Pennsylvania Alternate Assessment Technical Report

BRT

08-31-2020

Contents

1 PASA 2020

This website houses all the technical documentation for the Pennsylvania Alternate Assessment, 2020. The table below provides a brief overview of the website contents. Following the table is a brief description of the test design and development.

2 Chapter 1: Test Design and Development

PASA is designed to reflect appropriate adaptations of PA content standards (alternate eligible content – AEC) that allow students to show what they know and can do using scaled performance scores (with anchor items providing comparable forms from year to year). Across various reporting categories, the eligible content is articulated with task specifications that are then applied to two forms: (a) Tier 1 for very low performing students and (b) Tier 2 for higher performing students.

Guide to Reading the Specification Table (with Science as an example)

Reporting Category:
The first level of organization for science content in this document

Reporting Category: S4.A The Nature of Science

Assessment Anchor: S4:A.1
Reason and Analysis

Assessment Anchor:
The second level of organization for science in this document

Anchor Descriptor: S4:A.1.3
Recognize and describe change in natural or human systems and the possible effects of those changes

Anchor Descriptor:
Statement of what students should know and be able to do after instruction

Eligible Content: S4: A.1.3.1
Observe and record change by using time and measurement

Eligible Content:
More detailed description of what the student should know and be able to do related to the Assessment Anchor

Alternate Eligible Content:
The Eligible Content written with a reduction in breadth, depth, or complexity

Alternate Eligible Content

S4.A.1.3.1a Identify changes to objects and living things

Task Specification:
Limitations, restrictions, or additional definitions and clarifications related to the assessment tasks

Task Specifications

• Students can be asked about changes due to heat or cold, changes in shape or size, changes in position
• Students may not be asked about changes in color
• Skills are limited to identification of change only, not about cause and effect

Tier Guidelines

Tier 1:
• Fewer words
• Simpler words
• More graphics

Tier 2:
• More words
• More complex words
• Fewer graphics

Tier Guidelines:
Statements outlining the most complex level at which an item should be written given its Tier Designation

2.1 Summary of Test Specification (TS) files for ELA, Math, and Science

In each of these files, the PASA test specifications are summarized for each subject area, including the purpose of the test, the content depicted, a description of two tiers used for very low performing students (Tier 1) and higher performing students (Tier 2), articulation of four performance categories (emerging, novice, proficient, and advanced), the test format and student response, the scoring system, and finally tables (for each grade) showing the number of items with various AECs.

See Appendix 1.1 (ELA), Appendix 1.2 (Math), and Appendix 1.3 (Science)

Summary of Appendices/Findings: All three tests were consistently designed with a number of key features that addressed alternate eligible content (AECs) reflecting academic standards: (a) accessibility (through tiers of scaffold), (b) sensitivity to a range of performance across proficiency categories, (c) layout and administration, and (d) breadth across all grades (3-8 and 11). Importantly, the tests include a wide range of AECs with items distributed throughout them.

Update of Tier 1 & 2 files for ELA, Math, and Science In fall 2019, PASA items were modified by removing extra (secondary and tertiary) prompts. As well, the language of the prompts themselves was revised to better distinguish the two tiers.

See Appendix 1.4 (ELA), Appendix 1.5 (Math), and Appendix 1.6 (Science)

Summary of Appendices/Findings. Perhaps the most important feature of the PASA is its application to a wide variety of skills in the population (students with the most significant cognitive disabilities). Using a two tier approach, students should have access to appropriate items, given their communication skills and use of language. These tiers generally vary in the number of words, complexity of words, and use of graphics. In 2019, the tests across both tiers were revised to better reflect the consistency across the tiers and deploy a single follow-up prompt with a dichotomous score (0 for incorrect and 1 for correct).

3 Item-Person Distributions

The PASA is designed to sample Alternate Eligible Content (AEC) in reading, writing, mathematics, and science in a purposeful and validated manner. AEC represent a reduction in breadth, depth, and level of complexity of the Eligible Content (EC) so that academic standards are both rigorous and appropriate for the students with the most severe cognitive disabilities while still ensuring access to the general education curriculum. PASA items, for both Tier 1 (less academically complex relative to AEC) and Tier 2 (more academically complex relative to AEC) PASA assessment-types, were scored dichotomously on a 2-point scale: 1 point awarded for a correct response and 0 points awarded for an incorrect response.

In this chapter, plots of PASA item difficulty and person ability (theta) are paired and shown by grade, content area, and tier. In general, the smaller the number of correct responses for a given item on an operational test, the higher its difficulty, and thus, the higher the item's location on the calibrated scale (as displayed in each plot). Once item locations are calibrated, the person ability estimates are measured on the same scale, and thus, can be compared to item difficulties as an indicator of how closely item difficulties match test-taker abilities for each test administered. A greater proportion of overlap between the two indicates a closer match between item difficulty and person ability, whereas less overlap indicates the opposite.

Generally, the plots shown suggest that most tests had an appropriate range of item difficulties represented, from easy to difficult, with item difficulties typically ranging between -4.0 and +4.0 on the calibrated scale, and that these ranges overlapped appropriately with person ability distributions. However, two general exceptions are notable: (1) some tests showed a mismatch in item difficulty-person ability whereby the two distributions have substantial areas of non-overlap, while (2) other tests contained "outlier items" with have an estimated difficulty far below or far above the estimated person distributions.

3.1 Non-Overlap in Item-Person Distributions

Grade 3, ELA, Tier 1 is an example of the first exception to the generally appropriate ranges and overlap observed. All but a single item ranges between about -1.0 and 0.0 on the calibrated scale as compared to the

person ability distribution plotted just below that ranges from approximately -2.5 to 2.0 on the same scale. In this example, about half of the students who took the Grade 3, ELA, Tier 1 test had an ability above all estimated item difficulties (except for a single outlier item at the far-high-end of the observed range in difficulty). Tests in which items were generally *too easy* relative to person ability include:

- Grade 3, ELA, Tier 1
- Grade 3, ELA, Tier 2
- Grade 4, Math, Tier 2
- Grade 6, ELA, Tier 2
- Grade 7, ELA, Tier 2
- Grade 8, ELA, Tier 2
- Grade 11, ELA, Tier 2

Tests in which items were generally *too difficult* relative to person ability include:

- Grade 4, Science, Tier 1
- Grade 8, Science Tier 1
- Grade 11, Science, Tier 1

Recommendation: For future test administrations, these tests, and any others showing substantial non-overlap between item difficulty and person ability ranges, should likely be examined with items removed/replaced to bring the distributions closer in line with one another relative to the calibrated scale.

3.2   Outlier Items in Item-Person Distrbutions

With respect to the second exception, some tests had one or more "outlier items" with an estimated difficulty far below or far above the estimated person distributions. Grade 11 Math, Tier 2 and Grade 11, ELA, Tier 1 is an example of former, in which two items have estimated item difficulties far *above* the estimated person ability range of about -2.5 to 2.5 on the calibrated scale. Grade 11, Math, Tier 2 is an example of the latter, in which two items have estimated item difficulties far *below* the estimated person ability range of about -1.75 to 1.75, For the 2019-20 academic year, some items were so far above or below the estimated person ability ranges there were eliminated from these analyses, including:

- Item E06BV4.1.1b-5 (estimated difficulty of -730.74 on the Grade 6, ELA, Tier 1 test)
- Item M05AT2.1.3a-9 (estimated difficulty of 24.44 on the Grade 5, Math, Tier 1 test)

Recommendation: For future test administrations, the two items removed for analyses, and other items with similarly out-of-range estimated difficulties, should likely be examined and either revised to bring them closer in line with typical person ability ranges, or discarded/replaced.

3.3 English/Language Arts

3.3.1 Grade 3 Tier 1
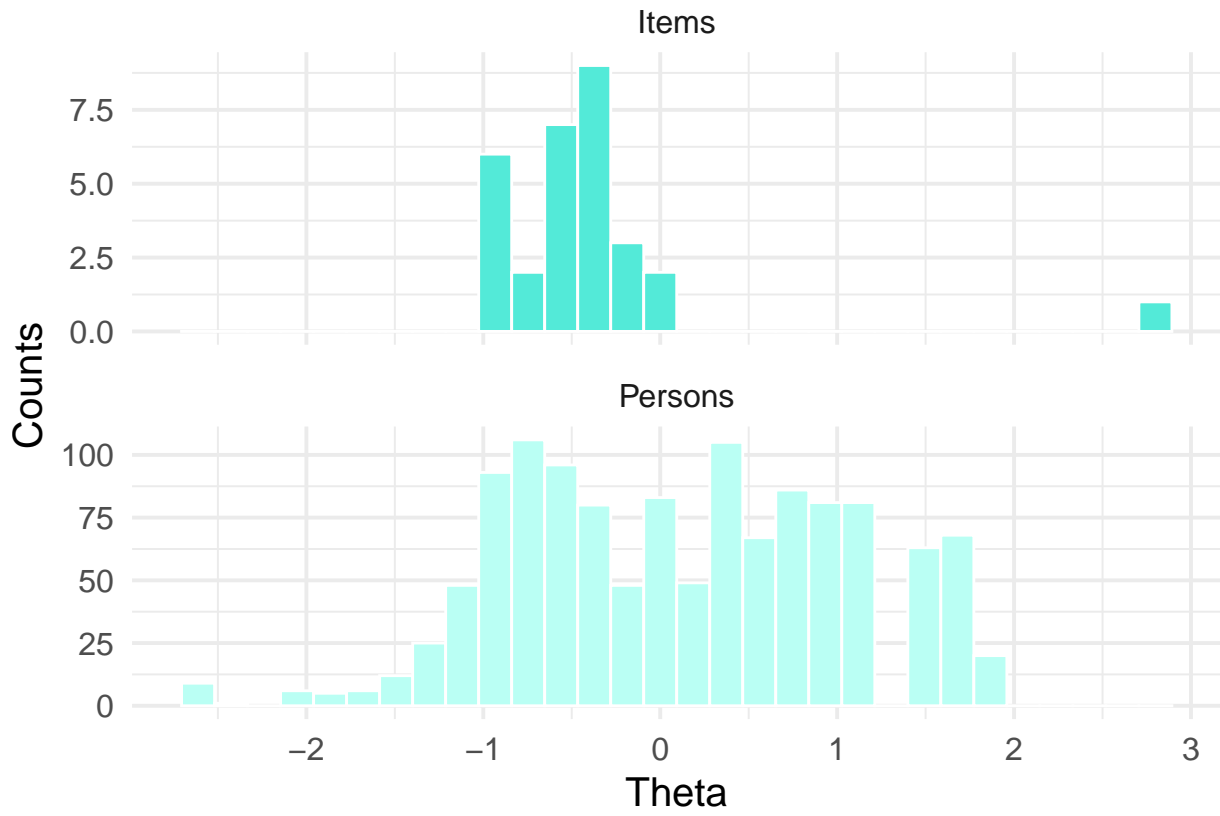
3.3.2 Grade 3 Tier 2

3.3.3 Grade 4 Tier 1

Items

Persons
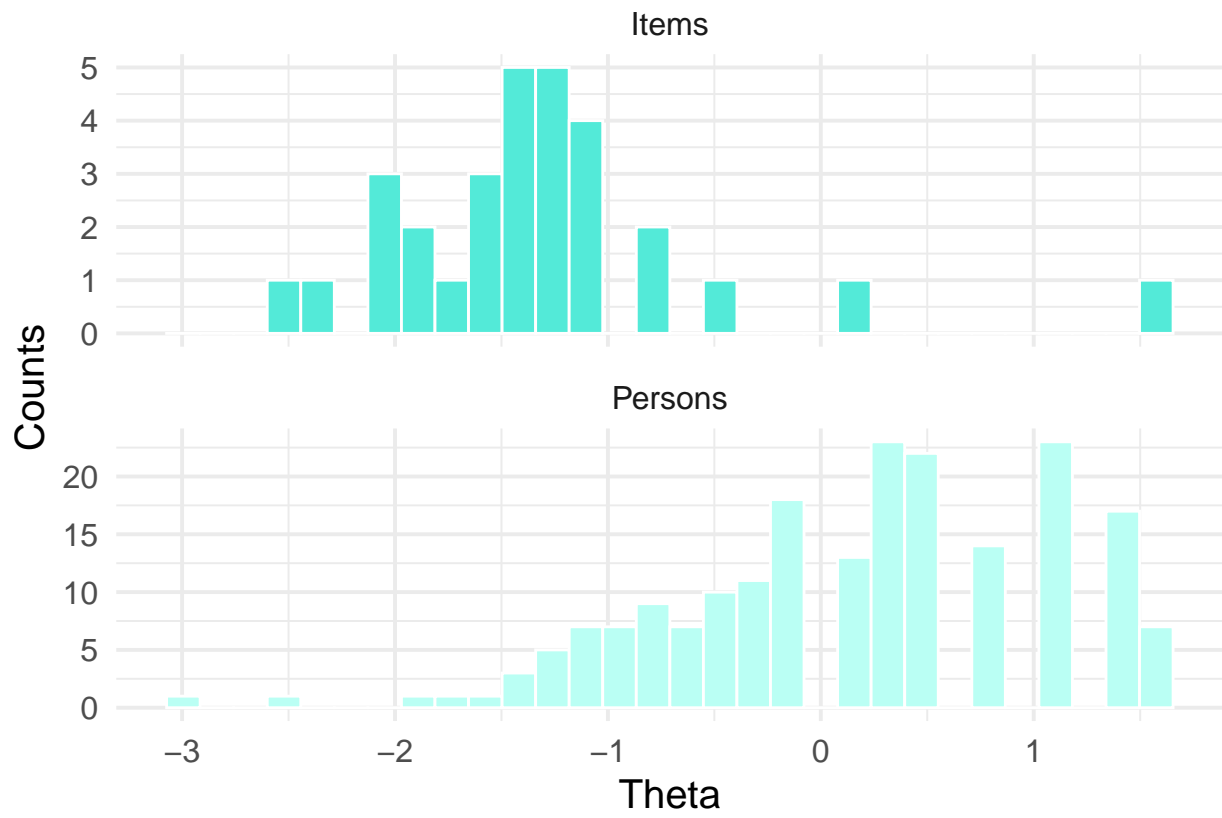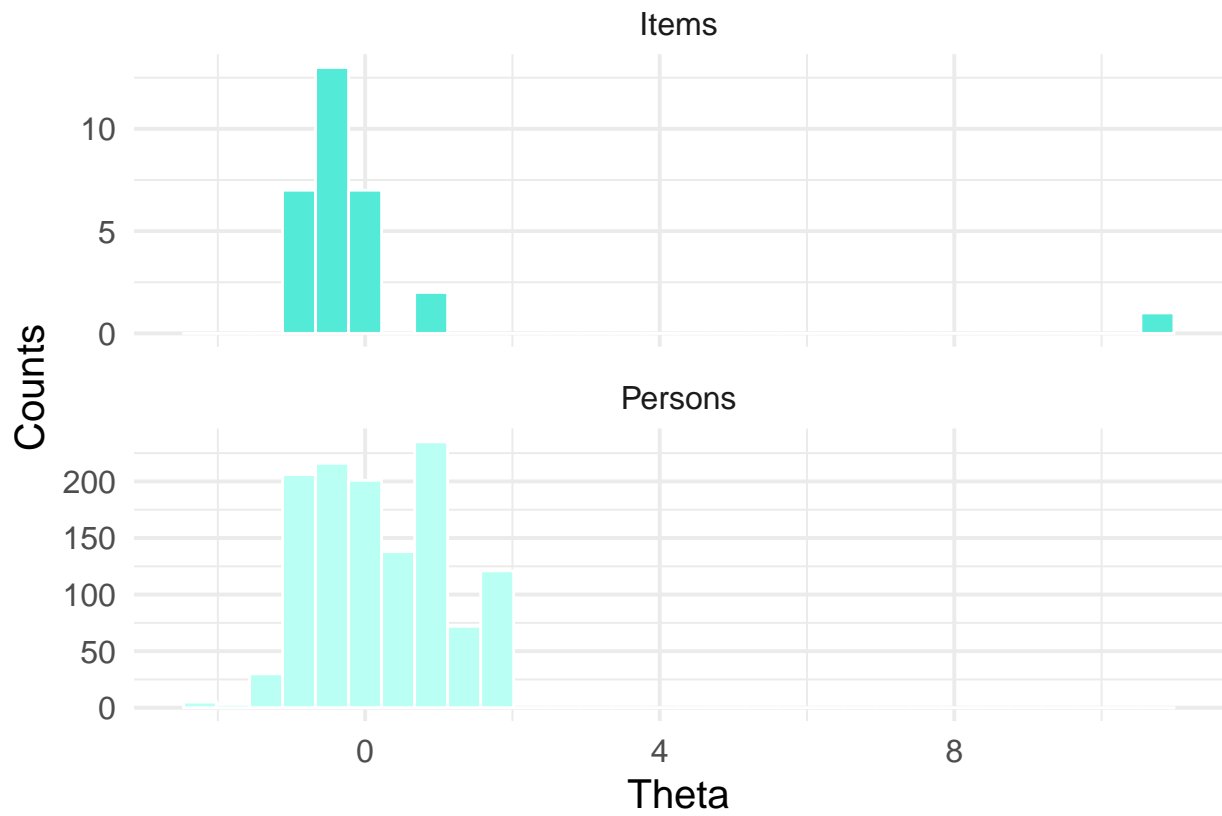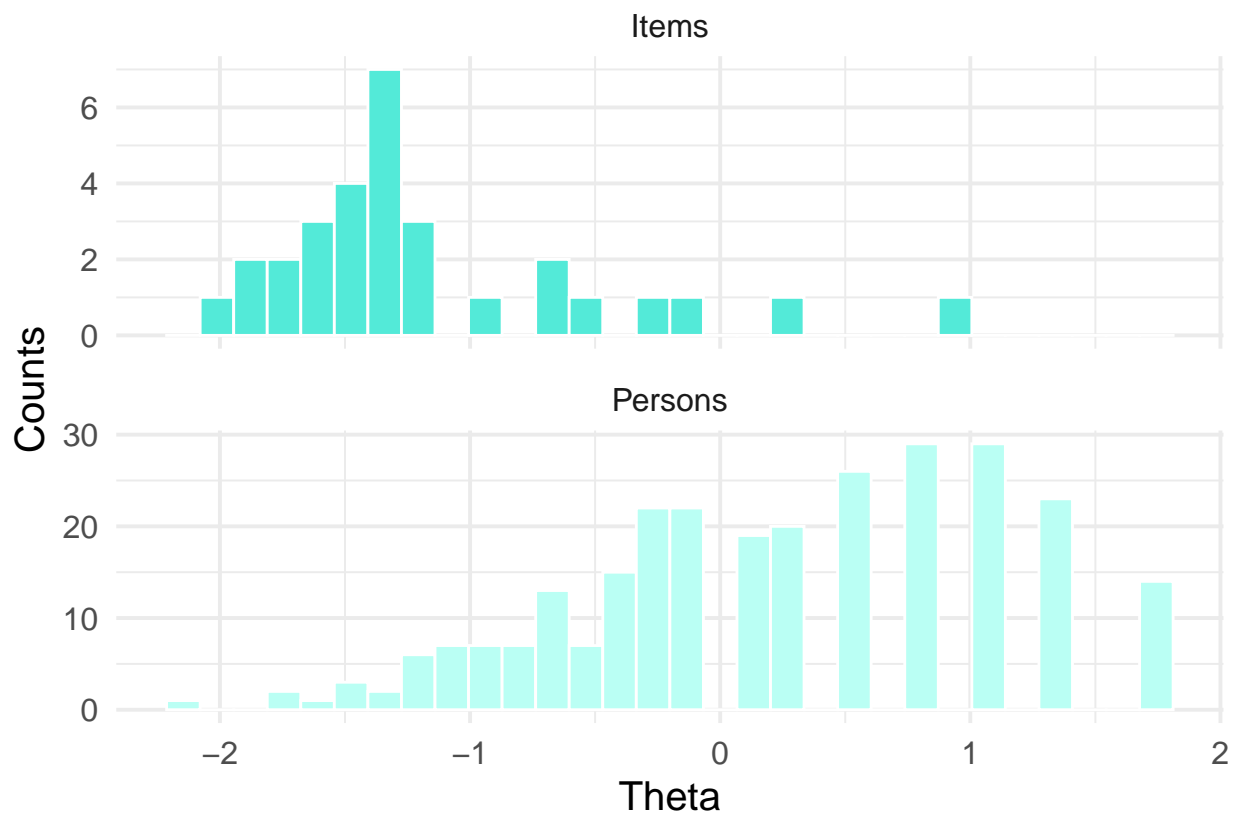
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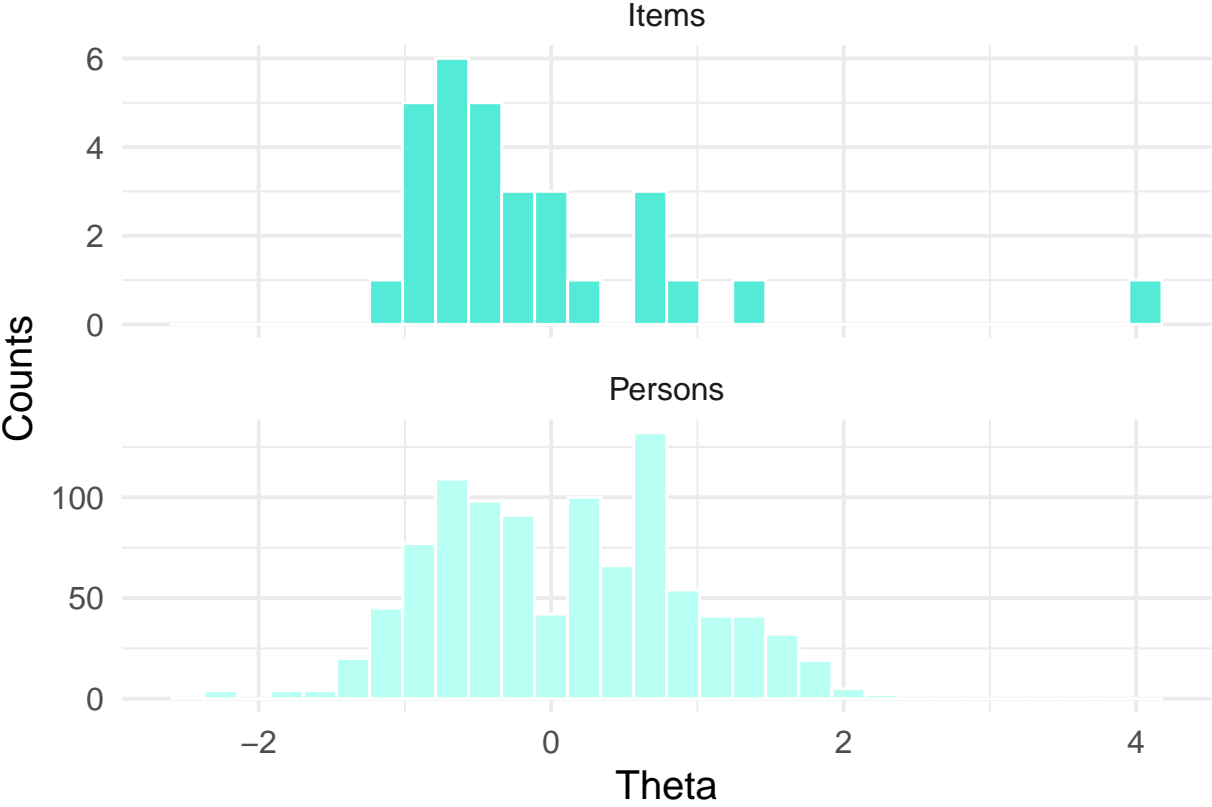
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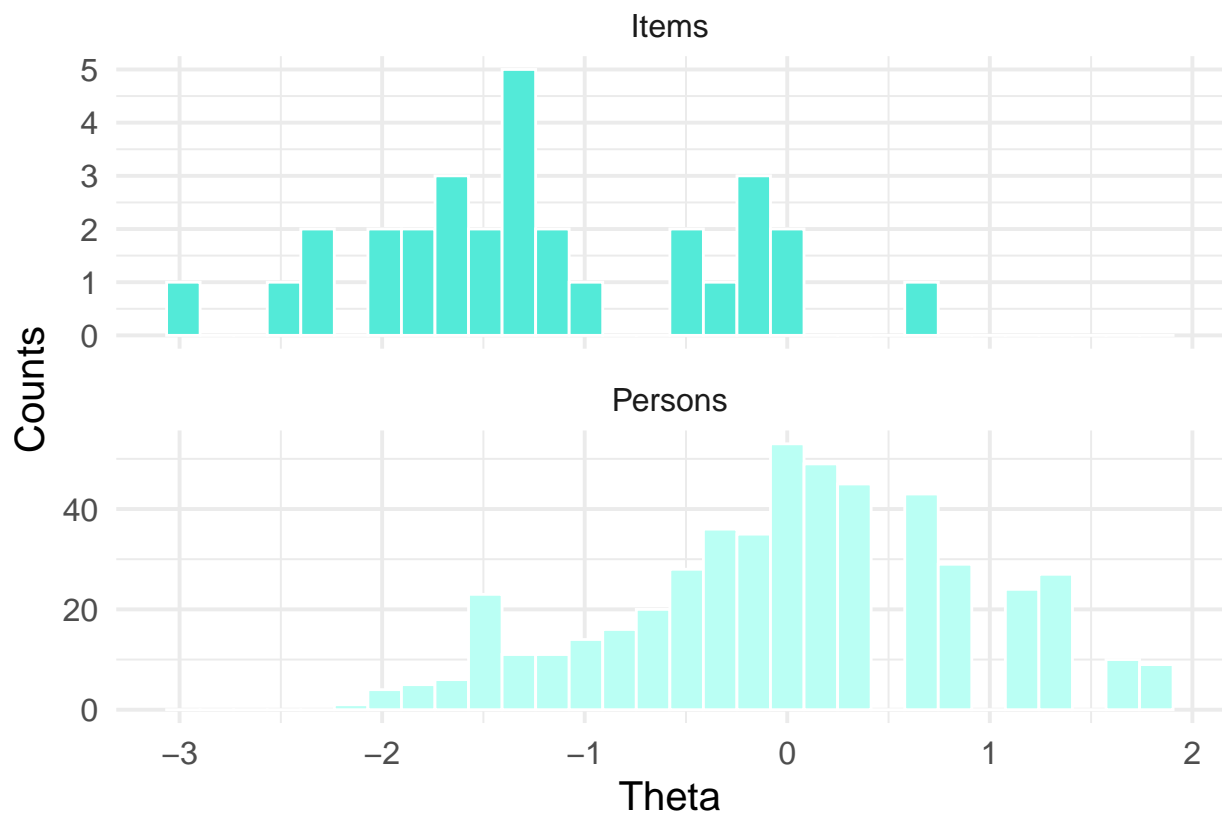
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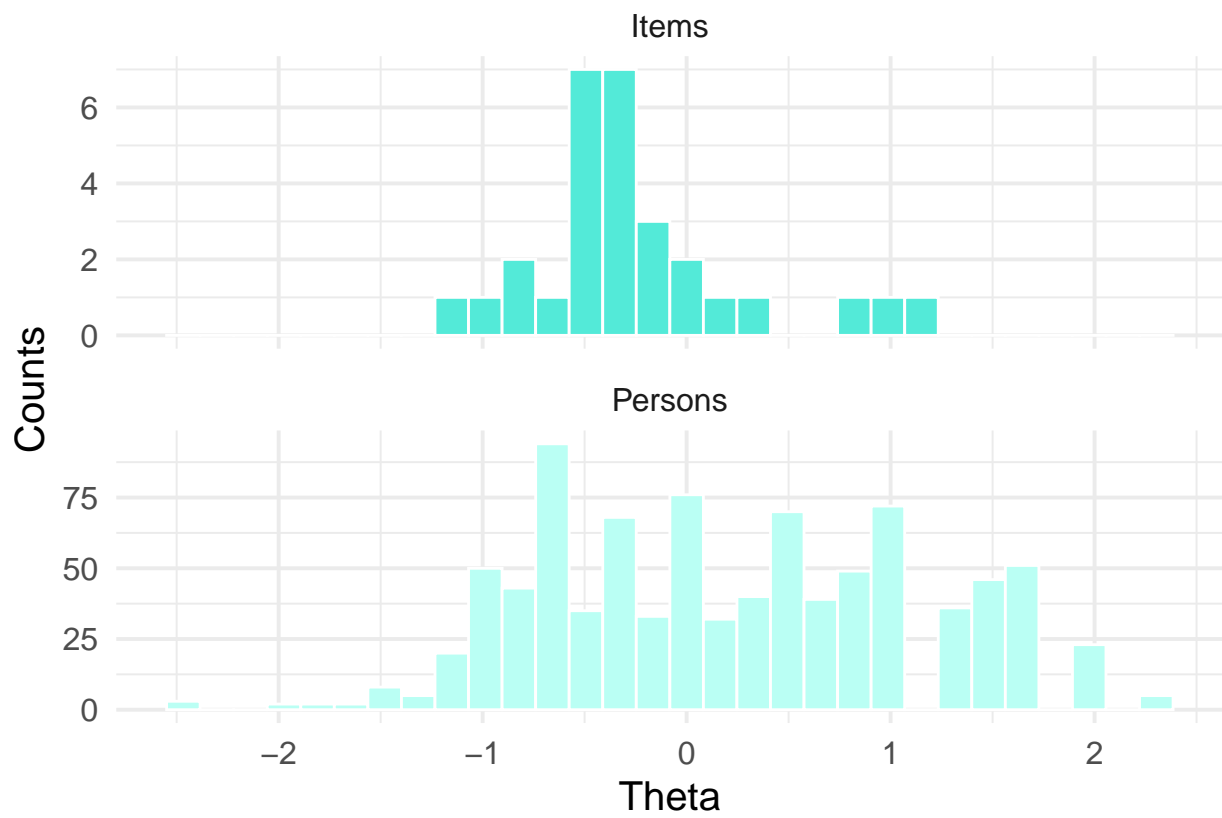
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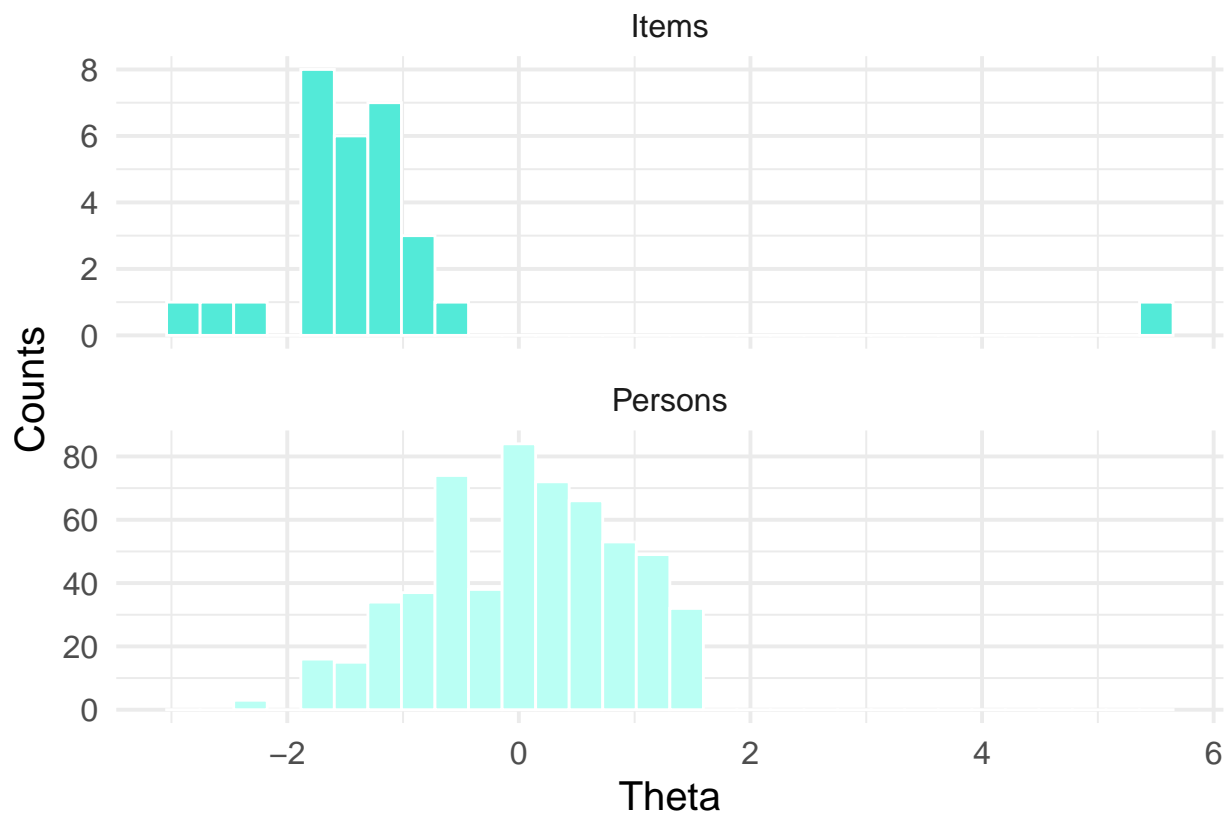
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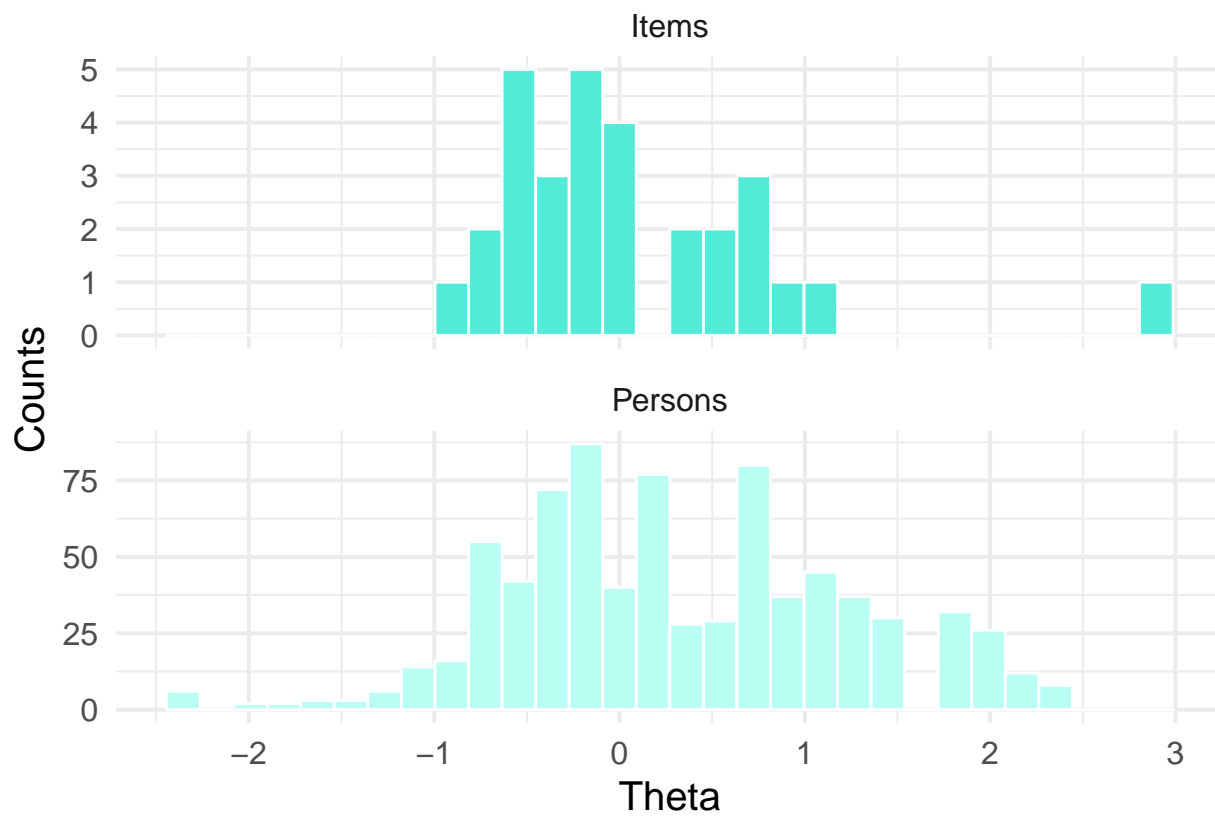
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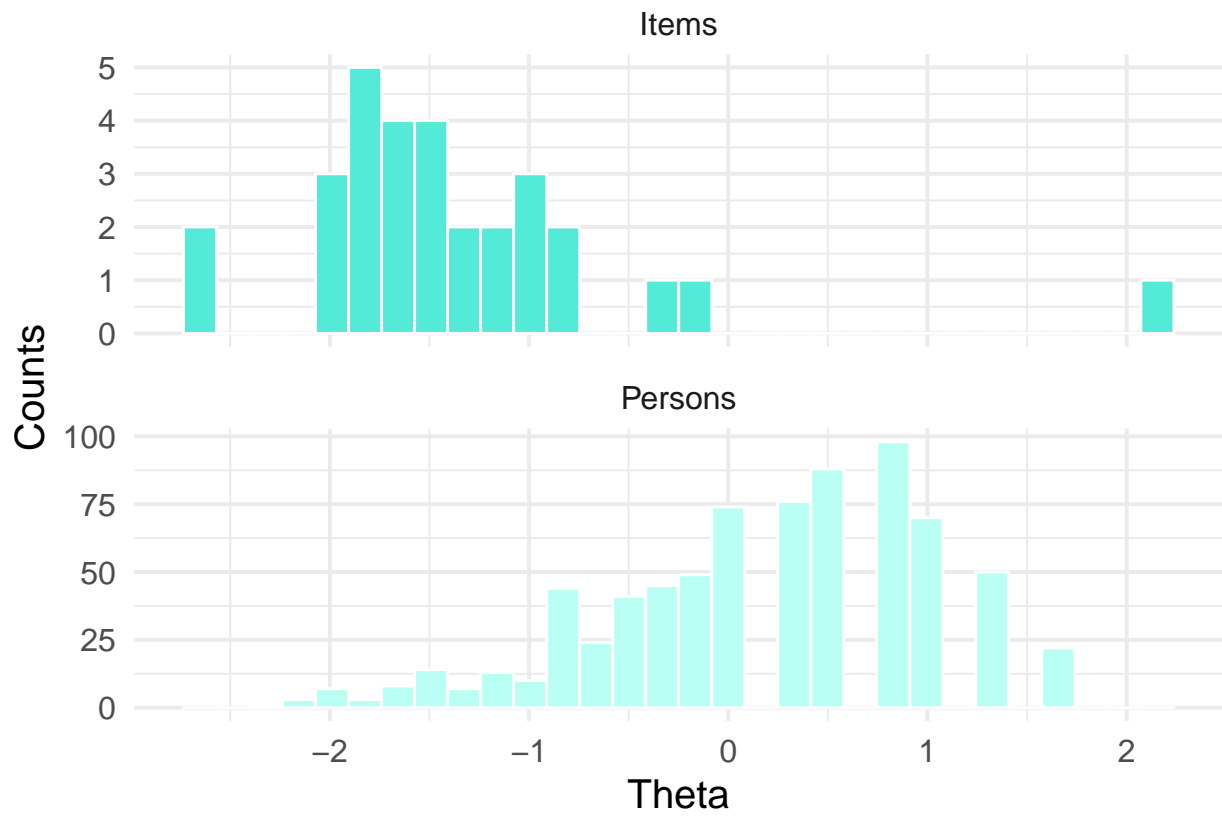
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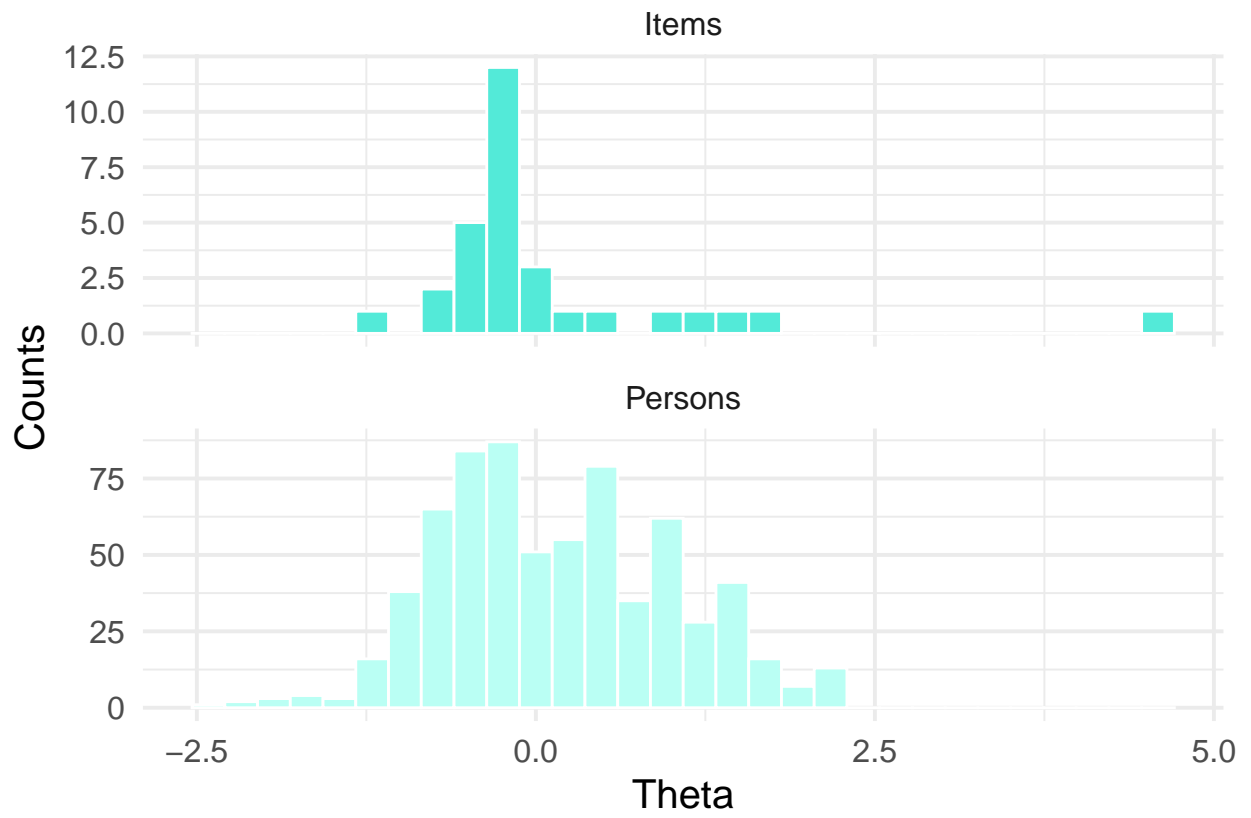
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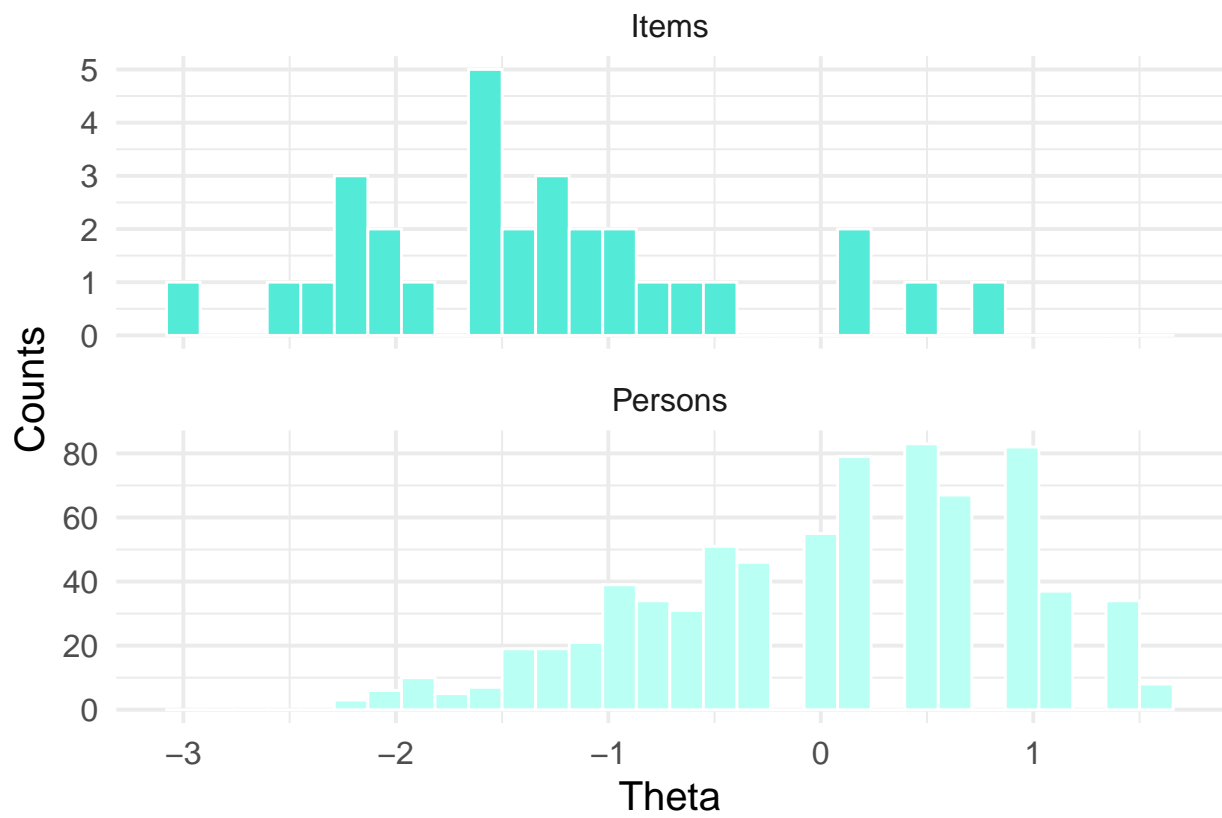
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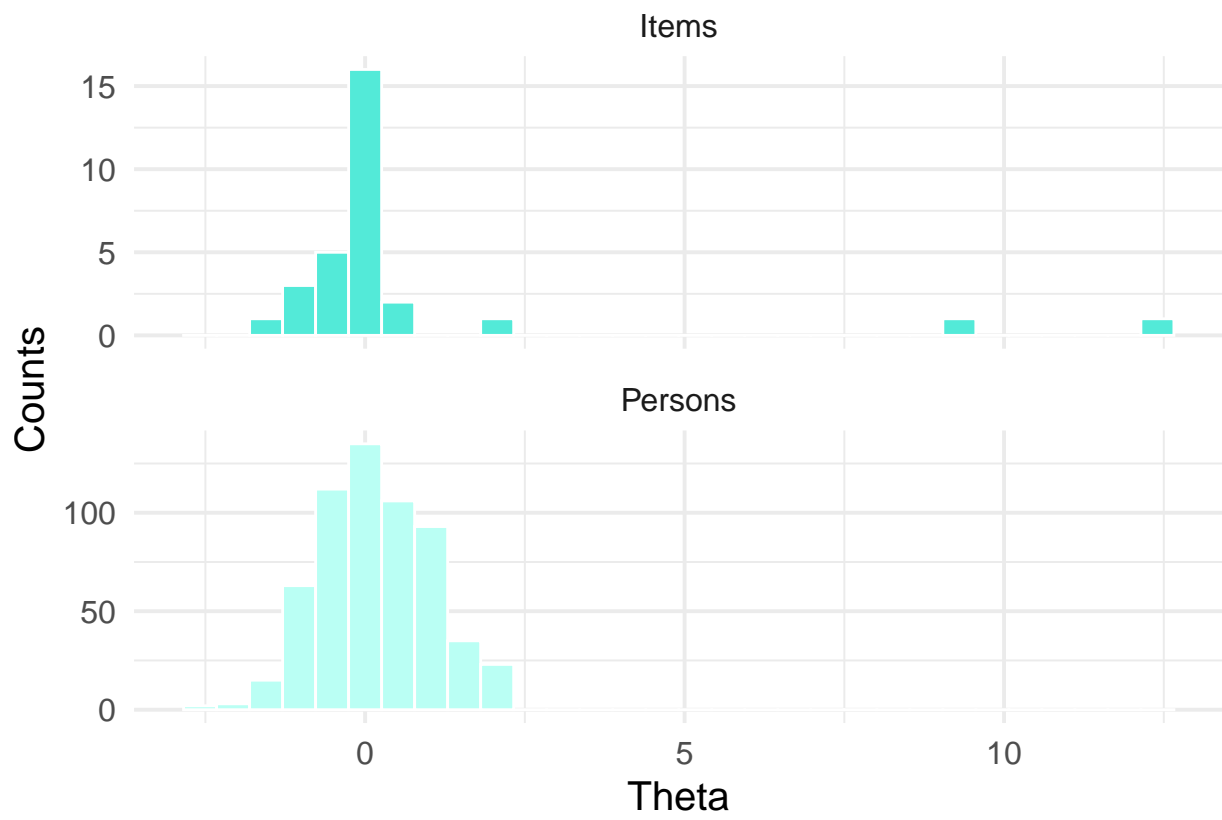
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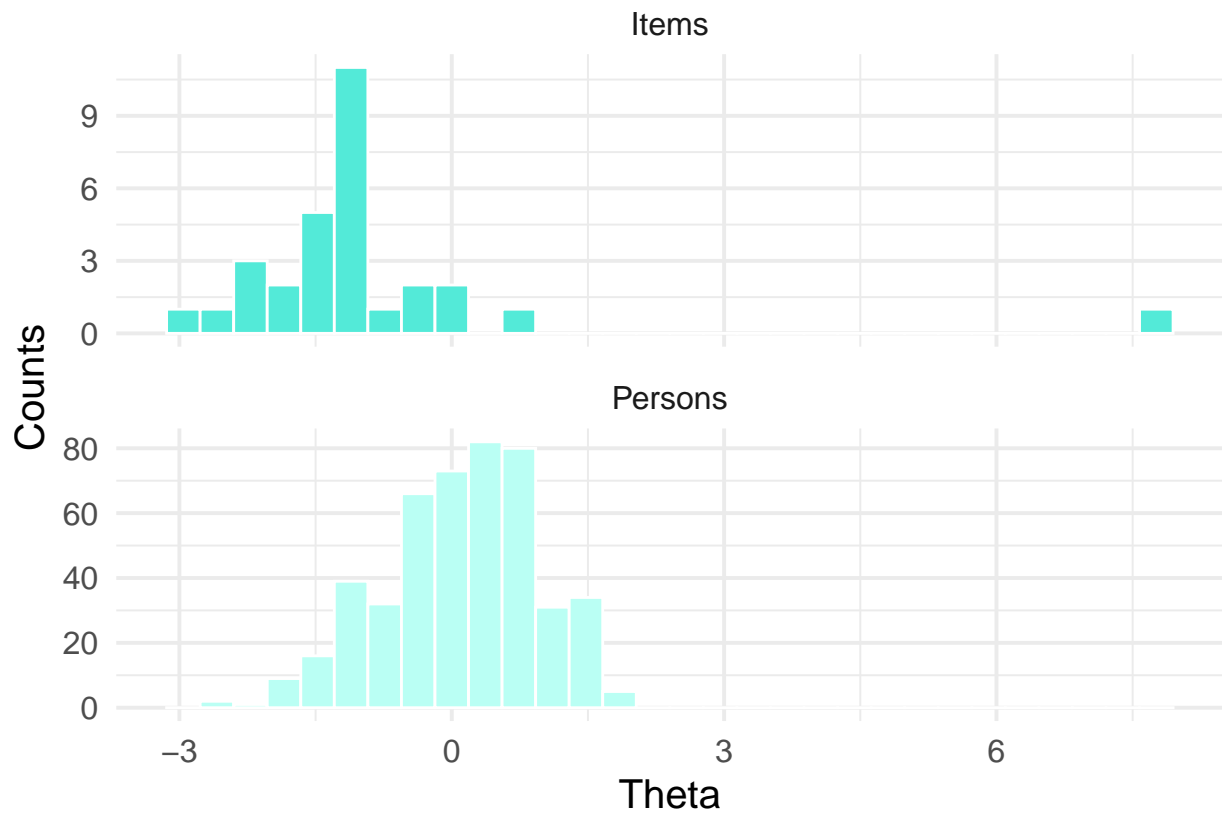
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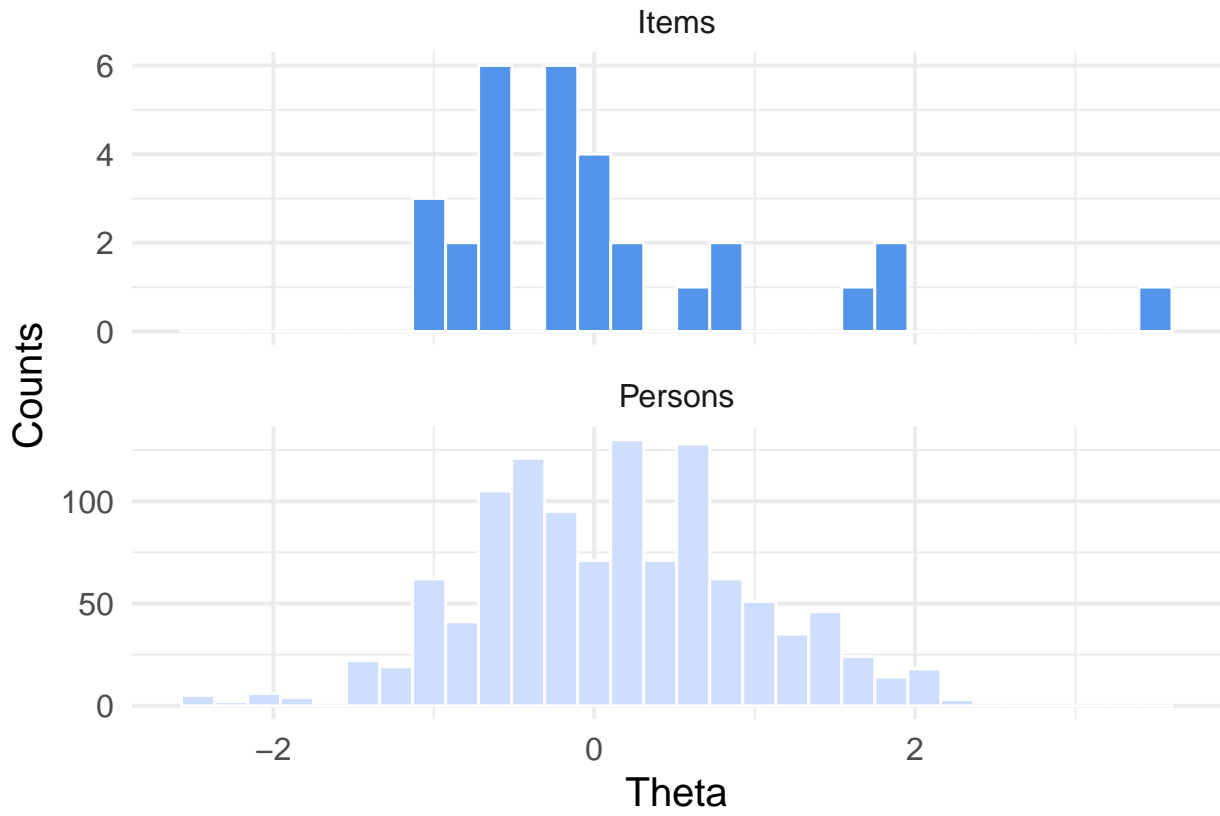
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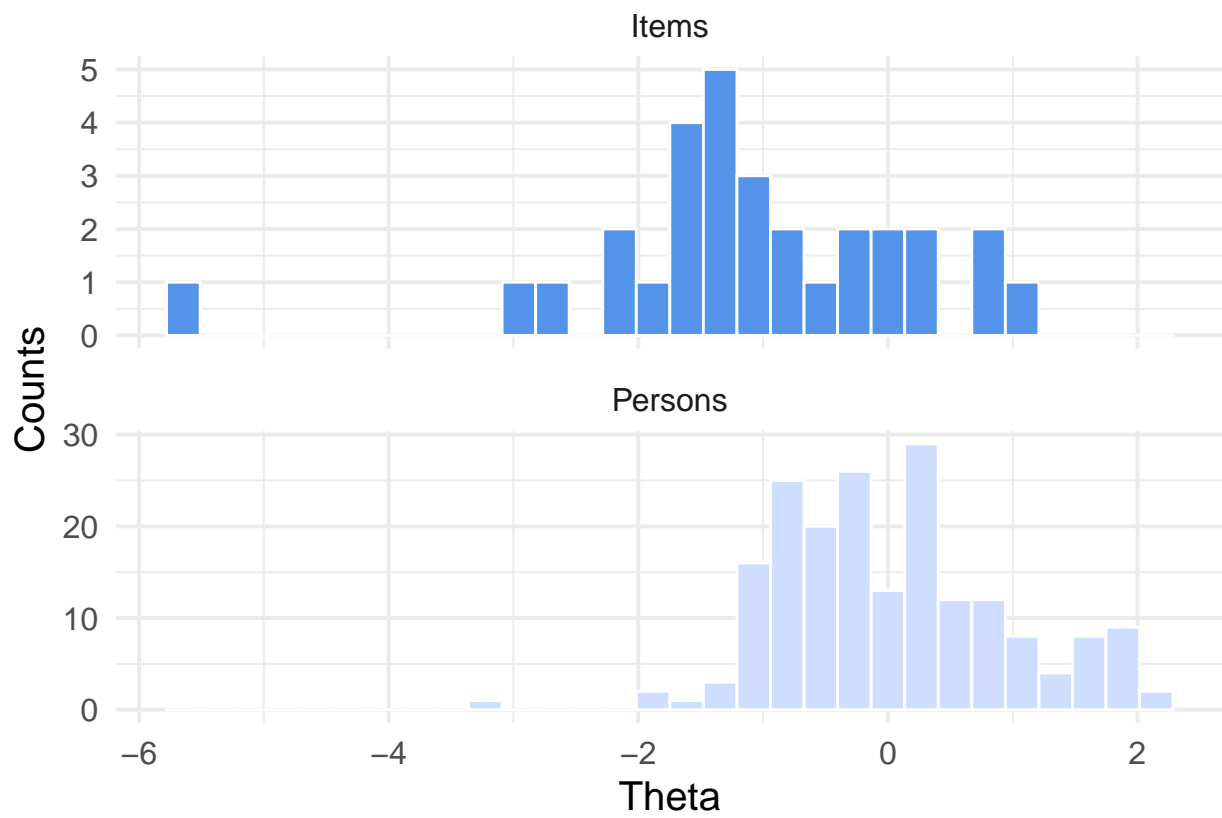
3.4.3 Grade 4 Tier 1

3.4.4 Grade 4 Tier 2

Items

Counts

Persons

Theta

3.4.5 Grade 5 Tier 1

Items

Persons

Counts

Theta
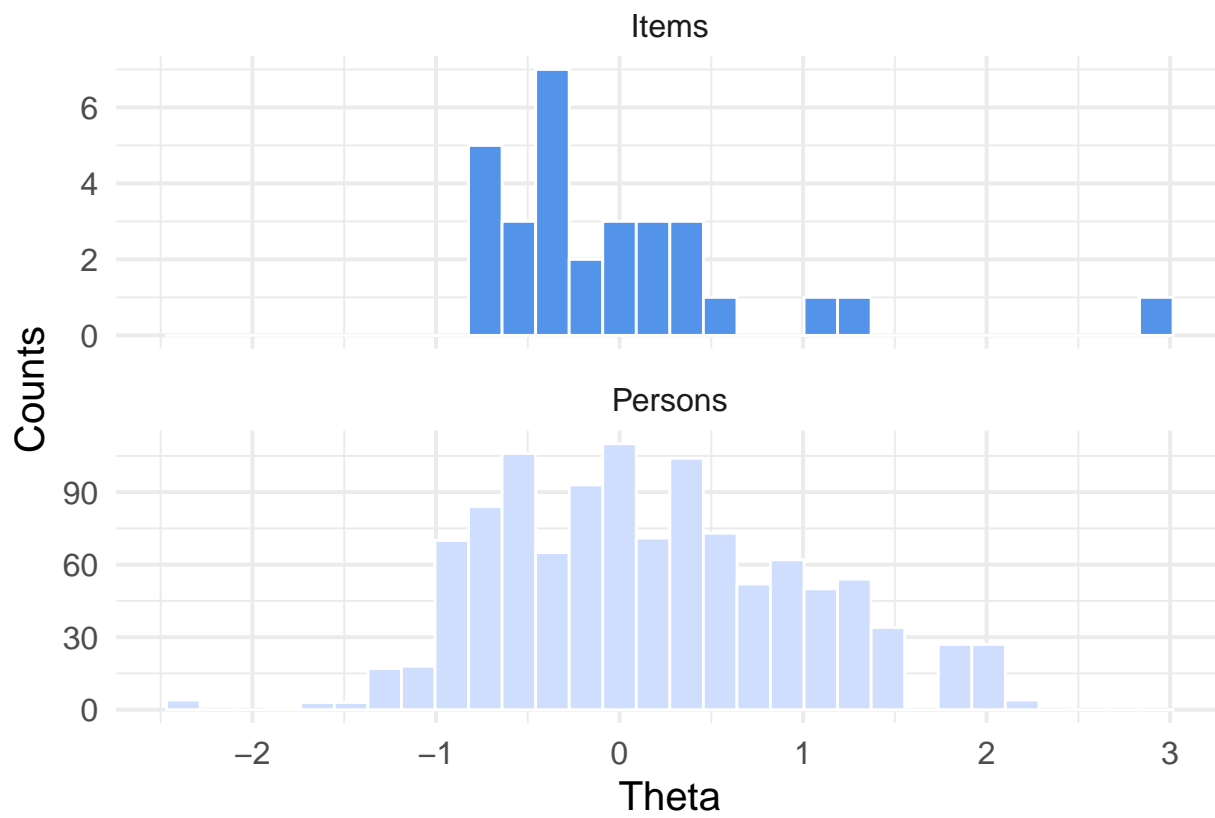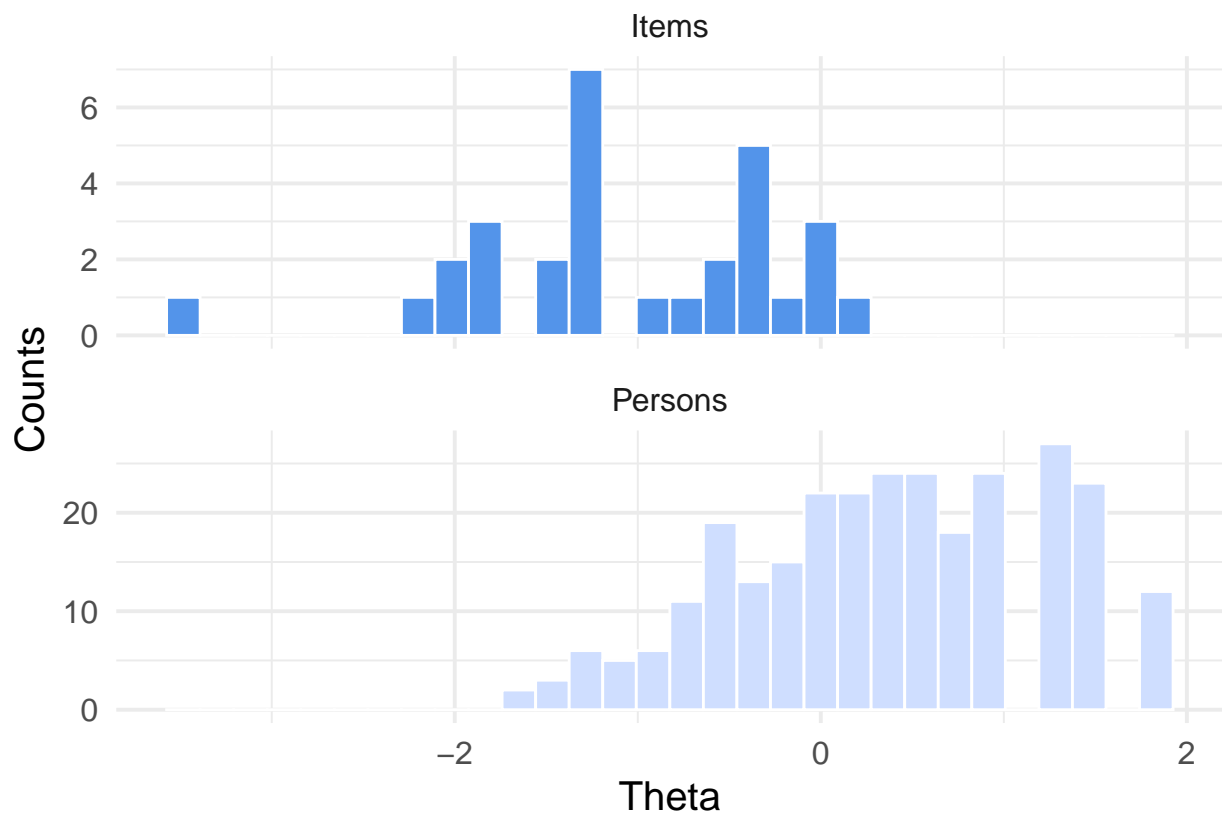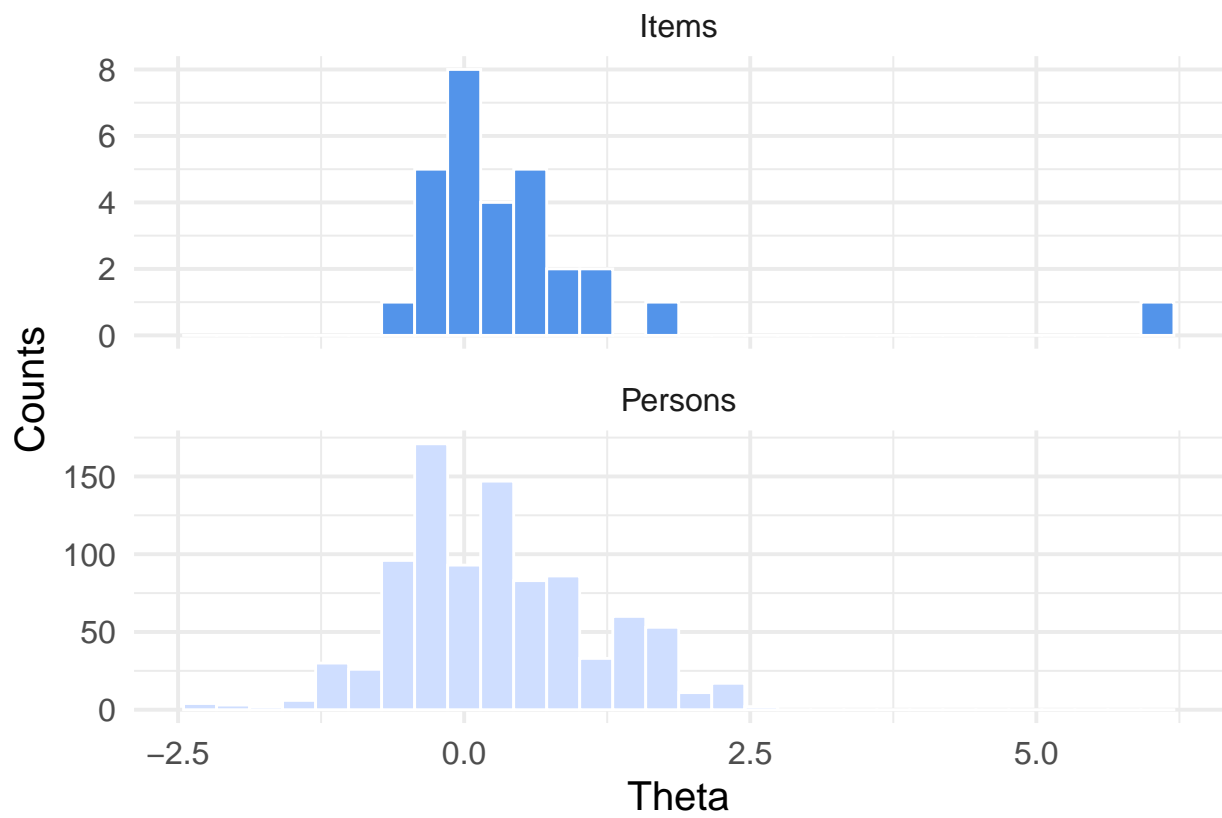
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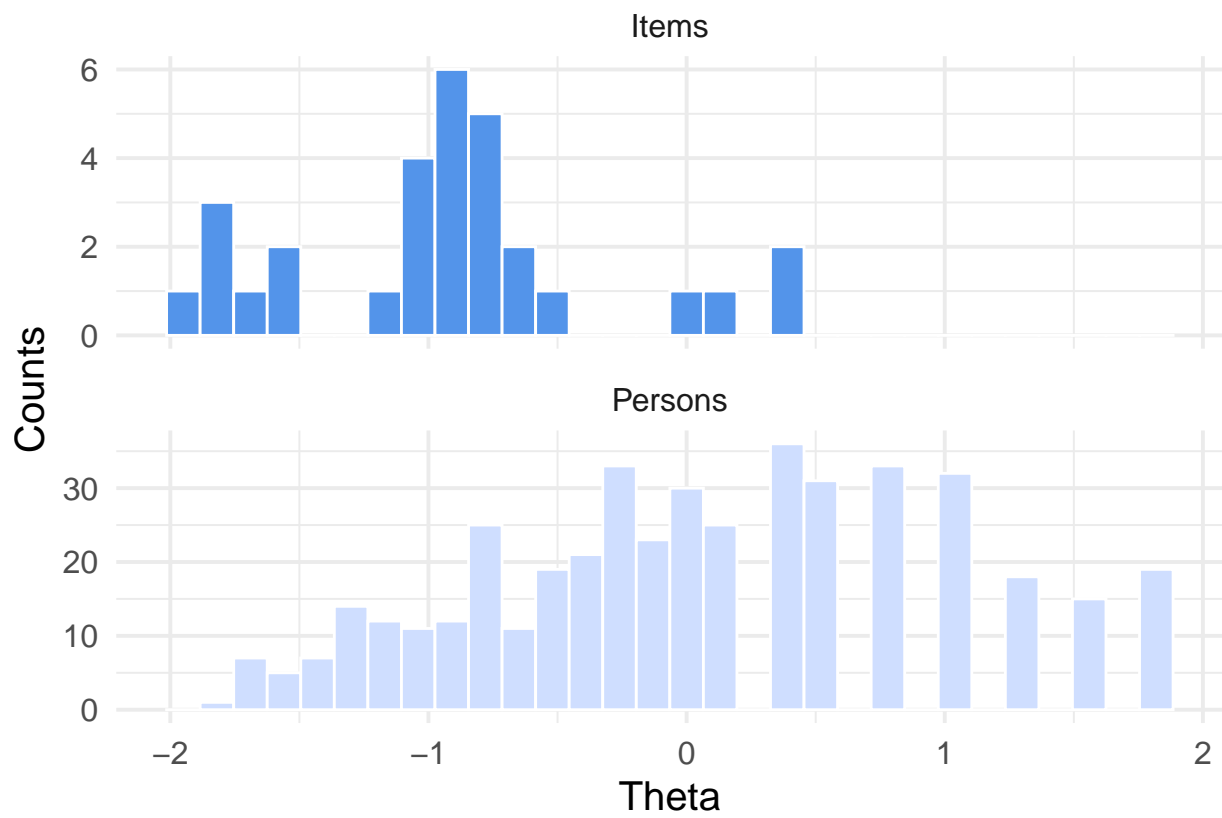
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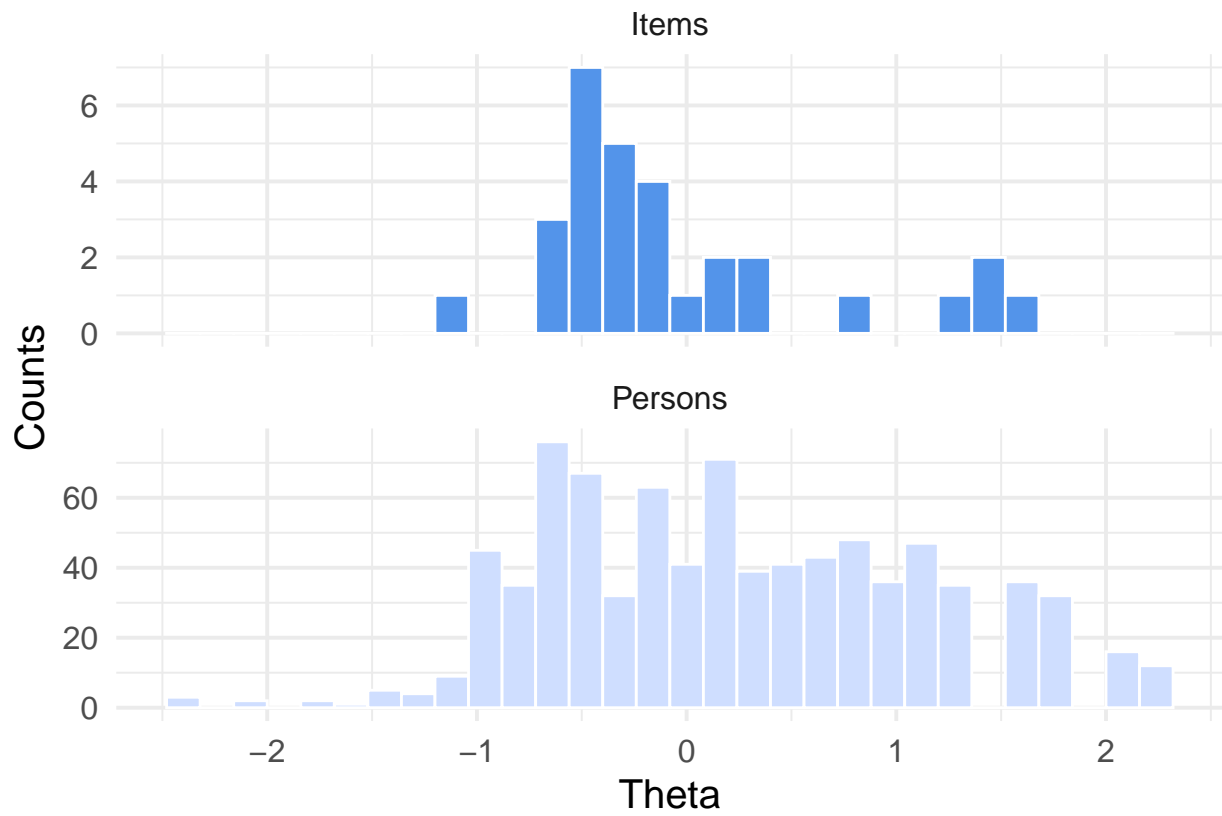
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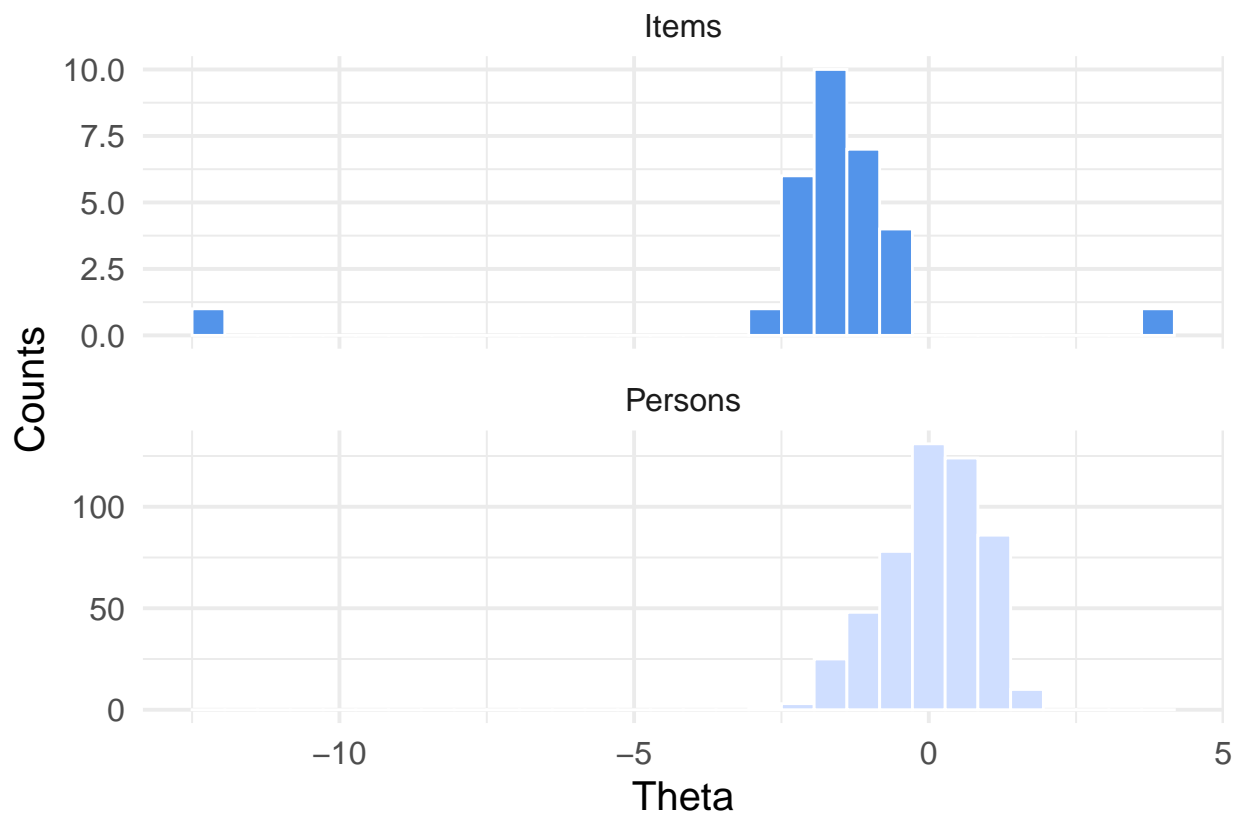
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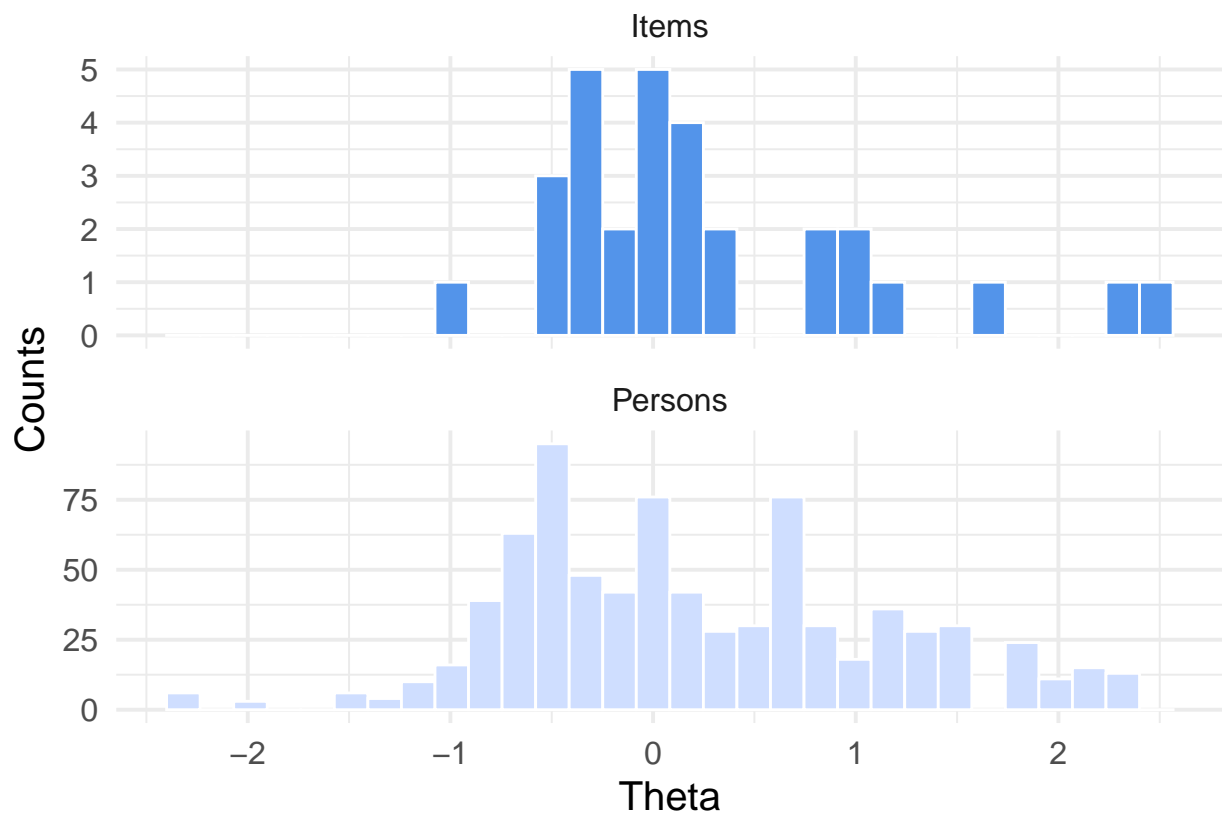
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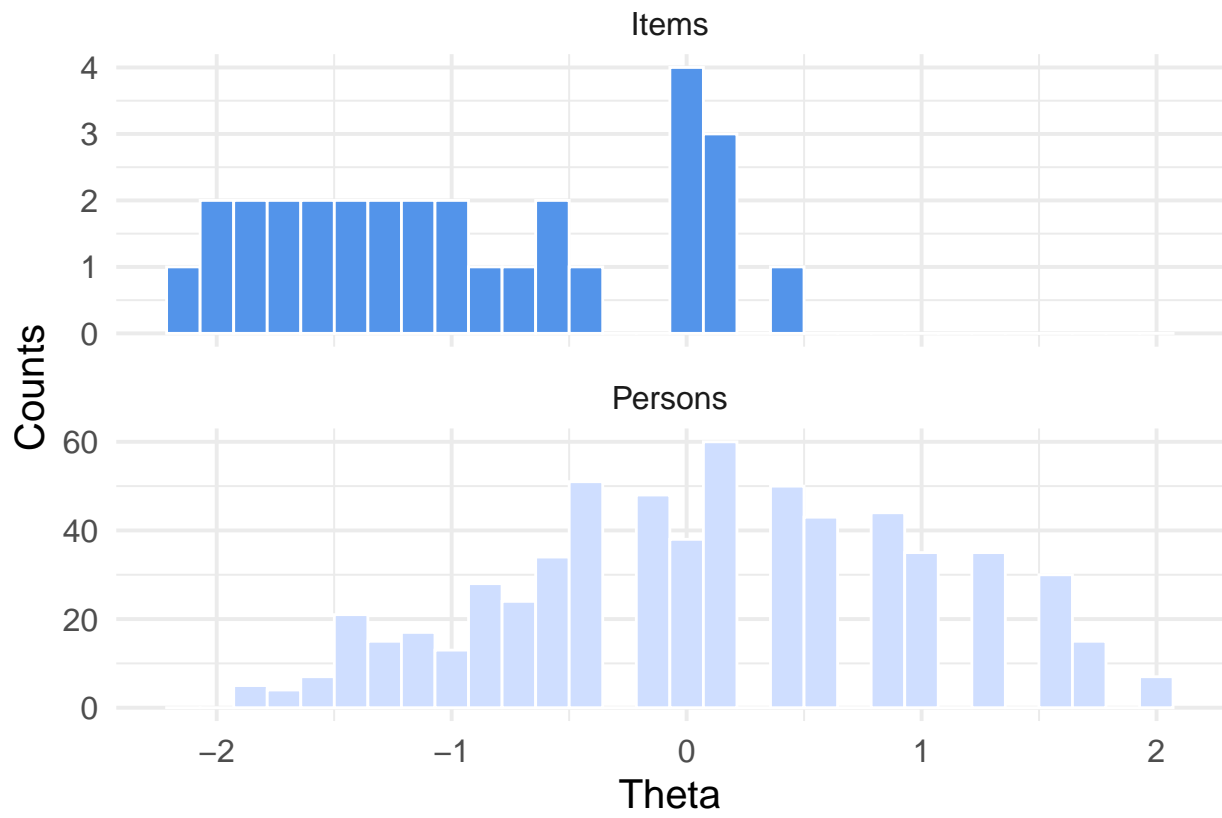
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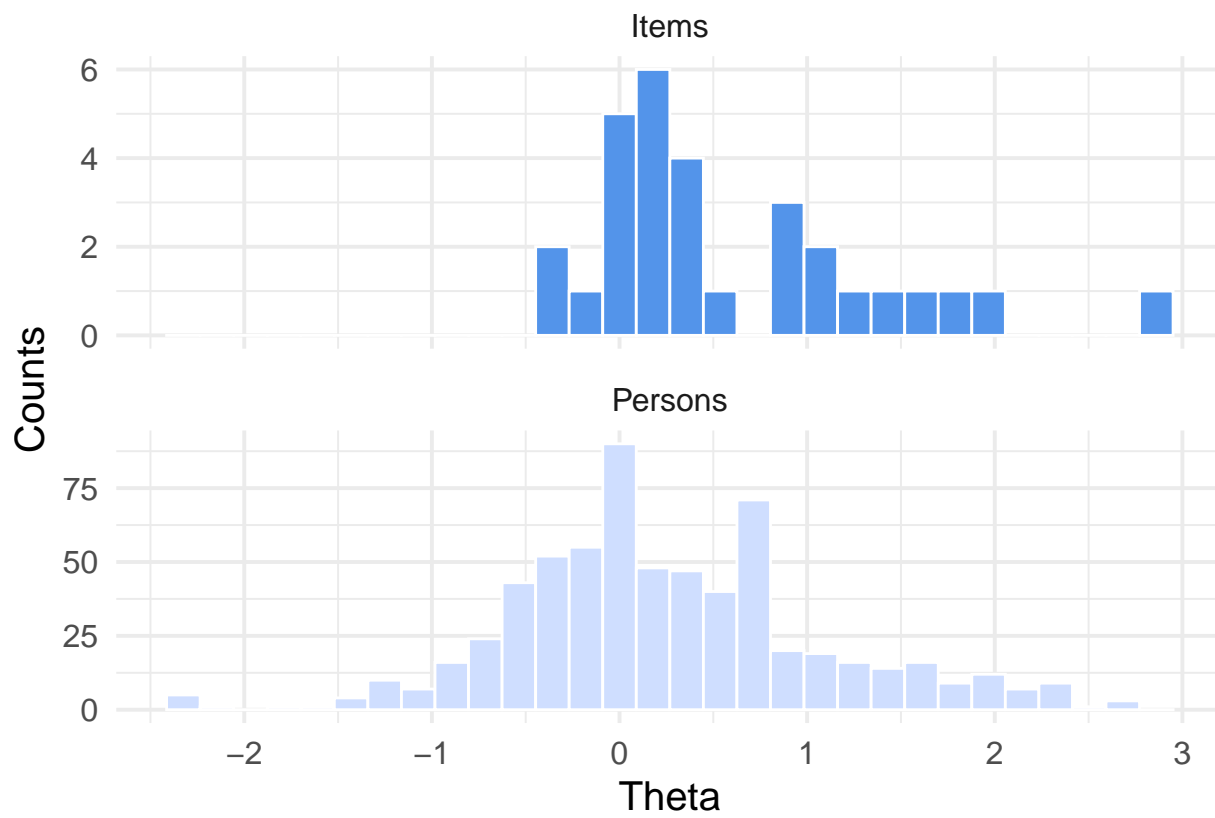
3.4.12 Grade 8 Tier 2

3.4.13 Grade 11 Tier 1

Items

Persons

Counts

Theta
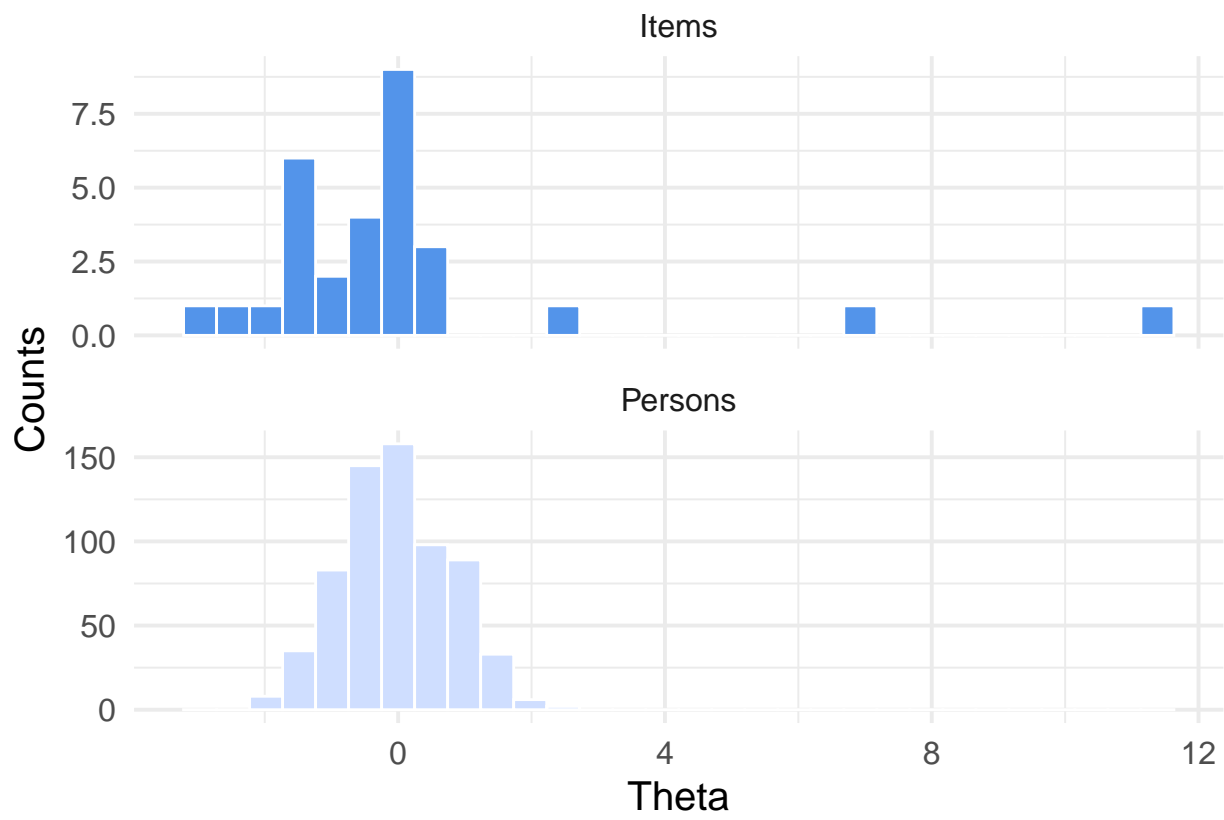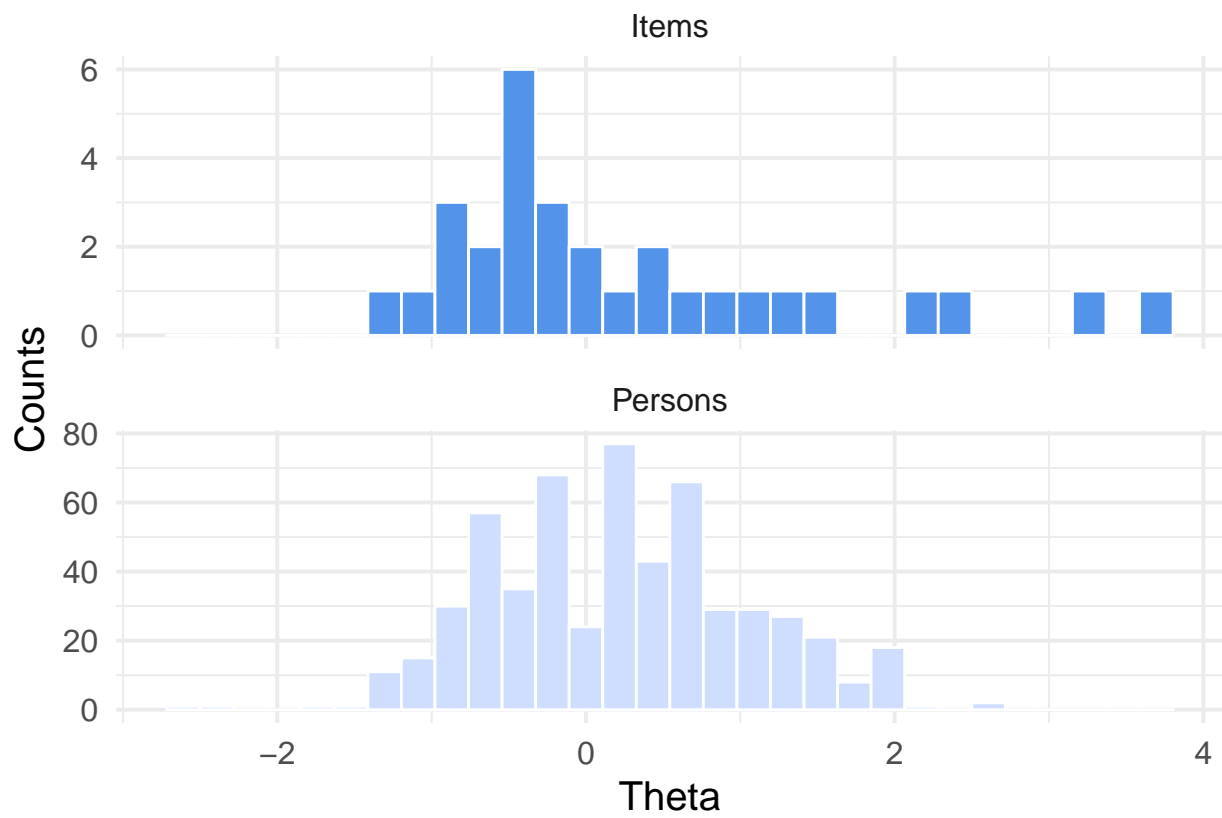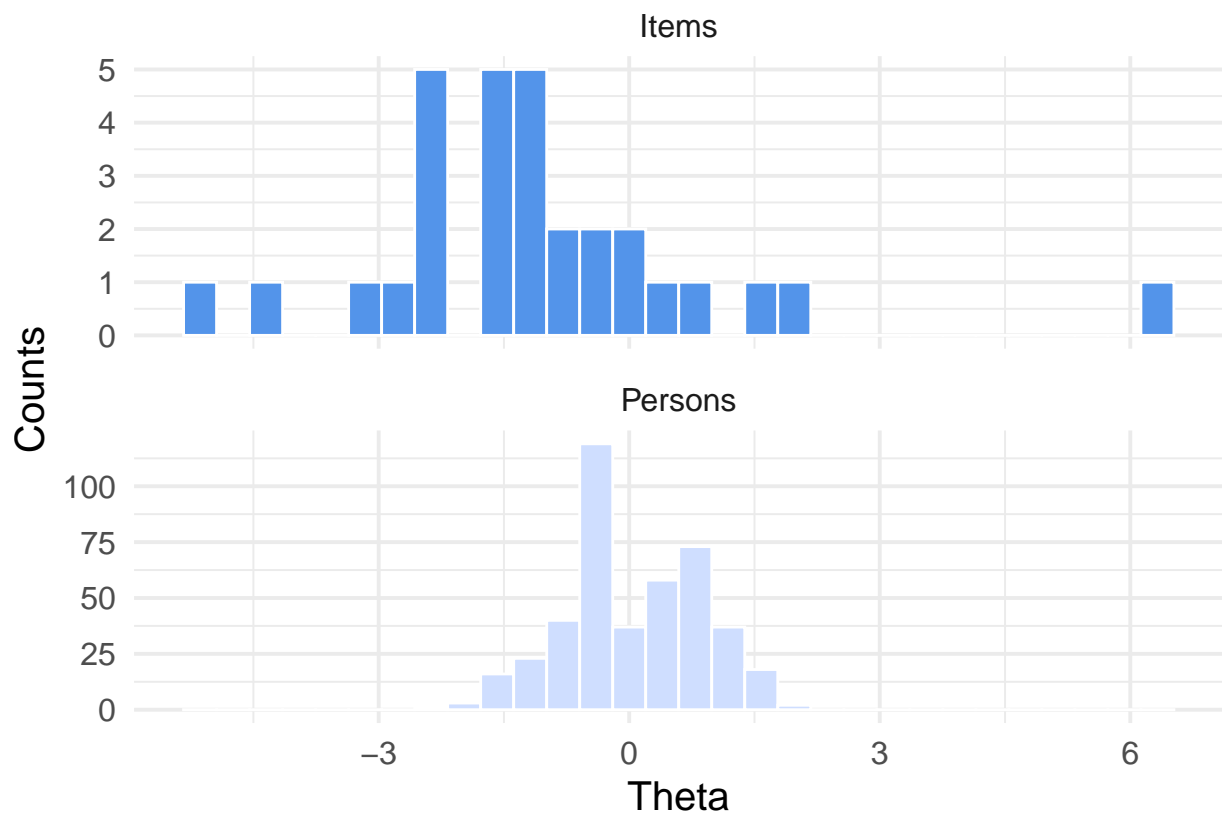
3.4.14   Grade 11 Tier 2

3.5 Science

3.5.1 Grade 4 Tier 1
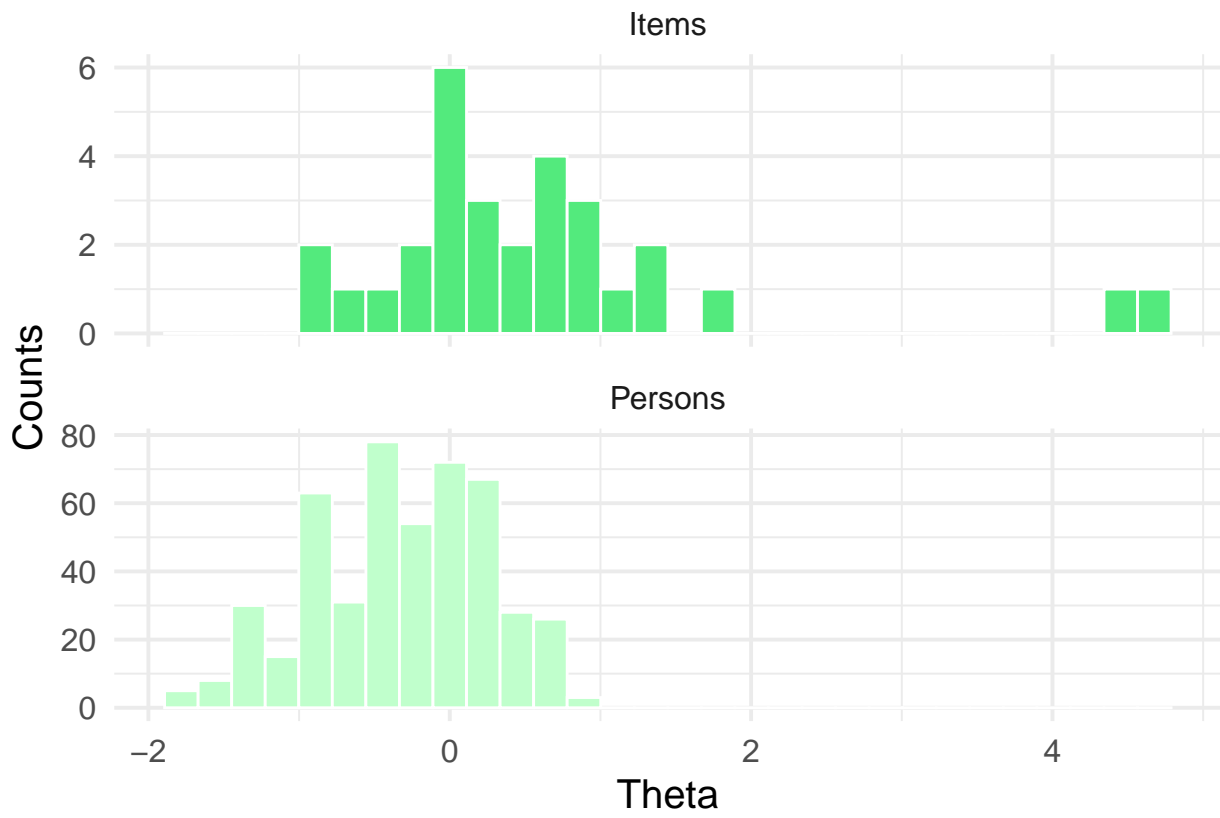
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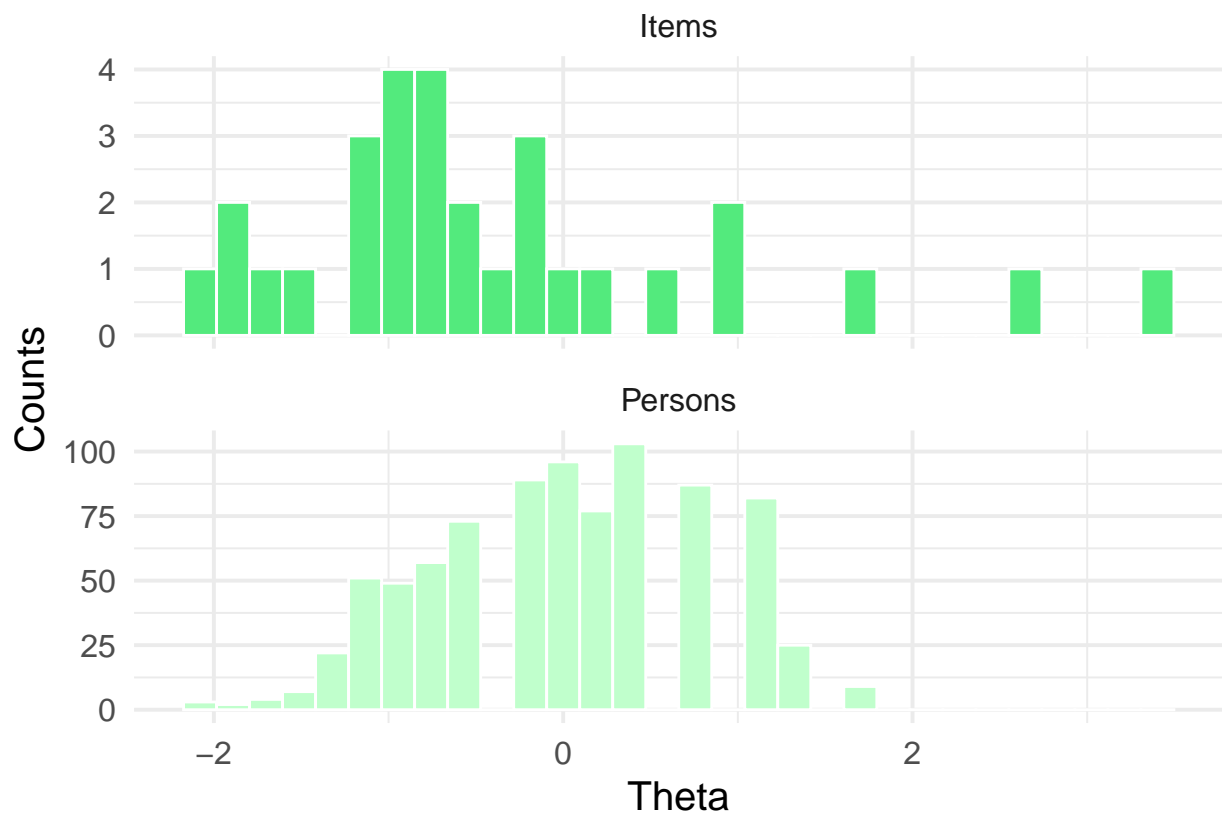
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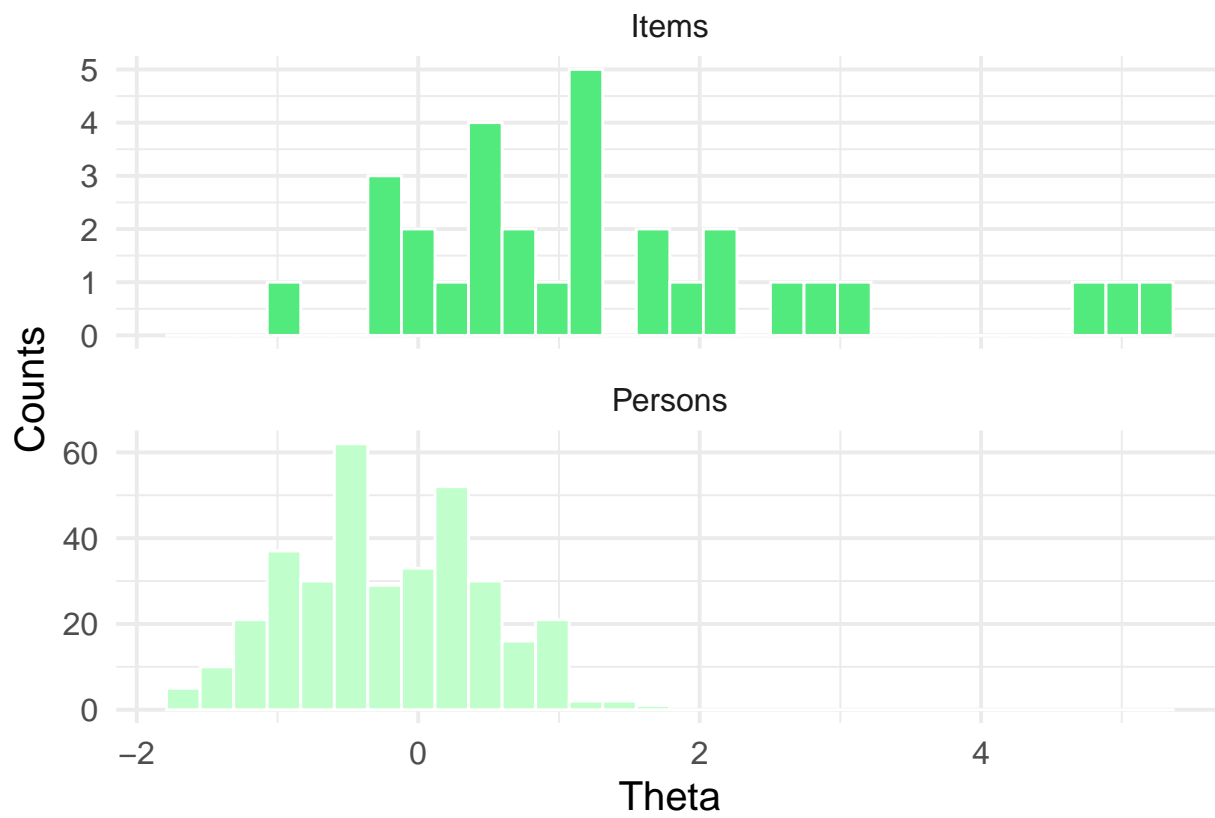
3.5.4 Grade 8 Tier 2

3.5.5 Grade 11 Tier 1

Items

Persons

Theta

Counts
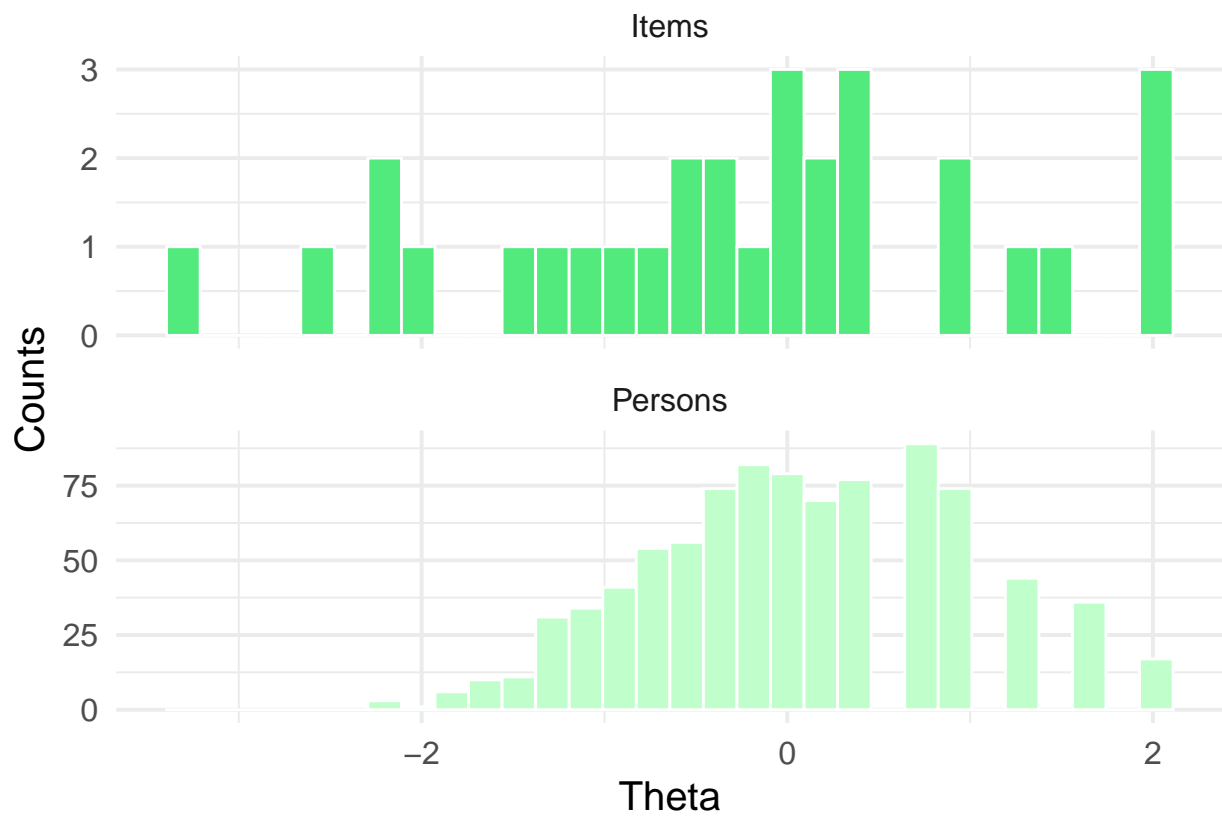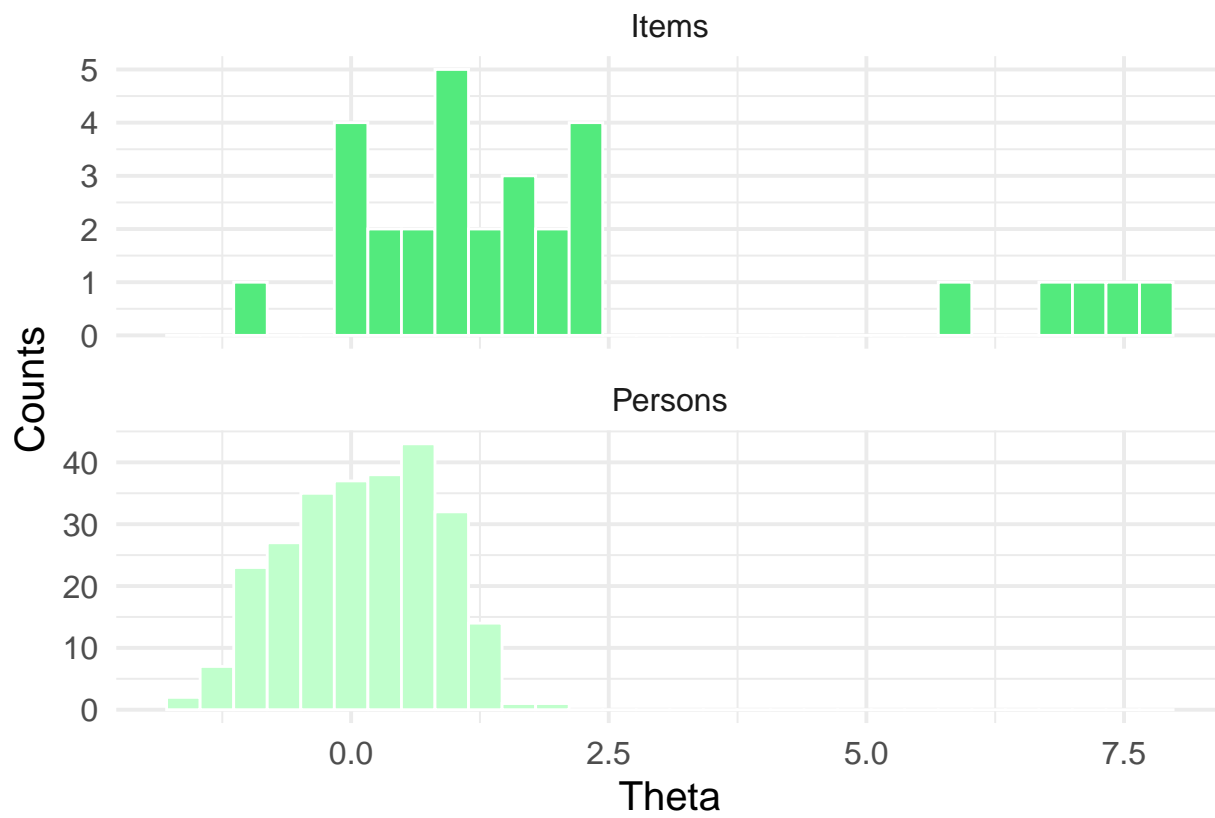
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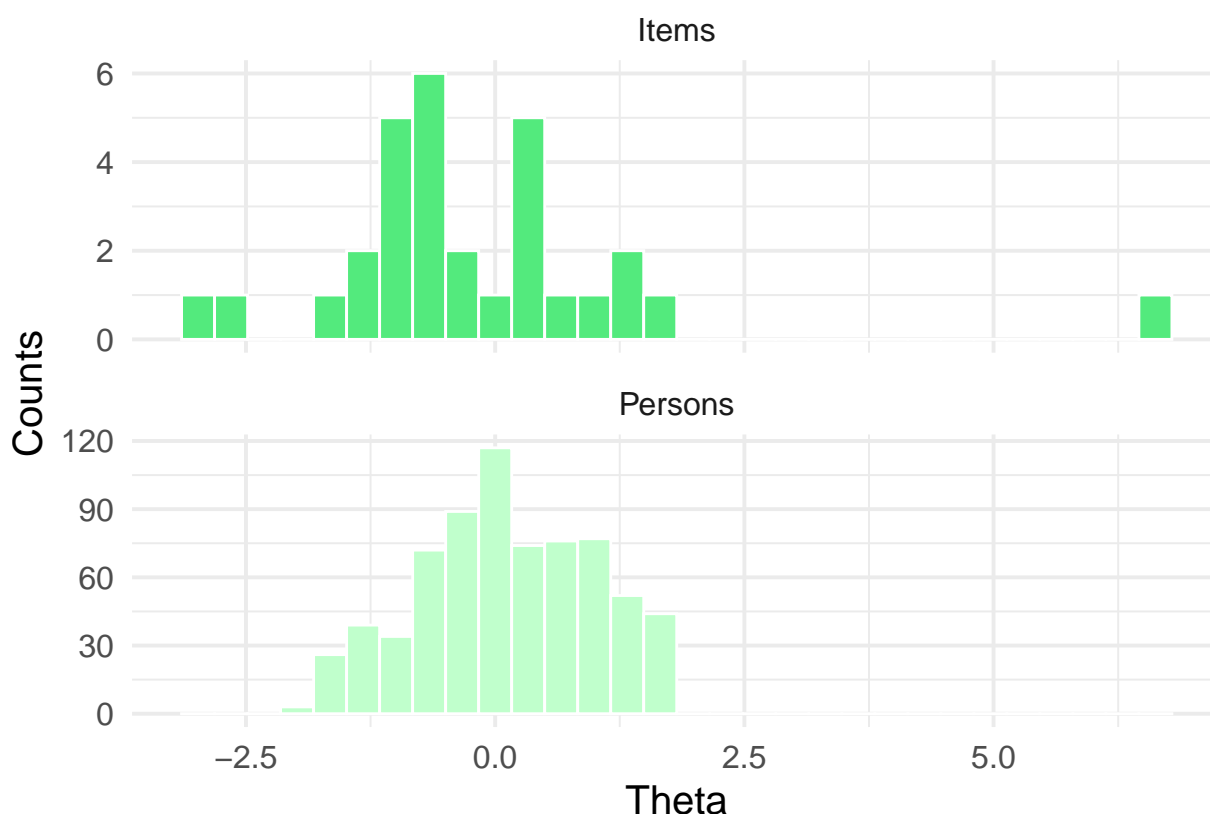
4 Marginal reliability

Marginal reliability is a measure of the overall reliability of a test, within an item response theory (IRT) framework, based on the average standard error conditioned on the range in person ability (or theta). The test information function (or TIF) conveys the precision of the test at any point in the person distribution, with the inverse representing the standard error in measurement. Thus, give this inverse relation, the larger the measurement error at a given theta value, the less information a test yields, typically, at the margins of the person distribution (e.g., extremely low or high scores on a test). The opposite is also true, the smaller the measurement error, the more information a test yields, typically, toward the center of the person distribution. Because measurement error varies across the range in theta based on the TIF, marginal reliability is calculated conditional on both theta and associated standard errors across the range in the calibrated scale. In this chapter, marginal reliability estimates are presented followed by plots of TIF by grade, content area, and tier for all tests comprising the PASA.

4.1 Marginal Reliability by Content Area, Grade, and Tier

Marginal reliability estimates are generally within acceptable ranges for drawing test-based inferences, with ELA and Math more reliable, on average, than Science. Overall, marginal reliability values range from 0.59 to 0.86 across all content areas, grades, and tiers. For ELA, marginal reliability ranges from 0.78 to 0.86. For Math, marginal reliability ranges from 0.71 to 0.86. And for Science, marginal reliability ranges from 0.59 to 0.74, with the lowest reliability estimated for the Grade 8, Tier 1 (0.59) and Grade 11, Tier 1 (0.64) Science tests.

Grade	Tier	Content	Marginal Reliability
3	1	ela	0.87
3	1	math	0.83
3	2	ela	0.75
3	2	math	0.78
4	1	ela	0.85
4	1	math	0.85
4	1	science	0.65
4	2	ela	0.78
4	2	math	0.77
4	2	science	0.68
5	1	ela	0.82
5	1	math	0.84
5	2	ela	0.75
5	2	math	0.81
6	1	ela	0.86
6	1	math	0.86
6	2	ela	0.73
6	2	math	0.73
7	1	ela	0.85
7	1	math	0.85
7	2	ela	0.73
7	2	math	0.76
8	1	ela	0.83
8	1	math	0.79
8	1	science	0.59
8	2	ela	0.73
8	2	math	0.73
8	2	science	0.74
11	1	ela	0.83
11	1	math	0.78
11	1	science	0.64
11	2	ela	0.75
11	2	math	0.71
11	2	science	0.73

5 Test information functions

Below, TIFs are plotted by content area, grade and PASA test tier. The peak (or highest point) in the TIF is the point at which test information is maximized for a given theta (or person ability) estimate. Each plot shows the theta ranges for which marginal reliability is equal to or greater than 0.80 (darker blue area under the TIF) and 0.70 (lighter blue area under the TIF) for the calibrated scale. While many PASA tests provide precise information, with a marginal reliability of at least 0.80, on either side of average person ability (theta = 0; e.g., ELA, Grade 3, Tier 1, and Math, Grade 3, Tier 1), some PASA tests provide more precise information for lower person ability ranges (theta < 0), with less information provided at the higher end of the person ability distribution (e.g., ELA, Grade 3, Tier 2, and Math, Grade 3, Tier 2).

5.1 English/Language Arts

5.1.1 Grade 3 Tier 1

ELA

ELA

ELA

ELA

ELA

ELA

ELA

ELA

ELA

ELA

ELA

ELA

5.1.13 Grade 11 Tier 1

ELA

5.1.14 Grade 11 Tier 2

ELA

5.2 Mathematics

5.2.1 Grade 3 Tier 1

Math

Math

Math

Math

Math

Math

Math

Math

Math

Math
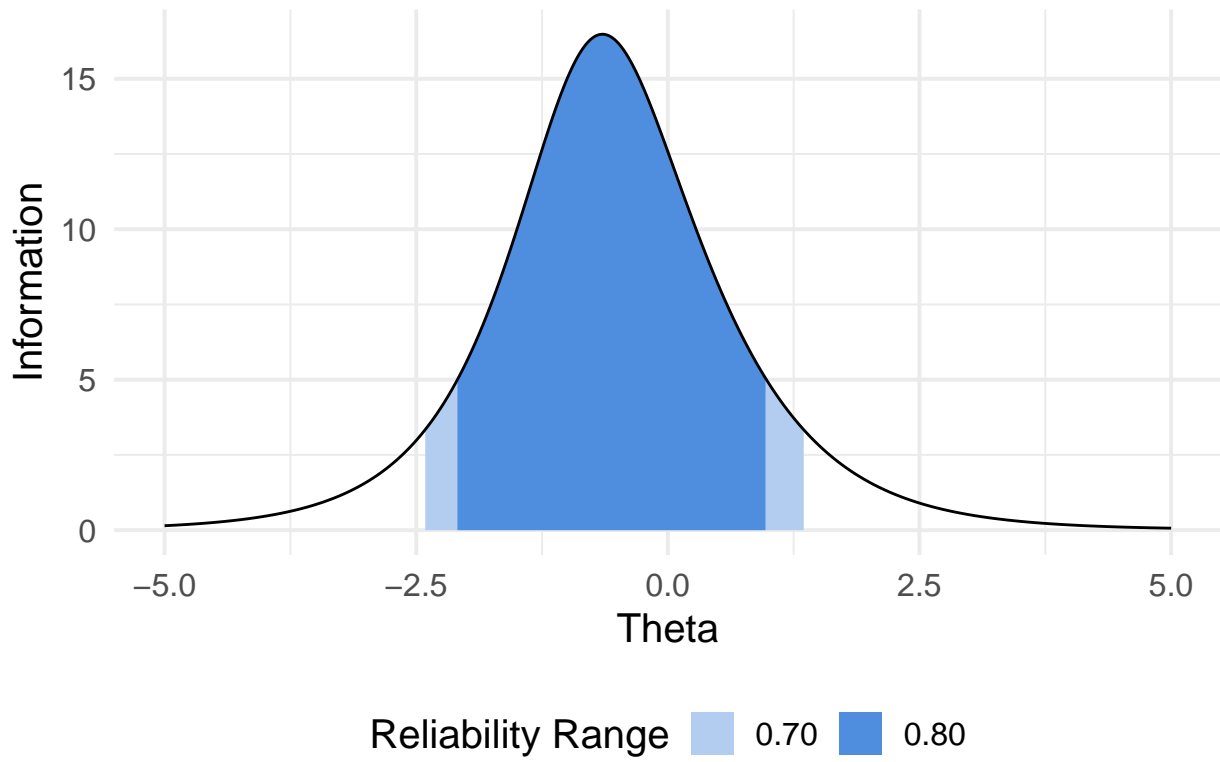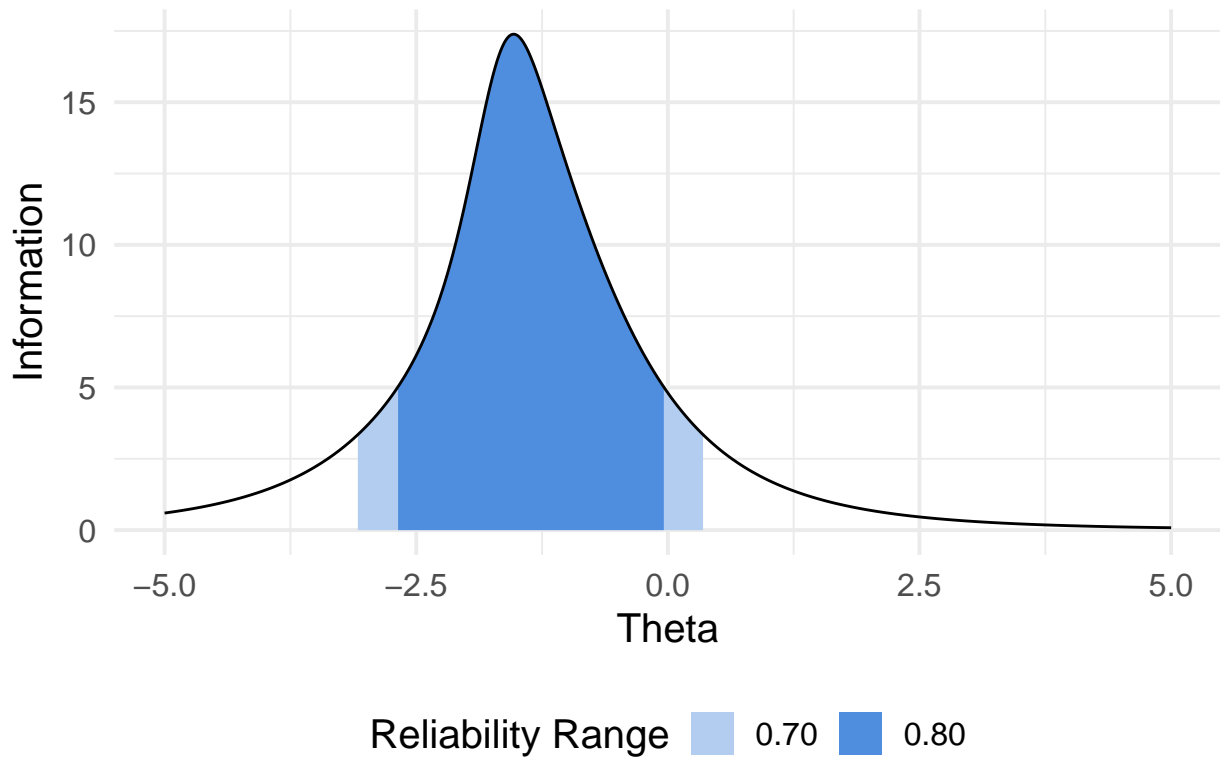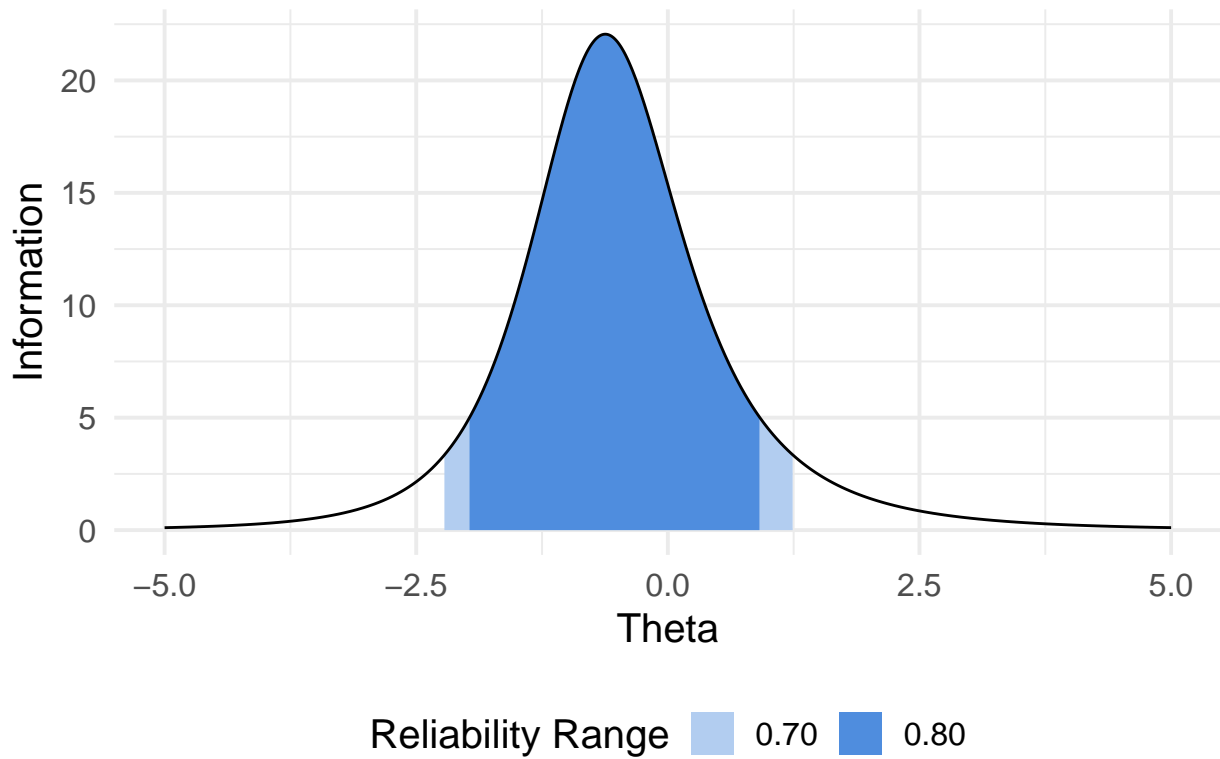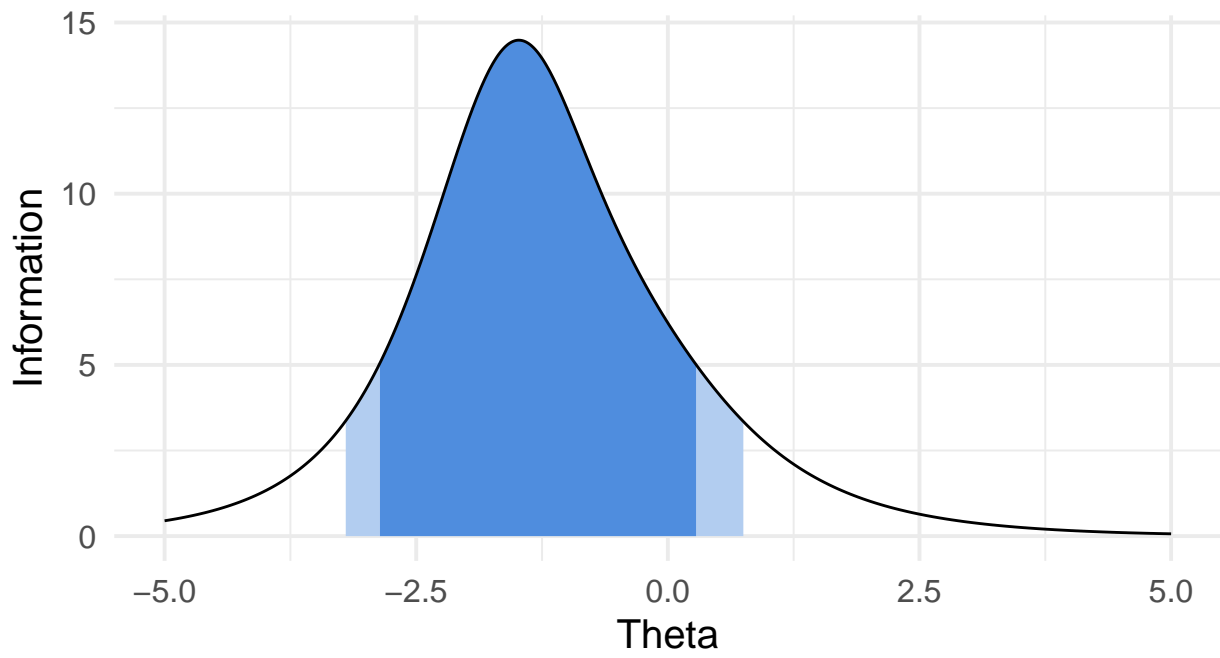
Reliability Range   0.70   0.80
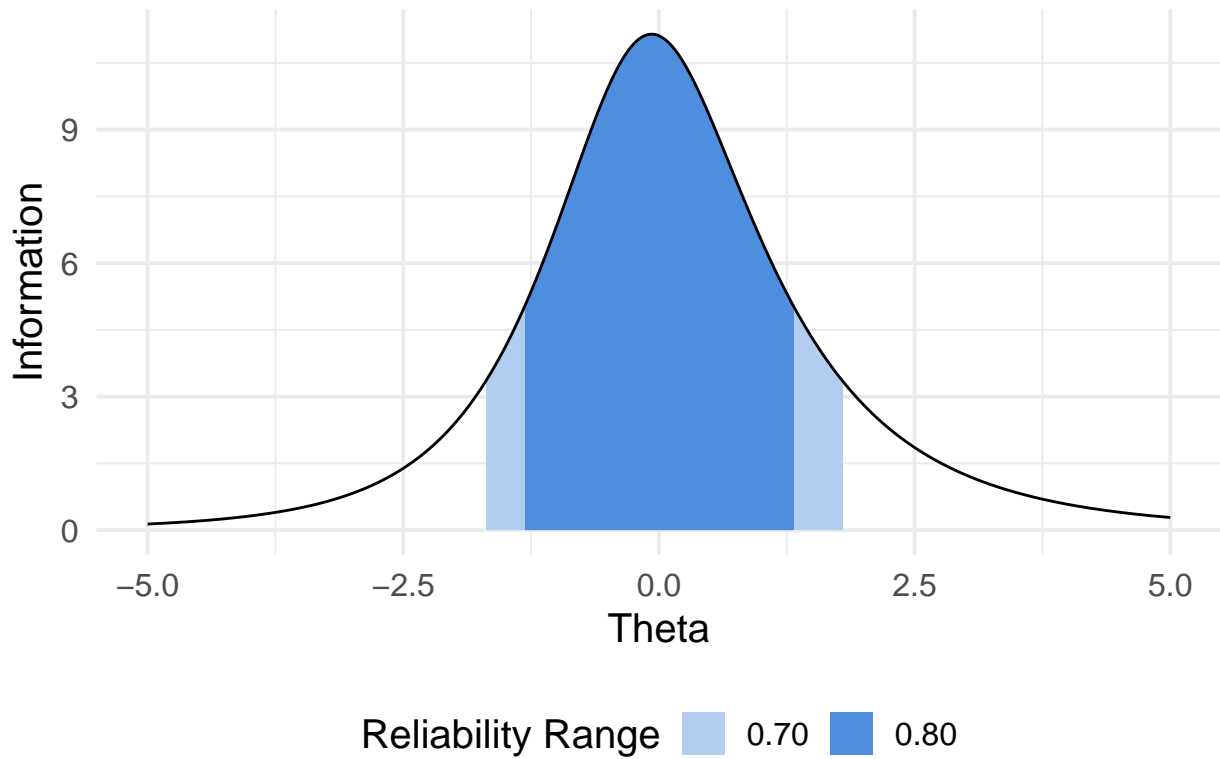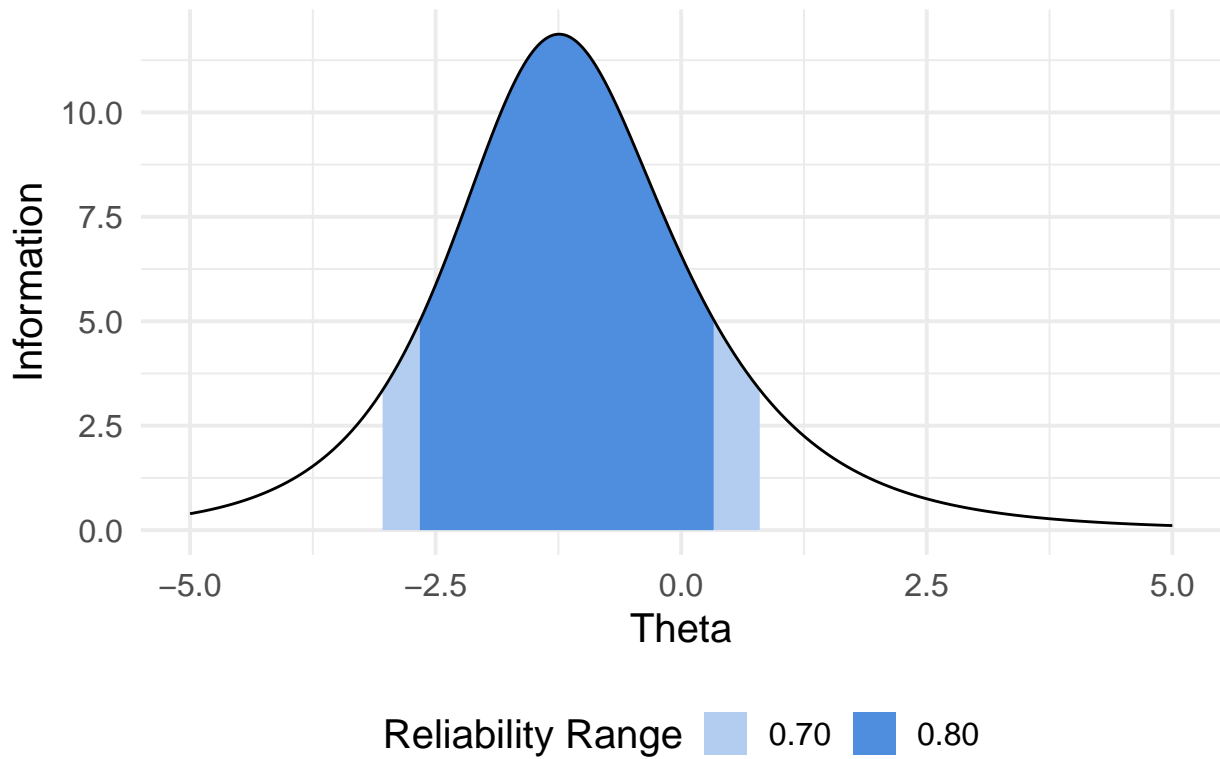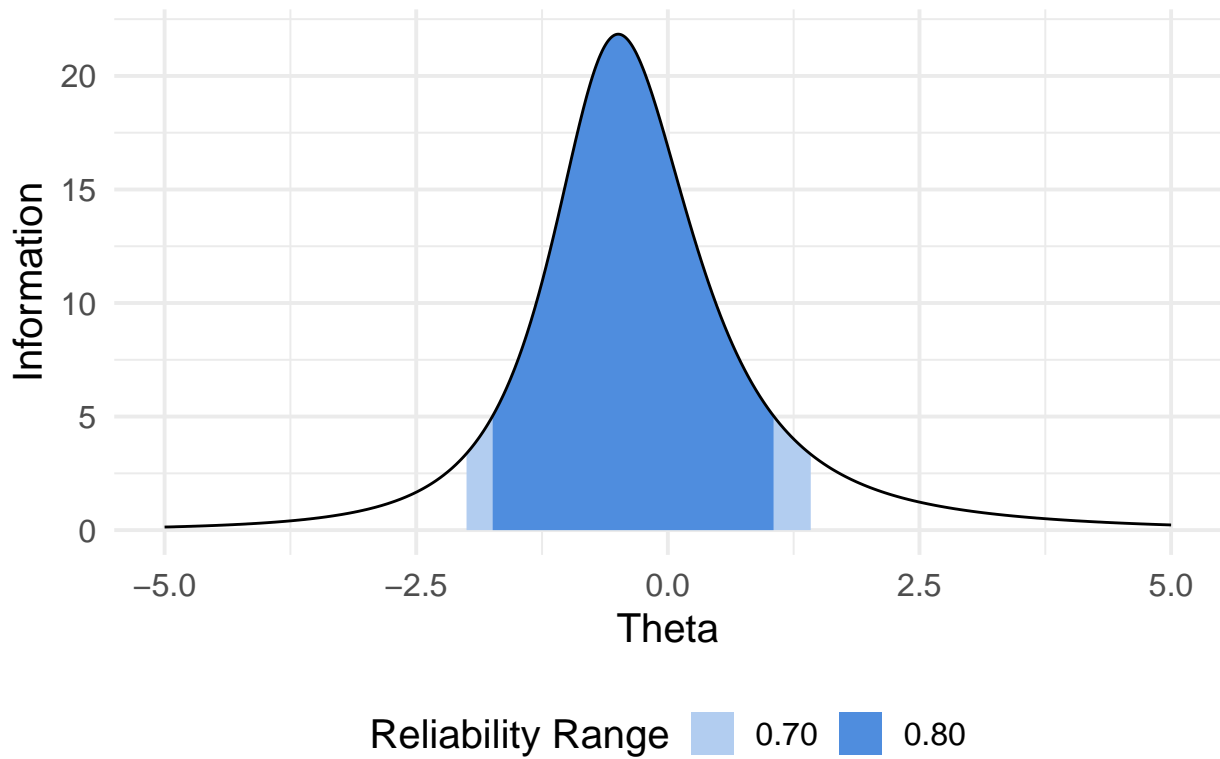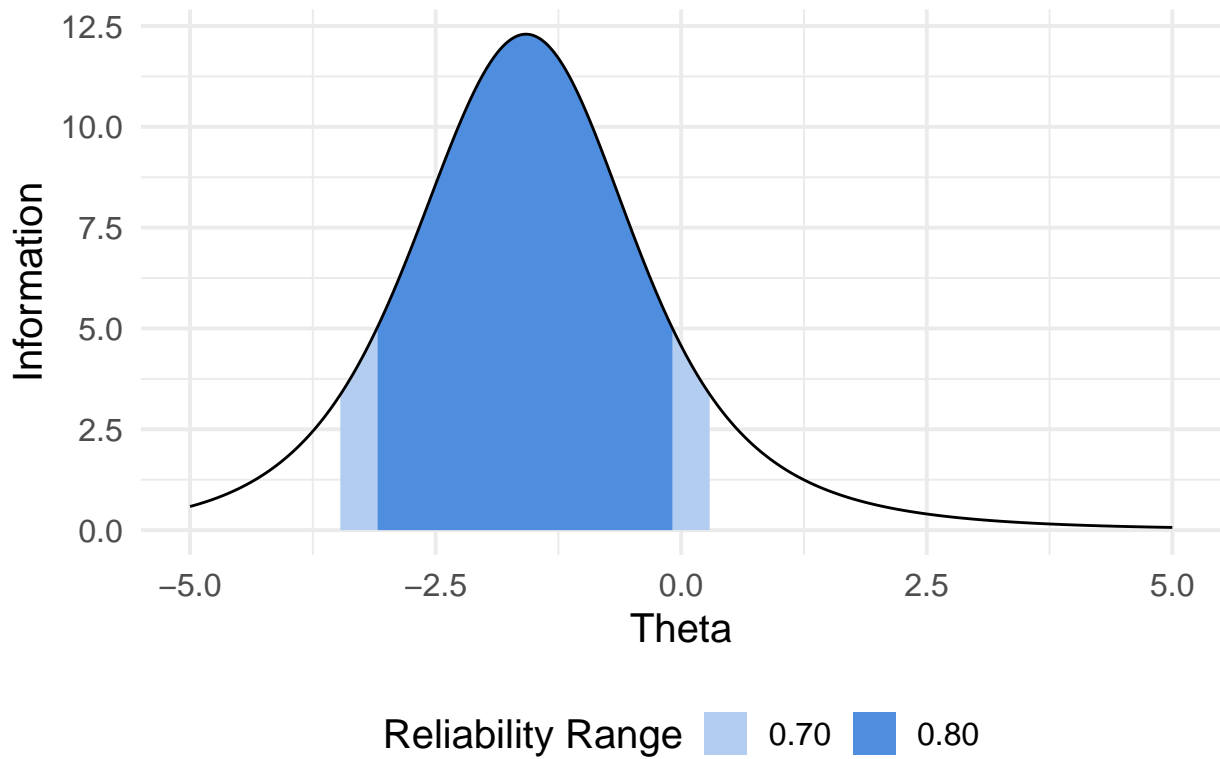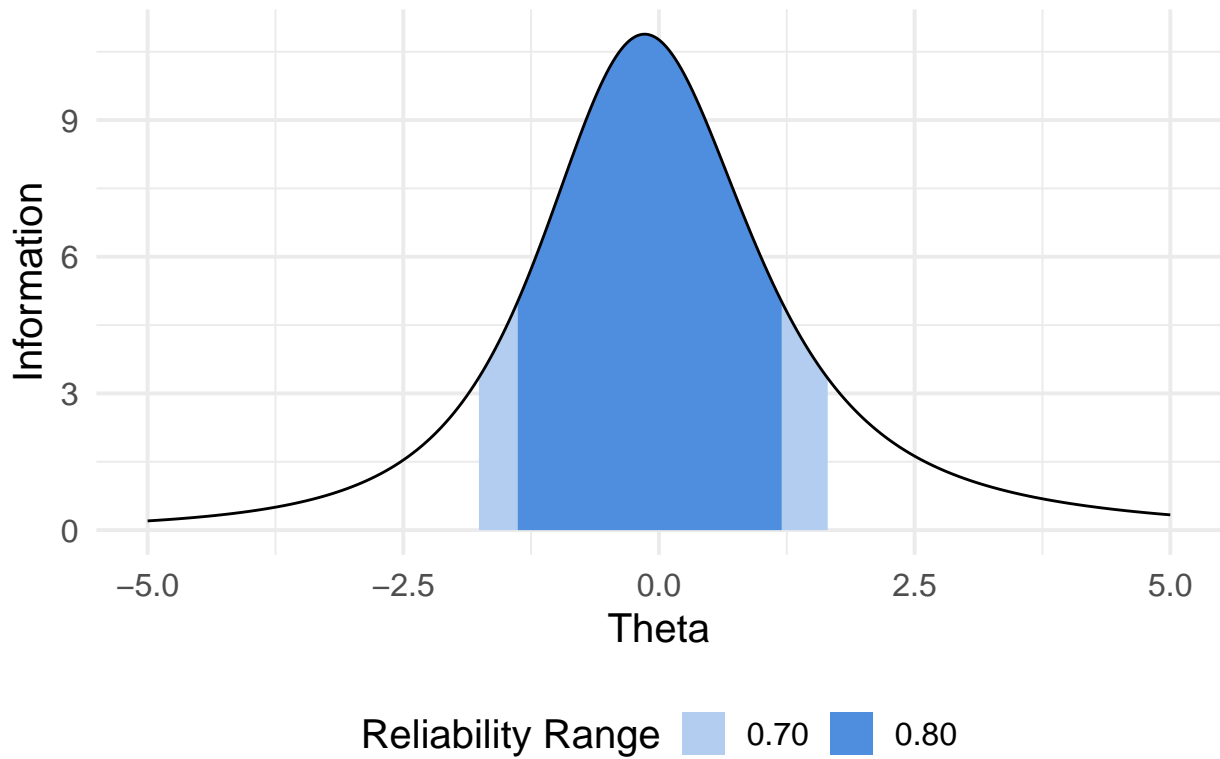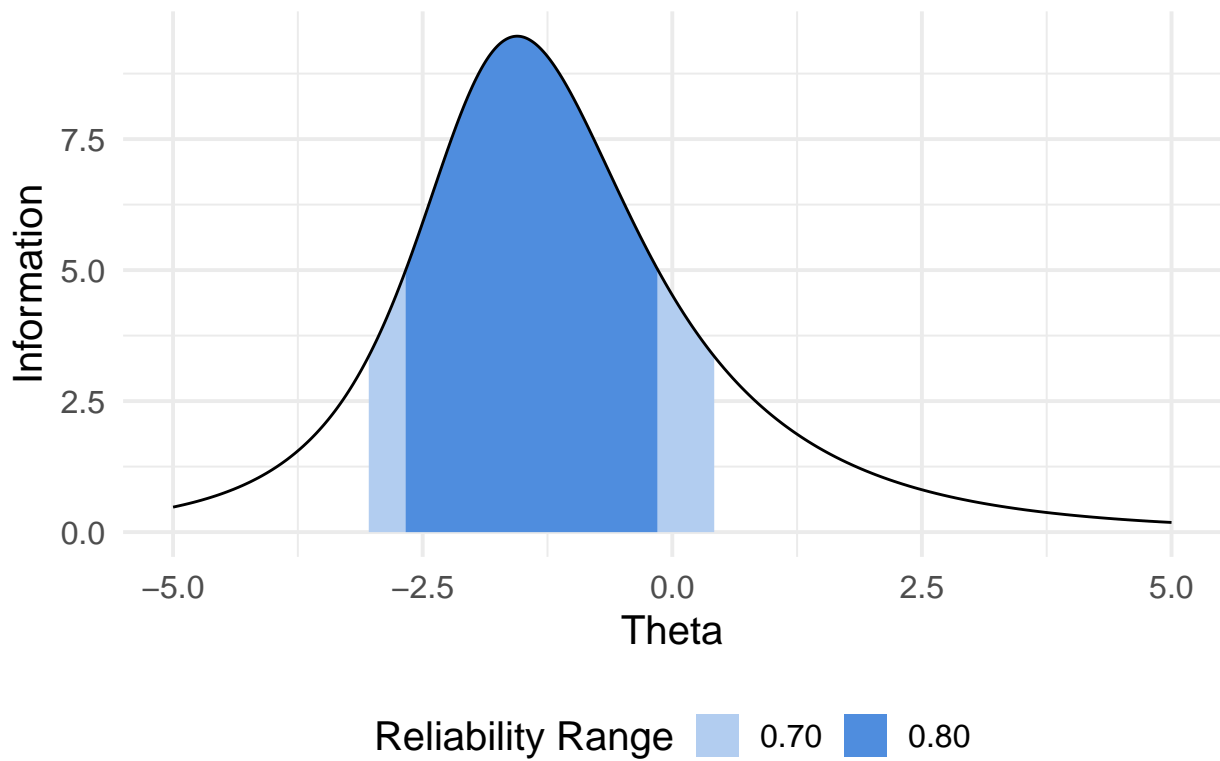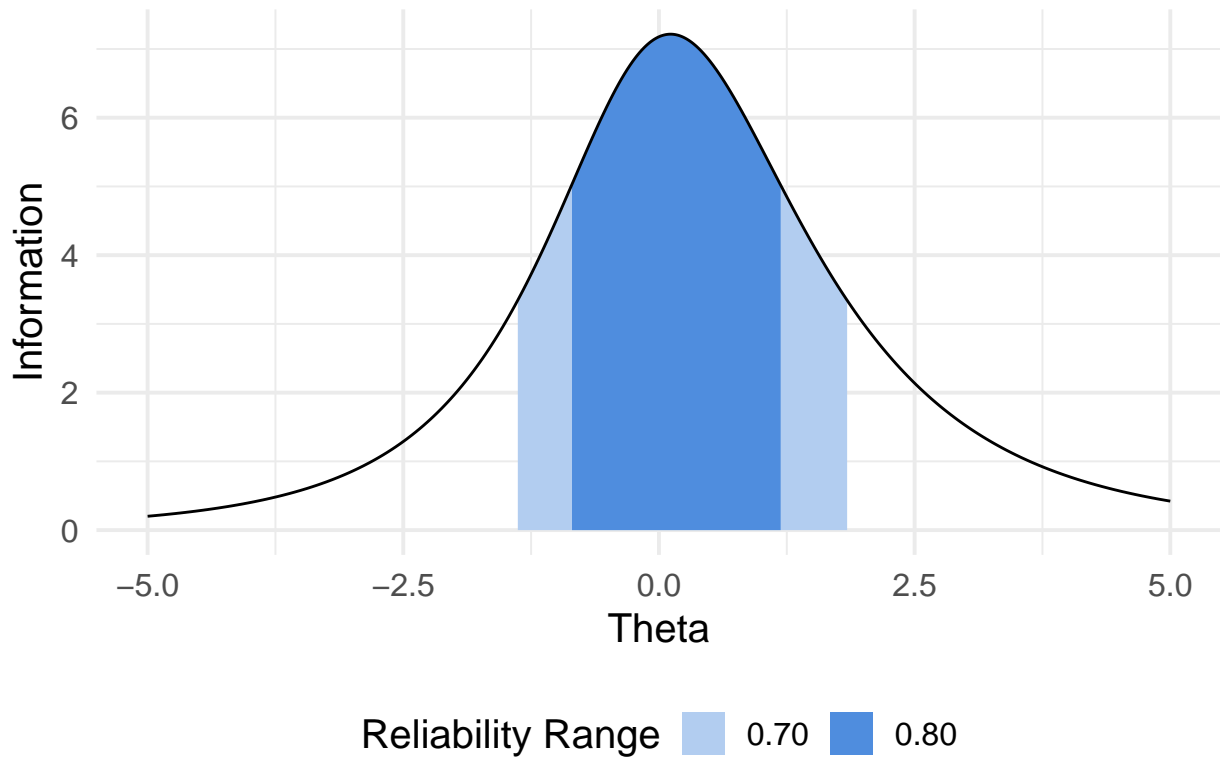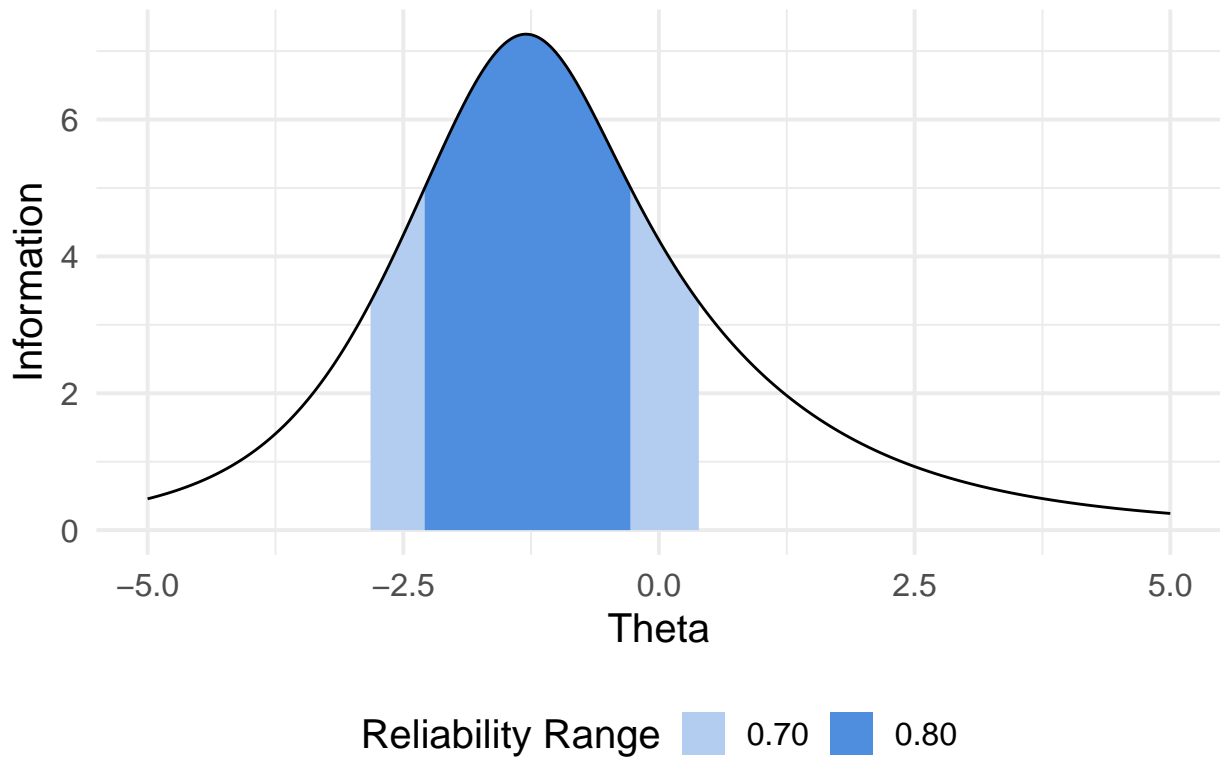
Math

Math

5.2.13   Grade 11 Tier 1

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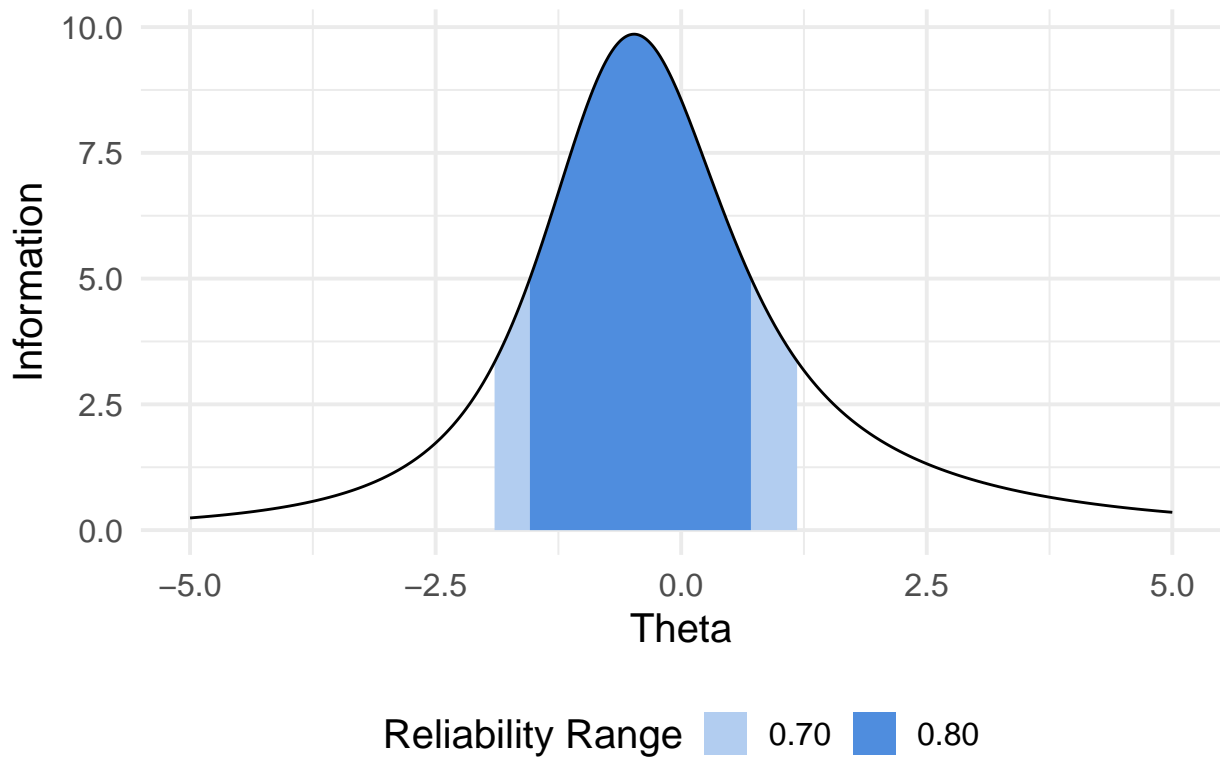
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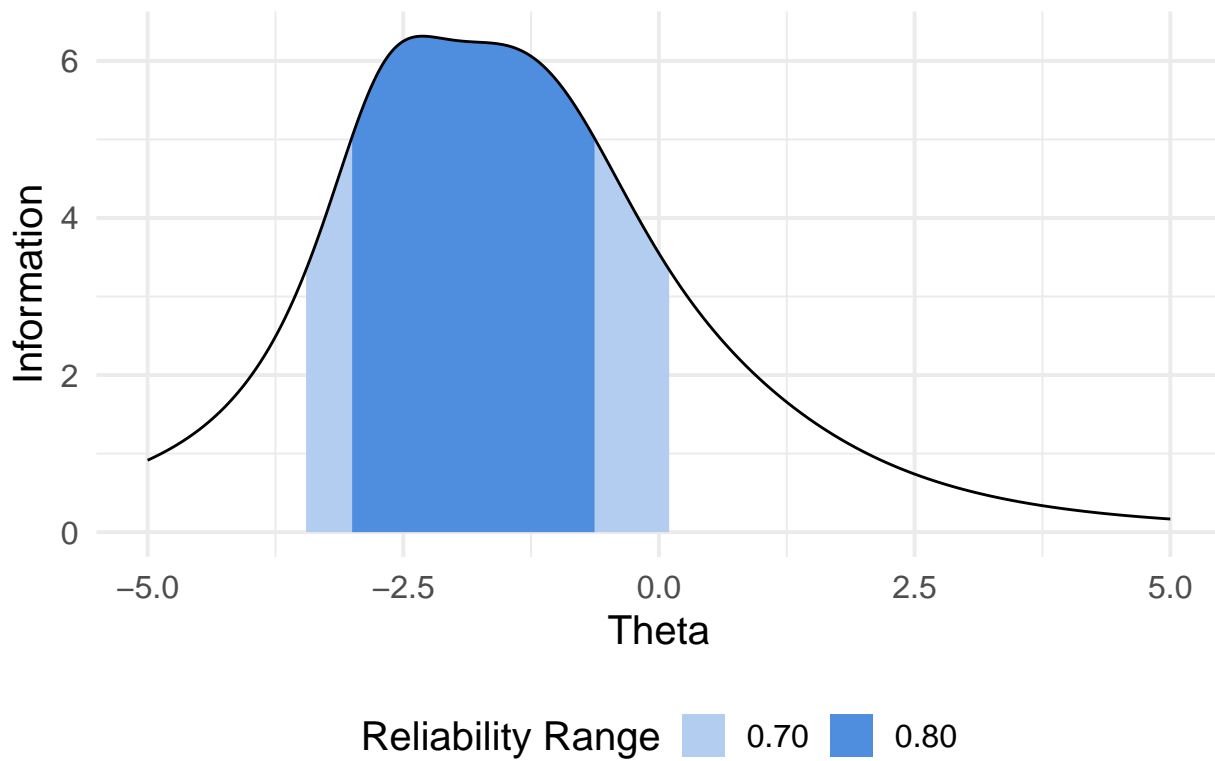
5.3   Science

5.3.1   Grade 4 Tier 1

Science
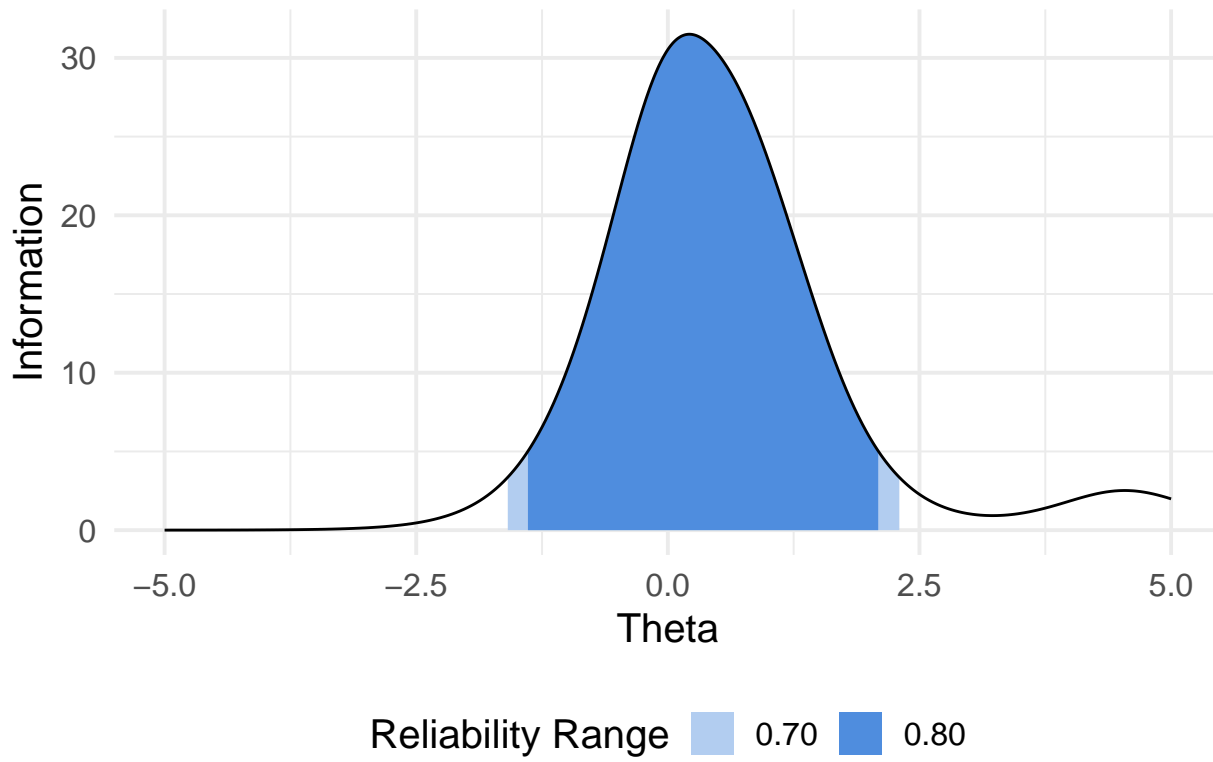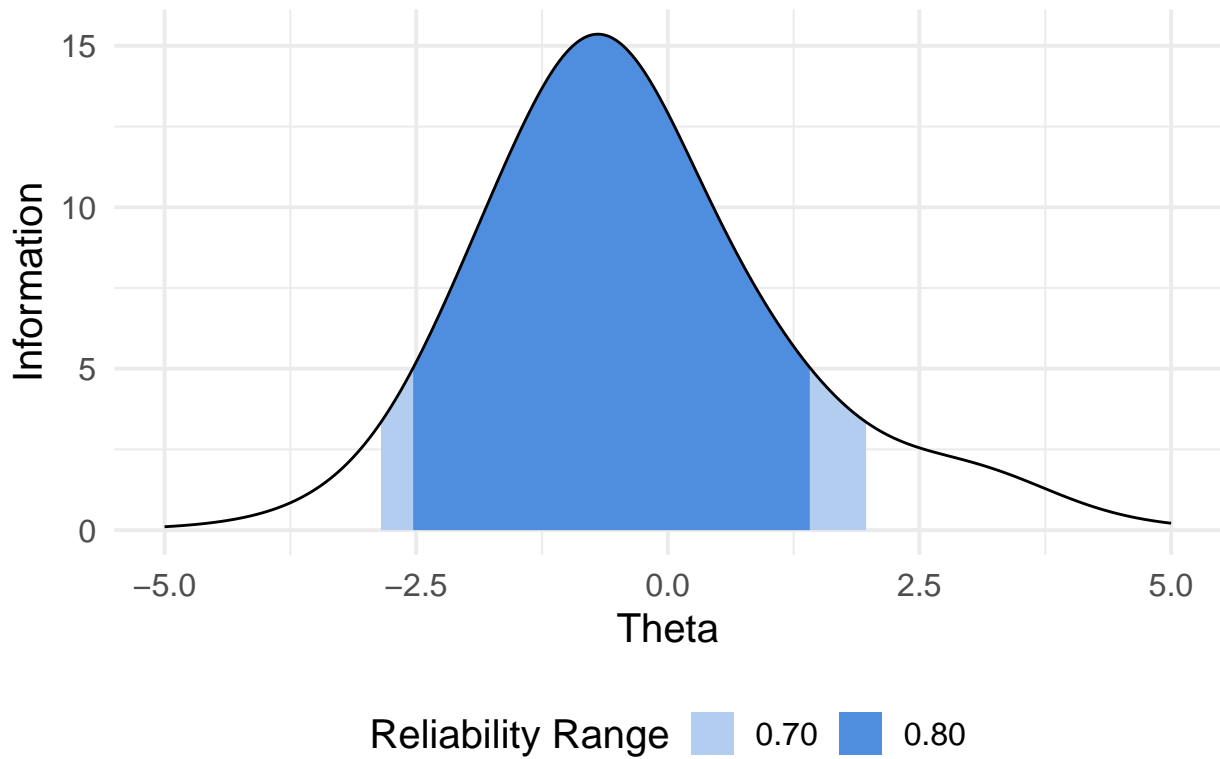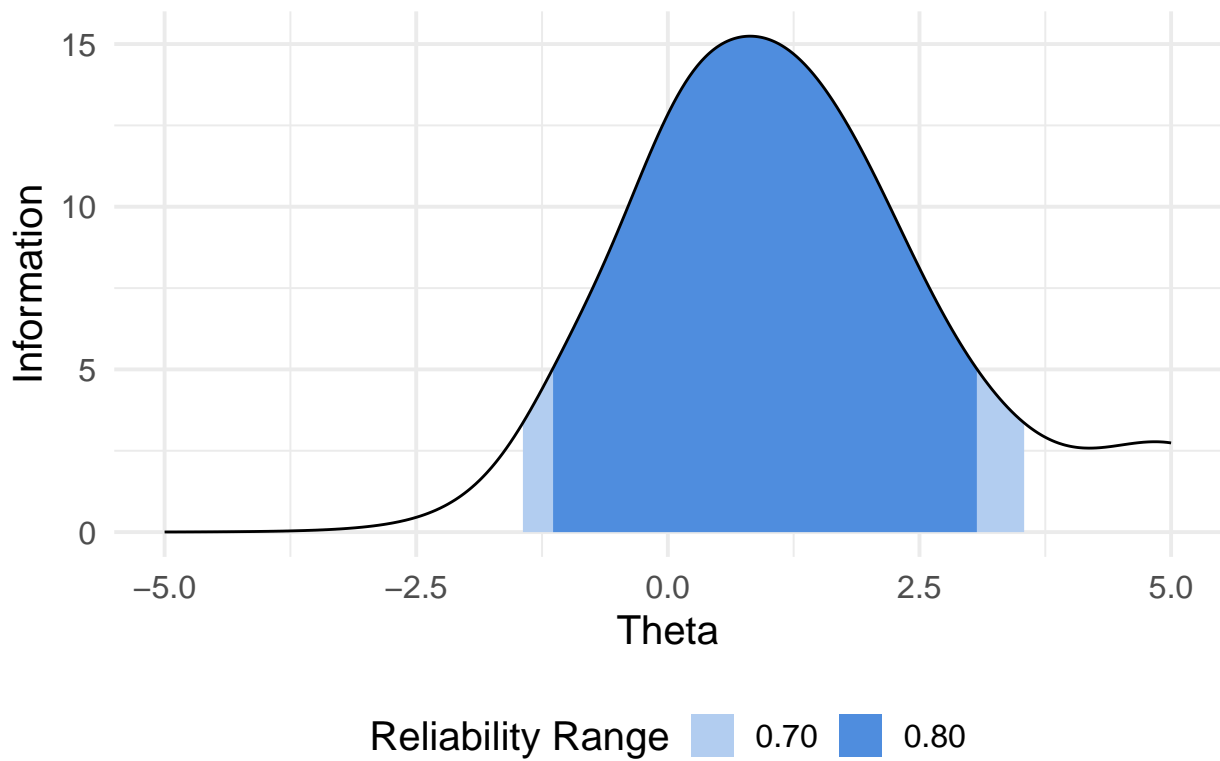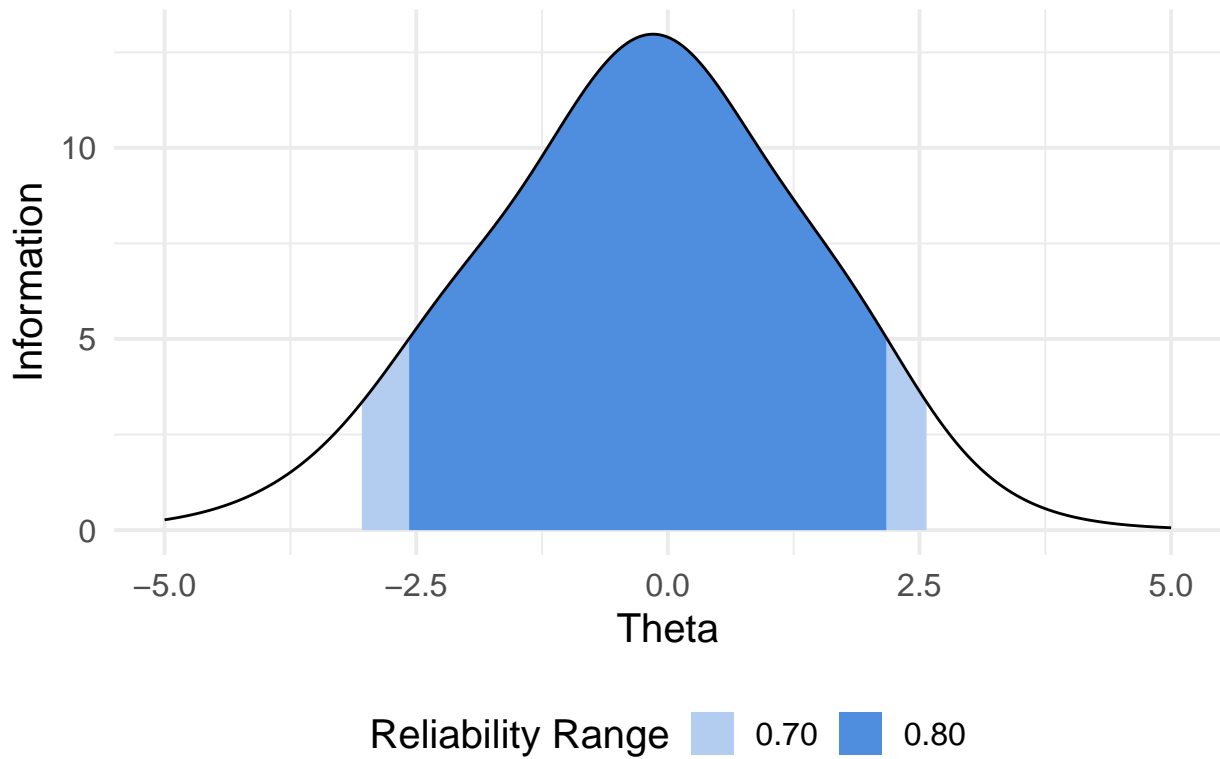
Science

Science
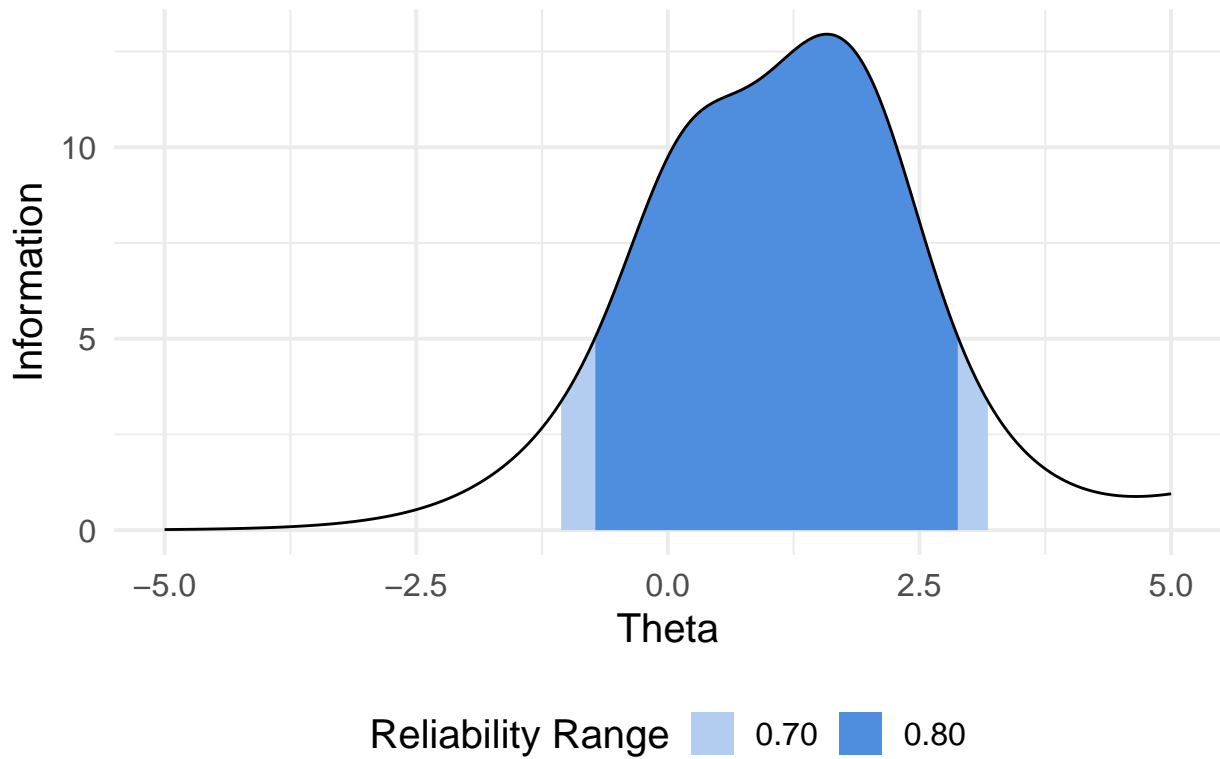
Science

Science

5.3.6 Grade 11 Tier 2

Science
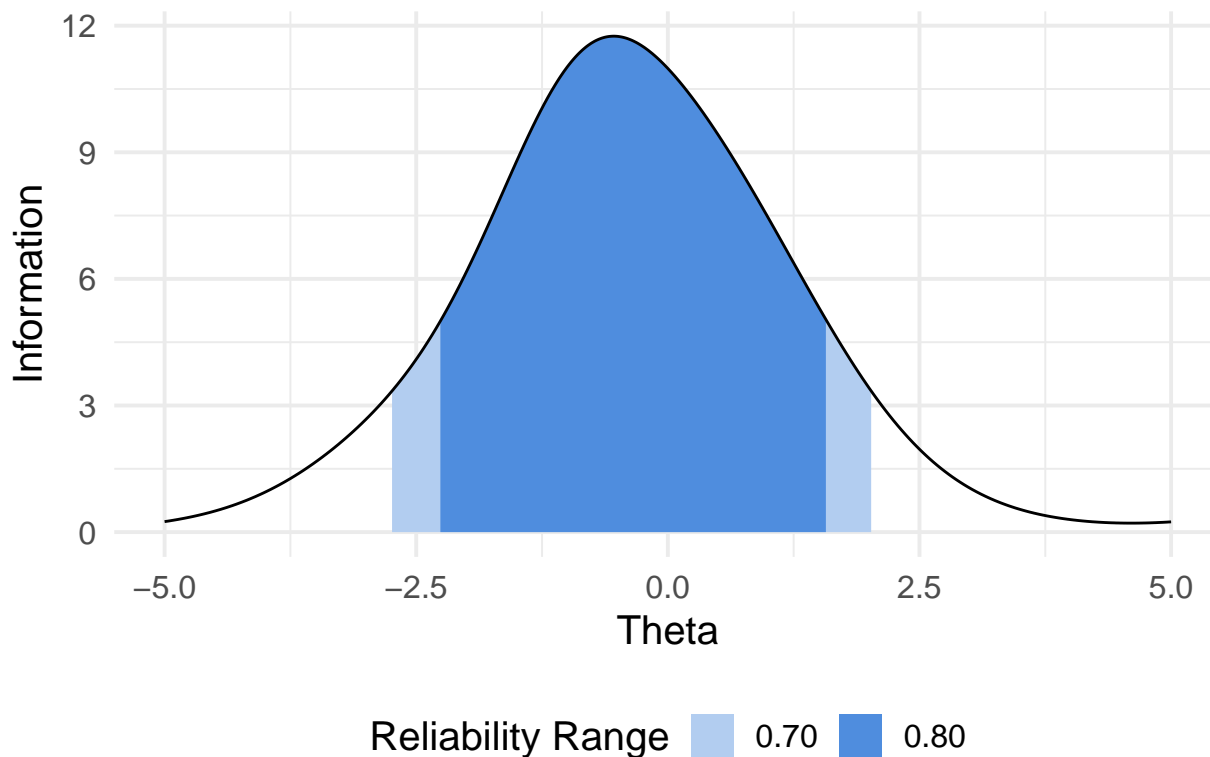
6   Conditional Standard Errors and Classification Accuracy & Consistency

7   Conditional Standard Errors

The average standard error of measurement (SEM) associated with each proficiency level cut score for 2019-20 student data are presented in the tables below.

7.1   English/Language Arts (ELA)

7.1.1   Grade 3 Tier 1

Proficency Level Cut	Cut Score	SE
Novice - Emerging	269	13
Emerging - Proficient	300	16
Proficient - Advanced	370	28

7.1.2   Grade 3 Tier 2

Proficency Level Cut	Cut Score	SE
Novice - Emerging	456	15
Emerging - Proficient	500	19
Proficient - Advanced	535	25

7.1.3 Grade 4 Tier 1

Proficency Level Cut	Cut Score	SE
Novice - Emerging	277	12
Emerging - Proficient	300	14
Proficient - Advanced	341	21

7.1.4 Grade 4 Tier 2

Proficency Level Cut	Cut Score	SE
Novice - Emerging	480	14
Emerging - Proficient	500	15
Proficient - Advanced	572	22

7.1.5 Grade 5 Tier 1

Proficency Level Cut	Cut Score	SE
Novice - Emerging	274	15
Emerging - Proficient	300	17
Proficient - Advanced	351	25

7.1.6 Grade 5 Tier 2

Proficency Level Cut	Cut Score	SE
Novice - Emerging	450	18
Emerging - Proficient	500	22
Proficient - Advanced	545	27

7.1.7 Grade 6 Tier 1

Proficency Level Cut	Cut Score	SE
Novice - Emerging	276	14
Emerging - Proficient	300	16
Proficient - Advanced	328	19

7.1.8 Grade 6 Tier 2

Proficency Level Cut	Cut Score	SE
Novice - Emerging	457	16
Emerging - Proficient	500	18
Proficient - Advanced	587	32

7.1.9 Grade 7 Tier 1

Proficency Level Cut	Cut Score	SE
Novice - Emerging	274	15
Emerging - Proficient	300	17
Proficient - Advanced	346	22

7.1.10 Grade 7 Tier 2

Proficency Level Cut	Cut Score	SE
Novice - Emerging	460	17
Emerging - Proficient	500	20
Proficient - Advanced	533	24

7.1.11 Grade 8 Tier 1

Proficency Level Cut	Cut Score	SE
Novice - Emerging	284	15
Emerging - Proficient	300	16
Proficient - Advanced	321	20

7.1.12 Grade 8 Tier 2

Proficency Level Cut	Cut Score	SE
Novice - Emerging	462	18
Emerging - Proficient	500	23
Proficient - Advanced	548	30

7.1.13 Grade 11 Tier 1

Proficency Level Cut	Cut Score	SE
Novice - Emerging	286	18
Emerging - Proficient	300	19
Proficient - Advanced	323	21

7.1.14 Grade 11 Tier 2

Proficency Level Cut	Cut Score	SE
Novice - Emerging	484	19
Emerging - Proficient	500	20
Proficient - Advanced	534	23

7.2 Mathematics

7.2.1 Grade 3 Tier 1

Proficency Level Cut	Cut Score	SE
Novice - Emerging	266	15
Emerging - Proficient	300	17
Proficient - Advanced	341	22

7.2.2 Grade 3 Tier 2

Proficency Level Cut	Cut Score	SE
Novice - Emerging	465	17
Emerging - Proficient	500	19
Proficient - Advanced	568	27

7.2.3 Grade 4 Tier 1

Proficency Level Cut	Cut Score	SE
Novice - Emerging	282	13
Emerging - Proficient	300	14
Proficient - Advanced	345	20

7.2.4 Grade 4 Tier 2

Proficency Level Cut	Cut Score	SE
Novice - Emerging	461	16
Emerging - Proficient	500	19
Proficient - Advanced	569	29

7.2.5 Grade 5 Tier 1

Proficency Level Cut	Cut Score	SE
Novice - Emerging	271	16
Emerging - Proficient	300	18
Proficient - Advanced	343	23

7.2.6 Grade 5 Tier 2

Proficency Level Cut	Cut Score	SE
Novice - Emerging	468	16
Emerging - Proficient	500	19
Proficient - Advanced	553	26

7.2.7 Grade 6 Tier 1

Proficency Level Cut	Cut Score	SE
Novice - Emerging	275	13
Emerging - Proficient	300	16
Proficient - Advanced	349	24

7.2.8 Grade 6 Tier 2

Proficency Level Cut	Cut Score	SE
Novice - Emerging	443	15
Emerging - Proficient	500	22
Proficient - Advanced	559	32

7.2.9 Grade 7 Tier 1

Proficency Level Cut	Cut Score	SE
Novice - Emerging	267	16
Emerging - Proficient	300	18
Proficient - Advanced	336	22

7.2.10 Grade 7 Tier 2

Proficency Level Cut	Cut Score	SE
Novice - Emerging	429	18
Emerging - Proficient	500	21
Proficient - Advanced	554	27

7.2.11 Grade 8 Tier 1

Proficency Level Cut	Cut Score	SE
Novice - Emerging	265	20
Emerging - Proficient	300	20
Proficient - Advanced	336	21

7.2.12 Grade 8 Tier 2

Proficency Level Cut	Cut Score	SE
Novice - Emerging	478	22
Emerging - Proficient	500	24
Proficient - Advanced	552	29

7.2.13 Grade 11 Tier 1

Proficency Level Cut	Cut Score	SE
Novice - Emerging	285	19
Emerging - Proficient	300	21
Proficient - Advanced	357	28

7.2.14 Grade 11 Tier 2

Proficency Level Cut	Cut Score	SE
Novice - Emerging	449	22
Emerging - Proficient	500	26
Proficient - Advanced	514	27

7.3 Science

7.3.1 Grade 4 Tier 1

Proficency Level Cut	Cut Score	SE
Novice - Emerging	260	28
Emerging - Proficient	300	18
Proficient - Advanced	379	21

7.3.2 Grade 4 Tier 2

Proficency Level Cut	Cut Score	SE
Novice - Emerging	433	25
Emerging - Proficient	500	24
Proficient - Advanced	573	33

7.3.3 Grade 8 Tier 1

Proficency Level Cut	Cut Score	SE
Novice - Emerging	257	32
Emerging - Proficient	300	27
Proficient - Advanced	376	21

7.3.4 Grade 8 Tier 2

Proficency Level Cut	Cut Score	SE
Novice - Emerging	430	28
Emerging - Proficient	500	24
Proficient - Advanced	579	27

7.3.5 Grade 11 Tier 1

Proficency Level Cut	Cut Score	SE
Novice - Emerging	267	32
Emerging - Proficient	300	28
Proficient - Advanced	374	22

7.3.6 Grade 11 Tier 2

Proficency Level Cut	Cut Score	SE
Novice - Emerging	426	27
Emerging - Proficient	500	23
Proficient - Advanced	578	31

8 Accuracy & Consistency

Results from the 2019-20 PASA test administration were analyzed using Rudner's classification index (Rudner, 2005). Results closer to 1.0 indicate the likelihood that a student was appropriately classified as proficient (Performance level of Proficient or Advanced) or not proficient (Performance Level of Novice or Emerging) and the likelihood that the student would be classified in the same Performance level category given an additional test administration (Accuracy and Consistency, respectively). The calculation utilizes item difficulty and (student ability) theta value distributions, as well as related standard errors of measurement (SEM), to generate probabilistic estimates based on one test administration. Complete results for each content area and grade, generated from the `cacIRT` package in R, are provided below. Please note that in cases in which there were no students in a proficiency level in a grade/tier, results cannot be reported.

Results indicate moderate to high levels of classification Accuracy (1.0 to 1) and Consistency (0.76 to 1.0).

8.1 English/Language Arts (ELA)

8.1.1 Grade 3 Tier 1

Proficency Level Cut	Accuracy	Consistency
Novice - Emerging	1.00	0.99
Emerging - Proficient	0.90	0.86
Proficient - Advanced	0.94	0.92

8.1.2   Grade 3 Tier 2

Proficency Level Cut	Accuracy	Consistency
Novice - Emerging	1.00	1.00
Emerging - Proficient	0.91	0.88
Proficient - Advanced	0.90	0.86

8.1.3   Grade 4 Tier 1

Proficency Level Cut	Accuracy	Consistency
Novice - Emerging	1.00	1.00
Emerging - Proficient	0.91	0.87
Proficient - Advanced	0.89	0.84

8.1.4   Grade 4 Tier 2

Proficency Level Cut	Accuracy	Consistency
Novice - Emerging	1.00	1.00
Emerging - Proficient	0.97	0.95
Proficient - Advanced	0.90	0.85

8.1.5   Grade 5 Tier 1

Proficency Level Cut	Accuracy	Consistency
Novice - Emerging	1.00	1.00
Emerging - Proficient	0.87	0.82
Proficient - Advanced	0.94	0.92

8.1.6   Grade 5 Tier 2

Proficency Level Cut	Accuracy	Consistency
Novice - Emerging	1.00	0.99
Emerging - Proficient	0.88	0.83
Proficient - Advanced	0.87	0.83

8.1.7   Grade 6 Tier 1

Proficency Level Cut	Accuracy	Consistency
Novice - Emerging	1.00	1.00
Emerging - Proficient	0.89	0.84
Proficient - Advanced	0.88	0.84

8.1.8   Grade 6 Tier 2

Proficency Level Cut	Accuracy	Consistency
Novice - Emerging	1.00	1.00
Emerging - Proficient	0.91	0.88
Proficient - Advanced	0.88	0.84

8.1.9 Grade 7 Tier 1

Proficency Level Cut	Accuracy	Consistency
Novice - Emerging	1.00	1.00
Emerging - Proficient	0.87	0.81
Proficient - Advanced	0.88	0.84

8.1.10 Grade 7 Tier 2

Proficency Level Cut	Accuracy	Consistency
Novice - Emerging	1.00	0.99
Emerging - Proficient	0.91	0.88
Proficient - Advanced	0.86	0.81

8.1.11 Grade 8 Tier 1

Proficency Level Cut	Accuracy	Consistency
Novice - Emerging	1.00	1.00
Emerging - Proficient	0.87	0.81
Proficient - Advanced	0.88	0.83

8.1.12 Grade 8 Tier 2

Proficency Level Cut	Accuracy	Consistency
Novice - Emerging	0.99	0.99
Emerging - Proficient	0.87	0.82
Proficient - Advanced	0.87	0.82

8.1.13 Grade 11 Tier 1

Proficency Level Cut	Accuracy	Consistency
Novice - Emerging	1.00	1.00
Emerging - Proficient	0.87	0.82
Proficient - Advanced	0.88	0.84

8.1.14 Grade 11 Tier 2

Proficency Level Cut	Accuracy	Consistency
Novice - Emerging	1.00	1.00
Emerging - Proficient	0.91	0.88
Proficient - Advanced	0.87	0.81

8.2 Mathematics

8.2.1 Grade 3 Tier 1

Proficency Level Cut	Accuracy	Consistency
Emerging - Proficient	1.00	1.00
Proficient - Advanced	0.95	0.92

8.2.2 Grade 3 Tier 2

Proficency Level Cut	Accuracy	Consistency
Novice - Emerging	1.00	1.00
Emerging - Proficient	0.89	0.85
Proficient - Advanced	0.89	0.84

8.2.3 Grade 4 Tier 1

Proficency Level Cut	Accuracy	Consistency
Novice - Emerging	1.00	1.00
Emerging - Proficient	0.89	0.85
Proficient - Advanced	0.91	0.88

8.2.4 Grade 4 Tier 2

Proficency Level Cut	Accuracy	Consistency
Novice - Emerging	1.0	0.99
Emerging - Proficient	0.9	0.86
Proficient - Advanced	0.9	0.85

8.2.5 Grade 5 Tier 1

Proficency Level Cut	Accuracy	Consistency
Novice - Emerging	1.00	1.00
Emerging - Proficient	0.88	0.83
Proficient - Advanced	0.92	0.89

8.2.6 Grade 5 Tier 2

Proficency Level Cut	Accuracy	Consistency
Novice - Emerging	0.99	0.99
Emerging - Proficient	0.88	0.83
Proficient - Advanced	0.91	0.88

8.2.7 Grade 6 Tier 1

Proficency Level Cut	Accuracy	Consistency
Novice - Emerging	1.00	1.00
Emerging - Proficient	0.88	0.83
Proficient - Advanced	0.91	0.88

8.2.8 Grade 6 Tier 2

Proficency Level Cut	Accuracy	Consistency
Novice - Emerging	1.00	1.00
Emerging - Proficient	0.90	0.86
Proficient - Advanced	0.87	0.83

8.2.9   Grade 7 Tier 1

Proficency Level Cut	Accuracy	Consistency
Novice - Emerging	1.00	1.00
Emerging - Proficient	0.88	0.83
Proficient - Advanced	0.91	0.87

8.2.10   Grade 7 Tier 2

Proficency Level Cut	Accuracy	Consistency
Novice - Emerging	0.99	0.99
Emerging - Proficient	0.87	0.82
Proficient - Advanced	0.89	0.84

8.2.11   Grade 8 Tier 1

Proficency Level Cut	Accuracy	Consistency
Emerging - Proficient	1.00	0.99
Proficient - Advanced	0.85	0.79

8.2.12   Grade 8 Tier 2

Proficency Level Cut	Accuracy	Consistency
Novice - Emerging	0.99	0.99
Emerging - Proficient	0.84	0.77
Proficient - Advanced	0.96	0.94

8.2.13   Grade 11 Tier 1

Proficency Level Cut	Accuracy	Consistency
Emerging - Proficient	1.00	1.0
Proficient - Advanced	0.93	0.9

8.2.14   Grade 11 Tier 2

Proficency Level Cut	Accuracy	Consistency
Novice - Emerging	1.00	0.99
Emerging - Proficient	0.89	0.85
Proficient - Advanced	0.86	0.81

8.3   Science

8.3.1   Grade 4 Tier 1

Proficency Level Cut	Accuracy	Consistency
Novice - Emerging	0.97	0.95
Emerging - Proficient	0.83	0.76

8.3.2 Grade 4 Tier 2

Proficency Level Cut	Accuracy	Consistency
Novice - Emerging	0.99	0.98
Emerging - Proficient	0.83	0.77

8.3.3 Grade 8 Tier 1

Proficency Level Cut	Accuracy	Consistency
Novice - Emerging	0.96	0.93
Emerging - Proficient	0.86	0.80

8.3.4 Grade 8 Tier 2

Proficency Level Cut	Accuracy	Consistency
Novice - Emerging	0.99	0.98
Emerging - Proficient	0.83	0.77
Proficient - Advanced	0.96	0.95

8.3.5 Grade 11 Tier 1

Proficency Level Cut	Accuracy	Consistency
Novice - Emerging	0.96	0.95
Emerging - Proficient	0.84	0.78

8.3.6 Grade 11 Tier 2

Proficency Level Cut	Accuracy	Consistency
Emerging - Proficient	0.84	0.78
Proficient - Advanced	0.94	0.92

9 Content Validity

9.1 Summary of Validity Based on Content

A number of dimensions are considered in the content covered across AECs. First, the type of item is organized into (a) anchor items, that facilitate form comparability from year to year, (b) Linking Tier 1 items (LT1) for low performing students assigned to this Tier, (c) Linking Tier 2 (LT2) for higher performing students assigned to this Tier, and (d) unique items that are being field tested for eventual placement on the test in future years. Note that the test for each Tier includes LT1 and LT2 so that students not placed in that Tier can perform not only on the items in their assigned Tier but also take items in the Tier where they are not placed. This crosswalk of items with students is important linking the two Tiers with both populations.

Summary of Alternate Eligible Content (AECs) by Item Code, Content Category, and Tier
In English Language Arts, four categories of content are included: Literature, Information, Writing, and language. In Mathematics, four content categories are included: numbers and operations, operations and algebra, geometry, and measurement and data. In Science, four categories of content are included: natural science, biology, physics, and earth-space. In all grades, these items are one of four types (Anchor, LT1, LT2, and Unique) and used in either Tier 1 and/or Tier 2.

See Appendix 1.7 (ELA), Appendix 1.8 (Math), Appendix 1.9 (Science)

Summary of Appendices/Findings. The PASA tests are systematically organized to reflect not only a broad range of Alternate Eligible Content (AECs) in English Language Arts (ELA), Mathematics, and Science but also a number of content categories to appropriately distinguish these complex constructs. Furthermore, this range is considered across both tiers and four types of items (anchor [A], linking to Tier 1 [LT1], linking to Tier 2 [LT2], and unique [U]). Two problems, however, result in stretching the item bank across so many dimensions: (a) many cells have no or few items, and (b) distinguishing anchor-linking items was unfruitful as both a- and b-parameters were missing where they should have been (A, LT1, and LT2) and present where they should not have been present (U). Therefore, to connect the scale to that used last year (2019), all items with a- and b-parameters were used irrespective of designation.

9.1.1 Item Quality (IQ) Reports for ELA-Math and Science

In the fall of 2019, all items in all subject areas, grades, and tier were revised in the number of prompts allowed, from multiple (2+) prompts to only 1. At the same time, errors were corrected and the language of the prompts clarified and reduced in verbiage. Each item was reviewed and revised by personnel in Behavioral Research and Teaching (BRT), then reviewed by personnel from the Bureau of Special Education, and finally reviewed by teachers in PA. Using the Distributed Item Review (DIR) process, teachers were assigned by grade band and subject area to respond to a number of statements reflecting item-standards alignment and bias. Two reports were published that document the entire process and the item quality.

See Appendix 1.10 (ELA and Mathematics) and Appendix 1.11 (Science)

Summary of Appendices/Findings The reports reflect positive reactions from teachers across all subject areas, grades, and tiers. They generally approved of the (a) correctness of the items, (b) the use of a single prompt, and (c) the structure/format of the item in line with the presentation of the main stimulus and options. As expected, some variation existed among the teacher teams and individual judges.

9.1.2 Identification of Standards with Common Items Across Tiers − Pivot Tables with Item Map files

In the summer of 2020, researchers at Behavioral Research and Teaching (BRT) used item maps to fix the scale to be the same as used in 2019, allowing comparisons to be made over time. In the end all items were used with a-parameters and b-parameters (irrespective of their code A, LT1, LT2, or U). In this appendix, tables present the number of items used within content categories.

See Appendix 1.12 (ELA, Mathematics, and Science)

Summary of Appendices/Findings. The content covered across tiers is sufficient in the number of items to allow the 2019 scale to be used.

10 Item Parameters and Item Fit

10.1 IRT Models for Scaling

10.1.1 ELA & Mathematics: 2PL IRT

$$P(Y = 1) = \frac{e^{a_j(\theta_i - b_j)}}{1 + e^{a_j(\theta_i - b_j)}}$$

10.1.2 Science: 1PL IRT w/ Guessing

$$P(Y = 1 | \theta_i, a, b_j, c_j) = c_j + (1 - c_j) \left(\frac{e^{a(\theta_i - b_j)}}{1 + e^{a(\theta_i - b_j)}} \right)$$

10.2　Item Parameter and Fit Summary

10.2.1　ELA

Item parameters and fit statistics are summarized by content area, grade, and tier for all PASA tests in the tables, below. RMSEA, the root mean square error of approximation, offers an indication of item fit to the two-parameter logistic (2PL) IRT models used in scaling ELA and Math, and the one-parameter logistic (2PL) IRT model with guessing parameter used in scaling Science. For RMSEA, values of < 0.03 indicate excellent fit, with values < 0.07 (see Steigler, 2007). Below, RMSEA item fit statistics are summarized, with the range, mean, and potentially problematic items (RMSEA ≥ 0.08) listed, for each ELA test. RMSEA for all ELA items are then given in the grade- and tier-level tables that follow:

- **Grade 3, Tier 1:** *Range* = 0.00 to 0.06; $M = 0.017$
- **Grade 3, Tier 2:** *Range* = 0.00 to 0.14; $M = 0.045$; E03AV4.1.1a.10, E03AV4.1.1a.12, E03AV4.1.1b.4, E03AV4.1.2a.7, and E03BK1.1.2b.7; RMSEA for item E03C1.3.1a.2 was not estimable
- **Grade 4, Tier 1:** *Range* = 0.00 to 0.04; $M = 0.015$
- **Grade 4, Tier 2:** *Range* = 0.00 to 0.06; $M = 0.017$
- **Grade 5, Tier 1:** *Range* = 0.00 to 0.08; $M = 0.014$; E05BK1.1.1c.4
- **Grade 5, Tier 2:** *Range* = 0.00 to 0.05; $M = 0.012$
- **Grade 6, Tier 1:** *Range* = 0.00 to 0.07; $M = 0.019$
- **Grade 6, Tier 2:** *Range* = 0.00 to 0.04; $M = 0.014$
- **Grade 7, Tier 1:** *Range* = 0.00 to 0.13; $M = 0.025$; E07AK1.1.1c.3
- **Grade 7, Tier 2:** *Range* = 0.00 to 0.09; $M = 0.025$; E07AK1.1.1a.8 and E07AV4.1.1a.9
- **Grade 8, Tier 1:** *Range* = 0.00 to 0.08; $M = 0.020$; E08BK1.1.2a.7
- **Grade 8, Tier 2:** *Range* = 0.00 to 0.04; $M = 0.016$
- **Grade 11, Tier 1:** *Range* = 0.00 to 0.04; $M = 0.013$
- **Grade 11, Tier 2:** *Range* = 0.00 to 0.05; $M = 0.013$

10.2.2 Grade 3 Tier 1

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
E03AC2.1.1a.3	FALSE	0.23	2.81	0	27.89	24	0.265	0.01
E03AC3.1.1a.8	TRUE	1.37	-0.15	0	62.78	22	p<.002	0.04
E03AK1.1.1a.10	FALSE	1.32	-0.89	0	23.76	22	0.36	0.01
E03AK1.1.1a.11	FALSE	1.55	-0.48	0	10.56	20	0.957	0.00
E03AK1.1.1a.7	TRUE	0.93	-0.19	0	23.95	24	0.465	0.00
E03AK1.1.2a.4	FALSE	2.03	-0.56	0	20.53	19	0.363	0.01
E03AK1.1.2a.5	FALSE	1.19	-0.13	0	24.84	21	0.254	0.01
E03AK1.1.3a.4	FALSE	1.37	-0.46	0	33.42	21	0.042	0.02
E03AK1.1.3a.9	FALSE	1.45	-0.48	0	28.38	20	0.101	0.02
E03AV4.1.1a.10	FALSE	0.88	-0.37	0	20.63	23	0.604	0.00
E03AV4.1.1a.12	FALSE	1.58	-0.92	0	29.77	22	0.124	0.02
E03AV4.1.1a.8	FALSE	1.15	-0.61	0	23.91	23	0.409	0.01
E03AV4.1.1b.3	FALSE	2.47	-0.71	0	33.62	18	0.014	0.03
E03AV4.1.1b.4	FALSE	1.36	-0.28	0	15.47	21	0.799	0.00
E03AV4.1.2a.8	TRUE	1.32	-0.77	0	35.98	24	0.055	0.02
E03BC2.1.2a.5	TRUE	1.18	-0.39	0	60.07	23	p<.002	0.04
E03BC3.1.1a.7	TRUE	1.44	-0.33	0	103.43	22	p<.002	0.06
E03BC3.1.1a.8	FALSE	1.10	0.06	0	21.61	21	0.422	0.00
E03BK1.1.2a.5	FALSE	1.26	-0.92	0	58.04	22	p<.002	0.04
E03BK1.1.2a.6	TRUE	1.19	-0.46	0	41.69	23	0.01	0.03
E03BK1.1.2b.11	FALSE	2.36	-0.95	0	19.49	18	0.362	0.01
E03BK1.1.2b.12	FALSE	1.71	-0.42	0	21.21	19	0.325	0.01
E03BV4.1.1a.8	FALSE	1.45	-0.38	0	10.97	21	0.963	0.00
E03BV4.1.1b.8	FALSE	0.83	-0.46	0	52.10	23	p<.002	0.03
E03C1.1.2a.4	FALSE	1.48	-0.61	0	22.89	20	0.294	0.01
E03C1.1.2a.5	FALSE	1.92	-0.61	0	19.71	20	0.476	0.00
E03C1.2.1a.3	FALSE	1.93	-0.84	0	26.80	19	0.109	0.02
E03C1.3.1a.1	FALSE	2.54	-0.65	0	34.11	18	0.012	0.03
E03D1.1.9a.2	FALSE	0.97	-0.89	0	23.69	24	0.48	0.00
E03D1.2.1a.1	FALSE	1.27	0.02	0	23.23	20	0.278	0.01

10.2.3 Grade 3 Tier 2

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
E03AC2.1.1a.4	TRUE	0.21	1.53	0	13.35	13	0.421	0.01
E03AC3.1.1a.8	TRUE	1.14	-1.44	0	11.30	11	0.419	0.01
E03AK1.1.1a.8	TRUE	0.46	-1.99	0	15.18	14	0.366	0.02
E03AK1.1.1a.9	TRUE	0.72	-1.98	0	14.98	14	0.38	0.02
E03AK1.1.2a.5	FALSE	1.01	-1.29	0	11.73	11	0.384	0.02
E03AK1.1.3a.6	TRUE	1.28	-1.63	0	16.87	11	0.112	0.05
E03AK1.1.3a.9	FALSE	2.27	-1.03	0	10.18	8	0.253	0.04
E03AV4.1.1a.10	TRUE	1.18	-0.43	0	62.59	12	p<.002	0.14
E03AV4.1.1a.12	FALSE	1.72	-1.78	0	14.05	5	0.015	0.10
E03AV4.1.1a.8	FALSE	0.72	-2.05	0	17.93	12	0.118	0.05
E03AV4.1.1b.4	TRUE	1.94	-1.42	0	43.83	9	p<.002	0.14
E03AV4.1.2a.7	TRUE	1.46	-1.86	0	38.07	9	p<.002	0.13
E03AV4.1.2a.9	TRUE	0.25	-1.07	0	27.37	15	0.026	0.06
E03BC3.1.1a.8	TRUE	1.26	-1.27	0	14.22	11	0.221	0.04
E03BK1.1.1a.4	TRUE	0.58	-1.48	0	25.04	14	0.034	0.06
E03BK1.1.2a.4	TRUE	0.67	-1.37	0	26.44	14	0.023	0.07
E03BK1.1.2a.5	FALSE	0.79	-2.38	0	8.56	10	0.575	0.00
E03BK1.1.2b.10	FALSE	1.50	-1.60	0	6.70	8	0.569	0.00
E03BK1.1.2b.7	TRUE	0.83	-0.78	0	35.67	13	p<.002	0.09
E03BK1.1.2b.9	FALSE	1.01	-0.79	0	7.24	11	0.779	0.00
E03BV4.1.1a.6	FALSE	1.99	-1.34	0	9.67	7	0.208	0.04
E03BV4.1.1a.8	FALSE	1.79	-1.02	0	11.78	9	0.226	0.04
E03BV4.1.1b.9	FALSE	0.82	-2.48	0	10.98	9	0.277	0.03
E03C1.1.1a.6	FALSE	1.14	-1.30	0	6.83	10	0.742	0.00
E03C1.1.2a.4	FALSE	1.25	-1.84	0	8.41	9	0.494	0.00
E03C1.1.2a.5	FALSE	3.22	-1.34	0	2.67	2	0.263	0.04
E03C1.3.1a.2	FALSE	4.62	-1.62	0	NA	0	NA	NA
E03D1.1.9a.4	FALSE	1.48	-1.19	0	9.19	9	0.42	0.01
E03D1.2.1a.2	FALSE	0.66	0.14	0	20.42	11	0.04	0.06
Eo3BV4.1.1b.1	TRUE	1.56	-1.07	0	14.66	11	0.199	0.04

10.2.4   Grade 4 Tier 1

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
E04AC2.1.1a.1	TRUE	2.78	-0.74	0	39.93	20	0.005	0.03
E04AK1.1.1a.7	TRUE	2.30	-0.82	0	60.90	22	p<.002	0.04
E04AK1.1.1a.8	FALSE	1.31	-0.26	0	31.54	22	0.086	0.02
E04AK1.1.1b.3	TRUE	1.98	-0.36	0	36.19	22	0.029	0.02
E04AK1.1.1b.4	FALSE	2.42	-0.66	0	13.49	19	0.812	0.00
E04AK1.1.1c.3	TRUE	1.53	-0.50	0	60.03	24	p<.002	0.04
E04AK1.1.1c.4	FALSE	2.07	-0.83	0	33.51	20	0.03	0.02
E04AK1.1.2a.7	FALSE	2.32	-0.56	0	29.27	20	0.083	0.02
E04AK1.1.2a.8	FALSE	0.58	0.86	0	27.79	23	0.224	0.01
E04AV4.1.1a.6	FALSE	1.25	-0.20	0	25.94	22	0.254	0.01
E04AV4.1.1a.7	TRUE	1.63	-0.52	0	26.09	24	0.349	0.01
E04AV4.1.1a.8	FALSE	2.50	-0.56	0	23.81	19	0.204	0.01
E04AV4.1.1b.3	FALSE	2.47	-0.71	0	11.58	20	0.93	0.00
E04AV4.1.1b.4	FALSE	1.09	-0.16	0	21.25	22	0.505	0.00
E04BC3.1.1a.4	FALSE	2.24	-0.68	0	24.98	20	0.202	0.01
E04BK1.1.1a.5	FALSE	0.30	-0.06	0	51.76	23	p<.002	0.03
E04BK1.1.1a.6	FALSE	1.31	0.14	0	30.21	21	0.088	0.02
E04BK1.1.1a.8	FALSE	1.27	-0.14	0	37.81	22	0.019	0.02
E04BK1.1.1c.9	FALSE	2.28	-0.80	0	18.65	20	0.544	0.00
E04BK1.1.2a.5	FALSE	0.84	-0.15	0	47.14	23	0.002	0.03
E04BK1.1.2b.2	FALSE	2.02	-0.38	0	20.64	20	0.418	0.00
E04BV4.1.1a.4	TRUE	0.98	-0.27	0	34.14	24	0.082	0.02
E04BV4.1.1b.10	TRUE	1.04	-0.70	0	41.10	24	0.016	0.02
E04BV4.1.1b.13	FALSE	2.18	-0.59	0	19.01	21	0.585	0.00
E04C1.1.1a.1	FALSE	2.45	-0.49	0	18.11	20	0.58	0.00
E04C1.1.2a.1	FALSE	1.18	-0.55	0	27.18	22	0.204	0.01
E04C1.3.1b.4	FALSE	0.95	0.13	0	22.80	23	0.473	0.00
E04D1.1.6a.1	FALSE	1.59	-0.33	0	26.43	22	0.234	0.01
E04D1.2.1a.4	FALSE	0.08	10.59	0	54.12	23	p<.002	0.03
E04D1.2.1a.5	FALSE	0.69	0.92	0	31.91	23	0.102	0.02

10.2.5 Grade 4 Tier 2

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
E04AC2.1.1a.1	FALSE	2.06	-1.92	0	8.88	5	0.11	0.05
E04AK1.1.1a.10	FALSE	1.22	-0.72	0	16.85	13	0.21	0.03
E04AK1.1.1a.9	TRUE	2.10	-1.49	0	5.02	11	0.93	0.00
E04AK1.1.1b.3	FALSE	1.31	-1.97	0	18.87	11	0.06	0.05
E04AK1.1.1b.4	FALSE	2.31	-1.77	0	3.93	5	0.56	0.00
E04AK1.1.1c.5	FALSE	0.98	-0.30	0	17.89	14	0.21	0.03
E04AK1.1.2a.7	FALSE	2.81	-1.38	0	1.74	8	0.99	0.00
E04AV4.1.1a.10	TRUE	1.21	-1.38	0	17.50	16	0.35	0.02
E04AV4.1.1a.6	FALSE	1.67	-1.34	0	6.93	12	0.86	0.00
E04AV4.1.1a.7	TRUE	1.24	-1.64	0	20.11	16	0.22	0.03
E04AV4.1.1a.9	TRUE	1.34	-0.65	0	27.22	15	0.03	0.06
E04AV4.1.1b.4	FALSE	1.38	-1.45	0	9.19	13	0.76	0.00
E04BC3.1.1a.6	TRUE	1.15	-1.26	0	14.62	16	0.55	0.00
E04BK1.1.1a.5	TRUE	0.72	-1.39	0	18.55	18	0.42	0.01
E04BK1.1.1a.7	TRUE	1.98	-1.72	0	8.51	10	0.58	0.00
E04BK1.1.1a.8	FALSE	1.17	-1.19	0	17.75	14	0.22	0.03
E04BK1.1.1c.8	FALSE	1.82	-1.25	0	19.25	12	0.08	0.05
E04BK1.1.2a.4	FALSE	1.06	-1.51	0	17.28	15	0.30	0.02
E04BK1.1.2b.1	FALSE	0.81	0.96	0	13.32	13	0.42	0.01
E04BK1.1.2b.5	FALSE	0.98	-0.59	0	15.83	14	0.32	0.02
E04BV4.1.1a.4	TRUE	0.73	-1.41	0	18.11	18	0.45	0.00
E04BV4.1.1b.11	FALSE	1.11	-1.89	0	9.26	14	0.81	0.00
E04BV4.1.1b.12	TRUE	0.96	-1.39	0	24.10	16	0.09	0.04
E04BV4.1.1b.9	FALSE	0.69	-1.31	0	11.04	16	0.81	0.00
E04C1.1.1a.2	FALSE	2.14	-1.60	0	3.08	7	0.88	0.00
E04C1.1.3a.3	FALSE	0.93	-1.59	0	13.84	15	0.54	0.00
E04C1.3.1b.3	FALSE	1.03	-1.35	0	12.52	14	0.56	0.00
E04D1.1.6a.2	FALSE	1.47	-0.98	0	12.89	14	0.54	0.00
E04D1.2.1a.4	FALSE	1.20	0.24	0	10.13	13	0.68	0.00
E04D1.2.1a.5	FALSE	1.86	-0.08	0	17.25	11	0.10	0.05

10.2.6 Grade 5 Tier 1

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
E05AC2.1.1a.7	FALSE	1.38	-0.98	0	18.85	21	0.595	0.00
EO5AC2.1.1b.4	FALSE	0.55	0.74	0	34.05	21	0.036	0.03
E05AK1.1.1a.4	FALSE	1.91	-0.77	0	26.12	18	0.097	0.02
E05AK1.1.1a.6	TRUE	1.99	-0.85	0	40.46	20	0.004	0.03
E05AK1.1.1b.7	FALSE	2.48	-0.65	0	24.90	16	0.072	0.02
E05AK1.1.1c.3	FALSE	2.29	-0.72	0	14.21	17	0.652	0.00
E05AK1.1.2a.1	FALSE	0.83	0.71	0	21.30	21	0.441	0.00
E05AK1.1.2b.1	FALSE	1.17	-0.16	0	32.74	20	0.036	0.03
E05AV4.1.1a.5	FALSE	2.31	-0.44	0	34.77	17	0.007	0.03
E05AV4.1.1a.7	FALSE	1.27	0.13	0	16.71	20	0.672	0.00
E05AV4.1.1b.7	FALSE	2.56	-0.68	0	26.52	16	0.047	0.03
E05AV4.1.2a.10	FALSE	0.78	-0.19	0	39.93	21	0.008	0.03
E05AV4.1.2a.7	FALSE	1.36	-0.70	0	12.09	20	0.913	0.00
E05BC2.1.2a.3	TRUE	0.53	0.89	0	26.29	23	0.287	0.01
E05BK1.1.1a.6	FALSE	1.19	-0.24	0	14.81	20	0.787	0.00
E05BK1.1.1a.7	FALSE	2.20	-0.89	0	15.34	17	0.571	0.00
E05BK1.1.1b.10	FALSE	0.73	0.76	0	22.08	21	0.395	0.01
E05BK1.1.1b.9	FALSE	1.23	-0.51	0	19.36	20	0.499	0.00
E05BK1.1.1c.4	TRUE	0.91	0.01	0	153.82	23	p<.002	0.08
E05BK1.1.2b.7	FALSE	0.45	-0.40	0	23.13	23	0.453	0.00
E05BV4.1.1a.7	TRUE	1.01	-0.57	0	51.22	23	p<.002	0.04
E05BV4.1.1a.8	FALSE	0.26	3.96	0	26.27	22	0.24	0.01
E05BV4.1.1c.3	FALSE	0.84	-0.44	0	35.57	22	0.034	0.03
E05BV4.1.2a.6	TRUE	2.20	-0.47	0	20.90	19	0.342	0.01
E05C1.1.1a.1	FALSE	0.88	-1.06	0	31.85	22	0.08	0.02
E05C1.2.2a.3	FALSE	1.33	0.05	0	17.24	20	0.637	0.00
E05CC1.2.3a.1	FALSE	0.28	1.33	0	30.87	23	0.126	0.02
E05CC1.3.2a.1	FALSE	1.51	-0.81	0	19.25	19	0.441	0.00
E05D1.1.6a.1	FALSE	1.31	-0.08	0	20.76	20	0.411	0.01
EO5C1.3.5a.3	FALSE	0.86	-0.93	0	20.25	22	0.567	0.00

10.2.7 Grade 5 Tier 2

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
E05AC2.1.1a.7	FALSE	1.68	-2.36	0	12.19	12	0.43	0.01
E05AC2.1.1a.8	FALSE	2.01	-1.63	0	17.87	14	0.213	0.02
E05AC2.1.1a.9	FALSE	1.52	-1.49	0	22.42	16	0.13	0.03
E05AC2.1.1b.5	FALSE	0.26	-2.91	0	25.94	18	0.101	0.03
E05AK1.1.1a.4	FALSE	1.46	-1.96	0	13.86	15	0.537	0.00
E05AK1.1.1c.4	TRUE	1.39	-1.63	0	14.70	18	0.683	0.00
E05AK1.1.2a.2	FALSE	1.41	-0.38	0	15.42	16	0.494	0.00
E05AK1.1.2b.2	FALSE	0.88	-1.35	0	21.95	18	0.234	0.02
E05AV4.1.1a.5	FALSE	3.27	-1.26	0	11.21	12	0.511	0.00
E05AV4.1.1b.6	FALSE	0.54	-1.52	0	20.04	18	0.331	0.01
E05AV4.1.2a.10	TRUE	0.67	-0.99	0	13.56	20	0.852	0.00
E05AV4.1.2a.7	FALSE	1.15	-1.97	0	12.81	16	0.687	0.00
E05AV4.1.2a.9	FALSE	0.83	-0.53	0	18.43	17	0.362	0.01
E05BC2.1.2a.3	FALSE	0.70	-0.46	0	17.76	17	0.404	0.01
E05BK1.1.1a.8	FALSE	2.10	-1.39	0	15.21	14	0.364	0.01
E05BK1.1.1a.9	FALSE	0.83	-2.50	0	19.55	17	0.298	0.02
E05BK1.1.1b.11	FALSE	0.59	-1.10	0	22.68	18	0.203	0.02
E05BK1.1.1b.9	FALSE	1.31	-1.59	0	14.73	16	0.544	0.00
E05BK1.1.1c.4	TRUE	0.77	-0.03	0	21.70	19	0.299	0.02
E05BK1.1.2b.9	TRUE	0.30	0.71	0	49.42	21	p<.002	0.05
E05BV4.1.1a.7	FALSE	1.52	-1.76	0	18.55	15	0.235	0.02
E05BV4.1.1a.9	FALSE	0.94	-0.12	0	10.60	16	0.834	0.00
E05BV4.1.1c.4	FALSE	0.62	-1.22	0	11.34	18	0.879	0.00
E05BV4.1.2a.6	TRUE	2.08	-1.74	0	11.24	15	0.735	0.00
E05C1.1.1a.2	FALSE	0.37	0.00	0	17.27	19	0.572	0.00
E05C1.2.2a.3	FALSE	0.91	-1.37	0	20.25	18	0.319	0.02
E05C1.3.5a.2	FALSE	0.46	-2.26	0	18.17	18	0.445	0.00
E05CC1.2.3a.1	FALSE	0.77	-0.18	0	20.43	17	0.253	0.02
E05CC1.3.2a.2	FALSE	0.49	-1.37	0	25.21	18	0.119	0.03
E05D1.1.6a.2	FALSE	1.06	-0.16	0	14.57	16	0.556	0.00

10.2.8 Grade 6 Tier 1

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
E06AC2.1.1a.1	FALSE	2.10	-0.17	0	20.91	19	0.342	0.01
E06AK1.1.1a.6	FALSE	1.90	-0.45	0	30.27	19	0.048	0.03
E06AK1.1.1a.7	FALSE	1.30	0.36	0	13.49	21	0.891	0.00
E06AK1.1.1b.7	TRUE	0.53	1.12	0	123.94	24	p<.002	0.07
E06AK1.1.1b.8	FALSE	1.89	-0.42	0	20.28	19	0.378	0.01
E06AK1.1.1c.3	FALSE	1.22	-0.11	0	24.83	21	0.255	0.01
E06AK1.1.2a.4	FALSE	1.49	-0.38	0	21.49	21	0.429	0.00
E06AK1.1.2b.4	FALSE	1.94	-0.39	0	25.45	19	0.146	0.02
E06AV4.1.1b.6	TRUE	1.04	-0.58	0	55.52	24	p<.002	0.04
E06AV4.1.1b.7	FALSE	0.78	0.95	0	28.51	22	0.159	0.02
E06AV4.1.2a.3	FALSE	0.73	-0.26	0	50.00	24	p<.002	0.04
E06AV4.1.2a.4	FALSE	1.10	-0.03	0	21.68	21	0.418	0.01
E06BC2.1.1a.7	FALSE	0.70	0.88	0	23.85	22	0.355	0.01
E06BC3.1.1b.4	FALSE	2.09	-0.43	0	27.79	19	0.087	0.02
E06BK1.1.1a.4	FALSE	0.63	-0.20	0	36.13	24	0.053	0.02
E06BK1.1.1a.5	FALSE	1.56	-0.27	0	25.58	21	0.223	0.02
E06BK1.1.1b.5	FALSE	2.82	-0.54	0	27.83	17	0.047	0.03
E06BK1.1.1b.6	TRUE	1.43	-0.51	0	34.95	24	0.069	0.02
E06BK1.1.2a.5	FALSE	1.27	0.18	0	33.76	21	0.038	0.03
E06BK1.1.2a.6	FALSE	1.74	-0.38	0	29.29	20	0.082	0.02
E06BV4.1.1a.4	FALSE	2.04	-0.85	0	19.18	19	0.446	0.00
E06BV4.1.1b.4	FALSE	1.21	-1.17	0	20.39	22	0.559	0.00
E06BV4.1.1b.5	TRUE	0.79	0.50	0	86.39	24	p<.002	0.05
E06BV4.1.2a.4	FALSE	1.36	-0.42	0	21.45	22	0.493	0.00
E06C1.1.1a.1	FALSE	1.55	-0.26	0	22.03	21	0.398	0.01
E06C1.2.2a.3	FALSE	0.83	0.04	0	47.49	23	0.002	0.03
E06C1.2.4a.4	FALSE	1.74	-0.79	0	22.00	20	0.34	0.01
E06C1.3.1a.3	FALSE	0.63	-0.94	0	31.04	23	0.122	0.02
E06C1.3.5a.1	FALSE	0.77	-0.50	0	37.93	23	0.026	0.03
E06D1.1.6a.5	FALSE	0.83	-0.29	0	14.79	22	0.871	0.00

10.2.9 Grade 6 Tier 2

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
E06AC2.1.1a.3	FALSE	0.96	-1.01	0	9.91	17	0.91	0.00
E06AK1.1.1a.8	TRUE	0.88	-1.76	0	33.23	19	0.02	0.04
E06AK1.1.1a.9	FALSE	1.56	-0.91	0	20.92	16	0.18	0.02
E06AK1.1.1b.7	FALSE	1.17	-1.12	0	14.86	17	0.61	0.00
E06AK1.1.1b.8	FALSE	1.46	-1.81	0	23.78	16	0.09	0.03
E06AK1.1.1c.4	FALSE	1.81	-1.69	0	20.30	15	0.16	0.03
E06AK1.1.2a.4	FALSE	2.02	-1.42	0	13.52	15	0.56	0.00
E06AK1.1.2b.4	FALSE	1.81	-1.59	0	11.80	15	0.69	0.00
E06AV4.1.1b.6	FALSE	3.26	-1.56	0	5.30	11	0.92	0.00
E06AV4.1.1b.8	TRUE	0.70	-1.05	0	24.58	19	0.17	0.02
E06AV4.1.2a.3	FALSE	0.70	-1.84	0	17.10	18	0.52	0.00
E06AV4.1.2a.4	FALSE	1.07	-1.18	0	18.50	17	0.36	0.01
E06BC2.1.1a.8	FALSE	1.90	-0.99	0	20.96	15	0.14	0.03
E06BC3.1.1b.5	FALSE	1.14	-1.75	0	17.55	16	0.35	0.01
E06BK1.1.1a.4	FALSE	0.63	-0.77	0	22.26	18	0.22	0.02
E06BK1.1.1a.6	TRUE	1.00	-1.46	0	27.09	19	0.10	0.03
E06BK1.1.1b.7	FALSE	1.06	-1.23	0	20.18	17	0.26	0.02
E06BK1.1.1b.8	FALSE	1.32	-1.54	0	9.34	16	0.90	0.00
E06BK1.1.2a.5	FALSE	1.06	-1.23	0	13.68	17	0.69	0.00
E06BK1.1.2a.7	FALSE	0.90	-0.46	0	13.80	16	0.61	0.00
E06BV4.1.1a.5	TRUE	2.38	-1.87	0	11.03	14	0.68	0.00
E06BV4.1.1b.5	FALSE	0.00	-730.74	0	13.57	19	0.81	0.00
E06BV4.1.1b.6	TRUE	0.62	-2.88	0	34.16	20	0.03	0.04
E06BV4.1.2a.5	FALSE	0.28	5.52	0	18.68	15	0.23	0.02
E06C1.1.1a.1	FALSE	1.79	-1.67	0	22.48	15	0.10	0.03
E06C1.2.2a.4	FALSE	1.48	-1.07	0	17.81	16	0.34	0.01
E06C1.2.4a.5	FALSE	0.85	-2.72	0	29.19	17	0.03	0.04
E06C1.3.1a.3	FALSE	0.53	-1.33	0	20.08	18	0.33	0.01
E06C1.3.5a.2	FALSE	0.71	-2.19	0	29.76	18	0.04	0.03
E06D1.1.6a.6	FALSE	0.85	-1.69	0	10.17	17	0.90	0.00

10.2.10 Grade 7 Tier 1

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
E07AK1.1.1a.6	FALSE	1.80	-0.06	0	79.42	20	p<.002	0.06
E07AK1.1.1a.7	TRUE	1.79	-0.58	0	30.46	21	0.083	0.02
E07AK1.1.1b.6	FALSE	1.02	-0.21	0	24.91	22	0.302	0.01
E07AK1.1.1b.8	FALSE	2.22	-0.59	0	35.10	16	0.004	0.04
E07AK1.1.1c.3	TRUE	0.13	2.84	0	384.76	26	p<.002	0.13
E07AK1.1.2a.6	TRUE	1.25	-0.10	0	30.54	22	0.106	0.02
E07AK1.1.2b.3	FALSE	2.01	-0.26	0	40.23	19	0.003	0.04
E07AK1.1.2b.4	FALSE	0.44	1.00	0	33.48	23	0.073	0.02
E07AV4.1.1a.6	FALSE	2.94	-0.57	0	13.71	15	0.547	0.00
E07AV4.1.1a.8	FALSE	1.18	0.59	0	23.90	21	0.298	0.01
E07AV4.1.1b.1	FALSE	1.49	-0.83	0	20.63	20	0.419	0.01
E07AV4.1.2a.6	FALSE	0.95	0.65	0	22.57	21	0.368	0.01
E07BC3.1.1a.5	TRUE	0.98	0.40	0	41.32	23	0.011	0.03
E07BC3.1.1b.4	TRUE	0.84	0.69	0	26.32	23	0.286	0.01
E07BK1.1.1a.5	FALSE	2.37	-0.66	0	38.98	16	p<.002	0.04
E07BK1.1.1a.7	FALSE	2.04	-0.35	0	9.81	18	0.938	0.00
E07BK1.1.1b.5	FALSE	0.49	-0.45	0	35.32	23	0.048	0.03
E07BK1.1.1b.7	FALSE	0.68	-0.72	0	32.02	23	0.1	0.02
E07BK1.1.1c.1	FALSE	1.39	0.29	0	33.54	21	0.041	0.03
E07BK1.1.2b.1	FALSE	1.27	0.56	0	65.15	20	p<.002	0.05
E07BV4.1.1a.5	FALSE	0.46	-0.18	0	29.60	22	0.129	0.02
E07BV4.1.1a.7	FALSE	1.68	-0.08	0	48.46	20	p<.002	0.04
E07BV4.1.1b.5	FALSE	2.14	-0.18	0	14.32	18	0.708	0.00
E07BV4.1.2a.7	FALSE	0.92	0.86	0	29.42	21	0.104	0.02
E07C1.1.1a.2	FALSE	0.87	0.68	0	18.88	21	0.593	0.00
E07C1.1.5a.1	FALSE	0.87	-0.49	0	30.72	22	0.102	0.02
E07C1.2.1a.1	FALSE	0.74	-0.35	0	18.41	22	0.682	0.00
E07C1.2.2a.3	FALSE	0.85	-0.06	0	20.95	22	0.524	0.00
E07C1.3.3a.5	FALSE	1.23	0.03	0	31.46	21	0.066	0.03
E07C1.3.5a.1	FALSE	1.21	-0.61	0	45.51	21	p<.002	0.04

10.2.11 Grade 7 Tier 2

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
E07AK1.1.1a.6	FALSE	1.74	-1.70	0	22.73	17	0.158	0.02
E07AK1.1.1a.8	TRUE	0.92	-1.15	0	143.83	20	p<.002	0.09
E07AK1.1.1b.6	FALSE	1.07	-1.82	0	9.57	18	0.945	0.00
E07AK1.1.1b.9	TRUE	0.73	-1.22	0	47.45	21	p<.002	0.04
E07AK1.1.1c.3	FALSE	0.98	-2.60	0	19.56	18	0.358	0.01
E07AK1.1.2a.6	FALSE	1.01	-1.60	0	34.88	18	0.01	0.04
E07AK1.1.2b.3	FALSE	1.55	-1.82	0	19.27	17	0.313	0.01
E07AK1.1.2b.5	FALSE	1.06	-1.93	0	15.20	18	0.648	0.00
E07AV4.1.1a.7	TRUE	1.19	-0.37	0	35.70	18	0.008	0.04
E07AV4.1.1a.9	TRUE	1.10	-1.50	0	131.92	20	p<.002	0.09
E07AV4.1.1b.2	TRUE	1.17	-1.88	0	26.76	20	0.142	0.02
E07AV4.1.2a.6	FALSE	0.84	-1.01	0	21.49	18	0.256	0.02
E07BC3.1.1a.5	FALSE	1.34	-1.01	0	10.67	16	0.83	0.00
E07BC3.1.1b.4	FALSE	0.89	-1.51	0	17.57	19	0.551	0.00
E07BK1.1.1a.6	FALSE	1.21	-1.45	0	27.94	18	0.063	0.03
E07BK1.1.1a.7	FALSE	1.00	-2.57	0	27.71	18	0.067	0.03
E07BK1.1.1b.6	FALSE	0.95	-0.79	0	18.07	17	0.385	0.01
E07BK1.1.1b.8	FALSE	1.33	-0.09	0	5.21	14	0.983	0.00
E07BK1.1.1c.2	FALSE	1.77	-1.69	0	12.49	17	0.769	0.00
E07BK1.1.2b.2	FALSE	1.78	-1.47	0	24.15	16	0.086	0.03
E07BV4.1.1a.6	FALSE	0.97	-1.62	0	23.17	18	0.184	0.02
E07BV4.1.1a.8	FALSE	1.35	-0.92	0	10.78	16	0.823	0.00
E07BV4.1.1b.5	FALSE	2.45	-1.76	0	11.46	14	0.649	0.00
E07BV4.1.2a.8	FALSE	1.66	-0.85	0	34.70	15	0.003	0.04
E07C1.1.1a.2	FALSE	0.74	-1.40	0	17.94	19	0.526	0.00
E07C1.1.5a.2	FALSE	0.99	-1.79	0	20.42	18	0.31	0.01
E07C1.2.1a.1	FALSE	0.58	-2.05	0	31.84	19	0.033	0.03
E07C1.2.2a.4	FALSE	0.50	-2.05	0	18.85	19	0.466	0.00
E07C1.3.3a.6	FALSE	0.15	2.20	0	25.49	18	0.112	0.02
E07C1.3.5a.2	FALSE	0.70	-1.38	0	16.69	19	0.611	0.00

10.2.12 Grade 8 Tier 1

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
E08AC2.1.1a.7	TRUE	1.12	0.10	0	31.01	22	0.096	0.02
E08AK1.1.1a.5	FALSE	0.78	1.14	0	23.36	21	0.325	0.01
E08AK1.1.1a.6	FALSE	1.27	-0.40	0	20.47	19	0.367	0.01
E08AK1.1.1b.5	FALSE	1.88	-0.60	0	13.15	17	0.726	0.00
E08AK1.1.1b.7	FALSE	1.00	-1.11	0	27.88	21	0.143	0.02
E08AK1.1.1c.3	FALSE	0.81	-0.22	0	39.00	21	0.01	0.04
E08AK1.1.2b.4	FALSE	1.50	-0.27	0	15.11	19	0.716	0.00
E08AK1.1.2b.5	FALSE	0.54	1.60	0	34.39	22	0.045	0.03
E08AV4.1.1a.5	FALSE	2.28	-0.14	0	28.66	18	0.053	0.03
E08AV4.1.1a.7	FALSE	1.70	-0.31	0	24.07	19	0.193	0.02
E08AV4.1.1b.6	FALSE	0.64	-0.62	0	20.69	22	0.54	0.00
E08AV4.1.2a.7	TRUE	0.51	0.86	0	36.22	24	0.052	0.03
E08BC2.1.1a.7	FALSE	0.08	4.58	0	31.65	24	0.136	0.02
E08BC3.1.1a.4	FALSE	0.70	-0.12	0	21.02	21	0.458	0.00
E08BK1.1.1a.7	FALSE	2.06	-0.66	0	28.95	17	0.035	0.03
E08BK1.1.1a.9	FALSE	2.92	-0.50	0	23.26	15	0.079	0.03
E08BK1.1.1b.3	FALSE	1.91	-0.31	0	28.92	19	0.067	0.03
E08BK1.1.1b.4	FALSE	2.28	-0.59	0	36.70	17	0.004	0.04
E08BK1.1.2a.7	TRUE	1.66	-0.13	0	112.96	20	p<.002	0.08
E08BK1.1.2b.3	FALSE	1.86	-0.16	0	36.67	18	0.006	0.04
E08BV4.1.1a.6	FALSE	0.20	1.50	0	36.75	24	0.046	0.03
E08BV4.1.1a.9	FALSE	1.46	-0.14	0	20.42	19	0.37	0.01
E08BV4.1.1b.4	FALSE	0.77	0.46	0	21.46	21	0.431	0.01
E08BV4.1.2a.2	FALSE	1.35	-0.21	0	28.94	19	0.067	0.03
E08C1.1.2a.5	FALSE	2.13	-0.18	0	21.62	18	0.249	0.02
E08C1.1.5a.2	FALSE	1.05	-0.20	0	21.06	20	0.394	0.01
E08C1.2.1a.1	FALSE	1.23	-0.33	0	18.15	19	0.512	0.00
E08C1.2.6a.3	FALSE	0.75	0.20	0	22.17	21	0.39	0.01
E08C1.3.1a.4	FALSE	2.24	-0.52	0	26.19	17	0.071	0.03
E08C1.3.3a.3	FALSE	0.57	0.01	0	37.59	22	0.02	0.03

10.2.13 Grade 8 Tier 2

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
E08AC2.1.1a.7	FALSE	1.59	-1.48	0	19.42	16	0.25	0.02
E08AK1.1.1a.6	FALSE	0.68	-2.28	0	23.88	18	0.16	0.02
E08AK1.1.1a.7	FALSE	1.31	-1.33	0	11.49	16	0.78	0.00
E08AK1.1.1b.5	FALSE	1.67	-2.50	0	13.08	13	0.44	0.00
E08AK1.1.1b.6	FALSE	0.61	0.54	0	30.27	17	0.02	0.03
E08AK1.1.1c.4	FALSE	1.73	-2.28	0	10.54	15	0.78	0.00
E08AK1.1.2b.4	FALSE	1.55	-1.57	0	24.39	16	0.08	0.03
E08AK1.1.2b.5	FALSE	1.07	-0.98	0	14.41	17	0.64	0.00
E08AV4.1.1a.6	TRUE	1.10	-1.09	0	28.24	19	0.08	0.03
E08AV4.1.1b.5	FALSE	2.41	-1.60	0	19.10	14	0.16	0.02
E08AV4.1.1b.6	FALSE	0.38	-2.31	0	20.04	19	0.39	0.01
E08AV4.1.2a.7	TRUE	0.85	-0.88	0	42.44	20	0.00	0.04
E08BC2.1.1a.8	FALSE	0.55	-0.47	0	11.17	18	0.89	0.00
E08BC3.1.1a.5	FALSE	1.37	-0.74	0	12.86	15	0.61	0.00
E08BK1.1.1a.10	TRUE	0.61	-1.24	0	10.24	20	0.96	0.00
E08BK1.1.1a.7	FALSE	1.49	-2.95	0	12.84	10	0.23	0.02
E08BK1.1.1b.4	FALSE	3.48	-1.83	0	18.07	9	0.03	0.04
E08BK1.1.1b.6	FALSE	-0.15	0.83	0	37.49	19	0.01	0.04
E08BK1.1.2a.7	FALSE	0.71	-1.32	0	18.74	18	0.41	0.01
E08BK1.1.2b.4	FALSE	0.86	-2.21	0	31.62	18	0.02	0.03
E08BV4.1.1a.7	FALSE	0.58	0.15	0	9.66	18	0.94	0.00
E08BV4.1.1a.8	FALSE	0.52	0.10	0	12.94	18	0.80	0.00
E08BV4.1.1b.5	FALSE	1.74	-0.68	0	24.49	14	0.04	0.03
E08BV4.1.2a.3	TRUE	1.56	-1.51	0	29.17	18	0.05	0.03
E08C1.1.2a.6	FALSE	1.63	-1.43	0	16.43	16	0.42	0.01
E08C1.1.5a.3	FALSE	1.55	-2.09	0	11.22	16	0.80	0.00
E08C1.2.1a.1	FALSE	1.39	-1.56	0	18.26	16	0.31	0.01
E08C1.2.6a.4	FALSE	0.60	-1.16	0	19.96	18	0.34	0.01
E08C1.3.1a.4	FALSE	1.57	-2.05	0	19.46	16	0.25	0.02
E08C1.3.3a.4	FALSE	0.91	-1.57	0	27.90	17	0.05	0.03

10.2.14 Grade 11 Tier 1

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
CC1.2.1112Ab.5	FALSE	1.01	0.20	0	13.78	20	0.84	0.00
CC1.2.1112Ba.4	FALSE	0.90	-0.70	0	41.15	20	0.00	0.04
CC1.2.1112Ba.5	FALSE	0.81	0.11	0	22.91	21	0.35	0.01
CC1.2.1112Ba.6	FALSE	2.10	-0.18	0	27.20	16	0.04	0.04
CC1.2.1112Bb.8	FALSE	0.56	-1.43	0	28.60	21	0.12	0.03
CC1.2.1112Ca.1	FALSE	0.09	12.40	0	23.61	23	0.43	0.01
CC1.2.1112Da.1	TRUE	1.50	-0.29	0	23.02	20	0.29	0.02
CC1.2.1112Ea.3	FALSE	1.36	-0.06	0	18.31	19	0.50	0.00
CC1.2.1112Ea.4	FALSE	1.17	0.02	0	19.97	19	0.40	0.01
CC1.2.1112Ja.4	FALSE	0.09	9.35	0	28.73	23	0.19	0.02
CC1.2.1112Ka.4	FALSE	0.79	0.12	0	19.40	21	0.56	0.00
CC1.2.1112Ka.5	FALSE	0.58	-0.16	0	30.35	21	0.09	0.03
CC1.2.1112Kb.5	FALSE	0.93	0.17	0	15.18	20	0.77	0.00
CC1.2.1112La.4	FALSE	0.96	-0.19	0	37.75	20	0.01	0.04
CC1.3.1112Ab.4	FALSE	1.42	-0.94	0	14.31	18	0.71	0.00
CC1.3.1112Ba.4	FALSE	1.15	-0.11	0	14.64	19	0.74	0.00
CC1.3.1112Ba.6	TRUE	1.20	-0.10	0	33.18	21	0.04	0.03
CC1.3.1112Bb.3	FALSE	0.65	2.11	0	23.82	21	0.30	0.01
CC1.3.1112Bc.1	FALSE	2.08	-0.46	0	17.90	17	0.40	0.01
CC1.3.1112Fa.8	FALSE	0.87	-1.18	0	30.71	20	0.06	0.03
CC1.3.1112Ia.3	TRUE	1.00	-0.53	0	23.53	22	0.37	0.01
CC1.3.1112Ia.4	FALSE	1.40	0.26	0	16.40	19	0.63	0.00
CC1.3.1112Ja.5	TRUE	2.07	-0.16	0	11.38	18	0.88	0.00
CC1.3.1112Ja.6	FALSE	0.96	-0.46	0	24.95	20	0.20	0.02
CC1.4.1112Ba.4	FALSE	0.78	0.59	0	26.89	20	0.14	0.02
CC1.4.1112Ca.3	FALSE	0.67	0.33	0	25.69	21	0.22	0.02
CC1.4.1112Da.2	FALSE	0.81	-0.15	0	15.66	21	0.79	0.00
CC1.4.1112Ha.3	FALSE	0.73	0.17	0	14.41	21	0.85	0.00
CC1.4.1112Ka.1	FALSE	1.05	0.16	0	18.36	20	0.56	0.00
CC1.4.1112Ma.1	FALSE	1.43	-0.81	0	9.30	18	0.95	0.00

10.2.15 Grade 11 Tier 2

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
CC1.2.1112Ab.5	FALSE	0.88	-1.35	0	17.35	16	0.36	0.01
CC1.2.1112Ba.4	FALSE	0.51	-3.10	0	26.11	17	0.07	0.03
CC1.2.1112Ba.7	FALSE	0.77	-0.08	0	17.36	16	0.36	0.01
CC1.2.1112Bb.9	FALSE	0.67	-1.26	0	13.10	17	0.73	0.00
CC1.2.1112Ca.2	FALSE	0.19	0.01	0	17.14	18	0.51	0.00
CC1.2.1112Da.2	FALSE	1.39	-2.12	0	22.46	14	0.07	0.04
CC1.2.1112Ea.3	FALSE	0.94	-1.71	0	12.21	16	0.73	0.00
CC1.2.1112Ea.5	FALSE	0.62	-0.33	0	33.91	17	0.01	0.05
CC1.2.1112Ja.4	FALSE	0.10	7.62	0	22.67	18	0.20	0.02
CC1.2.1112Ka.5	FALSE	0.93	-1.08	0	15.81	17	0.54	0.00
CC1.2.1112Ka.7	FALSE	1.39	-1.12	0	9.50	15	0.85	0.00
CC1.2.1112Kb.6	FALSE	1.06	-1.54	0	13.27	16	0.65	0.00
CC1.2.1112La.5	FALSE	0.29	-1.23	0	16.46	17	0.49	0.00
CC1.2.Ba.1	FALSE	2.20	-1.63	0	5.74	12	0.93	0.00
CC1.3.1112Ab.4	FALSE	1.76	-2.00	0	8.28	12	0.76	0.00
CC1.3.1112Ba.4	TRUE	1.03	-0.97	0	26.38	18	0.09	0.03
CC1.3.1112Ba.5	FALSE	1.18	-1.06	0	9.56	16	0.89	0.00
CC1.3.1112Bb.3	FALSE	1.03	0.75	0	17.95	14	0.21	0.03
CC1.3.1112Bc.1	FALSE	1.43	-2.11	0	16.81	14	0.27	0.02
CC1.3.1112Fa.9	TRUE	1.06	-1.05	0	26.39	18	0.09	0.03
CC1.3.1112Ia.4	TRUE	1.47	-1.34	0	26.29	17	0.07	0.03
CC1.3.1112Ia.5	TRUE	0.68	-2.55	0	34.40	18	0.01	0.04
CC1.3.1112Ja.7	FALSE	1.91	-1.62	0	9.87	12	0.63	0.00
CC1.3.1112Ja.8	FALSE	1.07	-1.13	0	15.56	16	0.48	0.00
CC1.4.1112Ba.5	FALSE	0.94	-0.54	0	26.61	16	0.05	0.04
CC1.4.1112Ca.3	FALSE	0.84	-0.99	0	26.15	17	0.07	0.03
CC1.4.1112Da.2	FALSE	0.79	-1.23	0	9.57	17	0.92	0.00
CC1.4.1112Ha.4	FALSE	1.18	-1.08	0	12.71	16	0.69	0.00
CC1.4.1112Ka.2	FALSE	0.99	-2.23	0	8.69	15	0.89	0.00
CC1.4.1112Ma.2	FALSE	0.86	-0.83	0	9.93	17	0.91	0.00

10.2.16 Math

RMSEA item fit statistics are summarized, with the range, mean, and potentially problematic items (RMSEA ≥ 0.08) listed, for each Math test. RMSEA for all Math items are then given in the grade- and tier-level tables that follow:

- **Grade 3, Tier 1:** *Range* = 0.00 to 0.04; *M* = 0.018
- **Grade 3, Tier 2:** *Range* = 0.00 to 0.09; *M* = 0.037; M03BO3.1.5b.3 and M03DM1.2.1a.5
- **Grade 4, Tier 1:** *Range* = 0.00 to 0.04; *M* = 0.017
- **Grade 4, Tier 2:** *Range* = 0.00 to 0.18; *M* = 0.038; M04AT1.1.3a.2 and M04CG1.1.2a.6
- **Grade 5, Tier 1:** *Range* = 0.00 to 0.04; *M* = 0.020
- **Grade 5, Tier 2:** *Range* = 0.00 to 0.06; *M* = 0.024
- **Grade 6, Tier 1:** *Range* = 0.00 to 0.06; *M* = 0.020
- **Grade 6, Tier 2:** *Range* = 0.00 to 0.12; *M* = 0.026; M06AR112a_2019.1 and M06DS1.1.2a.11
- **Grade 7, Tier 1:** *Range* = 0.00 to 0.07; *M* = 0.027
- **Grade 7, Tier 2:** *Range* = 0.00 to 0.07; *M* = 0.020
- **Grade 8, Tier 1:** *Range* = 0.00 to 0.12; *M* = 0.028; M08BF2.1.1a.22
- **Grade 8, Tier 2:** *Range* = 0.00 to 0.05; *M* = 0.015
- **Grade 11, Tier 1:** *Range* = 0.00 to 0.08; *M* = 0.027; CC24HSB5a_2019M.3
- **Grade 11, Tier 2:** *Range* = 0.00 to 0.07; *M* = 0.013; RMSEA for items CC.2.3.HSA13a.15 and CC23HSA13a_2019.1 were not estimable

10.2.17 Grade 3 Tier 1

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
M03AF1.1.1a.3	FALSE	1.16	-0.54	0	32.33	22	0.072	0.02
M03AF111a_2019.2	FALSE	1.34	-0.56	0	27.46	20	0.123	0.02
M03AF111a_2019.4	FALSE	0.93	-0.13	0	42.50	22	0.005	0.03
M03AT1.1.1a.4	FALSE	1.33	-0.04	0	27.50	21	0.155	0.02
M03AT1.1.1a.5	FALSE	1.44	-0.17	0	34.94	21	0.029	0.02
M03AT1.1.2a.10	FALSE	2.09	-0.66	0	31.41	19	0.036	0.02
M03AT1.1.2a.12	FALSE	2.14	-0.26	0	35.06	19	0.014	0.03
M03AT1.1.2b.4	FALSE	0.93	-0.18	0	41.08	22	0.008	0.03
M03AT1.1.4a.4	FALSE	0.29	1.63	0	54.54	24	p<.002	0.03
M03AT1.1.4a.6	FALSE	0.53	0.29	0	29.48	24	0.203	0.01
M03AT1.1.4a.8	FALSE	0.30	1.83	0	60.58	24	p<.002	0.04
M03AT111a_2019.1	FALSE	1.24	-0.01	0	17.23	21	0.697	0.00
M03BO1.1.1a.3	FALSE	0.14	3.46	0	41.17	24	0.016	0.03
M03BO3.1.5b.1	FALSE	1.43	0.19	0	24.43	20	0.224	0.01
M03BO315_2019.1	FALSE	1.36	-0.63	0	40.96	20	0.004	0.03
M03CG1.1.3a.3	FALSE	0.67	0.65	0	34.17	23	0.063	0.02
M03CG111a_2019.3	FALSE	2.32	-1.02	0	29.22	17	0.033	0.03
M03CG111a.2020.1.1	FALSE	2.03	-1.08	0	16.56	18	0.554	0.00
M03DM1.1.1a.1	FALSE	1.30	-0.31	0	37.41	21	0.015	0.03
M03DM1.1.1a.2	FALSE	0.91	0.76	0	14.82	22	0.87	0.00
M03DM1.1.1a.8	FALSE	0.64	0.76	0	25.69	23	0.316	0.01
M03DM1.2.1a.1	FALSE	1.04	-0.93	0	28.36	22	0.164	0.02
M03DM1.2.3a.5	TRUE	1.09	0.00	0	28.18	23	0.209	0.01
M03DM1.3.1a.4	FALSE	0.51	1.95	0	31.94	23	0.101	0.02
M03DM1.3.1a.7	FALSE	1.76	-0.53	0	34.39	20	0.024	0.03
M03DM1.3.1a.8	FALSE	1.88	-0.91	0	20.16	18	0.324	0.01
M03DM121a_2019.3	FALSE	1.09	0.07	0	49.81	21	p<.002	0.04
M03DM2.1.1a.11	FALSE	1.48	-0.81	0	19.08	20	0.517	0.00
M03DM2.1.1a.12	FALSE	1.69	-0.28	0	20.09	20	0.452	0.00
M03DM3.1.2a.1	FALSE	2.17	-0.54	0	29.02	19	0.066	0.02

10.2.18   Grade 3 Tier 2

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
M03AF1.1.1a.1	FALSE	0.92	-1.56	0	12.35	9	0.19	0.04
M03AF1.1.1a.2	FALSE	0.58	0.76	0	14.99	13	0.31	0.03
M03AF1.1.1a.5	FALSE	0.47	1.16	0	24.10	13	0.03	0.07
M03AF1.1.1a.6	FALSE	0.58	0.17	0	8.87	12	0.71	0.00
M03AF111a_2019.2	FALSE	0.86	-2.11	0	13.31	8	0.10	0.06
M03AT1.1.1a.5	FALSE	1.67	-1.58	0	4.57	5	0.47	0.00
M03AT1.1.1a.6	FALSE	0.82	-1.59	0	9.80	10	0.46	0.00
M03AT1.1.2b.1	FALSE	1.14	-1.44	0	8.36	9	0.50	0.00
M03AT1.1.2b.4	FALSE	0.52	-2.21	0	8.37	10	0.59	0.00
M03AT1.1.4a.4	FALSE	0.95	-0.27	0	12.24	10	0.27	0.03
M03AT1.1.4a.6	FALSE	0.93	-0.82	0	13.14	10	0.22	0.04
M03AT1.1.4a.8	FALSE	1.16	0.10	0	14.36	9	0.11	0.06
M03BO1.1.1a.4	FALSE	0.63	-0.10	0	11.75	11	0.38	0.02
M03BO3.1.1a.4	FALSE	1.28	-0.91	0	12.81	9	0.17	0.05
M03BO3.1.5b.1	FALSE	1.42	-1.15	0	6.75	8	0.56	0.00
M03BO3.1.5b.3	FALSE	3.16	-1.21	0	8.54	4	0.07	0.08
M03CG1.1.1a.2	FALSE	1.80	-1.87	0	5.82	4	0.21	0.05
M03CG1.1.1a.4	FALSE	2.26	-1.49	0	3.35	4	0.50	0.00
M03CG1.1.3a.1	FALSE	1.30	-1.32	0	13.32	8	0.10	0.06
M03DM1.1.1a.2	FALSE	0.87	-0.28	0	20.39	11	0.04	0.07
M03DM1.1.1a.8	FALSE	1.07	-0.52	0	17.82	10	0.06	0.06
M03DM1.2.1a.5	FALSE	0.54	-5.76	0	5.13	2	0.08	0.09
M03DM1.2.1a.7	FALSE	0.45	-1.22	0	22.35	11	0.02	0.07
M03DM1.3.1a.4	FALSE	0.60	0.20	0	18.15	12	0.11	0.05
M03DM1.3.1a.6	FALSE	1.12	-1.30	0	5.16	9	0.82	0.00
M03DM121a_2019.3	FALSE	0.48	-2.84	0	15.44	10	0.12	0.05
M03DM2.1.1a.11	TRUE	0.50	-2.56	0	14.12	12	0.29	0.03
M03DM2.1.1a.3	FALSE	1.75	-1.15	0	7.44	7	0.38	0.02
M03DM3.1.2a.2	FALSE	1.90	-1.28	0	9.38	7	0.23	0.04
M03DM4.1.1a.1	FALSE	0.57	0.73	0	17.31	13	0.18	0.04

10.2.19   Grade 4 Tier 1

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
M04AF1.1.1a.1	FALSE	0.29	2.92	0	19.63	21	0.545	0.00
M04AF1.1.2a.7	FALSE	0.51	0.35	0	54.44	22	p<.002	0.04
M04AF1.1.2a.9	TRUE	2.04	-0.40	0	37.23	21	0.016	0.03
M04AF2.1.1a.1	FALSE	0.61	1.15	0	27.35	21	0.16	0.02
M04AF2.1.2a.3	FALSE	1.02	0.10	0	18.34	20	0.565	0.00
M04AT1.1.1a.1	FALSE	1.26	-0.09	0	38.73	20	0.007	0.03
M04AT1.1.1a.2	FALSE	0.87	0.51	0	27.87	21	0.144	0.02
M04AT1.1.3a.2	FALSE	2.02	-0.76	0	24.54	18	0.138	0.02
M04AT1.1.3a.5	TRUE	1.92	-0.67	0	44.02	21	0.002	0.03
M04AT113a_2019.2	FALSE	1.59	0.36	0	54.65	19	p<.002	0.04
M04AT2.1.1a.14	FALSE	1.40	-0.31	0	27.47	19	0.094	0.02
M04AT2.1.1a.8	FALSE	0.95	0.17	0	22.43	20	0.318	0.01
M04AT2.1.2a.7	FALSE	2.51	-0.75	0	14.81	16	0.539	0.00
M04BO1.1.3a.1	FALSE	1.83	-0.45	0	19.59	18	0.357	0.01
M04BO1.1.3a.3	FALSE	1.86	-0.52	0	28.70	18	0.052	0.02
M04BO1.1.3a.4	FALSE	0.57	0.40	0	41.86	22	0.007	0.03
M04BO113a_2019.1	FALSE	1.58	0.00	0	21.39	19	0.316	0.01
M04BO2.1.1a.7	FALSE	1.47	0.17	0	40.14	19	0.003	0.03
M04BO3.1.1a.7	FALSE	2.20	-0.46	0	13.80	17	0.681	0.00
M04BO311a_2019.3	FALSE	2.34	-0.82	0	14.16	17	0.656	0.00
M04CG1.1.2a.1	FALSE	2.27	-0.59	0	16.83	17	0.466	0.00
M04CG1.1.2a.3	TRUE	2.16	-0.70	0	32.63	21	0.05	0.02
M04CG1.1.2a.4	FALSE	2.10	-0.64	0	24.59	18	0.137	0.02
M04DM1.1.1a.1	FALSE	1.15	-0.23	0	15.66	20	0.737	0.00
M04DM1.1.1a.2	FALSE	0.51	1.19	0	16.09	21	0.765	0.00
M04DM1.1.1a.6	FALSE	0.76	-0.03	0	27.33	22	0.199	0.01
M04DM1.1.3a.6	FALSE	1.52	-0.36	0	20.13	19	0.387	0.01
M04DM113a_2019.2	TRUE	0.93	-0.22	0	41.70	23	0.01	0.03
M04DM2.1.2a.4	FALSE	1.74	-0.42	0	35.47	19	0.012	0.03
M04DM212a_2019.1	FALSE	1.56	-0.30	0	26.40	19	0.119	0.02

10.2.20 Grade 4 Tier 2

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
M04AF1.1.2a.1	FALSE	1.38	-1.76	0	19.14	9	0.024	0.06
M04AF1.1.2a.2	FALSE	1.43	-1.22	0	12.90	10	0.229	0.03
M04AF1.1.2a.7	FALSE	0.48	-0.44	0	18.18	13	0.151	0.04
M04AF2.1.2a.1	FALSE	1.15	-1.37	0	14.84	12	0.25	0.03
M04AF2.1.2a.3	FALSE	1.16	-0.72	0	18.52	12	0.101	0.04
M04AT1.1.3a.2	FALSE	2.07	-2.07	0	9.42	1	0.002	0.17
M04AT1.1.3a.3	FALSE	1.10	-1.24	0	6.17	12	0.907	0.00
M04AT2.1.2a.1	FALSE	1.00	-0.32	0	13.07	12	0.364	0.02
M04AT2.1.2a.12	FALSE	1.21	-0.58	0	14.28	11	0.218	0.03
M04AT2.1.2a.13	FALSE	1.31	-0.39	0	11.10	11	0.435	0.01
M04AT2.1.2a.4	FALSE	0.68	0.06	0	8.75	13	0.792	0.00
M04AT2.1.2a.7	FALSE	2.60	-1.55	0	6.13	4	0.19	0.04
M04AT212a_2019.2	TRUE	0.60	0.02	0	25.90	15	0.039	0.05
M04BO1.1.3a.1	FALSE	0.70	-3.45	0	7.33	8	0.502	0.00
M04BO1.1.3a.10	TRUE	1.22	-1.45	0	11.02	11	0.442	0.00
M04BO1.1.3a.4	FALSE	0.79	-0.41	0	11.76	13	0.548	0.00
M04BO113a_2019.1	FALSE	1.65	-1.19	0	11.09	9	0.269	0.03
M04BO113a_2019.3	TRUE	1.67	-0.97	0	20.68	11	0.037	0.06
M04BO211a_2019.1	TRUE	1.32	-0.46	0	15.18	12	0.232	0.03
M04BO3.1.1a.7	FALSE	2.57	-1.35	0	12.37	5	0.03	0.07
M04CG1.1.2a.2	TRUE	1.74	-1.83	0	4.72	4	0.317	0.03
M04CG1.1.2a.6	TRUE	1.27	-1.98	0	40.45	9	p<.002	0.11
M04CG112a_2019.4	TRUE	0.94	-0.24	0	24.15	13	0.03	0.06
M04DM1.1.1a.2	FALSE	0.75	0.12	0	17.27	12	0.14	0.04
M04DM1.1.3a.1	FALSE	1.27	-0.29	0	6.74	11	0.82	0.00
M04DM1.1.3a.6	FALSE	1.50	-1.23	0	10.80	10	0.373	0.02
M04DM111a_2019.3	TRUE	0.47	-2.14	0	36.27	15	0.002	0.07
M04DM113a_2019.1	FALSE	0.90	0.02	0	14.45	12	0.273	0.03
M04DM2.1.2a.4	FALSE	1.69	-1.78	0	12.73	7	0.079	0.06
M04DM212a_2019.1	FALSE	1.34	-1.28	0	4.65	10	0.913	0.00

10.2.21   Grade 5 Tier 1

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
M05AF1.1.1a.14	TRUE	0.96	0.36	0	37.01	21	0.017	0.03
M05AF1.1.1a.3	FALSE	0.80	0.39	0	16.38	20	0.693	0.00
M05AF111a_2019.3	FALSE	0.68	0.58	0	31.85	21	0.061	0.02
M05AF2.1.2a.7	FALSE	0.62	1.09	0	23.92	20	0.246	0.01
M05AT1.1.1a.7	FALSE	1.14	0.41	0	37.24	19	0.007	0.03
M05AT1.1.2a.3	FALSE	1.04	0.46	0	22.57	19	0.257	0.01
M05AT1.1.4a.12	FALSE	1.01	0.61	0	47.93	19	p<.002	0.04
M05AT1.1.5a.3	FALSE	0.15	6.13	0	21.61	22	0.484	0.00
M05AT111a_2019.1	FALSE	2.46	-0.10	0	16.02	15	0.381	0.01
M05AT2.1.1a.11	FALSE	0.41	0.27	0	33.48	21	0.041	0.03
M05AT2.1.1a.13	FALSE	1.85	0.01	0	7.82	17	0.97	0.00
M05AT2.1.1a.2	TRUE	1.28	-0.38	0	49.57	20	p<.002	0.04
M05AT2.1.1a.4	FALSE	1.67	0.11	0	31.05	17	0.02	0.03
M05AT2.1.1a.6	FALSE	1.20	-0.54	0	23.98	18	0.156	0.02
M05AT2.1.2a.1	FALSE	0.90	0.07	0	25.87	20	0.17	0.02
M05AT2.1.2a.7	FALSE	0.71	1.06	0	40.81	20	0.004	0.03
M05AT2.1.3a.9	FALSE	0.02	24.44	0	20.63	22	0.543	0.00
M05AT212a_2019.4	FALSE	0.67	0.83	0	30.32	21	0.086	0.02
M05BO2.1.1a.1	FALSE	1.38	0.59	0	19.89	18	0.339	0.01
M05BO2.1.1a.2	FALSE	1.05	0.93	0	20.51	19	0.364	0.01
M05BO2.1.1a.9	FALSE	0.68	0.55	0	50.49	21	p<.002	0.04
M05BO2.1.1b.7	FALSE	0.86	-0.23	0	21.35	20	0.377	0.01
M05CG1.1.2a.4	FALSE	0.59	1.63	0	33.45	20	0.03	0.03
M05CG2.1.1a.11	FALSE	1.72	-0.11	0	32.13	17	0.014	0.03
M05CG2.1.1a.7	FALSE	2.04	-0.37	0	11.71	15	0.701	0.00
M05CG211a_2019.1	TRUE	1.43	-0.38	0	36.20	18	0.007	0.03
M05DM1.1.1a.7	FALSE	1.59	0.04	0	32.47	17	0.013	0.03
M05DM2.1.2a.3	FALSE	1.72	-0.07	0	24.09	17	0.117	0.02
M05DM2.1.2a.7	FALSE	1.51	-0.32	0	24.20	17	0.114	0.02
M05DM3.1.2a.9	FALSE	1.44	0.13	0	26.05	18	0.099	0.02

10.2.22 Grade 5 Tier 2

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
M05AF1.1.1a.11	TRUE	1.43	-0.50	0	31.31	17	0.018	0.04
M05AF1.1.1a.13	FALSE	0.93	-0.73	0	23.26	16	0.107	0.03
M05AF1.1.1a.14	TRUE	1.37	-0.71	0	21.92	17	0.188	0.03
M05AF1.1.1a.3	FALSE	0.94	-0.75	0	19.13	16	0.262	0.02
M05AT1.1.1a.2	FALSE	1.01	-1.06	0	32.14	16	0.01	0.05
M05AT1.1.2a.3	FALSE	2.23	-0.85	0	15.44	12	0.218	0.03
M05AT1.1.2a.4	FALSE	1.40	-0.92	0	12.78	15	0.619	0.00
M05AT1.1.4a.12	FALSE	0.93	-0.91	0	19.85	16	0.227	0.02
M05AT1.1.4a.13	FALSE	1.13	-0.92	0	34.85	16	0.004	0.05
M05AT1.1.5a.7	TRUE	0.88	-0.79	0	19.38	18	0.369	0.01
M05AT2.1.1a.11	FALSE	0.86	-0.95	0	16.83	16	0.397	0.01
M05AT2.1.1a.12	FALSE	1.17	-0.75	0	19.09	16	0.264	0.02
M05AT2.1.1a.2	FALSE	1.37	-1.77	0	20.24	14	0.123	0.03
M05AT2.1.2a.6	FALSE	1.08	-0.62	0	31.49	16	0.012	0.05
M05AT2.1.2a.7	FALSE	0.55	0.35	0	18.31	17	0.369	0.01
M05AT212a_2019.4	FALSE	0.52	0.07	0	13.28	17	0.717	0.00
M05BO2.1.1a.10	TRUE	2.11	-1.81	0	32.34	12	p<.002	0.06
M05BO2.1.1a.11	FALSE	1.26	-0.98	0	16.98	15	0.32	0.02
M05BO2.1.1a.12	TRUE	0.79	0.04	0	21.21	19	0.326	0.02
M05BO2.1.1a.9	FALSE	1.21	-0.74	0	18.98	16	0.27	0.02
M05BO2.1.1b.7	FALSE	1.10	-1.54	0	18.29	16	0.307	0.02
M05CG1.1.1a.1	FALSE	2.33	-1.57	0	13.66	10	0.189	0.03
M05CG1.1.1a.3	FALSE	1.32	-1.01	0	23.38	15	0.076	0.04
M05CG1.1.1a.8	FALSE	2.42	-1.19	0	10.85	12	0.542	0.00
M05CG2.1.1a.13	FALSE	1.32	-1.91	0	19.19	14	0.158	0.03
M05CG211a_2019.1	TRUE	1.35	-1.86	0	12.95	16	0.676	0.00
M05DM1.1.1a.9	FALSE	0.61	0.42	0	13.27	17	0.718	0.00
M05DM2.1.2a.7	FALSE	1.39	-1.69	0	18.61	14	0.18	0.03
M05DM2.1.2a.8	FALSE	1.26	-0.90	0	14.91	15	0.458	0.00
M05DM3.1.2a.7	FALSE	1.07	-1.10	0	38.70	16	p<.002	0.06

10.2.23   Grade 6 Tier 1

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
M06AN2.1.1a.14	FALSE	0.68	1.21	0	28.95	21	0.115	0.02
M06AN2.1.1a.16	TRUE	1.81	-0.28	0	43.78	20	0.002	0.04
M06AN2.2.1a.8	FALSE	2.23	-0.48	0	19.72	17	0.289	0.01
M06AN211a_2019.7	TRUE	1.22	0.05	0	21.50	22	0.49	0.00
M06AN221a_2019.2	FALSE	1.01	-0.59	0	33.56	21	0.04	0.03
M06AN3.1.3a.6	TRUE	1.58	-0.46	0	30.75	21	0.078	0.02
M06AN3.1.3a.8	FALSE	2.76	-0.47	0	18.53	15	0.236	0.02
M06AN313a_2019.3	FALSE	2.29	-0.71	0	32.27	16	0.009	0.04
M06AN313a_2019.4	FALSE	3.65	-0.66	0	23.37	12	0.025	0.03
M06AN313a_2019.5	FALSE	0.71	-1.16	0	23.38	21	0.324	0.01
M06An323a_2019.1	FALSE	1.13	0.24	0	31.38	20	0.05	0.03
M06AN323a_2019.2	FALSE	0.68	1.67	0	68.28	21	p<.002	0.05
M06AN323a_2019.4	FALSE	0.61	1.43	0	22.13	21	0.392	0.01
M06AR1.1.2a.9	TRUE	1.38	-0.48	0	45.76	21	p<.002	0.04
M06AR1.1.5a.4	FALSE	2.07	-0.44	0	12.18	18	0.838	0.00
M06AR1.1.5a.7	FALSE	1.18	0.31	0	23.24	20	0.277	0.01
M06AR112a_2019.2	FALSE	2.49	-0.30	0	15.60	16	0.482	0.00
M06AR112a_2019.5	FALSE	2.03	-0.31	0	15.94	17	0.528	0.00
M06BE2.1.2a.10	FALSE	2.29	-0.31	0	30.32	17	0.024	0.03
M06BE2.1.2a.11	FALSE	1.50	-0.14	0	27.98	19	0.084	0.02
M06BE2.1.2a.2	FALSE	1.03	0.17	0	21.75	20	0.354	0.01
M06BE2.1.2a.3	FALSE	1.39	-0.16	0	35.66	20	0.017	0.03
M06CG1.1.1a.m.1	FALSE	1.85	-0.22	0	55.64	18	p<.002	0.05
M06CG111am_2019.1	FALSE	3.03	-0.46	0	11.58	15	0.71	0.00
M06CG115a_2019.1	FALSE	1.07	-0.14	0	10.22	20	0.964	0.00
M06CG115a_2019.2	FALSE	1.06	-0.38	0	19.83	21	0.532	0.00
M06DS1.1.2a.10	FALSE	0.59	1.47	0	24.96	21	0.249	0.01
M06DS1.1.2a.m.1	FALSE	0.58	0.15	0	22.30	22	0.442	0.00
M06DS112a_2019.1	TRUE	2.21	-0.54	0	69.58	18	p<.002	0.06
M06DS112a_2019.2	TRUE	0.56	0.83	0	39.57	23	0.017	0.03

10.2.24 Grade 6 Tier 2

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
M06AN2.1.1a.14	FALSE	0.83	-0.45	0	9.74	15	0.836	0.00
M06AN2.1.1a.15	FALSE	1.10	-1.70	0	14.67	16	0.549	0.00
M06AN211a_2019.1	FALSE	1.51	-1.44	0	11.38	14	0.656	0.00
M06AN211a_2019.5	FALSE	1.14	-0.80	0	27.51	14	0.017	0.04
M06AN221a_2019.2	FALSE	1.18	-1.98	0	18.69	15	0.228	0.02
M06AN3.1.3a.6	FALSE	1.57	-2.07	0	18.38	14	0.19	0.03
M06AN3.1.3a.7	TRUE	1.03	-1.39	0	33.25	17	0.01	0.04
M06AN313a_2019.3	FALSE	1.24	-2.82	0	2.41	10	0.992	0.00
M06AN313a_2019.5	FALSE	0.86	-1.95	0	13.13	16	0.663	0.00
M06AN323a_2019.3	FALSE	0.92	-0.83	0	15.02	14	0.377	0.01
M06AN323a_2019.5	FALSE	-0.03	-12.28	0	47.14	17	p<.002	0.06
M06AR1.1.2a.8	FALSE	1.76	-1.79	0	14.81	13	0.319	0.02
M06AR1.1.2a.9	FALSE	1.56	-1.89	0	22.26	15	0.101	0.03
M06AR1.1.5a.7	FALSE	1.52	-0.90	0	18.11	14	0.202	0.02
M06AR1.1.5a.8	FALSE	1.61	-1.45	0	23.33	14	0.055	0.04
M06AR112a_2019.1	TRUE	1.87	-1.52	0	124.43	14	p<.002	0.12
M06AR112a_2019.5	FALSE	1.77	-1.88	0	6.80	13	0.912	0.00
M06AR115a_2019.1	FALSE	2.04	-1.17	0	12.47	13	0.489	0.00
M06BE2.1.2a.11	FALSE	1.89	-1.26	0	26.03	13	0.017	0.04
M06BE2.1.2a.3	FALSE	1.41	-1.72	0	23.21	15	0.08	0.03
M06BE2.1.2a.9	FALSE	1.73	-1.00	0	17.97	14	0.208	0.02
M06BE212a_2019.1	FALSE	1.87	-2.07	0	20.49	11	0.039	0.04
M06CG1.1.1a.10	FALSE	0.53	-0.42	0	14.09	15	0.518	0.00
M06CG1.1.1a.m.1	FALSE	1.22	-1.51	0	19.98	15	0.173	0.03
M06CG1.1.1a.m.2	TRUE	1.58	-2.02	0	19.38	15	0.197	0.02
M06CG115a_2019.3	TRUE	0.20	3.83	0	22.32	17	0.173	0.03
M06DS1.1.2a.11	TRUE	0.64	-0.98	0	69.00	16	p<.002	0.08
M06DS1.1.2a.12	FALSE	0.90	-1.30	0	22.67	15	0.091	0.03
M06DS1.1.2am.9	FALSE	0.70	-0.30	0	21.80	15	0.113	0.03
M06DS112a_2019.1	TRUE	1.40	-2.20	0	21.52	15	0.121	0.03

10.2.25 Grade 7 Tier 1

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
M07AN1.1.1a_2019_T1.1	FALSE	1.34	0.21	0	31.30	17	0.018	0.03
M07AN1.1.1a.13	FALSE	2.12	-0.07	0	22.82	16	0.119	0.02
M07AN1.1.1a.17	FALSE	1.28	0.40	0	22.90	18	0.195	0.02
M07AN1.1.1a.19	FALSE	0.68	0.95	0	18.95	20	0.525	0.00
M07AN1.1.1a.3	FALSE	0.68	-0.47	0	17.73	20	0.605	0.00
M07AN1112a_2019.1	TRUE	0.69	1.08	0	20.96	22	0.523	0.00
M07AN111a_2019.1	FALSE	0.82	-0.34	0	25.16	20	0.196	0.02
M07AN111a_2019.13	FALSE	0.90	0.79	0	30.01	20	0.07	0.03
M07AN111a_2019.2	FALSE	1.55	0.08	0	22.04	17	0.183	0.02
M07AN111a_2019.4	TRUE	0.84	0.21	0	71.06	21	p<.002	0.06
M07AN111a_2019.5	FALSE	1.66	0.04	0	20.79	17	0.236	0.02
M07AN111a_2019.7	TRUE	0.49	0.98	0	89.20	22	p<.002	0.06
M07AR1.1.1a.1	FALSE	0.55	1.67	0	31.25	21	0.07	0.03
M07AR1.1.6a.5	FALSE	1.83	-0.39	0	28.31	16	0.029	0.03
M07AR1.1.6a.6	FALSE	1.57	0.12	0	28.55	17	0.039	0.03
M07AR111a_2019.1	FALSE	0.55	2.42	0	20.89	20	0.404	0.01
M07AR115a_2019.2	FALSE	0.41	0.23	0	28.01	21	0.14	0.02
M07AR116a_2019.1	FALSE	1.58	-0.10	0	33.27	17	0.01	0.04
M07BE2.2.1a.2	FALSE	0.94	-0.92	0	26.74	19	0.111	0.02
M07BE2.3.1a.9	FALSE	1.52	-0.56	0	28.28	17	0.042	0.03
M07BE221a_2019.1	FALSE	1.85	-0.25	0	35.27	16	0.004	0.04
M07CG1.1.2a.1	FALSE	0.54	-0.35	0	22.95	21	0.346	0.01
M07CG1.1.4a.7	TRUE	0.93	0.28	0	112.28	21	p<.002	0.07
M07CG111a_2019.2	FALSE	1.73	-0.06	0	19.91	16	0.224	0.02
M07CG111a_2019.3	FALSE	2.08	-0.40	0	19.39	14	0.151	0.02
M07CG114a_2019.1	TRUE	0.33	2.25	0	68.76	23	p<.002	0.05
M07CG222a_2019.2	FALSE	1.35	-0.04	0	25.54	18	0.111	0.02
M07DS211b_2019.1	TRUE	0.62	0.89	0	52.30	22	p<.002	0.04
M07DS211b_2019.2	TRUE	1.33	-0.13	0	54.48	20	p<.002	0.05
M07DS211b_2019.4	FALSE	0.63	-0.55	0	35.69	20	0.017	0.03

10.2.26 Grade 7 Tier 2

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
M07AN1.1.1a.13	FALSE	1.94	-1.36	0	20.44	14	0.117	0.03
M07AN1.1.1a.19	TRUE	0.49	0.02	0	24.15	19	0.191	0.02
M07AN1.1.1a.5	FALSE	1.05	0.06	0	29.98	15	0.012	0.04
M07AN1.1.1a.6	FALSE	1.43	-1.05	0	10.14	15	0.811	0.00
M07AN111a_2019.12	FALSE	1.34	-1.22	0	15.42	16	0.494	0.00
M07AN111a_2019.13	FALSE	0.97	-0.60	0	15.57	16	0.483	0.00
M07AN111a_2019.3	TRUE	0.66	0.14	0	33.20	18	0.016	0.04
M07AN111a_2019.4	TRUE	1.31	-1.19	0	26.88	17	0.06	0.03
M07AN111a_2019.6	FALSE	1.60	-1.55	0	16.50	14	0.284	0.02
M07AN111a_2019.7	FALSE	1.54	-1.19	0	15.15	14	0.368	0.01
M07AR1.1.6a.5	FALSE	2.12	-1.71	0	5.64	12	0.933	0.00
M07AR1.1.6a.7	FALSE	0.75	0.11	0	22.70	16	0.122	0.03
M07AR111a_2019.4	FALSE	0.95	-0.05	0	18.71	16	0.284	0.02
M07AR115a_2019.1	FALSE	0.93	-1.00	0	22.11	17	0.18	0.02
M07AR116a_2019.2	FALSE	0.99	-0.81	0	20.51	16	0.198	0.02
M07BE2.2.1a.1	FALSE	0.52	-0.41	0	14.22	18	0.714	0.00
M07BE2.2.1a.4	FALSE	0.40	0.48	0	21.80	17	0.192	0.02
M07BE2.3.1a.9	FALSE	2.32	-1.96	0	10.96	10	0.36	0.01
M07BE231a_2019.2	TRUE	0.53	-0.07	0	20.53	19	0.363	0.01
M07CG1.1.1a.1	FALSE	1.36	-1.84	0	13.34	15	0.576	0.00
M07CG1.1.2a.4	FALSE	0.43	-0.72	0	19.52	18	0.36	0.01
M07CG1.1.4a.1	FALSE	0.85	-1.86	0	18.88	16	0.275	0.02
M07CG1.1.4a.8	TRUE	0.58	-0.53	0	25.63	19	0.141	0.02
M07CG111a_2019.2	FALSE	1.07	-1.58	0	23.13	16	0.11	0.03
M07CG111a_2019.3	FALSE	1.48	-1.72	0	24.04	14	0.045	0.03
M07CG114a_2019.1	TRUE	0.53	0.19	0	49.03	19	p<.002	0.05
M07CG222a_2019.2	FALSE	0.72	-1.98	0	12.91	17	0.742	0.00
M07DS2.1.1a.3	FALSE	0.25	-2.11	0	34.17	18	0.012	0.04
M07DS211b_2019.2	TRUE	1.38	-1.25	0	70.71	17	p<.002	0.07
M07DS211b_2019.4	FALSE	1.28	-1.38	0	17.18	16	0.374	0.01

10.2.27 Grade 8 Tier 1

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
M08AN1.1.2a.1	FALSE	1.93	-0.03	0	23.64	13	0.035	0.04
M08AN1.1.2a.4	FALSE	1.34	0.41	0	20.20	15	0.164	0.02
M08AN1.1.2a.6	FALSE	0.96	1.14	0	26.82	18	0.082	0.03
M08AN1.1.2a.7	FALSE	1.47	0.31	0	22.38	15	0.098	0.03
M08AN1.1.5a.2	FALSE	0.41	2.88	0	35.90	18	0.007	0.04
M08BE1.1.2a.1	FALSE	0.51	1.96	0	16.41	18	0.564	0.00
M08BE1.1.2a.2	FALSE	1.12	0.11	0	20.34	16	0.205	0.02
M08BE1.1.2a.8	FALSE	0.66	0.86	0	44.85	19	p<.002	0.05
M08BE2.1.1a.1	FALSE	1.12	0.09	0	27.20	16	0.039	0.03
M08BE2.1.1a.3	FALSE	0.49	0.29	0	35.27	20	0.019	0.04
M08BE2.1.3a.1	FALSE	0.82	0.92	0	20.83	18	0.288	0.02
M08BE2.1.3a.2	FALSE	1.03	0.00	0	19.68	16	0.235	0.02
M08BE213a.1	FALSE	0.68	1.01	0	22.08	19	0.28	0.02
M08BE3.1.2a.4	FALSE	0.77	-0.32	0	20.17	19	0.384	0.01
M08BE3.1.2a.5	FALSE	0.43	0.60	0	21.47	20	0.37	0.01
M08BF2.1.1a.1	FALSE	0.62	0.81	0	31.55	19	0.035	0.03
M08BF2.1.1a.15	FALSE	0.62	0.25	0	32.22	20	0.041	0.03
M08BF2.1.1a.22	TRUE	1.39	-0.08	0	179.37	19	p<.002	0.12
M08BF2.1.1a.3	FALSE	1.10	0.20	0	16.15	16	0.443	0.00
M08BF211a.1	FALSE	1.35	0.32	0	20.37	15	0.158	0.02
M08CG1.1.1a.1	FALSE	1.22	-0.04	0	41.35	16	p<.002	0.05
M08CG1.1.1a.6	FALSE	0.63	0.02	0	12.92	19	0.843	0.00
M08CG1.1.1a.7	FALSE	0.75	0.14	0	39.94	18	0.002	0.04
M08CG1.1.2a.3	FALSE	1.72	-0.13	0	19.73	14	0.139	0.03
M08CG3.1.1a.2	FALSE	0.24	1.71	0	34.23	20	0.025	0.03
M08DS1.1.2a.3	FALSE	1.00	1.23	0	13.93	18	0.734	0.00
M08DS1.2.1a.1	FALSE	1.23	0.24	0	24.60	15	0.056	0.03
M08DS112a_2019.1	FALSE	0.74	-0.35	0	19.99	19	0.395	0.01
M08DS112a_2019.3	FALSE	0.23	1.63	0	36.28	20	0.014	0.04
M08DS121a_2019.2	FALSE	0.74	1.39	0	35.39	18	0.008	0.04

10.2.28 Grade 8 Tier 2

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
M08AN1.1.2a.21	FALSE	1.30	-1.66	0	22.54	13	0.05	0.03
M08AN1.1.2a.6	FALSE	0.87	-0.58	0	15.72	15	0.40	0.01
M08AN1.1.2a.7	FALSE	1.64	-1.37	0	16.15	12	0.18	0.02
M08AN1.1.5a.4	FALSE	0.52	-0.11	0	12.33	16	0.72	0.00
M08AN1.1.5a.6	FALSE	0.89	0.16	0	25.06	15	0.05	0.03
M08BE1.1.2a.1	FALSE	0.75	-0.21	0	19.50	16	0.24	0.02
M08BE1.1.2a.15	FALSE	2.22	-1.25	0	14.97	11	0.18	0.02
M08BE1.1.2a.18	FALSE	1.67	-1.03	0	10.96	13	0.61	0.00
M08BE1.1.2a.2	FALSE	1.19	-1.55	0	16.37	13	0.23	0.02
M08BE1.1.2a.4	FALSE	1.09	0.16	0	15.46	14	0.35	0.01
M08BE1.1.2a.8	FALSE	0.51	0.11	0	10.98	16	0.81	0.00
M08BE2.1.1a.4	FALSE	0.24	0.15	0	19.42	16	0.25	0.02
M08BE3.1.1a.3	FALSE	0.46	-0.19	0	22.07	16	0.14	0.02
M08BE3.1.2a.12	FALSE	0.78	-0.39	0	22.78	16	0.12	0.03
M08BE3.1.2a.5	FALSE	0.95	-1.04	0	15.47	15	0.42	0.01
M08BE312a_2019.1	FALSE	0.40	0.58	0	13.81	16	0.61	0.00
M08BF2.1.1a.22	FALSE	1.78	-1.91	0	13.29	10	0.21	0.02
M08BF2.1.1a.3	FALSE	1.50	-1.41	0	12.53	13	0.48	0.00
M08BF2.1.1a.6	FALSE	1.20	-0.72	0	22.30	13	0.05	0.03
M08BF211a_2019.4	TRUE	1.33	-0.57	0	17.32	17	0.43	0.00
M08CG1.1.1a.2	FALSE	1.51	-2.43	0	16.35	10	0.09	0.03
M08CG1.1.1a.6	FALSE	0.94	-1.30	0	17.07	14	0.25	0.02
M08CG1.1.2a.3	FALSE	0.70	-2.80	0	35.41	15	0.00	0.05
M08CG1.1.2a.6	FALSE	-0.05	11.56	0	26.21	17	0.07	0.03
M08CG311a_2019.2	FALSE	0.68	0.58	0	12.75	15	0.62	0.00
M08CG311a_2019.3	FALSE	0.74	-0.20	0	13.20	16	0.66	0.00
M08DS1.1.2a.3	FALSE	0.48	0.30	0	18.00	16	0.32	0.01
M08DS1.1.2a.4	FALSE	0.13	6.73	0	15.78	17	0.54	0.00
M08DS112a_2019.2	TRUE	0.43	2.47	0	30.07	18	0.04	0.03
M08DS121a_2019.2	FALSE	0.53	0.06	0	11.65	16	0.77	0.00

10.2.29   Grade 11 Tier 1

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
CC.2.1.HSF2a.13	FALSE	0.65	-1.09	0	20.52	16	0.198	0.02
CC.2.1.HSF2a.21	FALSE	2.31	-0.55	0	12.32	11	0.34	0.01
CC.2.1.HSF4a.1	TRUE	1.01	-1.23	0	50.31	17	p<.002	0.06
CC.2.1.HSF4a.2	FALSE	0.73	0.44	0	15.71	16	0.473	0.00
CC.2.2.HSC1a.12	FALSE	1.68	-0.29	0	17.91	14	0.211	0.02
CC.2.2.HSC1a.13	FALSE	1.35	-0.93	0	20.70	14	0.11	0.03
CC.2.2.HSC3a.3	FALSE	1.35	0.18	0	9.94	15	0.824	0.00
CC.2.2.HSC5a.10	FALSE	1.62	-0.33	0	21.37	14	0.092	0.03
CC.2.2.HSC5a.9	FALSE	0.27	-0.55	0	26.30	17	0.069	0.03
CC.2.2.HSC5b.6	FALSE	0.72	0.54	0	11.30	16	0.79	0.00
CC.2.2.HSC5b.7	FALSE	0.86	1.02	0	28.14	16	0.03	0.04
CC.2.2.HSD1a.12	FALSE	0.76	-0.18	0	16.39	16	0.426	0.01
CC.2.2.HSD1a.13	FALSE	2.04	-0.33	0	22.76	13	0.045	0.04
CC.2.2.HSD1a.16	FALSE	0.82	0.60	0	28.08	16	0.031	0.04
CC.2.2.HSD1a.9	FALSE	0.40	3.22	0	31.15	17	0.019	0.04
CC.2.2.HSD8a.5	FALSE	0.95	0.79	0	35.40	16	0.004	0.05
CC.2.2.HSD8a.6	FALSE	0.54	1.32	0	18.75	17	0.343	0.01
CC.2.2.HSD8a.7	FALSE	0.17	-0.01	0	28.54	18	0.054	0.03
CC.2.2.HSD9a.10	FALSE	0.46	2.41	0	22.44	17	0.168	0.02
CC.2.2.HSD9a.12	FALSE	0.36	2.26	0	29.66	17	0.029	0.04
CC.2.3.HSA13a.12	FALSE	2.27	-0.91	0	28.93	11	0.002	0.05
CC.2.3.HSA13a.13	FALSE	1.78	-0.06	0	18.72	13	0.132	0.03
CC.2.3.HSA13a.14	FALSE	1.56	-0.48	0	10.50	14	0.725	0.00
CC.2.4.HSB2a.7	FALSE	0.22	3.78	0	17.75	18	0.472	0.00
CC.2.4.HSB2a.9	FALSE	0.53	1.53	0	23.55	17	0.132	0.03
CC.2.4.HSB5a.5	FALSE	2.20	-0.49	0	16.47	12	0.171	0.03
CC.2.4.HSB7a.12	FALSE	0.57	-0.21	0	22.04	17	0.183	0.02
CC22HSD1a_2019M.2	FALSE	0.73	-0.34	0	19.27	16	0.255	0.02
CC24HSB2a_2019M.4	FALSE	0.41	-0.87	0	20.37	17	0.256	0.02
CC24HSB5a_2019M.3	TRUE	0.99	-0.33	0	76.18	18	p<.002	0.08

10.2.30 Grade 11 Tier 2

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
CC.2.1.HSF2a.13	FALSE	1.04	-1.58	0	5.91	12	0.92	0.00
CC.2.1.HSF2a.16	FALSE	0.99	-1.29	0	15.02	12	0.24	0.02
CC.2.1.HSF2a.21	FALSE	1.16	-2.35	0	10.92	10	0.364	0.01
CC.2.1.HSF4a.1	FALSE	1.37	-3.05	0	1.02	3	0.796	0.00
CC.2.1.HSF4a.8	FALSE	1.83	-1.04	0	12.22	10	0.271	0.02
CC.2.2.HSC1a.12	FALSE	1.71	-1.58	0	5.48	9	0.791	0.00
CC.2.2.HSC1a.14	FALSE	1.39	-1.58	0	7.60	11	0.749	0.00
CC.2.2.HSC1a.15	FALSE	1.69	-1.08	0	8.97	11	0.625	0.00
CC.2.2.HSC3a.4	FALSE	1.16	0.32	0	33.13	11	p<.002	0.07
CC.2.2.HSC5a.11	FALSE	0.79	-0.28	0	21.17	14	0.097	0.04
CC.2.2.HSC5a.9	FALSE	0.13	-2.48	0	8.78	15	0.889	0.00
CC.2.2.HSD1a.14	FALSE	0.41	-2.27	0	10.58	15	0.782	0.00
CC.2.2.HSD1a.16	FALSE	0.56	-0.77	0	21.19	14	0.097	0.04
CC.2.2.HSD1a.6	FALSE	0.15	1.41	0	5.82	14	0.971	0.00
CC.2.2.HSD1a.9	FALSE	0.52	0.96	0	14.48	13	0.341	0.02
CC.2.2.HSD8a.7	FALSE	0.71	-1.29	0	17.39	13	0.182	0.03
CC.2.2.HSD9a.13	TRUE	0.43	1.78	0	17.16	16	0.375	0.01
CC.2.3.HSA13a.12	FALSE	1.53	-2.56	0	17.32	8	0.027	0.05
CC.2.3.HSA13a.14	FALSE	0.83	-2.27	0	19.89	13	0.098	0.04
CC.2.3.HSA13a.15	FALSE	0.96	-5.25	0	NA	0	NA	NA
CC.2.4.HSB2a.9	FALSE	0.17	6.22	0	13.41	13	0.417	0.01
CC.2.4.HSB3a.5	FALSE	0.94	0.14	0	12.26	12	0.425	0.01
CC.2.4.HSB5a.6	FALSE	0.75	-1.54	0	14.77	13	0.322	0.02
CC22HSD1a_2019M.3	FALSE	0.90	-0.61	0	14.74	13	0.324	0.02
CC22HSD9a_2019M.3	FALSE	0.68	0.17	0	23.95	14	0.046	0.04
CC23HSA13a_2019.1	FALSE	2.75	-2.68	0	NA	NA	NA	NA
CC24HSB2a_2019M.3	FALSE	0.85	-1.29	0	18.16	13	0.151	0.03
CC24HSB3a_2019M.2	FALSE	0.86	-0.35	0	12.64	14	0.555	0.00
CC24HSB5a_2019M.3	FALSE	0.39	-4.32	0	19.70	14	0.14	0.03
CC24HSB7a_2019M.1	FALSE	1.37	-1.65	0	23.89	11	0.013	0.05

10.2.31 Science

RMSEA item fit statistics are summarized, with the range, mean, and potentially problematic items (RMSEA ≥ 0.08) listed, for each Science test. RMSEA for all Science items are then given in the grade- and tier-level tables that follow:

- **Grade 4, Tier 1:** $Range = 0.00$ to 0.10; $M = 0.039$; S4.B.1.1.3.3 and S4.B.1.1.4.4
- **Grade 4, Tier 2:** $Range = 0.00$ to 0.15; $M = 0.033$; S4.A.2.2.1.4 and S4.D.1.2.2.3
- **Grade 8, Tier 1:** $Range = 0.00$ to 0.08; $M = 0.035$; S8.A.3.1.5b.2
- **Grade 8, Tier 2:** $Range = 0.00$ to 0.12; $M = 0.032$; S8.A.2.2.1.6, S8.B.1.1.3.5, and S8.C.2.2.3.6
- **Grade 11, Tier 1:** $Range = 0.00$ to 0.12; $M = 0.049$; S11.A.2.1.3.6, S11.A.3.1.2.7, S11.B.3.1.4a.2, S11.B.3.1.4b.11, and S11.B.3.1.4b.9
- **Grade 11, Tier 2:** $Range = 0.00$ to 0.06; $M = 0.023$; RMSEA for item S11.B.1.1.2.6 was not estimable

10.2.32 Grade 4 Tier 1

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
S4.A.1.1.2a.2	TRUE	3.23	-0.11	0.25	20.18	16	0.212	0.02
S4.A.2.1.4.10	FALSE	2.27	0.84	0.26	11.72	13	0.551	0.00
S4.A.2.1.4.5	FALSE	2.27	1.06	0.37	9.34	13	0.747	0.00
S4.A.2.2.1.3	TRUE	3.23	0.01	0.42	27.19	16	0.039	0.04
S4.A.2.2.1.4	TRUE	3.23	0.74	0.14	40.68	16	p<.002	0.06
S4.A.3.1.1.3	FALSE	2.27	1.30	0.34	19.57	14	0.144	0.03
S4.A.3.3.2.3	FALSE	2.27	0.89	0.28	13.83	13	0.386	0.01
S4.B.1.1.3.3	TRUE	3.23	-0.42	0.13	65.74	15	p<.002	0.08
S4.B.1.1.4.4	TRUE	3.23	0.89	0.13	82.36	14	p<.002	0.10
S4.B.1.1.4.7	FALSE	2.27	0.65	0.25	20.26	13	0.089	0.03
S4.B.1.1.5a.1	FALSE	2.27	-0.18	0.38	19.39	12	0.079	0.04
S4.B.2.1.1.3	TRUE	3.23	-0.02	0.28	16.88	16	0.393	0.01
S4.B.2.1.1.4	FALSE	2.27	0.74	0.30	22.27	13	0.051	0.04
S4.B.2.1.1.5	FALSE	2.27	-0.82	0.00	24.57	10	0.006	0.06
S4.B.3.1.1.11	FALSE	2.27	0.33	0.33	23.06	13	0.041	0.04
S4.B.3.1.1.5	TRUE	3.23	1.31	0.48	27.55	17	0.05	0.04
S4.B.3.1.1.7	TRUE	3.23	0.49	0.14	29.22	15	0.015	0.04
S4.B.3.3.5.9	FALSE	2.27	-0.10	0.28	23.43	12	0.024	0.04
S4.C.1.1.1a.2	FALSE	2.27	-0.81	0.21	22.76	11	0.019	0.05
S4.C.1.1.2.7	FALSE	2.27	1.74	0.18	17.37	13	0.183	0.03
S4.C.1.1.2.9	FALSE	2.27	4.39	0.25	19.66	12	0.074	0.04
S4.C.3.1.3.3	FALSE	2.27	0.74	0.39	18.03	13	0.156	0.03
S4.C.3.1.3.4	TRUE	2.24	0.19	0.33	23.72	16	0.096	0.03
S4.D.1.1.1.5	TRUE	3.23	0.21	0.44	34.63	16	0.004	0.05
S4.D.1.2.1.3	FALSE	2.27	0.01	0.23	15.78	13	0.261	0.02
S4.D.1.2.1.4	FALSE	2.27	4.71	0.28	39.42	14	p<.002	0.06
S4.D.1.2.2a.3	TRUE	2.24	0.02	0.36	35.25	16	0.004	0.05
S4.D.2.1.2.4	FALSE	2.27	-0.56	0.23	22.03	11	0.024	0.05
S4.D.2.1.2.5	FALSE	2.27	-0.17	0.37	35.88	12	p<.002	0.06
S4.D.2.1.2a.2	FALSE	2.27	0.36	0.36	15.59	13	0.272	0.02

10.2.33 Grade 4 Tier 2

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
S4.A.1.1.2a.3	TRUE	1.74	-0.75	0.38	37.67	13	p<.002	0.05
S4.A.2.1.4.10	FALSE	1.86	0.93	0.49	22.15	11	0.023	0.04
S4.A.2.1.4.5	FALSE	1.86	2.70	0.42	18.85	11	0.064	0.03
S4.A.2.2.1.3	TRUE	1.74	-1.96	0.27	18.33	11	0.074	0.03
S4.A.2.2.1.4	TRUE	1.74	0.61	0.31	120.42	13	p<.002	0.10
S4.A.3.1.1.6	FALSE	1.86	0.02	0.39	20.53	10	0.025	0.04
S4.A.3.3.2.4	FALSE	1.86	-0.54	0.82	9.28	8	0.319	0.01
S4.B.1.1.3.4	TRUE	1.74	-0.24	0.34	20.35	13	0.087	0.03
S4.B.1.1.4.4	TRUE	1.38	-1.09	0.21	31.24	13	0.003	0.04
S4.B.1.1.4.7	FALSE	1.86	-0.42	0.78	14.34	9	0.111	0.03
S4.B.1.1.5.a.3	TRUE	1.74	-1.14	0.35	30.84	13	0.004	0.04
S4.B.2.1.1.3	TRUE	1.74	-2.12	0.25	11.21	9	0.261	0.02
S4.B.2.1.1.4	FALSE	1.86	-0.64	0.73	13.05	9	0.161	0.02
S4.B.2.1.1.6	TRUE	1.74	-1.46	0.23	13.59	12	0.328	0.01
S4.B.3.1.1.11	FALSE	1.86	-1.96	0.02	17.24	7	0.016	0.04
S4.B.3.1.1.7	TRUE	1.38	-0.68	0.25	19.68	13	0.103	0.03
S4.B.3.1.1.8	FALSE	1.86	-1.71	0.01	13.41	8	0.098	0.03
S4.B.3.3.5.6	FALSE	1.86	1.63	0.57	21.77	11	0.026	0.03
S4.C.1.1.1a.3	FALSE	1.86	-0.91	0.71	12.49	9	0.187	0.02
S4.C.1.1.2.7	FALSE	1.86	-0.14	0.54	11.19	10	0.343	0.01
S4.C.1.1.2.9	FALSE	1.86	0.16	0.48	14.21	10	0.163	0.02
S4.C.3.1.3.4	TRUE	1.74	-0.96	0.24	39.10	13	p<.002	0.05
S4.C.3.1.3.5	FALSE	1.86	-0.13	0.51	12.78	10	0.236	0.02
S4.D.1.1.1.5	TRUE	1.74	-0.93	0.41	14.40	13	0.346	0.01
S4.D.1.2.1.3	FALSE	1.86	-1.06	0.85	10.82	6	0.094	0.03
S4.D.1.2.1.4	FALSE	1.86	3.36	0.41	28.63	11	0.003	0.04
S4.D.1.2.2.3	TRUE	1.38	-0.92	0.40	253.80	13	p<.002	0.15
S4.D.2.1.2.4	FALSE	1.86	-0.83	0.94	6.67	4	0.154	0.03
S4.D.2.1.2a.2	FALSE	1.86	-0.73	0.80	8.95	8	0.346	0.01
S4.D.2.1.2a.3	FALSE	1.86	0.94	0.36	11.26	11	0.422	0.00

10.2.34 Grade 8 Tier 1

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
S8.A.1.3.2.4	FALSE	1.84	0.06	0.20	11.73	10	0.303	0.02
S8.A.2.1.1a.10	FALSE	1.84	-0.23	0.29	23.26	10	0.01	0.06
S8.A.2.1.1a.5	FALSE	1.84	0.41	0.15	22.05	10	0.015	0.06
S8.A.2.1.1a.6	FALSE	1.84	4.94	0.38	17.41	12	0.135	0.04
S8.A.2.2.1.3	FALSE	1.84	0.82	0.49	13.59	12	0.328	0.02
S8.A.2.2.3.3	FALSE	1.84	0.71	0.44	10.04	12	0.612	0.00
S8.A.3.1.5b.2	TRUE	2.42	1.14	0.26	49.98	15	p<.002	0.08
S8.A.3.1.5b.3	FALSE	1.84	3.15	0.37	23.64	12	0.023	0.05
S8.A.3.3.2.3	FALSE	1.84	2.76	0.20	8.93	11	0.628	0.00
S8.B.1.1.3.11	FALSE	1.84	-0.29	0.11	16.48	10	0.087	0.04
S8.B.1.1.3.5	TRUE	2.59	-1.03	0.17	28.47	11	0.003	0.07
S8.B.1.1.3.7	FALSE	1.84	0.17	0.15	8.72	9	0.464	0.00
S8.B.2.1.1.5	FALSE	1.84	1.23	0.24	13.55	12	0.33	0.02
S8.B.3.1.1.4	FALSE	1.84	2.56	0.26	16.94	12	0.152	0.03
S8.B.3.1.1.5	FALSE	1.84	4.84	0.32	31.47	12	0.002	0.07
S8.B.3.1.1.6	FALSE	1.84	5.23	0.40	18.87	12	0.092	0.04
S8.B.3.2.1.4	FALSE	1.84	0.49	0.29	8.08	11	0.706	0.00
S8.B.3.2.1.8	FALSE	1.84	0.44	0.40	13.86	10	0.18	0.03
S8.B.3.3.3.1	FALSE	1.84	1.00	0.37	11.02	11	0.442	0.00
S8.C.1.1.2.5	FALSE	1.84	1.70	0.35	25.70	12	0.012	0.06
S8.C.1.1.2.6	FALSE	1.84	2.18	0.31	17.98	12	0.116	0.04
S8.C.1.1.2.7	FALSE	1.84	-0.13	0.00	17.06	9	0.048	0.05
S8.C.2.2.3.4	TRUE	2.42	1.62	0.22	11.57	15	0.711	0.00
S8.C.2.2.3.6	TRUE	2.42	2.09	0.21	9.26	14	0.814	0.00
S8.D.1.1.2.5	FALSE	1.84	1.94	0.21	16.91	11	0.111	0.04
S8.D.1.1.2.6	TRUE	2.42	-0.04	0.25	38.17	13	p<.002	0.07
S8.D.1.1.2.7	FALSE	1.84	1.15	0.28	23.66	12	0.023	0.05
S8.D.1.1.2.8	FALSE	1.84	1.28	0.45	16.95	12	0.152	0.03
S8.D.1.2.1.5	TRUE	2.42	0.36	0.24	30.91	14	0.006	0.06
S8.D.1.3.1.4	FALSE	1.84	1.12	0.30	16.62	12	0.164	0.03

10.2.35 Grade 8 Tier 2

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
S8.A.1.3.2.8	FALSE	1.75	0.94	0.25	9.46	12	0.663	0.00
S8.A.2.1.1a.5	FALSE	1.75	-1.51	0.00	21.60	9	0.01	0.04
S8.A.2.1.1a.6	FALSE	1.75	0.34	0.35	19.78	11	0.048	0.03
S8.A.2.1.1a.8	FALSE	1.75	-0.83	0.69	11.10	10	0.35	0.01
S8.A.2.2.1.6	TRUE	2.03	-1.01	0.34	111.45	12	p<.002	0.10
S8.A.2.2.3.4	FALSE	1.75	0.12	0.64	15.03	12	0.24	0.02
S8.A.3.1.5b.2	FALSE	1.75	0.30	0.74	16.84	12	0.156	0.02
S8.A.3.1.5b.3	FALSE	1.75	1.95	0.60	23.71	13	0.034	0.03
S8.A.3.3.2.4	FALSE	1.75	0.20	0.37	21.32	11	0.03	0.03
S8.B.1.1.3.11	FALSE	1.75	-1.37	0.36	18.26	10	0.051	0.03
S8.B.1.1.3.5	TRUE	1.47	-3.25	0.32	62.27	6	p<.002	0.10
S8.B.1.1.3.8	FALSE	1.75	-2.26	0.01	10.73	8	0.218	0.02
S8.B.2.1.1.7	FALSE	1.75	-2.57	0.01	15.00	7	0.036	0.04
S8.B.3.1.1.4	FALSE	1.75	-0.15	0.49	17.42	12	0.135	0.02
S8.B.3.1.1.5	FALSE	1.75	0.83	0.45	32.12	12	p<.002	0.04
S8.B.3.1.1.7	FALSE	1.75	0.01	0.25	14.84	11	0.19	0.02
S8.B.3.2.1.4	FALSE	1.75	-0.09	0.90	9.03	9	0.434	0.00
S8.B.3.2.1.8	FALSE	1.75	-2.24	0.57	8.61	6	0.197	0.02
S8.B.3.3.3.2	FALSE	1.75	-0.70	0.46	21.54	11	0.028	0.03
S8.C.1.1.2.5	FALSE	1.75	0.03	0.71	8.76	11	0.644	0.00
S8.C.1.1.2.6	FALSE	1.75	-0.40	0.52	14.18	11	0.223	0.02
S8.C.1.1.2.8	FALSE	1.75	-0.41	0.37	15.05	11	0.18	0.02
S8.C.2.2.3.4	TRUE	2.03	1.42	0.51	67.87	16	p<.002	0.06
S8.C.2.2.3.6	TRUE	2.03	2.01	0.25	215.16	15	p<.002	0.12
S8.D.1.1.2.5	FALSE	1.75	-0.59	0.30	19.38	10	0.036	0.03
S8.D.1.1.2.6	TRUE	2.03	-2.03	0.24	32.56	11	p<.002	0.05
S8.D.1.1.2.7	FALSE	1.75	2.07	0.49	15.37	12	0.222	0.02
S8.D.1.1.2.8	FALSE	1.75	1.31	0.58	7.95	13	0.847	0.00
S8.D.1.2.1.4	FALSE	1.75	-0.47	0.04	14.62	10	0.146	0.02
S8.D.1.3.1.5	FALSE	1.75	0.43	0.47	16.33	11	0.129	0.02

10.2.36   Grade 11 Tier 1

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
S11.A.1.3.2.3	TRUE	2.35	1.72	0.40	18.68	15	0.228	0.03
S11.A.2.1.1.5	FALSE	1.49	0.64	0.30	20.83	10	0.022	0.06
S11.A.2.1.3.5	FALSE	1.49	1.22	0.44	12.08	12	0.439	0.00
S11.A.2.1.3.6	FALSE	1.49	0.95	0.10	26.37	9	0.002	0.09
S11.A.3.1.2.6	TRUE	2.68	1.39	0.23	32.91	14	0.003	0.07
S11.A.3.1.2.7	FALSE	1.49	7.47	0.31	28.32	11	0.003	0.08
S11.A.3.1.2.8	FALSE	1.49	-0.04	0.00	9.43	10	0.491	0.00
S11.A.3.3.3.6	FALSE	1.49	6.86	0.30	26.20	11	0.006	0.07
S11.A.3.3.3.7	FALSE	1.49	1.72	0.26	20.48	11	0.039	0.06
S11.A.3.3.3.8	FALSE	1.49	2.14	0.40	18.10	12	0.113	0.04
S11.A.3.3.3.9	FALSE	1.49	1.91	0.38	18.23	12	0.109	0.04
S11.B.1.1.2.6	FALSE	1.49	-1.04	0.00	18.68	8	0.017	0.07
S11.B.1.1.2.7	FALSE	1.49	1.13	0.36	15.57	12	0.212	0.03
S11.B.3.1.3.4	FALSE	1.49	0.58	0.22	21.37	10	0.019	0.07
S11.B.3.1.4a.2	TRUE	2.68	-0.04	0.21	53.10	12	p<.002	0.12
S11.B.3.1.4b.11	FALSE	1.49	0.03	0.00	32.81	9	p<.002	0.10
S11.B.3.1.4b.9	FALSE	1.49	0.31	0.00	37.03	8	p<.002	0.12
S11.B.3.2.3.6	FALSE	1.49	0.84	0.24	13.90	11	0.239	0.03
S11.C.1.1.1.4	FALSE	1.49	0.89	0.34	20.30	12	0.062	0.05
S11.C.2.2.3.3	TRUE	2.68	1.93	0.30	13.44	14	0.493	0.00
S11.C.3.1.1.6	FALSE	1.49	0.94	0.15	21.34	11	0.03	0.06
S11.C.3.1.3.5	FALSE	1.49	2.37	0.28	15.86	11	0.146	0.04
S11.C.3.1.3.6	FALSE	1.49	7.10	0.24	11.84	11	0.376	0.02
S11.C.3.1.3.7	FALSE	1.49	1.54	0.22	8.17	11	0.698	0.00
S11.D.1.1.3.4	TRUE	2.68	0.29	0.15	14.37	12	0.277	0.03
S11.D.1.1.3.5	FALSE	1.49	7.81	0.26	9.31	11	0.594	0.00
S11.D.1.2.2.3	TRUE	2.68	2.17	0.26	24.65	14	0.038	0.05
S11.D.1.2.2.5	FALSE	1.49	0.08	0.00	16.88	9	0.051	0.06
S11.D.2.1.4.5	FALSE	1.49	2.42	0.35	16.38	11	0.128	0.04
S11.D.2.1.4.6	FALSE	1.49	5.71	0.24	13.81	11	0.244	0.03

10.2.37 Grade 11 Tier 2

Item Label	Anchor	Discrimination	Difficulty	Guessing	S_X2	Df	p-value	RMSEA
S11.A.1.3.2.4	FALSE	1.52	-0.28	0.31	20.29	11	0.041	0.04
S11.A.2.1.1.6	FALSE	1.52	-2.60	0.01	6.53	7	0.48	0.00
S11.A.2.1.3.6	FALSE	1.52	1.22	0.41	12.45	12	0.41	0.01
S11.A.2.1.3.7	TRUE	1.37	0.22	0.45	23.78	14	0.049	0.03
S11.A.3.1.2.11	FALSE	1.52	-0.05	0.29	14.23	11	0.221	0.02
S11.A.3.1.2.6	TRUE	1.72	-1.26	0.24	13.60	13	0.403	0.01
S11.A.3.1.2.7	FALSE	1.52	0.68	0.51	38.84	12	p<.002	0.06
S11.A.3.3.3.10	FALSE	1.52	0.48	0.29	6.99	12	0.858	0.00
S11.A.3.3.3.6	FALSE	1.52	0.48	0.49	25.05	12	0.015	0.04
S11.A.3.3.3.7	FALSE	1.52	-0.55	0.54	12.65	11	0.317	0.01
S11.A.3.3.3.8	FALSE	1.52	-0.83	0.23	8.07	11	0.707	0.00
S11.B.1.1.2.6	FALSE	1.52	-3.07	0.24	NA	0	NA	NA
S11.B.1.1.2.8	TRUE	1.72	-0.91	0.30	24.14	13	0.03	0.04
S11.B.3.1.3.5	FALSE	1.52	-0.77	0.15	25.62	10	0.004	0.05
S11.B.3.1.4a.3	FALSE	1.52	0.32	0.48	15.99	11	0.142	0.03
S11.B.3.1.4b.11	FALSE	1.52	-0.37	0.75	33.05	10	p<.002	0.06
S11.B.3.1.4b.9	FALSE	1.52	-1.26	0.56	11.60	10	0.313	0.01
S11.B.3.2.3.4	FALSE	1.52	-0.93	0.25	16.99	11	0.108	0.03
S11.C.1.1.1.4	FALSE	1.52	-1.73	0.31	10.82	10	0.372	0.01
S11.C.2.2.3.4	FALSE	1.52	-0.58	0.00	9.41	10	0.494	0.00
S11.C.3.1.1.6	FALSE	1.52	-0.61	0.35	8.87	11	0.634	0.00
S11.C.3.1.3.5	FALSE	1.52	0.48	0.75	27.16	11	0.004	0.05
S11.C.3.1.3.6	FALSE	1.52	6.53	0.41	38.43	12	p<.002	0.06
S11.C.3.1.3.8	FALSE	1.52	-1.08	0.16	16.97	11	0.109	0.03
S11.D.1.1.3.4	FALSE	1.52	0.85	0.94	6.34	8	0.609	0.00
S11.D.1.1.3.5	FALSE	1.52	1.67	0.36	17.67	12	0.126	0.03
S11.D.1.2.2.5	FALSE	1.52	-0.69	0.69	16.94	10	0.076	0.03
S11.D.1.2.2.7	FALSE	1.52	-0.79	0.70	7.53	10	0.675	0.00
S11.D.2.1.4.5	FALSE	1.52	1.29	0.74	13.06	12	0.365	0.01
S11.D.2.1.4.6	FALSE	1.52	-0.95	0.11	7.82	10	0.646	0.00

Steiger, J. H. (2007), Understanding the limitations of global fit assessment in structural equation modeling. *Personality and Individual Differences*, *42*, 893-98.

11 Convergent/Divergent Validity

To examine convergent and divergent validity evidence, (a) correlations were were conducted to examine the relation between scale scores in the different content areas (ELA with Math, ELA with Science, and Math with Science), and (b) Chi-squared tests of independence were conducted to examine whether performance level scores (i.e., *Advanced*, *Proficient*, *Emerging*, of *Novice*) were independent across content areas at the $p = .01$ significance level. Note that the p-values were computed for a Monte Carlo test (Hope, 1968) with 2,000 replicates.

We also display histograms of the number of items with no response and the number of items not attempted.

12 Correlations Among Content Areas

Correlations for ELA with Math ranged from 0.29 to 0.71, correlations for ELA with Science ranged from 0.61 to 0.82, and correlations for Math with Science ranged from 0.32 to 0.61. Please see Table 6.1.1. Across grades, correlations are almost always higher for Tier 1 than Tier 2 (except Grades 8 ELA with Math, and all Grade 11 correlations). Across Grades 4, 8 and 11, correlations for ELA with Science were higher than correlations for Math with Science.

12.1 Correlations between Content Areas by Grade and Tier

Grade	Tier	ELA with Math	ELA with Science	Math with Science
3	1	.51	–	–
3	2	.51	–	–
4	1	.69	.82	.61
4	2	.42	.70	.40
5	1	.71	–	–
5	2	.39	–	–
6	1	.69	–	–
6	2	.35	–	–
7	1	.71	–	–
7	2	.36	–	–
8	1	.36	.77	.37
8	2	.39	.66	.32
11	2	.29	.61	.37
11	1	.41	.80	.40

13 Chi-squared Tests of Independence for Performance Levels Among Content Areas

Across grades and tiers, all Chi-squared tests of independence were statistically significant, except Grade 4, Tier 2 ELA - Science. Thus, in general, performance level scores in one content area were not independent of performance level scores in another content area.

13.1 English/Language Arts (ELA) - Mathematics

Grade	Tier	Chi-Square	p-value
3	1	258.83	< .01
3	2	89.37	< .01
4	1	831.69	< .01
4	2	113.63	< .01
5	1	533.11	< .01
5	2	145.75	< .01
6	1	572.22	< .01
6	2	170.04	< .01
7	1	513.27	< .01
7	2	181.48	< .01
8	1	223.29	< .01
8	2	161.59	< .01
11	2	95.57	< .01
11	1	123.39	< .01

13.1.1 Performance Level Matrices

13.1.1.1 Grade 3 Tier 1

| | Math | | | | |
ELA	Advanced	Proficient	Emerging	Novice	Missing
Advanced	79	0	0	0	9
Proficient	448	7	0	0	28
Emerging	326	167	0	1	59
Novice	198	4	0	1	17
Missing	0	0	0	0	0

13.1.1.2 Grade 3 Tier 2

| | Math | | | | |
ELA	Advanced	Proficient	Emerging	Novice	Missing
Advanced	52	39	0	9	6
Proficient	6	28	0	11	7
Emerging	0	0	2	2	2
Novice	2	10	5	15	5
Missing	0	0	0	0	0

13.1.1.3 Grade 4 Tier 1

| | Math | | | | |
ELA	Advanced	Proficient	Emerging	Novice	Missing
Advanced	151	221	6	21	29
Proficient	32	152	10	70	33
Emerging	0	26	229	83	58
Novice	5	64	44	80	17
Missing	0	0	0	0	0

13.1.1.4 Grade 4 Tier 2

ELA	Math				
	Advanced	Proficient	Emerging	Novice	Missing
Advanced	76	48	0	7	10
Proficient	22	57	6	23	14
Emerging	0	0	3	1	1
Novice	0	1	3	3	1
Missing	0	0	0	0	0

13.1.1.5 Grade 5 Tier 1

ELA	Math				
	Advanced	Proficient	Emerging	Novice	Missing
Advanced	34	18	0	2	4
Proficient	114	149	21	63	43
Emerging	3	12	217	80	41
Novice	12	76	81	83	24
Missing	0	0	0	0	0

13.1.1.6 Grade 5 Tier 2

ELA	Math				
	Advanced	Proficient	Emerging	Novice	Missing
Advanced	57	58	3	16	8
Proficient	26	73	35	69	15
Emerging	0	2	17	8	2
Novice	7	29	40	27	8
Missing	0	0	0	0	0

13.1.1.7 Grade 6 Tier 1

ELA	Math				
	Advanced	Proficient	Emerging	Novice	Missing
Advanced	110	134	11	50	47
Proficient	8	51	29	46	13
Emerging	1	15	264	29	36
Novice	2	32	54	37	16
Missing	0	0	0	0	0

13.1.1.8 Grade 6 Tier 2

ELA	Math				
	Advanced	Proficient	Emerging	Novice	Missing
Advanced	83	35	0	6	10
Proficient	127	118	13	63	29
Emerging	0	1	9	2	2
Novice	10	28	10	24	6
Missing	0	0	0	0	0

13.1.1.9 Grade 7 Tier 1

ELA	Math				
	Advanced	Proficient	Emerging	Novice	Missing
Advanced	95	62	4	35	31
Proficient	26	60	36	63	29
Emerging	1	4	186	29	17
Novice	2	17	90	70	21
Missing	0	0	0	0	0

13.1.1.10 Grade 7 Tier 2

	Math				
ELA	Advanced	Proficient	Emerging	Novice	Missing
Advanced	187	130	3	50	34
Proficient	53	97	4	60	19
Emerging	0	3	6	18	3
Novice	8	24	2	42	8
Missing	0	0	0	0	0

13.1.1.11 Grade 8 Tier 1

	Math				
ELA	Advanced	Proficient	Emerging	Novice	Missing
Advanced	130	10	3	4	20
Proficient	147	16	7	1	20
Emerging	25	94	2	0	14
Novice	152	71	5	0	37
Missing	0	0	0	0	0

13.1.1.12 Grade 8 Tier 2

	Math				
ELA	Advanced	Proficient	Emerging	Novice	Missing
Advanced	27	135	11	31	24
Proficient	22	110	28	72	31
Emerging	14	10	42	20	11
Novice	18	34	29	62	12
Missing	0	0	0	0	0

13.1.1.13 Grade 11 Tier 2

		Math			
ELA	Advanced	Proficient	Emerging	Novice	Missing
Advanced	231	45	0	15	14
Proficient	45	30	0	16	7
Emerging	10	12	1	16	2
Novice	11	7	0	6	4
Missing	0	0	0	0	0

13.1.1.14   Grade 11 Tier 1

		Math			
ELA	Advanced	Proficient	Emerging	Novice	Missing
Advanced	46	123	0	1	5
Proficient	6	72	0	0	4
Emerging	1	266	0	0	42
Novice	0	65	0	0	3
Missing	0	0	0	0	0

13.2 English/Language Arts (ELA) - Science

Grade	Tier	Chi-Square	p-value
4	1	421.51	< .01
4	2	59.14	< .01
8	1	388.10	< .01
8	2	201.48	< .01
11	2	62.73	< .01
11	1	182.21	< .01

13.2.1 Performance Level Matrices

13.2.1.1 Grade 4 Tier 1

| ELA | Science | | | | |
	Advanced	Proficient	Emerging	Novice	Missing
Advanced	0	225	1	161	41
Proficient	0	96	3	152	46
Emerging	0	12	99	201	84
Novice	0	48	4	131	27
Missing	0	0	0	0	0

13.2.1.2 Grade 4 Tier 2

| ELA | Science | | | | |
	Advanced	Proficient	Emerging	Novice	Missing
Advanced	0	105	0	22	14
Proficient	0	44	1	60	17
Emerging	0	0	0	4	1
Novice	0	1	0	7	0
Missing	0	0	0	0	0

13.2.1.3 Grade 8 Tier 1

ELA	Science				
	Advanced	Proficient	Emerging	Novice	Missing
Advanced	9	70	1	63	24
Proficient	0	42	9	107	33
Emerging	0	0	101	11	23
Novice	0	15	98	116	36
Missing	0	0	0	0	0

13.2.1.4 Grade 8 Tier 2

ELA	Science				
	Advanced	Proficient	Emerging	Novice	Missing
Advanced	35	142	3	22	26
Proficient	9	156	4	55	39
Emerging	0	21	10	49	17
Novice	0	50	4	84	17
Missing	0	0	0	0	0

13.2.1.5 Grade 11 Tier 2

ELA	Science				
	Advanced	Proficient	Emerging	Novice	Missing
Advanced	32	215	0	39	19
Proficient	0	47	0	41	10
Emerging	0	20	0	16	5
Novice	1	15	0	8	4
Missing	0	0	0	0	0

13.2.1.6 Grade 11 Tier 1

		Science			
ELA	Advanced	Proficient	Emerging	Novice	Missing
Advanced	12	116	0	40	7
Proficient	0	45	0	31	6
Emerging	0	70	52	131	56
Novice	0	27	1	37	3
Missing	0	0	0	0	0

13.3 Mathematics - Science

Grade	Tier	Chi-Square	p-value
4	1	893.76	< .01
4	2	137.03	< .01
8	1	479.75	< .01
8	2	296.37	< .01
11	2	197.10	< .01
11	1	376.10	< .01

13.3.1 Performance Level Matrices

13.3.1.1 Grade 4 Tier 1

	Science				
Math	Advanced	Proficient	Emerging	Novice	Missing
Advanced	0	129	1	48	10
Proficient	0	164	3	261	35
Emerging	0	14	98	149	28
Novice	0	61	4	162	27
Missing	0	13	1	25	98

13.3.1.2 Grade 4 Tier 2

	Science				
Math	Advanced	Proficient	Emerging	Novice	Missing
Advanced	0	81	0	14	3
Proficient	0	49	0	47	10
Emerging	0	3	0	9	0
Novice	0	11	1	20	2
Missing	0	6	0	3	17

13.3.1.3 Grade 8 Tier 1

	Science				
Math	Advanced	Proficient	Emerging	Novice	Missing
Advanced	8	109	73	231	33
Proficient	0	10	128	38	15
Emerging	0	1	2	13	1
Novice	0	3	0	2	0
Missing	1	4	6	13	67

13.3.1.4 Grade 8 Tier 2

	Science				
Math	Advanced	Proficient	Emerging	Novice	Missing
Advanced	11	34	4	29	3
Proficient	28	187	2	49	23
Emerging	1	40	7	54	8
Novice	3	91	3	73	15
Missing	1	17	5	5	50

13.3.1.5 Grade 11 Tier 2

	Science				
Math	Advanced	Proficient	Emerging	Novice	Missing
Advanced	32	210	0	45	10
Proficient	1	53	0	34	6
Emerging	0	0	0	1	0
Novice	0	28	0	22	3
Missing	0	6	0	2	19

13.3.1.6 Grade 11 Tier 1

	Science				
Math	Advanced	Proficient	Emerging	Novice	Missing
Advanced	9	38	0	5	1
Proficient	3	216	50	229	28
Emerging	0	0	0	0	0
Novice	0	0	0	1	0
Missing	0	4	3	4	43

14 Number of Items with No Response or Not Attempted

14.1 English/Language Arts (ELA)

14.1.1 Grade 3 Tier - No Response
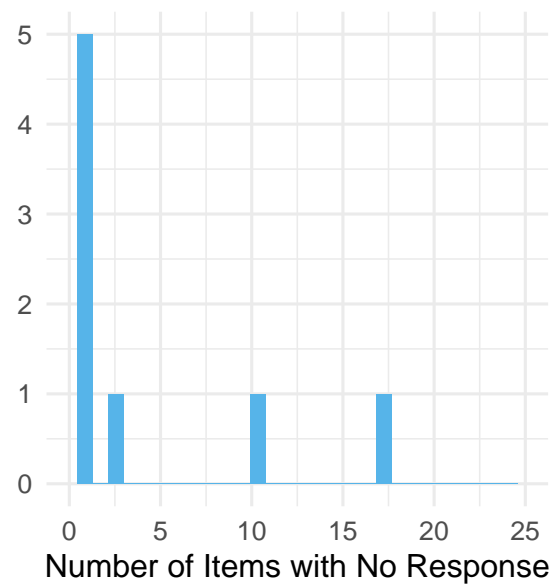
Figure 6.2.2.1

ELA Grade 3: Histograms of Items with No Response

Tier 1

Showing 270 of 1344 Tier 1 students with at least one item with no response.

Number of Items with No Response
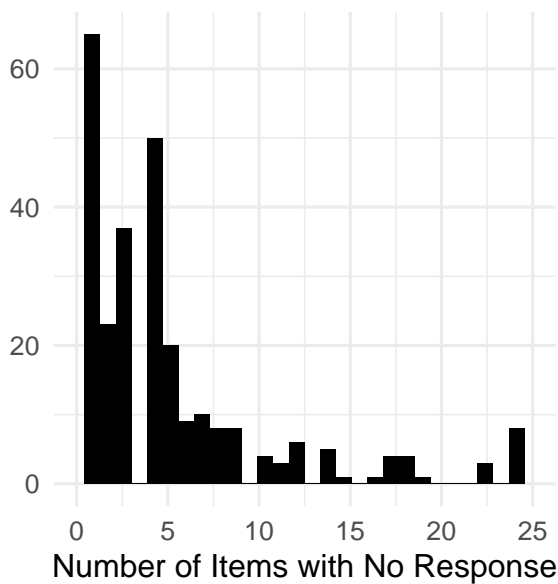
Tier 2

Showing 8 of 201 Tier 2 students with at least one item with no response.

Number of Items with No Response

Figure 6.2.2.2

ELA Grade 3: Histograms of Items Not Attempted

Tier 1

Showing 105 of 1344 Tier 1 students
with at least one item not attempted.

Tier 2

Zero Tier 2 students
with at least one item not attempted.

Figure 6.2.2.3

ELA Grade 4: Histograms of Items with No Response

Tier 1

Showing 206 of 1331 Tier 1 students
with at least one item with no response.

Tier 2

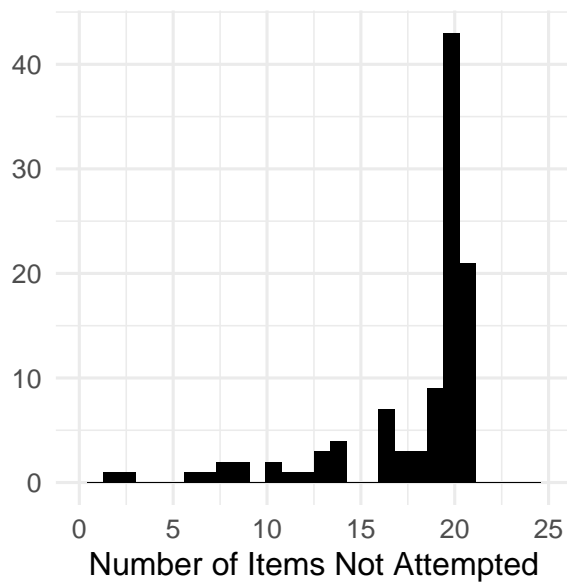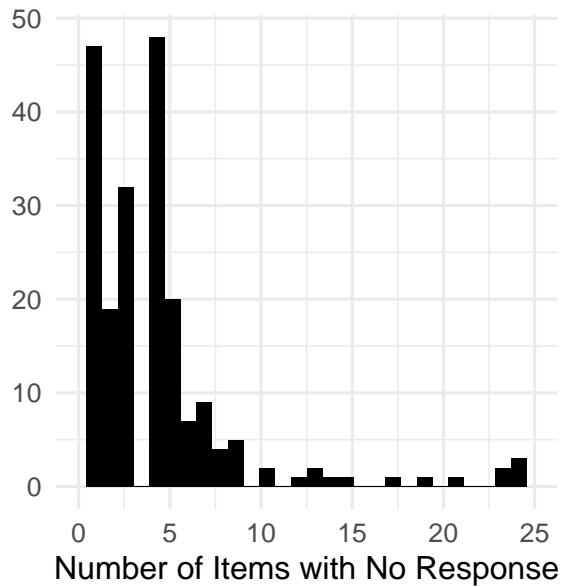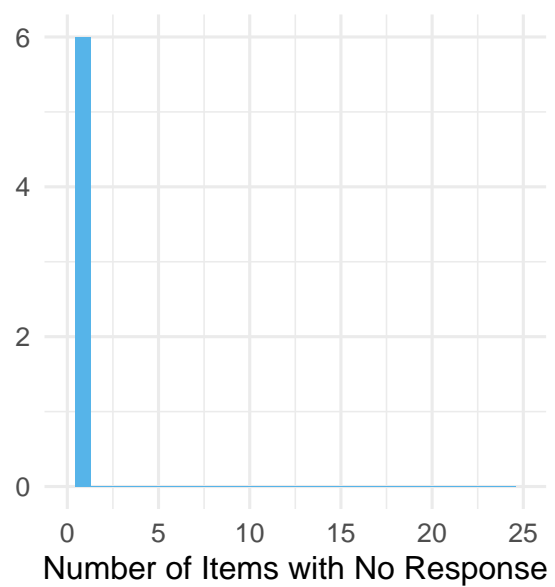Showing 6 of 276 Tier 2 students
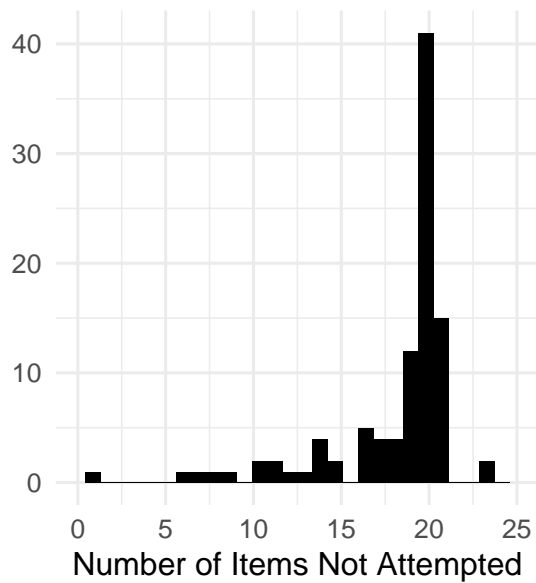with at least one item with no response.

Figure 6.2.2.4

ELA Grade 4: Histograms of Items Not Attempted

Tier 1

Showing 100 of 1331 Tier 1 students
with at least one item not attempted.

Tier 2

Showing 1 of 276 Tier 2 students
with at least one item not attempted.

Figure 6.2.2.5

ELA Grade 5: Histograms of Items with No Response

Tier 1

Showing 169 of 1077 Tier 1 students
with at least one item with no response.

Tier 2

Showing 7 of 500 Tier 2 students
with at least one item with no response.

Figure 6.2.2.6

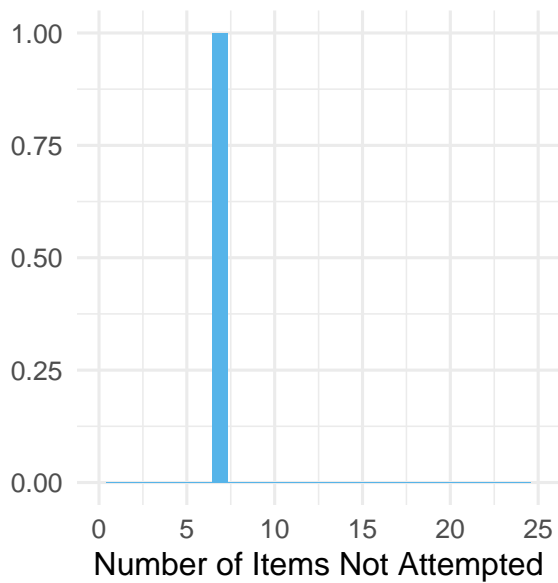ELA Grade 5: Histograms of Items Not Attempted

Tier 1

Showing 88 of 1077 Tier 1 students
with at least one item not attempted.

Tier 2

Showing 1 of 500 Tier 2 students
with at least one item not attempted.

Figure 6.2.2.7

ELA Grade 6: Histograms of Items with No Response

Tier 1

Showing 144 of 985 Tier 1 students
with at least one item with no response.

Tier 2

Showing 8 of 576 Tier 2 students
with at least one item with no response.

Figure 6.2.2.8

ELA Grade 6: Histograms of Items Not Attempted

Tier 1

Showing 80 of 985 Tier 1 students
with at least one item not attempted.

Tier 2

Showing 3 of 576 Tier 2 students
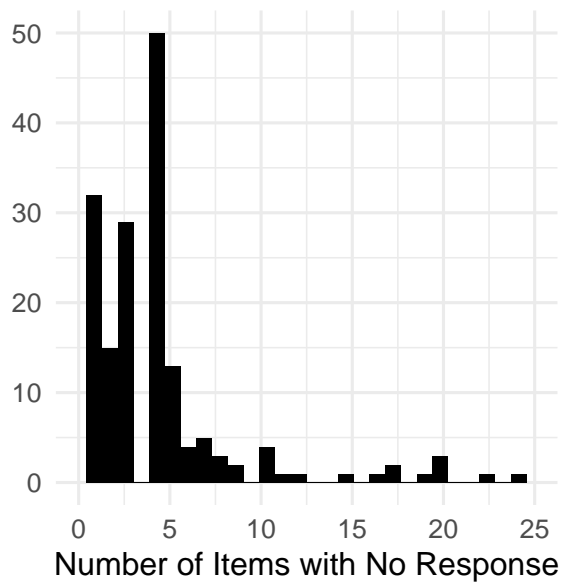with at least one item not attempted.

Figure 6.2.2.9

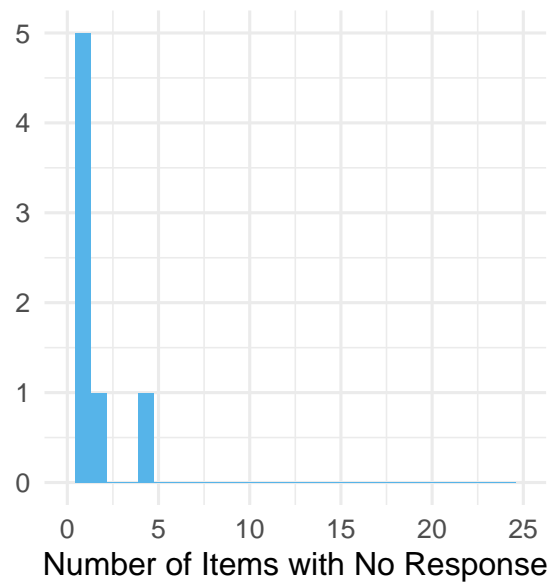ELA Grade 7: Histograms of Items with No Response

Tier 1

Showing 142 of 878 Tier 1 students
with at least one item with no response.

Tier 2

Showing 7 of 751 Tier 2 students
with at least one item with no response.

Figure 6.2.2.10

ELA Grade 7: Histograms of Items Not Attempted

Tier 1

Showing 86 of 878 Tier 1 students
with at least one item not attempted.

Tier 2

Showing 4 of 751 Tier 2 students
with at least one item not attempted.

Figure 6.2.2.11

ELA Grade 8: Histograms of Items with No Response

Tier 1

Showing 122 of 758 Tier 1 students
with at least one item with no response.

Tier 2

Showing 11 of 743 Tier 2 students
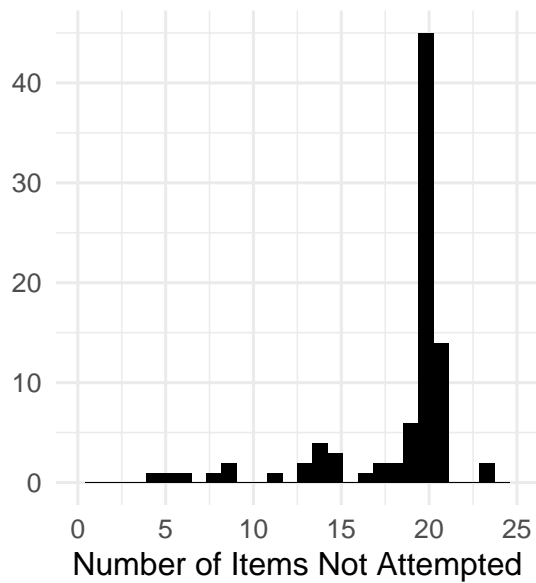with at least one item with no response.

Figure 6.2.2.12

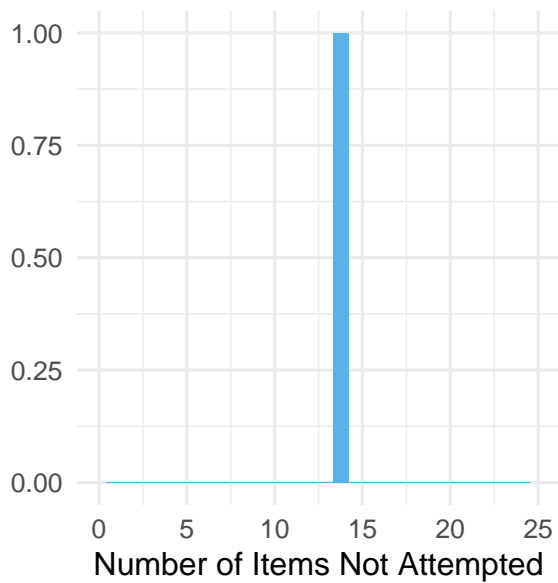ELA Grade 8: Histograms of Items Not Attempted

Tier 1

Showing 68 of 758 Tier 1 students
with at least one item not attempted.

Tier 2

Showing 7 of 743 Tier 2 students
with at least one item not attempted.

Figure 6.2.2.13

ELA Grade 11: Histograms of Items with No Response

Tier 1

Showing 97 of 634 Tier 1 students
with at least one item with no response.

Tier 2

Showing 7 of 472 Tier 2 students
with at least one item with no response.

Figure 6.2.2.14

ELA Grade 11: Histograms of Items Not Attempted

Tier 1

Showing 46 of 634 Tier 1 students
with at least one item not attempted.

Tier 2

Showing 2 of 472 Tier 2 students
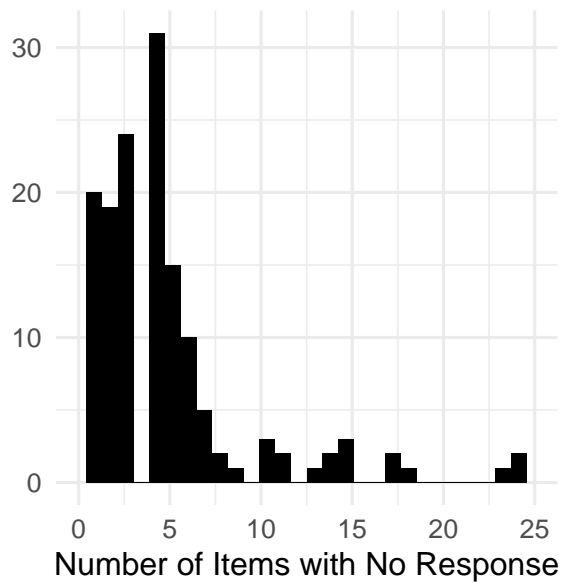with at least one item not attempted.

14.2 Mathematics

14.2.1 Grade 3 Tier - No Response

Figure 6.2.2.15

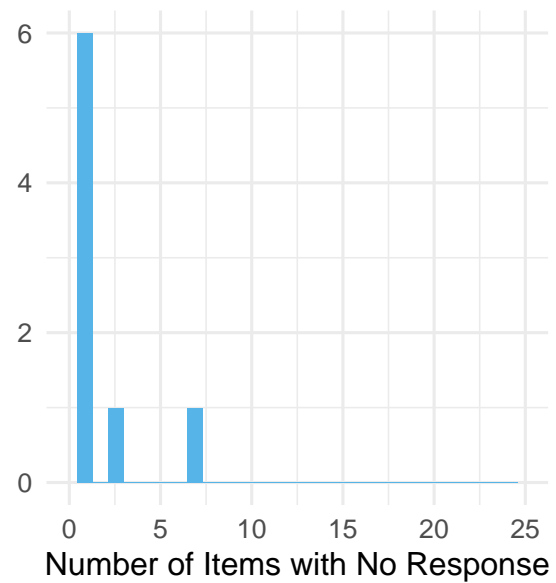Math Grade 3: Histograms of Items with No Response

Tier 1

Showing 319 of 1248 Tier 1 students
with at least one item with no response.

Tier 2

Showing 13 of 191 Tier 2 students
with at least one item with no response.

Figure 6.2.2.16

Math Grade 3: Histograms of Items Not Attempted

Tier 1

Showing 113 of 1248 Tier 1 students
with at least one item not attempted.

Tier 2

Zero Tier 2 students
with at least one item not attempted.

Figure 6.2.2.17

Math Grade 4: Histograms of Items with No Response

Tier 1

Showing 253 of 1227 Tier 1 students
with at least one item with no response.
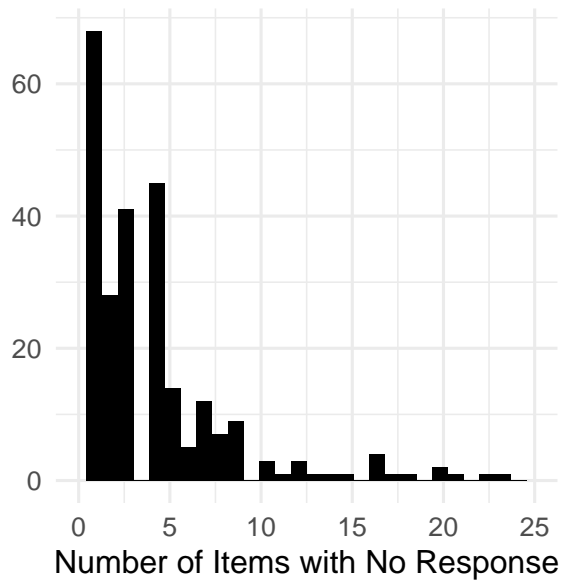
Tier 2

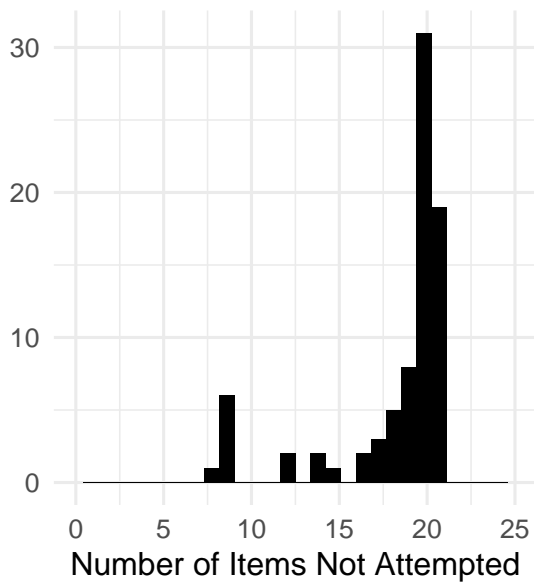Showing 9 of 276 Tier 2 students
with at least one item with no response.
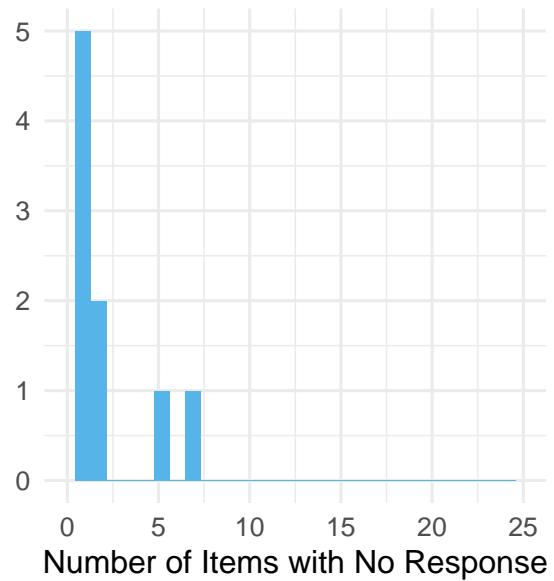
Figure 6.2.2.18

Math Grade 4: Histograms of Items Not Attempted

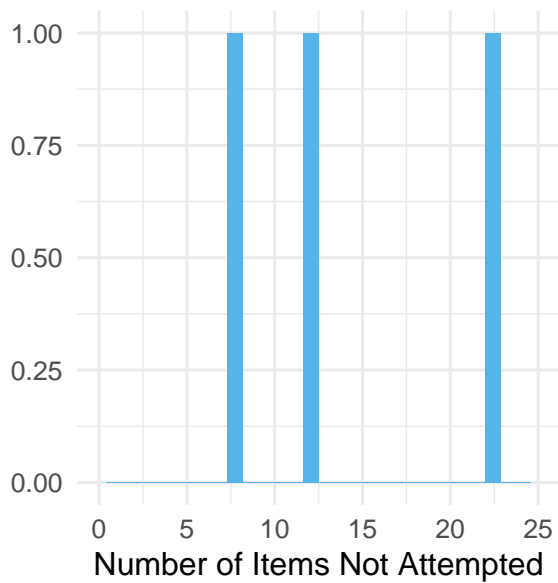## Tier 1

Showing 95 of 1227 Tier 1 students
with at least one item not attempted.
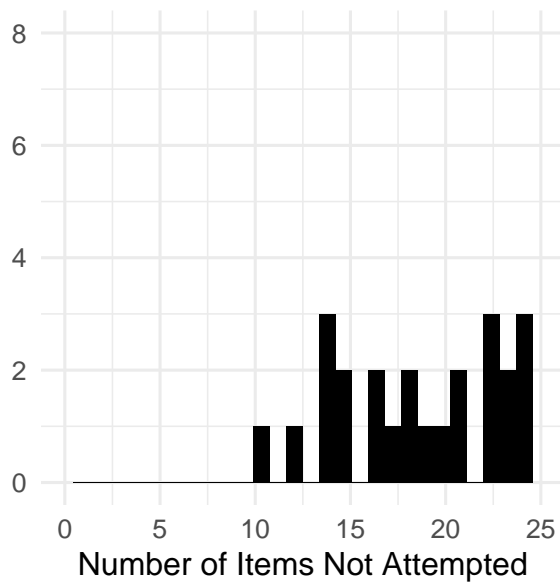
Tier 2

Zero Tier 2 students
with at least one item not attempted.

Figure 6.2.2.19

Math Grade 5: Histograms of Items with No Response

Tier 1

Showing 207 of 1015 Tier 1 students
with at least one item with no response.
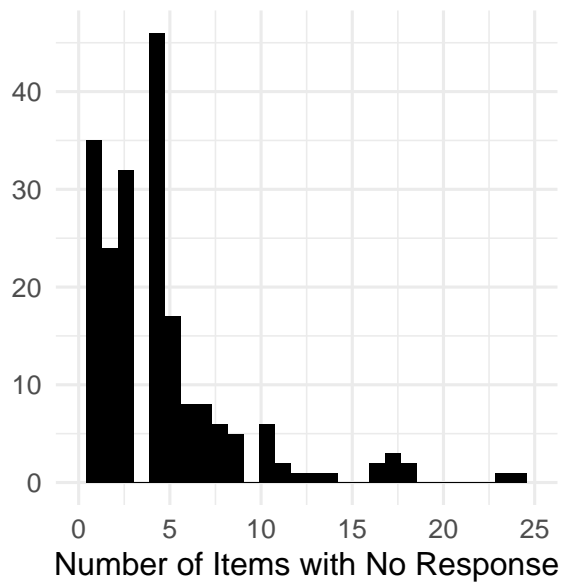
Tier 2

Showing 15 of 442 Tier 2 students
with at least one item with no response.
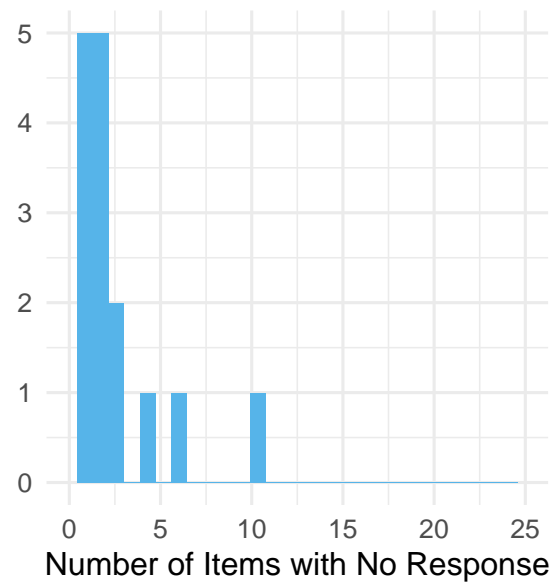
Figure 6.2.2.20

Math Grade 5: Histograms of Items Not Attempted

Tier 1

Showing 92 of 1015 Tier 1 students
with at least one item not attempted.
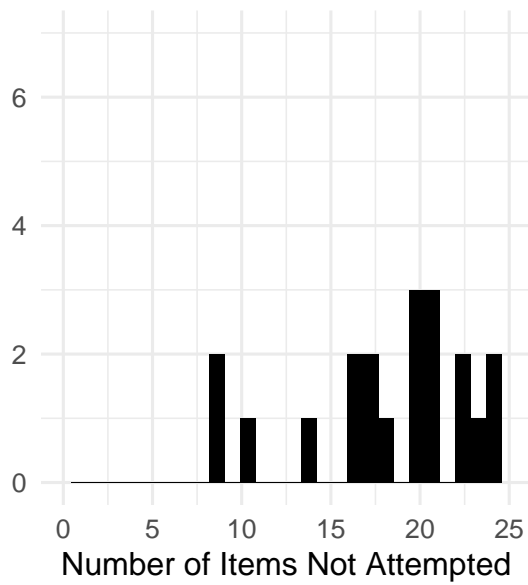
Tier 2

Showing 2 of 442 Tier 2 students
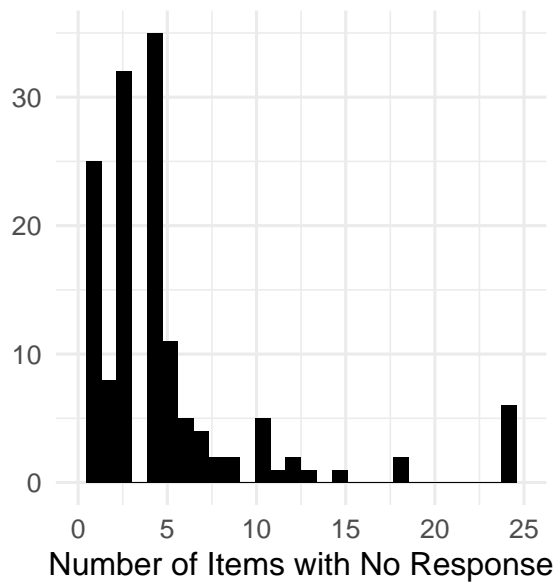with at least one item not attempted.
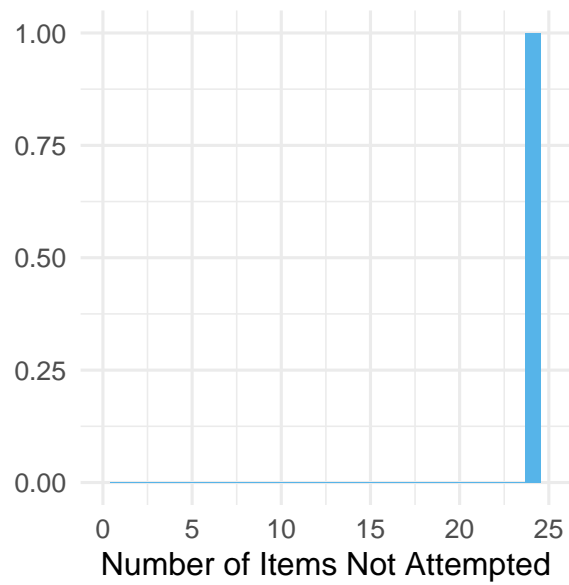
Figure 6.2.2.21

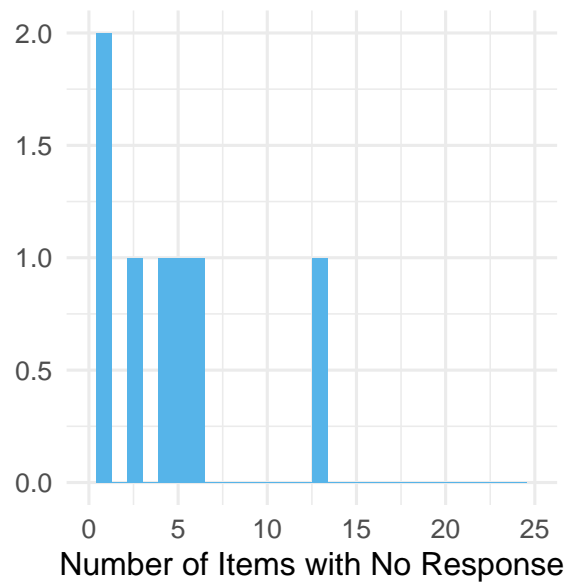Math Grade 6: Histograms of Items with No Response

Tier 1

Showing 175 of 922 Tier 1 students
with at least one item with no response.
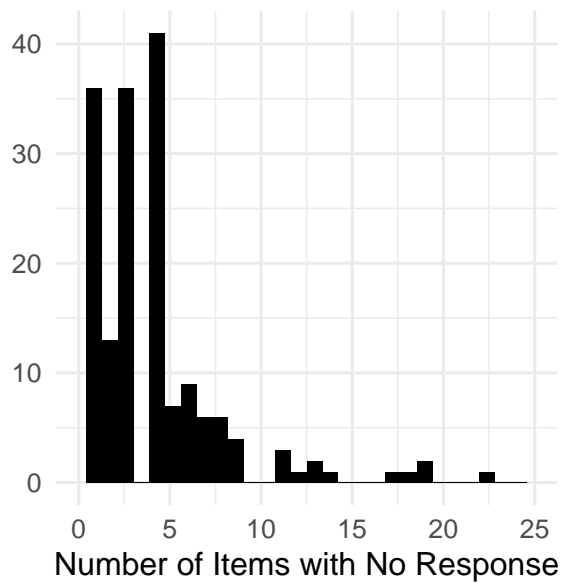
Tier 2

Showing 11 of 507 Tier 2 students
with at least one item with no response.
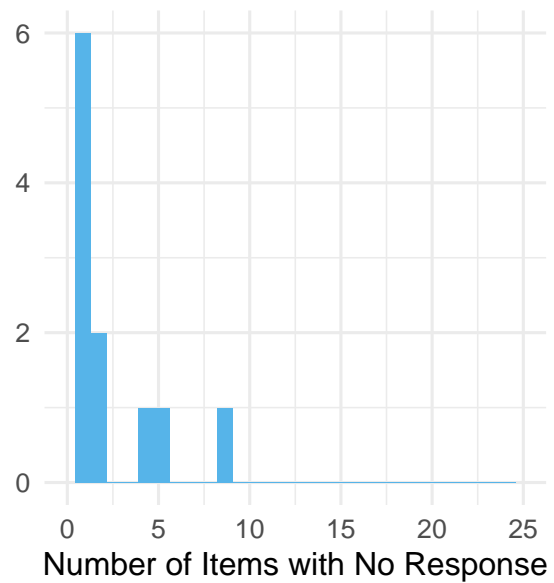
Figure 6.2.2.22

Math Grade 6: Histograms of Items Not Attempted

Tier 1

Showing 81 of 922 Tier 1 students
with at least one item not attempted.
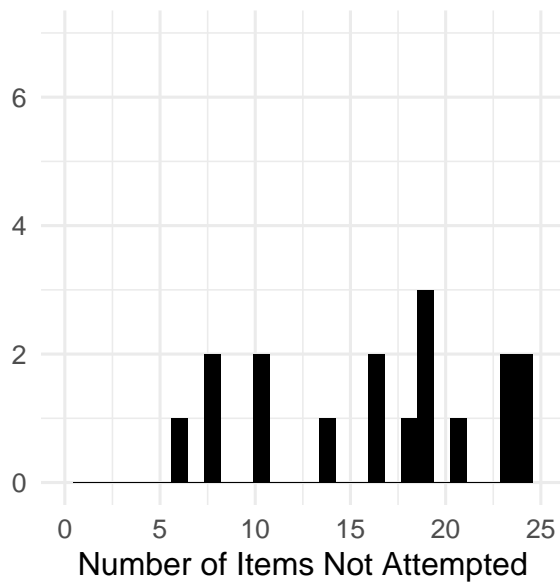
Tier 2

Showing 1 of 507 Tier 2 students
with at least one item not attempted.
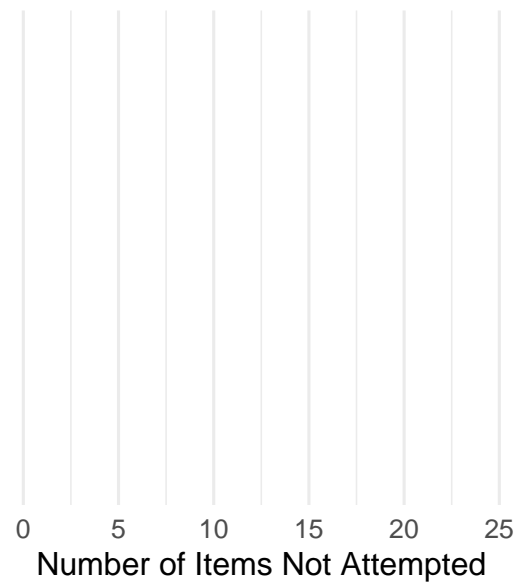
Figure 6.2.2.23

Math Grade 7: Histograms of Items with No Response

Tier 1

Showing 176 of 878 Tier 1 students
with at least one item with no response.
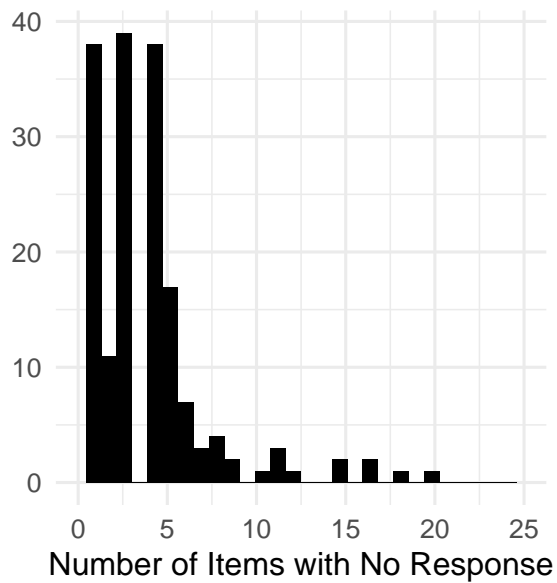
Tier 2

Showing 15 of 628 Tier 2 students
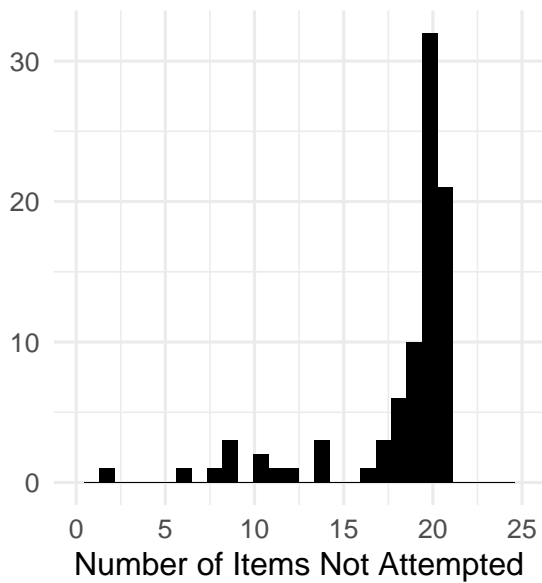with at least one item with no response.
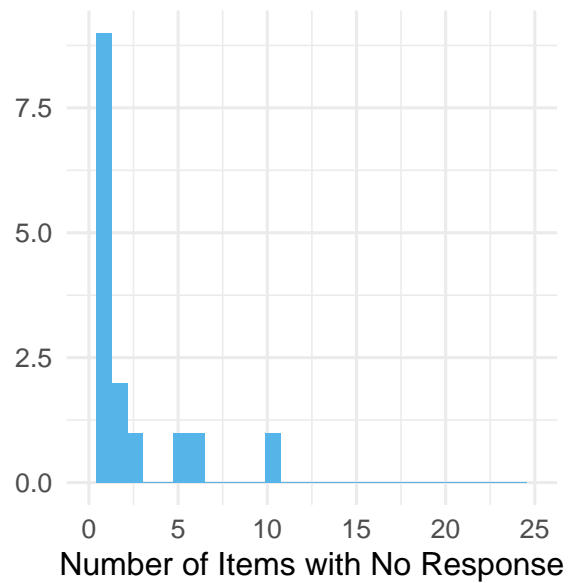
Figure 6.2.2.24

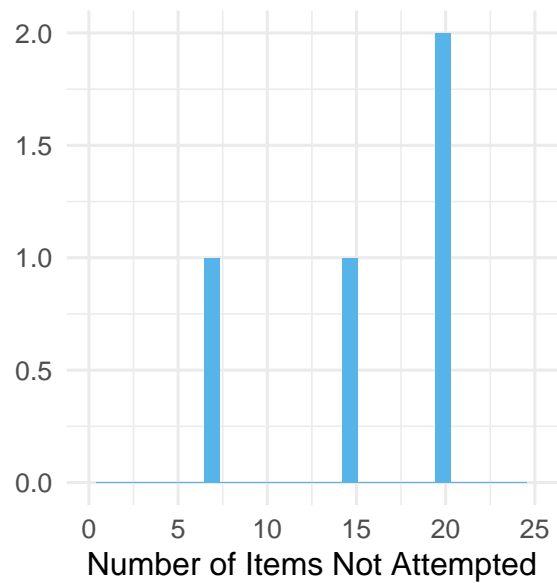Math Grade 7: Histograms of Items Not Attempted

Tier 1

Showing 89 of 878 Tier 1 students
with at least one item not attempted.
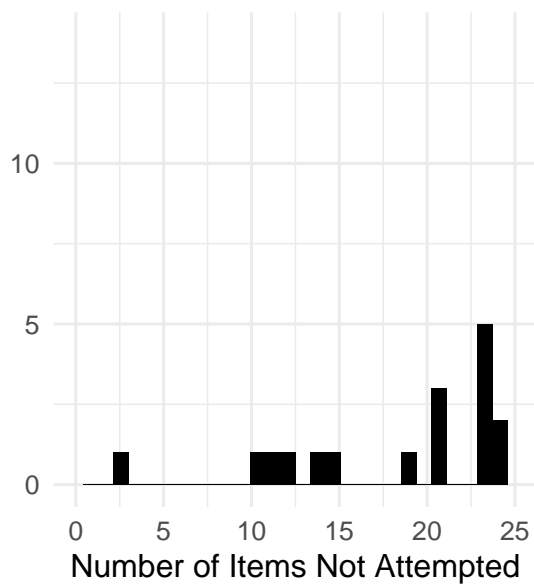
Tier 2

Showing 4 of 628 Tier 2 students
with at least one item not attempted.
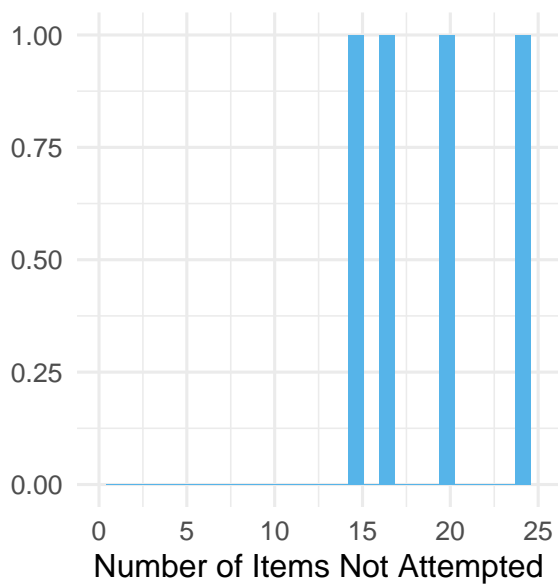
Figure 6.2.2.25

Math Grade 8: Histograms of Items with No Response

Tier 1

Showing 123 of 709 Tier 1 students
with at least one item with no response.
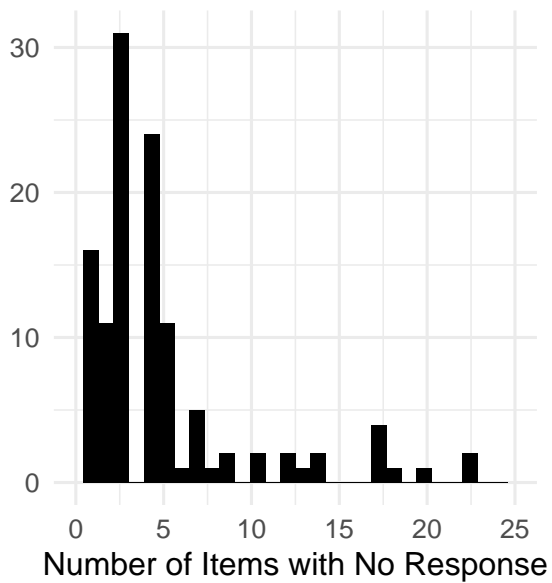
Tier 2

Showing 16 of 660 Tier 2 students
with at least one item with no response.
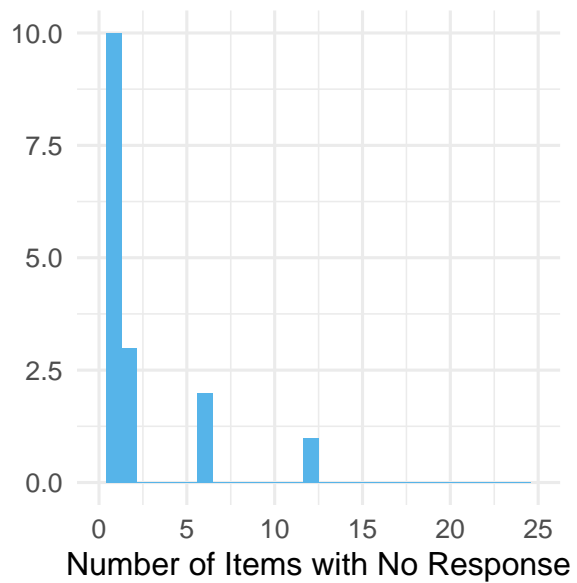
Figure 6.2.2.26

Math Grade 8: Histograms of Items Not Attempted

Tier 1

Showing 69 of 709 Tier 1 students
with at least one item not attempted.
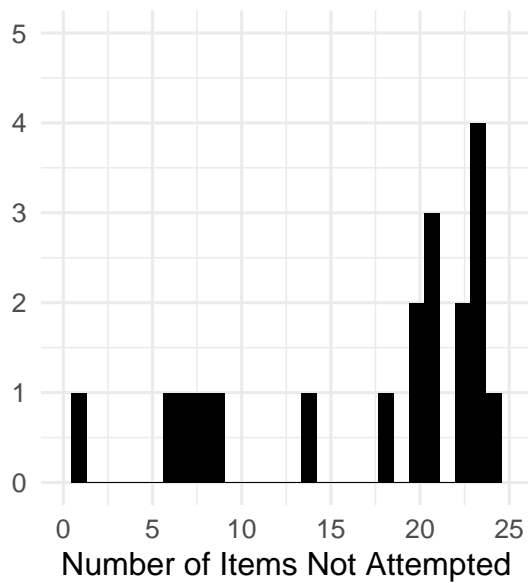
Tier 2

Showing 3 of 660 Tier 2 students
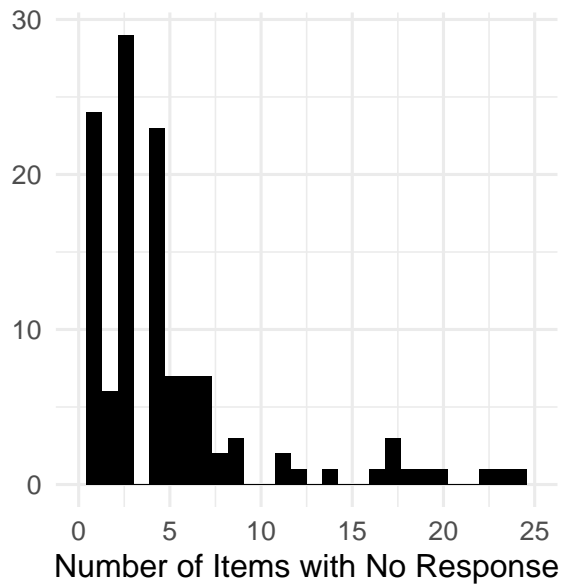with at least one item not attempted.
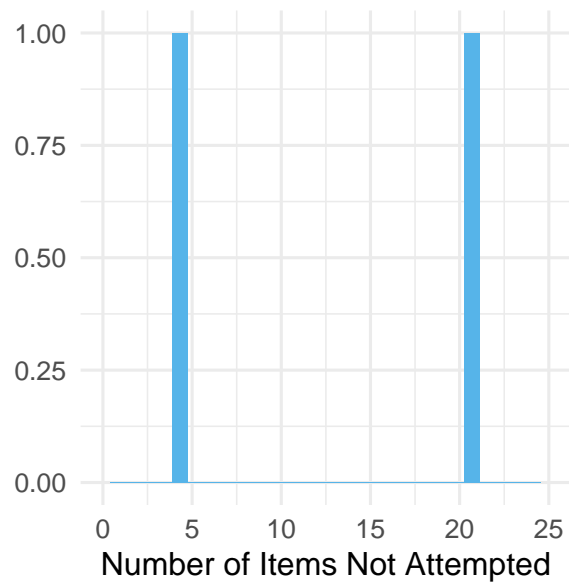
Figure 6.2.2.27

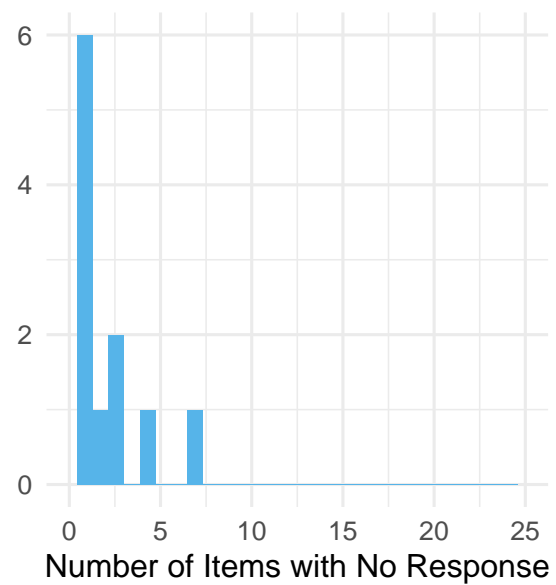Math Grade 11: Histograms of Items with No Response

Tier 1

Showing 91 of 609 Tier 1 students
with at least one item with no response.
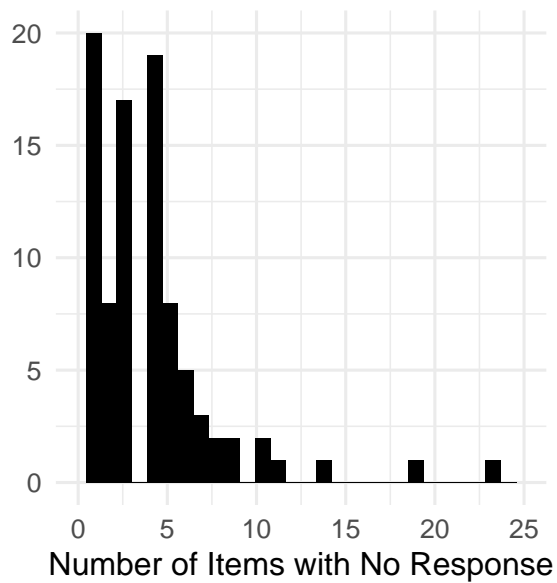
Tier 2

Showing 13 of 428 Tier 2 students
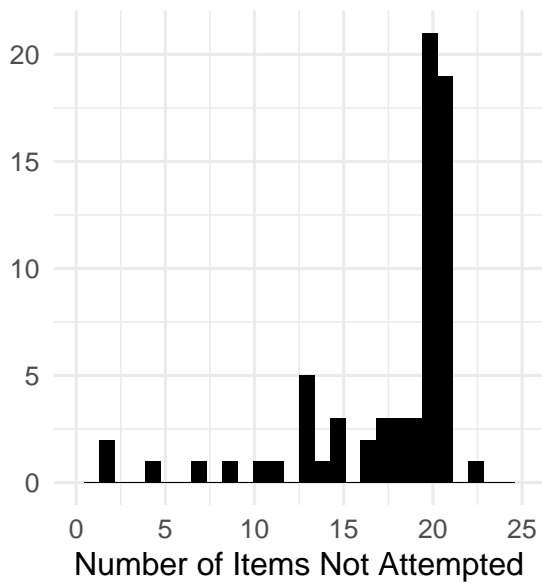with at least one item with no response.
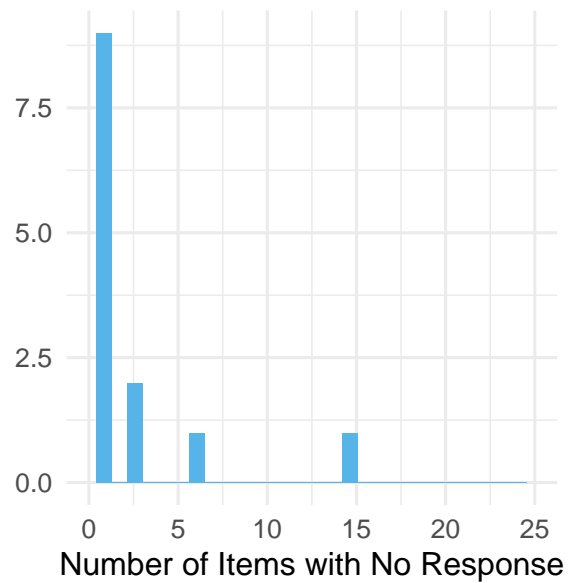
Figure 6.2.2.28

Math Grade 11: Histograms of Items Not Attempted

Tier 1

Showing 44 of 609 Tier 1 students
with at least one item not attempted.

Number of Items Not Attempted
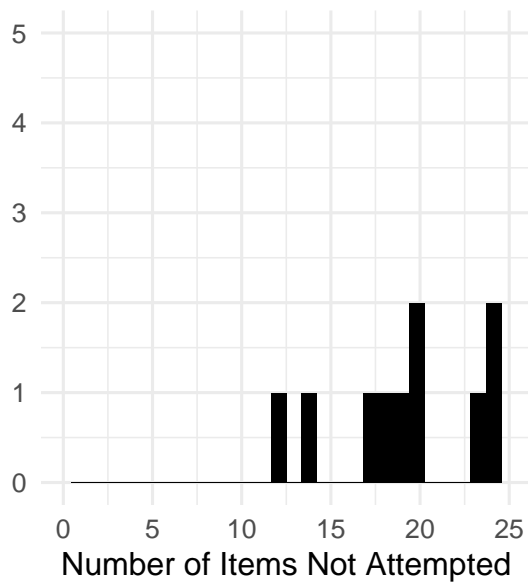
Tier 2

Showing 1 of 428 Tier 2 students
with at least one item not attempted.

Number of Items Not Attempted
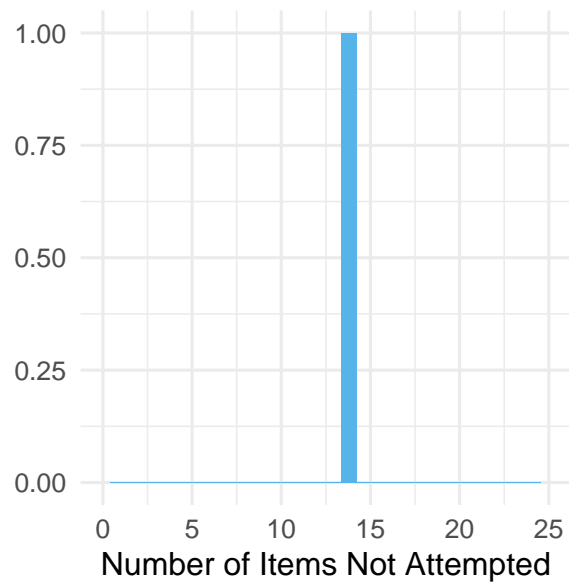
14.3 Science

14.3.1 Grade 4 Tier - No Response

Figure 6.2.2.29

Science Grade 4: Histograms of Items with No Response

Tier 1

Showing 208 of 571 Tier 1 students
with at least one item with no response.
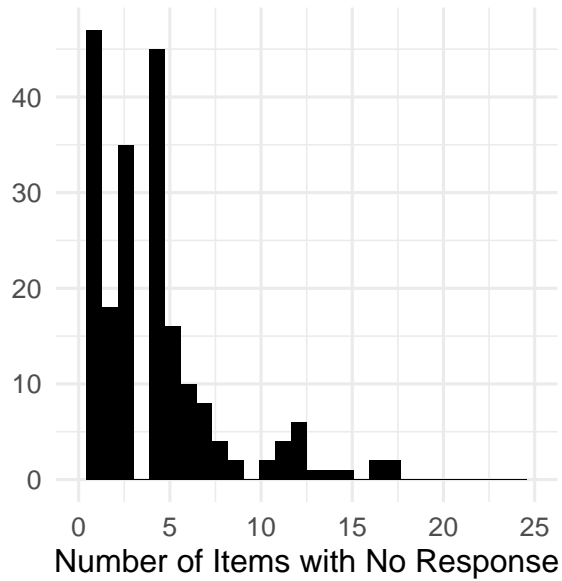
Tier 2

Showing 16 of 841 Tier 2 students
with at least one item with no response.
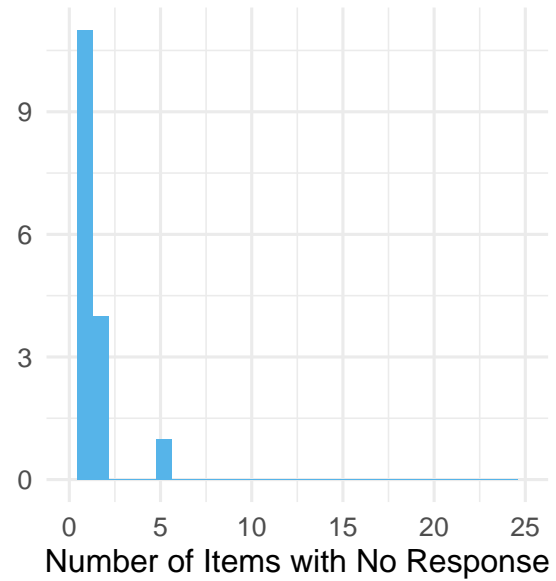
Figure 6.2.2.30

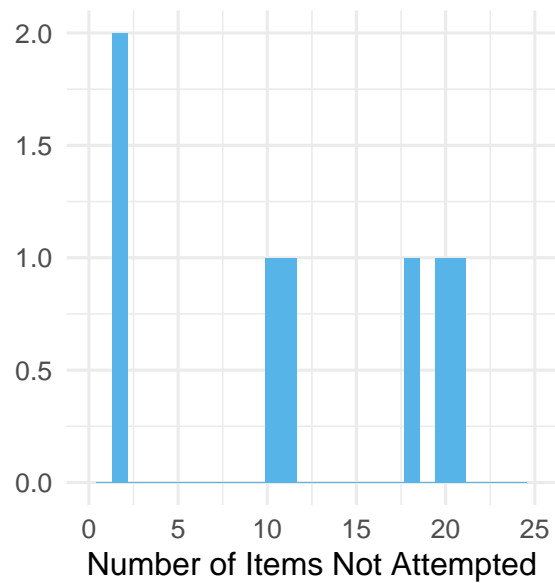Science Grade 4: Histograms of Items Not Attempted

Tier 1

Showing 92 of 571 Tier 1 students
with at least one item not attempted.
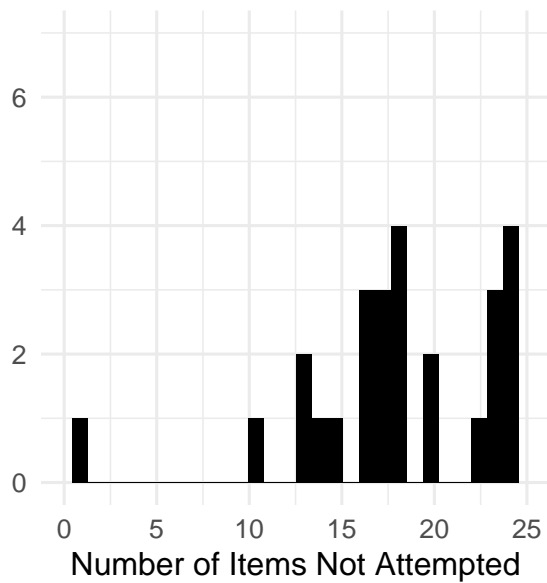
Tier 2

Showing 5 of 841 Tier 2 students
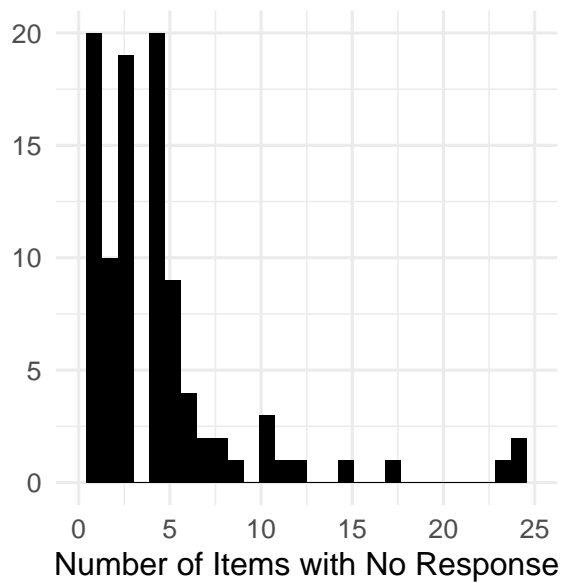with at least one item not attempted.
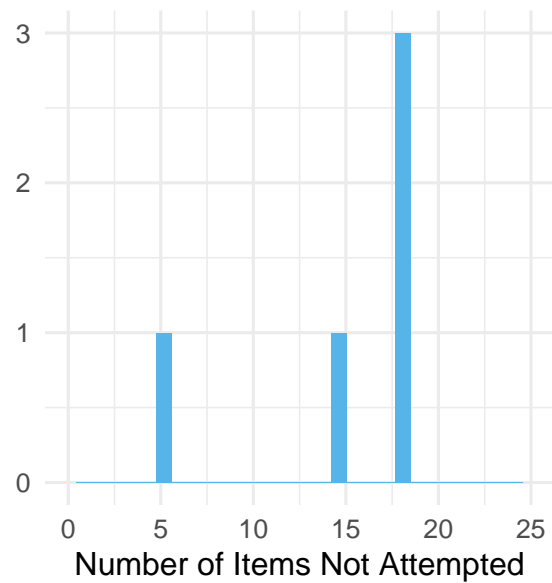
Figure 6.2.2.31

Science Grade 8: Histograms of Items with No Response

Tier 1

Showing 108 of 415 Tier 1 students
with at least one item with no response.

Number of Items with No Response
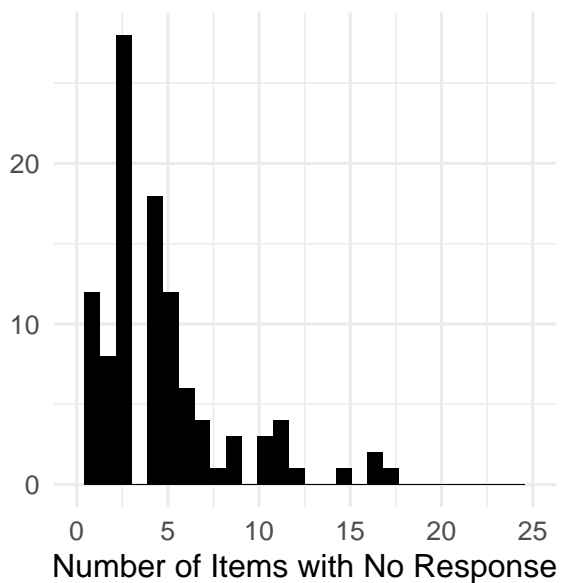
Tier 2

Showing 10 of 893 Tier 2 students
with at least one item with no response.

Number of Items with No Response
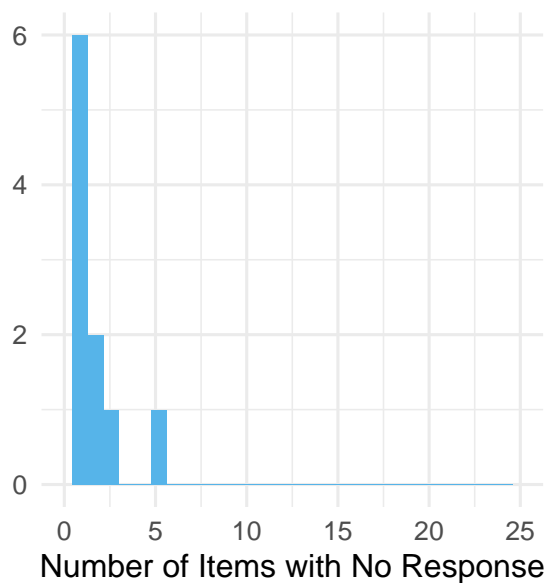
Figure 6.2.2.32
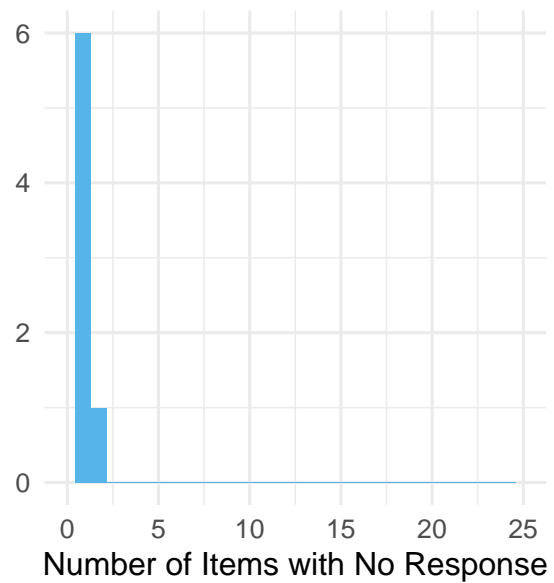
Science Grade 8: Histograms of Items Not Attempted

Tier 1

Showing 64 of 415 Tier 1 students
with at least one item not attempted.
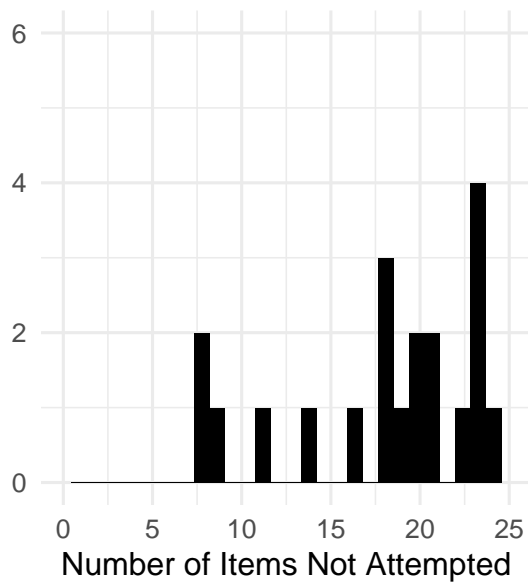
Tier 2

Showing 5 of 893 Tier 2 students
with at least one item not attempted.
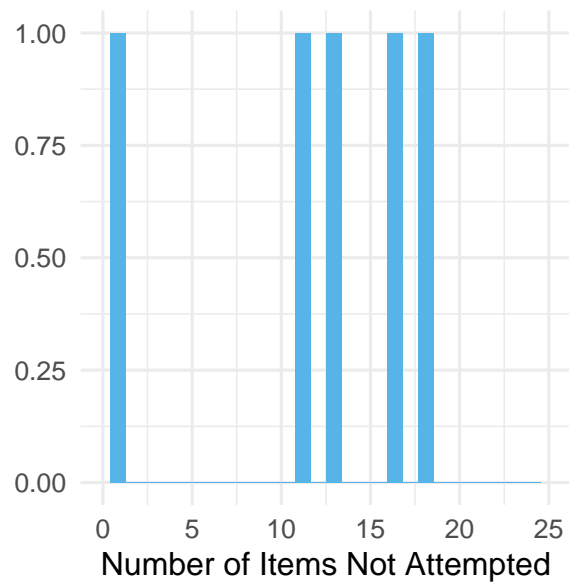
Figure 6.2.2.33

Science Grade 11: Histograms of Items with No Response

Tier 1

Showing 77 of 308 Tier 1 students
with at least one item with no response.
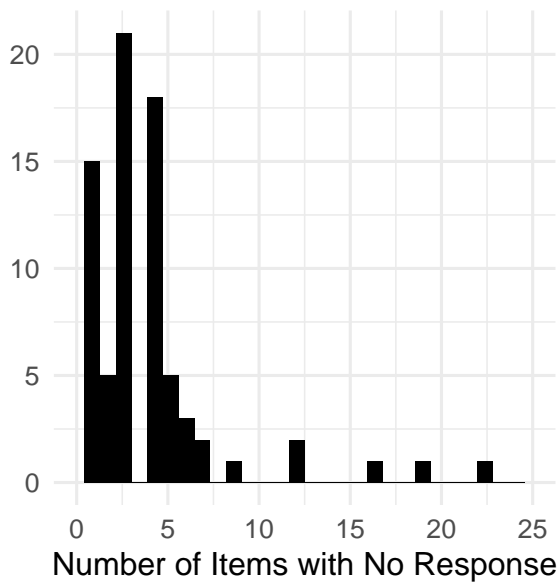
Tier 2

Showing 7 of 706 Tier 2 students
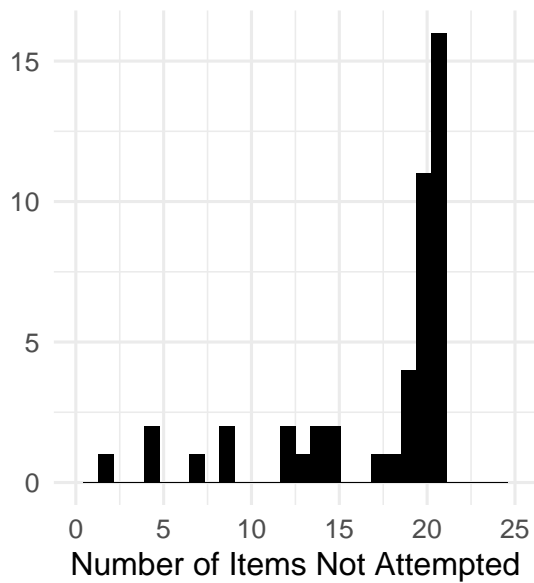with at least one item with no response.
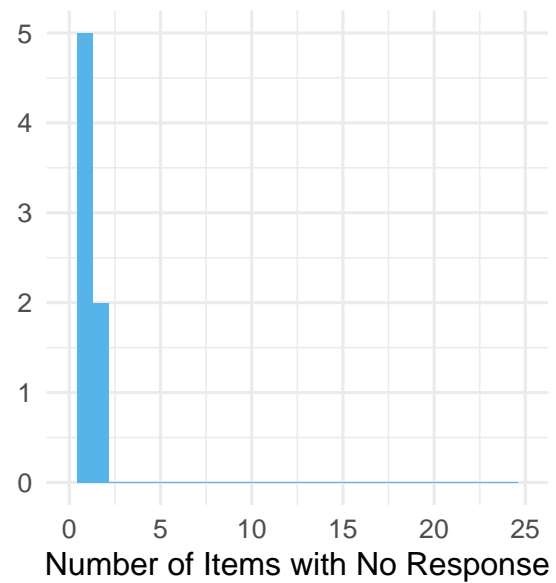
Figure 6.2.2.34

Science Grade 11: Histograms of Items Not Attempted
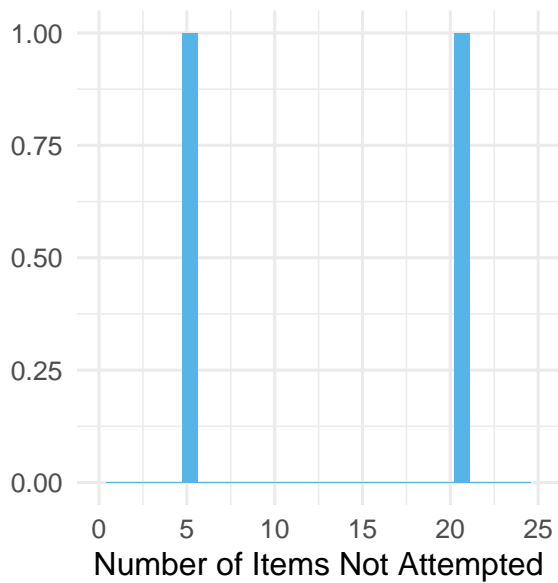
Tier 1

Showing 48 of 308 Tier 1 students
with at least one item not attempted.
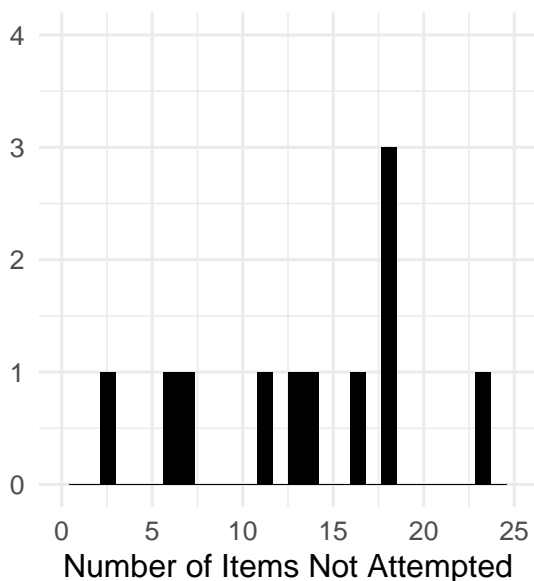
Tier 2

Showing 3 of 706 Tier 2 students
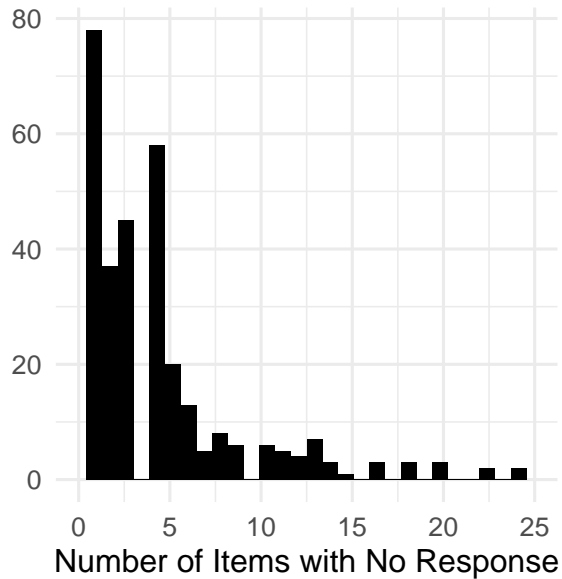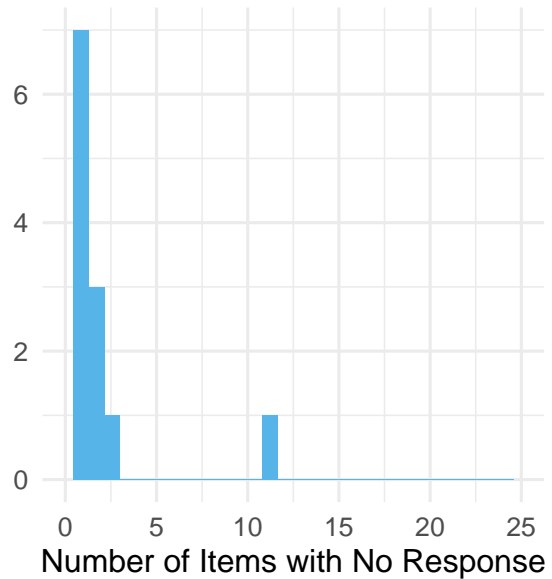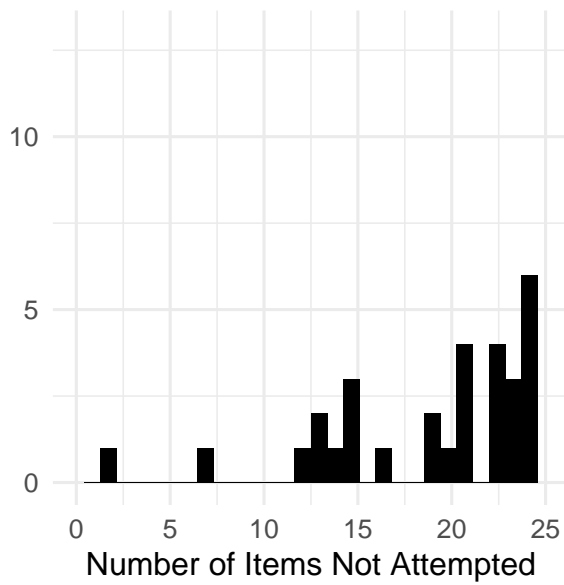with at least one item not attempted.
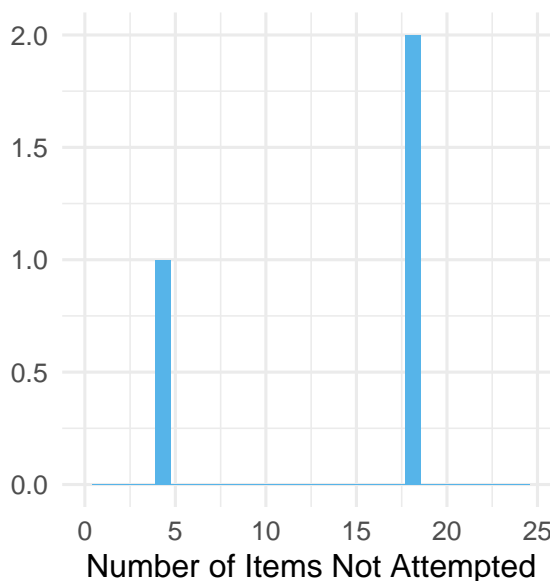
15 Fairness and Accessibility

As noted in the Standards for Educational and Psychological Testing, Standard 3.3 specifies that "Those responsible for test development should include relevant subgroups in validity, reliability/precision, and other preliminary studies used when constructing the test" (p. 64). This argument is expanded to include reporting outcomes by relevant subgroups, noting however, that "subgroup differences do not in and of themselves indicate lack of fairness, but such differences should trigger follow-up studies, where feasible, to identify the potential causes of such differences" (p. 65). American Educational Research Association, American Psychological Association, National Council on Measurement in Education (2014). Standards for Educational and Psychological Testing. Washington, DC: Authors. This evaluation was completed by comparing the performance (by subject area, grade level, and Tier) for the following student groups: (a) sex, (b) race-ethnicity, (c) Limited English Proficiency, (d) disability, and (e) free-reduced price lunch. This evaluation involved comparing student counts and average differences (using the mean relative to the standard deviation). The tables are displayed in an appendix.

16 English Language Arts

16.1 Gender

Few differences were reported by gender. Most of the student counts, averages, and standard deviations were similar for males and females. In Tier 2, slight differences (half a standard deviation) were present in the earlier (elementary) grades.

Grade	Tier	Cohen's D (Female - Male)
3	1	0.17
3	2	-0.42
4	1	-0.02
4	2	-0.25
5	1	-0.06
5	2	-0.19
6	1	0.07
6	2	0.05
7	1	0.00
7	2	-0.08
8	1	0.02
8	2	-0.14
11	1	-0.03
11	2	0.13

16.2 Limited English Proficiency

With Limited English Proficiency (coded as No versus Yes) within Tiers and grade levels, few differences were apparent in averages and standard deviations. On the other hand, as expected, great differences were present in the number of students (count) in these two groups.

Grade	Tier	Cohen's D (No - Yes)
3	1	-0.08
3	2	0.05
4	1	0.06
4	2	0.05
5	1	-0.02
5	2	0.47
6	1	-0.11
6	2	0.50
7	1	-0.26
7	2	0.36
8	1	0.06
8	2	0.26
11	1	0.05
11	2	0.66

16.3 Economically Disadvantaged

For the analyses comparing students receiving free and reduced price lunch, slightly higher performances were present for those not receiving such support; this was true across grades as well as Tiers.

Grade	Tier	Cohen's D (No - Yes)
3	1	-0.23
3	2	-0.18
4	1	-0.44
4	2	-0.23
5	1	-0.42
5	2	-0.10
6	1	-0.42
6	2	-0.31
7	1	-0.35
7	2	-0.31
8	1	-0.26
8	2	-0.24
11	1	-0.22
11	2	-0.24

16.4 Primary Disability

Like race-ethnicity (which had many different coded values), the analysis by disability resulted in great variation in counts, averages, and standard deviations. The two most present disabilities were Autism and Intellectual Disabilities, with Multiple Disabilities also quite prominent. This was true for both Tiers and across grade levels. Please see the appendix for descriptive statistics (counts, means, and standard deviations).

16.5 Ethnicity

When comparing the performance of students from different racial and ethnic groups, across the grade levels and Tiers, considerable variation was present in all aspects of count (number of students), averages, and standard deviations. Please see the appendix for descriptive statistics (counts, means, and standard deviations).

17 Mathematics

17.1 Gender

We found more males participating in the PASA than females, sometimes double the number. This was true across grades and Tiers. Furthermore, performance differences were slightly greater for males than females, across grades and Tiers. Both males and females had similar variance (standard deviations).

Grade	Tier	Cohen's D (Female - Male)
3	1	0.01
3	2	-0.61
4	1	-0.17
4	2	-0.48
5	1	-0.13
5	2	-0.41
6	1	-0.05
6	2	-0.26
7	1	-0.12
7	2	-0.18
8	1	-0.06
8	2	-0.18
11	1	0.03
11	2	-0.11

17.2 Limited English Proficiency

Limited English Proficient students, though fewer than the number of students deemed proficient, performed as well to those proficient, in all grades and Tiers; the variance in these two groups was comparable.

Grade	Tier	Cohen's D (No - Yes)
3	1	0.04
3	2	-0.34
4	1	-0.01
4	2	0.00
5	1	-0.14
5	2	-0.03
6	1	-0.15
6	2	-0.04
7	1	-0.17
7	2	0.07
8	1	-0.06
8	2	-0.23
11	1	-0.01
11	2	-0.15

17.3 Economically Disadvantaged

Students receiving free and reduced price lunch performed comparably to students who did not receive such support. The count of students in both groups was much greater in Tier 1. Though fewer in number (by half), the averages and standard deviations were quite similar with those receiving support often a bit higher (by a half standard deviation).

Grade	Tier	Cohen's D (No - Yes)
3	1	-0.18
3	2	-0.18
4	1	-0.30
4	2	-0.11
5	1	-0.40
5	2	-0.09
6	1	-0.40
6	2	-0.23
7	1	-0.40
7	2	-0.16
8	1	-0.21
8	2	-0.09
11	1	-0.16
11	2	-0.22

17.4 Ethnicity

The largest group of students were White, followed by Black/African American, and finally Hispanic students. This was true for all grades and Tiers. Wide variation existed in both the averages and standard deviations. Please see the appendix for descriptive statistics (counts, means, and standard deviations).

17.5 Primary Disability

The largest group of students were with Intellectual Disabilities or Autism, followed by Multiple Disabilities. Great variation was present in averages and standard divisions. Many disabilities had very few students participating in the PASA. Please see the appendix for descriptive statistics (counts, means, and standard deviations).

18 Science

18.1 Gender

In most grades and Tiers, far more males than females participated in the Science PASA and for both groups, more students took Tier 2 than Tier 1. Their performance (averages and standard deviations) were comparable.

Grade	Tier	Cohen's D (Female - Male)
4	1	0.20
4	2	-0.21
8	1	-0.01
8	2	-0.32
11	1	0.20
11	2	-0.12

18.2 Limited English Proficiency

The number of students with Limited English Proficiency was fairly small and much less than those with English proficiency. Both groups performed comparably (in averages and standard deviations) across the grades and Tiers.

Grade	Tier	Cohen's D (No - Yes)
4	1	-0.16
4	2	0.28
8	1	0.08
8	2	0.25
11	1	-0.02
11	2	0.30

18.3 Ethnicity

The count was greatest with White, then Black-African American, and Hispanic students. Values (averages and standard deviations) were slightly varied across the grades and Tiers but not as much as in ELA and Mathematics. Please see the appendix for descriptive statistics (counts, means, and standard deviations).

18.4 Primary Disability

As in ELA and Mathematics, the count of students was greatest with Autism and Intellectual Disabilities. Performance was somewhat varied (in averaged and standard deviations) across the grades and Tiers. Some disability areas were represented with only a few students, making it difficult to generalize. Please see the appendix for descriptive statistics (counts, means, and standard deviations).

19 Appendix

Note - cell sizes less than 5 not reported.

19.1 English/Language Arts

19.1.1 Gender

19.1.1.1 Grade 3 Tier 1

Group	n	mean	sd
Female	407	293.15	52.92
Male	937	284.23	51.85

19.1.1.2 Grade 3 Tier 2

Group	n	mean	sd
Female	59	524.86	48.00
Male	142	544.40	43.99

19.1.1.3 Grade 4 Tier 1

Group	n	mean	sd
Female	416	307.53	54.63
Male	915	308.84	51.21

19.1.1.4 Grade 4 Tier 2

Group	n	mean	sd
Female	91	558.29	34.88
Male	185	567.11	35.10

19.1.1.5 Grade 5 Tier 1

Group	n	mean	sd
Female	343	288.50	40.22
Male	734	290.87	38.93

19.1.1.6 Grade 5 Tier 2

Group	n	mean	sd
Female	141	516.19	42.82
Male	359	524.44	43.05

19.1.1.7 Grade 6 Tier 1

Group	n	mean	sd
Female	312	308.44	56.66
Male	673	304.46	56.95

19.1.1.8 Grade 6 Tier 2

Group	n	mean	sd
Female	171	548.92	40.25
Male	405	546.98	42.09

19.1.1.9 Grade 7 Tier 1

Group	n	mean	sd
Female	299	303.40	54.55
Male	579	303.47	55.70

19.1.1.10 Grade 7 Tier 2

Group	n	mean	sd
Female	235	535.27	36.80
Male	516	538.25	38.95

19.1.1.11 Grade 8 Tier 1

Group	n	mean	sd
Female	270	300.86	23.23
Male	488	300.41	24.02

19.1.1.12 Grade 8 Tier 2

Group	n	mean	sd
Female	237	515.34	44.56
Male	506	521.86	47.54

19.1.1.13 Grade 11 Tier 1

Group	n	mean	sd
Female	199	286.13	49.87
Male	435	287.72	50.58

19.1.1.14 Grade 11 Tier 2

Group	n	mean	sd
Female	156	554.76	41.72
Male	316	549.44	42.98

19.1.2 Limited English Proficient

19.1.2.1 Grade 3 Tier 1

Group	n	mean	sd
No	1256	286.66	52.19
Yes	88	290.74	54.29

19.1.2.2 Grade 3 Tier 2

Group	n	mean	sd
No	189	538.80	46.60
Yes	12	536.58	35.78

19.1.2.3 Grade 4 Tier 1

Group	n	mean	sd
No	1240	308.63	52.45
Yes	91	305.69	50.20

19.1.2.4 Grade 4 Tier 2

Group	n	mean	sd
No	263	564.28	35.31
Yes	13	562.62	34.40

19.1.2.5 Grade 5 Tier 1

Group	n	mean	sd
No	1000	290.06	39.47
Yes	77	290.78	37.87

19.1.2.6 Grade 5 Tier 2

Group	n	mean	sd
No	474	523.03	43.51
Yes	26	505.46	30.82

19.1.2.7 Grade 6 Tier 1

Group	n	mean	sd
No	915	305.31	57.42
Yes	70	311.11	49.02

19.1.2.8 Grade 6 Tier 2

Group	n	mean	sd
No	551	548.44	41.44
Yes	25	528.04	39.39

19.1.2.9 Grade 7 Tier 1

Group	n	mean	sd
No	811	302.38	55.49
Yes	67	316.36	51.23

19.1.2.10 Grade 7 Tier 2

Group	n	mean	sd
No	714	537.94	38.55
Yes	37	525.41	30.98

19.1.2.11 Grade 8 Tier 1

Group	n	mean	sd
No	697	300.69	23.77
Yes	61	299.23	23.35

19.1.2.12 Grade 8 Tier 2

Group	n	mean	sd
No	707	520.38	46.52
Yes	36	508.03	48.88

19.1.2.13 Grade 11 Tier 1

Group	n	mean	sd
No	588	287.39	50.70
Yes	46	285.09	45.73

19.1.2.14 Grade 11 Tier 2

Group	n	mean	sd
No	453	552.36	42.12
Yes	19	523.58	45.63

19.1.3 Economically Disadvantaged

19.1.3.1 Grade 3 Tier 1

Group	n	mean	sd
NO	531	279.75	49.91
YES	813	291.62	53.35

19.1.3.2 Grade 3 Tier 2

Group	n	mean	sd
NO	70	533.30	44.92
YES	131	541.53	46.42

19.1.3.3 Grade 4 Tier 1

Group	n	mean	sd
NO	480	294.03	51.68
YES	851	316.55	50.89

19.1.3.4 Grade 4 Tier 2

Group	n	mean	sd
NO	95	558.93	37.65
YES	181	566.97	33.64

19.1.3.5 Grade 5 Tier 1

Group	n	mean	sd
NO	370	279.46	38.88
YES	707	295.69	38.44

19.1.3.6 Grade 5 Tier 2

Group	n	mean	sd
NO	156	519.08	47.05
YES	344	523.49	41.19

19.1.3.7 Grade 6 Tier 1

Group	n	mean	sd
NO	360	290.91	54.34
YES	625	314.25	56.57

19.1.3.8 Grade 6 Tier 2

Group	n	mean	sd
NO	188	538.87	44.60
YES	388	551.76	39.32

19.1.3.9 Grade 7 Tier 1

Group	n	mean	sd
NO	327	291.44	53.41
YES	551	310.57	55.18

19.1.3.10 Grade 7 Tier 2

Group	n	mean	sd
NO	241	529.24	40.22
YES	510	541.14	36.77

19.1.3.11 Grade 8 Tier 1

Group	n	mean	sd
NO	299	296.90	21.93
YES	459	302.96	24.56

19.1.3.12 Grade 8 Tier 2

Group	n	mean	sd
NO	289	512.91	47.88
YES	454	524.15	45.41

19.1.3.13 Grade 11 Tier 1

Group	n	mean	sd
NO	244	280.40	48.95
YES	390	291.49	50.76

19.1.3.14 Grade 11 Tier 2

Group	n	mean	sd
NO	156	544.23	45.61
YES	316	554.64	40.66

19.1.4 Primary Disability

19.1.4.1 Grade 3 Tier 1

Group	n	mean	sd
AUT	617	278.11	50.00
DB	4	NA	NA
DEF	2	NA	NA
ED	11	332.45	49.18
ID	461	298.30	45.58
LD	40	346.20	30.79
MUL	107	241.34	47.78
OHI	81	319.52	48.71
SL	7	326.29	38.66
TBI	6	292.67	65.10
VI	8	219.62	37.39

19.1.4.2 Grade 3 Tier 2

Group	n	mean	sd
AUT	100	546.82	46.33
DB	1	NA	NA
DEF	1	NA	NA
ED	1	NA	NA
ID	61	524.34	40.07
LD	15	559.27	45.28
MUL	2	NA	NA
OHI	18	529.17	48.84
SL	1	NA	NA
TBI	1	NA	NA

19.1.4.3 Grade 4 Tier 1

Group	n	mean	sd
AUT	544	299.33	52.97
DB	1	NA	NA
DEF	4	NA	NA
ED	2	NA	NA
ID	540	320.84	45.42
LD	49	357.84	26.24
MUL	105	261.66	46.86
OHI	66	331.23	42.88
ORT	5	317.20	22.19
SL	4	NA	NA
TBI	6	285.50	44.90
VI	5	210.20	22.81

19.1.4.4 Grade 4 Tier 2

Group	n	mean	sd
AUT	111	562.67	40.51
ED	7	570.86	32.98
ID	98	560.87	32.24
LD	24	575.17	28.29
MUL	1	NA	NA
OHI	29	571.59	27.54
ORT	2	NA	NA
SL	4	NA	NA

19.1.4.5 Grade 5 Tier 1

Group	n	mean	sd
AUT	411	286.24	38.49
DB	2	NA	NA
DEF	2	NA	NA
ED	13	317.85	29.98
ID	436	299.80	31.64
LD	29	329.69	17.15
MUL	112	251.50	43.09
OHI	60	302.53	30.78
TBI	4	NA	NA
VI	8	227.88	36.00

19.1.4.6   Grade 5 Tier 2

Group	n	mean	sd
AUT	231	522.16	46.35
DB	1	NA	NA
ED	11	531.64	26.36
ID	167	519.14	39.94
LD	28	540.36	33.58
MUL	9	486.44	44.44
OHI	46	526.85	40.28
SL	1	NA	NA
TBI	5	509.80	47.12
VI	1	NA	NA

19.1.4.7   Grade 6 Tier 1

Group	n	mean	sd
AUT	383	293.12	51.17
DB	2	NA	NA
DEF	12	305.92	31.05
ED	9	363.11	30.98
ID	410	322.15	50.95
LD	32	369.41	34.23
MUL	88	245.08	48.92
OHI	37	340.92	51.51
ORT	3	NA	NA
SL	2	NA	NA
TBI	1	NA	NA
VI	6	248.33	64.35

19.1.4.8   Grade 6 Tier 2

Group	n	mean	sd
AUT	215	542.05	46.31
DEF	5	504.20	38.59
ED	11	548.73	48.41
ID	230	545.60	37.46
LD	54	569.59	32.80
MUL	8	554.25	49.85
OHI	44	555.98	34.13
ORT	3	NA	NA
SL	2	NA	NA
TBI	3	NA	NA
VI	1	NA	NA

19.1.4.9 Grade 7 Tier 1

Group	n	mean	sd
AUT	302	290.76	48.33
DB	1	NA	NA
DEF	8	284.25	67.46
ED	9	350.78	27.12
ID	382	320.47	49.18
LD	20	380.05	17.93
MUL	97	249.48	48.17
OHI	40	332.30	41.25
ORT	3	NA	NA
SL	2	NA	NA
TBI	7	281.71	61.67
VI	7	238.43	72.78

19.1.4.10 Grade 7 Tier 2

Group	n	mean	sd
AUT	277	535.16	41.07
DEF	4	NA	NA
ED	11	550.27	38.45
ID	312	535.55	35.42
LD	66	553.53	28.43
MUL	6	514.50	26.52
OHI	63	538.33	38.37
SL	4	NA	NA
TBI	5	575.60	11.24
VI	3	NA	NA

19.1.4.11 Grade 8 Tier 1

Group	n	mean	sd
AUT	268	297.36	22.86
DB	1	NA	NA
DEF	3	NA	NA
ED	8	327.75	13.26
ID	344	306.01	20.77
LD	10	332.90	9.34
MUL	83	280.18	22.88
OHI	25	311.72	18.81
ORT	2	NA	NA
SL	2	NA	NA
TBI	3	NA	NA
VI	9	281.00	33.37

19.1.4.12 Grade 8 Tier 2

Group	n	mean	sd
AUT	249	516.31	49.23
DEF	4	NA	NA
ED	14	538.79	42.16
ID	326	515.40	44.81
LD	70	543.94	38.36
MUL	13	494.46	67.66
OHI	56	533.88	39.52
ORT	3	NA	NA
SL	5	502.80	34.62
TBI	3	NA	NA

19.1.4.13 Grade 11 Tier 1

Group	n	mean	sd
AUT	187	271.79	46.99
DEF	1	NA	NA
ED	3	NA	NA
ID	334	298.71	44.56
LD	15	358.93	33.11
MUL	60	247.87	48.50
OHI	20	322.05	40.73
ORT	3	NA	NA
SL	1	NA	NA
TBI	2	NA	NA
VI	8	229.50	25.82

19.1.4.14 Grade 11 Tier 2

Group	n	mean	sd
AUT	127	543.80	45.69
DEF	1	NA	NA
ED	11	555.09	52.64
ID	231	548.69	42.41
LD	56	565.02	30.66
MUL	6	535.00	45.49
OHI	33	574.97	30.17
ORT	4	NA	NA
SL	3	NA	NA

19.1.5 Race/Ethnicity

19.1.5.1 Grade 3 Tier 1

Group	n	mean	sd
American Indian	5	278.60	51.91
Asian	59	261.00	43.79
Black or African American	322	287.30	50.66
Hispanic	188	289.70	50.25
Multiracial	76	284.74	54.82
White	694	288.51	53.58

19.1.5.2 Grade 3 Tier 2

Group	n	mean	sd
Asian	7	505.86	30.44
Black or African American	46	534.98	46.95
Hispanic	26	539.46	46.50
Multiracial	15	546.40	57.93
White	107	541.12	44.18

19.1.5.3 Grade 4 Tier 1

Group	n	mean	sd
American Indian	2	NA	NA
Asian	47	294.89	56.71
Black or African American	362	308.86	49.50
Hispanic	202	306.23	54.20
Multiracial	91	304.22	54.72
White	627	310.32	52.45

19.1.5.4 Grade 4 Tier 2

Group	n	mean	sd
American Indian	1	NA	NA
Asian	7	550.00	29.17
Black or African American	56	560.88	36.17
Hispanic	34	557.53	39.25
Multiracial	13	583.62	23.95
White	165	565.56	34.58

19.1.5.5 Grade 5 Tier 1

Group	n	mean	sd
American Indian	4	NA	NA
Asian	37	280.65	33.53
Black or African American	290	293.78	37.05
Hispanic	162	293.83	38.75
Multiracial	64	277.91	37.26
White	520	289.37	40.94

19.1.5.6 Grade 5 Tier 2

Group	n	mean	sd
American Indian	1	NA	NA
Asian	13	502.46	43.06
Black or African American	130	524.17	41.03
Hispanic	66	517.17	43.49
Multiracial	28	527.89	41.84
White	262	522.66	44.17

19.1.5.7 Grade 6 Tier 1

Group	n	mean	sd
Asian	26	285.85	45.40
Black or African American	233	307.85	56.70
Hispanic	163	307.98	56.09
Multiracial	55	309.85	54.92
White	508	304.59	57.87

19.1.5.8 Grade 6 Tier 2

Group	n	mean	sd
American Indian	1	NA	NA
Asian	11	515.09	36.18
Black or African American	151	546.41	41.00
Hispanic	71	543.08	43.97
Multiracial	31	546.84	43.66
White	311	550.55	40.71

19.1.5.9 Grade 7 Tier 1

Group	n	mean	sd
American Indian	1	NA	NA
Asian	29	303.86	59.96
Black or African American	223	310.53	55.94
Hispanic	118	302.01	58.41
Multiracial	53	301.92	53.05
White	454	300.43	54.03

19.1.5.10 Grade 7 Tier 2

Group	n	mean	sd
Asian	12	514.50	34.46
Black or African American	185	536.74	34.27
Hispanic	97	535.19	39.01
Multiracial	44	536.80	48.01
White	413	538.80	38.71

19.1.5.11 Grade 8 Tier 1

Group	n	mean	sd
Asian	27	296.67	20.22
Black or African American	185	304.81	24.83
Hispanic	120	301.90	22.15
Multiracial	32	292.66	22.44
White	394	299.08	23.73

19.1.5.12 Grade 8 Tier 2

Group	n	mean	sd
American Indian	2	NA	NA
Asian	19	508.21	48.25
Black or African American	185	518.22	47.80
Hispanic	72	513.64	50.15
Multiracial	32	510.34	42.77
White	433	522.91	45.68

19.1.5.13 Grade 11 Tier 1

Group	n	mean	sd
Asian	28	264.82	47.82
Black or African American	136	288.93	47.71
Hispanic	63	286.25	47.75
Multiracial	22	306.32	51.05
White	385	287.31	51.43

19.1.5.14   Grade 11 Tier 2

Group	n	mean	sd
American Indian	2	NA	NA
Asian	7	530.29	41.54
Black or African American	90	553.57	40.39
Hispanic	42	539.64	45.80
Multiracial	16	578.19	27.79
White	315	551.27	42.91

19.2   Mathematics

19.2.1   Gender

19.2.1.1   Grade 3 Tier 1

Group	n	mean	sd
Female	386	352.83	13.26
Male	862	352.75	13.52

19.2.1.2   Grade 3 Tier 2

Group	n	mean	sd
Female	56	516.88	45.01
Male	135	544.87	46.36

19.2.1.3   Grade 4 Tier 1

Group	n	mean	sd
Female	392	300.43	39.29
Male	835	307.19	39.92

19.2.1.4   Grade 4 Tier 2

Group	n	mean	sd
Female	93	527.38	44.95
Male	183	549.77	47.90

19.2.1.5   Grade 5 Tier 1

Group	n	mean	sd
Female	324	290.69	50.80
Male	691	297.23	51.07

19.2.1.6 Grade 5 Tier 2

Group	n	mean	sd
Female	121	497.17	40.14
Male	321	514.23	43.37

19.2.1.7 Grade 6 Tier 1

Group	n	mean	sd
Female	307	288.84	49.57
Male	615	291.43	51.24

19.2.1.8 Grade 6 Tier 2

Group	n	mean	sd
Female	146	523.55	54.36
Male	361	537.40	50.09

19.2.1.9 Grade 7 Tier 1

Group	n	mean	sd
Female	300	283.58	50.80
Male	578	289.74	54.25

19.2.1.10 Grade 7 Tier 2

Group	n	mean	sd
Female	198	522.50	44.82
Male	430	530.51	46.59

19.2.1.11 Grade 8 Tier 1

Group	n	mean	sd
Female	260	340.41	8.72
Male	449	340.98	9.31

19.2.1.12 Grade 8 Tier 2

Group	n	mean	sd
Female	209	499.93	26.39
Male	451	504.75	26.05

19.2.1.13 Grade 11 Tier 1

Group	n	mean	sd
Female	198	342.42	11.06
Male	411	342.10	10.58

19.2.1.14 Grade 11 Tier 2

Group	n	mean	sd
Female	140	533.99	34.10
Male	288	537.82	32.48

19.2.2 Limited English Proficient

19.2.2.1 Grade 3 Tier 1

Group	n	mean	sd
No	1167	352.81	13.51
Yes	81	352.23	12.32

19.2.2.2 Grade 3 Tier 2

Group	n	mean	sd
No	178	535.67	48.15
Yes	13	550.23	38.12

19.2.2.3 Grade 4 Tier 1

Group	n	mean	sd
No	1141	305.01	40.05
Yes	86	305.28	37.02

19.2.2.4 Grade 4 Tier 2

Group	n	mean	sd
No	260	542.22	48.61
Yes	16	542.31	38.70

19.2.2.5 Grade 5 Tier 1

Group	n	mean	sd
No	949	294.70	51.21
Yes	66	301.53	48.58

19.2.2.6 Grade 5 Tier 2

Group	n	mean	sd
No	418	509.48	43.11
Yes	24	510.88	44.65

19.2.2.7 Grade 6 Tier 1

Group	n	mean	sd
No	861	290.09	50.86
Yes	61	297.31	47.93

19.2.2.8 Grade 6 Tier 2

Group	n	mean	sd
No	484	533.32	51.87
Yes	23	535.30	48.64

19.2.2.9 Grade 7 Tier 1

Group	n	mean	sd
No	813	286.96	53.31
Yes	65	296.02	50.71

19.2.2.10 Grade 7 Tier 2

Group	n	mean	sd
No	595	528.16	46.14
Yes	33	524.85	47.14

19.2.2.11 Grade 8 Tier 1

Group	n	mean	sd
No	657	340.73	9.1
Yes	52	341.27	9.1

19.2.2.12 Grade 8 Tier 2

Group	n	mean	sd
No	628	502.91	26.08
Yes	32	509.31	28.85

19.2.2.13 Grade 11 Tier 1

Group	n	mean	sd
No	568	342.20	10.90
Yes	41	342.27	8.05

19.2.2.14 Grade 11 Tier 2

Group	n	mean	sd
No	408	536.34	33.11
Yes	20	541.15	31.69

19.2.3 Economically Disadvantaged

19.2.3.1 Grade 3 Tier 1

Group	n	mean	sd
NO	506	351.38	12.98
YES	742	353.73	13.66

19.2.3.2 Grade 3 Tier 2

Group	n	mean	sd
NO	69	531.06	48.58
YES	122	539.84	46.94

19.2.3.3 Grade 4 Tier 1

Group	n	mean	sd
NO	454	297.52	39.60
YES	773	309.44	39.33

19.2.3.4 Grade 4 Tier 2

Group	n	mean	sd
NO	91	538.56	48.09
YES	185	544.02	48.03

19.2.3.5 Grade 5 Tier 1

Group	n	mean	sd
NO	348	281.91	48.83
YES	667	302.04	50.86

19.2.3.6 Grade 5 Tier 2

Group	n	mean	sd
NO	139	506.94	47.87
YES	303	510.76	40.82

19.2.3.7 Grade 6 Tier 1

Group	n	mean	sd
NO	347	278.18	48.78
YES	575	298.04	50.38

19.2.3.8 Grade 6 Tier 2

Group	n	mean	sd
NO	158	525.15	55.87
YES	349	537.15	49.30

19.2.3.9 Grade 7 Tier 1

Group	n	mean	sd
NO	315	274.58	48.37
YES	563	294.93	54.33

19.2.3.10 Grade 7 Tier 2

Group	n	mean	sd
NO	217	523.16	45.39
YES	411	530.54	46.41

19.2.3.11 Grade 8 Tier 1

Group	n	mean	sd
NO	281	339.64	8.61
YES	428	341.52	9.33

19.2.3.12 Grade 8 Tier 2

Group	n	mean	sd
NO	261	501.79	27.94
YES	399	504.16	25.04

19.2.3.13 Grade 11 Tier 1

Group	n	mean	sd
NO	238	341.14	10.72
YES	371	342.89	10.69

19.2.3.14 Grade 11 Tier 2

Group	n	mean	sd
NO	138	531.51	35.58
YES	290	538.98	31.52

19.2.4 Primary Disability

19.2.4.1 Grade 3 Tier 1

Group	n	mean	sd
AUT	566	352.49	13.45
DB	4	NA	NA
DEF	2	NA	NA
ED	5	356.60	9.21
ID	437	354.77	10.42
LD	38	365.61	7.81
MUL	99	337.61	14.23
OHI	78	358.86	11.97
SL	5	362.60	7.02
TBI	6	349.67	16.54
VI	8	331.62	10.95

19.2.4.2 Grade 3 Tier 2

Group	n	mean	sd
AUT	96	549.41	45.87
DEF	1	NA	NA
ED	2	NA	NA
ID	55	511.04	40.30
LD	16	567.38	40.04
MUL	2	NA	NA
OHI	17	521.12	46.26
SL	1	NA	NA
TBI	1	NA	NA

19.2.4.3 Grade 4 Tier 1

Group	n	mean	sd
AUT	498	301.52	40.81
DB	1	NA	NA
DEF	4	NA	NA
ED	2	NA	NA
ID	498	312.71	34.64
LD	47	333.43	24.82
MUL	97	265.52	35.16
OHI	62	318.61	34.42
ORT	6	311.67	29.19
SL	2	NA	NA
TBI	5	295.40	47.57
VI	5	224.40	21.02

19.2.4.4 Grade 4 Tier 2

Group	n	mean	sd
AUT	108	549.27	50.92
ED	6	560.67	47.90
ID	95	530.33	43.93
LD	26	557.77	38.36
MUL	2	NA	NA
OHI	34	542.50	47.96
ORT	1	NA	NA
SL	4	NA	NA

19.2.4.5 Grade 5 Tier 1

Group	n	mean	sd
AUT	387	297.30	54.48
DB	2	NA	NA
DEF	2	NA	NA
ED	13	323.77	40.87
ID	407	301.59	42.11
LD	22	347.27	42.26
MUL	109	251.74	46.15
OHI	60	301.43	45.07
TBI	5	304.60	38.52
VI	8	229.25	40.54

19.2.4.6 Grade 5 Tier 2

Group	n	mean	sd
AUT	200	515.78	46.96
DB	1	NA	NA
DEF	1	NA	NA
ED	11	501.18	26.48
ID	151	497.95	36.03
LD	34	530.91	40.65
MUL	4	NA	NA
OHI	34	514.74	40.99
SL	1	NA	NA
TBI	4	NA	NA
VI	1	NA	NA

19.2.4.7 Grade 6 Tier 1

Group	n	mean	sd
AUT	352	289.00	49.50
DB	2	NA	NA
DEF	9	300.11	34.26
ED	8	335.00	37.97
ID	383	296.39	44.78
LD	33	342.00	41.79
MUL	86	233.66	35.02
OHI	39	325.62	43.80
ORT	2	NA	NA
SL	2	NA	NA
TBI	1	NA	NA
VI	5	250.20	63.97

19.2.4.8 Grade 6 Tier 2

Group	n	mean	sd
AUT	189	544.95	49.89
DEF	5	539.60	45.98
ED	9	517.56	64.76
ID	196	520.76	51.52
LD	51	544.12	40.51
MUL	6	507.17	65.17
OHI	41	540.44	50.32
ORT	3	NA	NA
SL	2	NA	NA
TBI	3	NA	NA
VI	2	NA	NA

19.2.4.9 Grade 7 Tier 1

Group	n	mean	sd
AUT	298	285.78	52.94
DB	1	NA	NA
DEF	9	300.33	74.60
ED	10	314.60	32.18
ID	384	297.86	48.73
LD	19	346.21	39.55
MUL	96	238.47	41.72
OHI	45	298.98	43.74
ORT	2	NA	NA
SL	1	NA	NA
TBI	7	254.86	42.14
VI	6	217.00	19.30

19.2.4.10 Grade 7 Tier 2

Group	n	mean	sd
AUT	235	534.02	47.69
DEF	4	NA	NA
ED	8	573.50	26.54
ID	248	514.73	42.62
LD	65	545.72	38.44
MUL	5	496.40	61.03
OHI	50	532.34	42.93
SL	5	540.20	50.20
TBI	5	572.00	22.09
VI	3	NA	NA

19.2.4.11 Grade 8 Tier 1

Group	n	mean	sd
AUT	240	340.01	8.73
DB	1	NA	NA
DEF	3	NA	NA
ED	11	349.82	6.85
ID	329	342.25	7.98
LD	11	352.82	7.68
MUL	76	333.72	9.57
OHI	23	343.52	6.90
ORT	2	NA	NA
SL	2	NA	NA
TBI	3	NA	NA
VI	8	328.62	10.18

19.2.4.12 Grade 8 Tier 2

Group	n	mean	sd
AUT	227	506.48	27.14
DEF	4	NA	NA
ED	9	496.11	15.37
ID	284	499.72	25.61
LD	62	513.32	24.59
MUL	10	491.30	26.30
OHI	53	501.85	26.08
ORT	3	NA	NA
SL	5	493.60	27.29
TBI	3	NA	NA

19.2.4.13 Grade 11 Tier 1

Group	n	mean	sd
AUT	171	340.53	10.09
ED	3	NA	NA
ID	332	344.26	9.07
LD	15	354.33	6.86
MUL	54	330.87	11.26
OHI	20	350.20	9.24
ORT	4	NA	NA
SL	1	NA	NA
TBI	3	NA	NA
VI	6	326.00	10.71

19.2.4.14 Grade 11 Tier 2

Group	n	mean	sd
AUT	117	539.49	35.65
DEF	1	NA	NA
ED	8	520.88	30.02
ID	205	531.72	31.97
LD	54	545.94	25.14
MUL	6	516.33	9.31
OHI	31	551.81	38.43
ORT	3	NA	NA
SL	3	NA	NA

19.2.5 Race/Ethnicity

19.2.5.1 Grade 3 Tier 1

Group	n	mean	sd
American Indian	5	348.40	18.37
Asian	50	349.06	13.70
Black or African American	286	353.26	12.73
Hispanic	180	352.62	12.92
Multiracial	72	351.21	14.23
White	655	353.09	13.71

19.2.5.2 Grade 3 Tier 2

Group	n	mean	sd
Asian	9	530.33	34.05
Black or African American	42	522.52	48.34
Hispanic	25	537.56	51.66
Multiracial	14	544.50	52.51
White	101	541.80	46.17

19.2.5.3 Grade 4 Tier 1

Group	n	mean	sd
American Indian	1	NA	NA
Asian	43	301.19	44.45
Black or African American	309	306.07	39.41
Hispanic	201	304.63	39.87
Multiracial	78	298.87	43.22
White	595	305.61	39.23

19.2.5.4 Grade 4 Tier 2

Group	n	mean	sd
American Indian	1	NA	NA
Asian	9	547.78	37.66
Black or African American	61	540.51	46.28
Hispanic	35	539.17	49.17
Multiracial	15	532.07	58.70
White	155	544.15	48.41

19.2.5.5 Grade 5 Tier 1

Group	n	mean	sd
American Indian	5	268.20	47.13
Asian	31	293.03	56.68
Black or African American	263	298.25	49.34
Hispanic	157	300.20	51.38
Multiracial	60	288.05	51.71
White	499	293.16	51.38

19.2.5.6 Grade 5 Tier 2

Group	n	mean	sd
Asian	14	533.57	45.70
Black or African American	107	514.51	45.43
Hispanic	55	510.36	41.40
Multiracial	26	511.00	41.35
White	240	505.61	42.17

19.2.5.7 Grade 6 Tier 1

Group	n	mean	sd
Asian	24	287.46	45.85
Black or African American	226	296.68	50.09
Hispanic	133	291.88	50.71
Multiracial	51	286.06	48.72
White	488	288.00	51.29

19.2.5.8 Grade 6 Tier 2

Group	n	mean	sd
American Indian	1	NA	NA
Asian	11	548.45	51.32
Black or African American	119	533.83	52.96
Hispanic	68	534.56	46.51
Multiracial	26	534.23	64.98
White	282	532.14	51.27

19.2.5.9 Grade 7 Tier 1

Group	n	mean	sd
American Indian	1	NA	NA
Asian	29	284.41	48.97
Black or African American	221	291.93	52.22
Hispanic	124	289.40	58.11
Multiracial	50	294.66	55.86
White	453	284.41	52.14

19.2.5.10 Grade 7 Tier 2

Group	n	mean	sd
Asian	11	528.18	55.38
Black or African American	154	523.78	46.47
Hispanic	79	527.06	44.41
Multiracial	31	524.13	44.93
White	353	530.36	46.32

19.2.5.11 Grade 8 Tier 1

Group	n	mean	sd
Asian	24	338.12	8.15
Black or African American	181	342.34	9.52
Hispanic	103	341.07	8.62
Multiracial	32	340.75	9.04
White	369	340.09	9.00

19.2.5.12 Grade 8 Tier 2

Group	n	mean	sd
American Indian	2	NA	NA
Asian	19	507.84	30.15
Black or African American	153	504.63	26.66
Hispanic	66	511.20	21.78
Multiracial	28	494.71	21.42
White	392	501.75	26.65

19.2.5.13 Grade 11 Tier 1

Group	n	mean	sd
American Indian	1	NA	NA
Asian	27	337.22	12.29
Black or African American	123	342.24	9.85
Hispanic	58	342.79	8.53
Multiracial	23	343.57	11.70
White	377	342.39	11.10

19.2.5.14 Grade 11 Tier 2

Group	n	mean	sd
American Indian	1	NA	NA
Asian	5	548.00	49.74
Black or African American	80	537.14	31.00
Hispanic	40	539.28	33.74
Multiracial	12	545.00	29.33
White	290	535.34	33.38

19.3 Science

19.3.1 Gender

19.3.1.1 Grade 4 Tier 1

Group	n	mean	sd
Female	142	294.27	17.79
Male	353	290.65	17.62

19.3.1.2 Grade 4 Tier 2

Group	n	mean	sd
Female	267	491.99	28.43
Male	574	497.89	27.60

19.3.1.3 Grade 8 Tier 1

Group	n	mean	sd
Female	133	270.26	32.93
Male	227	270.60	33.24

19.3.1.4 Grade 8 Tier 2

Group	n	mean	sd
Female	300	493.89	43.33
Male	593	508.26	46.40

19.3.1.5 Grade 11 Tier 1

Group	n	mean	sd
Female	94	316.69	27.34
Male	176	311.30	27.40

19.3.1.6 Grade 11 Tier 2

Group	n	mean	sd
Female	218	512.19	38.76
Male	488	516.80	40.93

19.3.2 Limited English Proficient

19.3.2.1 Grade 4 Tier 1

Group	n	mean	sd
No	466	291.53	17.78
Yes	29	294.28	16.87

19.3.2.2 Grade 4 Tier 2

Group	n	mean	sd
No	784	496.56	27.84
Yes	57	488.56	29.17

19.3.2.3 Grade 8 Tier 1

Group	n	mean	sd
No	337	270.64	32.97
Yes	23	268.00	35.34

19.3.2.4 Grade 8 Tier 2

Group	n	mean	sd
No	840	504.13	45.55
Yes	53	492.38	49.90

19.3.2.5 Grade 11 Tier 1

Group	n	mean	sd
No	250	313.13	27.37
Yes	20	313.75	29.18

19.3.2.6 Grade 11 Tier 2

Group	n	mean	sd
No	666	516.11	39.97
Yes	40	503.25	44.26

19.3.3 Economically Disadvantaged

19.3.3.1 Grade 4 Tier 1

Group	n	mean	sd
NA	495	291.69	17.73

19.3.3.2 Grade 4 Tier 2

Group	n	mean	sd
NA	841	496.02	27.99

19.3.3.3 Grade 8 Tier 1

Group	n	mean	sd
NA	360	270.48	33.08

19.3.3.4 Grade 8 Tier 2

Group	n	mean	sd
NA	893	503.43	45.87

19.3.3.5 Grade 11 Tier 1

Group	n	mean	sd
NA	270	313.17	27.45

19.3.3.6 Grade 11 Tier 2

Group	n	mean	sd
NA	706	515.38	40.3

19.3.4 Primary Disability

19.3.4.1 Grade 4 Tier 1

Group	n	mean	sd
AUT	233	287.83	17.33
DB	1	NA	NA
DEF	3	NA	NA
ID	175	296.77	17.21
LD	2	NA	NA
MUL	58	287.64	16.73
OHI	16	302.88	13.78
ORT	2	NA	NA
TBI	4	NA	NA
VI	1	NA	NA

19.3.4.2 Grade 4 Tier 2

Group	n	mean	sd
AUT	300	494.37	31.12
ED	8	514.12	27.11
ID	379	495.20	26.07
LD	65	506.14	24.59
MUL	8	482.38	27.15
OHI	71	497.66	26.14
ORT	4	NA	NA
SL	5	501.00	14.95
TBI	1	NA	NA

19.3.4.3 Grade 8 Tier 1

Group	n	mean	sd
AUT	139	266.50	31.62
DEF	3	NA	NA
ED	3	NA	NA
ID	157	274.99	32.87
LD	4	NA	NA
MUL	39	250.97	29.28
OHI	10	293.70	20.61
SL	1	NA	NA
TBI	2	NA	NA
VI	2	NA	NA

19.3.4.4 Grade 8 Tier 2

Group	n	mean	sd
AUT	280	503.47	48.05
DEF	3	NA	NA
ED	16	529.50	48.00
ID	427	497.70	43.45
LD	69	532.91	38.68
MUL	17	480.12	56.50
OHI	66	510.30	42.01
ORT	5	515.80	33.00
SL	6	474.50	50.50
TBI	2	NA	NA
VI	2	NA	NA

19.3.4.5 Grade 11 Tier 1

Group	n	mean	sd
AUT	95	309.56	25.28
DEF	1	NA	NA
ED	1	NA	NA
ID	139	317.11	27.38
MUL	24	300.33	29.47
OHI	5	323.60	33.13
ORT	2	NA	NA
TBI	2	NA	NA
VI	1	NA	NA

19.3.4.6 Grade 11 Tier 2

Group	n	mean	sd
AUT	170	512.21	42.75
ED	9	530.89	43.61
ID	393	512.46	39.18
LD	68	535.16	34.63
MUL	14	483.07	31.25
OHI	43	532.23	34.59
ORT	3	NA	NA
SL	3	NA	NA
TBI	2	NA	NA
VI	1	NA	NA

19.3.5 Race/Ethnicity

19.3.5.1 Grade 4 Tier 1

Group	n	mean	sd
Asian	25	289.76	17.53
Black or African American	134	293.25	17.94
Hispanic	76	291.00	17.34
Multiracial	27	291.89	17.84
White	233	291.20	17.82

19.3.5.2 Grade 4 Tier 2

Group	n	mean	sd
American Indian	2	NA	NA
Asian	19	498.95	22.01
Black or African American	194	494.16	26.02
Hispanic	134	492.46	27.66
Multiracial	51	491.41	32.98
White	441	498.26	28.45

19.3.5.3 Grade 8 Tier 1

Group	n	mean	sd
American Indian	1	NA	NA
Asian	16	264.50	30.41
Black or African American	79	275.10	34.70
Hispanic	46	268.43	31.08
Multiracial	21	267.57	30.06
White	197	269.93	33.56

19.3.5.4 Grade 8 Tier 2

Group	n	mean	sd
American Indian	1	NA	NA
Asian	20	503.10	54.73
Black or African American	220	501.39	44.29
Hispanic	104	498.98	48.98
Multiracial	36	494.11	43.11
White	512	505.98	45.68

19.3.5.5 Grade 11 Tier 1

Group	n	mean	sd
American Indian	1	NA	NA
Asian	14	300.29	28.40
Black or African American	62	316.81	27.00
Hispanic	33	313.18	32.61
Multiracial	6	319.83	14.15
White	154	312.42	26.60

19.3.5.6 Grade 11 Tier 2

Group	n	mean	sd
American Indian	1	NA	NA
Asian	12	486.17	35.39
Black or African American	135	510.71	37.89
Hispanic	63	515.51	46.18
Multiracial	28	522.86	43.77
White	467	517.01	39.82

20 Proficiency Level Frequencies and Percentages

21 ELA

Grade	Tier	Total	Emerging	Novice	Proficient	Advanced
3	1	1344	553 (41.1%)	220 (16.4%)	483 (35.9%)	88 (6.5%)
3	2	201	6 (3.0%)	37 (18.4%)	52 (25.9%)	106 (52.7%)
4	1	1331	396 (29.8%)	210 (15.8%)	297 (22.3%)	428 (32.2%)
4	2	276	5 (1.8%)	8 (2.9%)	122 (44.2%)	141 (51.1%)
5	1	1077	353 (32.8%)	276 (25.6%)	390 (36.2%)	58 (5.4%)
5	2	500	29 (5.8%)	111 (22.2%)	218 (43.6%)	142 (28.4%)
6	1	985	345 (35.0%)	141 (14.3%)	147 (14.9%)	352 (35.7%)
6	2	576	14 (2.4%)	78 (13.5%)	350 (60.8%)	134 (23.3%)
7	1	878	237 (27.0%)	200 (22.8%)	214 (24.4%)	227 (25.9%)
7	2	751	30 (4.0%)	84 (11.2%)	233 (31.0%)	404 (53.8%)
8	1	758	135 (17.8%)	265 (35.0%)	191 (25.2%)	167 (22.0%)
8	2	743	97 (13.1%)	155 (20.9%)	263 (35.4%)	228 (30.7%)
11	1	634	309 (48.7%)	68 (10.7%)	82 (12.9%)	175 (27.6%)
11	2	472	41 (8.7%)	28 (5.9%)	98 (20.8%)	305 (64.6%)

21.1 Tier 1
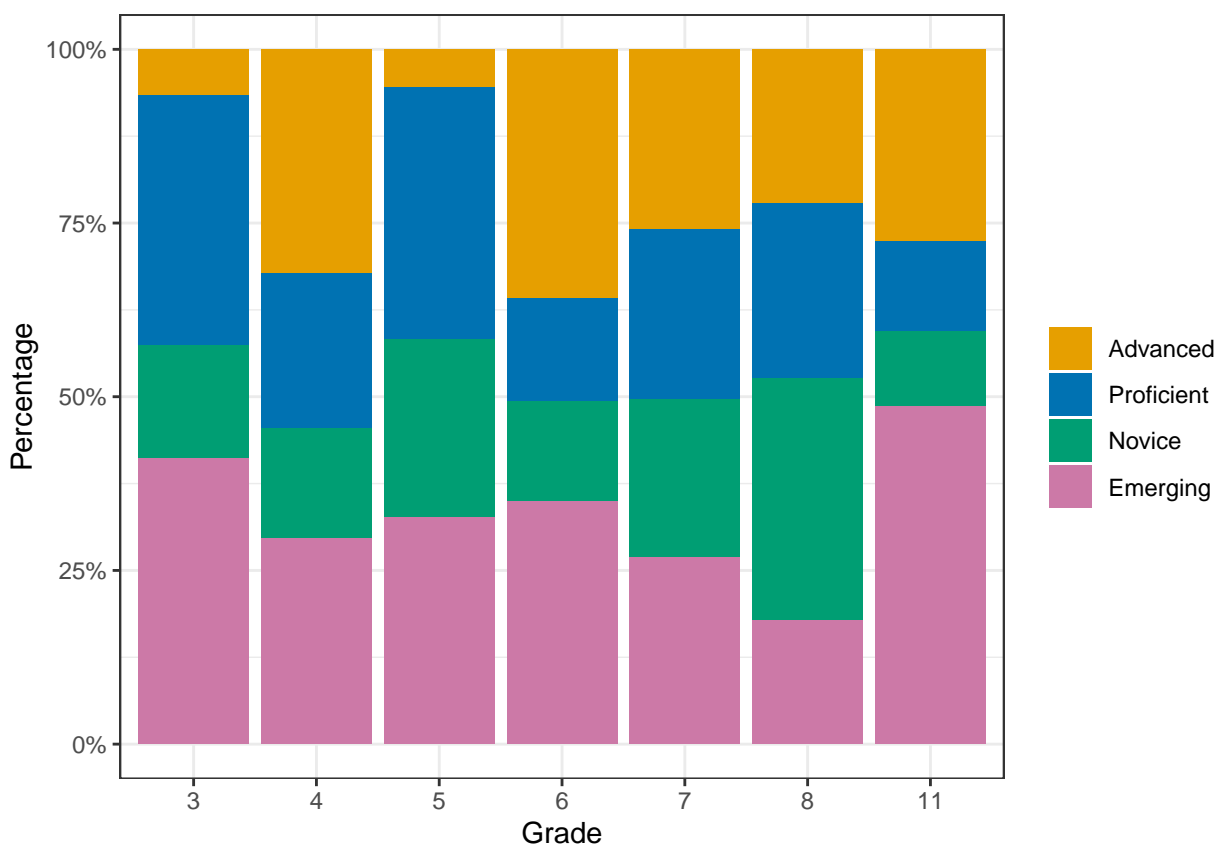
21.2   Tier 2
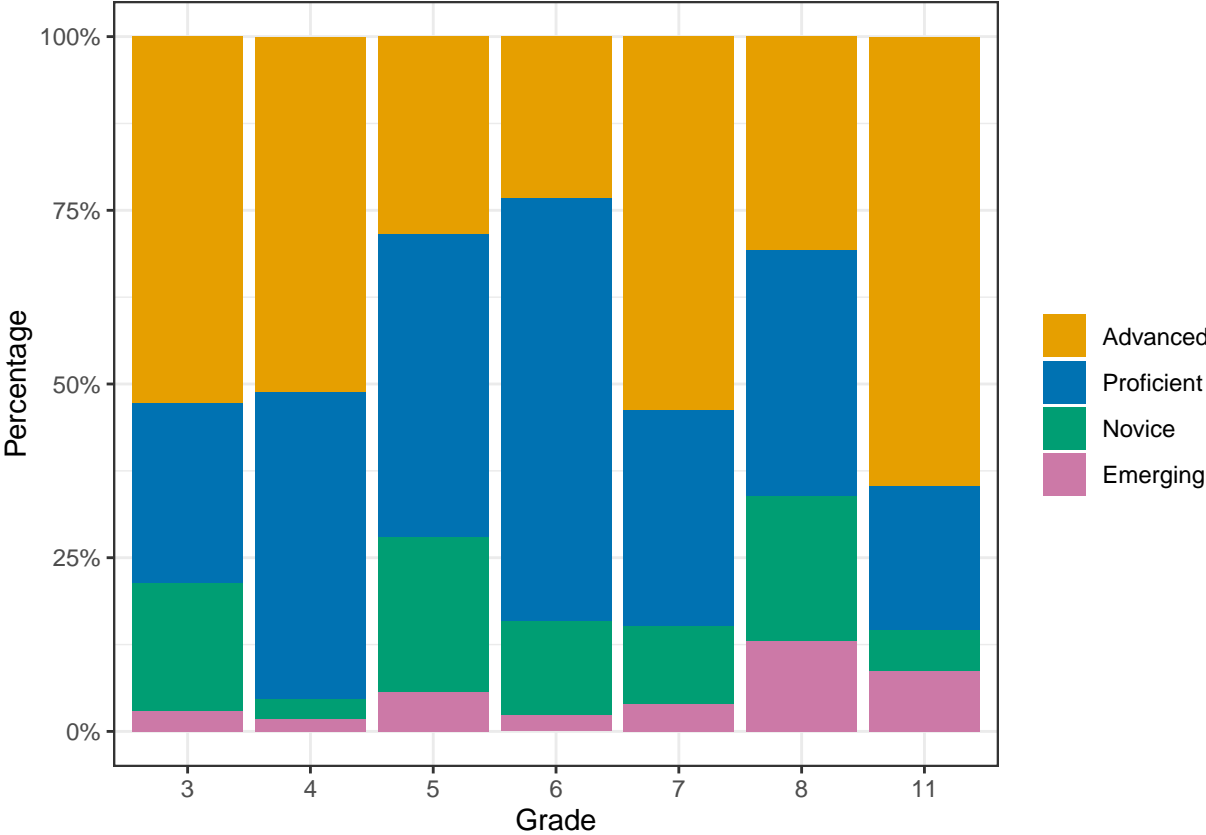
22 Math

Grade	Tier	Total	Emerging	Novice	Proficient	Advanced
3	1	1248	0 (0.0%)	0 (0.0%)	170 (13.6%)	1078 (86.4%)
3	2	191	7 (3.7%)	41 (21.5%)	88 (46.1%)	55 (28.8%)
4	1	1227	294 (24.0%)	265 (21.6%)	472 (38.5%)	196 (16.0%)
4	2	276	16 (5.8%)	36 (13.0%)	120 (43.5%)	104 (37.7%)
5	1	1015	327 (32.2%)	243 (23.9%)	269 (26.5%)	176 (17.3%)
5	2	442	96 (21.7%)	107 (24.2%)	155 (35.1%)	84 (19.0%)
6	1	922	362 (39.3%)	175 (19.0%)	254 (27.5%)	131 (14.2%)
6	2	507	35 (6.9%)	87 (17.2%)	165 (32.5%)	220 (43.4%)
7	1	878	330 (37.6%)	209 (23.8%)	164 (18.7%)	175 (19.9%)
7	2	628	9 (1.4%)	163 (26.0%)	247 (39.3%)	209 (33.3%)
8	1	709	0 (0.0%)	0 (0.0%)	179 (25.2%)	530 (74.8%)
8	2	660	129 (19.5%)	197 (29.8%)	312 (47.3%)	22 (3.3%)
11	1	609	0 (0.0%)	0 (0.0%)	559 (91.8%)	50 (8.2%)
11	2	428	2 (0.5%)	54 (12.6%)	69 (16.1%)	303 (70.8%)

22.1 Tier 1
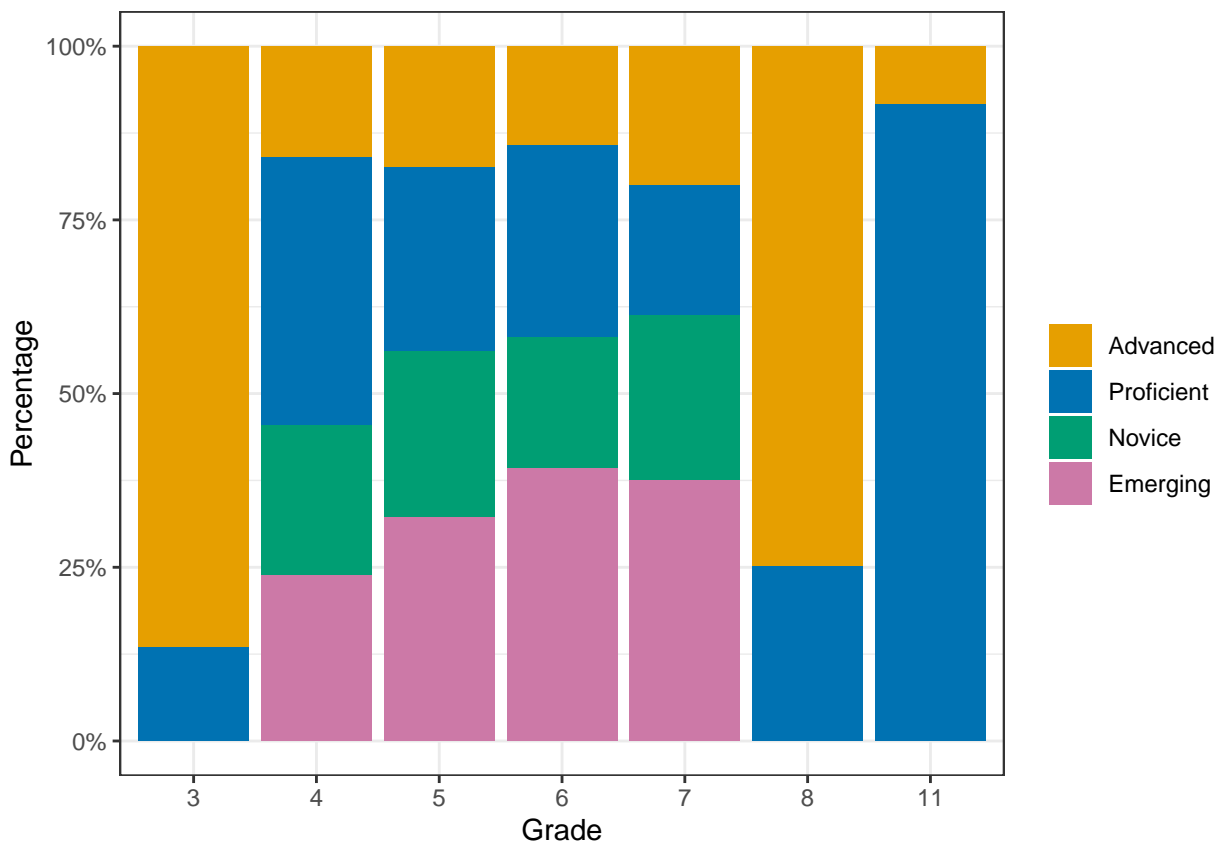
22.2   Tier 2
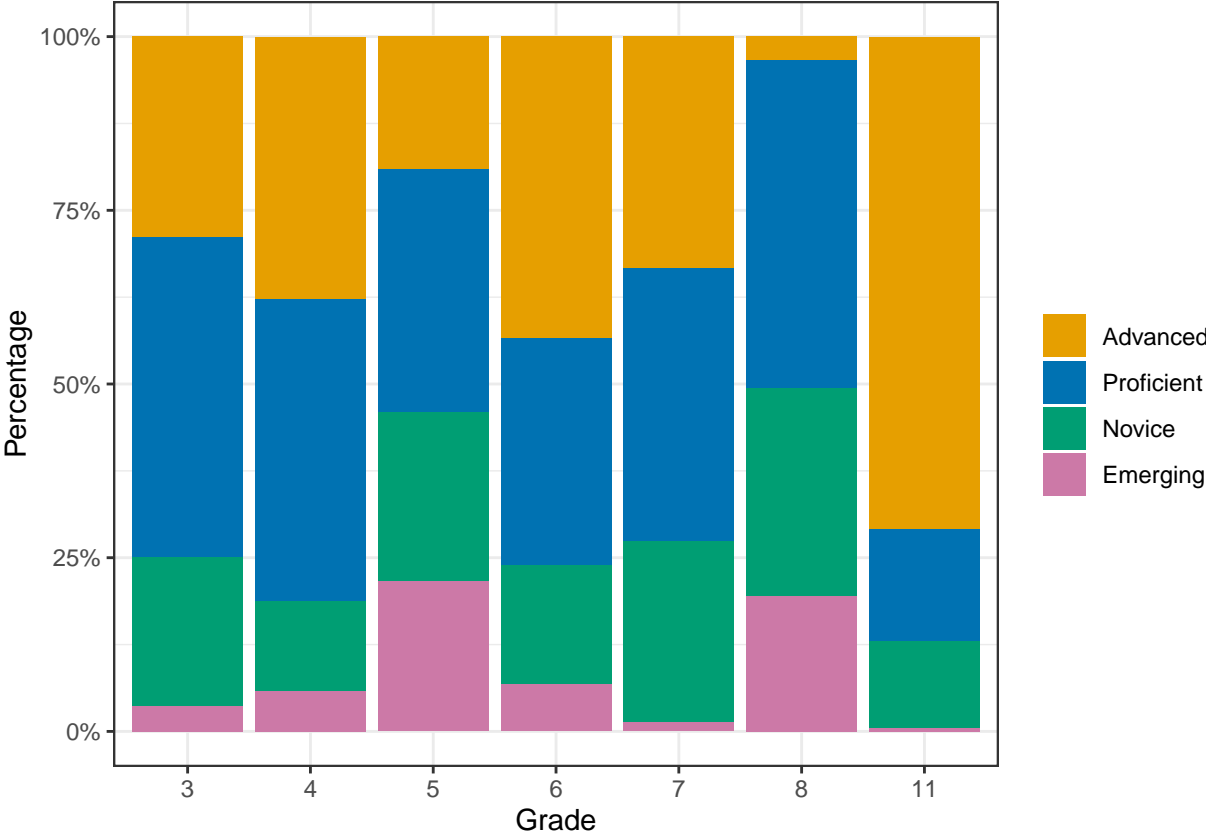
23 Science

Grade	Tier	Total	Emerging	Novice	Proficient	Advanced
4	1	571	101 (17.7%)	311 (54.5%)	159 (27.8%)	0 (0.0%)
4	2	841	9 (1.1%)	449 (53.4%)	383 (45.5%)	0 (0.0%)
8	1	415	200 (48.2%)	143 (34.5%)	72 (17.3%)	0 (0.0%)
8	2	893	35 (3.9%)	372 (41.7%)	433 (48.5%)	53 (5.9%)
11	1	308	54 (17.5%)	88 (28.6%)	165 (53.6%)	1 (0.3%)
11	2	706	5 (0.7%)	261 (37.0%)	396 (56.1%)	44 (6.2%)

23.1 Tier 1
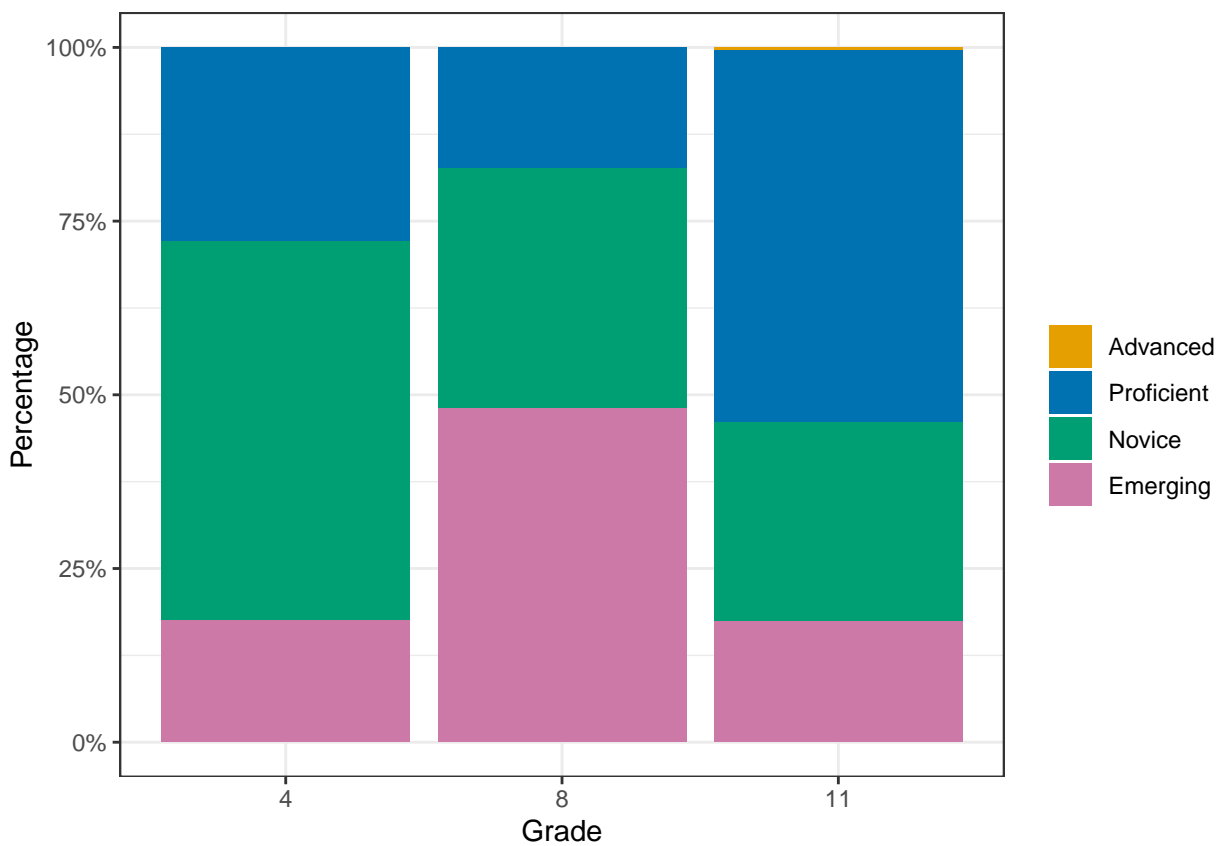
23.2 Tier 2
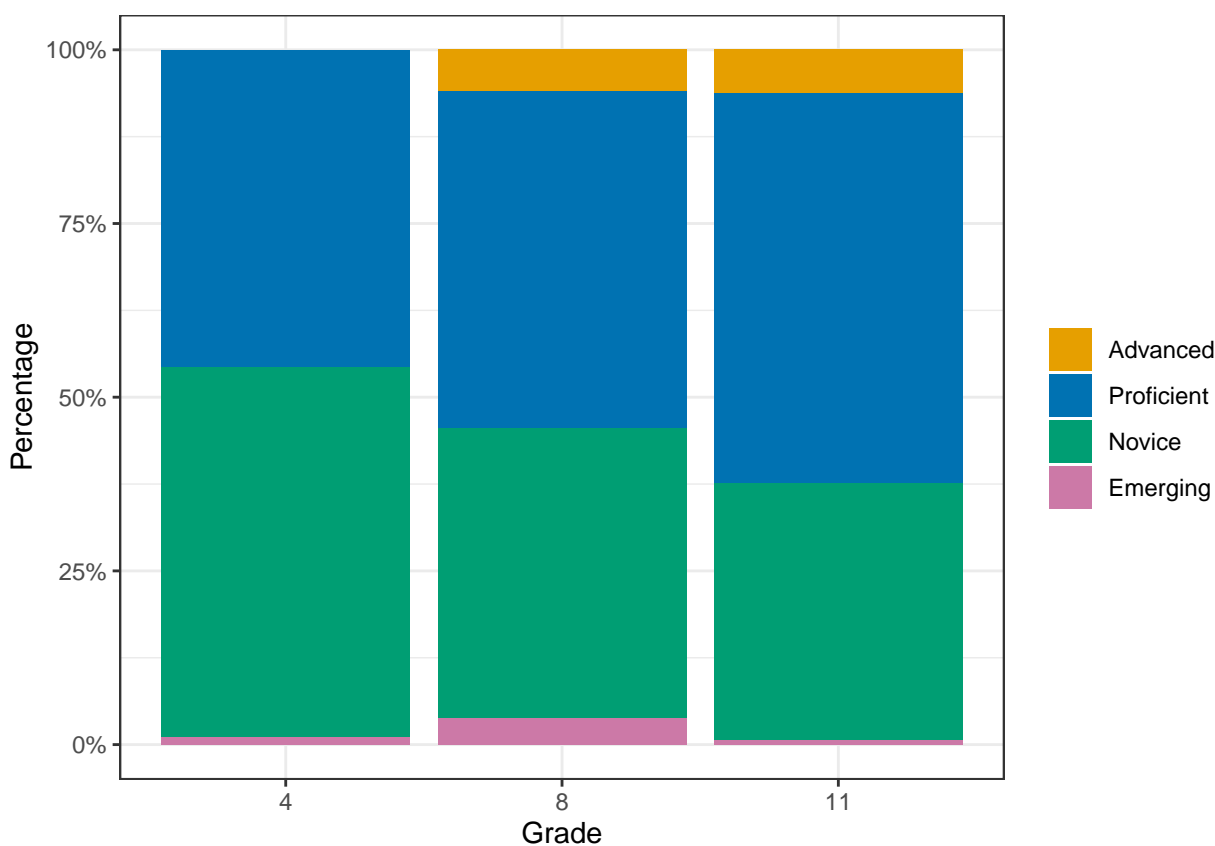
24 School District Participation

The table below shows the participation in the 2019-2020 PASA ELA, Math, and Science content areas by school district.

	ELA		Math		Science	
School District	Count	Percent	Count	Percent	Count	Percent
Abington Heights SD	20	0.19	20	0.21	12	0.33
Abington SD	48	0.45	42	0.44	22	0.60
Achievement House CS	4	0.04	4	0.04	3	0.08
Agora Cyber CS	60	0.57	60	0.63	30	0.82
Albert Gallatin Area SD	41	0.39	41	0.43	17	0.46
Aliquippa SD	12	0.11	12	0.13	2	0.05
Allegheny IU 3	103	0.98	97	1.02	45	1.23
Allegheny Valley SD	7	0.07	7	0.07	1	0.03
Allentown City SD	130	1.23	114	1.20	39	1.06
Altoona Area SD	79	0.75	62	0.65	30	0.82
Ambridge Area SD	16	0.15	16	0.17	7	0.19
Antietam SD	3	0.03	3	0.03	0	0.00
Antonia Pantoja CS	9	0.09	9	0.09	3	0.08
Apollo Ridge SD	3	0.03	2	0.02	1	0.03
Appalachia IU 8	29	0.27	28	0.29	9	0.25
Arin IU 28	8	0.08	7	0.07	0	0.00

School District	ELA		Math		Science	
	Count	Percent	Count	Percent	Count	Percent
Armstrong SD	41	0.39	38	0.40	20	0.55
ASPIRA Bilingual Cyber CS	11	0.10	11	0.12	4	0.11
Athens Area SD	11	0.10	11	0.12	0	0.00
Avon Grove SD	17	0.16	14	0.15	7	0.19
Avonworth SD	6	0.06	6	0.06	3	0.08
Bald Eagle Area SD	9	0.09	9	0.09	6	0.16
Baldwin Whitehall SD	13	0.12	12	0.13	6	0.16
Bancroft NeuroHealth	7	0.07	6	0.06	1	0.03
Bangor Area SD	10	0.09	10	0.10	8	0.22
Beacon Light Behavioral Health	2	0.02	2	0.02	0	0.00
Beaver Area SD	3	0.03	3	0.03	3	0.08
Beaver Valley IU 27	30	0.28	29	0.30	9	0.25
Bedford Area SD	9	0.09	9	0.09	1	0.03
Belle Vernon Area SD	17	0.16	17	0.18	8	0.22
Bellefonte Area SD	6	0.06	6	0.06	2	0.05
Bellwood Antis SD	9	0.09	3	0.03	0	0.00
Belmont CS	4	0.04	4	0.04	3	0.08
Bensalem Township SD	32	0.30	32	0.34	15	0.41
Benton Area SD	7	0.07	7	0.07	4	0.11
Bentworth SD	4	0.04	4	0.04	3	0.08
Berks County IU 14	1	0.01	1	0.01	0	0.00
Berlin Brothersvalley SD	2	0.02	2	0.02	2	0.05
Berwick Area SD	9	0.09	9	0.09	3	0.08
Bethel Park SD	16	0.15	12	0.13	5	0.14
Bethlehem Area SD	30	0.28	30	0.31	9	0.25
Bethlehem Center SD	13	0.12	13	0.14	7	0.19
Big Beaver Falls Area SD	10	0.09	10	0.10	5	0.14
Big Spring SD	7	0.07	3	0.03	2	0.05
Blackhawk SD	2	0.02	2	0.02	0	0.00
Blast IU 17	55	0.52	55	0.58	20	0.55
Bloomsburg Area SD	15	0.14	15	0.16	5	0.14
Blue Mountain SD	11	0.10	9	0.09	3	0.08
Blue Ridge SD	7	0.07	7	0.07	3	0.08
Boyertown Area SD	6	0.06	6	0.06	2	0.05
Bradford Area SD	5	0.05	5	0.05	5	0.14
Brandywine Heights Area SD	1	0.01	1	0.01	0	0.00
Bristol Borough SD	16	0.15	16	0.17	3	0.08
Bristol Township SD	16	0.15	16	0.17	3	0.08
Brockway Area SD	9	0.09	9	0.09	3	0.08
Brownsville Area SD	7	0.07	7	0.07	3	0.08
Bucks County IU 22	116	1.10	108	1.13	28	0.76
Burgettstown Area SD	3	0.03	3	0.03	0	0.00
Butler Area SD	45	0.43	45	0.47	22	0.60
Cambria Heights SD	7	0.07	7	0.07	0	0.00
Camphill Special Schs, Inc.	2	0.02	2	0.02	0	0.00
Canon McMillan SD	28	0.27	28	0.29	15	0.41

School District	ELA		Math		Science	
	Count	Percent	Count	Percent	Count	Percent
Canton Area SD	16	0.15	16	0.17	8	0.22
Capital Academy	1	0.01	1	0.01	0	0.00
Capital Area IU 15	18	0.17	17	0.18	8	0.22
Capstone Academy	4	0.04	4	0.04	1	0.03
Carbon Lehigh IU 21	127	1.20	118	1.24	33	0.90
Carbondale Area SD	4	0.04	0	0.00	0	0.00
Carlisle Area SD	3	0.03	3	0.03	1	0.03
Carlynton SD	4	0.04	4	0.04	1	0.03
Carmichaels Area SD	15	0.14	15	0.16	10	0.27
Catasauqua Area SD	12	0.11	12	0.13	1	0.03
Centennial School Lehigh Univ	1	0.01	1	0.01	0	0.00
Centennial SD	9	0.09	8	0.08	2	0.05
Central Bucks SD	26	0.25	26	0.27	10	0.27
Central Cambria SD	14	0.13	13	0.14	3	0.08
Central Columbia SD	3	0.03	3	0.03	1	0.03
Central Dauphin SD	55	0.52	53	0.56	22	0.60
Central Fulton SD	4	0.04	4	0.04	0	0.00
Central Greene SD	1	0.01	0	0.00	0	0.00
Central Susquehanna IU 16	18	0.17	18	0.19	8	0.22
Central Valley SD	8	0.08	8	0.08	6	0.16
Central York SD	14	0.13	14	0.15	5	0.14
Chambersburg Area SD	80	0.76	79	0.83	26	0.71
Charleroi SD	9	0.09	9	0.09	3	0.08
Chartiers Houston SD	6	0.06	0	0.00	0	0.00
Chartiers Valley SD	1	0.01	0	0.00	0	0.00
Cheltenham Township SD	13	0.12	13	0.14	4	0.11
Chester Co IU 24	106	1.00	92	0.96	38	1.04
Chester Community CS	16	0.15	16	0.17	6	0.16
Chester Upland SD	15	0.14	11	0.12	6	0.16
Chichester SD	23	0.22	23	0.24	9	0.25
Childrens Institute Of Pgh	58	0.55	43	0.45	10	0.27
Circle of Seasons CS	3	0.03	3	0.03	0	0.00
City CHS	1	0.01	1	0.01	1	0.03
Clairton City SD	10	0.09	10	0.10	5	0.14
Claysburg Kimmel SD	4	0.04	4	0.04	1	0.03
Clearfield Area SD	12	0.11	12	0.13	6	0.16
Clelian Heights Sch For Excep	13	0.12	12	0.13	9	0.25
Coatesville Area SD	11	0.10	11	0.12	6	0.16
Cocalico SD	18	0.17	18	0.19	5	0.14
Colonial IU 20	234	2.22	216	2.26	77	2.10
Colonial SD	33	0.31	29	0.30	12	0.33
Columbia Borough SD	12	0.11	12	0.13	5	0.14
Commonwealth Charter Academy	26	0.25	26	0.27	18	0.49
Community Academy Of Phil CS	10	0.09	10	0.10	5	0.14
Comprehensive Learning Center	15	0.14	15	0.16	5	0.14
Conemaugh Township Area SD	14	0.13	13	0.14	7	0.19

School District	ELA		Math		Science	
	Count	Percent	Count	Percent	Count	Percent
Conemaugh Valley SD	2	0.02	1	0.01	2	0.05
Conestoga Valley SD	17	0.16	16	0.17	5	0.14
Conewago Valley SD	27	0.26	27	0.28	9	0.25
Conneaut SD	14	0.13	14	0.15	3	0.08
Connellsville Area SD	30	0.28	30	0.31	16	0.44
Conrad Weiser Area SD	3	0.03	3	0.03	0	0.00
Cornell SD	4	0.04	4	0.04	3	0.08
Cornwall Lebanon SD	10	0.09	10	0.10	4	0.11
Corry Area SD	8	0.08	8	0.08	3	0.08
Council Rock SD	37	0.35	30	0.31	14	0.38
CPASDA	3	0.03	1	0.01	0	0.00
Crawford Central SD	5	0.05	5	0.05	2	0.05
Cumberland Valley SD	50	0.47	50	0.52	21	0.57
Dallas SD	9	0.09	8	0.08	3	0.08
Dallastown Area SD	8	0.08	8	0.08	2	0.05
Danville Area SD	18	0.17	18	0.19	7	0.19
Davidson School	93	0.88	89	0.93	35	0.95
Deer Lakes SD	6	0.06	6	0.06	2	0.05
Delaware Co IU 25	36	0.34	35	0.37	17	0.46
Delaware Valley SD	18	0.17	16	0.17	7	0.19
Delta School	10	0.09	8	0.08	0	0.00
Derry Area SD	21	0.20	18	0.19	7	0.19
Derry Township SD	14	0.13	14	0.15	7	0.19
Devereux Day School	9	0.09	9	0.09	2	0.05
Devereux Leo Kanner LC	41	0.39	40	0.42	24	0.65
Dover Area SD	31	0.29	29	0.30	10	0.27
Downingtown Area SD	6	0.06	5	0.05	1	0.03
Dr. G. A. Barber Ctr Inc.	37	0.35	36	0.38	14	0.38
Dubois Area SD	27	0.26	27	0.28	9	0.25
Dunmore SD	13	0.12	13	0.14	7	0.19
Duquesne City SD	3	0.03	3	0.03	1	0.03
East Lycoming SD	11	0.10	11	0.12	3	0.08
East Penn SD	27	0.26	27	0.28	11	0.30
East Pennsboro Area SD	5	0.05	5	0.05	4	0.11
East Stroudsburg Area SD	21	0.20	18	0.19	5	0.14
Eastern Lancaster Co SD	41	0.39	39	0.41	17	0.46
Eastern Lebanon Co SD	5	0.05	5	0.05	1	0.03
Easton Area SD	27	0.26	26	0.27	15	0.41
Educ Ctr At Watson Institute	36	0.34	34	0.36	10	0.27
Elizabeth Forward SD	3	0.03	2	0.02	1	0.03
Elizabethtown Area SD	9	0.09	9	0.09	3	0.08
Elk Lake SD	14	0.13	14	0.15	6	0.16
Ellwood City Area SD	5	0.05	5	0.05	2	0.05
Ephrata Area SD	27	0.26	27	0.28	6	0.16
Erie City SD	122	1.16	113	1.18	52	1.42

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School District	ELA		Math		Science	
	Count	Percent	Count	Percent	Count	Percent
Erie Rise Leadership Academy Charter School	13	0.12	13	0.14	3	0.08
Esperanza Academy CS	1	0.01	1	0.01	0	0.00
Eugenio Maria De Hostos CS	1	0.01	1	0.01	1	0.03
Exeter Township SD	1	0.01	1	0.01	0	0.00
Fairview SD	5	0.05	5	0.05	2	0.05
Fannett Metal SD	1	0.01	1	0.01	1	0.03
Farrell Area SD	3	0.03	3	0.03	2	0.05
Fleetwood Area SD	4	0.04	4	0.04	2	0.05
Forbes Road SD	1	0.01	1	0.01	0	0.00
Forest City Regional SD	3	0.03	3	0.03	1	0.03
Fort Cherry SD	1	0.01	1	0.01	1	0.03
Fort LeBoeuf SD	4	0.04	4	0.04	3	0.08
Fox Chapel Area SD	5	0.05	5	0.05	2	0.05
Franklin Area SD	23	0.22	23	0.24	14	0.38
Franklin Regional SD	15	0.14	14	0.15	6	0.16
Franklin Towne Charter El Sch	5	0.05	5	0.05	1	0.03
Franklin Towne CHS	3	0.03	3	0.03	3	0.08
Frazier SD	3	0.03	3	0.03	2	0.05
Frederick Douglass Mastery CS	8	0.08	8	0.08	1	0.03
Freedom Area SD	5	0.05	5	0.05	3	0.08
Freeport Area SD	10	0.09	7	0.07	1	0.03
G. Crothers Mem. Sch	33	0.31	30	0.31	16	0.44
Galeton Area SD	7	0.07	7	0.07	5	0.14
Garnet Valley SD	16	0.15	11	0.12	2	0.05
Gateway SD	16	0.15	15	0.16	7	0.19
General McLane SD	17	0.16	16	0.17	9	0.25
Gettysburg Area SD	3	0.03	3	0.03	1	0.03
Girard SD	29	0.27	29	0.30	13	0.35
Glendale SD	5	0.05	5	0.05	1	0.03
Governor Mifflin SD	16	0.15	12	0.13	4	0.11
Graham Academy	41	0.39	40	0.42	10	0.27
Great Valley SD	1	0.01	0	0.00	0	0.00
Greater Johnstown SD	53	0.50	42	0.44	24	0.65
Greater Latrobe SD	5	0.05	5	0.05	3	0.08
Greater Nanticoke Area SD	33	0.31	33	0.35	8	0.22
Green Tree School	26	0.25	11	0.12	0	0.00
Greencastle Antrim SD	3	0.03	3	0.03	1	0.03
Greensburg Salem SD	7	0.07	7	0.07	1	0.03
Greenville Area SD	5	0.05	4	0.04	1	0.03
Greenville El School	5	0.05	4	0.04	1	0.03
Greenwood SD	3	0.03	3	0.03	2	0.05
Grove City Area SD	2	0.02	2	0.02	2	0.05
Grover Cleveland Mastery CS	3	0.03	3	0.03	0	0.00
Halifax Area SD	2	0.02	2	0.02	1	0.03
Hamburg Area SD	3	0.03	2	0.02	0	0.00

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School District	ELA		Math		Science	
	Count	Percent	Count	Percent	Count	Percent
Hampton Township SD	10	0.09	9	0.09	7	0.19
Hanover Area SD	2	0.02	2	0.02	0	0.00
Hanover Public SD	2	0.02	2	0.02	1	0.03
Harbor Creek SD	5	0.05	3	0.03	2	0.05
Harrisburg City SD	103	0.98	98	1.03	35	0.95
Hatboro Horsham SD	11	0.10	10	0.10	5	0.14
Haverford Township SD	12	0.11	9	0.09	6	0.16
Hazleton Area SD	48	0.45	48	0.50	15	0.41
Hempfield Area SD	24	0.23	24	0.25	8	0.22
Hempfield SD	25	0.24	21	0.22	7	0.19
Hermitage SD	5	0.05	5	0.05	0	0.00
Highlands Hosp Ctr for Autism	19	0.18	19	0.20	6	0.16
Highlands SD	27	0.26	27	0.28	10	0.27
HMS School	12	0.11	12	0.13	4	0.11
Hogan Learning Academy LLC	20	0.19	17	0.18	9	0.25
Hollidaysburg Area SD	10	0.09	10	0.10	4	0.11
Homer Center SD	1	0.01	1	0.01	1	0.03
Hope Academy of Wexford	5	0.05	3	0.03	2	0.05
Hopewell Area SD	6	0.06	6	0.06	2	0.05
Independence CS	3	0.03	3	0.03	0	0.00
Independence CS West	4	0.04	4	0.04	0	0.00
Indiana Area SD	9	0.09	8	0.08	4	0.11
Inquiry Charter School	4	0.04	4	0.04	3	0.08
Insight PA Cyber CS	4	0.04	4	0.04	1	0.03
Interboro SD	10	0.09	10	0.10	5	0.14
Iroquois SD	4	0.04	4	0.04	3	0.08
IU 1	33	0.31	30	0.31	13	0.35
Jeannette City SD	4	0.04	4	0.04	1	0.03
Jenkintown SD	1	0.01	1	0.01	0	0.00
Jersey Shore Area SD	12	0.11	12	0.13	5	0.14
John B Stetson CS	6	0.06	6	0.06	2	0.05
Johnsonburg Area SD	1	0.01	1	0.01	0	0.00
Juniata Valley SD	8	0.08	8	0.08	3	0.08
Kane Area SD	6	0.06	5	0.05	3	0.08
Katharine Dean Tillotson School	11	0.10	10	0.10	4	0.11
Kennett Consolidated SD	6	0.06	3	0.03	0	0.00
Keystone Central SD	17	0.16	13	0.14	7	0.19
Keystone Oaks SD	9	0.09	9	0.09	2	0.05
Keystone SD	1	0.01	0	0.00	0	0.00
Kidspeace Athlete Sch	5	0.05	3	0.03	1	0.03
Kipp DuBois CS	1	0.01	0	0.00	0	0.00
Kipp W. Philadelphia CS	7	0.07	6	0.06	0	0.00
Kiski Area SD	29	0.27	29	0.30	8	0.22
Kutztown Area SD	14	0.13	12	0.13	2	0.05
Lackawanna Trail SD	4	0.04	4	0.04	0	0.00
Lakeland SD	3	0.03	3	0.03	1	0.03

School District	ELA		Math		Science	
	Count	Percent	Count	Percent	Count	Percent
Lakeview SD	2	0.02	2	0.02	1	0.03
Lampeter Strasburg SD	12	0.11	12	0.13	9	0.25
Lancaster Lebanon IU 13	98	0.93	94	0.99	44	1.20
Lancaster SD	59	0.56	57	0.60	15	0.41
Laurel Highlands SD	8	0.08	8	0.08	3	0.08
Laurel SD	3	0.03	0	0.00	1	0.03
Lebanon SD	6	0.06	6	0.06	3	0.08
Lehighton Area El Sch	20	0.19	16	0.17	5	0.14
Lehighton Area SD	20	0.19	16	0.17	5	0.14
Lenape Tech	4	0.04	4	0.04	4	0.11
Lewisburg Area SD	1	0.01	1	0.01	0	0.00
LifeWorks	1	0.01	0	0.00	1	0.03
Ligonier Valley SD	5	0.05	4	0.04	1	0.03
Lincoln IU 12	200	1.89	186	1.95	80	2.18
Lincoln School	1	0.01	1	0.01	1	0.03
Line Mountain SD	7	0.07	7	0.07	4	0.11
Lower Dauphin SD	26	0.25	25	0.26	16	0.44
Lower Moreland Township SD	13	0.12	13	0.14	5	0.14
Luzerne IU 18	23	0.22	23	0.24	9	0.25
Mahanoy Area SD	8	0.08	8	0.08	2	0.05
Mahoning Valley Academy (Behavioral Health Associates)	1	0.01	1	0.01	0	0.00
Manheim Central SD	1	0.01	1	0.01	1	0.03
Manheim Township SD	9	0.09	9	0.09	1	0.03
Marion Center Area SD	6	0.06	6	0.06	0	0.00
Marple Newtown SD	13	0.12	11	0.12	5	0.14
Martin Luther Sch	3	0.03	3	0.03	2	0.05
MAST Community CS	6	0.06	6	0.06	0	0.00
MaST Community CS II	4	0.04	3	0.03	2	0.05
Mastery CS Clymer Elem	7	0.07	0	0.00	0	0.00
Mastery CS Hardy Williams	2	0.02	2	0.02	0	0.00
Mastery CS Harrity	1	0.01	0	0.00	0	0.00
Mastery CS John Wister	4	0.04	4	0.04	1	0.03
Mastery CS Mann Campus	7	0.07	7	0.07	3	0.08
Mastery CS Pastorius	7	0.07	5	0.05	3	0.08
Mastery CS Pickett Campus	11	0.10	11	0.12	2	0.05
Mastery CS Shoemaker Campus	3	0.03	3	0.03	1	0.03
Mastery CS Smedley Campus	18	0.17	6	0.06	0	0.00
Mastery CS Thomas Campus	2	0.02	2	0.02	2	0.05
McGuffey SD	5	0.05	4	0.04	1	0.03
McKeesport Area SD	20	0.19	20	0.21	5	0.14
Mechanicsburg Area SD	5	0.05	5	0.05	4	0.11
Melmark School	20	0.19	16	0.17	9	0.25
Memphis Street Academy CS	11	0.10	11	0.12	5	0.14
Merakey Autism Center	1	0.01	0	0.00	0	0.00
Merakey Autism Center - Carlisle	13	0.12	13	0.14	3	0.08

School District	ELA		Math		Science	
	Count	Percent	Count	Percent	Count	Percent
Merakey Autism Center - Ellsworth	1	0.01	1	0.01	0	0.00
Merakey Education Center - Roaring Spring	4	0.04	4	0.04	2	0.05
Merakey Education Center - Warrington	4	0.04	4	0.04	1	0.03
Mercer Area SD	10	0.09	10	0.10	5	0.14
Methacton SD	7	0.07	7	0.07	3	0.08
Meyersdale Area SD	8	0.08	8	0.08	2	0.05
Mid Valley SD	21	0.20	21	0.22	6	0.16
Midd West SD	10	0.09	8	0.08	2	0.05
Middletown Area SD	18	0.17	18	0.19	5	0.14
Midland Borough SD	4	0.04	4	0.04	2	0.05
Midwestern IU 4	9	0.09	7	0.07	2	0.05
Mifflin County SD	14	0.13	14	0.15	4	0.11
Mifflinburg Area SD	9	0.09	9	0.09	6	0.16
Millcreek Township SD	34	0.32	29	0.30	10	0.27
Millersburg Area SD	8	0.08	8	0.08	2	0.05
Millville Area SD	6	0.06	6	0.06	1	0.03
Milton Area SD	10	0.09	10	0.10	5	0.14
Minersville Area SD	5	0.05	5	0.05	2	0.05
Moniteau SD	8	0.08	8	0.08	2	0.05
Montgomery Area SD	9	0.09	9	0.09	4	0.11
Montgomery Co IU 23	19	0.18	13	0.14	4	0.11
Montour SD	13	0.12	13	0.14	3	0.08
Montrose Area SD	2	0.02	2	0.02	0	0.00
Moon Area SD	26	0.25	8	0.08	4	0.11
Morrisville Borough SD	3	0.03	3	0.03	1	0.03
Moshannon Valley SD	2	0.02	2	0.02	2	0.05
Mount Carmel Area SD	24	0.23	24	0.25	10	0.27
Mount Pleasant Area SD	11	0.10	11	0.12	7	0.19
Mount Union Area SD	11	0.10	10	0.10	3	0.08
Mt Lebanon SD	14	0.13	14	0.15	6	0.16
Muhlenberg SD	19	0.18	19	0.20	5	0.14
Muncy SD	3	0.03	3	0.03	3	0.08
Nazareth Area SD	5	0.05	3	0.03	4	0.11
Neshaminy SD	74	0.70	71	0.74	16	0.44
Neshannock Township SD	6	0.06	6	0.06	4	0.11
New Brighton Area SD	4	0.04	4	0.04	2	0.05
New Castle Area SD	50	0.47	49	0.51	18	0.49
New Directions	1	0.01	1	0.01	1	0.03
New Foundations CS	2	0.02	2	0.02	2	0.05
New Hope Solebury SD	7	0.07	7	0.07	2	0.05
New Kensington Arnold SD	32	0.30	32	0.34	13	0.35
New Story Clearfield	5	0.05	5	0.05	3	0.08
New Story DuBois	5	0.05	5	0.05	3	0.08
New Story Harrisburg	24	0.23	24	0.25	7	0.19
New Story Holland	4	0.04	4	0.04	2	0.05
New Story Indiana	10	0.09	10	0.10	5	0.14

School District	ELA		Math		Science	
	Count	Percent	Count	Percent	Count	Percent
New Story Monroeville	4	0.04	4	0.04	1	0.03
New Story Selinsgrove	9	0.09	0	0.00	0	0.00
New Story Throop	3	0.03	3	0.03	0	0.00
New Story Wyoming	9	0.09	8	0.08	4	0.11
New Story Wyomissing	9	0.09	9	0.09	7	0.19
Newport SD	10	0.09	10	0.10	2	0.05
Norristown Area SD	30	0.28	30	0.31	15	0.41
North Allegheny SD	18	0.17	18	0.19	2	0.05
North East SD	10	0.09	8	0.08	1	0.03
North Hills SD	23	0.22	23	0.24	9	0.25
North Penn SD	63	0.60	58	0.61	23	0.63
North Pocono SD	7	0.07	7	0.07	6	0.16
North Schuylkill SD	9	0.09	9	0.09	7	0.19
North Star SD	1	0.01	0	0.00	0	0.00
Northampton Area SD	21	0.20	21	0.22	10	0.27
Northeast Bradford SD	13	0.12	13	0.14	5	0.14
Northeastern Educ. IU 19	13	0.12	13	0.14	0	0.00
Northern Lebanon SD	13	0.12	8	0.08	5	0.14
Northern Lehigh SD	8	0.08	8	0.08	3	0.08
Northern Potter SD	8	0.08	8	0.08	2	0.05
Northern Tioga SD	30	0.28	30	0.31	12	0.33
Northern York County SD	2	0.02	2	0.02	0	0.00
Northgate SD	7	0.07	7	0.07	2	0.05
Northwest Area SD	12	0.11	12	0.13	4	0.11
Northwest Tri County IU 5	11	0.10	9	0.09	2	0.05
Northwestern Lehigh SD	1	0.01	1	0.01	0	0.00
Norwin SD	26	0.25	26	0.27	13	0.35
Octorara Area SD	1	0.01	1	0.01	0	0.00
Oil City Area SD	11	0.10	11	0.12	2	0.05
Oley Valley SD	12	0.11	12	0.13	3	0.08
Olney Charter High School	6	0.06	5	0.05	4	0.11
Otto Eldred SD	5	0.05	5	0.05	1	0.03
Overbrook School For Blind	30	0.28	29	0.30	5	0.14
Owen J Roberts SD	18	0.17	18	0.19	9	0.25
Oxford Area SD	14	0.13	14	0.15	5	0.14
PA Distance Learning CS	11	0.10	11	0.12	7	0.19
Pace School	2	0.02	2	0.02	2	0.05
Palmerton Area SD	16	0.15	16	0.17	11	0.30
Palmyra Area SD	11	0.10	11	0.12	2	0.05
Panther Valley SD	12	0.11	11	0.12	7	0.19
Parkland SD	34	0.32	33	0.35	14	0.38
Pathway School	23	0.22	9	0.09	0	0.00
Pen Argyl Area SD	1	0.01	1	0.01	0	0.00
Penn Cambria SD	1	0.01	1	0.01	0	0.00
Penn Delco SD	2	0.02	0	0.00	0	0.00
Penn Hills Charter School	1	0.01	1	0.01	0	0.00

School District	ELA		Math		Science	
	Count	Percent	Count	Percent	Count	Percent
Penn Hills SD	40	0.38	40	0.42	13	0.35
Penn Manor SD	11	0.10	11	0.12	7	0.19
Penn Trafford SD	14	0.13	14	0.15	9	0.25
Penncrest SD	6	0.06	6	0.06	2	0.05
Pennridge SD	34	0.32	34	0.36	14	0.38
Penns Manor Area SD	6	0.06	6	0.06	4	0.11
Pennsbury SD	25	0.24	22	0.23	9	0.25
Pennsylvania Cyber CS	48	0.45	48	0.50	27	0.74
Pennsylvania Leadership CS	13	0.12	12	0.13	10	0.27
Pennsylvania School For Deaf	7	0.07	3	0.03	1	0.03
Pennsylvania Virtual CS	24	0.23	24	0.25	11	0.30
People For People CS	3	0.03	3	0.03	2	0.05
Perkiomen Valley SD	10	0.09	9	0.09	4	0.11
Perseus House CS Of Excellence	4	0.04	4	0.04	3	0.08
Peters Township SD	14	0.13	12	0.13	5	0.14
Philadelphia Academy CS	11	0.10	10	0.10	7	0.19
Philadelphia City SD	1371	12.99	1061	11.12	375	10.22
Philadelphia CS Arts & Sciences at HR Edmonds	9	0.09	9	0.09	3	0.08
Philipsburg Osceola Area SD	6	0.06	6	0.06	1	0.03
Phoenixville Area SD	20	0.19	20	0.21	5	0.14
Pine Grove Area SD	4	0.04	4	0.04	2	0.05
Pine Richland SD	3	0.03	3	0.03	1	0.03
Pittsburgh SD	339	3.21	318	3.33	120	3.27
Plea School	16	0.15	12	0.13	3	0.08
Pleasant Valley SD	15	0.14	15	0.16	7	0.19
Plum Borough SD	19	0.18	19	0.20	9	0.25
Pocono Mountain SD	16	0.15	6	0.06	1	0.03
Port Allegany SD	2	0.02	2	0.02	1	0.03
Portage Area SD	1	0.01	1	0.01	0	0.00
Pottsgrove SD	15	0.14	15	0.16	7	0.19
Pottstown SD	12	0.11	12	0.13	4	0.11
Pottsville Area SD	16	0.15	16	0.17	8	0.22
Pressley Ridge Day Sch Autism	7	0.07	4	0.04	4	0.11
Pressley Ridge Johnstown	15	0.14	15	0.16	10	0.27
Propel Braddock Hills	10	0.09	10	0.10	8	0.22
Propel East	1	0.01	1	0.01	1	0.03
Propel McKeesport	1	0.01	1	0.01	0	0.00
Propel Montour	1	0.01	1	0.01	0	0.00
Propel Northside	2	0.02	2	0.02	1	0.03
Purchase Line SD	2	0.02	2	0.02	0	0.00
Quakertown Community SD	23	0.22	23	0.24	10	0.27
Radnor Township SD	8	0.08	2	0.02	1	0.03
Reach Cyber CS	23	0.22	23	0.24	8	0.22
Reading SD	235	2.23	212	2.22	74	2.02
Red Lion Area SD	25	0.24	25	0.26	10	0.27

School District	ELA		Math		Science	
	Count	Percent	Count	Percent	Count	Percent
Renaissance Academy CS	2	0.02	1	0.01	0	0.00
Reynolds SD	10	0.09	10	0.10	3	0.08
Richard Allen Preparatory CS	1	0.01	1	0.01	0	0.00
Richland SD	7	0.07	7	0.07	5	0.14
Ridgway Area SD	2	0.02	2	0.02	0	0.00
Ridley SD	21	0.20	19	0.20	8	0.22
Ringgold SD	7	0.07	6	0.06	3	0.08
Riverview IU 6	11	0.10	10	0.10	1	0.03
Riverview SD	1	0.01	0	0.00	0	0.00
Rochester Area SD	13	0.12	13	0.14	5	0.14
Rose Tree Media SD	23	0.22	20	0.21	10	0.27
Russell Byers CS	1	0.01	1	0.01	0	0.00
Saint Clair Area SD	5	0.05	4	0.04	2	0.05
Salisbury Township SD	1	0.01	1	0.01	1	0.03
Saucon Valley SD	7	0.07	7	0.07	3	0.08
Sayre Area SD	15	0.14	15	0.16	7	0.19
School at McGuire Memorial	32	0.30	32	0.34	13	0.35
School Lane CS	3	0.03	3	0.03	2	0.05
Schuylkill Haven Area SD	3	0.03	3	0.03	1	0.03
Schuylkill IU 29	22	0.21	22	0.23	5	0.14
Schuylkill Valley SD	7	0.07	7	0.07	2	0.05
Scranton School for Deaf & HOH	7	0.07	7	0.07	1	0.03
Scranton SD	46	0.44	46	0.48	22	0.60
Selinsgrove Area SD	9	0.09	1	0.01	3	0.08
Seneca Highlands IU 9	10	0.09	10	0.10	5	0.14
Seneca Valley SD	22	0.21	22	0.23	20	0.55
Shaler Area SD	9	0.09	8	0.08	7	0.19
Shamokin Area SD	23	0.22	23	0.24	12	0.33
Sharon City SD	4	0.04	3	0.03	0	0.00
Sharpsville Area SD	4	0.04	1	0.01	1	0.03
Shenandoah Valley SD	12	0.11	12	0.13	3	0.08
Shenango Area SD	2	0.02	2	0.02	0	0.00
Shikellamy SD	29	0.27	26	0.27	4	0.11
Shippensburg Area SD	15	0.14	15	0.16	6	0.16
Slippery Rock Area SD	2	0.02	2	0.02	1	0.03
Soaring Heights Clearfield	6	0.06	6	0.06	2	0.05
Soaring Heights State College	2	0.02	2	0.02	0	0.00
Solanco SD	12	0.11	12	0.13	2	0.05
Somerset Area SD	8	0.08	0	0.00	0	0.00
Souderton Area SD	26	0.25	26	0.27	10	0.27
South Allegheny SD	4	0.04	4	0.04	0	0.00
South Butler County SD	1	0.01	1	0.01	1	0.03
South Park SD	12	0.11	12	0.13	7	0.19
South Williamsport Area SD	3	0.03	3	0.03	1	0.03
Southeast Delco SD	26	0.25	17	0.18	1	0.03
Southern Columbia Area SD	17	0.16	17	0.18	4	0.11

School District	ELA		Math		Science	
	Count	Percent	Count	Percent	Count	Percent
Southern Huntingdon County SD	5	0.05	5	0.05	2	0.05
Southern Lehigh SD	1	0.01	1	0.01	0	0.00
Southern Tioga SD	8	0.08	2	0.02	0	0.00
Southern York County SD	12	0.11	12	0.13	5	0.14
Southmoreland SD	2	0.02	2	0.02	1	0.03
Southwood School	1	0.01	1	0.01	0	0.00
Spectrum CS	3	0.03	3	0.03	3	0.08
Spring Cove SD	8	0.08	7	0.07	4	0.11
Spring Ford Area SD	2	0.02	2	0.02	1	0.03
Spring Grove Area SD	20	0.19	20	0.21	5	0.14
Springfield SD	30	0.28	24	0.25	7	0.19
Springtime Sch	3	0.03	3	0.03	3	0.08
St Stephens Lutheran Acad	18	0.17	18	0.19	6	0.16
St. Stephens Lutheran Academy Utica	2	0.02	1	0.01	0	0.00
Steel Valley SD	8	0.08	8	0.08	3	0.08
Steelton Highspire SD	7	0.07	7	0.07	1	0.03
Sto Rox SD	20	0.19	19	0.20	4	0.11
Stroudsburg Area SD	17	0.16	15	0.16	6	0.16
Sugar Valley Rural CS	4	0.04	4	0.04	0	0.00
Susquehanna Community SD	3	0.03	3	0.03	0	0.00
Susquehanna Twp SD	36	0.34	34	0.36	15	0.41
Susquenita SD	5	0.05	5	0.05	4	0.11
Sylvan Heights Science CS	1	0.01	1	0.01	0	0.00
TALK Institute and School	5	0.05	3	0.03	1	0.03
Tamaqua Area SD	15	0.14	13	0.14	4	0.11
TECH Freire CS	2	0.02	2	0.02	0	0.00
Timothy School	34	0.32	31	0.32	8	0.22
Titusville Area SD	15	0.14	15	0.16	9	0.25
Towanda Area SD	5	0.05	5	0.05	1	0.03
Tredyffrin Easttown SD	22	0.21	22	0.23	6	0.16
Tri Valley SD	2	0.02	2	0.02	2	0.05
Trinity Area SD	29	0.27	29	0.30	12	0.33
Troy Area SD	4	0.04	4	0.04	1	0.03
Tunkhannock Area SD	17	0.16	17	0.18	10	0.27
Turkeyfoot Valley Area SD	1	0.01	1	0.01	0	0.00
Twin Valley SD	10	0.09	10	0.10	2	0.05
Tyrone Area SD	10	0.09	10	0.10	1	0.03
Union City Area SD	13	0.12	13	0.14	8	0.22
Union SD	3	0.03	3	0.03	0	0.00
Uniontown Area SD	22	0.21	22	0.23	12	0.33
Unionville Chadds Ford SD	3	0.03	3	0.03	1	0.03
United SD	8	0.08	8	0.08	7	0.19
Universal Bluford Charter School	8	0.08	8	0.08	1	0.03
Universal Daroff Charter School	17	0.16	14	0.15	6	0.16
Universal Vare Charter Middle School	1	0.01	0	0.00	0	0.00
Upper Adams SD	4	0.04	4	0.04	3	0.08

School District	ELA		Math		Science	
	Count	Percent	Count	Percent	Count	Percent
Upper Darby SD	122	1.16	94	0.99	36	0.98
Upper Dauphin Area SD	2	0.02	2	0.02	2	0.05
Upper Dublin SD	10	0.09	9	0.09	1	0.03
Upper Merion Area SD	25	0.24	25	0.26	10	0.27
Upper Perkiomen SD	2	0.02	2	0.02	1	0.03
Upper Saint Clair SD	11	0.10	11	0.12	2	0.05
Urban Pathways K-5 College Charter School	1	0.01	1	0.01	0	0.00
Vanguard School	31	0.29	29	0.30	6	0.16
Vista School	22	0.21	18	0.19	9	0.25
Wallenpaupack Area SD	16	0.15	16	0.17	8	0.22
Wallingford Swarthmore SD	3	0.03	3	0.03	0	0.00
Warren County SD	47	0.45	47	0.49	20	0.55
Warrior Run SD	11	0.10	8	0.08	1	0.03
Warwick SD	9	0.09	9	0.09	4	0.11
Watson Inst Friendship Academy	2	0.02	1	0.01	1	0.03
Watson Institute Education Center South	15	0.14	11	0.12	4	0.11
Wattsburg Area SD	10	0.09	10	0.10	5	0.14
Waynesboro Area SD	26	0.25	26	0.27	8	0.22
Weatherly Area SD	2	0.02	2	0.02	0	0.00
Wellsboro Area SD	12	0.11	12	0.13	4	0.11
West Allegheny SD	3	0.03	3	0.03	2	0.05
West Branch Area SD	12	0.11	10	0.10	6	0.16
West Chester Area SD	23	0.22	18	0.19	7	0.19
West Greene SD	15	0.14	15	0.16	5	0.14
West Jefferson Hills SD	1	0.01	0	0.00	0	0.00
West Middlesex Area SD	6	0.06	6	0.06	0	0.00
West Mifflin Area SD	2	0.02	2	0.02	0	0.00
West Perry SD	17	0.16	17	0.18	3	0.08
West Shore SD	25	0.24	16	0.17	9	0.25
Western Beaver County SD	7	0.07	7	0.07	0	0.00
Western PA School For Blind	43	0.41	41	0.43	15	0.41
Western PA School For Deaf	16	0.15	16	0.17	6	0.16
Western Wayne SD	13	0.12	7	0.07	4	0.11
Westmoreland IU 7	31	0.29	21	0.22	4	0.11
Wilkes Barre Area SD	42	0.40	41	0.43	17	0.46
Wilkinsburg Borough SD	7	0.07	7	0.07	0	0.00
William Penn SD	44	0.42	42	0.44	13	0.35
Williamsburg Community SD	1	0.01	1	0.01	1	0.03
Williamsport Area SD	16	0.15	16	0.17	3	0.08
Wilmington Area SD	5	0.05	5	0.05	1	0.03
Wilson Area SD	3	0.03	3	0.03	0	0.00
Wilson SD	34	0.32	29	0.30	8	0.22
Wissahickon CS	1	0.01	1	0.01	0	0.00
Wissahickon SD	5	0.05	1	0.01	1	0.03
Woodland Hills SD	14	0.13	14	0.15	3	0.08
Woods Services	9	0.09	4	0.04	0	0.00

School District	ELA		Math		Science	
	Count	Percent	Count	Percent	Count	Percent
Wordsworth Acad Fort Washington	6	0.06	6	0.06	1	0.03
Wyalusing Area SD	13	0.12	13	0.14	5	0.14
Wyoming Area SD	4	0.04	1	0.01	2	0.05
Wyoming Valley West SD	32	0.30	32	0.34	6	0.16
Wyomissing Area SD	11	0.10	10	0.10	0	0.00
York City SD	55	0.52	55	0.58	26	0.71
York Suburban SD	14	0.13	10	0.10	2	0.05
Young Scholars of McKeesport Charter School	2	0.02	2	0.02	1	0.03
Total	10556	100.00	9539	100.00	3668	100.00