

Section 5. Scoring Procedures

Scale Scores

The Mod-HSA reporting scale ranges from 240 to 650. This scale was aligned to the HSA scale, which was established in 2003. Scale scores describing total test performance on the Mod-HSA are maximum likelihood estimates (MLEs) obtained using item-pattern (IP) scoring. Subscores are based on raw score to scale score (RS-SS) scoring tables.

When IP scoring with the 3PL model is used, the likelihood equation can have multiple maxima. Therefore, a numerical method was used to find the scale score at the global maximum in the likelihood function. RS-SS scoring tables were obtained by taking the inverse of the TCCs for items contributing to the associated subscores (Yen, 1984).

Since the Mod-HSAs forms were aligned with the HSA scale, the cut-scores established for the HSAs were used to generate performance category (Basic, Proficient, and Advanced) and Pass-Fail classifications for the Mod-HSAs.

Lowest and Highest Obtainable Test Scores

The maximum likelihood procedure under the 3PL model cannot produce reasonable scale score estimates for students with perfect scores or scores below the level expected by guessing. While maximum likelihood estimates are usually available for students with extreme scores other than zero or perfect, occasionally these estimates have very large conditional standard errors of measurement (CSEMs), and differences between these extreme values have little meaning. Therefore, scores were established for these students based on the procedure used for the HSA (refer to Appendix 3.C of the 2004 Technical Report). These values were called the lowest obtainable scale score (LOSS) and the highest obtainable scale score (HOSS). The same LOSS and HOSS values were used for RS-SS tables and the IP scoring. Starting with the summer 2005 administration of the HSA, MSDE decided that the LOSS and HOSS values would be 240 and 650, respectively, for all content areas. Since the Mod-HSA is on the same scale as the HSA, the same LOSS and HOSS values were used.

Cut-Scores

MSDE requested that the Mod-HSAs be aligned with the HSA scales so that the cut-scores established for the HSAs could be applied to the Mod-HSAs. The HSA cut-scores associated with each performance level in the non-English content areas were established

by MSDE in 2003⁵. The HSA English cut-scores were established during a standard setting held in October of 2005.

Two cut-scores were established for the Algebra and English tests, enabling students to be classified as Basic, Proficient, or Advanced. Two cut-scores were needed because the results for these tests are used as the high school mathematics and English/language arts components of Maryland’s system of accountability⁶ under NCLB. Prior to the 2007-2008 school year, Biology had only one cut-score. In 2007 two cut-scores were applied to Biology and the results are now used as components of the MSDE accountability system. There is only one cut-score for the Government test; it is used to classify students as Basic or Proficient.

To verify that the cut-scores established for the HSAs were appropriate for the Mod-HSA, a standard setting was conducted in August 2008, using the Mod-HSA student results. The standard setting panels, consisting of Maryland general and special educators, confirmed that the HSA cut-scores were appropriate for the Mod-HSA⁷.

Students eligible to take a Mod-HSA and who entered grade 9 in or after the 2005-2006 academic year, must pass Mod-HSAs or HSAs in all four content areas or achieve an overall combined score of 1602 as part of the requirements for graduation. The Proficient cut-scores are used to determine Pass/Fail classifications. The cut-scores by content area are given in Table 5.1.

Table 5.1 Mod-HSA 2008 Cut-Scores by Content Area

Content Area	Cut-score	
	Proficient	Advanced
Algebra	412	450
Biology	400	452
English	396	429
Government	394	---

⁵ Technical documentation on the standard setting method used to establish the HSA cut-scores is available on the Maryland State Department of Education web site at <http://www.marylandpublicschools.org/msde/divisions/planningresultstest/maryland+standard+setting+technical+reports.htm>.

⁶ Information regarding the system of accountability is available on the Maryland State Department of Education web site at http://www.marylandpublicschools.org/NR/rdonlyres/0146EDA2-5F91-47DD-9A84-16164BDEA25C/18082/Acct_workbook_final_w_table_appendices_r_93008.doc

⁷ Information regarding the standard setting process for the Mod-HSA is available at the MSDE web site http://www.marylandpublicschools.org/NR/rdonlyres/3253C1DD-CA2E-4E64-A066-D6F36EBADF9B/18003/ModHSA_SB_Final.ppt