

## Section 9. Test Construction and Administration

### Test Development

#### *Planning*

Planning for the test development process began with the creation of the MD Mod-HSA blueprints and item modification/development plans for each content area. MSDE content specialists collaborated with Maryland educators, both special education and content area experts, to develop a plan for modifying and developing content for the modified assessments. The MD HSA item bank was reviewed to determine how well the available item pool could be modified to meet the item requirements of the MD Mod-HSAs and blueprint requirements as identified across the Core Learning Goals. Items, passages, and stimuli identified as modifiable were revised according to item plans, using such modifications as reducing the number of response options from four to three, simplifying language and graphics, grouping text within longer passages, and repeating critical passage text within an item. When deficits in the pool of modifiable items were identified, MSDE and its collaborative partners developed additional items.

#### *Test Specifications and Design*

MSDE defined the basic test design and provided it to Educational Testing Service (ETS). The blueprints for the 50-item test design are presented below in the section on test specifications. The basic test design defined the reporting categories and the number of items in each reporting category. Decisions about the distribution of items throughout the forms were left to the collaborative efforts of ETS and MSDE content specialists. Construction of the operational forms was based on test blueprints approved by MSDE.

#### *Item Type*

The MD Mod-HSAs consist of selected response items only. Each of the three content areas—Algebra, Biology, and English—contained 50 operational items worth a total of 50 score points.

#### *Item Modification, Development, Review, and Revision*

MSDE oversaw the initial item modification and development. MSDE content and special education specialists worked with Maryland educators to modify existing MD HSA items and to develop new items written specifically for the MD Mod-HSA program. These items underwent review and revision at MSDE prior to their submission to ETS for inclusion in the MD Mod-HSA item bank.

Once received by ETS, all items were uploaded into the item bank and all graphics and stimulus materials were revised as requested. At this point, all items underwent a series of editorial reviews in accordance with the following procedures:

- Items were edited according to standard rules developed in conjunction with MSDE.
- Items were reviewed for accuracy, organization, comprehension, style, usage, consistency, and fairness/sensitivity.
- Item content was reviewed to establish whether the item measured the intended Goal-Expectation-Indicator-Assessment Limit.
- Verification was made that copyright and/or trademark permissions had been obtained for any materials requiring permissions.
- Internal reviews were conducted and historical records established for all version changes.

After ETS performed the required internal reviews, item revision recommendations were submitted to MSDE for their review. Any associated stimulus material, graphic, and/or art was provided as well as information regarding the Goal-Expectation-Indicator-Assessment Limit that each question addressed.

MSDE performed a final review of the items and provided feedback to ETS content specialists. Suggested edits were incorporated into the items. The items were then prepared for a final round of reviews by the Content Review and Bias/Sensitivity Review Committees.

The 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 matched the intended CLG indicator; and (c) did not unfairly favor or disadvantage an individual or group. A total of 699 items were reviewed across all content areas. Of these items, 8 (0.01%) were rejected by the Bias/Sensitivity Review Committee, while 159 (22.7%) were accepted with edits. In total, the two committees accepted a total of 532 (76.1%) of the 699 MD Mod-HSA test items.

Upon completion of this final round of reviews, MSDE and ETS content specialists conducted another side-by-side meeting to evaluate the reviews. The ETS content specialists then made any necessary final edits to the items and/or revisions to the accompanying graphics. The items that survived this process were then eligible for placement in the MD Mod-HSA forms.

### **Test Specifications**

Tables 9.1 through 9.3 identify each reporting category and the number of items in each category for the three content area MD Mod-HSA tests.

Table 9.1 MD Mod-HSA Algebra Blueprint

Reporting Category	Number of items
Expectation 1.1 Analyzing Pattern and Functions	13
Expectation 1.2 Modeling Real-World Situations	16
Expectation 3.1 Collecting, Organizing, and Analyzing Data	11
Expectation 3.2 Using Data to Make Predictions	10
<b>Total</b>	<b>50</b>

*Note.* Information about the referenced expectations can be found in the Maryland Core Learning Goals for Algebra on the Maryland School Improvement website at <http://www.mdk12.org/assessments/standards/9-12.html>

Table 9.2 MD Mod-HSA Biology Blueprint

Reporting Category	Number of items
Goal 1 Skills and Processes of Biology	11
Expectation 3.1 Structure and Function of Biological Molecules	8
Expectation 3.2 Structure and Function of Cells and Organisms	9
Expectation 3.3 Inheritance of Traits	8
Expectation 3.4 Mechanism of Evolutionary Change	6
Expectation 3.5 Interdependence of Organisms in the Biosphere	8
<b>Total</b>	<b>50</b>

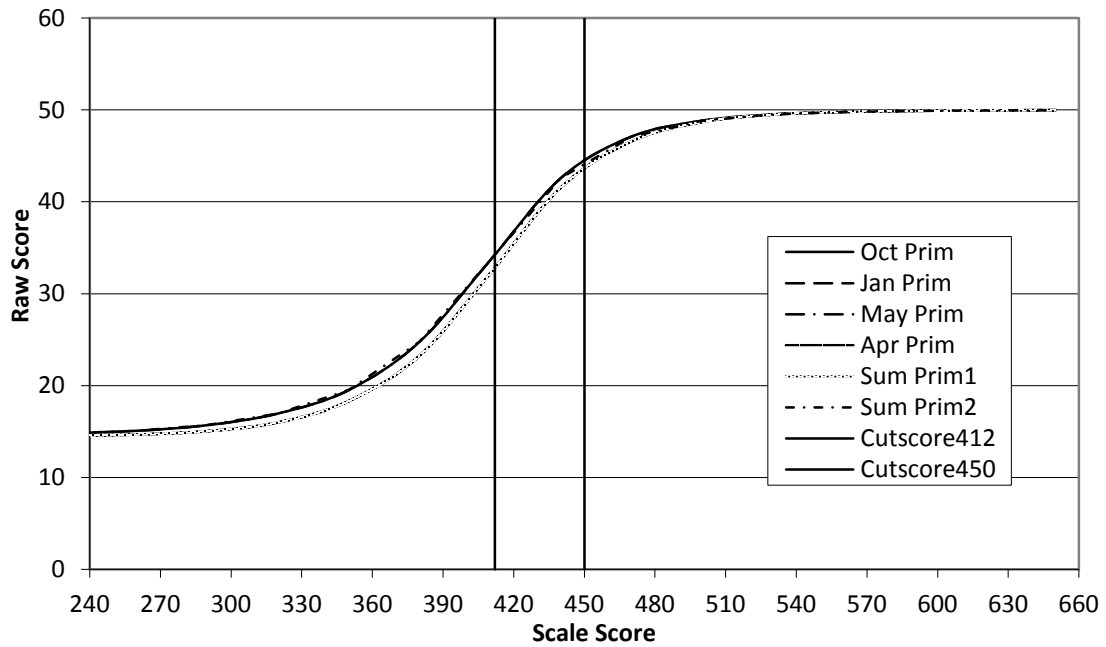
*Note.* Information about the referenced goal and expectations can be found in the Maryland Core Learning Goals for Biology on the Maryland School Improvement website at <http://www.mdk12.org/assessments/standards/9-12.html>

Table 9.3 MD Mod-HSA English Blueprint

Reporting Category	Number of Items
1: Reading and Literature: Comprehension and Interpretation Includes indicators 1.1.1; 1.1.2; 1.1.3; 1.2.1; 1.3.3; 3.2.2.	13
2: Reading and Literature: Making Connections and Evaluation Includes indicators 1.1.4; 1.2.2; 1.2.3; 1.2.4; 1.2.5; 1.3.5; 4.2.1.	13
3: Writing—Composing Includes indicators 2.2.1; 2.2.2; 2.2.3; 2.2.5; 2.3.1; 2.3.3; 4.3.1.	13
4: Writing—Language Usage and Conventions Includes indicators 3.1.3; 3.1.4; 3.1.6; 3.1.8; 3.3.1; 3.3.2.	11
<b>Total</b>	<b>50</b>

*Note.* Information about the referenced indicators can be found in the Maryland Core Learning Goals for English on the Maryland School Improvement website at <http://www.mdk12.org/assessments/standards/9-12.html>

Figures 9.1 through 9.6 show the plots of the TCCs and CSEMs for the forms developed for each content area. It is important to note that the TCCs and CSEMs shown in the plots are based on preequated item parameters and therefore are curves calculated prior to administration of the tests. As expected, the CSEM plots indicate that the CSEMs for each content area were lowest in the middle range of scale scores (approximately 375 to 475 for Algebra and Biology and 340 to 450 for English). The majority of students score in the range where the CSEMs are smallest. (Refer to Section 13, figures 13.1 to 13.3 for histograms of student performance.)



Note: Maximum possible raw score is 50.

Figure 9.1 Test Characteristic Curves for the MD Mod-HSA 2012 Algebra Forms

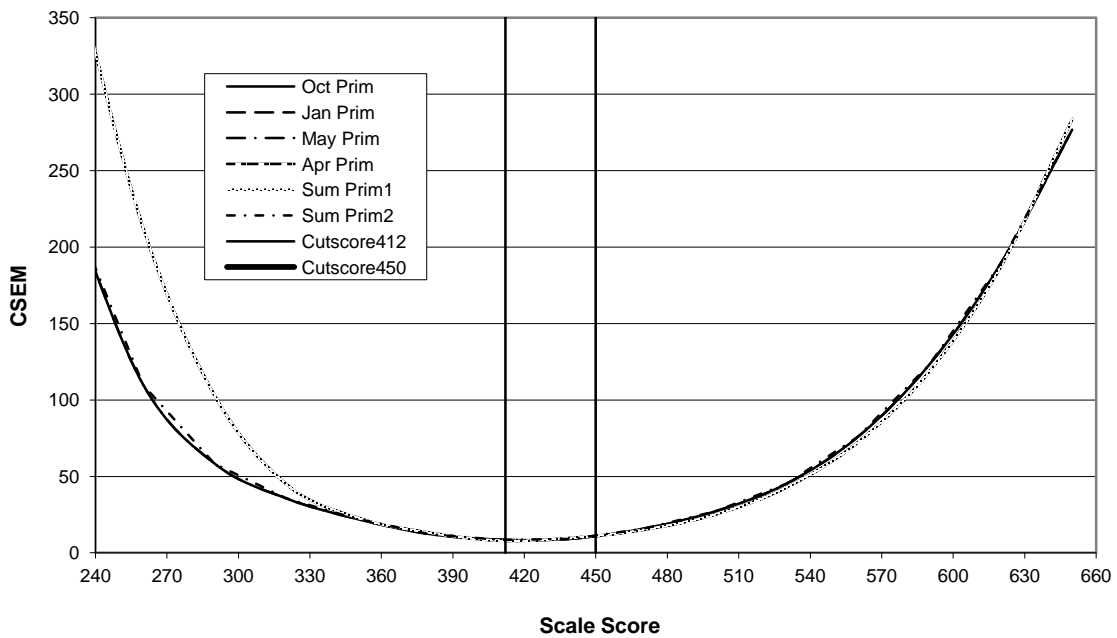
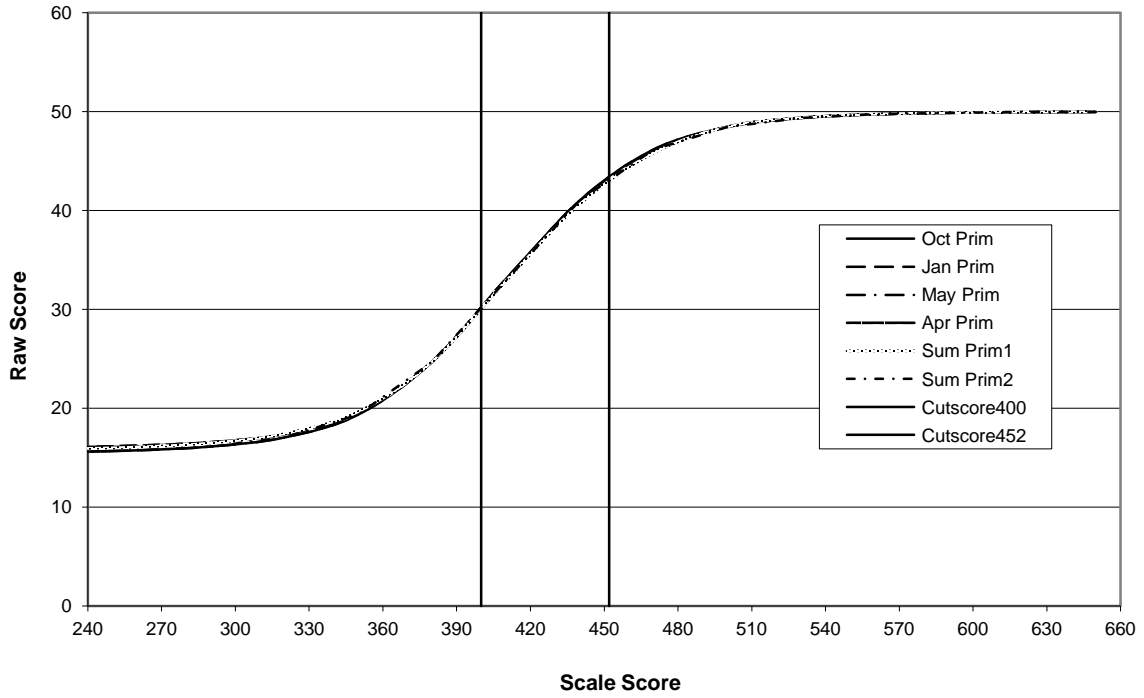


Figure 9.2 Conditional Standard Errors of Measurement for the MD Mod-HSA 2012 Algebra Forms



Note: Maximum possible raw score is 50.

Figure 9.3 Test Characteristic Curves for the MD Mod-HSA 2012 Biology Forms

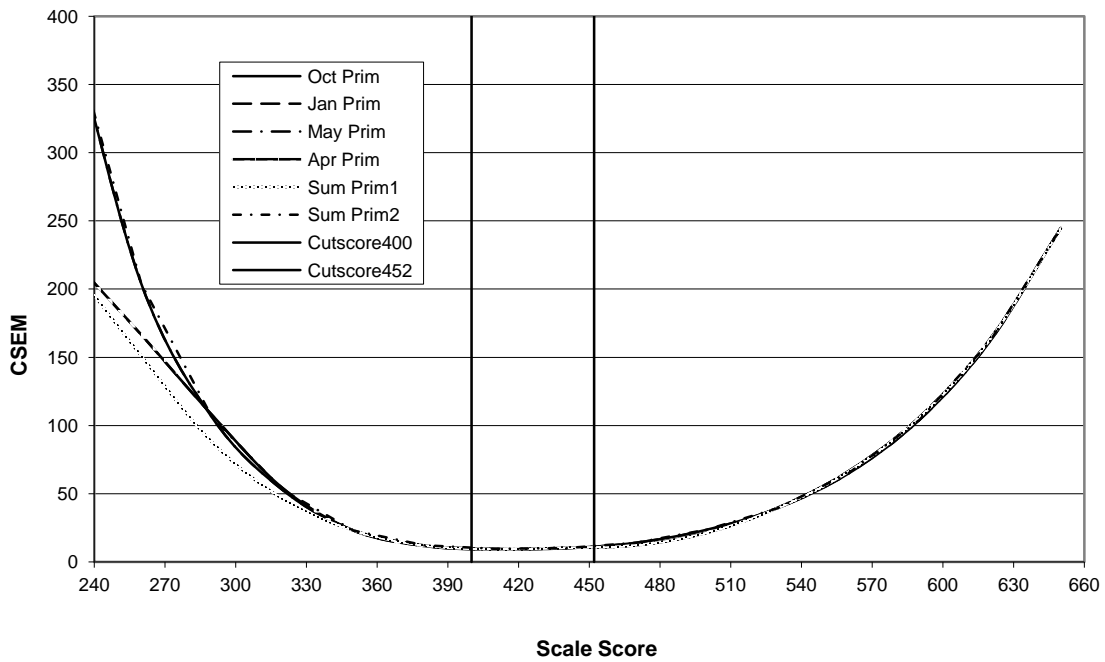
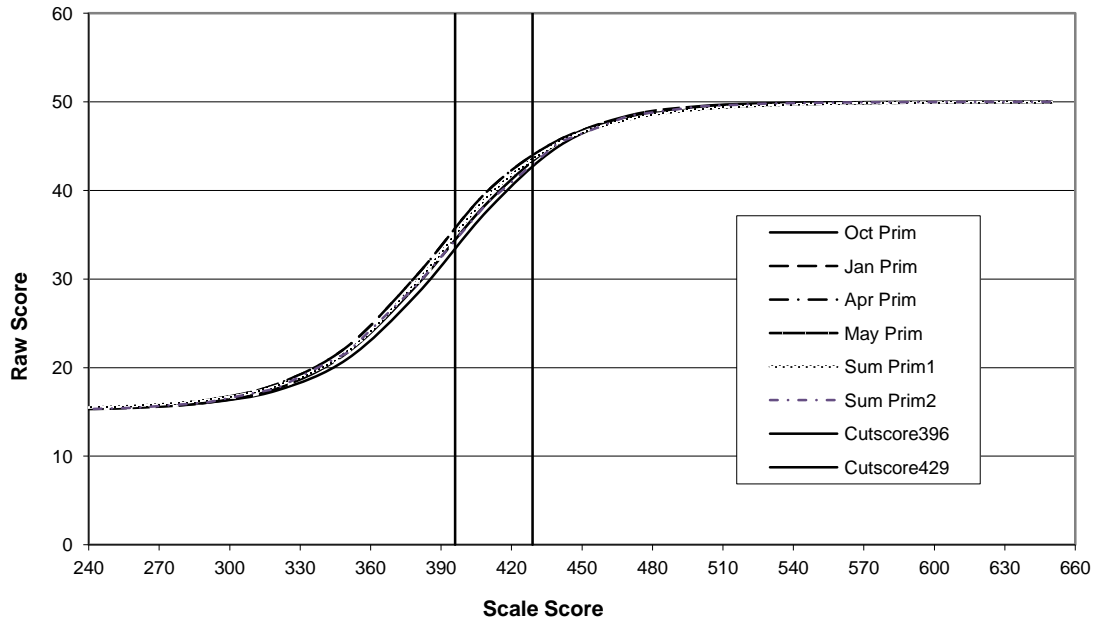


Figure 9.4 Conditional Standard Errors of Measurement for the MD Mod-HSA 2012 Biology Forms



Note: Maximum possible raw score is 50.

Figure 9.5 Test Characteristic Curves for the MD Mod-HSA 2012 English Forms

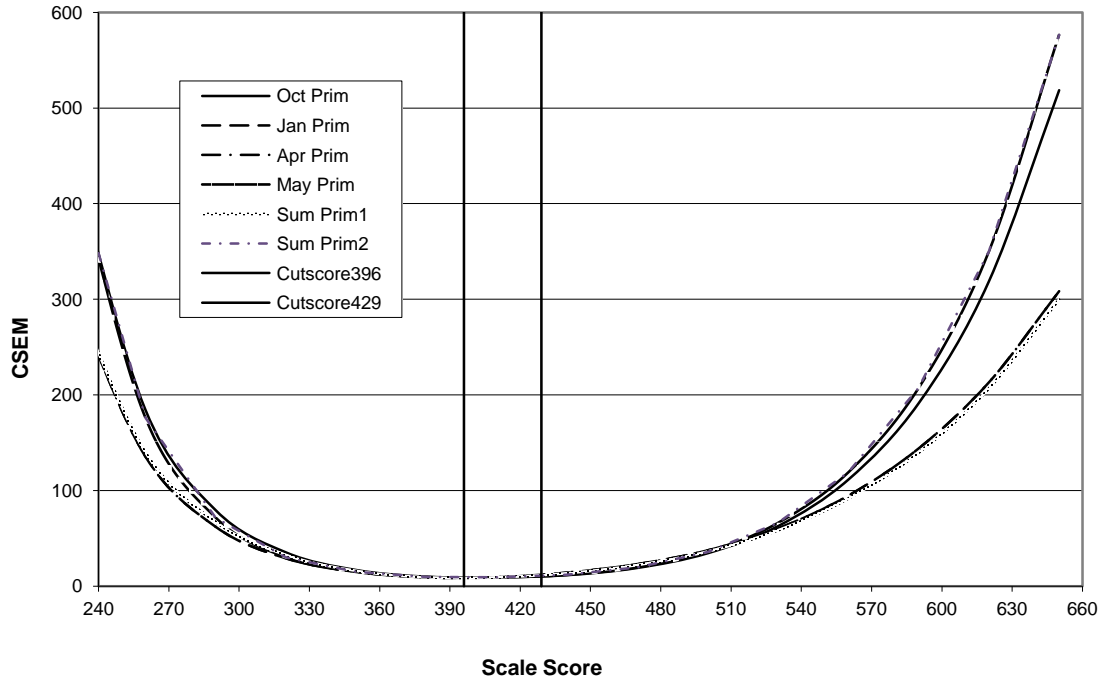


Figure 9.6 Conditional Standard Errors of Measurement for the MD Mod-HSA 2012 English Forms

## Test Administration

The MD Mod-HSA tests were administered both online and on paper in October 2011 and January, April, May, and Summer 2012. One paper and one online MD Mod-HSA form per content area were administered during each administration, with the exception of Summer 2012, where two paper and two online forms were administered.

The forms for Algebra, Biology, and English, were administered in two sessions within a single sitting. Sessions are separated by a short break. All forms administered without accommodations have the timing limits shown in Table 9.5. The percent of students taking Mod-HSAs online by content area and administration is reported in Table 9.5.

Table 9.4 MD Mod-HSA Testing Timing Schedule in Minutes by Content Area

Content Area	Session 1	Break	Session 2
Algebra	50	5	50
Biology	30	5	30
English	50	5	40

Table 9.5 Percent of Online MD Mod-HSAs by Content Area and Administration

Content Area	October	January	April	May	Summer
Algebra	50%	55%	48%	49%	52%
Biology	49%	56%	52%	53%	48%
English	52%	55%	49%	53%	58%