

Virginia Board of Education Agenda Item



Agenda Item: E

Date: January 10, 2013

Title	Final Review of Recommended Cut Scores for the End-of-Course Standards of Learning Tests in Reading, Earth Science, Biology and Chemistry Based on the 2010 English and Science Standards		
Presenter	Mrs. Shelley Loving-Ryder, Assistant Superintendent, Division of Student Assessment and School Improvement		
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Purpose of Presentation:

Action required by Board of Education regulation.

Previous Review or Action:

Previous review and action. Specify date and action taken below:

Date: November 29, 2012

Action: First Review of Recommended Cut Scores for the End-of-Course Standards of Learning Tests in Reading, Earth Science, Biology and Chemistry Based on the 2010 English and Science Standards

Action Requested:

Final Review: Action requested at this meeting.

Alignment with Board of Education Goals: Please indicate (X) all that apply:

	Goal 1: Accountability for Student Learning
x	Goal 2: Rigorous Standards to Promote College and Career Readiness
	Goal 3: Expanded Opportunities to Learn
	Goal 4: Nurturing Young Learners
	Goal 5: Highly Qualified and Effective Educators
	Goal 6: Sound Policies for Student Success
	Goal 7: Safe and Secure Schools
	Other Priority or Initiative. Specify:

Background Information and Statutory Authority:

Goal 2: The approval of cut scores on the new Earth Science, Biology, Chemistry, and End-of-Course Reading tests supports the implementation of rigorous standards to promote college and career readiness.

In 2012-2013 new Standards of Learning (SOL) tests measuring the 2010 English and science content standards will be administered. Because of the changes in the content measured by these tests, new passing scores must be adopted by the Virginia Board of Education. Consistent with the process used in

1998, committees of educators were convened in November 2012 to recommend to the Board of Education (BOE) minimum "cut" scores for the achievement levels of *pass/proficient* and *pass/advanced* for the Earth Science, Biology, and Chemistry tests and *pass/proficient* and *advanced/college path* for the End-of-Course Reading test. A description of the process used by the committees to recommend cut scores on the tests to the Board of Education may be found in Attachment A.

Summary of Important Issues:

Information about the range of cut scores recommended by the committees for the achievement levels of *pass/proficient* and *pass/advanced* for the Earth Science, Biology and Chemistry tests and *pass/proficient* and *advanced/college path* for the End-of-Course Reading test is contained in Attachment B. It is important to note that the following definition of the *advanced/college path* designation for the EOC Reading test reflects the deliberations of the higher education faculty who participated on the EOC reading standard setting committee.

A student obtaining an "advanced/college path" score should have the necessary knowledge and skills for enrollment, without remediation, in an introductory credit-bearing college course with a substantial reading load, assuming that the student continues to demonstrate a comparable level of achievement in subsequent high school English courses. Because college courses with heavy reading loads often require students to convey ideas gleaned from reading, successful students in such courses will demonstrate the same level of skill in oral and written communication.

The Board is asked to review the recommendations of the standard setting committee and to adopt "cut" scores for the achievement levels of *pass/proficient* and *pass/advanced* for the end-of-course Earth Science, Biology and Chemistry tests and *pass/proficient* and *advanced/college path* for the EOC Reading test.

Impact on Fiscal and Human Resources:

N/A

Timetable for Further Review/Action:

Upon approval by the Board of Education, this information will be disseminated to the school divisions via a Superintendent's Memorandum.

Superintendent's Recommendation:

The Superintendent of Public Instruction recommends that the Board of Education adopt cut scores representing the achievement levels of *pass/proficient* and *pass/advanced* for the end-of-course Earth Science, Biology and Chemistry Standards of Learning Tests and *pass/proficient* and *advanced/college path* for the end-of-course reading test as follows.

- Earth Science: 25 out of 50 for proficient and 45 out of 50 for advanced
- Biology: 27 out of 50 for proficient and 45 out of 50 for advanced
- Chemistry: 25 out of 50 for proficient and 44 out of 50 for advanced
- End-of-course reading: 31 out of 55 for proficient and 49 out of 55 for advanced/college path

Standard Setting Modified-Angoff Procedure

Standard setting is a systematic way of making a professional judgment on the number of questions on a test that must be answered correctly to signify that a student's achievement is at the *proficient* or *advanced* achievement level. The number of questions that a student must answer correctly to be classified as proficient or advanced is called a "cut score." In the case of the *Standards of Learning (SOL) Assessments* for reading and science end-of-course assessments, three performance level categories have been established:

Advanced Attainment of the Standards (Pass)

Proficient in the Standards (Pass)

Does Not Meet the Standard (Fail)

One cut score will distinguish *Proficient in the Standards (Pass)* from *Does Not Meet the Standard (Fail)*. A second cut score will distinguish *Advanced Attainment of the Standards (Pass)* from *Proficient in the Standards (Pass)*.

The procedure used for standard setting for the SOL reading and science tests is known as the modified-Angoff procedure. This procedure has been widely used on tests for a number of years. Steps used in the procedure are described below.

1. Judges receive training in the standard-setting process and complete a simulation activity.
2. Judges take the test on which cut scores are to be set to simulate the experience of the students who have taken the test.
3. Judges discuss the performance level descriptor for each achievement level (i.e., Fail, Proficient, and Advanced). An example of a performance level descriptor for the "proficient" achievement level for the Biology test is shown below.

A student performing at the proficient level should be able to:

- Demonstrate appropriate nature of science skills when investigating, researching, reporting, and applying science content.
- Describe and explain chemical, life process, structure/function, and genetic relationships in living systems.
- Express and infer relationships based on fossil evidence, developmental stages, structural similarities, and new discoveries.
- Within ecosystems, describe the flow of energy and nutrients, individual and population dynamics, and predict the effect of human activities.

Judges then discuss the characteristics of students who just make it into an achievement level: those who are “just proficient” and “just advanced,” to further define the particular knowledge and skills that separate those students in one achievement level from those in the others.

4. **Round 1 Ratings:**

Judges independently examine each question on the test, thinking of students who are “just” *proficient* and estimating whether or not these students would answer each item correctly MOST of the time (2/3 of the time). (Note: Judges are instructed to determine what students *should* do, rather than what they *can* now do.) Judges use the same procedure for the *advanced* category. When Round 1 is completed, each judge has recorded “yes” or “no” for each question on the test for both “proficient” and “advanced.” Each judge’s ratings on the questions are converted to a cut score.

5. **Round 2 Ratings:**

Judges are provided with a table of each judge’s ratings from Round 1, refine the definitions and descriptors, and repeat the process used in Round 1.

6. **Round 3 Ratings:**

Judges are provided with a table of each judge’s ratings from Round 2, refine the definitions and descriptors, and repeat the process used in Round 2.

Articulation Committee:

After the work of the standard setting committees has been completed, a smaller group of educators composed of two or three members from each of the standard setting committees is convened to review the results of round 3 for each test. In the case of the end-of-course science tests, the purpose of this “articulation committee” was to review the round 3 results for the tests for Earth Science, Biology, and Chemistry to determine the reasonableness of the recommended cut scores in light of the performance level descriptors and estimated impact data. The impact data reviewed by the articulation committee provided estimates, based on field test data, of the number of students who would fall into each achievement level if the recommended cut scores were adopted. Based on their review, the articulation committee recommended adjustments to the cut scores for some of the end-of-course science tests. Because only the end-of-course reading test was reviewed by the standard setting committee during the November 2012 meetings, no articulation meeting was conducted for reading.

Recommendation Presented to the Board of Education:

The results of the standard setting committees and the articulation committee are presented as recommendations to the Board of Education as part of first review. On final review, the Board of Education is asked to adopt cut scores on each SOL test.

**Summary and Background Information on Proposed Cut Scores
for the End-of-Course Science Tests and the End-of-Course (EOC) Reading Test Based on the 2010
Standards of Learning**

	Pass/Proficient					Pass/Advanced (Advanced/College Path for End-of-Course Reading)			
	Background Information		Standard Setting Summary			Background Information	Standard Setting Summary		
Test Name	Pass/Proficient Cut Score for Previous Test**	Estimate of Difficulty of New Test as Compared to the Previous Test	Round 3 Median for Proficient	Articulation Committee Recommendation	Superintendent's Recommendation	Pass/Advanced Cut Score for Previous Test**	Round 3 Median for Advanced	Articulation Committee Recommendation	Superintendent's Recommendation
Earth Science	30 out of 50	Moderately more difficult	24 out of 50	24 out of 50	25 out of 50	45 out of 50	45 out of 50	45 out of 50	45 out of 50
Biology	26 out of 50	Slightly more difficult	30 out of 50	26 out of 50	27 out of 50	45 out of 50	46 out of 50	45 out of 50	45 out of 50
Chemistry	27 out of 50	Moderately more difficult	25 out of 50	25 out of 50	25 out of 50	45 out of 50	44 out of 50	44 out of 50	44 out of 50
EOC Reading*	31 out of 55***	Slightly more difficult	28 out of 55	N/A	31 out of 55	42 out of 50	49 out of 55	N/A	49 out of 55

* The EOC Reading Test based on the 2010 Standards of Learning (SOL) has 55 items.

** Tests based on the 2003 Science SOL or the 2002 English SOL.

*** The EOC Reading test based on the 2002 English SOL had 50 items. The EOC reading test based on the 2010 SOL has 55 items. This score represent an adjustment based on the increase in the length of the test.