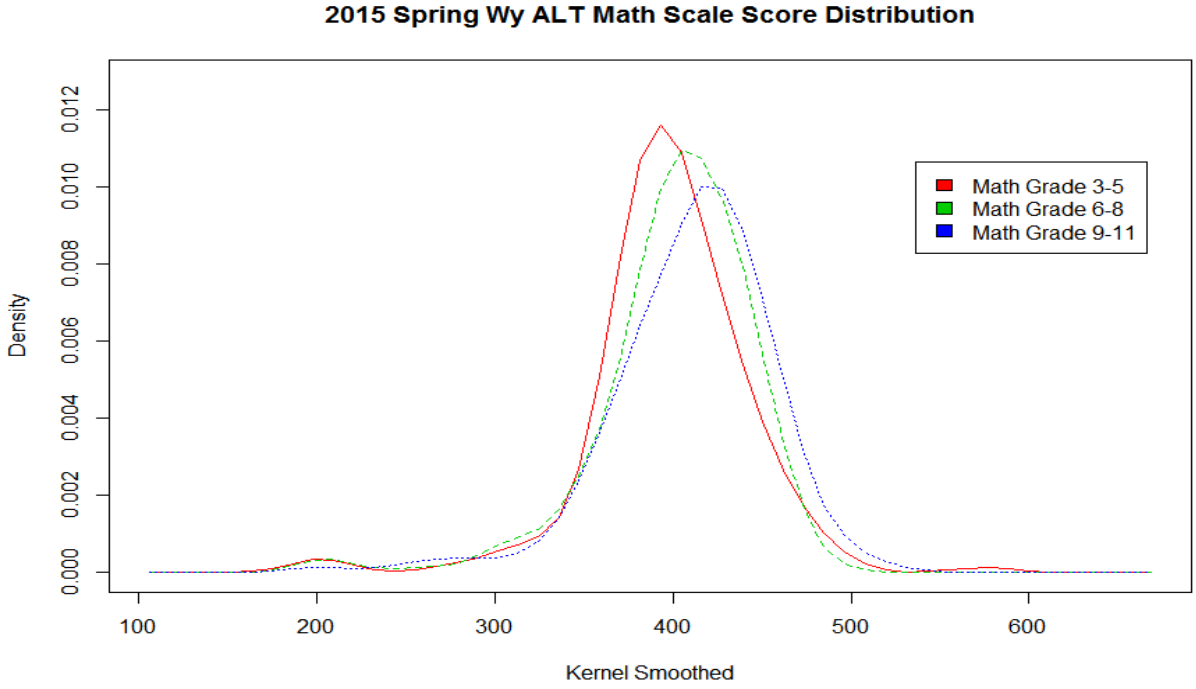


Figure 15. Student Scale Score Distribution for Math



9.4 SECOND SCORER ANALYSIS

9.4.1 Role and Responsibility of Second Scorers

The fidelity of administration and scoring is monitored using a second scorer to verify reliability of scoring in a sample of administrations. Second scorers serve to independently score student responses in all tested content areas. Scores from first and second scorers will be compared. Second scorers can be other test administrators, administrators, special education coordinators, or other qualified staff. Community volunteers and parents cannot serve as second scorers.

Table 17 lists the total and the sampled numbers of teachers and students, as well as the percentages of the sampled teachers and students for each grade-band in mathematics tests. The tables show that about 48% of teachers in grades 3–5, 65% of teachers in grades 6–8, and 57% of teachers in grades 9–11 for mathematics were assigned second scorers. Also, second scorers scored about 22–24% of students taking mathematics tests.

Table 17. Sampling Summary

Subject	Grade/ Grade-Band	Total		Sampled		Percentage	
		Teacher	Student	Teacher	Student	Teacher	Student
Math	3–5	92	210	44	51	48	24
	6–8	78	215	51	52	65	24
	9–11	69	183	39	40	57	22

9.4.2 Procedure for Second Scorer Training and Rescoring

Second scorers attended the same teacher training workshops for the spring 2015 administration. During the training sessions, the second scorers learned to observe and complete a specially designed paper score form during the test administrations. They were told that they could discuss with the test administrator the student's starting task, the student's necessary accommodations and any items not administered because of access limitations. However, second scorers were advised they could *not* discuss individual scores or student responses during or after test administrations. After the test administrations, second scorers were instructed to enter their scores into the online Data Entry Interface (DEI). Entering the scores into the DEI automatically adds them to the database for second scorers.

9.4.3 Results of Second Scorer Study

The second scorer analysis used data from spring 2015 administration. If a second scorer did not enter scores into the DEI, the record was excluded from the analysis. If a record only had second scorer scores, that record was also removed from the study.

Table 18 summarizes the results by subject and grade or grade-band. The "*N*" column contains the *N*-count of students who were scored by second scorers. The "Same" column shows the number and percentages of items that first and second scorers scored identically. The "±1"

column shows the one score point difference. The "±2" column shows the two score point differences. The "±3" column shows the three score point differences. The "Other" column contains the scoring differences other than numeric differences, such as a response of NR versus a blank or a response of 0 versus AL. The low percentage in the "±3" and "±2" columns occurred because not all items had a two-point score and only a few items had a three-point score.

The results show that 92.2% or more of the scores from two raters are consistent for all forms. Only 0.8–4.9% of scores are inconsistent due to adjacent scores (±1), fewer than 0.5% due to discrepant scores (±2), 0.0% due to discrepant (±3) scores, and 0.1–3.2% due to non-numeric differences. The result is usually observed in the alternate assessments in second rater analysis for other states. The result is sufficient to indicate the precsion of item scoring.

Table 18. Second-Rater Analysis Results for Mathematics

Mathematics		Item Response Differences					Item Response Differences				
		Same	±1	±2	±3	Other	Same	±1	±2	±3	Other
		N	*N*	*N*	*N*	*N*	%	%	%	%	%
Grade	Item Type										
3–5	1(11)	547	9	0	0	5	97.5	1.6	0.0	0.0	0.9
	2(52)	2605	35	9	0	3	98.2	1.3	0.3	0.0	0.1
	4(4)	188	10	1	0	5	92.2	4.9	0.5	0.0	2.5
	Total	3340	54	10	0	13	97.7	1.6	0.3	0.0	0.4
6–8	1(4)	200	4	0	0	4	96.2	1.9	0.0	0.0	1.9
	2(63)	3227	25	1	0	23	98.5	0.8	0.0	0.0	0.7
	4(3)	146	5	0	0	5	93.6	3.2	0.0	0.0	3.2
	Total	3573	34	1	0	32	98.2	0.9	0.0	0.0	0.9
9–11	1(7)	271	5	0	0	4	96.8	1.8	0.0	0.0	1.4
	2(60)	2336	50	11	0	3	97.3	2.1	0.5	0.0	0.1
	4(3)	116	2	0	0	2	96.7	1.7	0.0	0.0	1.7
	Total	2723	57	11	0	9	97.3	2.0	0.4	0.0	0.3

Cohen's weighted Kappa coefficient, which allows differential weighting of disagreement, is a preferable measure of inter-rater agreement. The weighted Kappa coefficient for each form is shown in Table 19. As the table shows, the inter-rater scoring is highly consistent with weighted Kappa coefficient greater than 0.95. The "ASE" column shows the asymptotic standard errors are low. The "LowerCL" and "UpperCL" columns show the 95% confidence limits of the weighted Kappa coefficients.

Table 19. Inter-Rater Kappa Coefficient

Form	Weighted Kappa	ASE	LowerCL	UpperCL
Math 3–5	0.967	0.0085	0.950	0.984
Math 6–8	0.978	0.0068	0.965	0.992
Math 9–11	0.947	0.0133	0.921	0.973

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APPENDICES

Appendix A: Spring 2015 Test Form Summary

Table A1: Spring 2015 English Language Arts Test Summary

Wy-ALT English Laguage Arts		
Spring 2015 Number of Tasks	Spring 2015 Form Number of Items	Spring 2015 Form Number of Points
Grade-Band 3–5		
12	70	125
Grade-Band 6–8		
12	71	124
Grade-Band 9–11		
12	69	122

Table A2: Spring 2015 Mathematics Test Summary

Wy-ALT Mathematics		
Spring 2015 Number of Tasks	Spring 2015 Form Number of Items	Spring 2015 Form Number of Points
Grade-Band 3–5		
12	67	131
Grade-Band 6–8		
12	70	142
Grade-Band 9–11		
12	70	139

Table A3: Spring 2015 Science Test Summary

Wy-ALT Science		
Spring 2015 Number of Tasks	Spring 2015 Form Number of Items	Spring 2015 Form Number of Points
Grade 4		
12	65	109
Grade 8		
12	66	114
Grade-Band 9–11		
12	71	129

Table A4: Spring 2015 English Language Arts Test Standards Summary

Wy-ALT English Language Arts						
Standards	Test Specification Number of Tasks	Test Specification Number of Items	Test Specification Number of Points	Spring 2015 Forms Number of Tasks	Spring 2015 Forms Number of Items	Spring 2015 Forms Number of Points
Grade-Band 3–5						
Literature	2 or 3	8–18	16–36	3	18	32
Informational Text	2 or 3	8–18	16–36	3	17	32
Foundational Skills	2 or 3	8–18	16–36	2	12	21
Writing	1 or 2	4–12	8–24	2	11	16
Language	1 or 2	4–12	8–24	2	12	24
Grade-Band 6–8						
Literature	3 or 4	12–24	24–48	3	18	33
Informational Text	4	16–24	32–48	4	23	43
Writing	2	8–12	16–24	2	12	18
Language	2 or 3	8–18	16–36	3	18	30
Grade-Band 9–11						
Literature	3 or 4	12–24	24–48	3	17	32
Informational Text	4	16–24	32–48	4	23	41
Writing	2	8–12	16–24	2	12	18
Language	2 or 3	8–18	16–36	3	17	31

Table A5: Spring 2015 Mathematics Test Standards Summary

Wy-ALT Mathematics						
Standards	Test Specification Number of Tasks	Test Specification Number of Items	Test Specification Number of Points	Spring 2015 Forms Number of Tasks	Spring 2015 Forms Number of Items	Spring 2015 Forms Number of Points
Grade-Band 3–5						
Operations and Algebraic Thinking	2 or 3	8–18	16–36	3	18	36
Numbers and Operations: Base Ten	2 or 3	8–18	16–36	2	9	18
Numbers and Operations: Fractions	2 or 3	8–18	16–36	3	16	29
Geometry	2	8–12	16–24	2	12	24
Measurement and Data	2	8–12	16–24	2	12	24
Grade-Band 6–8						
Geometry	2	8–12	16–24	2	10	24
Ratios and Proportional Relationships	2	8–12	16–24	2	12	24
The Number System	2	8–12	16–24	2	12	24
Expressions and Equations	2	8–12	16–24	2	12	24
Functions	2	8–12	16–24	2	12	22
Statistics and Probability	2	8–12	16–24	2	12	24
Grade-Band 9–11						
Algebra	3 or 4	12–24	24–48	3	18	36
Geometry	5 or 6	20–36	40–72	5	29	57
Statistics and Probability	3 or 4	12–24	24–48	4	23	46

Table A6: Spring 2015 Science Test Standards Summary

Wy-ALT Science						
Standards	Test Specification Number of Tasks	Test Specification Number of Items	Test Specification on Number of Points	Spring 2015 Forms Number of Tasks	Spring 2015 Forms Number of Items	Spring 2015 Forms Number of Points
Grade 4						
Earth and Space Science	4	16–24	32–48	4	19	27
Life Science	4	16–24	32–48	4	23	39
Physical Science	4	16–24	32–48	4	23	43
Grade 8						
Earth and Space Science	4	16–24	32–48	4	23	39
Life Science	4	16–24	32–48	4	22	38
Physical Science	4	16–24	32–48	4	21	37
Grade-Band 9–11						
Biology	2	8–12	16–24	2	11	22
Chemistry	2	8–12	16–24	2	12	21
Environmental Science	2	8–12	16–24	2	12	24
Physical Geology	2	8–12	16–24	2	12	24
Physical Science-High School	2	8–12	16–24	2	12	21
Physics	2	8–12	16–24	2	12	17

Appendix B: Scale Score Distributions

Scale Score	Frequency	Percent	Cum. Frequency	Cum. Percent
289	1	1.5	1	1.5
291	1	1.5	2	3
318	1	1.5	3	4.5
323	2	3	5	7.5
346	1	1.5	6	9
349	2	3	8	11.9
358	1	1.5	9	13.4
364	1	1.5	10	14.9
366	1	1.5	11	16.4
367	2	3	13	19.4
369	1	1.5	14	20.9
370	1	1.5	15	22.4
371	1	1.5	16	23.9
372	3	4.5	19	28.4
373	1	1.5	20	29.9
375	1	1.5	21	31.3
379	1	1.5	22	32.8
380	1	1.5	23	34.3
381	3	4.5	26	38.8
382	2	3	28	41.8
385	2	3	30	44.8
386	1	1.5	31	46.3
387	1	1.5	32	47.8
388	1	1.5	33	49.3
391	1	1.5	34	50.7
393	1	1.5	35	52.2
398	1	1.5	36	53.7
399	1	1.5	37	55.2
401	1	1.5	38	56.7
402	1	1.5	39	58.2
404	1	1.5	40	59.7
406	2	3	42	62.7
412	1	1.5	43	64.2
417	1	1.5	44	65.7
419	2	3	46	68.7
421	2	3	48	71.6
423	1	1.5	49	73.1
424	2	3	51	76.1
425	3	4.5	54	80.6
426	1	1.5	55	82.1
427	2	3	57	85.1
428	1	1.5	58	86.6
434	1	1.5	59	88.1
437	1	1.5	60	89.6
439	1	1.5	61	91
442	3	4.5	64	95.5
454	2	3	66	98.5
487	1	1.5	67	100

Scale Score	Frequency	Percent	Cum. Frequency	Cum. Percent
240	1	1.3	1	1.3
280	1	1.3	2	2.6
318	1	1.3	3	3.9
323	1	1.3	4	5.3
332	1	1.3	5	6.6
352	2	2.6	7	9.2
358	3	3.9	10	13.2
361	2	2.6	12	15.8
364	1	1.3	13	17.1
369	1	1.3	14	18.4
375	2	2.6	16	21.1
379	2	2.6	18	23.7
382	1	1.3	19	25
384	2	2.6	21	27.6
385	2	2.6	23	30.3
389	1	1.3	24	31.6
394	1	1.3	25	32.9
399	1	1.3	26	34.2
401	1	1.3	27	35.5
402	1	1.3	28	36.8
404	2	2.6	30	39.5
405	1	1.3	31	40.8
406	2	2.6	33	43.4
407	1	1.3	34	44.7
409	2	2.6	36	47.4
411	2	2.6	38	50
412	1	1.3	39	51.3
415	1	1.3	40	52.6
417	1	1.3	41	53.9
419	3	3.9	44	57.9
421	1	1.3	45	59.2
422	1	1.3	46	60.5
424	1	1.3	47	61.8
426	4	5.3	51	67.1
427	1	1.3	52	68.4
428	1	1.3	53	69.7
431	1	1.3	54	71.1
432	2	2.6	56	73.7
433	1	1.3	57	75
434	1	1.3	58	76.3
436	1	1.3	59	77.6
437	1	1.3	60	78.9
438	1	1.3	61	80.3
439	1	1.3	62	81.6
442	1	1.3	63	82.9
445	2	2.6	65	85.5
453	3	3.9	68	89.5
454	1	1.3	69	90.8
457	1	1.3	70	92.1
458	1	1.3	71	93.4
462	1	1.3	72	94.7
467	1	1.3	73	96.1
479	1	1.3	74	97.4
506	1	1.3	75	98.7
555	1	1.3	76	100

Scale Score	Frequency	Percent	Cum. Frequency	Cum. Percent
216	1	1.5	1	1.5
280	1	1.5	2	2.9
313	1	1.5	3	4.4
332	1	1.5	4	5.9
352	2	2.9	6	8.8
360	1	1.5	7	10.3
362	1	1.5	8	11.8
364	1	1.5	9	13.2
367	3	4.4	12	17.6
371	1	1.5	13	19.1
372	2	2.9	15	22.1
379	1	1.5	16	23.5
380	1	1.5	17	25
381	1	1.5	18	26.5
382	1	1.5	19	27.9
388	1	1.5	20	29.4
389	1	1.5	21	30.9
391	1	1.5	22	32.4
397	1	1.5	23	33.8
402	1	1.5	24	35.3
404	1	1.5	25	36.8
405	1	1.5	26	38.2
409	1	1.5	27	39.7
410	1	1.5	28	41.2
411	1	1.5	29	42.6
413	3	4.4	32	47.1
417	1	1.5	33	48.5
418	1	1.5	34	50
419	1	1.5	35	51.5
420	1	1.5	36	52.9
421	2	2.9	38	55.9
423	1	1.5	39	57.4
425	1	1.5	40	58.8
426	3	4.4	43	63.2
428	3	4.4	46	67.6
429	2	2.9	48	70.6
434	1	1.5	49	72.1
439	1	1.5	50	73.5
442	1	1.5	51	75
445	1	1.5	52	76.5
449	1	1.5	53	77.9
451	3	4.4	56	82.4
454	1	1.5	57	83.8
458	2	2.9	59	86.8
465	1	1.5	60	88.2
467	1	1.5	61	89.7
473	2	2.9	63	92.6
479	1	1.5	64	94.1
482	1	1.5	65	95.6
487	1	1.5	66	97.1
511	1	1.5	67	98.5
532	1	1.5	68	100

Scale Score	Frequency	Percent	Cum. Frequency	Cum. Percent
226	1	1.6	1	1.6
302	1	1.6	2	3.2
324	1	1.6	3	4.8
334	2	3.2	5	7.9
347	1	1.6	6	9.5
351	1	1.6	7	11.1
354	1	1.6	8	12.7
361	2	3.2	10	15.9
377	2	3.2	12	19
380	1	1.6	13	20.6
383	1	1.6	14	22.2
386	1	1.6	15	23.8
390	1	1.6	16	25.4
393	1	1.6	17	27
395	1	1.6	18	28.6
401	4	6.3	22	34.9
405	1	1.6	23	36.5
409	1	1.6	24	38.1
412	1	1.6	25	39.7
418	5	7.9	30	47.6
423	1	1.6	31	49.2
424	1	1.6	32	50.8
429	2	3.2	34	54
430	1	1.6	35	55.6
431	1	1.6	36	57.1
434	2	3.2	38	60.3
437	2	3.2	40	63.5
440	1	1.6	41	65.1
441	1	1.6	42	66.7
442	1	1.6	43	68.3
444	2	3.2	45	71.4
445	1	1.6	46	73
446	1	1.6	47	74.6
447	1	1.6	48	76.2
449	2	3.2	50	79.4
454	1	1.6	51	81
457	3	4.8	54	85.7
467	1	1.6	55	87.3
469	2	3.2	57	90.5
475	1	1.6	58	92.1
479	2	3.2	60	95.2
480	1	1.6	61	96.8
482	1	1.6	62	98.4
486	1	1.6	63	100

Scale Score	Frequency	Percent	Cum. Frequency	Cum. Percent
226	1	1.5	1	1.5
358	1	1.5	2	3
361	2	3	4	6
367	3	4.5	7	10.4
370	1	1.5	8	11.9
374	2	3	10	14.9
383	2	3	12	17.9
386	3	4.5	15	22.4
397	1	1.5	16	23.9
399	2	3	18	26.9
401	1	1.5	19	28.4
405	1	1.5	20	29.9
407	1	1.5	21	31.3
409	2	3	23	34.3
410	1	1.5	24	35.8
413	1	1.5	25	37.3
418	1	1.5	26	38.8
420	1	1.5	27	40.3
424	1	1.5	28	41.8
425	1	1.5	29	43.3
429	4	6	33	49.3
431	1	1.5	34	50.7
434	1	1.5	35	52.2
435	2	3	37	55.2
436	1	1.5	38	56.7
437	2	3	40	59.7
442	1	1.5	41	61.2
447	2	3	43	64.2
449	1	1.5	44	65.7
450	1	1.5	45	67.2
456	1	1.5	46	68.7
457	2	3	48	71.6
460	6	9	54	80.6
462	1	1.5	55	82.1
467	1	1.5	56	83.6
471	1	1.5	57	85.1
473	1	1.5	58	86.6
479	1	1.5	59	88.1
482	1	1.5	60	89.6
485	1	1.5	61	91
486	1	1.5	62	92.5
492	1	1.5	63	94
502	1	1.5	64	95.5
511	1	1.5	65	97
525	1	1.5	66	98.5
572	1	1.5	67	100

Scale Score	Frequency	Percent	Cum. Frequency	Cum. Percent
302	1	1.2	1	1.2
310	1	1.2	2	2.4
324	1	1.2	3	3.5
334	1	1.2	4	4.7
339	1	1.2	5	5.9
361	1	1.2	6	7.1
364	1	1.2	7	8.2
370	1	1.2	8	9.4
377	3	3.5	11	12.9
378	1	1.2	12	14.1
383	2	2.4	14	16.5
386	1	1.2	15	17.6
390	3	3.5	18	21.2
393	1	1.2	19	22.4
397	2	2.4	21	24.7
405	2	2.4	23	27.1
406	1	1.2	24	28.2
409	2	2.4	26	30.6
413	2	2.4	28	32.9
414	1	1.2	29	34.1
415	1	1.2	30	35.3
416	1	1.2	31	36.5
418	3	3.5	34	40
420	1	1.2	35	41.2
421	1	1.2	36	42.4
423	1	1.2	37	43.5
424	2	2.4	39	45.9
426	2	2.4	41	48.2
429	3	3.5	44	51.8
430	1	1.2	45	52.9
432	3	3.5	48	56.5
434	1	1.2	49	57.6
436	2	2.4	51	60
437	1	1.2	52	61.2
438	1	1.2	53	62.4
440	4	4.7	57	67.1
442	1	1.2	58	68.2
445	2	2.4	60	70.6
446	1	1.2	61	71.8
449	3	3.5	64	75.3
451	1	1.2	65	76.5
454	3	3.5	68	80
457	1	1.2	69	81.2
460	2	2.4	71	83.5
463	1	1.2	72	84.7
466	1	1.2	73	85.9
467	1	1.2	74	87.1
469	1	1.2	75	88.2
471	2	2.4	77	90.6
474	1	1.2	78	91.8
479	1	1.2	79	92.9
480	2	2.4	81	95.3
486	1	1.2	82	96.5
492	1	1.2	83	97.6
502	1	1.2	84	98.8
526	1	1.2	85	100

Scale Score	Frequency	Percent	Cum. Frequency	Cum. Percent
234	1	1.7	1	1.7
344	1	1.7	2	3.4
355	1	1.7	3	5.1
361	2	3.4	5	8.5
368	3	5.1	8	13.6
375	2	3.4	10	16.9
381	1	1.7	11	18.6
383	1	1.7	12	20.3
390	1	1.7	13	22
396	1	1.7	14	23.7
400	3	5.1	17	28.8
404	1	1.7	18	30.5
405	2	3.4	20	33.9
406	1	1.7	21	35.6
416	1	1.7	22	37.3
420	1	1.7	23	39
423	1	1.7	24	40.7
428	1	1.7	25	42.4
430	1	1.7	26	44.1
432	1	1.7	27	45.8
434	1	1.7	28	47.5
437	1	1.7	29	49.2
438	1	1.7	30	50.8
440	2	3.4	32	54.2
443	1	1.7	33	55.9
444	1	1.7	34	57.6
448	4	6.8	38	64.4
451	2	3.4	40	67.8
452	2	3.4	42	71.2
455	1	1.7	43	72.9
456	1	1.7	44	74.6
459	2	3.4	46	78
462	1	1.7	47	79.7
463	1	1.7	48	81.4
469	1	1.7	49	83.1
471	2	3.4	51	86.4
474	1	1.7	52	88.1
481	2	3.4	54	91.5
482	1	1.7	55	93.2
487	1	1.7	56	94.9
502	1	1.7	57	96.6
505	2	3.4	59	100

Scale Score	Frequency	Percent	Cum. Frequency	Cum. Percent
322	1	1.5	1	1.5
339	1	1.5	2	3.1
353	1	1.5	3	4.6
357	1	1.5	4	6.2
364	1	1.5	5	7.7
368	1	1.5	6	9.2
378	2	3.1	8	12.3
380	1	1.5	9	13.8
381	1	1.5	10	15.4
383	1	1.5	11	16.9
384	1	1.5	12	18.5
385	1	1.5	13	20
387	1	1.5	14	21.5
393	1	1.5	15	23.1
397	1	1.5	16	24.6
400	2	3.1	18	27.7
404	2	3.1	20	30.8
406	1	1.5	21	32.3
413	1	1.5	22	33.8
417	1	1.5	23	35.4
424	1	1.5	24	36.9
425	1	1.5	25	38.5
428	3	4.6	28	43.1
430	1	1.5	29	44.6
432	2	3.1	31	47.7
433	1	1.5	32	49.2
434	1	1.5	33	50.8
435	1	1.5	34	52.3
437	1	1.5	35	53.8
440	1	1.5	36	55.4
443	1	1.5	37	56.9
444	1	1.5	38	58.5
446	1	1.5	39	60
448	2	3.1	41	63.1
452	1	1.5	42	64.6
455	1	1.5	43	66.2
459	1	1.5	44	67.7
461	1	1.5	45	69.2
462	1	1.5	46	70.8
463	2	3.1	48	73.8
467	2	3.1	50	76.9
475	2	3.1	52	80
481	1	1.5	53	81.5
487	5	7.7	58	89.2
501	1	1.5	59	90.8
505	4	6.2	63	96.9
524	1	1.5	64	98.5
566	1	1.5	65	100

Scale Score	Frequency	Percent	Cum. Frequency	Cum. Percent
234	1	1.7	1	1.7
326	1	1.7	2	3.4
339	1	1.7	3	5.1
344	1	1.7	4	6.8
378	4	6.8	8	13.6
386	1	1.7	9	15.3
387	2	3.4	11	18.6
388	1	1.7	12	20.3
390	3	5.1	15	25.4
393	1	1.7	16	27.1
395	2	3.4	18	30.5
398	1	1.7	19	32.2
403	1	1.7	20	33.9
404	1	1.7	21	35.6
406	1	1.7	22	37.3
408	3	5.1	25	42.4
409	1	1.7	26	44.1
410	1	1.7	27	45.8
412	1	1.7	28	47.5
413	1	1.7	29	49.2
414	1	1.7	30	50.8
415	1	1.7	31	52.5
423	2	3.4	33	55.9
426	1	1.7	34	57.6
427	1	1.7	35	59.3
433	1	1.7	36	61
439	1	1.7	37	62.7
444	1	1.7	38	64.4
445	1	1.7	39	66.1
446	1	1.7	40	67.8
448	1	1.7	41	69.5
449	1	1.7	42	71.2
455	1	1.7	43	72.9
457	1	1.7	44	74.6
461	1	1.7	45	76.3
463	2	3.4	47	79.7
466	1	1.7	48	81.4
469	1	1.7	49	83.1
471	2	3.4	51	86.4
475	1	1.7	52	88.1
477	1	1.7	53	89.8
481	3	5.1	56	94.9
495	1	1.7	57	96.6
505	1	1.7	58	98.3
542	1	1.7	59	100

Scale Score	Frequency	Percent	Cum. Frequency	Cum. Percent
209	1	1.5	1	1.5
307	1	1.5	2	3
322	1	1.5	3	4.5
326	2	3	5	7.5
337	1	1.5	6	9
344	1	1.5	7	10.4
356	1	1.5	8	11.9
359	1	1.5	9	13.4
365	2	3	11	16.4
368	2	3	13	19.4
370	3	4.5	16	23.9
373	1	1.5	17	25.4
375	1	1.5	18	26.9
376	3	4.5	21	31.3
378	1	1.5	22	32.8
379	2	3	24	35.8
381	1	1.5	25	37.3
382	2	3	27	40.3
385	2	3	29	43.3
386	1	1.5	30	44.8
388	1	1.5	31	46.3
389	1	1.5	32	47.8
391	1	1.5	33	49.3
392	2	3	35	52.2
395	2	3	37	55.2
397	1	1.5	38	56.7
398	4	6	42	62.7
400	2	3	44	65.7
403	3	4.5	47	70.1
405	1	1.5	48	71.6
408	1	1.5	49	73.1
409	1	1.5	50	74.6
410	1	1.5	51	76.1
412	1	1.5	52	77.6
413	1	1.5	53	79.1
414	2	3	55	82.1
416	1	1.5	56	83.6
417	1	1.5	57	85.1
419	1	1.5	58	86.6
421	2	3	60	89.6
429	2	3	62	92.5
432	1	1.5	63	94
435	1	1.5	64	95.5
441	1	1.5	65	97
444	1	1.5	66	98.5
482	1	1.5	67	100

Scale Score	Frequency	Percent	Cum. Frequency	Cum. Percent
200	1	1.3	1	1.3
274	1	1.3	2	2.7
330	1	1.3	3	4
350	1	1.3	4	5.3
356	1	1.3	5	6.7
359	1	1.3	6	8
362	1	1.3	7	9.3
365	2	2.7	9	12
368	1	1.3	10	13.3
370	2	2.7	12	16
376	1	1.3	13	17.3
379	1	1.3	14	18.7
381	2	2.7	16	21.3
382	5	6.7	21	28
383	2	2.7	23	30.7
386	1	1.3	24	32
389	1	1.3	25	33.3
390	1	1.3	26	34.7
392	4	5.3	30	40
394	2	2.7	32	42.7
395	1	1.3	33	44
397	1	1.3	34	45.3
398	1	1.3	35	46.7
399	1	1.3	36	48
400	4	5.3	40	53.3
403	1	1.3	41	54.7
404	1	1.3	42	56
405	2	2.7	44	58.7
406	1	1.3	45	60
409	2	2.7	47	62.7
411	1	1.3	48	64
412	1	1.3	49	65.3
414	1	1.3	50	66.7
415	1	1.3	51	68
417	3	4	54	72
419	2	2.7	56	74.7
420	3	4	59	78.7
422	2	2.7	61	81.3
426	1	1.3	62	82.7
430	1	1.3	63	84
435	1	1.3	64	85.3
438	1	1.3	65	86.7
439	1	1.3	66	88
441	2	2.7	68	90.7
449	1	1.3	69	92
451	1	1.3	70	93.3
456	1	1.3	71	94.7
462	1	1.3	72	96
474	1	1.3	73	97.3
481	1	1.3	74	98.7
575	1	1.3	75	100

Scale Score	Frequency	Percent	Cum. Frequency	Cum. Percent
200	1	1.5	1	1.5
300	2	2.9	3	4.4
359	1	1.5	4	5.9
362	1	1.5	5	7.4
365	1	1.5	6	8.8
366	1	1.5	7	10.3
367	1	1.5	8	11.8
370	1	1.5	9	13.2
373	1	1.5	10	14.7
376	3	4.4	13	19.1
379	1	1.5	14	20.6
380	1	1.5	15	22.1
381	1	1.5	16	23.5
382	3	4.4	19	27.9
383	1	1.5	20	29.4
384	1	1.5	21	30.9
385	1	1.5	22	32.4
388	1	1.5	23	33.8
389	2	2.9	25	36.8
391	1	1.5	26	38.2
392	1	1.5	27	39.7
393	1	1.5	28	41.2
397	2	2.9	30	44.1
398	1	1.5	31	45.6
400	2	2.9	33	48.5
401	1	1.5	34	50
402	1	1.5	35	51.5
404	1	1.5	36	52.9
409	1	1.5	37	54.4
410	1	1.5	38	55.9
411	2	2.9	40	58.8
421	1	1.5	41	60.3
422	2	2.9	43	63.2
424	1	1.5	44	64.7
425	1	1.5	45	66.2
427	1	1.5	46	67.6
429	2	2.9	48	70.6
431	1	1.5	49	72.1
432	1	1.5	50	73.5
433	1	1.5	51	75
444	1	1.5	52	76.5
445	1	1.5	53	77.9
446	2	2.9	55	80.9
448	1	1.5	56	82.4
449	3	4.4	59	86.8
451	1	1.5	60	88.2
454	1	1.5	61	89.7
458	1	1.5	62	91.2
463	1	1.5	63	92.6
466	1	1.5	64	94.1
470	2	2.9	66	97.1
482	1	1.5	67	98.5
494	1	1.5	68	100

Scale Score	Frequency	Percent	Cum. Frequency	Cum. Percent
200	1	1.6	1	1.6
209	1	1.6	2	3.2
258	1	1.6	3	4.8
307	1	1.6	4	6.3
312	1	1.6	5	7.9
343	1	1.6	6	9.5
361	4	6.3	10	15.9
369	1	1.6	11	17.5
373	1	1.6	12	19
377	1	1.6	13	20.6
379	1	1.6	14	22.2
380	1	1.6	15	23.8
384	2	3.2	17	27
389	1	1.6	18	28.6
390	2	3.2	20	31.7
391	1	1.6	21	33.3
392	1	1.6	22	34.9
396	1	1.6	23	36.5
397	3	4.8	26	41.3
398	1	1.6	27	42.9
401	1	1.6	28	44.4
403	1	1.6	29	46
404	1	1.6	30	47.6
405	1	1.6	31	49.2
408	2	3.2	33	52.4
411	1	1.6	34	54
412	3	4.8	37	58.7
415	3	4.8	40	63.5
416	4	6.3	44	69.8
419	2	3.2	46	73
420	1	1.6	47	74.6
421	1	1.6	48	76.2
422	1	1.6	49	77.8
425	1	1.6	50	79.4
426	1	1.6	51	81
427	2	3.2	53	84.1
431	1	1.6	54	85.7
435	1	1.6	55	87.3
437	2	3.2	57	90.5
439	1	1.6	58	92.1
442	3	4.8	61	96.8
450	1	1.6	62	98.4
454	1	1.6	63	100

Scale Score	Frequency	Percent	Cum. Frequency	Cum. Percent
209	1	1.5	1	1.5
307	1	1.5	2	3
337	1	1.5	3	4.5
340	1	1.5	4	6
341	1	1.5	5	7.5
345	1	1.5	6	9
351	1	1.5	7	10.4
353	2	3	9	13.4
359	1	1.5	10	14.9
361	1	1.5	11	16.4
372	1	1.5	12	17.9
374	1	1.5	13	19.4
376	2	3	15	22.4
381	1	1.5	16	23.9
388	1	1.5	17	25.4
392	1	1.5	18	26.9
393	1	1.5	19	28.4
394	1	1.5	20	29.9
395	4	6	24	35.8
396	2	3	26	38.8
398	1	1.5	27	40.3
400	3	4.5	30	44.8
401	1	1.5	31	46.3
403	1	1.5	32	47.8
406	1	1.5	33	49.3
408	1	1.5	34	50.7
415	2	3	36	53.7
418	2	3	38	56.7
419	1	1.5	39	58.2
422	1	1.5	40	59.7
423	2	3	42	62.7
425	1	1.5	43	64.2
432	4	6	47	70.1
433	3	4.5	50	74.6
434	2	3	52	77.6
435	1	1.5	53	79.1
440	1	1.5	54	80.6
444	3	4.5	57	85.1
446	2	3	59	88.1
449	1	1.5	60	89.6
450	2	3	62	92.5
454	1	1.5	63	94
456	1	1.5	64	95.5
463	1	1.5	65	97
467	1	1.5	66	98.5
484	1	1.5	67	100

Scale Score	Frequency	Percent	Cum. Frequency	Cum. Percent
296	1	1.2	1	1.2
307	1	1.2	2	2.4
312	1	1.2	3	3.5
327	1	1.2	4	4.7
337	1	1.2	5	5.9
345	1	1.2	6	7.1
361	1	1.2	7	8.2
364	2	2.4	9	10.6
371	2	2.4	11	12.9
372	2	2.4	13	15.3
376	2	2.4	15	17.6
381	1	1.2	16	18.8
384	2	2.4	18	21.2
385	1	1.2	19	22.4
388	2	2.4	21	24.7
389	2	2.4	23	27.1
390	4	4.7	27	31.8
391	1	1.2	28	32.9
392	6	7.1	34	40
398	2	2.4	36	42.4
400	1	1.2	37	43.5
402	2	2.4	39	45.9
403	1	1.2	40	47.1
404	1	1.2	41	48.2
407	2	2.4	43	50.6
408	3	3.5	46	54.1
409	2	2.4	48	56.5
410	2	2.4	50	58.8
411	2	2.4	52	61.2

Scale Score	Frequency	Percent	Cum. Frequency	Cum. Percent
413	1	1.2	53	62.4
415	1	1.2	54	63.5
420	1	1.2	55	64.7
421	5	5.9	60	70.6
424	1	1.2	61	71.8
427	1	1.2	62	72.9
429	2	2.4	64	75.3
430	1	1.2	65	76.5
434	2	2.4	67	78.8
435	1	1.2	68	80
436	2	2.4	70	82.4
437	1	1.2	71	83.5
438	1	1.2	72	84.7
440	1	1.2	73	85.9
441	2	2.4	75	88.2
443	1	1.2	76	89.4
450	1	1.2	77	90.6
453	1	1.2	78	91.8
454	1	1.2	79	92.9
455	1	1.2	80	94.1
457	1	1.2	81	95.3
461	1	1.2	82	96.5
463	2	2.4	84	98.8
469	1	1.2	85	100

Scale Score	Frequency	Percent	Cum. Frequency	Cum. Percent
248	1	1.7	1	1.7
266	1	1.7	2	3.4
286	1	1.7	3	5.1
336	1	1.7	4	6.8
349	1	1.7	5	8.5
357	1	1.7	6	10.2
359	1	1.7	7	11.9
365	1	1.7	8	13.6
371	2	3.4	10	16.9
373	1	1.7	11	18.6
379	3	5.1	14	23.7
381	1	1.7	15	25.4
390	1	1.7	16	27.1
391	3	5.1	19	32.2
393	1	1.7	20	33.9
395	1	1.7	21	35.6
397	1	1.7	22	37.3
410	1	1.7	23	39
411	1	1.7	24	40.7
412	1	1.7	25	42.4
415	2	3.4	27	45.8
416	1	1.7	28	47.5
419	1	1.7	29	49.2
420	2	3.4	31	52.5
421	1	1.7	32	54.2
423	1	1.7	33	55.9
424	1	1.7	34	57.6
425	1	1.7	35	59.3
426	2	3.4	37	62.7
428	1	1.7	38	64.4
429	1	1.7	39	66.1
432	1	1.7	40	67.8
435	1	1.7	41	69.5
437	2	3.4	43	72.9
439	1	1.7	44	74.6
441	2	3.4	46	78
442	1	1.7	47	79.7
444	3	5.1	50	84.7
448	1	1.7	51	86.4
452	1	1.7	52	88.1
456	1	1.7	53	89.8
461	1	1.7	54	91.5
464	1	1.7	55	93.2
467	1	1.7	56	94.9
488	1	1.7	57	96.6
491	1	1.7	58	98.3
497	1	1.7	59	100

Scale Score	Frequency	Percent	Cum. Frequency	Cum. Percent
289	1	1.5	1	1.5
316	1	1.5	2	3.1
344	1	1.5	3	4.6
349	1	1.5	4	6.2
357	1	1.5	5	7.7
359	1	1.5	6	9.2
361	1	1.5	7	10.8
363	1	1.5	8	12.3
365	1	1.5	9	13.8
373	2	3.1	11	16.9
376	1	1.5	12	18.5
377	1	1.5	13	20
379	1	1.5	14	21.5
383	1	1.5	15	23.1
384	1	1.5	16	24.6
389	2	3.1	18	27.7
398	1	1.5	19	29.2
400	1	1.5	20	30.8
401	1	1.5	21	32.3
403	2	3.1	23	35.4
406	1	1.5	24	36.9
408	3	4.6	27	41.5
410	1	1.5	28	43.1
412	1	1.5	29	44.6
414	2	3.1	31	47.7
415	1	1.5	32	49.2
416	1	1.5	33	50.8
417	1	1.5	34	52.3
420	2	3.1	36	55.4
422	3	4.6	39	60
424	1	1.5	40	61.5
426	1	1.5	41	63.1
429	1	1.5	42	64.6
432	3	4.6	45	69.2
435	1	1.5	46	70.8
437	1	1.5	47	72.3
439	1	1.5	48	73.8
441	1	1.5	49	75.4
444	1	1.5	50	76.9
452	2	3.1	52	80
454	3	4.6	55	84.6
456	2	3.1	57	87.7
457	1	1.5	58	89.2
459	1	1.5	59	90.8
461	1	1.5	60	92.3
464	1	1.5	61	93.8
466	1	1.5	62	95.4
469	1	1.5	63	96.9
471	1	1.5	64	98.5
482	1	1.5	65	100

Scale Score	Frequency	Percent	Cum. Frequency	Cum. Percent
200	1	1.7	1	1.7
322	1	1.7	2	3.4
343	1	1.7	3	5.1
346	1	1.7	4	6.8
349	1	1.7	5	8.5
366	2	3.4	7	11.9
376	1	1.7	8	13.6
377	1	1.7	9	15.3
379	2	3.4	11	18.6
384	1	1.7	12	20.3
387	1	1.7	13	22
389	1	1.7	14	23.7
390	2	3.4	16	27.1
396	3	5.1	19	32.2
397	1	1.7	20	33.9
399	1	1.7	21	35.6
402	3	5.1	24	40.7
405	1	1.7	25	42.4
406	1	1.7	26	44.1
407	1	1.7	27	45.8
410	1	1.7	28	47.5
411	1	1.7	29	49.2
413	1	1.7	30	50.8
414	1	1.7	31	52.5
418	3	5.1	34	57.6
420	1	1.7	35	59.3
421	1	1.7	36	61
424	1	1.7	37	62.7
426	2	3.4	39	66.1
427	1	1.7	40	67.8
430	1	1.7	41	69.5
432	1	1.7	42	71.2
434	1	1.7	43	72.9
435	2	3.4	45	76.3
437	2	3.4	47	79.7
439	1	1.7	48	81.4
446	1	1.7	49	83.1
448	2	3.4	51	86.4
449	1	1.7	52	88.1
452	2	3.4	54	91.5
457	1	1.7	55	93.2
458	1	1.7	56	94.9
474	1	1.7	57	96.6
488	1	1.7	58	98.3
520	1	1.7	59	100

Scale Score	Frequency	Percent	Cum. Frequency	Cum. Percent
200	1	1.3	1	1.3
283	1	1.3	2	2.6
293	1	1.3	3	3.9
341	1	1.3	4	5.2
345	1	1.3	5	6.5
353	1	1.3	6	7.8
361	1	1.3	7	9.1
364	1	1.3	8	10.4
365	1	1.3	9	11.7
372	3	3.9	12	15.6
373	1	1.3	13	16.9
376	3	3.9	16	20.8
380	4	5.2	20	26
381	1	1.3	21	27.3
384	3	3.9	24	31.2
386	2	2.6	26	33.8
388	4	5.2	30	39
389	1	1.3	31	40.3
390	1	1.3	32	41.6
391	4	5.2	36	46.8
393	1	1.3	37	48.1
398	2	2.6	39	50.6
401	4	5.2	43	55.8
403	3	3.9	46	59.7
405	3	3.9	49	63.6
408	1	1.3	50	64.9
411	1	1.3	51	66.2
413	2	2.6	53	68.8
414	1	1.3	54	70.1
416	1	1.3	55	71.4
417	1	1.3	56	72.7
419	2	2.6	58	75.3
420	1	1.3	59	76.6
424	2	2.6	61	79.2
425	1	1.3	62	80.5
426	1	1.3	63	81.8
427	1	1.3	64	83.1
428	1	1.3	65	84.4
430	1	1.3	66	85.7
441	1	1.3	67	87
442	1	1.3	68	88.3
444	1	1.3	69	89.6
445	1	1.3	70	90.9
447	1	1.3	71	92.2
454	1	1.3	72	93.5

Scale Score	Frequency	Percent	Cum. Frequency	Cum. Percent
457	1	1.3	73	94.8
465	1	1.3	74	96.1
466	1	1.3	75	97.4
478	1	1.3	76	98.7
575	1	1.3	77	100

Scale Score	Frequency	Percent	Cum. Frequency	Cum. Percent
254	2	2.4	2	2.4
280	1	1.2	3	3.5
323	1	1.2	4	4.7
326	1	1.2	5	5.9
343	1	1.2	6	7.1
347	1	1.2	7	8.2
351	2	2.4	9	10.6
359	1	1.2	10	11.8
362	1	1.2	11	12.9
366	3	3.5	14	16.5
370	1	1.2	15	17.6
377	2	2.4	17	20
380	1	1.2	18	21.2
381	1	1.2	19	22.4
385	2	2.4	21	24.7
386	3	3.5	24	28.2
389	1	1.2	25	29.4
390	2	2.4	27	31.8
391	1	1.2	28	32.9
393	1	1.2	29	34.1
394	1	1.2	30	35.3
397	3	3.5	33	38.8
398	1	1.2	34	40
401	2	2.4	36	42.4
403	1	1.2	37	43.5
404	2	2.4	39	45.9
405	4	4.7	43	50.6
406	1	1.2	44	51.8
409	1	1.2	45	52.9
414	4	4.7	49	57.6
415	3	3.5	52	61.2
416	1	1.2	53	62.4
418	1	1.2	54	63.5
419	3	3.5	57	67.1
420	1	1.2	58	68.2
421	1	1.2	59	69.4
424	3	3.5	62	72.9
427	1	1.2	63	74.1
428	1	1.2	64	75.3
430	3	3.5	67	78.8
435	1	1.2	68	80
436	1	1.2	69	81.2
437	1	1.2	70	82.4
439	2	2.4	72	84.7
441	1	1.2	73	85.9
443	1	1.2	74	87.1
444	1	1.2	75	88.2
446	1	1.2	76	89.4
448	1	1.2	77	90.6

Scale Score	Frequency	Percent	Cum. Frequency	Cum. Percent
449	1	1.2	78	91.8
458	1	1.2	79	92.9
460	2	2.4	81	95.3
470	3	3.5	84	98.8
477	1	1.2	85	100

Scale Score	Frequency	Percent	Cum. Frequency	Cum. Percent
200	1	1.7	1	1.7
338	1	1.7	2	3.4
342	1	1.7	3	5.1
357	1	1.7	4	6.8
360	2	3.4	6	10.2
363	1	1.7	7	11.9
370	1	1.7	8	13.6
373	1	1.7	9	15.3
378	1	1.7	10	16.9
386	2	3.4	12	20.3
387	2	3.4	14	23.7
388	1	1.7	15	25.4
389	2	3.4	17	28.8
391	1	1.7	18	30.5
395	1	1.7	19	32.2
399	1	1.7	20	33.9
402	1	1.7	21	35.6
404	3	5.1	24	40.7
406	1	1.7	25	42.4
407	1	1.7	26	44.1
408	2	3.4	28	47.5
412	1	1.7	29	49.2
414	1	1.7	30	50.8
415	2	3.4	32	54.2
417	1	1.7	33	55.9
420	1	1.7	34	57.6
422	1	1.7	35	59.3
423	1	1.7	36	61
424	1	1.7	37	62.7
426	1	1.7	38	64.4
428	1	1.7	39	66.1
430	1	1.7	40	67.8
431	3	5.1	43	72.9
436	1	1.7	44	74.6
439	2	3.4	46	78
442	1	1.7	47	79.7
448	1	1.7	48	81.4
452	1	1.7	49	83.1
454	1	1.7	50	84.7
456	1	1.7	51	86.4
460	1	1.7	52	88.1
462	1	1.7	53	89.8
472	1	1.7	54	91.5
484	1	1.7	55	93.2
487	1	1.7	56	94.9
501	1	1.7	57	96.6
506	1	1.7	58	98.3
542	1	1.7	59	100

Scale Score	Frequency	Percent	Cum. Frequency	Cum. Percent
248	1	1.5	1	1.5
320	1	1.5	2	3.1
330	1	1.5	3	4.6
334	1	1.5	4	6.2
346	1	1.5	5	7.7
350	1	1.5	6	9.2
357	2	3.1	8	12.3
362	1	1.5	9	13.8
376	1	1.5	10	15.4
383	2	3.1	12	18.5
389	2	3.1	14	21.5
392	2	3.1	16	24.6
393	3	4.6	19	29.2
394	1	1.5	20	30.8
397	1	1.5	21	32.3
400	1	1.5	22	33.8
402	1	1.5	23	35.4
403	1	1.5	24	36.9
405	1	1.5	25	38.5
406	1	1.5	26	40
407	3	4.6	29	44.6
408	3	4.6	32	49.2
412	3	4.6	35	53.8
422	1	1.5	36	55.4
423	1	1.5	37	56.9
424	1	1.5	38	58.5
425	1	1.5	39	60
430	2	3.1	41	63.1
431	2	3.1	43	66.2
435	1	1.5	44	67.7
436	1	1.5	45	69.2
438	1	1.5	46	70.8
439	1	1.5	47	72.3
443	1	1.5	48	73.8
446	1	1.5	49	75.4
449	5	7.7	54	83.1
451	1	1.5	55	84.6
455	2	3.1	57	87.7
459	1	1.5	58	89.2
460	1	1.5	59	90.8
461	1	1.5	60	92.3
462	2	3.1	62	95.4
472	1	1.5	63	96.9
479	1	1.5	64	98.5
484	1	1.5	65	100

Scale Score	Frequency	Percent	Cum. Frequency	Cum. Percent
200	1	1.7	1	1.7
300	1	1.7	2	3.4
350	1	1.7	3	5.2
357	1	1.7	4	6.9
370	1	1.7	5	8.6
372	1	1.7	6	10.3
373	1	1.7	7	12.1
376	1	1.7	8	13.8
379	1	1.7	9	15.5
381	1	1.7	10	17.2
383	3	5.2	13	22.4
385	1	1.7	14	24.1
389	2	3.4	16	27.6
391	2	3.4	18	31
392	1	1.7	19	32.8
394	2	3.4	21	36.2
396	2	3.4	23	39.7
400	1	1.7	24	41.4
402	3	5.2	27	46.6
404	1	1.7	28	48.3
405	1	1.7	29	50
406	1	1.7	30	51.7
408	1	1.7	31	53.4
409	3	5.2	34	58.6
410	2	3.4	36	62.1
414	2	3.4	38	65.5
415	1	1.7	39	67.2
424	2	3.4	41	70.7
426	1	1.7	42	72.4
428	1	1.7	43	74.1
431	2	3.4	45	77.6
433	1	1.7	46	79.3
438	1	1.7	47	81
439	1	1.7	48	82.8
441	1	1.7	49	84.5
445	2	3.4	51	87.9
452	1	1.7	52	89.7
453	1	1.7	53	91.4
454	1	1.7	54	93.1
456	1	1.7	55	94.8
458	1	1.7	56	96.6
479	1	1.7	57	98.3
488	1	1.7	58	100

Appendic C: Classical Item Statistics

Table C1. Classical Item Statistics—Grade-Band 3–5 English Language Arts

ITS ID	Test Form	Total N within Test Form	Prop Omit	Prop Access Limitation	Classical Analyses							DIF Analysis
					Adjusted Polyserial/Biserial	Average Score	Prop Score Point 0	Prop Score Point 1	Prop Score Point 2	Prop Score Point 3	Prop Score Point 4	Female / Male
2120	WYFORM1::PAPER::35ELA::SP15	100	0.01	0.00	0.54	2.57		0.02	0.98	0.86	0.73	+A
2136	WYFORM1::PAPER::35ELA::SP15	99	0.04	0.00	0.64	0.71	0.29	0.71				-A
2140	WYFORM1::PAPER::35ELA::SP15	98	0.05	0.00	0.36	0.83	0.17	0.83				-A
2141	WYFORM1::PAPER::35ELA::SP15	100	0.02	0.00	0.64	0.7	0.3	0.7				-A
2142	WYFORM1::PAPER::35ELA::SP15	99	0.04	0.00	0.36	0.42	0.58	0.42				-A
1970	WYFORM1::PAPER::35ELA::SP15	99	0.05	0.00	0.61	0.67	0.33	0.67				-A
1972	WYFORM1::PAPER::35ELA::SP15	99	0.05	0.00	0.51	0.67	0.33	0.67				+A
1973	WYFORM1::PAPER::35ELA::SP15	99	0.05	0.00	0.64	0.77	0.23	0.77				+A
1974	WYFORM1::PAPER::35ELA::SP15	97	0.07	0.00	0.64	1.32	0.24	0.76	0.56			-A
1975	WYFORM1::PAPER::35ELA::SP15	98	0.06	0.00	0.69	1.3	0.26	0.74	0.55			-A
1980	WYFORM1::PAPER::35ELA::SP15	98	0.05	0.00	0.61	1.41	0.16	0.84	0.57			-A
2174	WYFORM1::PAPER::35ELA::SP15	182	0.03	0.00	0.75	0.87	0.13	0.87				-A
2176	WYFORM1::PAPER::35ELA::SP15	181	0.03	0.00	0.73	0.77	0.23	0.77				-*C*
2177	WYFORM1::PAPER::35ELA::SP15	182	0.03	0.00	0.71	0.73	0.27	0.73				+A
2178	WYFORM1::PAPER::35ELA::SP15	184	0.02	0.00	0.72	0.81	0.19	0.81				+A
2179	WYFORM1::PAPER::35ELA::SP15	180	0.04	0.00	0.58	1.41	0.14	0.86	0.56			+A
2180	WYFORM1::PAPER::35ELA::SP15	183	0.03	0.00	0.65	1.51	0.11	0.89	0.62			+A
2893	WYFORM1::PAPER::35ELA::SP15	183	0.02	0.00	0.78	0.79	0.21	0.79				-A
2936	WYFORM1::PAPER::35ELA::SP15	183	0.02	0.00	0.66	0.77	0.23	0.77				-A
2937	WYFORM1::PAPER::35ELA::SP15	167	0.11	0.00	0.6	0.74	0.26	0.74				+A
2938	WYFORM1::PAPER::35ELA::SP15	181	0.03	0.00	0.63	0.81	0.19	0.81				+A
2939	WYFORM1::PAPER::35ELA::SP15	163	0.13	0.00	0.69	0.71	0.29	0.71				-A
2940	WYFORM1::PAPER::35ELA::SP15	182	0.03	0.00	0.44	0.61	0.39	0.61				-A
2131	WYFORM1::PAPER::35ELA::SP15	183	0.03	0.00	0.83	1.44	0.21	0.79	0.64			+A
2132	WYFORM1::PAPER::35ELA::SP15	181	0.04	0.00	0.61	1.46	0.15	0.85	0.62			+A
2134	WYFORM1::PAPER::35ELA::SP15	180	0.04	0.00	0.73	1.5	0.13	0.87	0.63			+A

2135	WYFORM1::PAPER::35ELA::SP15	180	0.04	0.00	0.74	1.33	0.27	0.73	0.59			-A
2137	WYFORM1::PAPER::35ELA::SP15	181	0.04	0.00	0.78	1.36	0.23	0.77	0.59			+A
2138	WYFORM1::PAPER::35ELA::SP15	182	0.03	0.00	0.75	1.37	0.18	0.82	0.55			-A
2292	WYFORM1::PAPER::35ELA::SP15	163	0.01	0.00	0.72	1.83	0.05	0.95	0.88			-A
2293	WYFORM1::PAPER::35ELA::SP15	164	0.00	0.00	0.62	1.49	0.11	0.89	0.6			+A
2296	WYFORM1::PAPER::35ELA::SP15	163	0.01	0.00	0.65	1.53	0.12	0.88	0.64			+C
2294	WYFORM1::PAPER::35ELA::SP15	163	0.01	0.00	0.38	1.57	0.13	0.87	0.71			-A
2299	WYFORM1::PAPER::35ELA::SP15	164	0.00	0.00	0.62	1.52	0.15	0.85	0.67			-A
2297	WYFORM1::PAPER::35ELA::SP15	163	0.01	0.00	0.62	1.37	0.13	0.87	0.5			-A
2144	WYFORM1::PAPER::35ELA::SP15	153	0.01	0.00	0.53	1.44	0.16	0.84	0.59			-A
2143	WYFORM1::PAPER::35ELA::SP15	154	0.00	0.00	0.77	1.8	0.08	0.92	0.88			-A
2145	WYFORM1::PAPER::35ELA::SP15	154	0.00	0.00	0.77	1.66	0.11	0.89	0.77			+A
2146	WYFORM1::PAPER::35ELA::SP15	153	0.01	0.00	0.46	1.63	0.07	0.93	0.7			-A
2147	WYFORM1::PAPER::35ELA::SP15	153	0.01	0.00	0.64	1.67	0.1	0.9	0.76			+A
2148	WYFORM1::PAPER::35ELA::SP15	153	0.01	0.00	0.62	1.54	0.13	0.87	0.67			-A
2127	WYFORM1::PAPER::35ELA::SP15	147	0.01	0.00	0.66	1.84	0.06	0.94	0.9			+A
2128	WYFORM1::PAPER::35ELA::SP15	148	0.00	0.00	0.56	1.64	0.08	0.92	0.72			-A
2129	WYFORM1::PAPER::35ELA::SP15	148	0.00	0.00	0.34	1.65	0.1	0.9	0.75			+A
2130	WYFORM1::PAPER::35ELA::SP15	148	0.00	0.00	0.66	1.4	0.2	0.8	0.6			+A
2133	WYFORM1::PAPER::35ELA::SP15	147	0.01	0.00	0.56	1.84	0.04	0.96	0.88			-A
2139	WYFORM1::PAPER::35ELA::SP15	146	0.01	0.00	0.53	1.38	0.13	0.87	0.51			+A
3471	WYFORM1::PAPER::35ELA::SP15	144	0.00	0.00	0.54	1.53	0.13	0.88	0.65			-A
3472	WYFORM1::PAPER::35ELA::SP15	144	0.00	0.00	0.31	1.39	0.17	0.83	0.56			-A
3473	WYFORM1::PAPER::35ELA::SP15	144	0.00	0.00	0.56	1.33	0.21	0.79	0.53			-A
3475	WYFORM1::PAPER::35ELA::SP15	144	0.00	0.00	0.6	1.56	0.11	0.89	0.67			-A
3477	WYFORM1::PAPER::35ELA::SP15	144	0.00	0.00	0.45	1.44	0.17	0.83	0.61			+A
3478	WYFORM1::PAPER::35ELA::SP15	144	0.00	0.00	0.56	1.47	0.17	0.83	0.65			-A
2995	WYFORM1::PAPER::35ELA::SP15	121	0.01	0.00	0.5	1.86	0.02	0.98	0.88			+A
2996	WYFORM1::PAPER::35ELA::SP15	122	0.00	0.00	0.43	1.07	0.34	0.66	0.41			-A
2998	WYFORM1::PAPER::35ELA::SP15	122	0.00	0.00	0.54	1.65	0.1	0.9	0.75			-A
2999	WYFORM1::PAPER::35ELA::SP15	121	0.01	0.00	0.59	1.69	0.09	0.91	0.78			-A
3000	WYFORM1::PAPER::35ELA::SP15	120	0.02	0.00	0.53	1.3	0.17	0.83	0.47			-A
2374	WYFORM1::PAPER::35ELA::SP15	105	0.01	0.00	0.45	1.1	0.33	0.67	0.44			+A

2376	WYFORM1::PAPER::35ELA::SP15	106	0.00	0.00	0.37	1.15	0.26	0.74	0.42			+A
2378	WYFORM1::PAPER::35ELA::SP15	105	0.00	0.00	0.52	1.64	0.1	0.9	0.74			-A
2379	WYFORM1::PAPER::35ELA::SP15	105	0.00	0.00	0.47	1.2	0.26	0.74	0.46			-A
2382	WYFORM1::PAPER::35ELA::SP15	105	0.00	0.00	0.82	1.9	0.03	0.97	0.92			+A
2384	WYFORM1::PAPER::35ELA::SP15	105	0.00	0.00	0.46	1.37	0.16	0.84	0.53			-A
3485	WYFORM1::PAPER::35ELA::SP15	95	0.01	0.00	0.2	0.96						-A
3486	WYFORM1::PAPER::35ELA::SP15	96	0.00	0.00	0.56	1.15	0.25	0.75	0.4			+A
3487	WYFORM1::PAPER::35ELA::SP15	96	0.00	0.00	0.37	1.21	0.24	0.76	0.45			+A
3488	WYFORM1::PAPER::35ELA::SP15	96	0.00	0.00	0.38	1.11	0.22	0.78	0.33			+A
3489	WYFORM1::PAPER::35ELA::SP15	96	0.00	0.00	0.22	1.15	0.22	0.78	0.36			-A
3490	WYFORM1::PAPER::35ELA::SP15	96	0.00	0.00	0.51	0.85	0.46	0.54	0.31			+A

Table C2. Classical Item Statistics—Grade-Band 6–8 English Language Arts

ITS ID	Test Form	Total N within Test Form	Prop Omit	Prop Access Limitation	Classical Analyses							DIF Analysis
					Adjusted Polyserial/Biserial	Average Score	Prop Score Point 0	Prop Score Point 1	Prop Score Point 2	Prop Score Point 3	Prop Score Point 4	Female / Male
2553	WYFORM1::PAPER::68ELA::SP15	121	0.01	0.00	0.55	2.51		0.03	0.97	0.88	0.66	-A
2554	WYFORM1::PAPER::68ELA::SP15	115	0.08	0.00	0.55	0.7	0.3	0.7				+A
2555	WYFORM1::PAPER::68ELA::SP15	116	0.08	0.00	0.56	0.83	0.17	0.83				+A
2556	WYFORM1::PAPER::68ELA::SP15	115	0.08	0.00	0.61	0.77	0.23	0.77				-A
2560	WYFORM1::PAPER::68ELA::SP15	117	0.06	0.00	0.62	0.71	0.29	0.71				-A
2557	WYFORM1::PAPER::68ELA::SP15	114	0.09	0.00	0.62	0.87	0.13	0.87				+A
2906	WYFORM1::PAPER::68ELA::SP15	123	0.01	0.00	0.64	2.25		0.09	0.91	0.77	0.57	+A
2917	WYFORM1::PAPER::68ELA::SP15	115	0.09	0.00	0.59	0.83	0.17	0.83				-A
2913	WYFORM1::PAPER::68ELA::SP15	114	0.09	0.00	0.6	0.81	0.19	0.81				+A
2914	WYFORM1::PAPER::68ELA::SP15	116	0.07	0.00	0.63	0.76	0.24	0.76				-A
2915	WYFORM1::PAPER::68ELA::SP15	117	0.06	0.00	0.74	0.62	0.38	0.62				-A
2916	WYFORM1::PAPER::68ELA::SP15	114	0.09	0.00	0.57	0.56	0.44	0.56				+A
3297	WYFORM1::PAPER::68ELA::SP15	180	0.05	0.00	0.41	0.79	0.21	0.79				-A
3298	WYFORM1::PAPER::68ELA::SP15	178	0.05	0.00	0.54	0.9	0.1	0.9				-A
3299	WYFORM1::PAPER::68ELA::SP15	179	0.05	0.00	0.76	0.84	0.16	0.84				-A
3300	WYFORM1::PAPER::68ELA::SP15	180	0.04	0.00	0.67	0.87	0.13	0.87				+A
3301	WYFORM1::PAPER::68ELA::SP15	178	0.05	0.00	0.73	0.8	0.2	0.8				-A
3303	WYFORM1::PAPER::68ELA::SP15	179	0.05	0.00	0.29	0.64	0.36	0.64				+C
2423	WYFORM1::PAPER::68ELA::SP15	177	0.05	0.00	0.82	1.65	0.09	0.91	0.74			-A
2425	WYFORM1::PAPER::68ELA::SP15	178	0.05	0.00	0.76	1.74	0.05	0.95	0.79			+A
2424	WYFORM1::PAPER::68ELA::SP15	175	0.07	0.00	0.45	1.5	0.15	0.85	0.65			-A
2426	WYFORM1::PAPER::68ELA::SP15	177	0.06	0.00	0.79	1.54	0.14	0.86	0.67			-A
2427	WYFORM1::PAPER::68ELA::SP15	177	0.06	0.00	0.51	1.34	0.17	0.83	0.51			-A
2428	WYFORM1::PAPER::68ELA::SP15	177	0.06	0.00	0.61	1.51	0.12	0.88	0.63			-A
2980	WYFORM1::PAPER::68ELA::SP15	181	0.04	0.00	0.57	0.69	0.31	0.69				-C
2981	WYFORM1::PAPER::68ELA::SP15	177	0.06	0.00	0.38	0.67	0.33	0.67				+A

2982	WYFORM1::PAPER::68ELA::SP15	177	0.06	0.00	0.59	0.79	0.21	0.79				+A
2983	WYFORM1::PAPER::68ELA::SP15	178	0.05	0.00	0.53	0.75	0.25	0.75				-A
2984	WYFORM1::PAPER::68ELA::SP15	177	0.06	0.00	0.71	0.81	0.19	0.81				+A
2985	WYFORM1::PAPER::68ELA::SP15	177	0.06	0.00	0.58	0.81	0.19	0.81				-*C*
2346	WYFORM1::PAPER::68ELA::SP15	136	0.01	0.00	0.62	1.9	0.03	0.97	0.93			-A
2347	WYFORM1::PAPER::68ELA::SP15	137	0.00	0.00	0.71	1.91	0.03	0.97	0.93			-A
2348	WYFORM1::PAPER::68ELA::SP15	137	0.00	0.00	0.59	1.85	0.03	0.97	0.88			-A
2350	WYFORM1::PAPER::68ELA::SP15	137	0.00	0.00	0.57	1.71	0.07	0.93	0.77			+A
2351	WYFORM1::PAPER::68ELA::SP15	137	0.00	0.00	0.58	1.85	0.04	0.96	0.89			+A
2352	WYFORM1::PAPER::68ELA::SP15	136	0.00	0.00	0.4	1.31	0.21	0.79	0.52			-A
2300	WYFORM1::PAPER::68ELA::SP15	134	0.00	0.00	0.59	1.94	0.01	0.99	0.95			+A
2301	WYFORM1::PAPER::68ELA::SP15	133	0.00	0.00	0.48	1.86	0.05	0.95	0.91			+A
2304	WYFORM1::PAPER::68ELA::SP15	134	0.00	0.00	0.56	1.79	0.04	0.96	0.84			+A
2305	WYFORM1::PAPER::68ELA::SP15	133	0.00	0.00	0.44	1.92	0.02	0.98	0.93			-A
2306	WYFORM1::PAPER::68ELA::SP15	134	0.00	0.00	0.58	1.59	0.07	0.93	0.66			-A
2307	WYFORM1::PAPER::68ELA::SP15	134	0.00	0.00	0.58	1.44	0.15	0.85	0.59			-A
3021	WYFORM1::PAPER::68ELA::SP15	132	0.00	0.00	0.33	1.54	0.05	0.95	0.59			+A
3022	WYFORM1::PAPER::68ELA::SP15	133	0.00	0.00	0.62	1.88	0.02	0.98	0.89			-A
3023	WYFORM1::PAPER::68ELA::SP15	132	0.00	0.00	0.54	1.57	0.12	0.88	0.69			-A
3024	WYFORM1::PAPER::68ELA::SP15	133	0.00	0.00	0.44	1.56	0.08	0.92	0.65			-A
3026	WYFORM1::PAPER::68ELA::SP15	133	0.00	0.00	0.62	1.51	0.13	0.87	0.64			-A
3356	WYFORM1::PAPER::68ELA::SP15	130	0.00	0.00	0.45	1.71	0.05	0.95	0.75			-A
3357	WYFORM1::PAPER::68ELA::SP15	129	0.00	0.00	0.57	1.61	0.11	0.89	0.72			+A
3359	WYFORM1::PAPER::68ELA::SP15	130	0.00	0.00	0.54	1.61	0.12	0.88	0.72			-A
3358	WYFORM1::PAPER::68ELA::SP15	130	0.00	0.00	0.54	1.82	0.03	0.97	0.85			+A
3360	WYFORM1::PAPER::68ELA::SP15	130	0.00	0.00	0.53	1.72	0.06	0.94	0.78			+A
3361	WYFORM1::PAPER::68ELA::SP15	129	0.01	0.00	0.36	1.51	0.1	0.9	0.61			-A
2357	WYFORM1::PAPER::68ELA::SP15	125	0.00	0.00	0.61	1.63	0.09	0.91	0.72			+A
2356	WYFORM1::PAPER::68ELA::SP15	125	0.00	0.00	0.48	1.86	0.02	0.98	0.88			+A
2359	WYFORM1::PAPER::68ELA::SP15	125	0.00	0.00	0.48	1.3	0.2	0.8	0.5			+A
2360	WYFORM1::PAPER::68ELA::SP15	125	0.00	0.00	0.37	1.23	0.24	0.76	0.47			+A
2358	WYFORM1::PAPER::68ELA::SP15	125	0.00	0.00	0.54	1.5	0.09	0.91	0.58			+*C*

2361	WYFORM1::PAPER::68ELA::SP15	125	0.00	0.00	0.51	1.74	0.06	0.94	0.8			+A
3479	WYFORM1::PAPER::68ELA::SP15	118	0.00	0.00	0.81	1.92	0.03	0.97	0.95			+A
3480	WYFORM1::PAPER::68ELA::SP15	119	0.00	0.00	0.5	1.46	0.13	0.87	0.6			-A
3481	WYFORM1::PAPER::68ELA::SP15	118	0.01	0.00	0.46	1.86	0.03	0.97	0.88			-A
3482	WYFORM1::PAPER::68ELA::SP15	119	0.00	0.00	0.25	1	0.3	0.7	0.3			+A
3483	WYFORM1::PAPER::68ELA::SP15	119	0.00	0.00	0.5	1.68	0.07	0.93	0.75			-A
3484	WYFORM1::PAPER::68ELA::SP15	119	0.00	0.00	0.34	1.37	0.13	0.87	0.5			-A
2832	WYFORM1::PAPER::68ELA::SP15	117	0.00	0.00	0.41	1.73	0.05	0.95	0.78			+A
2835	WYFORM1::PAPER::68ELA::SP15	116	0.00	0.00	0.59	1.07	0.37	0.63	0.44			-A
2836	WYFORM1::PAPER::68ELA::SP15	117	0.00	0.00	0.51	1.46	0.15	0.85	0.61			-A
2837	WYFORM1::PAPER::68ELA::SP15	117	0.00	0.00	0.34	1.37	0.13	0.87	0.5			+A
2838	WYFORM1::PAPER::68ELA::SP15	116	0.00	0.00	0.28	1.1	0.24	0.76	0.34			+A
2839	WYFORM1::PAPER::68ELA::SP15	118	0.00	0.00	0.4	1.07	0.24	0.76	0.31			-A

Table C3. Classical Item Statistics—Grade-Band 9–11 English Language Arts

ITS ID	Test Form	Total N within Test Form	Prop Omit	Prop Access Limitation	Classical Analyses							DIF Analysis
					Adjusted Polyserial/Biserial	Average Score	Prop Score Point 0	Prop Score Point 1	Prop Score Point 2	Prop Score Point 3	Prop Score Point 4	Female / Male
2616	WYFORM1::PAPER::911ELA::SP15	91	0.01	0.00	0.72	2.65		0.04	0.96	0.89	0.8	+A
2617	WYFORM1::PAPER::911ELA::SP15	87	0.06	0.00	0.5	0.77	0.23	0.77				+A
2618	WYFORM1::PAPER::911ELA::SP15	89	0.04	0.00	0.46	0.65	0.35	0.65				+A
2620	WYFORM1::PAPER::911ELA::SP15	84	0.08	0.00	0.47	0.65	0.35	0.65				+A
2621	WYFORM1::PAPER::911ELA::SP15	88	0.05	0.00	0.58	0.64	0.36	0.64				-A
2535	WYFORM1::PAPER::911ELA::SP15	90	0.03	0.00	0.76	2.62		0.03	0.97	0.87	0.79	+A
2537	WYFORM1::PAPER::911ELA::SP15	87	0.06	0.00	0.41	0.6	0.4	0.6				+A
2538	WYFORM1::PAPER::911ELA::SP15	88	0.05	0.00	0.56	0.76	0.24	0.76				+A
2539	WYFORM1::PAPER::911ELA::SP15	87	0.06	0.00	0.56	0.75	0.25	0.75				+A
2540	WYFORM1::PAPER::911ELA::SP15	86	0.07	0.00	0.54	0.69	0.31	0.69				+A
3015	WYFORM1::PAPER::911ELA::SP15	134	0.03	0.00	0.61	0.83	0.17	0.83				-A
3016	WYFORM1::PAPER::911ELA::SP15	132	0.04	0.00	0.44	0.61	0.39	0.61				+A
3017	WYFORM1::PAPER::911ELA::SP15	135	0.02	0.00	0.67	0.78	0.22	0.78				-A
3018	WYFORM1::PAPER::911ELA::SP15	132	0.04	0.00	0.63	0.8	0.2	0.8				+A
3019	WYFORM1::PAPER::911ELA::SP15	131	0.05	0.00	0.58	0.77	0.23	0.77				-A
3020	WYFORM1::PAPER::911ELA::SP15	134	0.03	0.00	0.64	0.72	0.28	0.72				-*C*
2521	WYFORM1::PAPER::911ELA::SP15	132	0.04	0.00	0.57	0.86	0.14	0.86				+A
2522	WYFORM1::PAPER::911ELA::SP15	132	0.04	0.00	0.49	0.58	0.42	0.58				+A
2523	WYFORM1::PAPER::911ELA::SP15	135	0.02	0.00	0.66	0.77	0.23	0.77				+A
2524	WYFORM1::PAPER::911ELA::SP15	132	0.04	0.00	0.8	1.24	0.25	0.75	0.49			-A
2525	WYFORM1::PAPER::911ELA::SP15	134	0.03	0.00	0.72	1.41	0.14	0.86	0.55			-A
2526	WYFORM1::PAPER::911ELA::SP15	132	0.04	0.00	0.67	1.36	0.14	0.86	0.49			+A
2789	WYFORM1::PAPER::911ELA::SP15	132	0.04	0.00	0.58	0.71	0.29	0.71				+A
2792	WYFORM1::PAPER::911ELA::SP15	129	0.06	0.00	0.7	0.78	0.22	0.78				+A
2791	WYFORM1::PAPER::911ELA::SP15	132	0.04	0.00	0.64	0.67	0.33	0.67				+A
2793	WYFORM1::PAPER::911ELA::SP15	132	0.04	0.00	0.66	1.45	0.14	0.86	0.59			+A

2794	WYFORM1::PAPER::911ELA::SP15	132	0.04	0.00	0.69	1.42	0.18	0.82	0.61			-A
2795	WYFORM1::PAPER::911ELA::SP15	132	0.04	0.00	0.67	1.03	0.36	0.64	0.39			+A
2497	WYFORM1::PAPER::911ELA::SP15	143	0.00	0.00	0.71	1.75	0.06	0.94	0.8			+A
2500	WYFORM1::PAPER::911ELA::SP15	141	0.01	0.00	0.85	1.68	0.09	0.91	0.77			+A
2501	WYFORM1::PAPER::911ELA::SP15	140	0.02	0.00	0.77	1.76	0.03	0.97	0.79			+A
2502	WYFORM1::PAPER::911ELA::SP15	141	0.01	0.00	0.87	1.63	0.14	0.86	0.77			+A
2503	WYFORM1::PAPER::911ELA::SP15	143	0.00	0.00	0.88	1.55	0.14	0.86	0.69			+A
2567	WYFORM1::PAPER::911ELA::SP15	132	0.00	0.00	0.76	1.77	0.05	0.95	0.82			+A
2569	WYFORM1::PAPER::911ELA::SP15	131	0.00	0.00	0.56	1.48	0.16	0.84	0.64			+A
2570	WYFORM1::PAPER::911ELA::SP15	130	0.02	0.00	0.71	1.6	0.11	0.89	0.71			+A
2571	WYFORM1::PAPER::911ELA::SP15	130	0.02	0.00	0.86	1.79	0.05	0.95	0.84			+A
2572	WYFORM1::PAPER::911ELA::SP15	131	0.01	0.00	0.65	1.67	0.08	0.92	0.76			-A
2574	WYFORM1::PAPER::911ELA::SP15	131	0.01	0.00	0.81	1.53	0.15	0.85	0.68			-A
2527	WYFORM1::PAPER::911ELA::SP15	129	0.00	0.00	0.8	1.88	0.02	0.98	0.91			+A
2528	WYFORM1::PAPER::911ELA::SP15	129	0.00	0.00	0.74	1.6	0.12	0.88	0.72			-A
2529	WYFORM1::PAPER::911ELA::SP15	128	0.01	0.00	0.79	1.68	0.09	0.91	0.77			+A
2532	WYFORM1::PAPER::911ELA::SP15	127	0.02	0.00	0.73	1.75	0.06	0.94	0.8			-A
2533	WYFORM1::PAPER::911ELA::SP15	128	0.01	0.00	0.56	1.59	0.1	0.9	0.69			+A
2534	WYFORM1::PAPER::911ELA::SP15	129	0.00	0.00	0.93	1.81	0.05	0.95	0.86			+A
2813	WYFORM1::PAPER::911ELA::SP15	125	0.00	0.00	0.68	1.58	0.11	0.89	0.69			+A
2814	WYFORM1::PAPER::911ELA::SP15	124	0.00	0.00	0.85	1.77	0.06	0.94	0.82			+A
2815	WYFORM1::PAPER::911ELA::SP15	125	0.00	0.00	0.75	1.54	0.12	0.88	0.66			-A
2819	WYFORM1::PAPER::911ELA::SP15	124	0.01	0.00	0.78	1.65	0.09	0.91	0.74			-A
2820	WYFORM1::PAPER::911ELA::SP15	124	0.01	0.00	0.59	1.41	0.19	0.81	0.6			-A
2821	WYFORM1::PAPER::911ELA::SP15	123	0.02	0.00	0.61	1.41	0.19	0.81	0.6			-A
2490	WYFORM1::PAPER::911ELA::SP15	114	0.00	0.00	0.94	1.87	0.04	0.96	0.9			-A
2491	WYFORM1::PAPER::911ELA::SP15	115	0.00	0.00	0.84	1.77	0.05	0.95	0.82			+A
2492	WYFORM1::PAPER::911ELA::SP15	113	0.02	0.00	0.32	1.08	0.32	0.68	0.4			+A
2495	WYFORM1::PAPER::911ELA::SP15	112	0.01	0.00	0.62	1.35	0.19	0.81	0.54			-A
2493	WYFORM1::PAPER::911ELA::SP15	115	0.00	0.00	0.55	1.21	0.23	0.77	0.44			+A
2494	WYFORM1::PAPER::911ELA::SP15	113	0.01	0.00	0.74	1.58	0.1	0.9	0.68			-A
3370	WYFORM1::PAPER::911ELA::SP15	109	0.01	0.00	0.69	1.61	0.09	0.91	0.71			+A

3371	WYFORM1::PAPER::911ELA::SP15	108	0.01	0.00	0.6	1.5	0.17	0.83	0.67			+A
3372	WYFORM1::PAPER::911ELA::SP15	109	0.01	0.00	0.57	1.38	0.15	0.85	0.52			-A
3373	WYFORM1::PAPER::911ELA::SP15	109	0.00	0.00	0.63	1.36	0.17	0.83	0.52			+A
3385	WYFORM1::PAPER::911ELA::SP15	109	0.00	0.00	0.59	1.46	0.2	0.8	0.66			-A
3384	WYFORM1::PAPER::911ELA::SP15	108	0.01	0.00	0.52	1.2	0.25	0.75	0.45			-C
3493	WYFORM1::PAPER::911ELA::SP15	105	0.00	0.00	0.6	1.36	0.14	0.86	0.5			-A
3494	WYFORM1::PAPER::911ELA::SP15	105	0.00	0.00	0.68	1.34	0.21	0.79	0.55			+A
3495	WYFORM1::PAPER::911ELA::SP15	104	0.01	0.00	0.61	1.48	0.15	0.85	0.63			-A
3496	WYFORM1::PAPER::911ELA::SP15	103	0.02	0.00	0.68	1.41	0.15	0.85	0.55			-A
3497	WYFORM1::PAPER::911ELA::SP15	102	0.03	0.00	0.51	1.23	0.23	0.77	0.45			-A
3499	WYFORM1::PAPER::911ELA::SP15	100	0.03	0.00	0.5	1.17	0.26	0.74	0.43			-A

Table C4. Classical Item Statistics—Grade-Band 3–5 Mathematics

ITS ID	Test Form	Total N within Test Form	Prop Omit	Prop Access Limitation	Classical Analyses							DIF Analysis
					Adjusted Polyserial/Biserial	Average Score	Prop Score Point 0	Prop Score Point 1	Prop Score Point 2	Prop Score Point 3	Prop Score Point 4	Female / Male
3203	WYFORM1::PAPER::35MATH::SP15	144	0.01	0.00	0.81	2.65		0.03	0.97	0.9	0.77	+A
3204	WYFORM1::PAPER::35MATH::SP15	142	0.02	0.00	0.6	2.34		0.05	0.95	0.84	0.55	+A
3207	WYFORM1::PAPER::35MATH::SP15	139	0.06	0.00	0.62	0.68	0.32	0.68				+A
3208	WYFORM1::PAPER::35MATH::SP15	140	0.05	0.00	0.4	0.52	0.48	0.52				-A
3206	WYFORM1::PAPER::35MATH::SP15	141	0.05	0.00	0.5	0.74	0.26	0.74				-A
3205	WYFORM1::PAPER::35MATH::SP15	143	0.03	0.00	0.3	0.48	0.52	0.48				-A
2667	WYFORM1::PAPER::35MATH::SP15	143	0.01	0.00	0.68	2.5		0.03	0.97	0.88	0.66	+A
2668	WYFORM1::PAPER::35MATH::SP15	141	0.03	0.00	0.68	2.48		0.04	0.96	0.86	0.66	+A
2771	WYFORM1::PAPER::35MATH::SP15	142	0.04	0.00	0.41	0.7	0.3	0.7				+A
2721	WYFORM1::PAPER::35MATH::SP15	141	0.05	0.00	0.27	0.43	0.57	0.43				-A
2722	WYFORM1::PAPER::35MATH::SP15	141	0.05	0.00	0.33	0.48	0.52	0.48				-A
2723	WYFORM1::PAPER::35MATH::SP15	142	0.04	0.00	0.43	0.63	0.37	0.63				+A
3249	WYFORM1::PAPER::35MATH::SP15	198	0.01	0.00	0.54	1.31	0.13	0.87	0.44			-A
3250	WYFORM1::PAPER::35MATH::SP15	196	0.02	0.00	0.56	1.49	0.16	0.84	0.65			-A
3251	WYFORM1::PAPER::35MATH::SP15	195	0.03	0.00	0.57	1.3	0.21	0.79	0.5			-A
3252	WYFORM1::PAPER::35MATH::SP15	195	0.03	0.00	0.48	1.22	0.3	0.7	0.52			+A
3253	WYFORM1::PAPER::35MATH::SP15	196	0.02	0.00	0.63	1.15	0.3	0.7	0.45			+A
3254	WYFORM1::PAPER::35MATH::SP15	196	0.02	0.00	0.62	1.26	0.17	0.83	0.43			+A
2248	WYFORM1::PAPER::35MATH::SP15	197	0.02	0.00	0.51	1.12	0.25	0.75	0.37			-A
2249	WYFORM1::PAPER::35MATH::SP15	196	0.02	0.00	0.47	1.11	0.32	0.68	0.43			-A
2250	WYFORM1::PAPER::35MATH::SP15	195	0.03	0.00	0.53	1.22	0.18	0.82	0.4			+A
2251	WYFORM1::PAPER::35MATH::SP15	195	0.03	0.00	0.51	1.35	0.25	0.75	0.6			-A
2257	WYFORM1::PAPER::35MATH::SP15	197	0.02	0.00	0.58	1.36	0.24	0.76	0.59			+A
2259	WYFORM1::PAPER::35MATH::SP15	195	0.03	0.00	0.43	1.1	0.28	0.72	0.38			+A
2260	WYFORM1::PAPER::35MATH::SP15	195	0.03	0.00	0.4	1.45	0.18	0.82	0.64			+A
2266	WYFORM1::PAPER::35MATH::SP15	195	0.03	0.00	0.45	1.04	0.29	0.71	0.32			-A

2264	WYFORM1::PAPER::35MATH::SP15	194	0.03	0.00	0.52	1.05	0.28	0.72	0.32			-A
2261	WYFORM1::PAPER::35MATH::SP15	192	0.04	0.00	0.35	1.26	0.26	0.74	0.52			+A
1887	WYFORM1::PAPER::35MATH::SP15	141	0.00	0.00	0.46	0.64	0.36	0.64				+A
1888	WYFORM1::PAPER::35MATH::SP15	141	0.00	0.00	0.47	0.74	0.26	0.74				+*C*
1889	WYFORM1::PAPER::35MATH::SP15	140	0.01	0.00	0.54	0.66	0.34	0.66				-A
1890	WYFORM1::PAPER::35MATH::SP15	140	0.01	0.00	0.49	1.54	0.11	0.89	0.64			-A
1892	WYFORM1::PAPER::35MATH::SP15	140	0.01	0.00	0.57	1.38	0.21	0.79	0.59			-A
2664	WYFORM1::PAPER::35MATH::SP15	94	0.00	0.00	0.64	1.62	0.1	0.9	0.71			+A
2666	WYFORM1::PAPER::35MATH::SP15	93	0.01	0.00	0.48	1.68	0.11	0.89	0.78			+A
2655	WYFORM1::PAPER::35MATH::SP15	94	0.00	0.00	0.54	1.13	0.29	0.71	0.41			+A
2661	WYFORM1::PAPER::35MATH::SP15	94	0.00	0.00	0.41	1.18	0.3	0.7	0.48			-A
2662	WYFORM1::PAPER::35MATH::SP15	94	0.00	0.00	0.52	1.31	0.19	0.81	0.5			-A
2663	WYFORM1::PAPER::35MATH::SP15	94	0.00	0.00	0.53	1.15	0.26	0.74	0.4			-A
2228	WYFORM1::PAPER::35MATH::SP15	87	0.00	0.00	0.54	1.11	0.2	0.8	0.31			-A
2229	WYFORM1::PAPER::35MATH::SP15	87	0.00	0.00	0.15	0.94	0.39	0.61	0.33			-A
2230	WYFORM1::PAPER::35MATH::SP15	87	0.00	0.00	0.25	1.15	0.25	0.75	0.4			-*C*
2231	WYFORM1::PAPER::35MATH::SP15	87	0.00	0.00	0.56	1.79	0.02	0.98	0.82			+A
2232	WYFORM1::PAPER::35MATH::SP15	87	0.00	0.00	0.43	1.49	0.16	0.84	0.66			-A
2233	WYFORM1::PAPER::35MATH::SP15	87	0.00	0.00	0.58	1.6	0.09	0.91	0.69			-A
3188	WYFORM1::PAPER::35MATH::SP15	87	0.00	0.00	0.53	1.63	0.1	0.9	0.74			+A
3190	WYFORM1::PAPER::35MATH::SP15	86	0.01	0.00	0.51	0.78	0.47	0.53	0.24			+A
3191	WYFORM1::PAPER::35MATH::SP15	87	0.00	0.00	0.53	1.37	0.1	0.9	0.47			-A
3192	WYFORM1::PAPER::35MATH::SP15	87	0.00	0.00	0.36	1.17	0.17	0.83	0.34			-A
3193	WYFORM1::PAPER::35MATH::SP15	87	0.00	0.00	0.53	1.25	0.28	0.72	0.53			+A
3194	WYFORM1::PAPER::35MATH::SP15	86	0.01	0.00	0.28	0.9	0.38	0.62	0.28			+A
2324	WYFORM1::PAPER::35MATH::SP15	69	0.00	0.00	0.55	1.46	0.1	0.9	0.57			-A
2325	WYFORM1::PAPER::35MATH::SP15	69	0.00	0.00	0.52	1.12	0.38	0.62	0.49			+A
2327	WYFORM1::PAPER::35MATH::SP15	69	0.00	0.00	0.56	1.16	0.29	0.71	0.45			+A
2330	WYFORM1::PAPER::35MATH::SP15	69	0.00	0.00	0.46	1.36	0.16	0.84	0.52			-A
2331	WYFORM1::PAPER::35MATH::SP15	69	0.00	0.00	0.49	1.3	0.23	0.77	0.54			-A
2207	WYFORM1::PAPER::35MATH::SP15	52	0.00	0.00	0.69	1.65	0.08	0.92	0.73			-A
2208	WYFORM1::PAPER::35MATH::SP15	52	0.00	0.00	0.54	1.48	0.13	0.87	0.62			-A

2210	WYFORM1::PAPER::35MATH::SP15	52	0.00	0.00	0.4	1.12	0.19	0.81	0.31			+A
2209	WYFORM1::PAPER::35MATH::SP15	52	0.00	0.00	0.5	1.21	0.27	0.73	0.48			-A
2211	WYFORM1::PAPER::35MATH::SP15	52	0.00	0.00	0.32	1.13	0.25	0.75	0.38			+A
2213	WYFORM1::PAPER::35MATH::SP15	52	0.00	0.00	0.32	1.35	0.17	0.83	0.52			+A
2316	WYFORM1::PAPER::35MATH::SP15	52	0.00	0.00	0.58	1.52	0.1	0.9	0.62			+A
2317	WYFORM1::PAPER::35MATH::SP15	52	0.00	0.00	0.54	1.56	0.13	0.87	0.69			+*C*
2320	WYFORM1::PAPER::35MATH::SP15	52	0.00	0.00	0.69	1.48	0.12	0.88	0.6			-A
2321	WYFORM1::PAPER::35MATH::SP15	52	0.00	0.00	0.2	0.85	0.33	0.67	0.17			-A
2318	WYFORM1::PAPER::35MATH::SP15	52	0.00	0.00	0.25	0.96	0.31	0.69	0.27			+A

Table C5. Classical Item Statistics—Grade-Band 6–8 Mathematics

ITS ID	Test Form	Total N within Test Form	Prop Omit	Prop Access Limitation	Classical Analyses							DIF Analysis
					Adjusted Polyserial/Biserial	Average Score	Prop Score Point 0	Prop Score Point 1	Prop Score Point 2	Prop Score Point 3	Prop Score Point 4	Female / Male
2575	WYFORM1::PAPER::68MATH::SP15	146	0.01	0.00	0.59	2.56		0.03	0.97	0.91	0.68	+A
2576	WYFORM1::PAPER::68MATH::SP15	142	0.03	0.00	0.68	2.55		0.02	0.98	0.88	0.69	+A
2577	WYFORM1::PAPER::68MATH::SP15	143	0.05	0.00	0.83	1.69	0.1	0.9	0.8			+A
2578	WYFORM1::PAPER::68MATH::SP15	141	0.06	0.00	0.93	1.62	0.13	0.87	0.76			+A
2579	WYFORM1::PAPER::68MATH::SP15	140	0.07	0.00	0.63	1.69	0.09	0.91	0.78			+A
2580	WYFORM1::PAPER::68MATH::SP15	139	0.07	0.00	0.58	1.38	0.18	0.82	0.56			-A
2805	WYFORM1::PAPER::68MATH::SP15	141	0.04	0.00	0.66	2.44		0.04	0.96	0.84	0.64	+A
2806	WYFORM1::PAPER::68MATH::SP15	142	0.05	0.00	0.42	0.78	0.22	0.78				-A
2853	WYFORM1::PAPER::68MATH::SP15	137	0.08	0.00	0.55	0.58	0.42	0.58				-A
2818	WYFORM1::PAPER::68MATH::SP15	141	0.05	0.00	0.55	0.86	0.45	0.55	0.3			+A
2822	WYFORM1::PAPER::68MATH::SP15	140	0.06	0.00	0.68	1.5	0.12	0.88	0.62			+A
2840	WYFORM1::PAPER::68MATH::SP15	138	0.07	0.00	0.5	1.33	0.21	0.79	0.54			+A
1985	WYFORM1::PAPER::68MATH::SP15	194	0.05	0.00	0.51	1.42	0.13	0.87	0.55			+A
1986	WYFORM1::PAPER::68MATH::SP15	195	0.04	0.00	0.5	1.29	0.27	0.73	0.55			-A
1987	WYFORM1::PAPER::68MATH::SP15	193	0.05	0.00	0.55	1.57	0.11	0.89	0.68			-A
1988	WYFORM1::PAPER::68MATH::SP15	193	0.05	0.00	0.69	1.55	0.1	0.9	0.65			-A
1989	WYFORM1::PAPER::68MATH::SP15	190	0.07	0.00	0.6	1.34	0.22	0.78	0.56			-A
1990	WYFORM1::PAPER::68MATH::SP15	195	0.04	0.00	0.54	1.63	0.11	0.89	0.74			+A
3237	WYFORM1::PAPER::68MATH::SP15	195	0.04	0.00	0.32	0.81	0.19	0.81				+A
3236	WYFORM1::PAPER::68MATH::SP15	193	0.05	0.00	0.2	0.58	0.42	0.58				-A
3238	WYFORM1::PAPER::68MATH::SP15	191	0.06	0.00	0.41	1.16	0.19	0.81	0.35			+A
3239	WYFORM1::PAPER::68MATH::SP15	194	0.05	0.00	0.5	1.2	0.25	0.75	0.45			-A
3240	WYFORM1::PAPER::68MATH::SP15	193	0.05	0.00	0.45	1.32	0.12	0.88	0.44			-A
3241	WYFORM1::PAPER::68MATH::SP15	193	0.05	0.00	0.29	1.2	0.27	0.73	0.48			+A
3261	WYFORM1::PAPER::68MATH::SP15	196	0.04	0.00	0.63	1.34	0.14	0.86	0.47			-A
3262	WYFORM1::PAPER::68MATH::SP15	193	0.05	0.00	0.66	1.34	0.22	0.78	0.56			-A

3263	WYFORM1::PAPER::68MATH::SP15	195	0.04	0.00	0.48	1.26	0.22	0.78	0.48			+A
3264	WYFORM1::PAPER::68MATH::SP15	194	0.05	0.00	0.42	1.34	0.19	0.81	0.52			+A
3265	WYFORM1::PAPER::68MATH::SP15	194	0.05	0.00	0.55	1.15	0.22	0.78	0.37			+A
3266	WYFORM1::PAPER::68MATH::SP15	194	0.05	0.00	0.47	1.21	0.28	0.72	0.49			-A
1961	WYFORM1::PAPER::68MATH::SP15	161	0.01	0.00	0.72	1.68	0.07	0.93	0.75			+A
1963	WYFORM1::PAPER::68MATH::SP15	159	0.01	0.00	0.66	1.74	0.07	0.93	0.81			+A
1964	WYFORM1::PAPER::68MATH::SP15	159	0.01	0.00	0.59	1.64	0.12	0.88	0.76			-A
1967	WYFORM1::PAPER::68MATH::SP15	159	0.01	0.00	0.35	1.25	0.18	0.82	0.43			-A
1965	WYFORM1::PAPER::68MATH::SP15	161	0.00	0.00	0.27	1.33	0.15	0.85	0.48			-A
1966	WYFORM1::PAPER::68MATH::SP15	161	0.00	0.00	0.49	0.83	0.4	0.6	0.24			-A
2279	WYFORM1::PAPER::68MATH::SP15	143	0.00	0.00	0.59	1.52	0.1	0.9	0.62			-A
2280	WYFORM1::PAPER::68MATH::SP15	143	0.00	0.00	0.42	1.43	0.15	0.85	0.57			-A
2281	WYFORM1::PAPER::68MATH::SP15	143	0.00	0.00	0.51	1.26	0.22	0.78	0.48			-*C*
2282	WYFORM1::PAPER::68MATH::SP15	141	0.00	0.00	0.17	0.99	0.33	0.67	0.32			-A
2283	WYFORM1::PAPER::68MATH::SP15	143	0.00	0.00	0.55	1.02	0.29	0.71	0.31			-A
2284	WYFORM1::PAPER::68MATH::SP15	143	0.00	0.00	0.07	0.98	0.32	0.68	0.3			-B
2368	WYFORM1::PAPER::68MATH::SP15	122	0.00	0.00	0.4	1.16	0.25	0.75	0.41			+A
2369	WYFORM1::PAPER::68MATH::SP15	122	0.00	0.00	0.35	1.25	0.22	0.78	0.48			-A
2370	WYFORM1::PAPER::68MATH::SP15	122	0.00	0.00	0.39	1.29	0.14	0.86	0.43			-A
2372	WYFORM1::PAPER::68MATH::SP15	121	0.00	0.00	0.44	1.17	0.21	0.79	0.37			-A
2373	WYFORM1::PAPER::68MATH::SP15	122	0.00	0.00	0.29	1.3	0.21	0.79	0.51			+A
2375	WYFORM1::PAPER::68MATH::SP15	122	0.00	0.00	0.34	1.32	0.21	0.79	0.53			-A
2088	WYFORM1::PAPER::68MATH::SP15	112	0.00	0.00	0.3	1.14	0.18	0.82	0.32			-A
2089	WYFORM1::PAPER::68MATH::SP15	112	0.00	0.00	0.32	1.17	0.25	0.75	0.42			-A
2091	WYFORM1::PAPER::68MATH::SP15	112	0.00	0.00	0.21	1.4	0.13	0.88	0.53			+A
2090	WYFORM1::PAPER::68MATH::SP15	112	0.00	0.00	0.59	1.26	0.23	0.77	0.49			+*C*
3364	WYFORM1::PAPER::68MATH::SP15	62	0.03	0.00	0.39	1.52	0.15	0.85	0.66			+A
3365	WYFORM1::PAPER::68MATH::SP15	63	0.00	0.00	0.38	1.17	0.24	0.76	0.41			+A
3368	WYFORM1::PAPER::68MATH::SP15	62	0.00	0.00	0.25	0.85	0.4	0.6	0.26			-A
3366	WYFORM1::PAPER::68MATH::SP15	62	0.00	0.00	0.47	1.52	0.11	0.89	0.63			-A
3367	WYFORM1::PAPER::68MATH::SP15	62	0.00	0.00	0.32	1.03	0.27	0.73	0.31			-A
3369	WYFORM1::PAPER::68MATH::SP15	62	0.00	0.00	0.23	0.68	0.5	0.5	0.18			-A

2498	WYFORM1::PAPER::68MATH::SP15	56	0.00	0.00	0.49	1.3	0.23	0.77	0.54			-A
2499	WYFORM1::PAPER::68MATH::SP15	56	0.02	0.00	0.38	1.39	0.16	0.84	0.55			+A
2504	WYFORM1::PAPER::68MATH::SP15	56	0.02	0.00	0.18	1.04	0.34	0.66	0.38			-A
2506	WYFORM1::PAPER::68MATH::SP15	57	0.00	0.00	0.19	1.23	0.18	0.82	0.4			+A
2507	WYFORM1::PAPER::68MATH::SP15	57	0.00	0.00	0.31	1.07	0.3	0.7	0.37			-A
2496	WYFORM1::PAPER::68MATH::SP15	57	0.00	0.00	0.38	1.32	0.18	0.82	0.49			-A
2726	WYFORM1::PAPER::68MATH::SP15	51	0.00	0.00	0.04	1.2	0.24	0.76	0.43			-A
2729	WYFORM1::PAPER::68MATH::SP15	50	0.00	0.00	0.41	1.18	0.26	0.74	0.44			-A
2730	WYFORM1::PAPER::68MATH::SP15	51	0.00	0.00	0.3	1.25	0.25	0.75	0.51			-A
2728	WYFORM1::PAPER::68MATH::SP15	50	0.00	0.00	0.07	1.06	0.28	0.72	0.34			+A
2731	WYFORM1::PAPER::68MATH::SP15	49	0.02	0.00	0.13	0.84	0.43	0.57	0.27			+A
2727	WYFORM1::PAPER::68MATH::SP15	50	0.02	0.00	0.12	1	0.28	0.72	0.28			+A

Table C6. Classical Item Statistics—Grade-Band 9–11 Mathematics

ITS ID	Test Form	Total N within Test Form	Prop Omit	Prop Access Limitation	Classical Analyses							DIF Analysis
					Adjusted Polyserial/Biserial	Average Score	Prop Score Point 0	Prop Score Point 1	Prop Score Point 2	Prop Score Point 3	Prop Score Point 4	Female / Male
2399	WYFORM1::PAPER::911MATH::SP15	103	0.01	0.00	0.75	2.69		0.04	0.96	0.91	0.82	+A
2400	WYFORM1::PAPER::911MATH::SP15	102	0.03	0.00	0.57	0.67	0.33	0.67				-A
2401	WYFORM1::PAPER::911MATH::SP15	101	0.04	0.00	0.48	0.73	0.27	0.73				+A
2402	WYFORM1::PAPER::911MATH::SP15	102	0.03	0.00	0.33	0.62	0.38	0.62				+A
2403	WYFORM1::PAPER::911MATH::SP15	100	0.05	0.00	0.53	1.06	0.31	0.69	0.37			-A
2404	WYFORM1::PAPER::911MATH::SP15	102	0.04	0.00	0.57	1.18	0.25	0.75	0.42			+A
2548	WYFORM1::PAPER::911MATH::SP15	101	0.02	0.01	0.68	2.54		0.05	0.95	0.92	0.67	-A
2549	WYFORM1::PAPER::911MATH::SP15	98	0.05	0.01	0.61	2.43		0.05	0.95	0.86	0.62	+A
2550	WYFORM1::PAPER::911MATH::SP15	96	0.08	0.01	0.15	0.6	0.4	0.6				+A
2551	WYFORM1::PAPER::911MATH::SP15	95	0.09	0.01	0.26	0.53	0.47	0.53				+A
2552	WYFORM1::PAPER::911MATH::SP15	97	0.07	0.01	0.25	0.74	0.26	0.74				*-C*
2558	WYFORM1::PAPER::911MATH::SP15	97	0.07	0.01	0.09	0.52	0.48	0.52				+A
3258	WYFORM1::PAPER::911MATH::SP15	151	0.06	0.00	0.81	1.8	0.07	0.93	0.87			+A
3259	WYFORM1::PAPER::911MATH::SP15	154	0.04	0.00	0.58	1.55	0.11	0.89	0.66			-A
3260	WYFORM1::PAPER::911MATH::SP15	152	0.05	0.00	0.49	1.36	0.16	0.84	0.52			-A
3255	WYFORM1::PAPER::911MATH::SP15	155	0.03	0.00	0.55	1.45	0.13	0.87	0.57			+A
3256	WYFORM1::PAPER::911MATH::SP15	155	0.03	0.00	0.63	1.48	0.2	0.8	0.68			+A
3257	WYFORM1::PAPER::911MATH::SP15	153	0.04	0.00	0.75	1.46	0.18	0.82	0.64			+A
1969	WYFORM1::PAPER::911MATH::SP15	153	0.04	0.00	0.66	1.38	0.13	0.87	0.51			-A
1971	WYFORM1::PAPER::911MATH::SP15	154	0.04	0.00	0.62	1.26	0.21	0.79	0.47			-A
1976	WYFORM1::PAPER::911MATH::SP15	152	0.05	0.00	0.7	1.27	0.21	0.79	0.48			-A
1977	WYFORM1::PAPER::911MATH::SP15	150	0.06	0.00	0.47	1.05	0.29	0.71	0.35			+A
1978	WYFORM1::PAPER::911MATH::SP15	150	0.06	0.00	0.63	1.49	0.14	0.86	0.63			-A
1979	WYFORM1::PAPER::911MATH::SP15	150	0.06	0.00	0.69	1.29	0.19	0.81	0.48			+A
2395	WYFORM1::PAPER::911MATH::SP15	150	0.04	0.02	0.63	1.58	0.11	0.89	0.69			+A
2396	WYFORM1::PAPER::911MATH::SP15	150	0.04	0.02	0.61	1.69	0.11	0.89	0.8			-A

2398	WYFORM1::PAPER::911MATH::SP15	150	0.04	0.02	0.32	0.8	0.51	0.49	0.31			+A
2391	WYFORM1::PAPER::911MATH::SP15	149	0.04	0.02	0.57	1.19	0.21	0.79	0.4			+A
2392	WYFORM1::PAPER::911MATH::SP15	147	0.06	0.02	0.63	0.97	0.39	0.61	0.36			+A
2393	WYFORM1::PAPER::911MATH::SP15	150	0.04	0.02	0.64	1.26	0.21	0.79	0.47			-A
3242	WYFORM1::PAPER::911MATH::SP15	142	0.01	0.00	0.65	1.47	0.14	0.86	0.61			+A
3243	WYFORM1::PAPER::911MATH::SP15	142	0.01	0.00	0.68	1.6	0.11	0.89	0.7			+A
3244	WYFORM1::PAPER::911MATH::SP15	143	0.00	0.00	0.58	1.28	0.2	0.8	0.48			-A
3246	WYFORM1::PAPER::911MATH::SP15	143	0.00	0.00	0.6	1.45	0.15	0.85	0.6			+A
3245	WYFORM1::PAPER::911MATH::SP15	142	0.01	0.00	0.44	1.03	0.26	0.74	0.29			-A
3247	WYFORM1::PAPER::911MATH::SP15	142	0.01	0.00	0.57	1.27	0.21	0.79	0.48			-A
2151	WYFORM1::PAPER::911MATH::SP15	121	0.00	0.02	0.24	1.24	0.22	0.78	0.46			-A
2156	WYFORM1::PAPER::911MATH::SP15	121	0.00	0.02	0.43	1.4	0.1	0.9	0.5			-A
2154	WYFORM1::PAPER::911MATH::SP15	121	0.00	0.02	0.48	1.17	0.22	0.78	0.4			-A
2158	WYFORM1::PAPER::911MATH::SP15	121	0.00	0.02	0.48	1.5	0.17	0.83	0.66			+A
2159	WYFORM1::PAPER::911MATH::SP15	121	0.00	0.02	0.46	1.4	0.15	0.85	0.55			-A
2160	WYFORM1::PAPER::911MATH::SP15	120	0.00	0.02	0.54	1.53	0.12	0.88	0.65			-A
1792	WYFORM1::PAPER::911MATH::SP15	115	0.00	0.00	0.37	1.67	0.07	0.93	0.74			+A
1794	WYFORM1::PAPER::911MATH::SP15	115	0.00	0.00	0.54	1.1	0.33	0.67	0.43			-A
1795	WYFORM1::PAPER::911MATH::SP15	115	0.00	0.00	0.41	1.15	0.27	0.73	0.42			-A
1793	WYFORM1::PAPER::911MATH::SP15	114	0.01	0.00	0.68	1.54	0.13	0.87	0.68			-A
1796	WYFORM1::PAPER::911MATH::SP15	115	0.00	0.00	0.54	1.19	0.22	0.78	0.41			-A
1797	WYFORM1::PAPER::911MATH::SP15	115	0.00	0.00	0.23	1	0.34	0.66	0.34			+A
2273	WYFORM1::PAPER::911MATH::SP15	112	0.00	0.00	0.45	1.3	0.22	0.78	0.53			*+C*
2272	WYFORM1::PAPER::911MATH::SP15	112	0.00	0.00	0.42	1.38	0.21	0.79	0.59			+A
2271	WYFORM1::PAPER::911MATH::SP15	112	0.00	0.00	0.39	0.88	0.42	0.58	0.29			-A
2277	WYFORM1::PAPER::911MATH::SP15	112	0.00	0.00	0.49	1.54	0.13	0.88	0.67			*+C*
2276	WYFORM1::PAPER::911MATH::SP15	112	0.00	0.00	0.44	0.96	0.36	0.64	0.32			+A
2761	WYFORM1::PAPER::911MATH::SP15	87	0.00	0.00	0.34	1.14	0.22	0.78	0.36			-A
2762	WYFORM1::PAPER::911MATH::SP15	86	0.00	0.00	0.37	1.3	0.24	0.76	0.55			+A
2763	WYFORM1::PAPER::911MATH::SP15	86	0.00	0.00	0.68	1.27	0.23	0.77	0.5			-A
2764	WYFORM1::PAPER::911MATH::SP15	85	0.00	0.00	0.58	1.12	0.28	0.72	0.4			+A
2765	WYFORM1::PAPER::911MATH::SP15	86	0.00	0.00	0.41	1.13	0.24	0.76	0.37			+A

2757	WYFORM1::PAPER::911MATH::SP15	75	0.00	0.00	0.28	0.93	0.41	0.59	0.35			+A
2758	WYFORM1::PAPER::911MATH::SP15	75	0.00	0.00	0.53	0.96	0.41	0.59	0.37			+A
2751	WYFORM1::PAPER::911MATH::SP15	74	0.00	0.00	0.52	1.45	0.12	0.88	0.57			-A
2753	WYFORM1::PAPER::911MATH::SP15	75	0.00	0.00	0.38	1	0.33	0.67	0.33			-A
2755	WYFORM1::PAPER::911MATH::SP15	75	0.00	0.00	0.58	1.43	0.13	0.87	0.56			+A
2756	WYFORM1::PAPER::911MATH::SP15	75	0.00	0.00	0.73	1.4	0.16	0.84	0.56			-A
3267	WYFORM1::PAPER::911MATH::SP15	71	0.00	0.00	0.16	0.89	0.39	0.61	0.28			+A
3268	WYFORM1::PAPER::911MATH::SP15	71	0.00	0.00	0.58	1.34	0.11	0.89	0.45			-A
3269	WYFORM1::PAPER::911MATH::SP15	71	0.00	0.00	0.3	1.17	0.27	0.73	0.44			+A
3270	WYFORM1::PAPER::911MATH::SP15	71	0.00	0.00	0.3	0.93	0.3	0.7	0.23			-A
3271	WYFORM1::PAPER::911MATH::SP15	71	0.00	0.00	0.25	1.15	0.24	0.76	0.39			+A
3272	WYFORM1::PAPER::911MATH::SP15	71	0.00	0.00	0.38	0.96	0.38	0.62	0.34			+A

Table C7. Classical Item Statistics—Grade 4 Science

ITS ID	Test Form	Total N within Test Form	Prop Omit	Prop Access Limitation	Classical Analyses							DIF Analysis
					Adjusted Polyserial/Biserial	Average Score	Prop Score Point 0	Prop Score Point 1	Prop Score Point 2	Prop Score Point 3	Prop Score Point 4	Female / Male
1983	WYFORM1::PAPER::4SCI::SP15	54	0.00	0.00	0.5	1.65						+A
1830	WYFORM1::PAPER::4SCI::SP15	54	0.04	0.00	0.68	0.87	0.13	0.87				-A
1831	WYFORM1::PAPER::4SCI::SP15	54	0.05	0.00	0.04	0.78	0.22	0.78				-A
1832	WYFORM1::PAPER::4SCI::SP15	54	0.04	0.00	0.21	0.57	0.43	0.57				+A
1833	WYFORM1::PAPER::4SCI::SP15	54	0.04	0.00	0.33	0.59	0.41	0.59				-A
1834	WYFORM1::PAPER::4SCI::SP15	53	0.05	0.00	0.27	0.49	0.51	0.49				+A
1984	WYFORM1::PAPER::4SCI::SP15	54	0.00	0.00	0.66	2.54		0.04	0.96	0.89	0.69	-A
1861	WYFORM1::PAPER::4SCI::SP15	54	0.04	0.00	0.23	0.56	0.44	0.56				-A
1863	WYFORM1::PAPER::4SCI::SP15	54	0.04	0.00	0.46	0.61	0.39	0.61				-*C*
1864	WYFORM1::PAPER::4SCI::SP15	54	0.04	0.00	0.52	0.76	0.24	0.76				-A
1866	WYFORM1::PAPER::4SCI::SP15	54	0.04	0.00	0.39	0.54	0.46	0.54				-A
1867	WYFORM1::PAPER::4SCI::SP15	54	0.04	0.00	0.45	0.81	0.19	0.81				-A
3278	WYFORM1::PAPER::4SCI::SP15	71	0.03	0.00	0.69	0.93	0.07	0.93				A
3279	WYFORM1::PAPER::4SCI::SP15	71	0.03	0.00	0.6	0.86	0.14	0.86				+A
3280	WYFORM1::PAPER::4SCI::SP15	71	0.03	0.00	0.53	0.52	0.48	0.52				+A
3312	WYFORM1::PAPER::4SCI::SP15	71	0.03	0.00	0.45	0.62	0.38	0.62				+A
3282	WYFORM1::PAPER::4SCI::SP15	71	0.03	0.00	0.67	1.35	0.14	0.86	0.49			-A
3283	WYFORM1::PAPER::4SCI::SP15	70	0.04	0.00	0.23	1.16	0.19	0.81	0.34			+A
1874	WYFORM1::PAPER::4SCI::SP15	70	0.04	0.00	0.42	0.69	0.31	0.69				+A
1876	WYFORM1::PAPER::4SCI::SP15	71	0.03	0.00	0.29	0.75	0.25	0.75				+A
1877	WYFORM1::PAPER::4SCI::SP15	71	0.03	0.00	0.53	0.62	0.38	0.62				-A
1878	WYFORM1::PAPER::4SCI::SP15	71	0.03	0.00	-0.05	0.44	0.56	0.44				-A
1905	WYFORM1::PAPER::4SCI::SP15	70	0.04	0.00	0.66	1.39	0.17	0.83	0.56			-A
1906	WYFORM1::PAPER::4SCI::SP15	71	0.03	0.00	0.72	1.41	0.18	0.82	0.59			+A
1907	WYFORM1::PAPER::4SCI::SP15	70	0.04	0.00	0.56	1.19	0.3	0.7	0.49			-A
1908	WYFORM1::PAPER::4SCI::SP15	69	0.05	0.00	0.62	1.51	0.14	0.86	0.65			+A

1909	WYFORM1::PAPER::4SCI::SP15	70	0.04	0.00	0.53	1.09	0.21	0.79	0.3			-A
1954	WYFORM1::PAPER::4SCI::SP15	49	0.00	0.00	0.42	1.35	0.27	0.73	0.61			+A
1956	WYFORM1::PAPER::4SCI::SP15	48	0.02	0.00	0.47	1.46	0.17	0.83	0.63			-A
1957	WYFORM1::PAPER::4SCI::SP15	49	0.00	0.00	0.62	1.37	0.24	0.76	0.61			-A
1959	WYFORM1::PAPER::4SCI::SP15	49	0.00	0.00	0.57	1.61	0.12	0.88	0.73			-A
1960	WYFORM1::PAPER::4SCI::SP15	49	0.00	0.00	0.42	1.29	0.14	0.86	0.43			+A
1818	WYFORM1::PAPER::4SCI::SP15	40	0.00	0.00	0.44	1.05	0.33	0.68	0.38			+*C*
1819	WYFORM1::PAPER::4SCI::SP15	40	0.00	0.00	0.38	1.33	0.13	0.88	0.45			+A
1820	WYFORM1::PAPER::4SCI::SP15	40	0.00	0.00	0.49	1.73	0.08	0.93	0.8			-A
1821	WYFORM1::PAPER::4SCI::SP15	40	0.00	0.00	0.5	1.28	0.25	0.75	0.53			+A
1822	WYFORM1::PAPER::4SCI::SP15	40	0.00	0.00	0.45	1.15	0.28	0.73	0.43			-A
1823	WYFORM1::PAPER::4SCI::SP15	40	0.00	0.00	0.56	1.25	0.18	0.83	0.43			+A
1835	WYFORM1::PAPER::4SCI::SP15	34	0.00	0.00	0.18	0.74	0.26	0.74				-A
1836	WYFORM1::PAPER::4SCI::SP15	34	0.00	0.00	0.01	0.68	0.32	0.68				+A
1838	WYFORM1::PAPER::4SCI::SP15	34	0.00	0.00	-0.02	0.76	0.24	0.76				+A
1840	WYFORM1::PAPER::4SCI::SP15	34	0.00	0.00	0.6	0.74	0.26	0.74				+A
1837	WYFORM1::PAPER::4SCI::SP15	34	0.00	0.00	0.45	0.38	0.62	0.38				-A
3284	WYFORM1::PAPER::4SCI::SP15	31	0.00	0.00	0.54	1.45	0.16	0.84	0.61			-A
3287	WYFORM1::PAPER::4SCI::SP15	31	0.00	0.00	0.22	1.65	0.06	0.94	0.71			-A
3286	WYFORM1::PAPER::4SCI::SP15	31	0.00	0.00	0.63	1.65	0.1	0.9	0.74			-A
3285	WYFORM1::PAPER::4SCI::SP15	31	0.00	0.00	0.62	1.48	0.16	0.84	0.65			+A
3288	WYFORM1::PAPER::4SCI::SP15	31	0.00	0.00	0.66	1.65	0.1	0.9	0.74			+A
3289	WYFORM1::PAPER::4SCI::SP15	31	0.00	0.00	0.65	1.19	0.32	0.68	0.52			-A
3273	WYFORM1::PAPER::4SCI::SP15	27	0.00	0.00	0.29	0.44	0.56	0.44				-A
3276	WYFORM1::PAPER::4SCI::SP15	27	0.00	0.00	0.3	0.44	0.56	0.44				-*C*
3275	WYFORM1::PAPER::4SCI::SP15	27	0.00	0.00	0.35	1.11	0.3	0.7	0.41			+*C*
3274	WYFORM1::PAPER::4SCI::SP15	27	0.00	0.00	0.33	1.3	0.19	0.81	0.48			-A
2149	WYFORM1::PAPER::4SCI::SP15	16	0.00	0.00	0.29	1.44	0.19	0.81	0.63			-A
2150	WYFORM1::PAPER::4SCI::SP15	16	0.00	0.00	0.29	1.56	0.13	0.88	0.69			-A
2152	WYFORM1::PAPER::4SCI::SP15	16	0.00	0.00	0.42	1.63	0.06	0.94	0.69			+A
2286	WYFORM1::PAPER::4SCI::SP15	16	0.00	0.00	0.58	1.5	0.13	0.88	0.63			-A
2153	WYFORM1::PAPER::4SCI::SP15	16	0.00	0.00	0.45	1.25	0.25	0.75	0.5			A

2155	WYFORM1::PAPER::4SCI::SP15	16	0.00	0.00	0.63	0.94	0.44	0.56	0.38			-A
1858	WYFORM1::PAPER::4SCI::SP15	16	0.00	0.00	0.28	0.88						-A
2056	WYFORM1::PAPER::4SCI::SP15	16	0.00	0.00	0.36	1.44	0.13	0.88	0.56			-A
1859	WYFORM1::PAPER::4SCI::SP15	16	0.00	0.00	0.32	1.06	0.38	0.63	0.44			-A
1857	WYFORM1::PAPER::4SCI::SP15	16	0.00	0.00	0.59	0.63						+A
1860	WYFORM1::PAPER::4SCI::SP15	16	0.00	0.00	0.52	1.06	0.31	0.69	0.38			A
2054	WYFORM1::PAPER::4SCI::SP15	16	0.00	0.00	0.4	1.19	0.25	0.75	0.44			+A

Table C8. Classical Item Statistics—Grade 8 Science

ITS ID	Test Form	Total N within Test Form	Prop Omit	Prop Access Limitation	Classical Analyses							DIF Analysis
					Adjusted Polyserial/Biserial	Average Score	Prop Score Point 0	Prop Score Point 1	Prop Score Point 2	Prop Score Point 3	Prop Score Point 4	Female / Male
1870	WYFORM1::PAPER::8SCI::SP15	66	0.00	0.00	0.55	2.73		0.02	0.98	0.92	0.82	-A
1873	WYFORM1::PAPER::8SCI::SP15	66	0.00	0.00	0.36	0.65	0.35	0.65				-A
1875	WYFORM1::PAPER::8SCI::SP15	65	0.03	0.00	0.78	0.85	0.15	0.85				+A
1879	WYFORM1::PAPER::8SCI::SP15	65	0.03	0.00	0.5	0.83	0.17	0.83				-A
1880	WYFORM1::PAPER::8SCI::SP15	65	0.03	0.00	0.46	0.8	0.2	0.8				+A
1881	WYFORM1::PAPER::8SCI::SP15	65	0.03	0.00	0.59	0.88	0.12	0.88				+A
2216	WYFORM1::PAPER::8SCI::SP15	64	0.04	0.00	0.29	0.73	0.27	0.73				-A
2219	WYFORM1::PAPER::8SCI::SP15	65	0.03	0.00	0.76	0.83	0.17	0.83				+A
2227	WYFORM1::PAPER::8SCI::SP15	65	0.03	0.00	0.62	1.34	0.11	0.89	0.45			+A
2224	WYFORM1::PAPER::8SCI::SP15	64	0.01	0.03	0.81	1.75	0.08	0.92	0.83			+A
2225	WYFORM1::PAPER::8SCI::SP15	63	0.03	0.03	0.68	1.49	0.11	0.89	0.6			+A
2226	WYFORM1::PAPER::8SCI::SP15	65	0.03	0.00	0.73	1.31	0.2	0.8	0.51			+A
2640	WYFORM1::PAPER::8SCI::SP15	80	0.02	0.00	0.77	0.75	0.25	0.75				-A
2641	WYFORM1::PAPER::8SCI::SP15	80	0.02	0.00	1.01	0.94	0.06	0.94				+A
2642	WYFORM1::PAPER::8SCI::SP15	81	0.01	0.00	0.79	0.81	0.19	0.81				+A
2645	WYFORM1::PAPER::8SCI::SP15	80	0.02	0.00	0.22	0.36	0.64	0.36				+A
2646	WYFORM1::PAPER::8SCI::SP15	80	0.02	0.00	0.45	0.55	0.45	0.55				+A
2604	WYFORM1::PAPER::8SCI::SP15	81	0.01	0.00	0.54	0.7	0.3	0.7				+A
2605	WYFORM1::PAPER::8SCI::SP15	79	0.04	0.00	0.32	0.65	0.35	0.65				+*C*
2608	WYFORM1::PAPER::8SCI::SP15	78	0.05	0.00	0.52	0.74	0.26	0.74				+A
2606	WYFORM1::PAPER::8SCI::SP15	80	0.02	0.00	0.6	1.2	0.23	0.78	0.43			-A
2609	WYFORM1::PAPER::8SCI::SP15	80	0.02	0.00	0.41	1.16	0.21	0.79	0.38			+A
2610	WYFORM1::PAPER::8SCI::SP15	79	0.04	0.00	0.6	1.27	0.22	0.78	0.48			+A
3350	WYFORM1::PAPER::8SCI::SP15	78	0.05	0.00	0.59	1.35	0.18	0.82	0.53			-A
3351	WYFORM1::PAPER::8SCI::SP15	78	0.05	0.00	0.41	1.09	0.23	0.77	0.32			-A
3352	WYFORM1::PAPER::8SCI::SP15	78	0.05	0.00	0.75	1.55	0.14	0.86	0.69			+A

3353	WYFORM1::PAPER::8SCI::SP15	78	0.05	0.00	0.69	1.55	0.09	0.91	0.64			+A
3354	WYFORM1::PAPER::8SCI::SP15	78	0.04	0.01	0.63	1.06	0.37	0.63	0.44			-A
3355	WYFORM1::PAPER::8SCI::SP15	78	0.04	0.01	0.63	1.19	0.21	0.79	0.4			-A
2009	WYFORM1::PAPER::8SCI::SP15	62	0.00	0.00	0.47	0.55	0.45	0.55				+A
2010	WYFORM1::PAPER::8SCI::SP15	61	0.00	0.00	0.36	0.69	0.31	0.69				-A
2013	WYFORM1::PAPER::8SCI::SP15	62	0.00	0.00	0.51	0.79	0.21	0.79				-*C*
2012	WYFORM1::PAPER::8SCI::SP15	62	0.00	0.00	0.2	0.55	0.45	0.55				-A
2014	WYFORM1::PAPER::8SCI::SP15	62	0.00	0.00	0.03	0.48	0.52	0.48				+A
1911	WYFORM1::PAPER::8SCI::SP15	37	0.00	0.00	0.35	1.43	0.22	0.78	0.65			+A
1913	WYFORM1::PAPER::8SCI::SP15	37	0.00	0.00	0.49	1.54	0.08	0.92	0.62			-A
1915	WYFORM1::PAPER::8SCI::SP15	37	0.00	0.00	0.46	1.81	0.05	0.95	0.86			-A
1917	WYFORM1::PAPER::8SCI::SP15	37	0.00	0.00	0.33	1.51	0.14	0.86	0.65			-A
1919	WYFORM1::PAPER::8SCI::SP15	37	0.00	0.00	0.08	1.65	0.11	0.89	0.76			+A
1920	WYFORM1::PAPER::8SCI::SP15	37	0.00	0.00	0.59	1.81	0.05	0.95	0.86			-A
2100	WYFORM1::PAPER::8SCI::SP15	36	0.00	0.00	0.19	1.47	0.06	0.94	0.53			-A
2101	WYFORM1::PAPER::8SCI::SP15	36	0.00	0.00	-0.04	1.25	0.11	0.89	0.36			-A
2102	WYFORM1::PAPER::8SCI::SP15	36	0.00	0.00	0.23	0.89						-A
2103	WYFORM1::PAPER::8SCI::SP15	35	0.00	0.00	0.25	0.77						+A
2104	WYFORM1::PAPER::8SCI::SP15	36	0.00	0.00	0.63	1.31	0.19	0.81	0.5			-A
2105	WYFORM1::PAPER::8SCI::SP15	36	0.00	0.00	0.43	1.56	0.11	0.89	0.67			-A
2647	WYFORM1::PAPER::8SCI::SP15	36	0.00	0.00	0.28	1.03	0.25	0.75	0.28			-A
2648	WYFORM1::PAPER::8SCI::SP15	36	0.00	0.00	0.61	1.39	0.17	0.83	0.56			-A
2649	WYFORM1::PAPER::8SCI::SP15	36	0.00	0.00	0.5	1.5	0.17	0.83	0.67			-A
2651	WYFORM1::PAPER::8SCI::SP15	35	0.03	0.00	0.33	1.29	0.2	0.8	0.49			-A
3344	WYFORM1::PAPER::8SCI::SP15	23	0.00	0.00	0.19	0.83	0.43	0.57	0.26			-A
3345	WYFORM1::PAPER::8SCI::SP15	23	0.00	0.00	0.56	1.61	0.09	0.91	0.7			-A
3346	WYFORM1::PAPER::8SCI::SP15	23	0.00	0.00	0.21	1.48	0.13	0.87	0.61			+A
3349	WYFORM1::PAPER::8SCI::SP15	22	0.00	0.00	-0.04	1.23	0.27	0.73	0.5			-A
2094	WYFORM1::PAPER::8SCI::SP15	20	0.00	0.00	0.65	1.2	0.2	0.8	0.4			+A
2095	WYFORM1::PAPER::8SCI::SP15	20	0.00	0.00	0.46	1.4	0.2	0.8	0.6			+A
2096	WYFORM1::PAPER::8SCI::SP15	20	0.00	0.00	0.48	1.5	0.1	0.9	0.6			+A
2098	WYFORM1::PAPER::8SCI::SP15	20	0.00	0.00	0.3	1.35	0.15	0.85	0.5			+A

2097	WYFORM1::PAPER::8SCI::SP15	20	0.00	0.00	0.41	1	0.25	0.75	0.25			+*C*
2099	WYFORM1::PAPER::8SCI::SP15	20	0.00	0.00	0.25	1.05	0.35	0.65	0.4			-A
2591	WYFORM1::PAPER::8SCI::SP15	18	0.00	0.00	0.73	1	0.22	0.78	0.22			-A
2592	WYFORM1::PAPER::8SCI::SP15	18	0.00	0.00	0.44	1.17	0.11	0.89	0.28			-A
2593	WYFORM1::PAPER::8SCI::SP15	18	0.00	0.00	0.77	1.06	0.22	0.78	0.28			+A
2594	WYFORM1::PAPER::8SCI::SP15	18	0.00	0.00	0.54	1.83	0.06	0.94	0.89			-A
2595	WYFORM1::PAPER::8SCI::SP15	18	0.00	0.00	0.71	1.11	0.22	0.78	0.33			+*C*
2596	WYFORM1::PAPER::8SCI::SP15	18	0.00	0.00	0.22	1.44	0.22	0.78	0.67			+*C*

Table C9. Classical Item Statistics—Grade-Band 9–11 Science

ITS ID	Test Form	Total N within Test Form	Prop Omit	Prop Access Limitation	Classical Analyses							DIF Analysis
					Adjusted Polyserial/Biserial	Average Score	Prop Score Point 0	Prop Score Point 1	Prop Score Point 2	Prop Score Point 3	Prop Score Point 4	Female / Male
2441	WYFORM1::PAPER::911SCI::SP15	103	0.01	0.00	0.67	2.74		0.02	0.98	0.95	0.81	-A
2444	WYFORM1::PAPER::911SCI::SP15	100	0.04	0.00	0.65	0.68	0.32	0.68				-A
2443	WYFORM1::PAPER::911SCI::SP15	101	0.04	0.00	0.42	0.5	0.5	0.5				+A
2442	WYFORM1::PAPER::911SCI::SP15	100	0.05	0.00	0.38	0.71	0.29	0.71				+*C*
2445	WYFORM1::PAPER::911SCI::SP15	100	0.05	0.00	0.39	0.76	0.24	0.76				-A
2447	WYFORM1::PAPER::911SCI::SP15	101	0.04	0.00	0.21	0.41	0.59	0.41				-A
2466	WYFORM1::PAPER::911SCI::SP15	102	0.01	0.00	0.49	2.56		0.03	0.97	0.88	0.71	+A
2467	WYFORM1::PAPER::911SCI::SP15	100	0.05	0.00	0.16	0.63	0.37	0.63				-A
2468	WYFORM1::PAPER::911SCI::SP15	100	0.05	0.00	0.39	0.57	0.43	0.57				+A
2469	WYFORM1::PAPER::911SCI::SP15	101	0.04	0.00	0.42	0.65	0.35	0.65				+*C*
2470	WYFORM1::PAPER::911SCI::SP15	99	0.06	0.00	0.25	0.72	0.28	0.72				-A
2471	WYFORM1::PAPER::911SCI::SP15	96	0.09	0.00	0.39	0.48	0.52	0.48				+A
2429	WYFORM1::PAPER::911SCI::SP15	148	0.05	0.00	0.67	1.43	0.14	0.86	0.57			+A
2431	WYFORM1::PAPER::911SCI::SP15	150	0.04	0.00	0.72	1.53	0.11	0.89	0.65			+A
2433	WYFORM1::PAPER::911SCI::SP15	150	0.04	0.00	0.64	1.29	0.21	0.79	0.51			+A
2434	WYFORM1::PAPER::911SCI::SP15	151	0.03	0.00	0.47	1.56	0.12	0.88	0.68			-A
2430	WYFORM1::PAPER::911SCI::SP15	152	0.03	0.00	0.53	1.34	0.17	0.83	0.51			-A
2432	WYFORM1::PAPER::911SCI::SP15	149	0.05	0.00	0.61	1.35	0.17	0.83	0.52			+A
2841	WYFORM1::PAPER::911SCI::SP15	151	0.03	0.00	0.51	0.63	0.37	0.63				+A
2842	WYFORM1::PAPER::911SCI::SP15	148	0.05	0.00	0.42	0.76	0.24	0.76				-A
2843	WYFORM1::PAPER::911SCI::SP15	148	0.04	0.01	0.33	0.6	0.4	0.6				+A
2844	WYFORM1::PAPER::911SCI::SP15	149	0.05	0.00	0.44	0.76	0.24	0.76				+A
2845	WYFORM1::PAPER::911SCI::SP15	148	0.04	0.01	0.47	1.11	0.22	0.78	0.33			-A
2846	WYFORM1::PAPER::911SCI::SP15	148	0.04	0.01	0.15	1.24	0.21	0.79	0.45			+A
2930	WYFORM1::PAPER::911SCI::SP15	152	0.03	0.00	0.65	1.45	0.17	0.83	0.62			+A
2931	WYFORM1::PAPER::911SCI::SP15	149	0.04	0.00	0.55	1.17	0.24	0.76	0.42			+A

2932	WYFORM1::PAPER::911SCI::SP15	148	0.05	0.00	0.52	1.61	0.11	0.89	0.72			+A
2933	WYFORM1::PAPER::911SCI::SP15	148	0.05	0.00	0.46	1.02	0.26	0.74	0.28			-A
2934	WYFORM1::PAPER::911SCI::SP15	150	0.04	0.00	0.58	1.26	0.23	0.77	0.49			-A
2935	WYFORM1::PAPER::911SCI::SP15	150	0.04	0.00	0.63	1.17	0.29	0.71	0.46			+A
2435	WYFORM1::PAPER::911SCI::SP15	142	0.01	0.00	0.14	1.34	0.2	0.8	0.54			-A
2436	WYFORM1::PAPER::911SCI::SP15	142	0.01	0.00	0.79	1.54	0.15	0.85	0.68			+A
2437	WYFORM1::PAPER::911SCI::SP15	141	0.01	0.00	0.61	1.62	0.12	0.88	0.74			-A
2438	WYFORM1::PAPER::911SCI::SP15	142	0.01	0.00	0.35	1.32	0.2	0.8	0.52			+A
2439	WYFORM1::PAPER::911SCI::SP15	142	0.01	0.00	0.45	1.05	0.34	0.66	0.39			-A
2440	WYFORM1::PAPER::911SCI::SP15	142	0.01	0.00	0.47	1.11	0.3	0.7	0.4			-A
3453	WYFORM1::PAPER::911SCI::SP15	128	0.00	0.00	0.6	1.45	0.2	0.8	0.66			+A
3454	WYFORM1::PAPER::911SCI::SP15	128	0.00	0.00	0.6	1.48	0.13	0.87	0.62			+A
3455	WYFORM1::PAPER::911SCI::SP15	128	0.00	0.00	0.39	1.26	0.23	0.77	0.48			-A
3456	WYFORM1::PAPER::911SCI::SP15	128	0.00	0.00	0.62	1.52	0.13	0.87	0.66			-A
3457	WYFORM1::PAPER::911SCI::SP15	128	0.00	0.00	0.56	1.52	0.13	0.88	0.64			-A
3458	WYFORM1::PAPER::911SCI::SP15	128	0.00	0.00	0.64	1.34	0.2	0.8	0.53			-A
2460	WYFORM1::PAPER::911SCI::SP15	118	0.00	0.00	0.45	1.18	0.31	0.69	0.49			-A
2461	WYFORM1::PAPER::911SCI::SP15	118	0.00	0.00	0.6	1.22	0.28	0.72	0.5			-A
2462	WYFORM1::PAPER::911SCI::SP15	118	0.00	0.00	0.59	1.36	0.19	0.81	0.55			-A
2463	WYFORM1::PAPER::911SCI::SP15	118	0.00	0.00	0.47	1.29	0.26	0.74	0.55			-C
2464	WYFORM1::PAPER::911SCI::SP15	118	0.00	0.00	0.29	1.43	0.2	0.8	0.64			-A
2465	WYFORM1::PAPER::911SCI::SP15	118	0.00	0.00	0.58	1.1	0.33	0.67	0.43			+A
3447	WYFORM1::PAPER::911SCI::SP15	106	0.00	0.00	0.42	1.32	0.25	0.75	0.57			+A
3448	WYFORM1::PAPER::911SCI::SP15	106	0.00	0.00	0.45	1.42	0.14	0.86	0.56			-A
3449	WYFORM1::PAPER::911SCI::SP15	106	0.00	0.00	0.43	1.35	0.13	0.87	0.48			+A
3450	WYFORM1::PAPER::911SCI::SP15	105	0.00	0.00	0.38	1.09	0.27	0.73	0.35			-A
3451	WYFORM1::PAPER::911SCI::SP15	106	0.00	0.00	0.42	1.06	0.37	0.63	0.42			+A
3452	WYFORM1::PAPER::911SCI::SP15	106	0.00	0.00	0.53	1.38	0.18	0.82	0.56			+A
2962	WYFORM1::PAPER::911SCI::SP15	84	0.00	0.00	0.56	1.62	0.07	0.93	0.69			+A
2963	WYFORM1::PAPER::911SCI::SP15	84	0.00	0.00	0.37	1.32	0.13	0.87	0.45			-A
2964	WYFORM1::PAPER::911SCI::SP15	84	0.00	0.00	0.46	1.61	0.13	0.87	0.74			+A
2965	WYFORM1::PAPER::911SCI::SP15	83	0.00	0.00	0.41	1.45	0.18	0.82	0.63			+A

2966	WYFORM1::PAPER::911SCI::SP15	84	0.00	0.00	0.62	1.45	0.17	0.83	0.62			+A
2967	WYFORM1::PAPER::911SCI::SP15	84	0.00	0.00	0.65	1.55	0.12	0.88	0.67			+A
14	WYFORM1::PAPER::911SCI::SP15	79	0.00	0.00	0.66	1.71	0.04	0.96	0.75			+A
17	WYFORM1::PAPER::911SCI::SP15	79	0.00	0.00	0.43	1.27	0.23	0.77	0.49			+A
18	WYFORM1::PAPER::911SCI::SP15	79	0.00	0.00	0.64	1.47	0.13	0.87	0.59			+A
19	WYFORM1::PAPER::911SCI::SP15	79	0.00	0.00	0.34	1.05	0.24	0.76	0.29			+A
20	WYFORM1::PAPER::911SCI::SP15	79	0.00	0.00	0.34	1.25	0.16	0.84	0.42			+A
3459	WYFORM1::PAPER::911SCI::SP15	77	0.00	0.00	0.54	0.62	0.38	0.62				-A
3460	WYFORM1::PAPER::911SCI::SP15	77	0.00	0.00	0.52	0.7	0.3	0.7				-A
3461	WYFORM1::PAPER::911SCI::SP15	77	0.00	0.00	0.37	0.62	0.38	0.62				+A
3462	WYFORM1::PAPER::911SCI::SP15	77	0.00	0.00	0.4	1.1	0.31	0.69	0.42			-A
3463	WYFORM1::PAPER::911SCI::SP15	77	0.00	0.00	0.51	1.08	0.27	0.73	0.35			+A
3464	WYFORM1::PAPER::911SCI::SP15	77	0.00	0.00	0.56	1.14	0.27	0.73	0.42			+A