

2021 Technical Manual for the Government and Maryland Integrated Science Assessments in the Maryland Comprehensive Assessment Program

High School Level

Prepared by Cognia and the Maryland
State Department of Education

cognia™



Foreword

The technical information included in this report is intended for use by those who evaluate tests, interpret scores, or use test results in making educational decisions. It is assumed that the reader has some technical knowledge of test construction and measurement procedures, as stated in Standards for Educational and Psychological Testing (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 2014).



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Section 1. Introduction

The Maryland Comprehensive Assessments are tests that are developed or adopted by the Maryland State Department of Education (MSDE) including those assessments formerly known as the Maryland High School Assessments (HSAs). The Maryland Comprehensive Assessment Program (MCAP) includes an end-of-course assessment in Government and a cumulative assessment in Science, the High School Maryland Integrated Science Assessment (MCAP HS MISA). These MCAPs are intended to meet the assessment requirements for Maryland high school graduation. The MCAP HS MISA also meets the high school testing requirements for the federal Every Student Succeeds Act of 2015 (ESSA). The MCAP Government assessment meets the high school assessment requirements from Maryland Code Educational Article §7-203 Education Accountability Program 2017. This report provides information about the January 2021 administrations for the MCAP Government and MCAP HS MISA, and Early Fall 2021 administration of the MCAP HS MISA. Due to the COVID-19 pandemic the May 2021 administration of MCAP HS MISA and May and Summer 2021 administrations of MCAP Government were not conducted.

The Government assessment administrations began in 2002 and continued until 2011. From summer 2011 to October 2012, the Government assessment was excluded from the then Maryland High School assessment program (HSA). Starting in January 2013, the Government assessment was reintroduced. Government is referred to as an “end-of-course” assessment because students take it as they complete the appropriate coursework, while HS MISA is an integrated assessment taken at the end of a locally decided sequence of courses. Starting in 2018, the MCAP HS MISA, a high-school level science assessment that is aligned to the Next Generation Science Standards (NGSS), replaced the existing end-of-course assessment in Biology.

In both the 2019-2020 and 2020-2021 school years, waivers from taking the assessments were granted for many students due to the COVID-19 pandemic. Students that did take the MCAP HS MISA or MCAP Government in 2021 were not required to pass the assessments but were required to pass the respective courses.

Since May 2009, the MCAPs have been administered online as well as in the paper-and-pencil format. Studies of the comparability of online and paper forms of the HSA were conducted in 2009 and 2010. The 2009 report is provided in the 2009 HSA Technical Report in Appendix 1C. The 2010 results were provided to MSDE (Educational Testing Service, October 29, 2010). Further mode comparability studies have not been conducted.

For the 2021 administration year, the paper-based testing was reserved for accommodations only. The computer-based testing was provided via the eMetric-based platform. The online administrations were conducted using the Student Kiosk web-based software application. The Student Kiosk allows students to respond to the selected-response (SR) items electronically by selecting an answer choice. Students respond electronically to the constructed-response (CR) items by typing their answers into the response boxes using the computer keyboard. The Student Kiosk also allows students to respond electronically to the technology-enhanced (TE) items in a variety of formats.

All SR and TE items were machine scored. The CR items were first scored by a human scorer and then received a second score from artificial intelligence (AI) using ACT's Constructed Response Automated Scoring Engine (CRASE+). CRASE+ analyzes a sample of human-scored student responses to produce a model that emulates human scoring behavior. When the scores from the two scorers were adjacent, the higher score was used. When the two scores differed by more than one point, the scoring supervisor would decide on a final resolution score. Additional detailed information about MCAP Government and MCAP HS MISA is provided below.

MCAP Government

The MCAP Government assessment was administered in January 2021. The May and summer administrations were canceled in 2021 due to COVID-19. Each of the distinct test forms administered in the January 2021 administration was the combination of one of two operational (or core) forms and one of six field test (matrix) forms. One of the operational forms was combined with each of three field test item sets. The other operational form was combined with the other three field test forms.

As just noted, each MCAP Government form consisted of operational and field test items. The operational items were used to produce student scores; students' scores on the field test items were not included in the computation of their scores. For the January administration, due to low student participation the field test items were not scored or analyzed. These items will be re-field tested during future administrations. Apart from items selected for public release, which are not reused, the operational items that are returned to the item bank remain unused for at least one year to minimize item exposure.

The operational items in the MCAP Government assessment consisted of SR items, which require students to choose from among four short response options; TE items, including matching, drag and drop, and hot spot items; brief constructed-response (BCR) items, which require students to write a short response; evidence-based argument sets (EBAS), which consist of a series of stimuli, SR items, and an extended CR (ECR) item. All items are based on the content outlined in Maryland's Social Studies Standards.¹

Item response models were used to estimate total test scores and subscores via item-pattern scoring. For MCAP Government, the three-parameter logistic (3PL) model was used for the SR items (see Section 2 for an introduction to item types) and the generalized partial credit model (GPCM) was used for the BCR and ECR items. Refer to *Scale Scores* in Section 4 for the details of the item response theory (IRT) models used and the item-pattern scoring procedure.

Pre-equated item parameter estimates were used to generate student scores on the MCAP Government assessment. When pre-equated item parameter estimates are used, the parameters are not estimated following an administration; instead, existing bank parameter estimates are used to produce student scores. Using this approach, scores can be calculated and assigned to students immediately after their answer documents have been processed.

¹ The Government Standards documents can be found on the Maryland School Improvement website at <http://www.marylandpublicschools.org/about/Pages/DAAIT/Assessment/HSA/index.aspx>

MCAP HS MISA

The MCAP HS MISA is the final assessment in a series of science assessments, including the grade 5 and grade 8 MISA, that students take aligned to the NGSS. The MCAP HS MISA is typically given in January and May of each school year. The May 2021 administration of MCAP HS MISA was canceled due to COVID-19. In response to this cancellation, an Early Fall 2021 MCAP HS MISA administration was offered.

Following the pattern established by the elementary and middle school MISA, the MCAP HS MISA consists of item sets that are organized around common stimuli. Students read a stimulus and then answer a set of six questions about the stimulus. These item sets are made up of a combination of multiple selected-response (MSR), SR, TE, and CR items.

The January 2021 MCAP HS MISA administration had three operational item sets and nine field test (matrix) item sets. One of the operational item sets was combined with each of three field test item sets. The other operational item sets were combined with the other six field test item sets. The result was a total of nine distinct test forms for the January 2021 administration. Due to low student participation during the January 2021 administration, the field test items were not scored or analyzed. These items will be re-field tested during future administrations.

The Early Fall 2021 MCAP HS MISA administration had three operational item sets and no field test (matrix) item sets. The test was planned by MSDE due to the disruption of COVID-19 in the 2020–2021 school year and the cancellation of the May 2021 administration. The test was designed to be significantly shorter than typical administrations.

Standard setting for the MCAP HS MISA assessment was conducted in August 2019, using a panel of 20 Maryland educators. The panel-recommended cut scores were reviewed by the MSDE. MSDE opted to make small policy-based adjustments to the panel-recommended cut scores. These final cut scores were transformed into scaled scores via the test characteristic curve of the test form used for standard setting. Please see the 2019 MCAP HS MISA Standard Setting Report for further details.

Item response models were used to estimate total test scores and subscores via item-pattern scoring. For MCAP HS MISA, the two-parameter logistic (2PL) model was used for the SR items and the GPCM was used for non-SR items.

This Maryland technical report consists of eight sections and three appendices.

- Section 1 introduces the Maryland Comprehensive Assessment Program.
- Section 2 describes the procedures used for test construction and administration.
- Section 3 presents validity evidence for the MCAP Government assessment and MCAP HS MISA.
- Section 4 delineates the scoring procedures and score types.
- Section 5 describes the reporting of 2021 MCAP Government and MCAP HS MISA results.

- Section 6 summarizes the results of the analyses of test reliability, decision consistency, and decision accuracy.
- Section 7 provides summary statistics and descriptive information about student characteristics.
- Section 8 gives the results of the analysis of the test data, including classical item analysis, differential item functioning, and field test item calibration and scaling.
- Appendix A provides examples of the score reports.
- Appendix B provides classical item statistics for operational items by administration for both content areas.

Section 2. Test Construction and Administration

Test Development

Planning

For the 2021 MCAP Government test, Cognia content leaders collaborated with their content counterparts at MSDE to build operational forms using selected-response (SR), brief constructed-response (BCR), and technology-enhanced items from the MCAP Government item bank. Field test items were embedded in the operational form according to the test design.

For the High School Maryland Integrated Science Assessment (MCAP HS MISA), Cognia content leaders collaborated with their content counterparts at MSDE to select operational items according to the test designs. Field test items were selected to continue to build an operational item bank for the MCAP HS MISA. In addition, the field test and operational items were planned with consideration to the design of the MISA in grades 5 and 8, to ensure continuity across the science assessments.

In adherence to these considerations, science “clusters” were developed to create a strong, three-dimensional alignment² to the Next Generation Science Standards (NGSS), incorporating two NGSS performance expectations. Each cluster was designed around a common stimulus that is based upon valid scientific research and contains six items.

MCAP Item Types

As noted in Section 1, four item types were used on the 2021 MCAP Government tests:

- SR—questions in multiple-choice format with four answer options and one correct answer;
- BCR—an item type used in MCAP Government only, for which the students need to write a short response;
- Technology-enhanced (TE) items—including matching, drag and drop, and hot spot items;
- Evidence-based argument sets (EBAS)—that consist of a series of stimuli, SR items, and an extended constructed-response (ECR) item.

² The Next Generation Science Standards (NGSS) are organized by Performance Expectations (PEs). In the NGSS, the content and the practices of science work together. Therefore, each PE is tied to a Disciplinary Core Idea (DCI) or content piece as well as to a Science and Engineering Practice (SEP) and a Crosscutting Concept (CCC), which are the over-arching science concepts that tie the content and practices. Items developed for Maryland HS Science must be aligned to two, if not all three, dimensions of the NGSS.

MCAP Government

Table 2-1 shows how the operational item types were distributed on each MCAP Government form for the 2021 administrations. Each SR item is worth one point, each TE item is worth two points, each BCR is worth four points, and each ECR is worth five points.

Table 2-1. Number of Operational Items and Points Possible by Item Type for Each MCAP Government Form

	SR	TE	BCR	ECR	Total
Number of Items	43	5	2	1	51
Points Possible	43	10	8	5	66

MCAP HS MISA

As also noted in Section 1, four item types were used on the 2021 MCAP HS MISA tests:

- SR—questions in multiple-choice format with four answer options and one correct answer;
- MSR—questions in multiple-choice format with multiple correct answers;
- Constructed-response (CR)—an item type for which the students need to write a response (2-point, 3-point, and 4-point CR items are included on the MCAP HS MISA test);
- Technology-enhanced (TE) items—including matching, drag and drop, ordering, graphing, hot spot, fill-in-the-blank (numerical entry only) and inline choice. (1-point and 2-point TE items are included on the MCAP HS MISA test).

As previously noted, the operational MCAP HS MISA test is designed with item sets, or clusters. Clusters on the operational form contained a stimulus, five machine-scored items (which include SR, MSR, and TE items) and one CR item, in one of three configurations based on the point value of the CR item.

- 2-point CR configuration: three 1-point SR/TE items, two 2-point SR/TE items, one 2-point CR item, or
- 3-point CR configuration: four 1-point SR/TE items, one 2-point SR/TE item, one 3-point CR item, or
- 4-point CR configuration: five 1-point SR/TE items, one 4-point CR item

Table 2-2. Number of Operational Items and Points Possible by Item Type for January 2021 MCAP HS MISA Form

	SR, MSR, TE	CR	Total
Number of Items	30	6	36
Points Possible	36	18	54

Early Fall 2021 MCAP HS MISA

The Early Fall 2021 MCAP HS MISA administration was planned by MSDE due to the disruption of COVID-19 in the 2020–2021 school year and the cancelation of the May 2020 administration. The test was designed to be significantly shorter than typical administrations. For this reason, the operational test design and blueprint were altered. In addition, no items were field tested during this administration.

The item types and cluster configurations that are outlined above remained the same for the Early Fall 2021 MCAP HS MISA.

The item types and point distribution were as follows.

Table 2-3. Number of Operational Items and Points Possible by Item Type for Early Fall 2021 MCAP HS MISA Form

	SR, MSR, TE	CR	Total
Number of Items	15	3	18
Points Possible	16	11	27

Test Specifications and Design

MCAP Government

For the MCAP Government test, MSDE predetermined the preliminary test design and provided it to Cognia, following the existing MCAP Government test blueprints. The final forms were selected by MSDE to adhere to content and psychometric guidelines. The basic test design document provided information based on specified expectations and the distribution of the number of items by item type for each reporting category. The variety of item types represented ensure that a variety of levels of cognitive complexity are addressed, although these levels are not specifically mandated by the test blueprints. Specific items were placed throughout the forms by Cognia content specialists, with the approval of MSDE. Construction of the forms was based on test blueprints approved by MSDE. The MCAP Government Operational Blueprint is presented in Table 2-4.

Table 2-4. MCAP Government Operational Blueprint

	Total Points Per Category
Standard 1: Civics	31
Standard 2: Peoples of the Nations and World	8
Standard 3: Geography	8
Standard 4: Economics	10
Standard 6: Skills and Processes	9
Total	66

Information on the referenced learning standards can be found in the Maryland Social Studies Standards for Government, available on the Maryland School Improvement website at <http://www.marylandpublicschools.org/about/Pages/DCAA/Social-Studies/AGHSH.aspx>.

MCAP HS MISA

For the January 2021 MCAP HS MISA test, MSDE and Cognia worked collaboratively to design an operational form consisting of six NGSS-aligned clusters, each containing one shared stimulus and six items. Each cluster included various item types as outlined above, always including one CR item. The variety of item types represented, as well as the complexity and three-dimensionality of the NGSS ensure that a variety of levels of cognitive complexity are addressed, although these levels are not specifically mandated by the test design.

The MCAP HS MISA operational subscore categories and test blueprint are as follows:

- Each test form contained a total of 36 items and 54 possible points, typically in the following cluster configurations: two 2-point CR clusters, two 3-point CR clusters, and two 4-point CR clusters.
- Each test form contained approximately 33 percent Physical Science items, 33 percent Life Science items, and 33 percent Earth and Space Science items across the six operational clusters.
- Each test form contained some same-domain clusters (PS-PS, LS-LS, ESS-ESS) and some integrated clusters (PS-LS, PS-ESS, LS-ESS).

Table 2-5. MCAP HS MISA Operational Blueprint

Content Area	Approximate Number of Items
Physical Science	12
Life Science	12
Earth and Space Science	12
Total Number of Items	36
Total Possible Points	54

In addition, test designs are also aligned to groupings of Practices and Crosscutting Concepts as illustrated in Table 2-6.

Table 2-6. Test Design Alignments

Practices Subscore Category	Min-Max Percentage	Crosscutting Concepts Subscore Category	Min-Max Percentage
Investigating and Evaluating (IE) *Investigations *Data *Math	22–65% (12–35 pts)	Patterns and Cause and Effect (PCE) *Patterns *Cause and Effect	22–70% (12–38 pts)
Developing Explanations and Solutions (DES) *Models *Explanations *Argument *Communicating	35–78% (19–42 pts)	Systems and Their Properties (SP) *Scale, Proportion, Quantity *System and System Models *Energy and Matter *Structure and Function *Stability and Change	30–78% (16–42 pts)

The MCAP HS MISA items and clusters were designed to align to a subset of the high school grade band standards. Item development and field test form construction were designed to support future operational test blueprints.

Early Fall 2021 MCAP HS MISA

As noted previously, the item types and cluster design for the Early Fall 2021 MCAP HS MISA remained the same. However, the test blueprint was shortened considerably. Because the test was shortened, and because of the integrated nature of the MCAP HS MISA clusters, the item and point distribution differed from full-length administrations.

The Early Fall 2021 MCAP HS MISA operational standards and test blueprint are as follows:

- Each test form contained a total of 18 items and 27 possible points with three clusters: two 4-point CR clusters and one 3-point CR cluster.
- Each test form contained 6 Physical Science points, 11 Earth Science points, and 10 Life Science points.
- Each test form 3 contained integrated clusters (1 PS-ESS and 2 LS-ESS).

Table 2-7. Early Fall MCAP HS MISA Operational Blueprint

Content Area	Approximate Number of Items
Physical Science	3
Life Science	5
Earth and Space Science	10
Total Number of Items	18
Total Possible Points	27

In addition, test designs are also aligned to groupings of Practices and Crosscutting Concepts as illustrated in Table 2-6. Because the Early Fall MCAP HS MISA was considerably shortened, subscores were not reported. For this reason, Table 2-6 references the Next Generation Science Standards (NGSS) Science and Engineering Practices and the Crosscutting Concepts that are included in the blueprint, although these were not used as subscores for the Early Fall MCAP HS MISA.

The MCAP HS MISA items and clusters were designed to align to a subset of the high school grade band standards.

Item Writing

In the 2020-2021 development year, new item development occurred for the MCAP Government, but no new items were written for the MCAP HS MISA assessment.

All test items were originally developed by item writers. Item writers were employed to develop high-quality test items that aligned with the Social Studies Standards (Government) or the NGSS. For the MCAP Government test, the items were developed by Maryland educators.

Item writers were trained on general item writing techniques as well as writing guidelines that are specific to the MCAP Government program. After an initial item writer training occurred, follow-up training was provided in the form of individual feedback and specialist review. After this follow-up training occurred, item writers received additional feedback and coaching as necessary.

Upon completion of their writing assignment, the item writers submitted their items to Cognia. Items and clusters that were accepted by the Cognia content team proceeded to the item review and revision process.

Item Review and Revision

All items on the forms underwent a series of reviews in accordance with the following procedures:

- Items were edited according to standard rules, including those detailed by the Maryland Overview Document, Style Guide, and Item Specification documents, developed in conjunction with MSDE.
- Items were reviewed for accuracy, organization, comprehension, style, usage, consistency, fairness/sensitivity, and accessibility.
- Item content was reviewed to establish whether the item measured the intended standards.
- Copyright and/or trademark permissions were verified for any materials requiring permissions, for both field test and operational material.
- Items were reviewed by Cognia editorial staff to ensure the item adhered to both the stated MSDE Style Guide and standard grammar rules.
- Internal reviews were conducted, and historical records were established for all version changes.

After Cognia performed the required internal reviews, items were submitted to MSDE for review. MSDE content specialists performed a review of the items and provided feedback to Cognia content specialists. The edits suggested by the MSDE specialists were then incorporated into the items. At this stage, items were also reviewed for accessibility and universal design.

Finally, the items were prepared for review by the Content, Bias/Sensitivity, and Accommodations Review Committees. These committees, selected by MSDE, were composed of diverse groups of Maryland educators. The committees reviewed each item to ensure that the content (a) accurately reflected what was taught in Maryland schools; (b) correctly aligned to the intended standards; (c) did not unfairly favor or disadvantage an individual or group; and (d) was universally designed and accessible to students with disabilities who utilize various presentation and response accommodations.

Upon completion of this final round of reviews, MSDE and Cognia content specialists conducted face-to-face meetings to evaluate and reconcile the reviews. Cognia then applied the requested edits to the items and/or revisions to the accompanying graphics.

For the MCAP Government assessment, 221 items were presented for review by the Content, Bias/Sensitivity, and Accommodations Review Committees in 2021. Some of these items were used to

build the 2022 field test forms. Nineteen items were rejected following committee recommendations and three items were put on hold due to current events or curriculum changes.

For the MCAP HS MISA assessment, 31 science clusters were presented for review by the Content, Bias/Sensitivity, and Accommodations Review Committees in 2021. These items were then used to build the 2021 field test forms. These clusters included 31 multi-part stimuli and 434 items. Because of the integrated nature of the clusters, acceptance rates depended on the entire cluster, not individual items. Two clusters were put on hold due to the extent of the revisions requested.

Testing Accommodations

Several alternate test formats were available to test takers, including large-print, braille, and standard paper-based versions of the MCAP Government and MCAP HS MISA tests. For 2021, all three alternate test formats were available for the January administration in both content areas. For additional information concerning test accommodations see the Maryland Assessment, Accessibility, and Accommodations Policy Manual available here:

<http://marylandpublicschools.org/programs/Documents/Special-Ed/IEP/MAM508102017.pdf>.

Test Construction

MCAP Government

The MCAP Government forms administered in January of 2021 were constructed using items from the Maryland MCAP government item bank. The pool of items that was available for use in the construction of the 2021 forms included items that had been administered, calibrated, and linked to the operational scale. Each MCAP Government test form was constructed to meet specific test blueprint specifications. Table 2-1 indicates the distribution of score points associated with each item type.

MCAP HS MISA

The MCAP HS MISA forms administered in January of 2021 were constructed using items from the 2018 MCAP HS MISA stand-alone field tests and the 2019 embedded field test forms. Items flagged for substantial DIF against any of the comparison groups were marked as such in the item bank and they were not used unless required to fulfill content specifications, and then, only after review and approval by MSDE. (See Section 8 for a more detailed account of these analyses and flagging criteria.)

Each MCAP HS MISA form was designed to meet the operational test blueprint outlined in Tables 2-2 and 2-3 above. Each form was designed with four sessions consisting of two integrated clusters each. Two field test clusters were embedded with the six operational clusters. Each session was designed to be completed in approximately 40 minutes.

As previously stated, each cluster included one shared stimulus and six items. Each cluster contained one CR item worth two, three, or four points. The remaining five items in the cluster were a variety of SR and TE item types.

Early Fall MCAP HS MISA

The Early Fall MCAP HS MISA forms administered in Fall 2021 were constructed using items from the 2018 MCAP HS MISA stand-alone field tests and the 2019 embedded field test forms. Items flagged for substantial DIF against any of the comparison groups were marked as such in the item bank and they were not used unless required to fulfill content specifications, and then, only after review and approval by MSDE. (See Section 8 for a more detailed account of these analyses and flagging criteria.)

Each Early Fall MCAP HS MISA form was designed to meet the shortened operational test blueprint outlined in Tables 2-7 above. Each form was designed with one session consisting of three integrated clusters. No field test clusters were included. Each form was designed to be completed in approximately 60 minutes.

As previously stated, each cluster included one shared stimulus and six items. Each cluster contained one CR item worth two, three, or four points. The remaining five items in the cluster were a variety of SR and TE item types.

Item Selection and Form Design

MCAP Government

To conserve the item pool, when multiple forms were included in an administration, each test form consisted of a common set of operational items shared across forms within an administration, as well as a unique set of items. Within this administration, approximately 60 percent of the operational items in each form were common across the test sections. The remaining items in the forms consisted of combinations of items that varied across forms. The percent of common items across forms was determined by MSDE and is consistent with the test specifications for previous administrations of the MCAP Government assessment.

The guidelines used to construct the forms are provided in Table 2-8. The exact composition of the forms varied slightly based on available items in the pool.

Table 2-8. Form Construction Specifications for the MCAP Government January 2021 Administration

Forms A, B, and C – Operational Core 1	Forms AA, AB, AC – Operational Core 2	Form X (Accom.)
Common set ~ 60% Unique items ~ 40%	Common set ~ 60% Unique items ~ 40%	Same as Form A
Field test selection – Unique items	Field test selection – Unique items	Field test selection – Same as Form A

In addition to the operational items, embedded field test items were included with each version of the test form, resulting in multiple versions of a test form containing different sets of field test items. Field test items accounted for approximately 19 percent of the total items on each form (12 field test items out of the total of 63 items). The content standards, item types, and item specifications added to the assessment and field tested in 2021 were developed and reviewed by Maryland educators to be

representative of the knowledge, concepts, and skills taught in Maryland government courses and designed to be measured by the test.

For this administration, there was more than one form available, so the forms were randomly assigned at the student level. Random assignment at the student level means that multiple forms of the test were distributed to students arbitrarily by the computer-based testing platform. Random assignment at the student level helps ensure that all forms are arbitrarily distributed throughout the state.

The 2021 MCAP Government forms were constructed using the test construction software associated with the customer item bank. The goal was to match the test characteristic curves (TCCs) and the conditional standard error of measurement (CSEM) curves with the “target” form defined as the base form used to set the operational scale. For MCAP Government, the base forms were originally developed in 2003. These base forms contained BCR items. Between summer 2009 and October 2013, BCR items were discontinued on the MCAP Government and the target TCCs for the MCAPs were revised so that they were no longer influenced by the characteristics of CR items. Refer to the Educational Testing Service (ETS) memorandum: *Considerations for Setting New Target Test Characteristic Curves for the Maryland High School Assessments (HSAs)* (ETS, 2009) for details on how new target TCCs were created. However, starting in January 2014, BCR items were reintroduced to the MCAP Government so the Government target TCCs have been revised back to include BCR items in the calculation of TCCs and CSEMs.

The following general steps were completed during the test construction process for the MCAP Government forms:

1. For each administration, all forms were constructed simultaneously in order to provide the best opportunity to construct parallel forms.
2. Items were selected to represent the test blueprint and match the target TCCs and CSEMs.
3. Test developers were careful to ensure that the item selections met all content specifications, including matching items to the test blueprint, distribution of keys, and avoidance of clueing³ or clanging.⁴
4. After the operational items were selected for the test forms, the field test sets were constructed. Item sets consisted of SR, BCR, TE, and ECR item types. While the field test sets were not constructed to meet any psychometric criteria, they were constructed to meet content criteria. For MCAP Government, the field test sets were estimated to be able to be completed by students in approximately 30 to 35 minutes. The field test items were embedded in the test according to a variety of content and template criteria, including, but not limited to, coverage of the reporting categories and assessment limits, cognitive balance, key balance/distribution, and clueing/clanging within the field test set and among the surrounding operational items.

Figures 2-1 and 2-2 show the plots of the TCCs and CSEMs of the operational forms used for MCAP Government in 2021. The vertical line in each figure represents the proficiency scaled cut score. The CSEMs in Figure 2-2 are CSEM values on the scaled score metric (i.e., scaled CSEMs). MCAP Government has only one cut: Proficient. It is important to note that the TCCs and CSEMs shown in the plots are based on pre-equated item parameters and therefore are curves calculated prior to administration of the tests. The TCC plots indicate that all forms for MCAP Government were within or

³ **Clueing** refers to information within a passage, stimulus, item, graphic, or other test component that allows respondents to select/construct the correct answer to one or more items in an assessment without the knowledge and/or skill targeted by the item.

⁴ **Clanging** occurs when an identical or similar word(s) appears in both the item stem and one or more item distractors. Also, if two or more items that are near each other share common key words, even if the item content does not clue, the items are said to clang because the interpretation of the word in one item can affect the interpretation of another item.

very close to each other across the range of scale scores. When forms varied in difficulty, differences between forms were typically less than 5 percent of the total raw score across the score range, especially in the range of the cut scores. When forms had differences slightly greater than 5 percent, these larger differences were typically seen at the very low end of the scale score range and at the high end of the scale. As expected, the CSEM plots indicate that the scaled CSEMs were lowest at and above the scaled cut score, which represents the middle and upper ranges of scale scores. Typically, this is where most student scores are located.

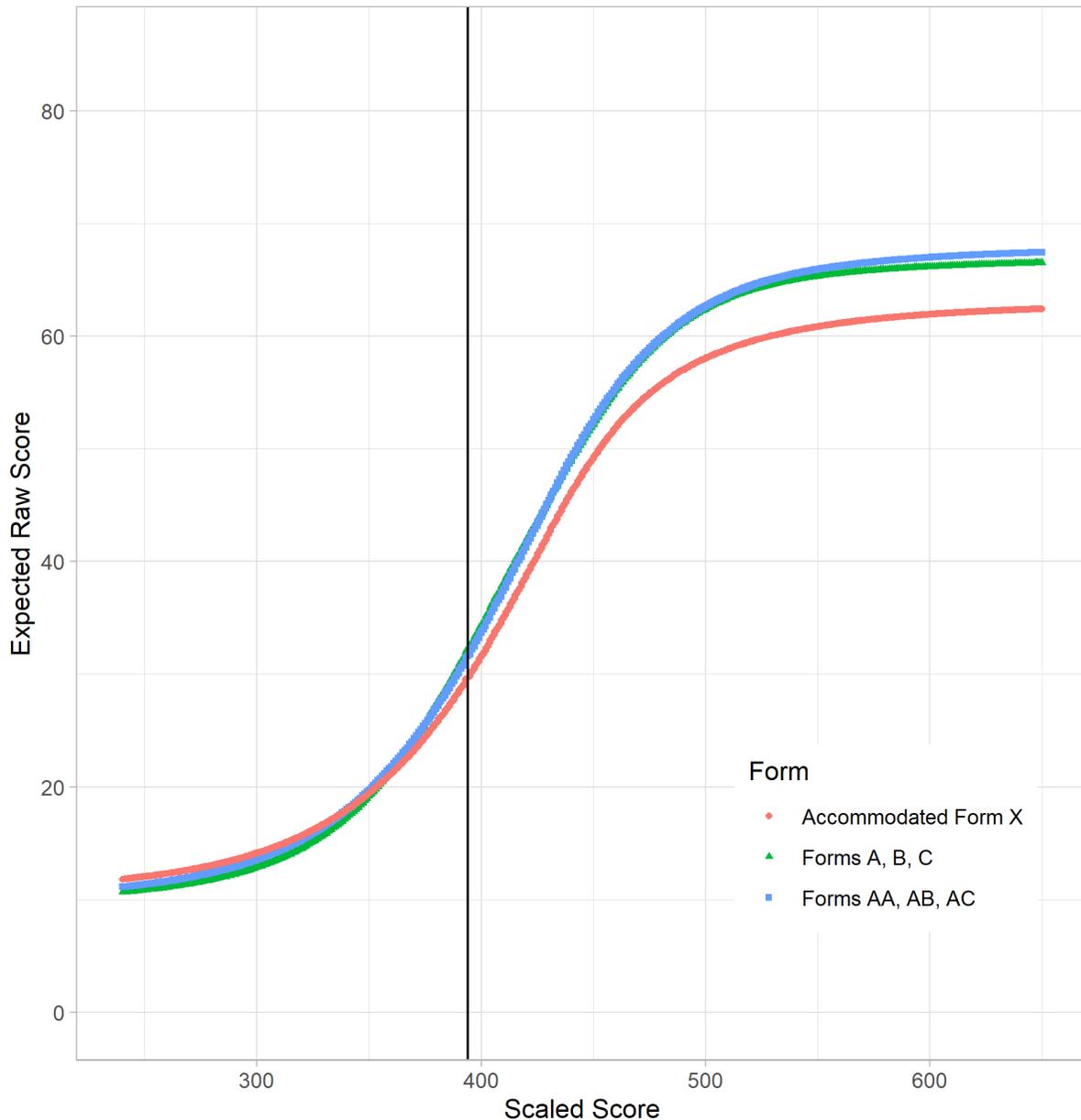


Figure 2-1. Test Characteristic Curves for the 2021 Maryland MCAP Government Forms—January

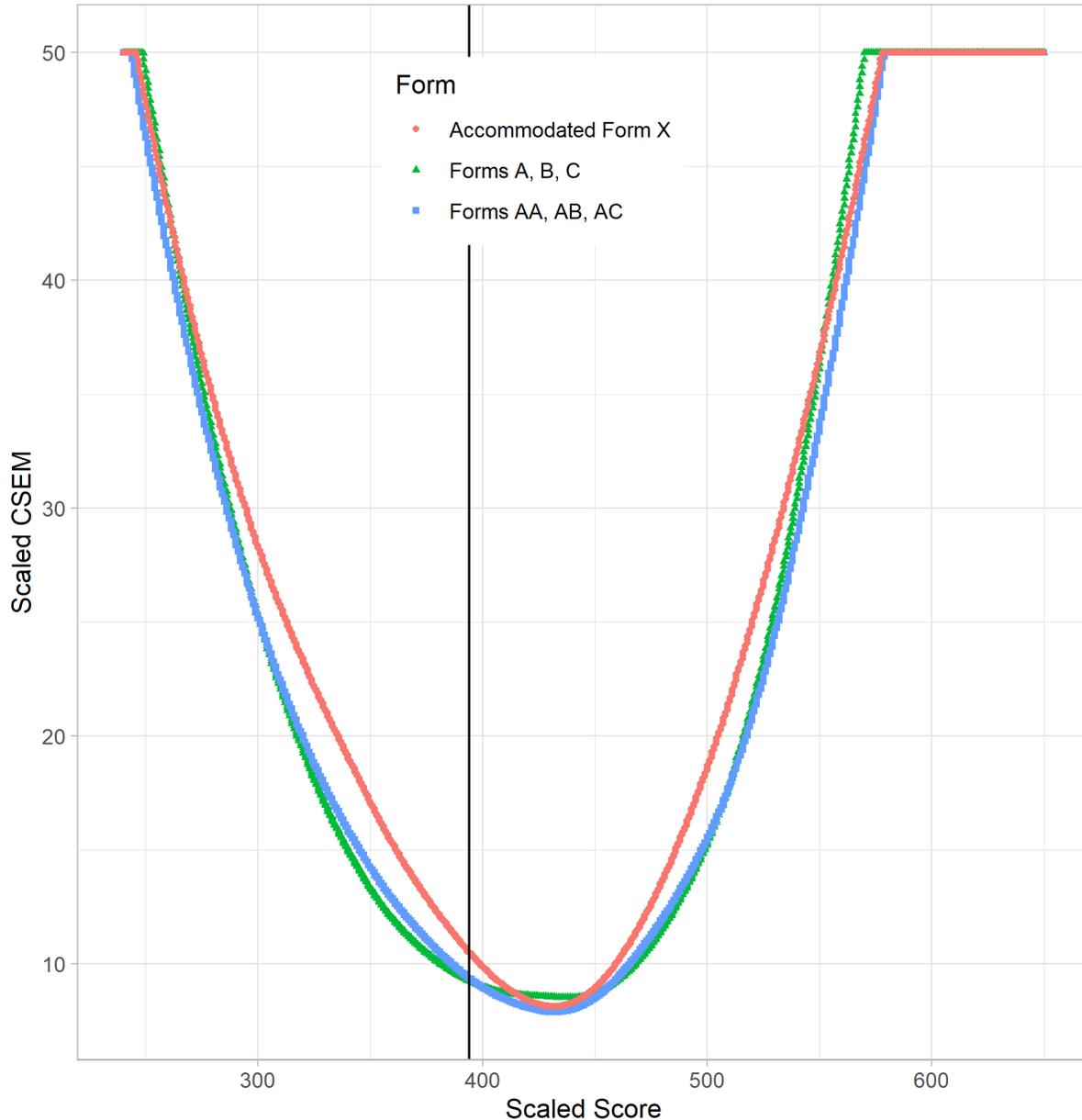


Figure 2-2. Conditional Standard Errors of Measurement and Proficiency Cutoffs for the 2021 Maryland MCAP Government Forms—January

MCAP HS MISA

Per the MCAP HS MISA test design, when multiple forms were included in an administration, each test form consisted of a common set of operational clusters shared across forms within an administration, as well as a unique set of items. Per this test design, one-half of the operational clusters are shared across the forms for each administration. There were no clusters shared across administrations in 2021, because the May 2021 administration was canceled. However, the clusters that were designed to be shared across administrations were still linked between January 2021 forms.

In addition to the operational items, embedded field test clusters were included with each version of the test form, resulting in multiple versions of a test form containing different sets of field test items. In 2021, six clusters were operational and two were field test clusters.

The guidelines used to construct the forms are provided in Tables 2-9 and 2-10. The exact composition of the forms varied slightly based on available items in the pool.

Table 2-9. Form Construction Specifications for the MCAP HS MISA January 2021 Administration

Forms A, C, AA – Operational Core 1	Forms B, AB, AC – Operational Core 2	Form X (Accom.)
Linking clusters – 50% Unique clusters – 50%	Linking clusters – 50% Unique clusters – 50%	Same as Form A
Field test selection – Unique clusters	Field test selection – Unique clusters	Field test selection – Same as Form A

Table 2-10. Form Construction Specifications for the Early Fall MCAP HS MISA Administration

Forms A, B – Operational Core 1	Form X (Accom.)
Linking clusters – 100%	Linking clusters – 100%
No field test clusters	No field test clusters

The following general steps were completed during the test construction process for the MCAP HS MISA forms:

5. For each administration, typically all forms were constructed simultaneously to provide the best opportunity to construct parallel forms. The Early Fall MISA was constructed after the January 2021 and May 2021 forms; due to COVID-19 disruptions, the need for the Early Fall MISA administration was not identified until later in 2021.
6. Test developers were careful to ensure that the item selections met all content specifications, including matching items to the test blueprint, distribution of keys, and avoidance of clueing or clanging.
7. After the operational items were selected for the test forms, the field test sets were constructed. Field test sets consisted of MCAP HS MISA clusters across all content areas. While the field test sets were not constructed to meet any psychometric criteria, they were constructed to meet content criteria. The field test items were embedded in the test according to a variety of content and template criteria, including, but not limited to, coverage of the reporting categories and continued efforts to build the operational pool of NGSS-aligned MCAP HS MISA clusters.

Figures 2-3 and 2-4 show the plots of the TCCs and CSEMs of the forms used for MCAP HS MISA in the January 2021 administration. Figures 2-5 and 2-6 show the plots of the TCCs and CSEMs of the forms used for MCAP HS MISA in the Early Fall 2021 administration. The vertical lines in each figure represents the scaled cut scores. Note that the CSEMs in these figures are CSEM values on the scaled score metric (i.e., scaled CSEMs).

The TCC plots indicate that all forms for MCAP HS MISA were within the range of scaled scores, or very close to each other. When forms varied in difficulty, differences between forms were typically less than 5 percent of the total raw score across the score range, especially in the range of the cut scores. When forms had differences slightly greater than 5 percent, these larger differences were typically seen at the

very low end of the scale score range and at the high end of the scale. The CSEM plots indicate that the scaled CSEMs were lowest at and above the scaled cut score, which represents the middle and upper ranges of scale scores. Typically, this is where most student scores are located.

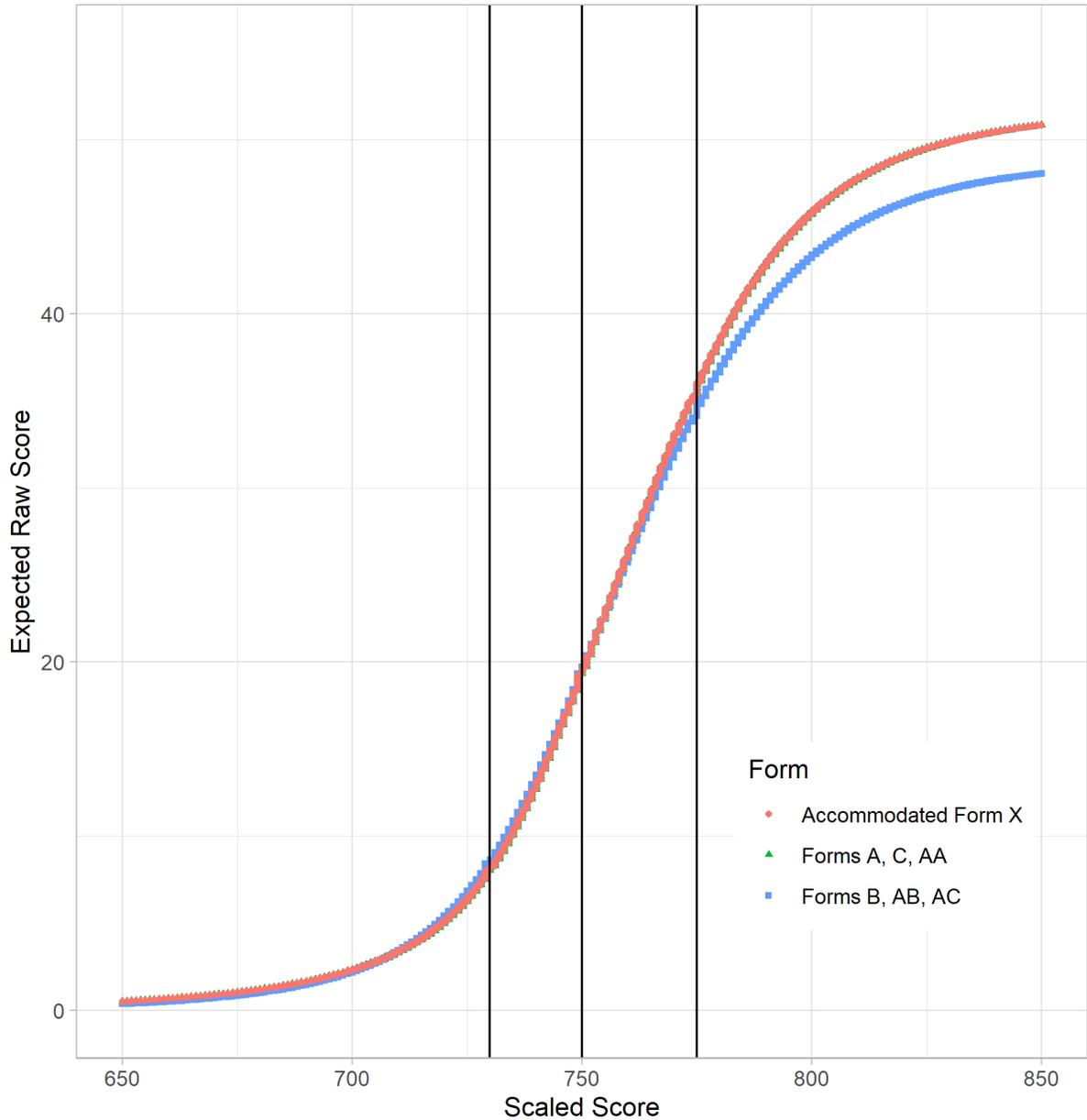


Figure 2-3. Test Characteristic Curves for the 2021 Maryland MCAP HS MISA Forms—January

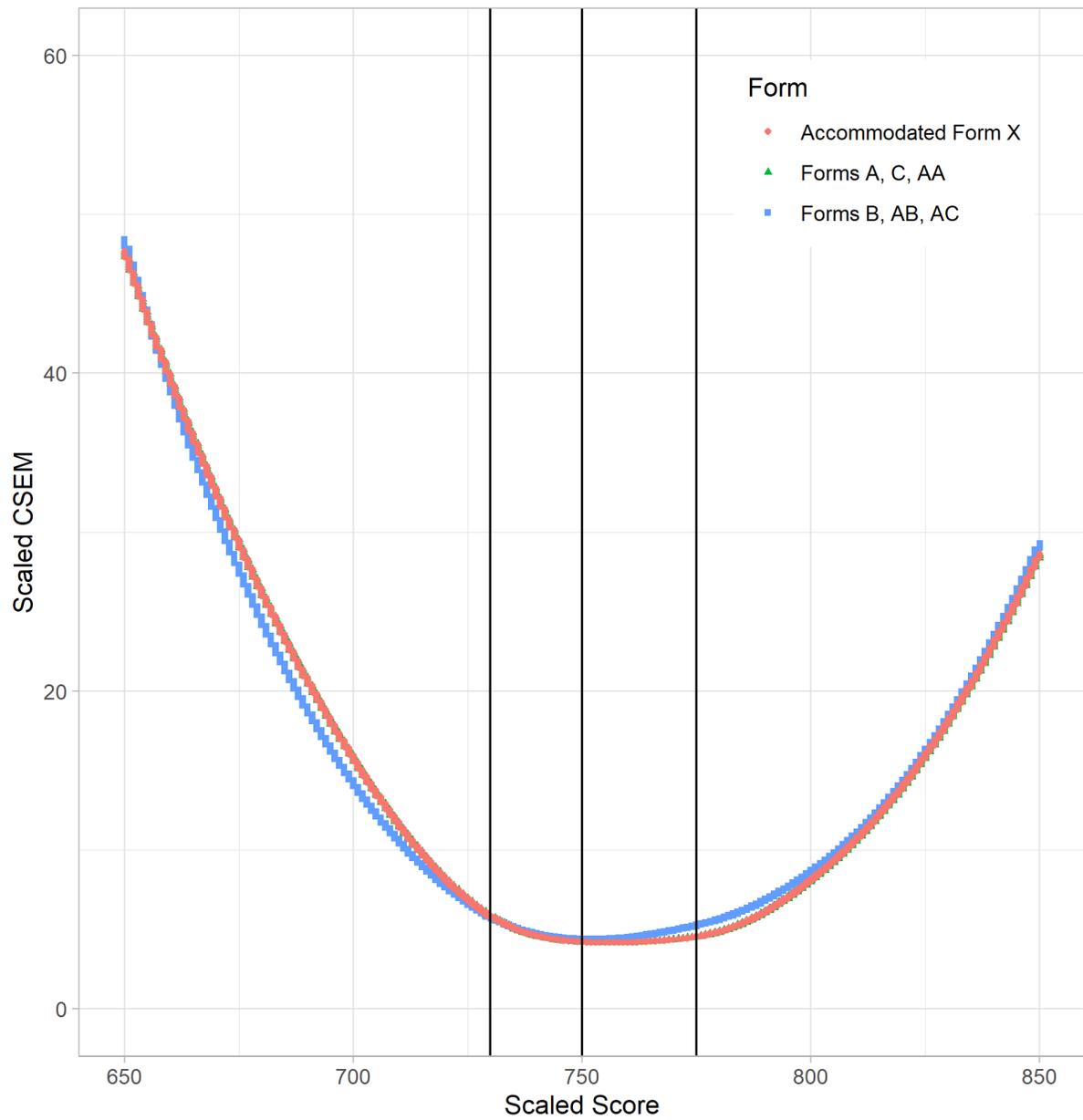


Figure 2-4. Conditional Standard Errors of Measurement and Performance Level Cutoffs for the 2021 Maryland MCAP HS MISA Forms—January

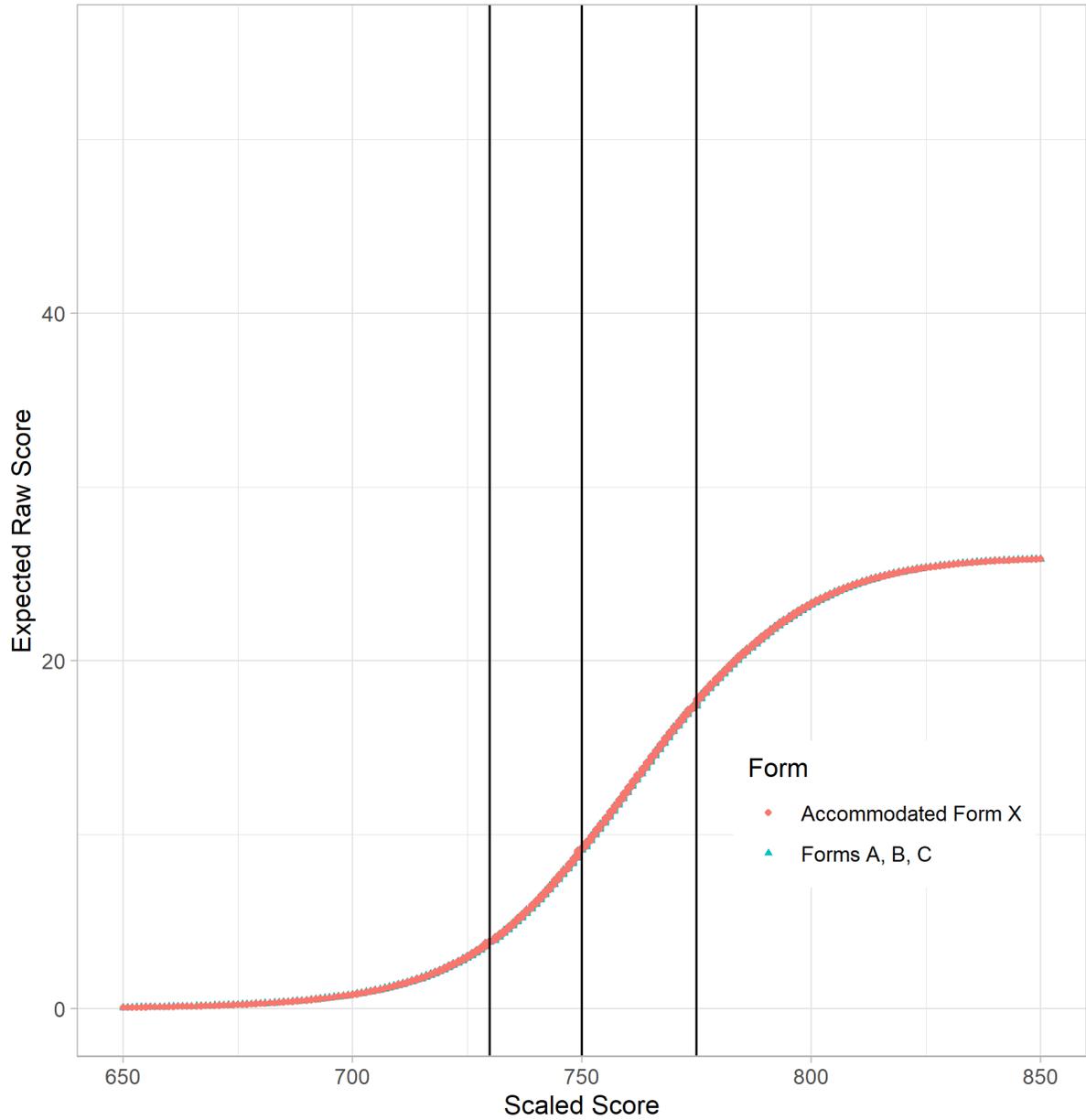


Figure 2-5. Test Characteristic Curves for the 2021 Maryland MCAP HS MISA Forms—Early Fall

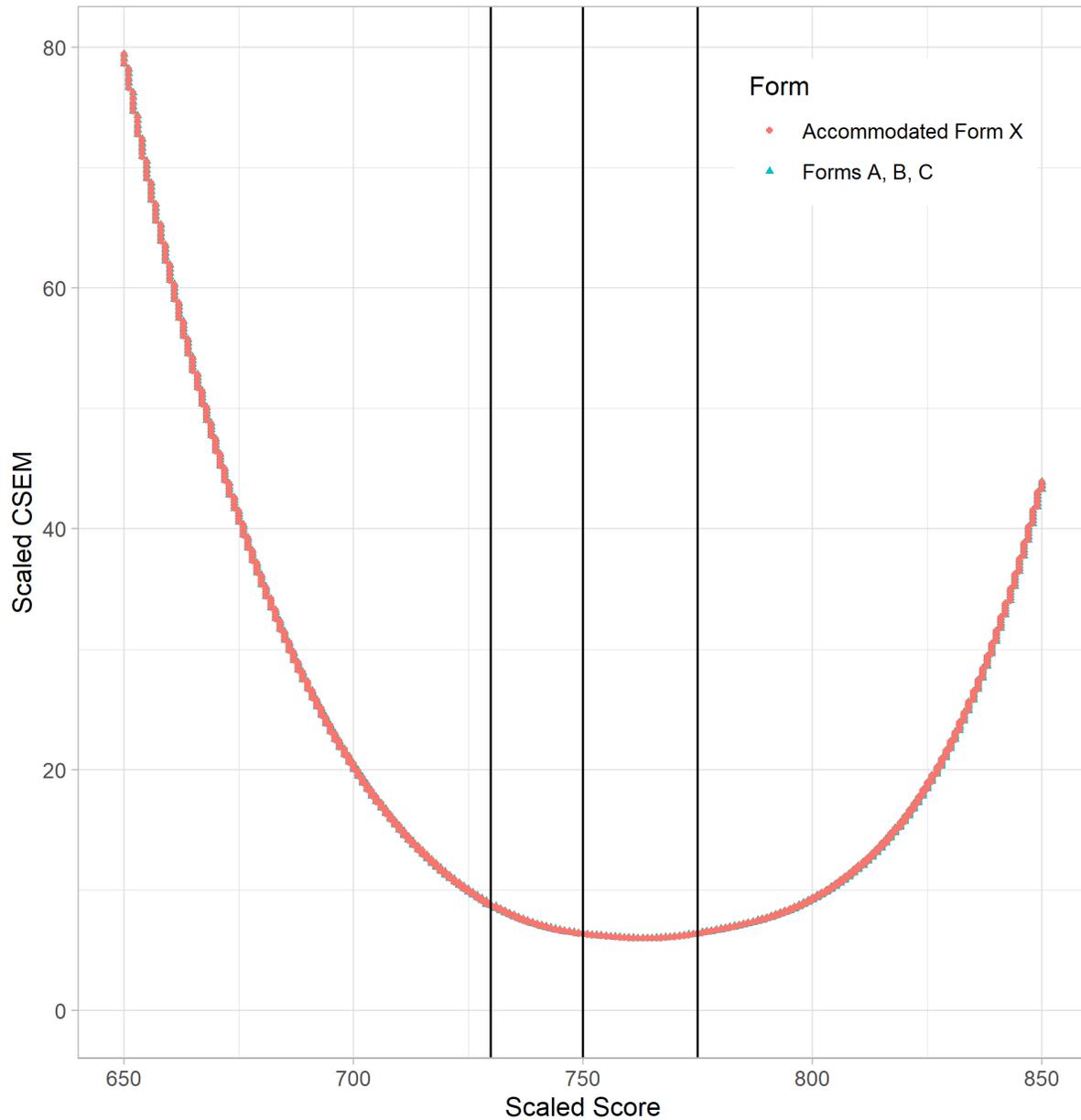


Figure 2-6. Conditional Standard Errors of Measurement and Performance Level Cutoffs for the 2021 Maryland MCAP HS MISA Forms—Early Fall

Test Administration

For all Maryland MCAP tests administered in 2021, both paper-and-pencil and online versions were available. An online Practice Test was available to the public throughout the administration year. For all administrations, online forms were randomly assigned. There was one paper form provided for students and used for accommodations or special circumstances. The paper administration window is one week shorter than the online window.

All forms administered without extended time accommodations had timing limits indicated in Table 2-11 and Table 2-12.

Table 2-11. Test Timing Schedule in Minutes for January 2021 MCAP Government and MCAP HS MISA

Content Area	Session One	Break	Session Two	Break	Session Three	Break	Session Four
MCAP HS MISA	40 min.	5 min.	40 min.	5 min.	40 min.	5 min.	40 min.
MCAP Government	40 min.	5 min.	40 min.	5 min.	40 min.	5 min.	40 min.

Table 2-12. Test Timing Schedule in Minutes for Early Fall 2021 MCAP HS MISA

Content Area	Session One
Early Fall MCAP HS MISA	60 min.

Section 3. Validity

Validity is one of the most important attributes of assessment quality and is a fundamental consideration when tests are developed and evaluated (AERA, APA, & NCME, 2014; Messick, 1989). Validity refers to the degree to which logical, empirical, and judgmental evidence supports each proposed interpretation or use of a set of scores. Validity is not based on a single study or type of study but is an ongoing process of gathering evidence to support the interpretation or use of the resulting test scores. The process begins with the test design and continues throughout the entire assessment process, including content specifications, item development, psychometric quality analyses, and inferences made from the test results.

This section provides validity evidence for the Maryland Comprehensive Assessment Program Government and High School Maryland Integrated Science Assessment. Students' scores on the MCAP Government and MCAP HS MISA are assumed to reflect students' level of knowledge and skills in a content area. The scaled scores on each of these assessments are used to classify students in terms of their level of proficiency based on cut scores established by the state.

Evidence Based on Analyses of Test Content

The MCAP Government test is referred to as an end-of-course test because students take it as they complete the appropriate coursework. The MCAP HS MISA is the final assessment in a series of science assessments that students take to measure their understanding of the subset of the high school grade band of the Next Generation Science Standards (NGSS). Consequently, MCAP Government items are developed to measure the knowledge and skills expected of students following completion of government coursework. The MCAP HS MISA items are developed to measure the knowledge and skills expected of students as they complete a variety of high school science courses, because the configuration of high school science courses and the timing of the assessment varies throughout the state. As discussed in Section 2, the development of test content for the MCAP Government and the MCAP HS MISA is overseen by content experts who have depth of knowledge and teaching experience related to the course(s). Appropriate content leaders who have similar qualifications review the test development work of these individuals.

Evidence based on analyses of test content includes logical analyses that determine the degree to which the items in a test represent the content domain that the test is intended to measure (AERA, APA, & NCME, 2014, p. 14). The test development process for the Maryland MCAPs provides numerous opportunities for MSDE to review test content and make changes to ensure that the items measure the knowledge and skills of Maryland students according to course standards. Every item that is created is referenced to a particular instructional standard (goal, expectation, or indicator). During the internal Cognia development process, the specific reference is confirmed or changed to reflect changes to the item. When the item is sent to a committee of Maryland educators for a content review, the members of the committee make independent judgments about the match of the item content to the standard that it is intended to measure and evaluate the appropriateness for the intended grade level. These judgments are tabulated and reviewed by the content experts who use the information to decide which items advance to the field test stage of development.

Evidence Based on Analyses of Internal Test Structure

Analyses of the internal structure of a test typically aim to study the relationships among test items and/or test components to establish the degree to which the items/components reflect the construct (AERA, APA, & NCME, 2014, p. 16). The term “construct” refers to the characteristic that a test is intended to measure and a test score interpretation is based on; in the case of the MCAP Government, the construct is the knowledge and skills defined by the test blueprint for each content area.

These test blueprints are derived from the Maryland State Standards for each course. By designing the test blueprints with consideration given to curriculum documents and other expectations for student learning, the blueprints ensure that the content of the test adequately samples the content knowledge and context required for valid inferences about student performance. The test blueprints are presented in Section 2 (see Tables 2-4, 2-5, and 2-7); the Maryland State Standards for government can be found on the MSDE website at: <https://marylandpublicschools.org/about/Pages/DAAIT/Assessment/HSA/index.aspx> for MISA at <https://www.marylandpublicschools.org/about/Pages/DAAIT/Assessment/MISA/index.aspx>

High total group internal consistencies as well as similar reliabilities between subgroups with roughly the same sample size provide additional evidence of validity. Measurement error is inevitable. However, high reliability over items within a test implies that the measurement error is small. Coefficient alpha (Cronbach, 1951) and IRT marginal reliability results for each administration for the overall population, as well as for subgroups, can be found in Section 6 of this report in Tables 6-1 through 6-3.

Another way to assess the internal structure of the test is through the evaluation of Pearson correlation matrices between the individual subscores. If subscores are strongly related to each other, it implies a high internal consistency between subscores. Table 3-1 shows the Pearson correlations between subscores of the MCAP Government test based on the data from the January administration. Results indicate that each subscore is positively correlated with the overall scale score and that the subscores are positively correlated with each other. Tables 3-2 shows the Pearson correlations between subscores of the MCAP HS MISA test based on the data from the January administration. No subscores were reported for the Early Fall administration. Results indicate that each subscore is positively correlated with the overall scale score and that the subscores are positively correlated with each other.

Table 3-1. Correlations Between Subscores—MCAP Government January Administration (N = 1,176)

	Overall	Standard 1: Civics	Standard 2: Peoples of the Nations and World	Standard 3: Geography	Standard 4: Economics	Standard 6: Skills and Processes
Overall	1.000	--	--	--	--	--
Standard 1: Civics	0.930	1.000	--	--	--	--
Standard 2: Peoples of the Nations and World	0.694	0.596	1.000	--	--	--
Standard 3: Geography	0.674	0.572	0.455	1.000	--	--
Standard 4: Economics	0.690	0.567	0.405	0.413	1.000	--
Standard 6: Skills and Processes	0.760	0.646	0.456	0.476	0.484	1.000

Table 3-2. Correlations Between Subscores—MCAP HS MISA January Administration (N = 1,029)

	Overall	Physical Sciences	Life Sciences	Earth and Space Sciences	Investigating and Evaluation	Developing Explanations and Solutions	Patterns and Cause and Effect	Systems and Their Properties
Overall	1.000	--	--	--	--	--	--	--
Physical Sciences	0.789	1.000	--	--	--	--	--	--
Life Sciences	0.832	0.539	1.000	--	--	--	--	--
Earth and Space Sciences	0.846	0.594	0.587	1.000	--	--	--	--
Investigating and Evaluation	0.754	0.575	0.651	0.661	1.000	--	--	--
Developing Explanations and Solutions	0.961	0.742	0.803	0.819	0.613	1.000	--	--
Patterns and Cause and Effect	0.896	0.728	0.818	0.672	0.585	0.912	1.000	--
Systems and Their Properties	0.920	0.720	0.736	0.823	0.747	0.861	0.715	1.000

Confirmatory Factor Analyses of the January 2021 Administration Data

Finally, the internal structures of the MCAP Government and MCAP HS MISA tests are assessed by the degree to which the test meets the requirements of the statistical models used to estimate item parameters and student scores. Confirmatory factor analysis (CFA) was used to assess the degree to which one-factor models fit the MCAP Government and the MCAP HS MISA tests. CFA is a useful statistical methodology for evaluating whether performance on items in each test reflects a single underlying characteristic (i.e., a unidimensional test) or a set of distinct characteristics defined by the

reporting categories (i.e., a multidimensional test). The CFA results provide evidence as to the degree to which the unidimensional item response theory (IRT) model used to calibrate the MCAP Government items is appropriate.

To assess the dimensionality of the MCAP Government, CFA was conducted using testing data from the January 2021 administration. For MCAP Government, Forms A, B, and C contained the same set of operational items, and Forms AA, AB, and AC contained the same set of operational items. Some operational items on Forms A, B, and C were not on Forms AA, AB, and AC. As such, a separate CFA was run per set. CFA was not run on the accommodated form (Form X), due to the very small number of students taking Form X of MCAP Government in January 2021.

To assess the dimensionality of the MCAP HS MISA, CFA was conducted using testing data from the January and Early Fall 2021 administrations. For the MCAP HS MISA January 2021 administration, Forms A, C, and AA contained the same set of operational items, and Forms B, AB, and AC contained the same set of operational items. A separate CFA was run per set, as well as a separate CFA on the accommodated form (Form X).

Mplus (Muthén & Muthén, 2007) was used to calculate matrices of polychoric correlations between the items and was also used to fit specified factor models to the data. In the analysis, the input polychoric correlation matrix was used to estimate the factor loadings between the indicators (items). Parameters for CFA were estimated using weighted least-squares (WLS) estimation with mean and variance adjustment (Muthén, du Toit, & Spisic, 1997). This method leads to a consistent estimator of the model parameters and provides standard errors that are robust under model misspecification. For ordinal data, WLS estimation offers an alternative to full-information maximum likelihood techniques. The latter becomes computationally too demanding for models with more than a few dimensions. Model fit is assessed through a scaled chi-square statistic. However, the degrees of freedom for the reference distribution of this statistic cannot be computed in the standard way. The correct degrees of freedom depend on the data, and hence degrees of freedom may vary when the same model is applied to different data (Muthén, 1998–2004, p. 19-20).

Overall model fit for the CFA model was examined using the scaled chi-square (χ^2) test of model fit in combination with supplemental fit indices. The Tucker-Lewis Index (TLI) compares the chi-square for the hypothesized model with that of the null or “independence” model, in which all correlations or covariances are zero. TLI values range from 0.0 to 1.0; values greater than 0.94 signify good fit (Hu & Bentler, 1999). The comparative fit index (CFI) and root mean square error of approximation (RMSEA) index are both based on non-centrality parameters. The CFI compares the covariance matrix predicted by the model with the observed covariance matrix, and the covariance matrix of the null model with the observed covariance matrix. A CFI value greater than 0.90 indicates acceptable model fit (Hu & Bentler, 1999). The RMSEA assesses the error in the hypothesized model predictions; values less than or equal to 0.06 indicate good fit (Hu & Bentler, 1999).

Table 3-3 shows the results of the analyses. Although the χ^2 statistic values were statistically significant, the TLI, CFI, and RMSEA fit statistics indicated that the one-factor solutions generally fit the data well. These fit statistics provide strong evidence in support of the item response theory (IRT) assumption of unidimensionality for both MCAP Government and MCAP HS MISA.

Table 3-3. Confirmatory Factor Analyses Fit Statistics

Test	Admin.	Forms	# of Factors	# of Items	N	df	χ^2	p-value	TLI	CFI	RMSEA
MCAP Govt.	Jan. 2021	Forms A, B, C	1	51	585	1,224	1420.854	0.0001	0.978	0.979	0.017
		Forms AA, AB, AC	1	51	567	1,224	1421.618	0.0001	0.975	0.976	0.017
		Accommodated Form X	--	--	24	--	--	--	--	--	--
MCAP HS MISA	Jan. 2021	Forms A, C, AA	1	36	511	594	711.281	0.0006	0.976	0.977	0.020
		Forms B, AB, AC	1	36	498	594	755.947	< 0.0001	0.966	0.968	0.023
		Accommodated Form X	--	--	20	--	--	--	--	--	--
MCAP HS MISA	Early Fall 2021	Forms A, B (In-Person Administration)	1	17	82,162	119	8792.647	< 0.0001	0.980	0.983	0.030
		Forms A, B (Remote Administration)	1	17	295	119	175.185	0.0006	0.946	0.953	0.040
		Accommodated Form X	1	17	2,170	119	310.922	< 0.0001	0.951	0.957	0.027

Table entries that meet or exceed the criterion are in bold.

Evidence Based on Response Processes

One source of validity evidence related to response processes is the rate of omitted responses. As part of the validity evidence, the omit rates of the operational items on the MCAP Government and MCAP HS MISA tests were evaluated. The tables in Appendix B contain the omit rates for operational items from MCAP Government and MCAP HS MISA by administration and item type.

For both tests, if more than 5 percent of students omit a selected-response (SR) item or more than 15 percent of students omit a non-SR item, that item earns a flag.

Other Supporting Information

In addition to the factor analyses and the information regarding speededness presented here and the validation documentation gathered and maintained by MSDE, other information in support of the uses and interpretations of the MCAP Government and MCAP HS MISA scores appears in the following sections:

- Section 4 provides detailed information concerning the scores that were reported and the cut scores for the MCAP Government and MCAP HS MISA.
- Section 5 provides detailed information regarding reporting of the 2021 Maryland MCAP Government and MCAP HS MISA results at the student level.

- Section 6 provides information concerning the test characteristics based on classical test theory for the January administration of the MCAP Government and MCAP HS MISA.
- Section 7 presents information regarding student characteristics for the administration of the MCAP Government and MCAP HS MISA.
- Section 8 includes documentation regarding the test analyses. Descriptions of classical item analyses and differential item functioning are included. In addition, summary tables of item p -value and item-total correlation distributions are provided.

Section 4. Scoring Procedures

Scale Scores

The MCAP Government reporting scale ranges from 240 to 650. For the MCAP Government tests, the scale was established in 2003 and defined so that the scale scores had a mean of 400 and a standard deviation of 40.

$$\text{ScaledScore}_{\text{MCAP Govt}} = 400 + 40\theta$$

where

θ is the ability level (or pattern score) of a student.

The High School Maryland Integrated Science Assessment (MCAP HS MISA) reporting scale ranges from 650 to 850. MCAP HS MISA scaled scores are computed via the following:

$$\text{ScaledScore}_{\text{HS MISA}} = 750 + 15.5(\theta - \theta_{Met})$$

where

θ_{Met} is the theta cut score for Met Expectations and is equal to 0.34570.

Students' total test scores and subscores are scale scores derived using item response theory (IRT; Yen & Fitzpatrick, 2006) and item-pattern scoring procedures. MCAP Government uses the three-parameter logistic (3PL) model for selected-response (SR) items and the generalized partial credit model (GPCM) for constructed-response (CR) items. MCAP HS MISA uses the two-parameter (2PL) model for SR items and the GPCM for non-SR multi-point (polytomous) items.

IRT expresses the probability that a student achieves a certain score on an item (such as correct or incorrect) as a function of the item's statistical properties and the person's ability level (or proficiency level). The 3PL model describes the probability that a person with ability θ responds correctly to item i as follows:

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

where

a_i is the slope parameter of item i , characterizing its discrimination;

b_i is the location parameter of item i , characterizing its difficulty;

c_i is the lower asymptote parameter of item i , reflecting the chance that students with very low proficiency will select the correct answer, sometimes called the "pseudo-guessing" level; and

D is a normal approximation constant.

Note that the 2PL is a special case of the 3PL in which the c -parameter (c_i) is fixed to 0.0.

The GPCM states that the probability that a person with ability θ obtains a score category of k on item i that has m score categories assigned score values ranging from 0 to $m - 1$ can be expressed as:

$$P_{ik}(\theta) = \frac{\exp[\sum_{v=1}^k Da_i(\theta - b_i + d_{iv})]}{\sum_{c=1}^m \exp[\sum_{v=1}^c Da_i(\theta - b_i + d_{iv})]}$$

where

b_i is the location parameter for item i ,

d_{iv} is the step parameter for score v on item i , and

m is the number of item score categories of item i (Muraki, 1992).

An indeterminacy exists in the item parameters of the GPCM. To resolve the indeterminacy, d_0 is fixed to 0 and the sum of the step parameters is fixed to 0.0.

There are essentially two ways of scoring a test: number-correct or item-pattern scoring. Number-correct scoring considers how many test items a student answered correctly in determining that student's total raw score. In contrast, the item-pattern scoring method is based on an IRT model. Item-pattern scoring considers not only a student's total raw responses, but also the psychometric characteristics of test items. Two students with exactly the same total raw scores will get the same test scores in number-correct scoring. It is highly likely, however, that even though they have the same total raw scores, the actual items they answered correctly were different, and their different sets of correctly answered items could have different item characteristics. In such a case, the students will very likely get different reported test scores in item-pattern scoring. With item-pattern scoring, a student who correctly answers a number of more difficult items will get a higher score than one who answers the same number of easier items. This would be applicable to both total test scores and subscore category scores reported using item-pattern scoring.

Item-pattern scoring has been found to produce smaller standard errors of measurement (SEM) than number-correct scoring. The smaller the SEM, the more confidence we have about the precision of the test results. In addition, test reliability is higher with item-pattern scoring than with number-correct scoring (Yen & Candell, 1991), which means that fewer questions are needed in item-pattern scoring than in number-correct scoring for equivalent scoring accuracy. For these reasons, both total scores and subscores of the MCAP Government and MCAP HS MISA tests are reported using item-pattern scoring.

Conditional Standard Errors of Measurement

Conditional standard errors of measurement (CSEM) were produced and are equal to the reciprocal of the square root of the test information function (TIF; i.e., the sum of item information functions). CSEMs are standard errors at individual score points, defined as:

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

where

θ is the individual score point (location on the scale),

$CSEM(\theta)$ is the conditional standard error of measurement at the score point, and

$I(\theta)$ is the test information function value at that score point, θ .

Lowest and Highest Obtainable Test Scores

The maximum likelihood procedure under either the 2PL or 3PL model does not produce finite scale score estimates for students with perfect scores or zero raw scores. In order for all test takers to receive scale scores, scores need to be established for perfect or zero raw scores. Perfect raw scores are assigned the highest obtainable scaled score (HOSS). Zero raw scores are assigned the lowest obtainable scaled score (LOSS). For MCAP Government, the LOSS and HOSS are 240 and 650, respectively. For MCAP HS MISA, the LOSS and HOSS are 650 and 850, respectively.

Cut Scores

MSDE established the cut scores associated with each of the performance levels in the MCAP Government tests in 2003.⁵ One cut score, 394, was established for the MCAP Government tests in 2003.

MSDE established cut scores for MCAP HS MISA in 2019 (Maryland State Department of Education, 2019). MCAP HS MISA scaled scores less than 730 fall into the *Partially Met Expectations* performance level. MCAP HS MISA scaled scores ranging from 730 to 749 fall into the *Approached Expectations* performance level. MCAP HS MISA scaled scores ranging from 750 to 774 fall into the *Met Expectations* performance level. Lastly, MCAP HS MISA scaled scores greater than or equal to 750 fall into the *Exceeded Expectations* performance level. More information on MCAP HS MISA standard setting can be found in the High School Maryland Integrated Science Assessments (HS-MISA) Standard Setting Report.

Year-to-Year Scale Maintenance

The MCAP Government has been pre-equated since 2004. In the pre-equating design, a bank of items with calibrated parameters on the reporting scale must exist before test form construction. The item parameter estimates for new forms are retrieved from the bank and are used to build test forms that are parallel across administrations. Student scores are produced with the existing item parameter estimates; thus, scores are linked from one administration to the other.

To expand both the MCAP Government and MCAP HS MISA item banks, both tests embedded field test items in the operational test forms of the January 2021 administration. No embedded field test items appeared on the Early Fall 2021 MCAP HS MISA test forms, due to the shortened test length of the Early Fall test forms. The embedded field test items on the January 2021 test forms for MCAP Government and MCAP HS MISA were not calibrated due to the relatively small number of students participating (1,176 for MCAP Government and 1,029 for MCAP HS MISA).

⁵ Technical documentation on the standard-setting method used to establish the MD HSA cut scores is available on the Maryland State Department of Education website at <https://marylandpublicschools.org/about/Pages/DCAA/PlanningResultsTest/HSATechnicalReports.aspx>

Section 5. Reporting

Reporting of Results

The MCAP Government and MCAP HS MISA tests are designed to measure student achievement in the Maryland content standards.

- MCAP Government results are reported in terms of a scaled score and performance level indicators, which were Not Met Expectations or Met Expectations, which respectively correspond to Fail and Pass status that appears on labels. Student performance on five social studies standards, Civics, Peoples of the Nations and World, Geography, Economics, and Skills & Processes, is reported as Has Not Met Expectations or Met Expectations.
- MCAP HS MISA results are reported in terms of test scaled scores and performance levels. There are three scaled cut scores that categorize student overall scaled scores into the performance levels of Partially Met Expectations, Approached Expectations, Met Expectations, and Exceeded Expectations. Student MISA integrated dimension performance is reported for Physical Sciences, Life Sciences, and Earth and Space Sciences. Each integrated dimension score is reported as Met or Exceeded Expectations, Approached Expectations, or Partially Met Expectations. However, integrated dimension scores were neither calculated nor reported for Early Fall 2021 because test forms had fewer items.

Student results are provided to the Maryland State Department of Education via a secure website. Cognia produced the following reports for the MCAP Government and MCAP HS MISA assessments (See Appendix A):

Table 5-1. List of MCAP Government and MCAP HS MISA Reports

Report	Jan 2021 HS Government and HS MISA	Early Fall HS MISA
Student Results Labels	X	X
Individual Student Report	X	X
School Student Roster Report	X	X
School-, District-, and State-Performance Summary Report	X	X
District Summary of Schools Report	X	X
State Summary of Districts Report	X	X
Interactive Reporting	X	X

In January 2021, the percent of students at each performance category for science sub-scores was included in the report. In Early Fall 2021, science sub-scores were not reported. Due to the reduced number of columns, this led to a change from landscape orientation to portrait orientation in the report formats for the MCAP HS MISA School Student Roster Report, District Summary of Schools Report, and State Summary of Districts Report.

Student Results Labels

A Student Results Label is produced for each tested student. Student results labels are printed and mailed to the districts for distribution. Additionally, labels were available for download via a secure website. The labels provide student identifying information as well as earned scaled score and performance level for the student.

Individual Student Results

An Individual Student Results Report is produced for each tested student. Student results reports are printed and mailed to the districts for distribution. Additionally, reports are available for download via a secure website.

The individual student report visualizes the results for the assessment, which includes the students overall earned scaled score and indication whether the student *Met Expectations*. The report also provides a comparison of the school, district, and state as a whole. The MCAP Government report provides student's test results on the social studies standards. The MCAP HS MISA report provides student's test results on the integrated dimensions.

School Student Roster Report

A School Student Roster Report is produced for each school containing at least one tested student for an administration. Reports are available for download via a secure website. The school student roster report summarizes school, district, and state performance by displaying the average overall scale score and the percent of students at each score category for the social studies standards and the science integrated dimensions. The report provides schools with student performance by listing students' test results.

School-, District-, and State-Performance Summary Report

The Performance Summary Report summarizes test results for schools, districts, and the state as a whole and by demographic subgroups. The number of valid scores, average scale score, number, and percent of students at each performance level are provided for gender, ethnicity/race, economic disadvantage, students with disabilities, and English Learner demographic subgroups.

District Summary of Schools Report

The District Summary of Schools Report provides the test results for schools in a particular district. The number of valid scores, average scale score, percent of students at each performance category for test subject, and applicable sub-scores are listed. Stacked horizontal bar charts are provided for the percentages.

State Summary of Districts Report

The State Summary of District Report provides the MCAP Government and MCAP HS MISA test results for each district. The number of valid scores, average scale score, percent of students at each

performance category for science/social studies standards, and science sub-scores, if applicable, are listed. Stacked horizontal bar charts are provided for the percentages.

Interactive Reporting

The Performance Level Summary is available in the interactive reporting platform, which is a permissions-based Web reporting tool (<https://reporting.cognia.org/ReportingMD/login.aspx>). To access this report, the user applies basic filtering options, such as the name of the district or school and the grade-level/content-area test. At this point, the user has the option of printing the report for the entire grade level or applying advanced filtering options to select a subgroup of students to analyze. Advanced filtering options include gender, ethnicity, EL, IEP (Individualized Education Program), and FARMS (Free and Reduced Meal Services). A user may provide a custom title for the report for download.

Decision Rules

To ensure that high school assessment results are processed and reported accurately, a document delineating decision rules is prepared before each reporting cycle. The decision rules are observed in the analyses of the high school assessment data and in reporting results. These rules also guide data analysts in identifying students to be excluded from school-, district-, and state-level summary computations.

Quality Assurance

The software quality assurance (SQA) team works together with the data processing and data analysis teams to ensure quality data is captured and delivered accurately. Quality control checks are being performed by the data processors and data analysts as the data is handed off via multiple internal software tools. These quality checks assess the accuracy of the data at different stages in the data processing. These data populate the database and subsequent tables/columns. The SQA team develops a test plan that includes previously agreed upon report designs and decision rule documents. Test cases housed in internal test cases repository software are then executed including, but not limited to, the following:

- Testing data counts of data imported
- Testing data quality of individual fields for valid values, such as gender, ethnicity, etc.
- Validating scripts developed by the software developers to ensure they match business requirements and technical specifications

Included in this testing effort to ensure the quality of the data, the SQA team uses a sample of schools and districts, which is selected based on multiple criteria. A few are identified below.

- Unique student testing records
- Students completed testing
- Students partially completed testing
- Invalidated students

Working together with the data processing and data analysis teams allows for timely and precise turnaround if any data anomalies are found. Test cases are tied to tickets outlining required work to allow for full transparency and cohesive teamwork in validation of the data. Included in the final execution, the SQA team executes test cases validating student printed reports and student labels for accuracy in consistency with the report design specifications. Once all the test cases are passed, the SQA team notifies the Cognia Client Services department for final sign off.

Section 6. Reliability

This section provides the results of test score reliability (classical and IRT-based) and decision consistency and accuracy analyses of the 2021 MCAP Government and High School Maryland Integrated Science Assessment (MCAP HS MISA).

Classical Reliability

The general concept of reliability concerns the precision of a test score. Of interest is quantifying the degree to which a score varies from an average result obtained over many testing occasions due to random factors (Haertel, 2006). A variety of theories and methods can be used to estimate reliability. Classical test theory defines reliability as the proportion of true-score variance in total score variance. Several different ways of estimating this proportion exist. One commonly used estimate of reliability is coefficient alpha (Cronbach, 1951), an internal consistency measure. It is derived from analysis of the consistency of performance over items within a test and provides a lower-bound estimate of a test's reliability as follows:

$$\alpha \equiv \frac{n}{n-1} \left[1 - \frac{\sum_{i=1}^n \sigma_{(Y_i)}^2}{\sigma_x^2} \right]$$

where

n is the number of items,

$\sigma_{(Y_i)}^2$ is the variance of scores on item i , and

σ_x^2 is the variance of the total score (sum of scores on the individual items).

Sample estimates are substituted for the population variances in this formula to provide reliability estimates.

IRT Marginal Reliability

IRT marginal reliability estimation is based on applying the standard classical test theory (CTT) formula, relating variances of true score, observed score, and measurement error, in the IRT setting. In CTT, the relationship between these variances is given by:

$$\sigma_x^2 = \sigma_T^2 + \sigma_E^2$$

where

σ_x^2 is the observed-score variance,

σ_T^2 is the true-score variance, and

σ_E^2 is the error variance.

Starting from this basic equation, it can be shown that the formula for CTT reliability can be expressed as:

$$CTT \text{ Reliability} = 1 - \frac{\sigma_E^2}{\sigma_x^2}$$

IRT marginal reliability is based on extending the CTT model to an IRT framework (Samejima, 1994) and provides an IRT-based estimate of the overall test reliability. Error variance is estimated as the mean squared conditional standard error of measurement (CSEM) of the theta estimates across students within a grade. Observed score variance is estimated as the variance of the theta estimates across students within a grade. Equivalently, the mean squared CSEM of the scale scores and the variance of the scale scores can be used in place of the CSEM of the theta estimates and the variance of the theta estimates, respectively. IRT marginal reliability is then given by the following formula:

$$IRT \text{ Marginal Reliability} = 1 - \frac{\overline{CSEM(\theta)^2}}{Var(\hat{\theta})} = 1 - \frac{\overline{CSEM(SS)^2}}{Var(SS)},$$

where

$\overline{CSEM(\theta)^2}$ is the mean squared CSEM,

$\overline{CSEM(SS)^2}$ is the mean squared scale CSEM,

$Var(\hat{\theta})$ is the variance of theta estimates, and

$Var(SS)$ is the scale score variance.

Using this formula, IRT marginal reliability estimates were calculated for each multistage test in science and government, using the scale scores (and their standard errors) for all the students across all three paths. The reliability of a test can also be evaluated by simply examining directly the CSEMs themselves. CSEMs facilitate the interpretation of individual scale scores. With any given scale score estimate for a student, the reasonable limits of the true scale score for the student can be calculated by using the CSEM for the scale score.

Reliability Results

The total group and subgroup classical and IRT marginal reliabilities are presented in Table 6-1 for MCAP Government and Tables 6-2 and 6-3 for MCAP HS MISA. Note that lower reliability coefficients are sometimes observed when sample sizes are small, the number of repeat test takers is large, or the sample is based only on those taking an accommodated form. That is because under such scenarios, the observed variation in scores tends to be restricted. Such restriction in range can translate to smaller reliability estimates.

Table 6-1. Test Reliability Estimates for MCAP Government: January Forms*

		Forms A–C				Forms AA–AC				Accommodated Form X			
		N	Alpha	SEM ^c	IRT	N	Alpha	SEM ^c	IRT	N	Alpha	SEM ^c	IRT
Overall		585	0.900	10.667	0.911	567	0.893	10.336	0.899	24	--	--	--
Gender	Male	299	0.903	10.428	0.909	299	0.900	10.378	0.907	17	--	--	--
	Female	286	0.898	10.865	0.913	268	0.885	10.224	0.889	7	--	--	--
	Missing	0	--	--	--	0	--	--	--	0	--	--	--
Grade	9	501	0.887	9.960	0.885	481	0.881	9.892	0.878	11	--	--	--
	10	43	--	--	--	53	0.901	10.337	0.907	8	--	--	--
	11	23	--	--	--	21	--	--	--	5	--	--	--
	12	18	--	--	--	12	--	--	--	0	--	--	--
	Missing	0	--	--	--	0	--	--	--	0	--	--	--
Special Education	Yes	55	0.780	13.985	0.886	52	0.858	11.071	0.884	22	--	--	--
	No	443	0.901	10.398	0.908	425	0.883	10.299	0.889	1	--	--	--
	Exited	31	--	--	--	38	--	--	--	0	--	--	--
	Exited & placed in 504 ^a	12	--	--	--	11	--	--	--	1	--	--	--
	504	44	--	--	--	41	--	--	--	0	--	--	--
Ethnicity	American Indian	0	--	--	--	0	--	--	--	0	--	--	--
	Asian	18	--	--	--	8	--	--	--	2	--	--	--
	African American	67	0.862	13.589	0.924	48	--	--	--	8	--	--	--
	Hawaiian/Pacific Islander	2	--	--	--	0	--	--	--	0	--	--	--
	White	423	0.882	9.889	0.878	451	0.882	9.866	0.879	11	--	--	--
	Hispanic	45	--	--	--	34	--	--	--	3	--	--	--
	Multi-Ethnic	30	--	--	--	26	--	--	--	0	--	--	--
	Missing	0	--	--	--	0	--	--	--	0	--	--	--
Limited English Proficient	Yes	13	--	--	--	5	--	--	--	2	--	--	--
	No	562	0.897	10.522	0.906	553	0.892	10.278	0.897	21	--	--	--
	Exited ^b	10	--	--	--	9	--	--	--	1	--	--	--

* Statistics not reported for sample size less than 50 ($N < 50$).

^a A 504 plan is a legal document falling under the provisions of the Rehabilitation Act of 1973 that provides a program of instructional services to assist students with special needs who are in a regular education setting.

^b LEP Exited indicates students who have exited English language acquisition services.

^c SEM (standard error of measurement) calculated as the SD of overall scaled scores multiplied by the square root of 1 minus coefficient alpha.

Table 6-2. Test Reliability Estimates for MCAP HS MISA: January Forms*

		Forms A, C, AA				Forms B, AB, AC				Accommodated Form X			
		N	Alpha	SEM ^c	IRT	N	Alpha	SEM ^c	IRT	N	Alpha	SEM ^c	IRT
Overall		511	0.848	5.327	0.874	498	0.858	5.209	0.876	20	--	--	--
Gender	Male	243	0.890	5.196	0.904	267	0.877	5.259	0.895	11	--	--	--
	Female	268	0.778	5.466	0.826	231	0.828	5.031	0.840	9	--	--	--
	Missing	0	--	--	--	0	--	--	--	0	--	--	--
Grade	9	8	--	--	--	7	--	--	--	2	--	--	--
	10	306	0.788	4.702	0.776	298	0.796	4.952	0.804	7	--	--	--
	11	182	0.806	5.618	0.856	176	0.813	5.084	0.829	11	--	--	--
	12	15	--	--	--	17	--	--	--	0	--	--	--
	Missing	0	--	--	--	0	--	--	--	0	--	--	--
Special Education	Yes	36	--	--	--	40	--	--	--	16	--	--	--
	No	391	0.823	5.080	0.839	386	0.846	5.120	0.862	1	--	--	--
	Exited	43	--	--	--	34	--	--	--	0	--	--	--
	Exited & placed in 504 ^a	10	--	--	--	4	--	--	--	2	--	--	--
	504	31	--	--	--	34	--	--	--	1	--	--	--
Ethnicity	American Indian	0	--	--	--	1	--	--	--	0	--	--	--
	Asian	17	--	--	--	13	--	--	--	0	--	--	--
	African American	61	0.682	5.741	0.774	63	0.874	5.163	0.888	6	--	--	--
	Hawaiian/Pacific Islander	1	--	--	--	1	--	--	--	0	--	--	--
	White	395	0.838	5.191	0.859	384	0.839	5.146	0.856	14	--	--	--
	Hispanic	14	--	--	--	22	--	--	--	0	--	--	--
	Multi-Ethnic	23	--	--	--	14	--	--	--	0	--	--	--
	Missing	0	--	--	--	0	--	--	--	0	--	--	--
Limited English Proficient	Yes	2	--	--	--	2	--	--	--	0	--	--	--
	No	501	0.849	5.311	0.874	487	0.860	5.210	0.878	20	--	--	--
	Exited ^b	8	--	--	--	9	--	--	--	0	--	--	--

* Statistics not reported for sample size less than 50 ($N < 50$).

^a A 504 plan is a legal document falling under the provisions of the Rehabilitation Act of 1973 that provides a program of instructional services to assist students with special needs who are in a regular education setting.

^b LEP Exited indicates students who have exited English language acquisition services.

^c SEM (standard error of measurement) calculated as the SD of overall scaled scores multiplied by the square root of 1 minus coefficient alpha.

Table 6-3. Test Reliability Estimates for MCAP HS MISA: Early Fall Forms*

		Forms A, B (In-Person Administration)				Forms A, B (Remote Administration)				Accommodated Form X			
		N	Alpha	SEM ^c	IRT	N	Alpha	SEM ^c	IRT	N	Alpha	SEM ^c	IRT
Overall		82,162	0.813	7.787	0.820	295	0.771	8.635	0.805	2,170	0.687	9.177	0.637
Gender	Male	41,051	0.829	7.745	0.833	119	0.768	8.579	0.800	1,376	0.698	9.215	0.652
	Female	41,068	0.796	7.791	0.804	176	0.774	8.662	0.809	792	0.666	9.093	0.605
	Missing	0	--	--	--	0	--	--	--	0	--	--	--
Grade	8	1	--	--	--	0	--	--	--	1	--	--	--
	9	3,265	0.692	9.822	0.813	3	--	--	--	114	0.292	17.272	0.768
	10	29,276	0.805	7.918	0.819	97	0.788	9.237	0.843	748	0.625	9.623	0.605
	11	35,249	0.808	7.647	0.808	102	0.743	7.399	0.703	1,009	0.701	8.854	0.628
	12	14,369	0.824	7.459	0.815	93	0.764	9.001	0.815	292	0.747	7.394	0.548
	Missing	2	--	--	--	0	--	--	--	6	--	--	--
Special Education	Yes	5,623	0.760	8.662	0.813	30	--	--	--	1,549	0.648	9.402	0.611
	No	69,075	0.809	7.708	0.812	238	0.756	8.505	0.786	505	0.443	11.365	0.579
	Exited	1,899	0.799	7.996	0.816	3	--	--	--	3	--	--	--
	Exited & placed in 504 ^a	442	0.796	7.519	0.789	0	--	--	--	14	--	--	--
	504	5,122	0.821	7.641	0.821	24	--	--	--	89	0.809	7.208	0.640
Ethnicity	American Indian	141	0.788	8.114	0.812	1	--	--	--	7	--	--	--
	Asian	8,425	0.795	7.186	0.768	44	--	--	--	92	0.790	9.414	0.768
	African American	22,231	0.750	8.626	0.804	112	0.765	8.541	0.796	656	0.556	10.495	0.606
	Hawaiian/Pacific Islander	115	0.768	6.693	0.697	0	--	--	--	0	--	--	--
	White	30,881	0.803	7.275	0.783	48	--	--	--	607	0.772	7.768	0.630
	Hispanic	9,471	0.776	8.231	0.806	24	--	--	--	474	0.490	11.111	0.597
	Multi-Ethnic	10,655	0.789	7.739	0.794	66	0.687	9.831	0.795	324	0.593	9.810	0.587
	Missing	0	--	--	--	0	--	--	--	0	--	--	--
Limited English Proficient	Yes	4,844	0.553	10.276	0.753	15	--	--	--	720	0.328	11.757	0.525
	No	68,193	0.812	7.727	0.816	194	0.803	8.467	0.826	1,367	0.739	8.729	0.665
	Exited ^b	9,125	0.777	7.402	0.762	86	0.663	9.540	0.765	73	0.683	9.836	0.680

* Statistics not reported for sample size less than 50 (N < 50).

^a A 504 plan is a legal document falling under the provisions of the Rehabilitation Act of 1973 that provides a program of instructional services to assist students with special needs who are in a regular education setting.

^b LEP Exited indicates students who have exited English language acquisition services.

^c SEM (standard error of measurement) calculated as the SD of overall scaled scores multiplied by the square root of 1 minus coefficient alpha.

Decision Accuracy and Decision Consistency

For MCAP Government tests, students are classified into one of two performance levels: Proficiency or Basic. For MCAP HS MISA tests, students are classified into one of four performance levels: Partially Met Expectations, Approached Expectations, Met Expectations, or Exceeded Expectations. The accuracy of decisions based on the specified cut score was assessed for reliability of classification using the computer program called *BB-CLASS* (Brennan, 2004). *BB-CLASS* provides two statistics that describe the reliability of classifications based on test scores (Livingston & Lewis, 1995). Specifically, information from an administration of one form is used to estimate the following:

Decision accuracy, or the extent to which test takers are classified, on the basis of their estimated ability, into the same performance level as they should be on the basis of their true ability. Decision accuracy addresses the question: How does the actual classification of test takers, based on their single-form scores, agree with the classification that would be made on the basis of their true scores, if their true scores were somehow known?

Decision consistency, or the extent to which test takers are classified into the same performance level if they take the same test one more time. Decision consistency addresses the question: What is the agreement between the classifications based on two non-overlapping, equally difficult forms of the test? *BB-CLASS* estimates decision accuracy using an estimated joint distribution of reported performance-level classifications on the current form of the assessment and the performance-level classifications based on an all-forms average (true score). *BB-CLASS* estimates decision consistency using an estimated joint distribution of reported performance-level classifications on the current form of the assessment and performance-level classifications on the alternate (parallel) form. In each case, the proportion of performance-level classifications with exact agreement is the sum of the entries in the diagonal of the contingency table representing the joint distribution.

Along with the observed frequency distribution of scaled scores, *BB-CLASS* requires an estimate of score reliability for the total test. To that end, IRT marginal reliability was used.

For the January 2021 MCAP Government forms, decision accuracy and consistency were calculated across performance levels. The results are provided in Table 6-4. Decision accuracy and consistency were also calculated across performance levels for the January 2021 MCAP HS MISA forms and the Early Fall 2021 MCAP HS MISA forms. The results for the January 2021 test forms of MCAP HS MISA are provided in Table 6-5, and the results for the Early Fall 2021 test forms of MCAP HS MISA are provided in Table 6-6.

Note that in all cases the decision accuracy indices tend to be somewhat larger than the decision consistency indices. This is due to the differences in the estimation procedures. The estimation procedure for decision accuracy includes a random component on one of the two variables, whereas in estimating decision consistency each variable includes a random component (Livingston & Lewis, 1995).

Table 6-4. Decision Accuracy and Consistency: MCAP Government January Forms

Index	Placement Scores	Basic	Proficient	Category Total*
Forms A–C (N = 585)				
Decision Accuracy	240 - 393	0.300	0.034	0.334
	394 - 650	0.044	0.622	0.666
Estimated Proportion Correctly Classified*: Total = 0.922				
Decision Consistency	240 - 393	0.288	0.054	0.342
	394 - 650	0.056	0.602	0.658
Estimated Proportion Consistently Classified*: Total = 0.890				
Forms AA, AB, AC (N = 567)				
Decision Accuracy	240 - 393	0.251	0.035	0.286
	394 - 650	0.042	0.673	0.714
Estimated Proportion Correctly Classified*: Total = 0.924				
Decision Consistency	240 - 393	0.241	0.057	0.298
	394 - 650	0.052	0.651	0.702
Estimated Proportion Consistently Classified*: Total = 0.891				

* Inconsistencies between cell entries and totals are due to rounding.

Note. The number of students taking Accommodated Form X was only 24, and as such decision accuracy and consistency was not estimated for that form.

Table 6-5. Decision Accuracy and Consistency: MCAP HS MISA January Forms

Index	Placement Scores	Partially Met Expectations	Approached Expectations	Met Expectations	Exceeded Expectations	Category Total*
Forms A, C, AA (N = 511)						
Decision Accuracy	650 - 729	0.040	0.008	0.000	0.000	0.049
	730 - 749	0.017	0.243	0.046	0.000	0.305
	750 - 774	0.000	0.054	0.537	0.034	0.625
	775 - 850	0.000	0.000	0.006	0.015	0.021
Estimated Proportion Correctly Classified*: Total = 0.835						
Decision Consistency	650 - 729	0.039	0.017	0.000	0.000	0.056
	730 - 749	0.018	0.219	0.072	0.000	0.310
	750 - 774	0.000	0.069	0.494	0.031	0.593
	775 - 850	0.000	0.000	0.023	0.018	0.041
Estimated Proportion Consistently Classified*: Total = 0.770						
Forms B, AB, AC (N = 498)						
Decision Accuracy	650 - 729	0.030	0.008	0.000	0.000	0.038
	730 - 749	0.013	0.236	0.043	0.000	0.292
	750 - 774	0.000	0.055	0.550	0.034	0.639
	775 - 850	0.000	0.000	0.009	0.022	0.031
Estimated Proportion Correctly Classified*: Total = 0.838						
Decision Consistency	650 - 729	0.029	0.017	0.000	0.000	0.045
	730 - 749	0.014	0.213	0.069	0.000	0.296
	750 - 774	0.000	0.069	0.505	0.032	0.607
	775 - 850	0.000	0.000	0.028	0.024	0.052
Estimated Proportion Consistently Classified*: Total = 0.771						

* Inconsistencies between cell entries and totals are due to rounding.

Note. The number of students taking Accommodated Form X was only 20, and as such decision accuracy and consistency was not estimated for that form.

Table 6-6. Decision Accuracy and Consistency: MCAP HS MISA Early Fall Forms

Index	Placement Scores	Partially Met Expectations	Approached Expectations	Met Expectations	Exceeded Expectations	Category Total*
Forms A, B (In-Person Administration; N = 82,162)						
Decision Accuracy	650 - 729	0.096	0.025	0.000	0.000	0.121
	730 - 749	0.030	0.251	0.047	0.000	0.327
	750 - 774	0.000	0.098	0.389	0.065	0.552
	775 - 850	0.000	0.000	0.000	0.000	0.000
Estimated Proportion Correctly Classified*: Total = 0.735						
Decision Consistency	650 - 729	0.092	0.046	0.002	0.000	0.140
	730 - 749	0.032	0.212	0.078	0.002	0.324
	750 - 774	0.002	0.114	0.332	0.055	0.503
	775 - 850	0.000	0.001	0.024	0.008	0.034
Estimated Proportion Consistently Classified*: Total = 0.644						
Forms A, B (Remote Administration; N = 2,170)						
Decision Accuracy	650 - 729	0.123	0.021	0.000	0.000	0.145
	730 - 749	0.028	0.220	0.042	0.000	0.291
	750 - 774	0.001	0.206	0.320	0.037	0.564
	775 - 850	0.000	0.000	0.000	0.000	0.000
Estimated Proportion Correctly Classified*: Total = 0.664						
Decision Consistency	650 - 729	0.119	0.039	0.002	0.000	0.161
	730 - 749	0.031	0.218	0.112	0.009	0.370
	750 - 774	0.003	0.189	0.246	0.028	0.465
	775 - 850	0.000	0.001	0.002	0.000	0.004
Estimated Proportion Consistently Classified*: Total = 0.584						
Accommodated Form X (N = 295)						
Decision Accuracy	650 - 729	0.224	0.037	0.001	0.000	0.263
	730 - 749	0.186	0.458	0.088	0.005	0.738
	750 - 774	0.000	0.000	0.000	0.000	0.000
	775 - 850	0.000	0.000	0.000	0.000	0.000
Estimated Proportion Correctly Classified*: Total = 0.682						
Decision Consistency	650 - 729	0.242	0.126	0.018	0.001	0.387
	730 - 749	0.148	0.313	0.059	0.004	0.523
	750 - 774	0.021	0.056	0.012	0.001	0.089
	775 - 850	0.000	0.000	0.000	0.000	0.000
Estimated Proportion Consistently Classified*: Total = 0.566						

* Inconsistencies between cell entries and totals are due to rounding.

Section 7. Student Characteristics

Summary Statistics

This section presents summary statistics for the January 2021 Maryland Comprehensive Assessment Program Government (MCAP Government) and High School Maryland Integrated Science Assessment (MCAP HS MISA).

Summary statistics (count, mean, and standard deviation) of scale scores in Table 7-1 are reported for all students and by grade for MCAP Government and MCAP HS MISA. Table 7-2 reports the MCAP Government percentage passing rates over test years. Table 7-3 reports the MCAP HS MISA performance level percentage distributions over test windows and years.

Table 7-1. Means and Standard Deviations Overall and by Grade for MCAP Government and MCAP HS MISA

	N	Mean	SD
MCAP Government			
Overall	1,176	405.757	33.387
Missing	0		
Grade			
9	993	410.359	29.352
10	104	393.683	36.352
11	49	--	--
12	30	--	--
MCAP HS MISA—January			
Overall	1,029	753.382	14.138
Missing	0		
Grade			
9	17	--	--
10	611	759.442	11.024
11	369	745.864	12.701
12	32	--	--
MCAP HS MISA—Early Fall			
Overall	84,627	748.684	18.165
Missing	8		
Grade			
8	2		
9	3,382	733.309	17.887
10	30,121	748.525	18.139
11	36,360	749.244	17.639
12	14,754	751.165	17.857

Note. Statistics not reported for sample size less than 50 ($N < 50$). Grade not provided reflects the small number of students whose grade was not provided in the rostering data.

Table 7-2. MCAP Government Percentage Passing Rates Over Test Years

Year	Mean Scaled Score	Percentage Passing	Percentage Passing—January ¹	Percentage Passing—May ¹	Percentage Passing—Summer ¹
2003	403.5	39.8	--	--	--
2004	406.5	54.6	--	--	--
2005	409.3	67.1	--	--	--
2006	418.5	74.1	--	--	--
2007	417.1	73.3	--	--	--
2008	417.1	71.5	--	--	--
2009	406.3	61.1	--	--	--
2010	408.6	61.7	--	--	--
2011	405.6	62.1	--	--	--
2012	--	*	--	--	--
2013	414.7	72.4	--	--	--
2014	417.6	76.5	--	--	--
2015	412.2	71.8	--	--	--
2016	405.4	62.7	--	--	--
2017	403.6	61.6	--	--	--
2018	403.2	62.5	--	--	--
2019	399.9	60.3	26.4	69.8	29.4
2020 ²	375.9	29.1	29.1	--	--
2021 ³	405.8	67.2	67.2	--	--

* The Government test was not administered after the May 2011 administration until January 2013, when it was introduced into the HSAs.

¹ Prior to 2019, the percent of students passing was not disaggregated by testing window (i.e., January, May, and Summer).

² In 2020, MCAP Government was only administered in January.

³ In 2021, MCAP Government was only administered in January.

The MCAP HS MISA performance level percentage distributions over test windows and years since 2019 are presented in Table 7-3.

Table 7-3. MCAP HS MISA Performance Level Percentage Distributions Over Test Windows and Years

Admin/Year	Partially Met Expectations	Approached Expectations	Met Expectations	Exceeded Expectations
January 2019	25.0	42.7	29.8	2.5
May 2019	21.8	43.2	31.3	3.7
January 2020	16.9	38.4	39.4	5.3
May 2020 ¹	--	--	--	--
January 2021	5.7	30.4	58.7	5.2
May 2021 ²	--	--	--	--
Early Fall 2021	13.3	37.7	42.7	6.3
2019-Overall	22.4	43.1	31.0	3.4
2020-Overall ¹	16.9	38.4	39.4	5.3
2021-Overall ²	13.2	37.6	42.9	6.3

¹ In 2020, MCAP HS MISA was only administered in January.

² In 2021, MCAP HS MISA was administered in January and Early Fall.

Summary statistics on MCAP Government for all students and for subgroups based on gender, special education programs, ethnicity, and English language proficiency are presented in Table 7-4. Summary statistics on MCAP HS MISA for all students and for subgroups based on gender, special education programs, ethnicity, and English language proficiency are presented in Table 7-5. These tables include the numbers of students tested for whom valid scores were available, mean scale scores, and standard deviations of scale scores. In addition, raw score reliabilities are provided for the overall group of test takers and for subgroups. Figure 7-1 shows the distribution of total scale scores for MCAP Government for the January 2021 administration. Figure 7-2 shows the distribution of total scale scores for MCAP HS MISA for the January 2021 administration. Figure 7-3 shows the distribution of total scale scores for MCAP HS MISA for the Early Fall 2021 administration.

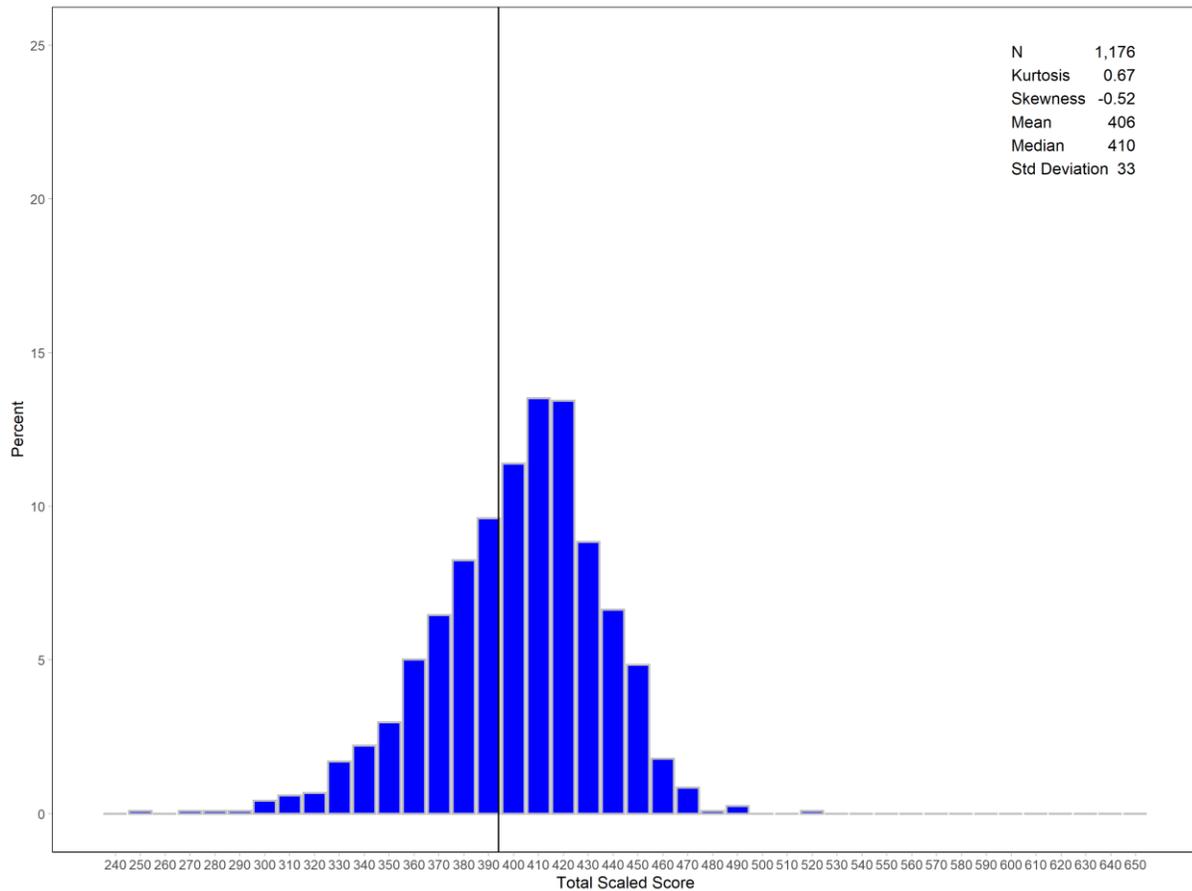


Figure 7-1. Total Scale Score Distribution for MCAP Government January 2021 Administration

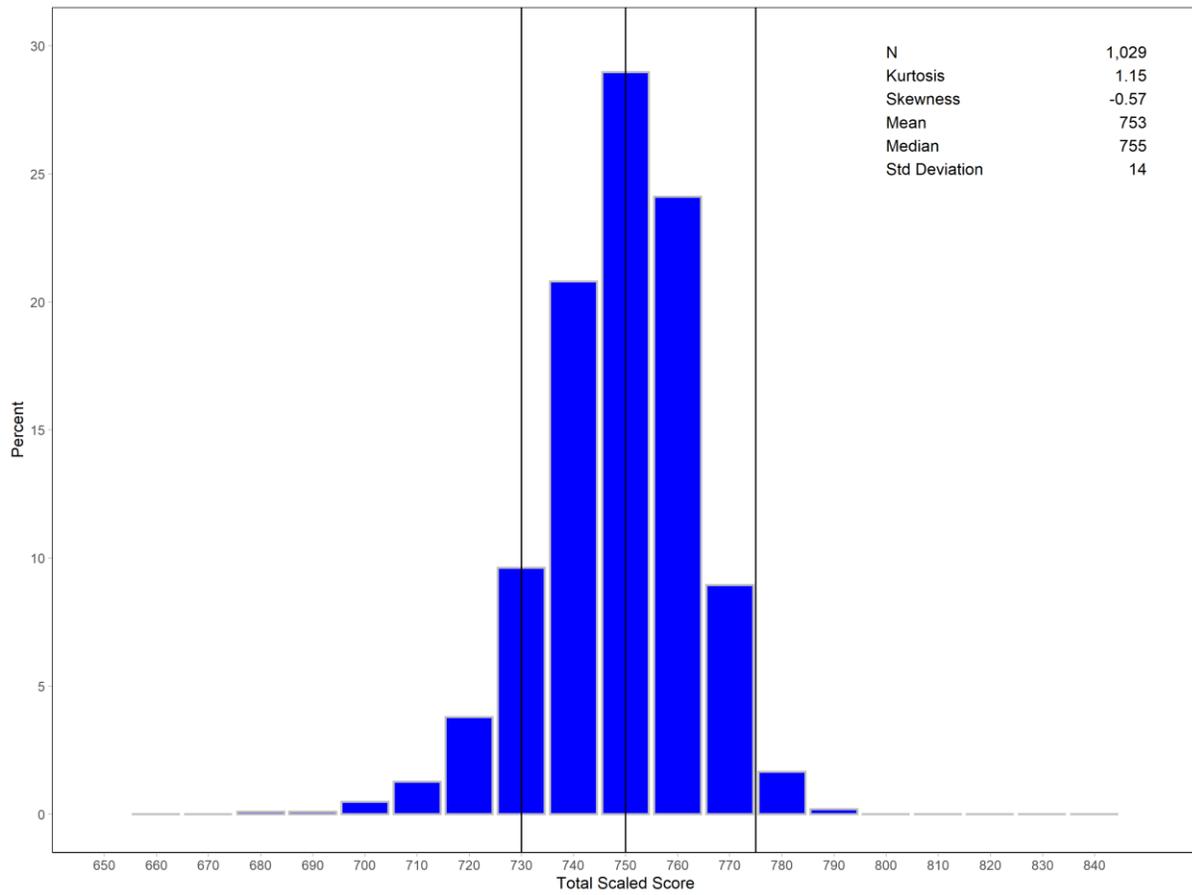


Figure 7-2. Total Scale Score Distribution for MCAP HS MISA January 2021 Administration

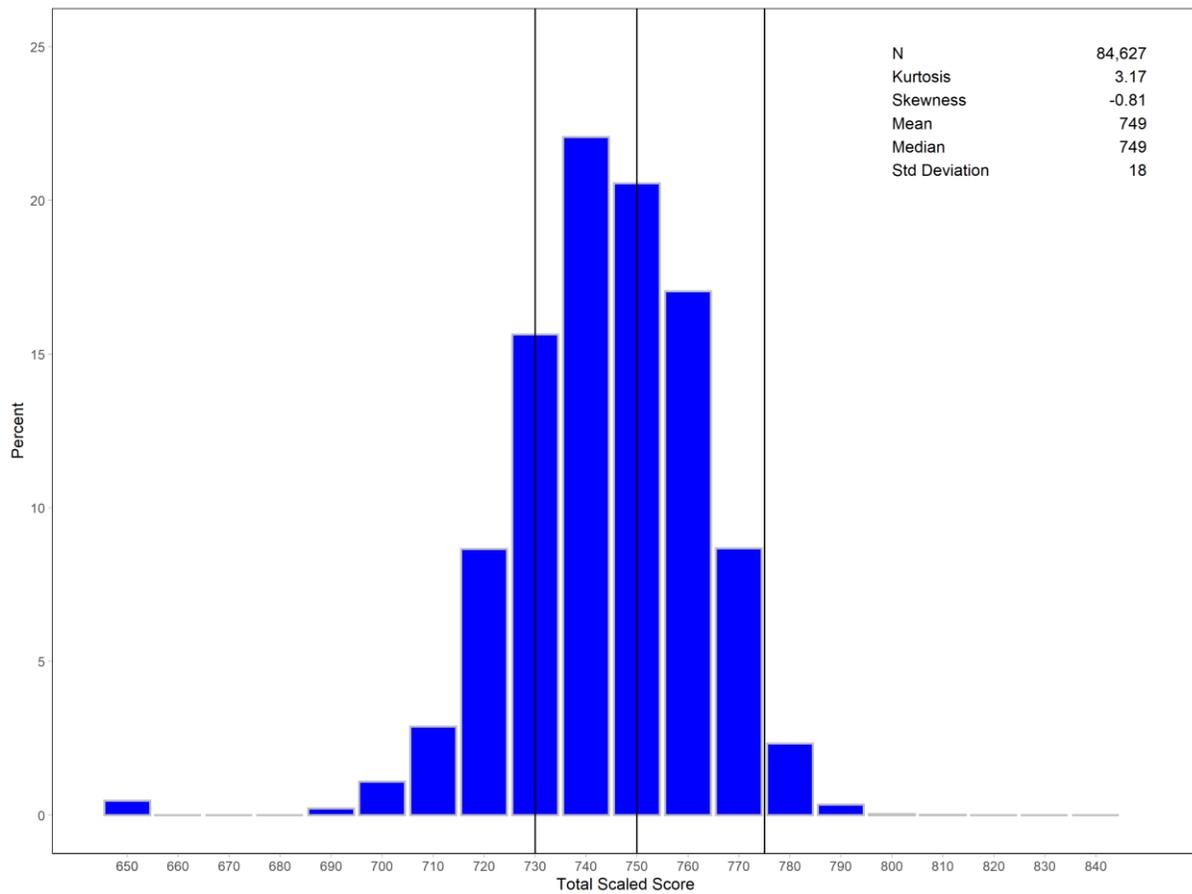


Figure 7-3. Total Scale Score Distribution for MCAP HS MISA Early Fall 2021 Administration

Table 7-4. Scaled Score Summary Statistics for MCAP Government: January Forms*

		Forms A–C				Forms AA–AC				Accommodated Form X			
		Mean	SD	N	%	Mean	SD	N	%	Mean	SD	N	%
Overall		406.0	33.7	585	100.0	407.3	31.6	567	100.0	--	--	24	100.0
Gender	Male	405.3	33.4	299	51.1	407.4	32.8	299	52.7	--	--	17	70.8
	Female	406.6	34.1	286	48.9	407.3	30.1	268	47.3	--	--	7	29.2
	Missing	--	--	0	0.0	--	--	0	0.0	--	--	0	0.0
Grade	9	410.3	29.6	501	85.6	410.9	28.7	481	84.8	--	--	11	45.8
	10	--	--	43	7.4	396.8	32.8	53	9.3	--	--	8	33.3
	11	--	--	23	3.9	--	--	21	3.7	--	--	5	20.8
	12	--	--	18	3.1	--	--	12	2.1	--	--	0	0.0
	Missing	--	--	0	0.0	--	--	0	0.0	--	--	0	0.0
Special Education	Yes	372.7	29.8	55	9.4	376.4	29.4	52	9.2	--	--	22	91.7
	No	410.7	33.1	443	75.7	411.4	30.1	425	75.0	--	--	1	4.2
	Exited	--	--	31	5.3	--	--	38	6.7	--	--	0	0.0
	Exited & placed in 504 ^a	--	--	12	2.1	--	--	11	1.9	--	--	1	4.2
	504	--	--	44	7.5	--	--	41	7.2	--	--	0	0.0
Ethnicity	American Indian	--	--	0	0.0	--	--	0	0.0	--	--	0	0.0
	Asian	--	--	18	3.1	--	--	8	1.4	--	--	2	8.3
	African American	369.5	36.6	67	11.5	--	--	48	8.5	--	--	8	33.3
	Hawaiian/Pacific Islander	--	--	2	0.3	--	--	0	0.0	--	--	0	0.0
	White	411.5	28.8	423	72.3	411.5	28.8	451	79.5	--	--	11	45.8
	Hispanic	--	--	45	7.7	--	--	34	6.0	--	--	3	12.5
	Multi-Ethnic	--	--	30	5.1	--	--	26	4.6	--	--	0	0.0
	Missing	--	--	0	0.0	--	--	0	0.0	--	--	0	0.0
Limited English Proficient	Yes	--	--	13	2.2	--	--	5	0.9	--	--	2	8.3
	No	407.0	32.9	562	96.1	407.7	31.3	553	97.5	--	--	21	87.5
	Exited ^b	--	--	10	1.7	--	--	9	1.6	--	--	1	4.2

* Statistics not reported for sample size less than 50 ($N < 50$).

^a A 504 plan is a legal document falling under the provisions of the Rehabilitation Act of 1973 that provides a program of instructional services to assist students with special needs who are in a regular education setting.

^b LEP Exited indicates students who have exited English language acquisition services.

Table 7-5. Summary Statistics for MCAP HS MISA: January Forms*

		Forms A, B, C				Forms AA, AB, AC				Accommodated Form X			
		Mean	SD	N	%	Mean	SD	N	%	Mean	SD	N	%
Overall		406.0	33.7	585	100.0	407.3	31.6	567	100.0	--	--	24	100.0
Gender	Male	405.3	33.4	299	51.1	407.4	32.8	299	52.7	--	--	17	70.8
	Female	406.6	34.1	286	48.9	407.3	30.1	268	47.3	--	--	7	29.2
	Missing	--	--	0	0.0	--	--	0	0.0	--	--	0	0.0
Grade	9	410.3	29.6	501	85.6	410.9	28.7	481	84.8	--	--	11	45.8
	10	--	--	43	7.4	396.8	32.8	53	9.3	--	--	8	33.3
	11	--	--	23	3.9	--	--	21	3.7	--	--	5	20.8
	12	--	--	18	3.1	--	--	12	2.1	--	--	0	0.0
	Missing	--	--	0	0.0	--	--	0	0.0	--	--	0	0.0
Special Education	Yes	372.7	29.8	55	9.4	376.4	29.4	52	9.2	--	--	22	91.7
	No	410.7	33.1	443	75.7	411.4	30.1	425	75.0	--	--	1	4.2
	Exited	--	--	31	5.3	--	--	38	6.7	--	--	0	0.0
	Exited & placed in 504 ^a	--	--	12	2.1	--	--	11	1.9	--	--	1	4.2
	504	--	--	44	7.5	--	--	41	7.2	--	--	0	0.0
Ethnicity	American Indian	--	--	0	0.0	--	--	0	0.0	--	--	0	0.0
	Asian	--	--	18	3.1	--	--	8	1.4	--	--	2	8.3
	African American	369.5	36.6	67	11.5	--	--	48	8.5	--	--	8	33.3
	Hawaiian/Pacific Islander	--	--	2	0.3	--	--	0	0.0	--	--	0	0.0
	White	411.5	28.8	423	72.3	411.5	28.8	451	79.5	--	--	11	45.8
	Hispanic	--	--	45	7.7	--	--	34	6.0	--	--	3	12.5
	Multi-Ethnic	--	--	30	5.1	--	--	26	4.6	--	--	0	0.0
	Missing	--	--	0	0.0	--	--	0	0.0	--	--	0	0.0
Limited English Proficient	Yes	--	--	13	2.2	--	--	5	0.9	--	--	2	8.3
	No	407.0	32.9	562	96.1	407.7	31.3	553	97.5	--	--	21	87.5
	Exited ^b	--	--	10	1.7	--	--	9	1.6	--	--	1	4.2

* Statistics not reported for sample size less than 50 ($N < 50$).

^a A 504 plan is a legal document falling under the provisions of the Rehabilitation Act of 1973 that provides a program of instructional services to assist students with special needs who are in a regular education setting.

^b LEP Exited indicates students who have exited English language acquisition services.

Table 7-6. Summary Statistics for MCAP HS MISA: Early Fall Forms*

		Forms A & B (In-Person Administration)				Forms A & B (Remote Administration)				Accommodated Form X			
		Mean	SD	N	%	Mean	SD	N	%	Mean	SD	N	%
Overall		749.1	18.0	82,162	100.0	745.4	18.0	295	100.0	731.8	16.4	2,170	100.0
Gender	Male	748.9	18.7	41,051	50.0	744.6	17.8	119	40.3	731.7	16.8	1,376	63.4
	Female	749.4	17.2	41,068	50.0	746.0	18.2	176	59.7	732.1	15.7	792	36.5
	Missing	--	--	0	0.0	--	--	0	0.0	--	--	0	0.0
Grade	8	--	--	1	0.0	--	--	0	0.0	--	--	1	0.0
	9	733.7	17.7	3265	4.0	--	--	3	1.0	723.4	20.5	114	5.3
	10	749.0	17.9	29,276	35.6	741.8	20.1	97	32.9	730.3	15.7	748	34.5
	11	749.7	17.5	35,249	42.9	747.2	14.6	102	34.6	732.8	16.2	1,009	46.5
	12	751.5	17.8	14,369	17.5	747.8	18.5	93	31.5	735.9	14.7	292	13.5
	Missing	--	--	2	0.0	--	--	0	0.0	--	--	6	0.3
Special Education	Yes	736.5	17.7	5,623	6.8	--	--	30	10.2	731.2	15.8	1,549	71.4
	No	750.1	17.6	69,075	84.1	746.3	17.2	238	80.7	729.4	15.2	505	23.3
	Exited	746.2	17.8	1899	2.3	--	--	3	1.0	--	--	3	0.1
	Exited & placed in 504 ^a	749.3	16.7	442	0.5	--	--	0	0.0	--	--	14	0.6
	504	750.6	18.1	5122	6.2	--	--	24	8.1	752.7	16.5	89	4.1
Ethnicity	American Indian	748.4	17.6	141	0.2	--	--	1	0.3	--	--	7	0.3
	Asian	759.5	15.9	8425	10.3	--	--	44	14.9	734.8	20.5	92	4.2
	African American	741.6	17.3	22,231	27.1	743.7	17.6	112	38.0	729.1	15.7	656	30.2
	Hawaiian/Pacific Islander	752.1	13.9	115	0.1	--	--	0	0.0	--	--	0	0.0
	White	754.4	16.4	30,881	37.6	--	--	48	16.3	736.7	16.3	607	28.0
	Hispanic	742.5	17.4	9,471	11.5	--	--	24	8.1	728.6	15.6	474	21.8
	Multi-Ethnic	747.5	16.9	10655	13.0	739.9	17.6	66	22.4	731.4	15.4	324	14.9
	Missing	--	--	0	0.0	--	--	0	0.0	--	--	0	0.0
Limited English Proficient	Yes	731.8	15.4	4,844	5.9	--	--	15	5.1	729.0	14.3	720	33.2
	No	750.3	17.8	68,193	83.0	745.9	19.1	194	65.8	733.0	17.1	1,367	63.0
	Exited ^b	750.0	15.7	9125	11.1	745.8	16.4	86	29.2	734.8	17.5	73	3.4

* Statistics not reported for sample size less than 50 ($N < 50$).

^a A 504 plan is a legal document falling under the provisions of the Rehabilitation Act of 1973 that provides a program of instructional services to assist students with special needs who are in a regular education setting.

^b LEP Exited indicates students who have exited English language acquisition services.

Demographic Characteristics

Demographic characteristics of the students who took the January 2021 MCAP Government and MCAP HS MISA tests are presented in Tables 7-7 and 7-8. Demographic characteristics of the students who took the Early Fall 2021 MCAP HS MISA test are presented in Table 7-9.

Table 7-7. Demographic Information for January MCAP Government—Combined Forms

		January		May ^c		Summer ^c	
		N	%	N	%	N	%
Overall		1,176	100.00%	--	--	--	--
Gender	Male	615	52.30%	--	--	--	--
	Female	561	47.70%	--	--	--	--
	Missing	0	0.00%	--	--	--	--
Grade	8	0	0.00%				
	9	993	84.44%				
	10	104	8.84%				
	11	49	4.17%				
	12	30	2.55%				
	Missing	0	0.00%				
Special Education	Yes	129	10.97%	--	--	--	--
	No	869	73.89%	--	--	--	--
	Exited	69	5.87%	--	--	--	--
	Exited & placed in 504 ^a	24	2.04%	--	--	--	--
	504	85	7.23%	--	--	--	--
Ethnicity	American Indian	0	0.00%	--	--	--	--
	Asian	28	2.38%	--	--	--	--
	African American	123	10.46%	--	--	--	--
	Hawaiian/ Pacific Islander	2	0.17%	--	--	--	--
	White	885	75.26%	--	--	--	--
	Hispanic	82	6.97%	--	--	--	--
	Multi-Ethnic	56	4.76%	--	--	--	--
Missing	0	0.00%	--	--	--	--	
Limited English Proficient	Yes	20	1.70%	--	--	--	--
	No	1,136	96.60%	--	--	--	--
	Exited ^b	20	1.70%	--	--	--	--

^a A 504 plan is a legal document falling under the provisions of the Rehabilitation Act of 1973 that provides a program of instructional services to assist students with special needs who are in a regular education setting.

^b LEP Exited indicates students who have exited English language acquisition services.

^c In 2021, MCAP Government was only administered in January.

Table 7-8. Demographic Information for January MCAP HS MISA—Combined Forms

		January		May ^c	
		N	%	N	%
Overall		1,029	100.00%	--	--
Gender	Male	521	50.63%	--	--
	Female	508	49.37%	--	--
	Missing	0	0.00%	--	--
Grade	8	0	0.00%		
	9	17	1.65%		
	10	611	59.38%		
	11	369	35.86%		
	12	32	3.11%		
	Missing	0	0.00%		
Special Education	Yes	92	8.94%	--	--
	No	778	75.61%	--	--
	Exited	77	7.48%	--	--
	Exited & placed in 504 ^a	16	1.55%	--	--
	504	66	6.41%	--	--
Ethnicity	American Indian	1	0.10%	--	--
	Asian	30	2.92%	--	--
	African American	130	12.63%	--	--
	Hawaiian/ Pacific Islander	2	0.19%	--	--
	White	793	77.07%	--	--
	Hispanic	36	3.50%	--	--
	Multi-Ethnic	37	3.60%	--	--
	Missing	0	0.00%	--	--
Limited English Proficient	Yes	4	0.39%	--	--
	No	1,008	97.96%	--	--
	Exited ^b	17	1.65%	--	--

^a A 504 plan is a legal document falling under the provisions of the Rehabilitation Act of 1973 that provides a program of instructional services to assist students with special needs who are in a regular education setting.

^b LEP Exited indicates students who have exited English language acquisition services.

^c In 2021, MCAP HS MISA was not administered in May.

Table 7-9. Demographic Information for Early Fall MCAP HS MISA—Combined Forms

		Early Fall	
		N	%
Overall		84,627	100.00%
Gender	Male	42,546	50.27%
	Female	42,036	49.67%
	Missing	0	0.00%
Grade	8	2	0.00%
	9	3,382	4.00%
	10	30,121	35.59%
	11	36,360	42.97%
	12	14,754	17.43%
	Missing	8	0.01%
Special Education	Yes	7,202	8.51%
	No	69,818	82.50%
	Exited	1,905	2.25%
	Exited & placed in 504 ^a	456	0.54%
	504	5,235	6.19%
Ethnicity	American Indian	149	0.18%
	Asian	8,561	10.12%
	African American	22,999	27.18%
	Hawaiian/ Pacific Islander	115	0.14%
	White	31,536	37.26%
	Hispanic	9,969	11.78%
	Multi-Ethnic	11,045	13.05%
	Missing	0	0.00%
Limited English Proficient	Yes	5,579	6.59%
	No	69,754	82.43%
	Exited ^b	9,284	10.97%

^a A 504 plan is a legal document falling under the provisions of the Rehabilitation Act of 1973 that provides a program of instructional services to assist students with special needs who are in a regular education setting.

^b LEP Exited indicates students who have exited English language acquisition services.

Section 8. Classical Item Analysis

Each administration, following the receipt of the final score file from eMetric for each administration, classical item statistics were calculated on the operational items on the Maryland Comprehensive Assessment Program Government (MCAP Government) and High School Maryland Integrated Science Assessment (MCAP HS MISA) tests. Classical item statistics provide key information about the quality of the items from an empirical perspective. The following outlines the classical item statistics estimated. The criteria for flagging the items for content specialists' review are also described below.

Classical item difficulty (p -value): This statistic indicates the mean item score expressed as a proportion of the maximum obtainable item score. For selected-response (SR) items, it is equivalent to the proportion of test takers in the sample that answered the item correctly. For constructed-response (CR) items, the average item score is divided by the maximum score points to obtain the p -value. Desired p -values for SR items generally fall within the range of 0.25 to 0.90. Occasionally, items that fall outside this range can be justified for inclusion in an item bank based on the quality and educational importance of the item content or the ability to measure students with very high or low achievement, especially if the students have not yet received instruction in the content.

Classical item discrimination (item-total correlation): This statistic describes the relationship between performance on the specific item and performance on the total test, including the item under study. For dichotomously scored items, the item-total correlation is the point-biserial correlation between the key and the total raw score. For polytomously scored items, the item-total correlation is the point-polyserial correlation between the item score and the total raw score. Values less than 0.20 are generally considered to indicate a weaker than desired relationship; therefore, these items receive careful consideration by Cognia and MSDE staff before including them on future forms. Items with negative correlations may indicate serious problems with the item content (e.g., multiple correct answers, incorrect key, unusually complex content, or unfamiliarity with the test content).

Point-biserial correlation of incorrect response option (SR items) with the total raw score: These statistics describe the relationship between selecting an incorrect response option for a specific item and performance on the total test, including the item under study. Typically, the correlation between an incorrect answer and total test performance is weak or negative. Values are typically compared and contrasted with the discrimination index. When the magnitude of a point-biserial correlation for an incorrect answer is strong relative to the correct answer, the item is carefully reviewed for content-related problems. Alternatively, positive point-biserial correlations on incorrect options may indicate that students have not had sufficient opportunity to learn the material.

Percentage of students omitting an item: This statistic is useful for identifying problems with test features, such as testing time and item/test layout. Typically, it is assumed that if students have an adequate amount of testing time, at least 95 percent of them should attempt to answer each question. When a pattern of omit percentages exceeds 5 percent for a series of SR/technology-enhanced (TE) items or 15 percent for CR items at the end of a timed section, this may indicate insufficient time for students to complete all items. For individual items, if the omit percentage is greater than 5 percent for a single SR/TE item or 15 percent for a CR item, this could be an indication of an item/test layout problem. For example, students might accidentally skip an item that follows a lengthy stem.

Proportion of students choosing each response option (SR items): This statistic indicates the proportion of test takers selecting each answer choice, or option. Options not selected by any students or selected by a very low proportion of students may indicate problems with plausibility of the option. Items that do not have all answer options functioning may be discarded or revised and field tested again.

Proportion of students receiving each CR score point: Observation of the distribution of scores is useful to identify how well the item is functioning. If no students are assigned the top score point, this may indicate that the item is not functioning with respect to the scoring rubric, there are problems with the item content, or students have not been taught the content.

The following flagging criteria were applied to all field test items administered in 2021:

- Difficulty flag: p -value is less than 0.10 or greater than 0.90.
- Discrimination flag: Item-total correlation is less than 0.10.
- Distractor flag: SR point-biserial correlation is positive for an incorrect option, or the magnitude of a point-biserial correlation for an incorrect answer is strong relative to the correct answer.
- Omit flag:
 - Percentage omitted is greater than 5 percent for SR or TE items.
 - Percentage omitted is greater than 15 percent for CR items.

The full set of tables of classical item statistics appears in Appendix B.

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Appendix A. Score Reports

January 2020

- MCAP District Summary of Schools
- MCAP District Performance Level Summary Report
- MCAP School Performance Level Summary Report
- MCAP Student Roster Report
- MCAP Student Report
- MCAP Student Labels
- MCAP Government Student Labels



DISTRICT SUMMARY OF SCHOOLS

CONFIDENTIAL - DO NOT DISTRIBUTE

Demonstration District A
MARYLAND

JANUARY 2020

HIGH SCHOOL SCIENCE ASSESSMENT, 2019-2020

PERFORMANCE DISTRIBUTION BY %	NUMBER OF VALID SCORES	AVERAGE SCALE SCORE	INTEGRATED DIMENSIONS			SCIENCE AND ENGINEERING PRACTICES (SEP)*			CROSSCUTTING CONCEPTS (CCO)*											
			Physical Sciences Integrated Practices and Crosscutting Concepts*	Life Sciences Integrated with Integrated Practices and Crosscutting Concepts*	Earth and Space Sciences Integrated with Engineering Practices and Crosscutting Concepts*	Investigating Evaluation and Solutions (IE)	Developing Models and Solutions (DES)	Patterns and Cause and Effect (PCE)	Systems and Properties (SP)	Physical Sciences Integrated Practices and Crosscutting Concepts*	Life Sciences Integrated with Integrated Practices and Crosscutting Concepts*	Earth and Space Sciences Integrated with Engineering Practices and Crosscutting Concepts*								
STATE	20,289	747	11	27	62	8	24	68	32	34	33	34	33	34	33	34	35			
DISTRICT	163	743	10	37	53	6	28	66	37	38	25	34	48	17	34	52	15	36	41	23
Demonstration School 1	6	738	17	50	33	17	50	33	33	67	0	50	33	17	67	33	0	50	33	17
Demonstration School 2	157	743	10	36	54	6	27	67	37	37	26	34	49	17	32	52	15	35	41	24

2 Partially Met Expectations (650-729)	3 Approached Expectations (730-749)	4 Met Expectations (750-774)	5 Exceeded Expectations (775-850)	1 Partially Met Expectations	2 Approached Expectations	3 Met or Exceeded Expectations	Lower	Middle	Upper
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03/23/2020



DISTRICT PERFORMANCE LEVEL SUMMARY REPORT

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Demonstration District A
MARYLAND

JANUARY 2020

HIGH SCHOOL SCIENCE ASSESSMENT, 2019-2020

Purpose: This report describes group achievement in terms of average scale scores and performance levels.

	Number of Valid Scores	Average Scale Score	Performance Levels									
			Level 2 Partially Met Expectations		Level 3 Approached Expectations		Level 4 Met Expectations		Level 5 Exceeded Expectations		≥ Level 4 Met or Exceeded Expectations	
			#	%	#	%	#	%	#	%	#	%
State	20,289	747	3,435	17	7,785	38	7,999	39	1,070	5	9,069	45
District	163	743	22	13	86	53	54	33	1	1	55	34
Gender												
Female	69	744	9	13	29	42	31	45	0	0	31	45
Male	94	742	13	14	57	61	23	24	1	1	24	26
Ethnicity/Race												
Hispanic or Latino	52	739	10	19	30	58	12	23	0	0	12	23
American Indian or Alaska Native	1	740	0	0	1	100	0	0	0	0	0	0
Asian	21	755	0	0	5	24	15	71	1	5	16	76
Black or African-American	53	738	8	15	33	62	12	23	0	0	12	23
Native Hawaiian or Other Pacific Islander	0	0	0	0	0	0	0	0	0	0	0	0
White	32	748	3	9	14	44	15	47	0	0	15	47
Two or more races	4	737	1	25	3	75	0	0	0	0	0	0
Not Indicated	0	0	0	0	0	0	0	0	0	0	0	0
Economic Disadvantage												
No	106	745	12	11	47	44	46	43	1	1	47	44
Yes	57	738	10	18	39	68	8	14	0	0	8	14
Students with Disabilities												
IEP - Yes	29	733	9	31	17	59	3	10	0	0	3	10
IEP - No	134	745	13	10	69	51	51	38	1	1	52	39
504	15	744	1	7	7	47	7	47	0	0	7	47
EL												
No	149	744	16	11	79	53	53	36	1	1	54	36
Yes	14	732	6	43	7	50	1	7	0	0	1	7

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SCHOOL PERFORMANCE LEVEL SUMMARY REPORT

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Demonstration School 1
 Demonstration District A
 MARYLAND

JANUARY 2020

HIGH SCHOOL SCIENCE ASSESSMENT, 2019-2020

Purpose: This report describes group achievement in terms of average scale scores and performance levels.

	Number of Valid Scores	Average Scale Score	Performance Levels									
			Level 2 Partially Met Expectations		Level 3 Approached Expectations		Level 4 Met Expectations		Level 5 Exceeded Expectations		≥ Level 4 Met or Exceeded Expectations	
			#	%	#	%	#	%	#	%	#	%
State	20,289	747	3,435	17	7,785	38	7,999	39	1,070	5	9,069	45
District	163	743	22	13	86	53	54	33	1	1	55	34
School	6	738	2	33	3	50	1	17	0	0	1	17
Gender												
Female	3	728	2	67	1	33	0	0	0	0	0	0
Male	3	748	0	0	2	67	1	33	0	0	1	33
Ethnicity/Race												
Hispanic or Latino	0	0	0	0	0	0	0	0	0	0	0	0
American Indian or Alaska Native	0	0	0	0	0	0	0	0	0	0	0	0
Asian	0	0	0	0	0	0	0	0	0	0	0	0
Black or African-American	1	723	1	100	0	0	0	0	0	0	0	0
Native Hawaiian or Other Pacific Islander	0	0	0	0	0	0	0	0	0	0	0	0
White	5	741	1	20	3	60	1	20	0	0	1	20
Two or more races	0	0	0	0	0	0	0	0	0	0	0	0
Not Indicated	0	0	0	0	0	0	0	0	0	0	0	0
Economic Disadvantage												
No	4	739	1	25	2	50	1	25	0	0	1	25
Yes	2	736	1	50	1	50	0	0	0	0	0	0
Students with Disabilities												
IEP - Yes	1	723	1	100	0	0	0	0	0	0	0	0
IEP - No	5	741	1	20	3	60	1	20	0	0	1	20
504	0	0	0	0	0	0	0	0	0	0	0	0
EL												
No	6	738	2	33	3	50	1	17	0	0	1	17
Yes	0	0	0	0	0	0	0	0	0	0	0	0

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STUDENT ROSTER REPORT

CONFIDENTIAL - DO NOT DISTRIBUTE

Demonstration School 1
 Demonstration District A
 MARYLAND

JANUARY 2020

HIGH SCHOOL SCIENCE ASSESSMENT, 2019-2020

STUDENT	OVERALL SCALE SCORE	Integrated Dimensions			
		Physical Sciences Integrated with Science and Engineering Practices and Crosscutting Concepts*	Life Sciences Integrated with Science and Engineering Practices and Crosscutting Concepts*	Earth and Space Sciences Integrated with Science and Engineering Practices and Crosscutting Concepts*	
STATE	747	11 27 62	8 24 68	8 30 62	
DISTRICT	743	10 37 53	6 28 66	7 39 55	
SCHOOL	738	17 50 33	17 50 33	17 33 50	
LNAME1, FNAME1	727	↔	↓	↔	↔
LNAME10, FNAME10	748	↔	↑	↑	↑
LNAME12, FNAME12	723	↓	↔	↓	↓
LNAME3, FNAME3	734	↑	↔	↔	↔
LNAME5, FNAME5	742	↔	↑	↑	↑
LNAME8, FNAME8	753	↑	↔	↑	↑

2	Partially Met Expectations (650-723)	3	Approached Expectations (730-749)	4	Met Expectations (750-774)	5	Exceeded Expectations (775-850)	↑	Met or Exceeded Expectations
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This report is NOT for public review. Distribution within your school/district must be in accordance with state and federal privacy laws, and local school board policy.
 * Numbers are percentages



Student Name: FNAME8 LNAME8
SASID: DA00800008
Date of Birth: Demo 01/01/2020
Administration: JANUARY 2020

LSS Name: Demonstration District A
School Name: Demonstration School 1
Grade: 10

High School Science Assessment Report, 2019-2020

How Can You Use This Report?

This report shows whether FNAME8 met high school grade band expectations in science and is on track to be college and career ready. The **Maryland Integrated Science Assessment (MISA)** is just one measure of how well your child is performing academically.

Ask your child's teachers:

- What do you see as my child's strengths and areas for improvement in science?
- How can these assessment results be used to help my child make progress in science?

To learn more about the test and to view sample questions and practice tests, please visit: <http://marylandpublicschools.org/about/Pages/DAAIT/Assessment/MISA/index.aspx>.

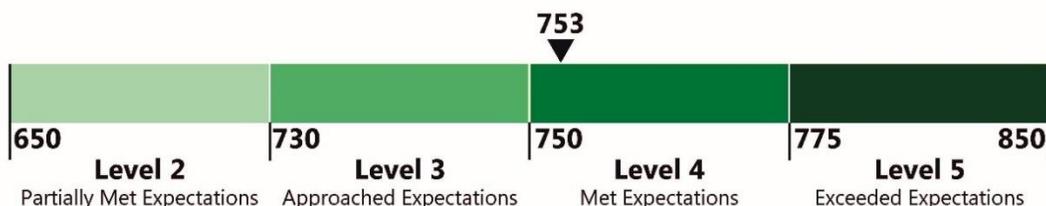
See side 2 of this report for specific information on your child's performance in science.



How did FNAME8 perform overall?

OVERALL STUDENT PERFORMANCE

Your student scored **753** on a scale of **650-850**, and performed at **LEVEL 4 - MET EXPECTATIONS**. Students performing at this level demonstrate a general understanding of high school appropriate Disciplinary Core Ideas, Science and Engineering Practices, and Crosscutting Concepts.



School, LSS, and State Comparisons

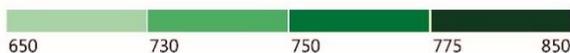
State Average



LSS Average



School Average[§]



§ Note: Some numbers may have been left blank because fewer than ten (10) students were tested.

How Students in Maryland Performed

Percentage of students at each performance level

Level 5



Level 4



Level 3



Level 2





Student Name: FNAME8 LNAME8

What is an Integrated Science Assessment?

The MISA is given in grades 5, 8 and high school. Each assessment integrates the **disciplinary core ideas** of physical science, life science, and earth and space science, as well as engineering, technology, and applications of science. These disciplines are then integrated with the **science and engineering practices** and **crosscutting concepts** described below:

Science and Engineering Practices: The behaviors and processes that scientists engage in to make sense of phenomena and design solutions to problems.

- Asking questions and defining problems
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Using mathematics and computational thinking
- Constructing explanations and designing solutions
- Engaging in argument from evidence
- Obtaining, evaluating and communicating information

Crosscutting Concepts: An organizational framework for connecting knowledge from the various discipline into a coherent and scientifically based view of the world.

- Patterns
- Cause and effect: Mechanism and explanation
- Scale, proportion, and quantity
- Systems and system models
- Energy and matter: Flows, cycles, and conservation
- Structure and function
- Stability and change
- Interdependence of science, engineering, and technology
- Influence of engineering, technology, and science on society and the natural world

The integration of these three dimensions - **disciplinary core ideas**, **science and engineering practices**, and **crosscutting concepts** - is fundamental to understanding science and central to the design of the MISA.

Further information about the performance levels at each grade band can be found online at:

<http://marylandpublicschools.org/about/Pages/DAAIT/Assessment/MISA/index.aspx>.

How Did Your Child Perform on the Integrated Dimensions of the HS MISA?



Physical Sciences Integrated with Science and Engineering Practices and Crosscutting Concepts

Your student performed about the same as students who **met or exceeded expectations**. Students meet expectations by demonstrating the ability to apply and integrate science and engineering practices and crosscutting concepts to the understanding of matter and its interactions, motion and stability, forces and interactions, energy and waves.



Earth and Space Sciences Integrated with Science and Engineering Practices and Crosscutting Concepts

Your student performed about the same as students who **met or exceeded expectations**. Students meet expectations by demonstrating the ability to apply and integrate science and engineering practices and crosscutting concepts to the understanding of Earth's place in the universe, Earth's systems, and Earth and human activity.



Life Sciences Integrated with Science and Engineering Practices and Crosscutting Concepts

Your student performed about the same as students who **approached expectations**. Students meet expectations by demonstrating the ability to apply and integrate science and engineering practices and crosscutting concepts to the understanding of how the structures and processes function from molecules to organisms, the interactions, energy and dynamics of ecosystems, the inheritance and variation of traits in heredity, and the unity and diversity of biological evolution.

LEGEND

Your child performed about the same as students who:



Met or Exceeded Expectations



Approached Expectations



Partially Met Expectations

How are assessment results used? Results from the assessment give your child's teacher, school, and LSS information about his/her science performance, and provide you with some insight on how your child is meeting expectations. These results never stand alone, but can be used with other assessments and class work when gauging student performance.

Learn more about Maryland's science standards

NGSS web site: <https://www.nextgenscience.org/>

MDK12 website: <http://marylandpublicschools.org/about/Pages/DAAIT/Assessment/MISA/index.aspx>

January 2020 Maryland Integrated Science Assessment (MISA)

LNAME1, FNAME1

LSS: Demonstration District A (DA)

School: Demonstration School 1 (DEM1)

Grade: 11 ID: DA00800001 DOB: 08/08/2002

MISA Scale Score: **727**

Performance Level: **Level 2 - Partially Met Expectations**

January 2020 Maryland Integrated Science Assessment (MISA)

LNAME8, FNAME8

LSS: Demonstration District A (DA)

School: Demonstration School 1 (DEM1)

Grade: 10 ID: DA00800008 DOB: 04/25/2004

MISA Scale Score: **753**

Performance Level: **Level 4 - Met Expectations**

January 2020 Maryland Integrated Science Assessment (MISA)

LNAME10, FNAME10

LSS: Demonstration District A (DA)

School: Demonstration School 1 (DEM1)

Grade: 10 ID: DA00800010 DOB: 06/10/2004

MISA Scale Score: **748**

Performance Level: **Level 3 - Approached Expectations**

January 2020 Maryland Integrated Science Assessment (MISA)

LNAME12, FNAME12

LSS: Demonstration District A (DA)

School: Demonstration School 1 (DEM1)

Grade: 12 ID: DA00800012 DOB: 06/28/2002

MISA Scale Score: **723**

Performance Level: **Level 2 - Partially Met Expectations**

January 2020 Maryland Integrated Science Assessment (MISA)

LNAME3, FNAME3

LSS: Demonstration District A (DA)

School: Demonstration School 1 (DEM1)

Grade: 10 ID: DA00800003 DOB: 06/06/2003

MISA Scale Score: **734**

Performance Level: **Level 3 - Approached Expectations**

January 2020 Maryland Integrated Science Assessment (MISA)

LNAME5, FNAME5

LSS: Demonstration District A (DA)

School: Demonstration School 1 (DEM1)

Grade: 10 ID: DA00800005 DOB: 05/21/2004

MISA Scale Score: **742**

Performance Level: **Level 3 - Approached Expectations**

Maryland HSA - Government

Test Date: January 2020

Student's Score	Passing Score	Pass/Fail Status
405	394	PASS

LASTNAME1, FIRSTNAME1 A

Date of Birth: 01/01/2004
State ID: 1234567890
LEA ID: 0000123456
LEA Name: Demonstration District A
LEA Number: DA
School Name: Demonstration School 1
School Number: DEM1



Maryland HSA - Government

Test Date: January 2020

Student's Score	Passing Score	Pass/Fail Status
335	394	FAIL

LASTNAME7, FIRSTNAME7 G

Date of Birth: 09/09/2003
State ID: 1234567896
LEA ID: 0000123462
LEA Name: Demonstration District A
LEA Number: DA
School Name: Demonstration School 1
School Number: DEM1



Maryland HSA - Government

Test Date: January 2020

Student's Score	Passing Score	Pass/Fail Status
336	394	FAIL

LASTNAME2, FIRSTNAME2 B

Date of Birth: 01/01/2004
State ID: 1234567891
LEA ID: 0000123457
LEA Name: Demonstration District A
LEA Number: DA
School Name: Demonstration School 1
School Number: DEM1



Maryland HSA - Government

Test Date: January 2020

Student's Score	Passing Score	Pass/Fail Status
387	394	FAIL

LASTNAME8, FIRSTNAME8 H

Date of Birth: 04/04/2003
State ID: 1234567897
LEA ID: 0000123463
LEA Name: Demonstration District A
LEA Number: DA
School Name: Demonstration School 1
School Number: DEM1



Maryland HSA - Government

Test Date: January 2020

Student's Score	Passing Score	Pass/Fail Status
317	394	FAIL

LASTNAME3, FIRSTNAME3 C

Date of Birth: 01/01/2004
State ID: 1234567892
LEA ID: 0000123458
LEA Name: Demonstration District A
LEA Number: DA
School Name: Demonstration School 1
School Number: DEM1



Maryland HSA - Government

Test Date: January 2020

Student's Score	Passing Score	Pass/Fail Status
395	394	PASS

LASTNAME9, FIRSTNAME9 I

Date of Birth: 02/07/2003
State ID: 1234567898
LEA ID: 0000123464
LEA Name: Demonstration District A
LEA Number: DA
School Name: Demonstration School 1
School Number: DEM1



Maryland HSA - Government

Test Date: January 2020

Student's Score	Passing Score	Pass/Fail Status
360	394	FAIL

LASTNAME4, FIRSTNAME4 D

Date of Birth: 01/01/2004
State ID: 1234567893
LEA ID: 0000123459
LEA Name: Demonstration District A
LEA Number: DA
School Name: Demonstration School 1
School Number: DEM1



Maryland HSA - Government

Test Date: January 2020

Student's Score	Passing Score	Pass/Fail Status
363	394	FAIL

LASTNAME10, FIRSTNAME10 J

Date of Birth: 11/11/2003
State ID: 1234567899
LEA ID: 0000123465
LEA Name: Demonstration District A
LEA Number: DA
School Name: Demonstration School 1
School Number: DEM1



Maryland HSA - Government

Test Date: January 2020

Student's Score	Passing Score	Pass/Fail Status
409	394	PASS

LASTNAME5, FIRSTNAME5 E

Date of Birth: 02/02/2004
State ID: 1234567894
LEA ID: 0000123460
LEA Name: Demonstration District A
LEA Number: DA
School Name: Demonstration School 1
School Number: DEM1



Maryland HSA - Government

Test Date: January 2020

Student's Score	Passing Score	Pass/Fail Status
332	394	FAIL

LASTNAME11, FIRSTNAME11 K

Date of Birth: 12/12/2003
State ID: 1234567900
LEA ID: 0000123466
LEA Name: Demonstration District A
LEA Number: DA
School Name: Demonstration School 1
School Number: DEM1



Maryland HSA - Government

Test Date: January 2020

Student's Score	Passing Score	Pass/Fail Status
349	394	FAIL

LASTNAME6, FIRSTNAME6 F

Date of Birth: 03/03/2004
State ID: 1234567895
LEA ID: 0000123461
LEA Name: Demonstration District A
LEA Number: DA
School Name: Demonstration School 1
School Number: DEM1



Maryland HSA - Government

Test Date: January 2020

Student's Score	Passing Score	Pass/Fail Status
440	394	PASS

LASTNAME12, FIRSTNAME12 L

Date of Birth: 05/05/2004
State ID: 1234567901
LEA ID: 0000123467
LEA Name: Demonstration District A
LEA Number: DA
School Name: Demonstration School 1
School Number: DEM1



Early Fall 2021

- MCAP District Summary of Schools
- MCAP District Performance Level Summary Report
- MCAP School Performance Level Summary Report
- MCAP Student Roster Report
- MCAP Student Report
- MCAP Student Labels



DISTRICT SUMMARY OF SCHOOLS

CONFIDENTIAL - DO NOT DISTRIBUTE

DEMONSTRATION DISTRICT A
MARYLAND

HIGH SCHOOL SCIENCE ASSESSMENT, 2021

EARLY FALL 2021

NAME	NUMBER OF VALID SCORES	AVERAGE SCALE SCORE	PERFORMANCE DISTRIBUTION BY %*
STATE	84570	749	 13 38 43 6
DISTRICT	52	751	 10 38 40 12
DEMONSTRATION SCHOOL 2	52	751	 10 38 40 12

2 Partially Met Expectations (650-729)

3 Approached Expectations (730-749)

4 Met Expectations (750-774)

5 Exceeded Expectations (775-850)

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* Numbers are percentages

§ Due to the shortened test form for the Early Fall High School MISA and the associated limited number of items, the state cannot report on the Integrated Dimensions for physical, life, and earth space science with the Science and Engineering Practices and Crosscutting Concepts.

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11/24/2021



DISTRICT PERFORMANCE LEVEL SUMMARY REPORT

CONFIDENTIAL - DO NOT DISTRIBUTE

Demonstration District A
MARYLAND

EARLY FALL 2021

HIGH SCHOOL SCIENCE ASSESSMENT, 2021

Purpose: This report describes group achievement in terms of average scale scores and performance levels.

	Number of Valid Scores	Average Scale Score	Performance Levels									
			Level 2 Partially Met Expectations		Level 3 Approached Expectations		Level 4 Met Expectations		Level 5 Exceeded Expectations		≥ Level 4 Met or Exceeded Expectations	
			#	%	#	%	#	%	#	%	#	%
State	84,570	749	11,242	13	31,874	38	36,099	43	5,355	6	41,454	49
District	52	751	5	10	20	38	21	40	6	12	27	52
Gender												
Female	28	754	1	4	11	39	13	46	3	11	16	57
Male	23	748	4	17	8	35	8	35	3	13	11	48
Non-Binary	1	746	0	0	1	100	0	0	0	0	0	0
Ethnicity/Race												
Hispanic or Latino	8	742	0	0	6	75	2	25	0	0	2	25
American Indian or Alaska Native	1	736	0	0	1	100	0	0	0	0	0	0
Asian	5	754	0	0	1	20	4	80	0	0	4	80
Black or African-American	16	748	3	19	6	38	6	38	1	6	7	44
Native Hawaiian or Other Pacific Islander	1	748	0	0	1	100	0	0	0	0	0	0
White	20	756	2	10	5	25	9	45	4	20	13	65
Two or more races	1	781	0	0	0	0	0	0	1	100	1	100
Not Indicated	0	0	0	0	0	0	0	0	0	0	0	0
Economic Disadvantage												
No	39	753	4	10	13	33	16	41	6	15	22	56
Yes	13	746	1	8	7	54	5	38	0	0	5	38
Students with Disabilities												
IEP - Yes	7	743	0	0	6	86	1	14	0	0	1	14
IEP - No	45	752	5	11	14	31	20	44	6	13	26	58
504	1	768	0	0	0	0	1	100	0	0	1	100
EL												
No	47	753	4	9	16	34	21	45	6	13	27	57
Yes	5	732	1	20	4	80	0	0	0	0	0	0

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SCHOOL PERFORMANCE LEVEL SUMMARY REPORT

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Demonstration School 2
 Demonstration District A
 MARYLAND

EARLY FALL 2021

HIGH SCHOOL SCIENCE ASSESSMENT, 2021

Purpose: This report describes group achievement in terms of average scale scores and performance levels.

	Number of Valid Scores	Average Scale Score	Performance Levels											
			Level 2 Partially Met Expectations		Level 3 Approached Expectations		Level 4 Met Expectations		Level 5 Exceeded Expectations		≥ Level 4 Met or Exceeded Expectations			
			#	%	#	%	#	%	#	%	#	%		
State	84,570	749	11,242	13	31,874	38	36,099	43	5,355	6	41,454	49		
District	52	751	5	10	20	38	21	40	6	12	27	52		
School	52	751	5	10	20	38	21	40	6	12	27	52		
Gender														
Female	28	754	1	4	11	39	13	46	3	11	16	57		
Male	23	748	4	17	8	35	8	35	3	13	11	48		
Non-Binary	1	746	0	0	1	100	0	0	0	0	0	0		
Ethnicity/Race														
Hispanic or Latino	8	742	0	0	6	75	2	25	0	0	2	25		
American Indian or Alaska Native	1	736	0	0	1	100	0	0	0	0	0	0		
Asian	5	754	0	0	1	20	4	80	0	0	4	80		
Black or African-American	16	748	3	19	6	38	6	38	1	6	7	44		
Native Hawaiian or Other Pacific Islander	1	748	0	0	1	100	0	0	0	0	0	0		
White	20	756	2	10	5	25	9	45	4	20	13	65		
Two or more races	1	781	0	0	0	0	0	0	1	100	1	100		
Not Indicated	0	0	0	0	0	0	0	0	0	0	0	0		
Economic Disadvantage														
No	39	753	4	10	13	33	16	41	6	15	22	56		
Yes	13	746	1	8	7	54	5	38	0	0	5	38		
Students with Disabilities														
IEP - Yes	7	743	0	0	6	86	1	14	0	0	1	14		
IEP - No	45	752	5	11	14	31	20	44	6	13	26	58		
504	1	768	0	0	0	0	1	100	0	0	1	100		
EL														
No	47	753	4	9	16	34	21	45	6	13	27	57		
Yes	5	732	1	20	4	80	0	0	0	0	0	0		

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STUDENT ROSTER REPORT

CONFIDENTIAL - DO NOT DISTRIBUTE

Demonstration School 2
 Demonstration District A
 MARYLAND

EARLY FALL 2021

HIGH SCHOOL SCIENCE ASSESSMENT, 2021

SUMMARY	OVERALL SCALE SCORE	PERFORMANCE DISTRIBUTION BY %*			
STATE	749	13	38	43	6
DISTRICT	751	10	38	40	12
SCHOOL	751	10	38	40	12
STUDENT	OVERALL SCALE SCORE	PERFORMANCE LEVEL	PERFORMANCE LEVEL DESCRIPTION		
LASTNAME10, PREFERRED10 M.	760	4	Met Expectations (750-774)		
LASTNAME101, PREFERRED101 M.	748	3	Approached Expectations (730-749)		
LASTNAME103, FIRST103	762	4	Met Expectations (750-774)		
LASTNAME105, FIRST105 M.	739	3	Approached Expectations (730-749)		
LASTNAME107, FIRST107 M.	746	3	Approached Expectations (730-749)		
LASTNAME108, FIRST108 M.	733	3	Approached Expectations (730-749)		
LASTNAME11, FIRST11 M.	781	5	Exceeded Expectations (775-850)		
LASTNAME111, FIRST111	732	3	Approached Expectations (730-749)		
LASTNAME114, PREFERRED114	754	4	Met Expectations (750-774)		

§ Due to the shortened test form for the Early Fall High School MISA and the associated limited number of items, the state cannot report on the Integrated Dimensions for physical, life, and earth space science with the Science and Engineering Practices and Crosscutting Concepts.

2 Partially Met Expectations (650-729)	3 Approached Expectations (730-749)	4 Met Expectations (750-774)	5 Exceeded Expectations (775-850)
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This report is NOT for public review. Distribution within your school/district must be in accordance with state and federal privacy laws, and local school board policy.

* Numbers are percentages



Student Name: PREFERRED10 M. LASTNAME10
SASID: D00000010
Date of Birth: 09/13/2005
Administration: EARLY FALL 2021

LSS Name: Demonstration District A
School Name: Demonstration School 2
Grade: 11

High School (Early Fall) Science Assessment Report, 2021

This report shows whether PREFERRED10 met high school grade band expectations in science and is on track to be college and career ready. The **Maryland Integrated Science Assessment (MISA)** is just one measure of how well your child is performing academically.

To learn more about the test and to view sample questions and practice tests, please visit:
<http://marylandpublicschools.org/about/Pages/DAAIT/Assessment/MISA/index.aspx>.

How Can You Use This Report?

Ask your child's teachers:

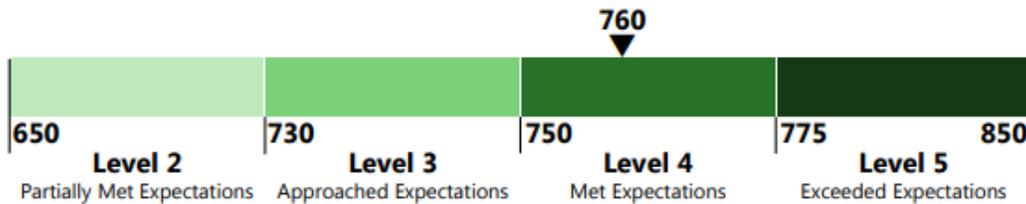
- What do you see as my child's strengths and areas for improvement in science?
- How can these assessment results be used to help my child make progress in science?



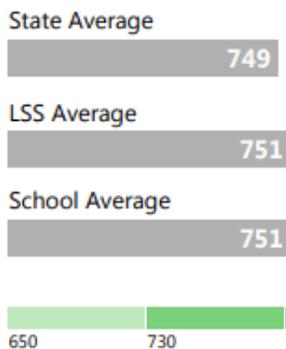
How did PREFERRED10 perform overall?

OVERALL STUDENT PERFORMANCE

Your student scored **760** on a scale of **650-850**, and performed at **LEVEL 4 - MET EXPECTATIONS**. Students performing at this level demonstrate a general understanding of high school appropriate Disciplinary Core Ideas, Science and Engineering Practices, and Crosscutting Concepts.

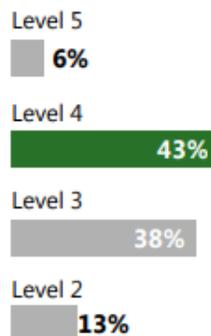


School, LSS*, and State Comparisons



How Students in Maryland Performed

Percentage of students at each performance level



* Please note that LSS stands for Local School System.



Student Name: PREFERRED10 M. LASTNAME10

What is an Integrated Science Assessment?

The MISA is given in grades 5, 8 and high school. Each assessment integrates the **disciplinary core ideas** of physical science, life science, and earth and space science, as well as engineering, technology, and applications of science. These disciplines are then integrated with the **science and engineering practices** and **crosscutting concepts** described below:

Science and Engineering Practices: The behaviors and processes that scientists engage in to make sense of phenomena and design solutions to problems.

- Asking questions and defining problems
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Using mathematics and computational thinking
- Constructing explanations and designing solutions
- Engaging in argument from evidence
- Obtaining, evaluating and communicating information

Crosscutting Concepts: An organizational framework for connecting knowledge from the various discipline into a coherent and scientifically based view of the world.

- Patterns
- Cause and effect: Mechanism and explanation
- Scale, proportion, and quantity
- Systems and system models
- Energy and matter: Flows, cycles, and conservation
- Structure and function
- Stability and change
- Interdependence of science, engineering, and technology
- Influence of engineering, technology, and science on society and the natural world

The integration of these three dimensions - **disciplinary core ideas**, **science and engineering practices**, and **crosscutting concepts** - is fundamental to understanding science and central to the design of the MISA.

Further information about the performance levels at each grade band can be found online at:

<http://marylandpublicschools.org/about/Pages/DAAIT/Assessment/MISA/index.aspx>.

How are assessment results used? Results from the assessment give your child's teacher, school, and LSS information about his/her science performance, and provide you with some insight on how your child is meeting expectations. These results never stand alone, but can be used with other assessments and class work when gauging student performance.

Learn more about Maryland's science standards

NGSS web site: <https://www.nextgenscience.org/>

MDK12 website: <http://marylandpublicschools.org/about/Pages/DAAIT/Assessment/MISA/index.aspx>

Early Fall 2021 Maryland Integrated Science Assessment (HS MISA)
LASTNAME10, PREFERRED10 M.
LSS: Demonstration District A (DA)
School: Demonstration School 2 (DEM2)
Grade: 11 ID: D0000010 DOB: 09/13/2005
MISA Scale Score: **760**
Performance Level: **Level 4 - Met Expectations**

Early Fall 2021 Maryland Integrated Science Assessment (HS MISA)
LASTNAME101, PREFERRED101 M.
LSS: Demonstration District A (DA)
School: Demonstration School 2 (DEM2)
Grade: 12 ID: D00000101 DOB: 09/30/2003
MISA Scale Score: **748**
Performance Level: **Level 3 - Approached Expectations**

Early Fall 2021 Maryland Integrated Science Assessment (HS MISA)
LASTNAME103, FIRST103
LSS: Demonstration District A (DA)
School: Demonstration School 2 (DEM2)
Grade: 10 ID: D00000103 DOB: 07/02/2006
MISA Scale Score: **762**
Performance Level: **Level 4 - Met Expectations**

Early Fall 2021 Maryland Integrated Science Assessment (HS MISA)
LASTNAME105, FIRST105 M.
LSS: Demonstration District A (DA)
School: Demonstration School 2 (DEM2)
Grade: 10 ID: D00000105 DOB: 05/02/2006
MISA Scale Score: **739**
Performance Level: **Level 3 - Approached Expectations**

Early Fall 2021 Maryland Integrated Science Assessment (HS MISA)
LASTNAME107, FIRST107 M.
LSS: Demonstration District A (DA)
School: Demonstration School 2 (DEM2)
Grade: 11 ID: D00000107 DOB: 09/07/2004
MISA Scale Score: **746**
Performance Level: **Level 3 - Approached Expectations**

Early Fall 2021 Maryland Integrated Science Assessment (HS MISA)
LASTNAME108, FIRST108 M.
LSS: Demonstration District A (DA)
School: Demonstration School 2 (DEM2)
Grade: 10 ID: D00000108 DOB: 02/28/2006
MISA Scale Score: **733**
Performance Level: **Level 3 - Approached Expectations**

Early Fall 2021 Maryland Integrated Science Assessment (HS MISA)
LASTNAME11, FIRST11 M.
LSS: Demonstration District A (DA)
School: Demonstration School 2 (DEM2)
Grade: 11 ID: D00000011 DOB: 06/06/2005
MISA Scale Score: **781**
Performance Level: **Level 5 - Exceeded Expectations**

Early Fall 2021 Maryland Integrated Science Assessment (HS MISA)
LASTNAME111, FIRST111
LSS: Demonstration District A (DA)
School: Demonstration School 2 (DEM2)
Grade: 11 ID: D00000111 DOB: 12/11/2003
MISA Scale Score: **732**
Performance Level: **Level 3 - Approached Expectations**

Early Fall 2021 Maryland Integrated Science Assessment (HS MISA)
LASTNAME114, PREFERRED114
LSS: Demonstration District A (DA)
School: Demonstration School 2 (DEM2)
Grade: 12 ID: D00000114 DOB: 09/11/2003
MISA Scale Score: **754**
Performance Level: **Level 4 - Met Expectations**

Early Fall 2021 Maryland Integrated Science Assessment (HS MISA)
LASTNAME115, PREFERRED115 M.
LSS: Demonstration District A (DA)
School: Demonstration School 2 (DEM2)
Grade: 12 ID: D00000115 DOB: 07/02/2004
MISA Scale Score: **761**
Performance Level: **Level 4 - Met Expectations**

Appendix B. Classical Item Statistics—Operational Items

For the data in tables B-1 through B-7:

- Item Type = Type + Point Value, where Type is one of the following:
 - BCR (brief constructed-response items worth 4 points),
 - CR (constructed-response items worth 2, 3, or 4 points),
 - MSR (multi-select items worth either 1 or 2 points),
 - SR (selected-response items), or
 - TE (technology-enhanced items worth either 1 or 2 points).
- Common = whether the item appears on other forms in this administration
 - L= item is common across all forms in this administration,
 - O = item is in one or more but not all forms in this administration.
- Forms = the forms on which the item appears in this administration,
- P_Val = p -value,
- R_ITT = item-total correlation,
- P_BIS1 – P_BIS n = option-total correlations for n options, and
- %Omits = percentage of omitted responses.

Table B-1. Classical Item Statistics, Operational Items: MCAP Government—January—Forms A–C (N =585)

Item Type	Anchor Status	ItemID	P_Val	R_ITT	P_BIS1	P_BIS2	P_BIS3	P_BIS4	%Omits
BCR-4	O	0061AS	0.33	0.63	--	--	--	--	0.0
BCR-4	L	0061ES	0.14	0.54	--	--	--	--	0.0
Mean (BCR-4)			0.24	0.59	--	--	--	--	0.0
SD (BCR-4)			0.13	0.07	--	--	--	--	0.0
ECR-5	O	005SU4	0.38	0.67	--	--	--	--	0.0
SR	L	005AWN	0.83	0.39	-0.32	0.39	-0.18	-0.08	0.0
SR	L	005BAG	0.72	0.37	-0.27	-0.17	0.37	-0.12	0.0
SR	O	007O59	0.79	0.44	-0.29	-0.21	0.44	-0.19	0.0
SR	O	0053DD	0.54	0.30	-0.07	0.30	-0.21	-0.14	0.2
SR	L	0053CV	0.64	0.44	-0.16	-0.12	-0.34	0.44	0.0
SR	L	004ZV0	0.54	0.28	-0.10	-0.25	0.28	-0.03	0.0
SR	L	0053C5	0.77	0.36	-0.17	-0.14	-0.26	0.36	0.2
SR	O	0065KZ	0.88	0.39	0.39	-0.25	-0.26	-0.15	0.0
SR	L	005F8Q	0.46	0.42	-0.22	0.42	-0.18	-0.15	0.3
SR	L	0053C4	0.49	0.31	-0.15	-0.27	0.31	-0.07	0.5
SR	O	005F26	0.84	0.43	-0.16	-0.24	0.43	-0.27	0.3
SR	O	00507I	0.61	0.17	-0.12	0.17	-0.08	-0.03	0.3
SR	L	005077	0.66	0.47	-0.15	0.47	-0.27	-0.27	0.3
SR	L	0053EI	0.81	0.24	-0.20	-0.15	-0.07	0.24	0.3
SR	L	0053F4	0.76	0.46	-0.20	-0.21	-0.30	0.46	0.3
SR	L	005B00	0.76	0.40	-0.17	-0.22	0.40	-0.24	0.7
SR	O	005SXL	0.51	0.28	0.28	-0.25	-0.08	-0.13	0.9
SR	O	005EOS	0.86	0.27	-0.20	0.27	-0.14	-0.11	0.2
SR	L	0065LC	0.60	0.55	0.55	-0.31	-0.22	-0.27	0.2
SR	O	005AOP	0.67	0.49	-0.32	-0.23	-0.26	0.49	0.2
SR	O	005SU0	0.34	0.49	-0.16	-0.12	0.49	-0.26	0.5
SR	O	005SU2	0.40	0.40	-0.30	-0.13	-0.09	0.40	0.2
SR	O	005SU1	0.63	0.43	-0.24	-0.20	-0.21	0.43	0.2
SR	O	005SU3	0.59	0.56	-0.20	-0.18	0.56	-0.38	0.2
SR	O	005FDV	0.90	0.39	-0.17	0.39	-0.26	-0.19	0.3
SR	L	0053JF	0.38	0.30	-0.24	0.11	-0.35	0.30	0.3
SR	L	0053CI	0.43	0.34	-0.26	0.34	-0.22	0.04	0.3
SR	L	005BD7	0.19	0.26	-0.18	-0.15	0.26	0.13	0.3
SR	L	005BCI	0.42	0.41	-0.20	-0.16	-0.16	0.41	0.3
SR	O	005BDO	0.44	0.40	-0.12	0.01	-0.37	0.40	0.3
SR	L	005SXQ	0.35	0.29	0.00	0.29	-0.13	-0.24	0.3
SR	L	0053D3	0.36	0.28	0.28	-0.10	-0.29	-0.01	0.3
SR	L	005BF3	0.52	0.48	-0.22	-0.22	0.48	-0.21	0.3
SR	L	005BH4	0.51	0.36	-0.14	-0.10	-0.23	0.36	0.3
SR	L	005F1I	0.71	0.50	-0.30	-0.18	0.50	-0.27	0.5
SR	L	005BK8	0.80	0.42	0.42	-0.22	-0.28	-0.17	0.5
SR	O	005BEU	0.39	0.33	-0.17	0.33	-0.13	-0.10	0.5
SR	L	0053AR	0.73	0.40	-0.26	-0.24	-0.17	0.40	0.7
SR	L	0065LD	0.53	0.41	-0.21	0.41	-0.19	-0.15	0.9
SR	L	005BDQ	0.73	0.44	-0.15	-0.25	0.44	-0.28	0.5
SR	L	005B24	0.51	0.40	-0.15	-0.26	0.40	-0.09	0.3
SR	O	00507E	0.57	0.48	-0.25	0.48	-0.25	-0.17	0.3
SR	L	0065KQ	0.62	0.40	-0.27	-0.16	0.40	-0.14	0.3
Mean (SR)			0.60	0.39	-0.13	-0.03	-0.01	0.00	0.3
SD (SR)			0.17	0.09	0.20	0.26	0.31	0.27	0.2
TE-2	O	0063VU	0.81	0.48	--	--	--	--	0.0
TE-2	O	005Y15	0.45	0.40	--	--	--	--	0.0

continued

Item Type	Anchor Status	ItemID	P_Val	R_ITT	P_BIS1	P_BIS2	P_BIS3	P_BIS4	%Omits
TE-2	O	0060YA	0.54	0.42	--	--	--	--	0.0
TE-2	O	0089UU	0.77	0.61	--	--	--	--	0.0
TE-2	O	005Y2A	0.52	0.37	--	--	--	--	0.0
Mean (TE-2)			0.62	0.46	--	--	--	--	0.0
SD (TE-2)			0.16	0.09	--	--	--	--	0.0

Table B-2. Classical Item Statistics, Operational Items: MCAP Government—January—Forms AA–AC (N =567)

Item Type	Anchor Status	ItemID	P_Val	R_ITT	P_BIS1	P_BIS2	P_BIS3	P_BIS4	%Omits
BCR-4	O	005041	0.42	0.55	--	--	--	--	0.0
BCR-4	L	0061ES	0.13	0.49	--	--	--	--	0.0
Mean (BCR-4)			0.28	0.52	--	--	--	--	0.0
SD (BCR-4)			0.20	0.04	--	--	--	--	0.0
ECR-5	O	005SU4	0.38	0.68	--	--	--	--	0.0
SR	L	005AWN	0.81	0.41	-0.30	0.41	-0.21	-0.13	0.0
SR	L	005BAG	0.73	0.36	-0.22	-0.20	0.36	-0.14	0.2
SR	O	0065L3	0.77	0.48	-0.25	-0.30	0.48	-0.20	0.0
SR	O	0061AR	0.65	0.50	0.50	-0.23	-0.28	-0.24	0.0
SR	L	0053CV	0.62	0.38	-0.18	-0.17	-0.25	0.38	0.2
SR	L	004ZV0	0.56	0.31	-0.16	-0.19	0.31	-0.08	0.4
SR	L	0053C5	0.78	0.41	-0.18	-0.25	-0.22	0.41	0.0
SR	O	005UTR	0.53	0.27	0.03	0.27	-0.16	-0.23	0.2
SR	L	005F8Q	0.44	0.42	-0.24	0.42	-0.17	-0.14	0.0
SR	L	0053C4	0.50	0.28	-0.13	-0.32	0.28	-0.03	0.4
SR	O	005FA1	0.51	0.35	-0.19	-0.09	-0.25	0.35	0.4
SR	O	005B73	0.77	0.24	-0.03	-0.28	0.24	-0.09	0.4
SR	L	005077	0.67	0.48	-0.20	0.48	-0.24	-0.28	0.4
SR	L	0053EI	0.80	0.21	-0.20	-0.16	-0.01	0.21	0.5
SR	L	0053F4	0.79	0.40	-0.12	-0.22	-0.28	0.40	0.4
SR	L	005B00	0.78	0.42	-0.24	-0.21	0.42	-0.24	1.1
SR	O	005B1V	0.38	0.14	0.14	-0.12	-0.10	0.07	1.4
SR	O	005078	0.87	0.47	-0.33	-0.21	0.47	-0.25	0.0
SR	L	0065LC	0.65	0.56	0.56	-0.33	-0.24	-0.26	0.0
SR	O	006541	0.68	0.49	-0.21	-0.35	0.49	-0.19	0.0
SR	O	005STM	0.36	0.54	-0.15	-0.24	-0.23	0.54	0.0
SR	O	005STL	0.77	0.42	-0.17	0.42	-0.29	-0.20	0.0
SR	O	005STK	0.51	0.36	-0.25	-0.11	0.36	-0.16	0.0
SR	O	005STN	0.69	0.49	-0.14	-0.19	-0.40	0.49	0.0
SR	O	005B0W	0.66	0.41	-0.33	-0.22	0.41	-0.14	0.2
SR	L	0053JF	0.37	0.33	-0.14	0.04	-0.37	0.33	0.2
SR	L	0053CI	0.43	0.37	-0.27	0.37	-0.21	0.02	0.2
SR	L	005BD7	0.17	0.18	-0.10	-0.17	0.18	0.14	0.2
SR	L	005BCI	0.40	0.42	-0.10	-0.20	-0.29	0.42	0.2
SR	O	005BJJ	0.44	0.27	-0.05	-0.17	0.27	-0.13	0.2
SR	L	005SXQ	0.37	0.28	0.00	0.28	-0.14	-0.23	0.2
SR	L	0053D3	0.37	0.28	0.28	-0.03	-0.33	-0.11	0.2
SR	L	005BF3	0.50	0.44	-0.18	-0.24	0.44	-0.18	0.2
SR	L	005BH4	0.47	0.36	-0.17	-0.14	-0.18	0.36	0.2
SR	L	005F1I	0.70	0.46	-0.27	-0.23	0.46	-0.20	0.2
SR	L	005BK8	0.80	0.41	0.41	-0.19	-0.34	-0.18	0.2
SR	O	0053DU	0.37	0.43	0.09	-0.16	0.43	-0.38	0.4
SR	L	0053AR	0.70	0.41	-0.26	-0.26	-0.15	0.41	0.4

continued

Item Type	Anchor Status	ItemID	P_Val	R_ITT	P_BIS1	P_BIS2	P_BIS3	P_BIS4	%Omits
SR	L	0065LD	0.52	0.41	-0.20	0.41	-0.18	-0.19	0.5
SR	L	005BDQ	0.75	0.45	-0.17	-0.26	0.45	-0.27	0.5
SR	L	005B24	0.49	0.40	-0.19	-0.26	0.40	-0.07	0.2
SR	O	005AUN	0.42	0.20	-0.09	0.20	-0.20	-0.02	0.2
SR	L	0065KQ	0.58	0.44	-0.31	-0.12	0.44	-0.21	0.2
Mean (SR)			0.58	0.38	-0.11	-0.08	0.03	-0.01	0.2
SD (SR)			0.17	0.10	0.21	0.25	0.32	0.26	0.3
TE-2	O	0063VU	0.81	0.48	--	--	--	--	0.0
TE-2	O	005Y15	0.48	0.37	--	--	--	--	0.0
TE-2	O	0060YA	0.54	0.38	--	--	--	--	0.0
TE-2	O	0089UU	0.79	0.60	--	--	--	--	0.0
TE-2	O	005UO3	0.48	0.33	--	--	--	--	0.0
Mean (TE-2)			0.62	0.43	--	--	--	--	0.0
SD (TE-2)			0.17	0.11	--	--	--	--	0.0

Table B-3. Classical Item Statistics, Operational Items: MCAP Government—January—Accommodated Form X (N = 24)

Item Type	Anchor Status	ItemID	P_Val	R_ITT	P_BIS1	P_BIS2	P_BIS3	P_BIS4	%Omits
BCR-4	O	005041	0.28	0.77	--	--	--	--	0.0
BCR-4	L	0061ES	0.04	0.61	--	--	--	--	0.0
Mean (BCR-4)			0.16	0.69	--	--	--	--	0.0
SD (BCR-4)			0.17	0.11	--	--	--	--	0.0
ECR-5	O	005STO	0.18	0.82	--	--	--	--	0.0
MSR-2	O	006UHI	0.46	0.62	--	--	--	--	0.0
MSR-2	O	006SGW	0.46	0.00	--	--	--	--	0.0
MSR-2	O	006UY6	0.35	0.34	--	--	--	--	0.0
MSR-2	O	006UG2	0.29	0.12	--	--	--	--	0.0
Mean (MSR-2)			0.39	0.27	--	--	--	--	0.0
SD (MSR-2)			0.08	0.27	--	--	--	--	0.0
SR	L	005AWN	0.67	0.34	-0.31	0.34	-0.11	-0.05	0.0
SR	L	005BAG	0.38	0.07	0.07	0.00	0.07	-0.20	0.0
SR	O	0065L3	0.58	0.54	-0.36	-0.17	0.54	-0.22	0.0
SR	O	0061AR	0.38	0.44	0.44	-0.23	-0.18	-0.14	0.0
SR	L	0053CV	0.46	0.51	-0.22	-0.38	-0.12	0.51	0.0
SR	L	004ZV0	0.21	0.36	-0.15	-0.28	0.36	0.12	0.0
SR	L	0053C5	0.54	0.54	-0.25	-0.22	-0.28	0.54	0.0
SR	O	005UTR	0.50	-0.04	-0.11	-0.04	0.27	-0.11	0.0
SR	L	005F8Q	0.38	0.37	-0.16	0.37	-0.37	0.13	0.0
SR	L	0053C4	0.33	0.46	-0.26	-0.19	0.46	-0.05	8.3
SR	O	005FA1	0.29	0.55	-0.11	-0.22	-0.15	0.55	8.3
SR	O	005B73	0.29	0.27	-0.05	-0.26	0.27	0.30	8.3
SR	L	005077	0.42	0.52	-0.37	0.52	-0.10	0.02	8.3
SR	L	0053EI	0.46	0.67	-0.26	-0.13	-0.36	0.67	8.3
SR	L	0053F4	0.42	0.57	-0.13	-0.37	-0.12	0.57	8.3
SR	L	005B00	0.42	0.67	-0.32	-0.28	0.67	-0.12	8.3
SR	O	005B1V	0.38	0.28	0.28	0.04	-0.19	-0.09	8.3
SR	O	005078	0.46	0.53	-0.33	-0.27	0.53	-0.13	0.0
SR	L	0065LC	0.42	0.39	0.39	-0.25	-0.19	-0.14	0.0
SR	O	006541	0.46	0.46	-0.08	-0.34	0.46	-0.17	0.0
SR	O	005STM	0.17	0.21	-0.28	-0.10	0.28	0.21	0.0
SR	O	005STL	0.38	0.61	-0.22	0.61	-0.32	-0.24	0.0

continued

Item Type	Anchor Status	ItemID	P_Val	R_ITT	P_BIS1	P_BIS2	P_BIS3	P_BIS4	%Omits
SR	O	005STK	0.38	0.64	-0.45	-0.22	0.64	-0.05	0.0
SR	O	005STN	0.33	0.31	0.02	-0.09	-0.20	0.31	4.2
SR	O	005B0W	0.38	0.48	-0.43	-0.32	0.48	0.23	0.0
SR	L	0053JF	0.21	0.20	-0.29	0.05	0.00	0.20	0.0
SR	L	0053CI	0.29	0.43	-0.20	0.43	-0.28	0.17	4.2
SR	L	005BD7	0.13	0.21	0.31	-0.42	0.21	0.01	0.0
SR	L	005BCI	0.29	0.24	0.01	-0.22	-0.09	0.24	0.0
SR	O	005BJJ	0.33	0.48	0.07	-0.36	0.48	-0.31	0.0
SR	L	005SXQ	0.25	0.32	-0.07	0.32	-0.21	-0.05	0.0
SR	L	0053D3	0.46	0.25	0.25	-0.02	-0.32	0.03	0.0
SR	L	005BF3	0.29	0.58	-0.09	-0.45	0.58	-0.05	0.0
SR	L	005BH4	0.42	0.47	0.01	-0.26	-0.28	0.47	4.2
SR	L	005F1I	0.50	0.55	-0.39	-0.09	0.55	-0.16	4.2
SR	L	005BK8	0.50	0.39	0.39	-0.03	-0.28	-0.14	4.2
SR	O	0053DU	0.46	0.09	0.48	-0.18	0.09	-0.06	4.2
SR	L	0053AR	0.58	0.50	-0.21	-0.32	0.00	0.50	4.2
SR	L	0065LD	0.25	-0.24	-0.14	-0.24	0.17	0.23	4.2
SR	L	005BDQ	0.46	0.34	-0.06	-0.34	0.34	0.05	4.2
SR	L	005B24	0.33	0.30	-0.29	0.11	0.30	-0.27	0.0
SR	O	005AUN	0.29	0.09	-0.18	0.09	-0.30	0.50	0.0
SR	L	0065KQ	0.17	0.58	-0.28	-0.01	0.58	-0.25	0.0
Mean (SR)			0.38	0.38	-0.10	-0.10	0.09	0.08	2.4
SD (SR)			0.12	0.20	0.25	0.26	0.34	0.27	3.3
TE-2	O	006UFG	0.58	0.63	--	--	--	--	0.0

Table B-4. Classical Item Statistics, Operational Items: HS MISA—January—Forms A, AC, AA (N = 511)

Item Type	Anchor Status	ItemID	P_Val	R_ITT	P_BIS1	P_BIS2	P_BIS3	P_BIS4	%Omits
CR-2	L	006IGR	0.26	0.62					0.0
CR-2	O	006GZX	0.19	0.52					0.0
Mean (CR-2)			0.23	0.57					0.0
SD (CR-2)			0.05	0.07					0.0
CR-3	L	005HGP	0.19	0.42					0.0
CR-3	O	00570B	0.31	0.57					0.0
Mean (CR-3)			0.25	0.49					0.0
SD (CR-3)			0.09	0.11					0.0
CR-4	L	005WON	0.22	0.63					0.0
CR-4	O	0063OU	0.26	0.70					0.0
Mean (CR-4)			0.24	0.67					0.0
SD (CR-4)			0.02	0.04					0.0
MSR-1	L	006RH5	0.58	0.55					0.0
MSR-1	O	0063NZ	0.09	0.26					0.0
Mean (MSR-1)			0.33	0.40					0.0
SD (MSR-1)			0.34	0.21					0.0
MSR-2	O	006GZ9	0.43	0.51					0.0
SR	L	005K55	0.46	0.16	-0.11	-0.22	0.16	0.04	0.0
SR	L	005H2S	0.41	0.23	-0.06	-0.24	0.23	0.01	0.0
SR	L	005H6O	0.41	0.40	-0.21	-0.20	-0.12	0.40	0.0
SR	L	005H65	0.52	0.28	-0.04	-0.18	0.28	-0.24	0.0
SR	L	006IG2	0.27	0.34	-0.06	-0.12	0.34	-0.15	0.2
SR	L	006RH9	0.67	0.27	-0.22	0.27	-0.08	-0.14	0.2
SR	O	006GXP	0.42	0.28	-0.07	0.28	-0.22	-0.09	0.0

continued

Item Type	Anchor Status	ItemID	P_Val	R_ITT	P_BIS1	P_BIS2	P_BIS3	P_BIS4	%Omits
SR	O	006GZB	0.36	0.13	0.13	-0.11	-0.07	0.02	0.0
SR	O	006GZN	0.58	0.44	0.44	-0.28	-0.16	-0.18	0.0
SR	L	005WHU	0.45	0.30	-0.07	0.30	-0.29	-0.12	0.0
SR	L	005WNB	0.78	0.48	-0.21	-0.30	0.48	-0.24	0.0
SR	L	005WNE	0.71	0.48	0.48	-0.24	-0.29	-0.21	0.0
SR	L	005WO1	0.54	0.38	-0.28	-0.17	-0.16	0.38	0.0
SR	L	006R0F	0.61	0.39	0.39	-0.26	-0.27	-0.06	0.0
SR	O	0056UO	0.52	0.31	-0.10	0.31	-0.20	-0.08	1.0
SR	O	005700	0.69	0.40	0.40	-0.23	-0.32	-0.05	1.0
SR	O	0056ZV	0.52	0.20	-0.10	0.01	-0.24	0.20	1.0
SR	O	0063L6	0.35	0.34	-0.12	-0.30	-0.01	0.34	1.0
SR	O	0063LJ	0.46	0.13	-0.22	0.13	0.13	-0.20	1.0
Mean (SR)			0.51	0.31	0.00	-0.08	-0.04	-0.02	0.3
SD (SR)			0.14	0.11	0.25	0.22	0.24	0.21	0.4
TE-1	O	0056TL	0.41	0.53					0.0
TE-1	O	0063L7	0.46	0.44					0.0
TE-1	O	0063LC	0.36	0.29					0.0
Mean (TE-1)			0.41	0.42					0.0
SD (TE-1)			0.05	0.12					0.0
TE-2	L	005H2Z	0.29	0.45					0.0
TE-2	L	006RFO	0.47	0.28					0.0
TE-2	L	006RFS	0.40	0.39					0.0
TE-2	O	006FMN	0.45	0.52					0.0
TE-2	O	0056ZQ	0.71	0.55					0.0
Mean (TE-2)			0.47	0.44					0.0
SD (TE-2)			0.15	0.11					0.0

Table B-5. Classical Item Statistics, Operational Items: HS MISA—January—Forms B, AB, AC (N=498)

Item Type	Anchor Status	ItemID	P_Val	R_ITT	P_BIS1	P_BIS2	P_BIS3	P_BIS4	%Omits
CR-2	L	006IGR	0.25	0.62					0.0
CR-2	O	006JVC	0.11	0.36					0.0
Mean (CR-2)			0.18	0.49					0.0
SD (CR-2)			0.10	0.18					0.0
CR-3	L	005HGP	0.18	0.44					0.0
CR-3	O	0064KQ	0.33	0.63					0.0
Mean (CR-3)			0.25	0.53					0.0
SD (CR-3)			0.10	0.13					0.0
CR-4	L	005WON	0.21	0.59					0.0
CR-4	O	006EG3	0.13	0.52					0.0
Mean (CR-4)			0.17	0.55					0.0
SD (CR-4)			0.05	0.05					0.0
MSR-1	L	006RH5	0.54	0.58					0.0
MSR-1	O	006JV9	0.22	0.39					0.0
Mean (MSR-1)			0.38	0.48					0.0
SD (MSR-1)			0.23	0.13					0.0
MSR-2	O	006JV2	0.59	0.65					0.0
MSR-2	O	0064K0	0.52	0.45					0.0
Mean (MSR-2)			0.56	0.55					0.0
SD (MSR-2)			0.05	0.14					0.0
SR	L	005K55	0.47	0.19	-0.10	-0.19	0.19	-0.03	0.2
SR	L	005H2S	0.35	0.31	-0.12	-0.30	0.31	0.05	0.0

continued

Item Type	Anchor Status	ItemID	P_Val	R_ITT	P_BIS1	P_BIS2	P_BIS3	P_BIS4	%Omits
SR	L	005H6O	0.43	0.40	-0.16	-0.19	-0.17	0.40	0.2
SR	L	005H65	0.60	0.25	-0.05	-0.19	0.25	-0.20	0.0
SR	L	006IG2	0.27	0.28	0.05	-0.05	0.28	-0.23	0.4
SR	L	006RH9	0.66	0.26	-0.07	0.26	-0.12	-0.17	1.0
SR	O	006JV3	0.71	0.43	-0.21	-0.24	0.43	-0.21	0.2
SR	O	006JV4	0.63	0.46	0.46	-0.17	-0.31	-0.15	0.4
SR	L	005WHU	0.45	0.32	0.00	0.32	-0.29	-0.17	0.4
SR	L	005WNB	0.76	0.37	-0.21	-0.15	0.37	-0.22	0.4
SR	L	005WNE	0.67	0.50	0.50	-0.18	-0.31	-0.24	0.4
SR	L	005WO1	0.52	0.37	-0.13	-0.21	-0.17	0.37	0.4
SR	L	006R0F	0.57	0.38	0.38	-0.22	-0.28	-0.03	0.8
SR	O	006EE1	0.63	0.20	0.20	0.03	-0.19	-0.09	1.2
SR	O	006EE6	0.27	0.15	0.15	-0.11	0.00	0.03	1.2
SR	O	006EF8	0.79	0.45	-0.25	-0.25	-0.16	0.45	1.4
SR	O	006RGT	0.48	0.34	-0.17	0.34	-0.11	-0.12	1.4
SR	O	006EFY	0.57	0.29	-0.02	-0.15	-0.22	0.29	1.4
SR	O	006R0D	0.75	0.45	-0.18	0.45	-0.26	-0.19	1.4
SR	O	0064JR	0.75	0.60	-0.22	-0.27	-0.37	0.60	1.4
SR	O	0064JX	0.61	0.37	-0.20	0.37	-0.09	-0.22	1.4
SR	O	0064JZ	0.53	0.39	-0.08	-0.15	-0.23	0.39	1.4
Mean (SR)			0.57	0.35	-0.02	-0.06	-0.07	0.01	0.8
SD (SR)			0.15	0.11	0.22	0.24	0.25	0.27	0.5
TE-2	L	005H2Z	0.32	0.45					0.0
TE-2	L	006RFO	0.43	0.30					0.0
TE-2	L	006RFS	0.43	0.42					0.0
TE-2	O	006JUP	0.60	0.50					0.0
Mean (TE-2)			0.45	0.42					0.0
SD (TE-2)			0.12	0.09					0.0

Table B-6. Classical Item Statistics, Operational Items: HS MISA—January—Accommodated Form X (N =20)

Item Type	Anchor Status	ItemID	P_Val	R_ITT	P_BIS1	P_BIS2	P_BIS3	P_BIS4	%Omits
CR-2	L	006IGR	0.05	0.49					0.0
CR-2	O	006JVC	0.03	0.09					0.0
Mean (CR-2)			0.04	0.29					0.0
SD (CR-2)			0.02	0.28					0.0
CR-3	L	005HGP	0.02	0.36					0.0
CR-3	O	0064KQ	0.08	0.28					0.0
Mean (CR-3)			0.05	0.32					0.0
SD (CR-3)			0.05	0.06					0.0
CR-4	L	005WON	0.05	0.57					0.0
CR-4	O	006EG3	0.03	0.52					0.0
Mean (CR-4)			0.04	0.54					0.0
SD (CR-4)			0.02	0.04					0.0
MSR-1	L	006RH5	0.20	0.57					0.0
MSR-1	O	006JV9	0.05	-0.14					0.0
Mean (MSR-1)			0.13	0.22					0.0
SD (MSR-1)			0.11	0.50					0.0
MSR-2	O	006JV2	0.23	0.65					0.0
MSR-2	O	0064K0	0.38	0.61					0.0
Mean (MSR-2)			0.30	0.63					0.0
SD (MSR-2)			0.11	0.03					0.0
SR	L	005K55	0.45	0.57	-0.25	-0.37	0.57	-0.09	0.0

continued

Item Type	Anchor Status	ItemID	P_Val	R_ITT	P_BIS1	P_BIS2	P_BIS3	P_BIS4	%Omits
SR	L	005H2S	0.35	0.30	-0.12	-0.35	0.30	0.13	0.0
SR	L	005H6O	0.35	0.64	-0.29	-0.24	-0.23	0.64	0.0
SR	L	005H65	0.45	0.42	-0.16	0.05	0.42	-0.39	0.0
SR	L	006IG2	0.25	0.21	-0.37	-0.04	0.21	0.17	0.0
SR	L	006RH9	0.60	0.44		0.44	-0.45	-0.07	0.0
SR	O	006JV3	0.35	0.30	-0.28	0.09	0.30	-0.05	5.0
SR	O	006JV4	0.15	0.07	0.07	-0.03	0.29	-0.37	0.0
SR	L	005WHU	0.25	-0.18	0.03	-0.18	0.05	0.44	5.0
SR	L	005WNB	0.50	0.61	-0.23	-0.39	0.61	0.02	5.0
SR	L	005WNE	0.30	0.29	0.29	-0.01	0.17	-0.25	5.0
SR	L	005WO1	0.20	0.17	0.34	-0.22	-0.03	0.17	5.0
SR	L	006R0F	0.40	-0.09	-0.09	-0.03	-0.22	0.57	10.0
SR	O	006EE1	0.30	0.51	0.51	-0.37	0.00	-0.02	10.0
SR	O	006EE6	0.10	0.07	0.07	0.08	-0.35	0.40	10.0
SR	O	006EF8	0.50	0.54		-0.37	-0.14	0.54	10.0
SR	O	006RGT	0.40	0.05	0.21	0.05	0.06	-0.25	10.0
SR	O	006EFY	0.30	0.35	0.21	0.07	-0.40	0.35	10.0
SR	O	006R0D	0.30	0.55	-0.07	0.55	0.21	-0.30	20.0
SR	O	0064JR	0.35	0.30	0.27	-0.29	-0.14	0.30	20.0
SR	O	0064JX	0.20	0.47	0.13	0.47	0.12	-0.26	20.0
SR	O	0064JZ	0.10	0.21	0.38	0.03	-0.16	0.21	20.0
Mean (SR)			0.33	0.31	0.03	-0.05	0.05	0.09	7.5
SD (SR)			0.13	0.23	0.26	0.28	0.30	0.32	7.2
TE-2	L	005H2Z	0.18	0.18					0.0
TE-2	L	006RFO	0.33	0.33					0.0
TE-2	L	006RFS	0.33	0.20					0.0
TE-2	O	006JUP	0.33	0.74					0.0
Mean (TE-2)			0.29	0.36					0.0
SD (TE-2)			0.08	0.26					0.0

Table B-7. Classical Item Statistics, Operational Items: HS MISA—Early Fall—Forms A & B (In-Person Administration) (N = 82,162)

Item Type	Anchor Status	ItemID	P_Val	R_ITT	P_BIS1	P_BIS2	P_BIS3	P_BIS4	%Omits
CR-3	L	0058GA	0.08	0.35	--	--	--	--	--
CR-4	L	004YBP	0.35	0.76	--	--	--	--	--
CR-4	L	005898	0.12	0.69	--	--	--	--	--
Mean (CR-4)			0.24	0.72	--	--	--	--	--
SD (CR-4)			0.16	0.05	--	--	--	--	--
SR	L	004YB5	0.45	0.42	-0.10	0.42	-0.31	-0.14	--
SR	L	004YBB	0.56	0.42	-0.16	-0.17	0.42	-0.27	--
SR	L	004YBF	0.51	0.43	-0.19	-0.16	-0.22	0.43	--
SR	L	004YBE	0.52	0.51	-0.18	0.51	-0.26	-0.23	--
SR	L	004YBH	0.52	0.40	0.40	-0.15	-0.16	-0.23	--
SR	L	0058BK	0.47	0.43	0.43	-0.16	-0.26	-0.12	--
SR	L	0058E6	0.55	0.29	0.29	0.02	-0.23	-0.24	--
SR	L	00582E	0.66	0.48	-0.20	-0.29	0.48	-0.22	--
SR	L	00587W	0.54	0.59	0.59	-0.27	-0.30	-0.22	--
SR	L	00588V	0.37	0.49	0.00	0.49	-0.28	-0.21	--
SR	L	005893	0.66	0.55	0.55	-0.24	-0.24	-0.23	-0.18
SR	L	00588X	0.32	0.39	-0.03	0.39	-0.22	-0.20	--
Mean (SR)			0.51	0.45	0.12	0.03	-0.13	-0.16	-0.18
SD (SR)			0.10	0.08	0.31	0.32	0.28	0.19	0.00

continued

Item Type	Anchor Status	ItemID	P_Val	R_ITT	P_BIS1	P_BIS2	P_BIS3	P_BIS4	%Omits
TE-1	L	00588U	0.28	0.59	--	--	--	--	--
TE-2	L	005872	0.55	0.63	--	--	--	--	--

Table B-8. Classical Item Statistics, Operational Items: HS MISA—Early Fall—Forms A & B (Remote Administration) (N = 295)

Item Type	Anchor Status	ItemID	P_Val	R_ITT	P_BIS1	P_BIS2	P_BIS3	P_BIS4	P_BIS5	%Omits
CR-3	L	0058GA	0.06	0.25	--	--	--	--	--	0.0
CR-4	L	004YBP	0.29	0.74	--	--	--	--	--	0.0
CR-4	L	005898	0.08	0.67	--	--	--	--	--	0.0
Mean (CR-4)			0.19	0.70	--	--	--	--	--	0.0
SD (CR-4)			0.15	0.05	--	--	--	--	--	0.0
SR	L	004YB5	0.39	0.35	-0.10	0.35	-0.23	-0.09		0.7
SR	L	004YBB	0.56	0.41	-0.18	-0.17	0.41	-0.22		1.0
SR	L	004YBF	0.47	0.35	-0.15	-0.07	-0.18	0.35		1.4
SR	L	004YBE	0.48	0.37	-0.07	0.37	-0.22	-0.17		1.7
SR	L	004YBH	0.50	0.37	0.37	-0.09	-0.19	-0.18		1.7
SR	L	0058BK	0.46	0.33	0.33	-0.18	-0.17	-0.06		1.4
SR	L	0058E6	0.54	0.33	0.33	0.03	-0.25	-0.22		2.0
SR	L	00582E	0.65	0.46	-0.18	-0.26	0.46	-0.15		2.4
SR	L	00587W	0.42	0.60	0.60	-0.27	-0.24	-0.15		4.4
SR	L	00588V	0.29	0.50	0.03	0.50	-0.22	-0.20		4.4
SR	L	005893	0.62	0.53	0.53	-0.20	-0.31	-0.15	-0.09	4.1
SR	L	00588X	0.32	0.30	0.05	0.30	-0.21	-0.15		3.7
Mean (SR)			0.48	0.41	0.13	0.03	-0.11	-0.12	-0.09	2.4
SD (SR)			0.11	0.09	0.28	0.28	0.26	0.15	0.00	1.4
TE-1	L	00588U	0.24	0.47	--	--	--	--	--	0.0
TE-2	L	005872	0.50	0.65	--	--	--	--	--	0.0

Table B-9. Classical Item Statistics, Operational Items: HS MISA—Early Fall—Accommodated Form X (N = 2170)

Item Type	Anchor Status	ItemID	P_Val	R_ITT	P_BIS1	P_BIS2	P_BIS3	P_BIS4	P_BIS5	%Omits
CR-3	L	0058GA	0.02	0.26	--	--	--	--	--	0.0
CR-4	L	004YBP	0.12	0.68	--	--	--	--	--	0.0
CR-4	L	005898	0.02	0.61	--	--	--	--	--	0.0
Mean (CR-4)			0.07	0.64	--	--	--	--	--	0.0
SD (CR-4)			0.07	0.05	--	--	--	--	--	0.0
SR	L	004YB5	0.32	0.29	-0.06	0.29	-0.24	0.01		0.6
SR	L	004YBB	0.39	0.36	-0.11	-0.10	0.36	-0.21		0.6
SR	L	004YBE	0.33	0.40	-0.11	0.40	-0.17	-0.14		1.2
SR	L	004YBF	0.30	0.38	-0.12	-0.11	-0.16	0.38		0.9
SR	L	004YBH	0.31	0.37	0.37	-0.11	-0.12	-0.15		1.2
SR	L	00582E	0.38	0.40	-0.12	-0.18	0.40	-0.16		2.1
SR	L	00587W	0.30	0.43	0.43	-0.17	-0.18	-0.12		0.1
SR	L	00588V	0.20	0.28	-0.03	0.28	-0.16	-0.05		0.1
SR	L	00588X	0.24	0.29	-0.01	0.29	-0.15	-0.13		0.4
SR	L	005893	0.44	0.44	0.44	-0.15	-0.21	-0.17	-0.08	0.4
SR	L	0058BK	0.27	0.38	0.38	-0.12	-0.17	-0.06		1.9
SR	L	0058E6	0.33	0.34	0.34	-0.05	-0.15	-0.16		2.0
Mean (SR)			0.32	0.36	0.12	0.02	-0.08	-0.08	-0.08	1.0
SD (SR)			0.07	0.06	0.25	0.22	0.22	0.16	0.00	0.7
TE-1	L	00588U	0.10	0.50	--	--	--	--	--	0.0
TE-2	L	005872	0.25	0.52	--	--	--	--	--	0.0