

Board of Education Agenda Item

Item: _____ A. _____

Date: 3/19/2008

Topic: First Review of Recommended Cut Scores for the Revised Grade 8 Standards of Learning Science Test

Presenter: Mrs. Shelley Loving-Ryder, Assistant Superintendent, Division of Student Assessment and School Improvement

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Origin:

_____ Topic presented for information only (no board action required)

Board review required by
_____ State or federal law or regulation
 Board of Education regulation
_____ Other: _____

Action requested at this meeting _____ Action requested at future meeting: _____ (date)

Previous Review/Action:

No previous board review/action
_____ Previous review/action
date _____
action _____

Background Information:

Revised Standards of Learning (SOL) for science were adopted by the Board of Education (BOE) in January 2003. The revised curriculum framework for science was adopted by the BOE in May 2003. Because of significant revisions to the SOL for grade 6, a new test blueprint for the cumulative grade 8 science test covering content from grades 6, 7, and 8 was developed. Grade 8 science tests developed using the new blueprint will be administered for the first time in spring 2008. Consistent with the process used to set cut scores on the other SOL tests, a committee of educators was convened to recommend to the BOE minimum cut scores on the grade 8 science test that represent the achievement levels of pass/proficient and pass/advanced. The SOL revisions in science in grades K through 5 and in earth science, biology, and chemistry did not necessitate changes in the grade 3, grade 5, and the end-of-course SOL science test blueprints.

Summary of Major Elements:

Information about the range of cut scores recommended by the committee for the grade 8 science SOL test for the achievement levels of pass/proficient and pass/advanced will be presented to the BOE. The BOE is asked to review this information and to adopt "cut" scores for the grade 8 science test at grade 8 that represent the achievement levels of pass/proficient and pass/advanced.

Superintendent's Recommendation:

The Superintendent of Public Instruction recommends that the BOE waive first review and adopt cut scores for the grade 8 SOL science test that represent the achievement levels of pass/proficient and pass/advanced.

Impact on Resources:

N/A

Timetable for Further Review/Action:

N/A

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 grade 8 science *Standards of Learning (SOL) Assessments*, three performance level categories have been established:

Advanced Attainment of the Standards (Pass)
Proficient in the Standards (Pass)
Below Proficient Attainment of the Standards (Fail)

One cut score will be established to distinguish *Proficient in the Standards* (Pass) from *Below Proficient Attainment of the Standards* (Fail). A second cut score will distinguish *Advanced Attainment of the Standards* (Pass) from *Proficient in the Standards* (Pass).

The procedure selected for use on the multiple-choice SOL tests is known as the modified-Angoff procedure. This procedure has been widely used on multiple-choice tests for over 35 years and was used in Virginia in standard setting for both the *Minimum Competency Tests* and *Literacy Passport Tests*. Listed below are the steps followed in the application of the modified-Angoff procedure.

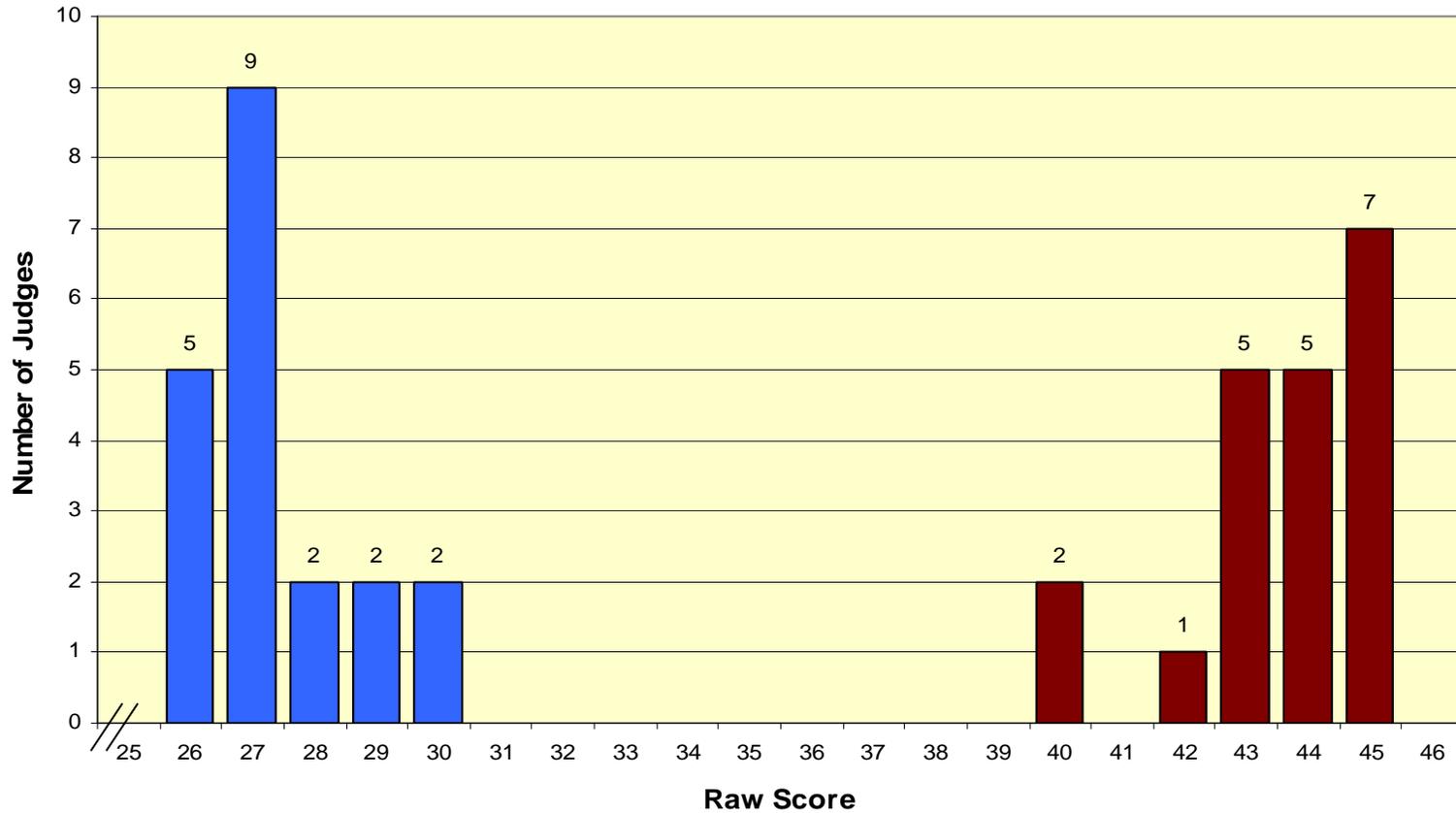
1. Judges receive training in the standard-setting process and complete a simulation activity.
2. Judges take the test on which cut scores are to be set to simulate the experience of the students who have taken the test.
3. Judges discuss the performance level descriptor for each achievement level (i.e., Below Proficient, Proficient, and Advanced). Judges discuss definitions of "barely proficient" and "barely 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, think of 100 *barely proficient* students, and estimate the proportion (percent) of *barely proficient* students who should answer the questions correctly. (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 an estimated percent for each question on the test.
5. Each judge's ratings on the questions are averaged and converted to a cut score. As shown in the example on the next page, each judge's ratings across the 10 test questions are averaged (i.e., summed and divided by the number of questions on the test). In the case of the example shown below, the ratings for Judge 1 are summed (.60 + .65 + .65 + .60 + .55 + .55 + .60 + .55 + .60 = 6.00) and divided by the number of questions on the test (6.00 / 10 = .60). Thus, Judge 1 has estimated that a student would need to answer 60 percent or six (6) questions correctly to demonstrate proficiency on this ten-question test.

Example
Four Judges Ratings on a Ten-Question Test

Question	Judge 1	Judge 2	Judge 3	Judge 4
1	.60	.75	.70	.55
2	.65	.60	.60	.55
3	.65	.65	.60	.50
4	.65	.80	.65	.60
5	.60	.75	.65	.45
6	.55	.80	.60	.45
7	.55	.90	.70	.40
8	.60	.55	.45	.40
9	.55	.65	.50	.55
10	.60	.55	.55	.55
Total	6.0	7.0	6.0	5.0
Average	.60	.70	.60	.50
Cut Score	6	7	6	5

6. The range of cut scores is presented to the judges. In the example, one judge placed the cut at 5, two at 6, and one at 7. Judges discuss their ratings and refine the definitions and descriptors of *barely proficient* and *barely advanced*.
7. **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.
8. **Round 3 Ratings:**
Optional.
9. Report of results presented as a recommendation to the Board of Education. The Board will be presented with the range of judges' scores at each of the three cuts.

SOL Standard Setting 2008 Grade 8 Science Round 3 Results



Proficient

Mean: 27.4

Median: 27.0

Advanced

Mean: 43.6

Median: 44.0

*Summary of Results for Grade 8 Science Standard Setting
March 11-12, 2008*

	Proficiency Level					
	Proficient			Advanced		
	Round			Round		
	1	2	3	1	2	3
Cut Score						
10	1					
18	1					
19	1	1				
20		1				
23	1					
24	1					
25	1	2				
26	1		5			
27	2	2	9			
28	1	2	2			
29	2	2	2			
30		3	2			
31	3	3				
32	2	2				
33	3	1				
36				2	1	
37		1				
38				2		
39					1	
40				1	1	2
41				2	2	
42				3	1	1
43				5	8	5
44				3	2	5
45				1	3	7
46				1	1	
N	20	20	20	20	20	20
Average	27.1	28.7	27.4	41.7	42.6	43.6
Median	28.5	29.5	27	42.5	43	44