

**Oklahoma Alternate Assessment
Program (OAAP) Rubrics
EOI Biology
2013–2014**

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Oklahoma Alternate Assessment Program
Mapping Cut Scores from the 4-point Scale to the 6-point Scale
August 2013

Background

The Oklahoma Alternate Assessment Program (OAAP) Portfolio assessment is designed to assess students with the most significant cognitive disabilities. The Oklahoma State Department of Education (OSDE) has received feedback from educators regarding access limitations to required assessment items collected for the OAAP portfolio assessment.

In order to measure a broader range of performance, the OSDE decided to incorporate two lower score levels into the existing 4-point scale. The new scale, a 6-point scale, will have a scoring rubric that captures the performance of students functioning at extremely low levels of ability; hence, measuring the growth of this group of students. This method, while providing access to students functioning at lower levels, also satisfies Federal requirements for measuring grade-level academic content standards.

The OSDE made changes to the task specifications/rubrics as follows:

- created new score points of 1 and 2;
- changed the scoring range from *1–4* to *1–6*;
- increased the existing score points by moving 1 to 3, 2 to 4, 3 to 5, and 4 to 6.

Even with the rubric extension, the same achievement standards are required for students to earn a Proficient score on the assessment. In other words, the performance level descriptors, which were derived from the expectations for student performance and guide the establishment of cut scores during standard setting, remain the same. Maintaining expectations of the existing performance levels removes the need for additional standard setting. In essence, score levels 1 and 2 in the new scoring rubric are added into the Unsatisfactory performance level. The section below describes the method and result of mapping the current cut scores to the new 6-point scale.

Method

From a scaling viewpoint, adding two score points below the existing scale results in a simple linear transfer of the scale by two (2) points. Those who would receive a score of three (3) points on the 4-point scale will now earn five (5) points on the 6-point scale. This linear relationship between the old and new scale presents a simple mapping solution: the new cut scores are computed by multiplying the number of objectives tested on a subject by two (2) score points and adding this product to the old cut score. The equation is as follows:

$$\text{New Cut Score} = \text{Old Cut Score} + [\text{Number of Objectives} \times 2]$$

For example, reading grade 3 has four (4) tasks that measure five (5) objectives. The maximum possible score on the 4-point scale is 20 points. The reading grade 3 cut scores for Limited Knowledge, Proficient, and Advanced levels are 8, 12, and 18, respectively (see Table 1). On a 6-point scale, the maximum possible reading grade 3 score becomes 30 points. When mapping the cut scores to the 6-point scale, the cut scores become 18, 22, and 28, respectively. For example,

$$\text{New cut score} = 8 + (5 \times 2) = 18$$

In this example, both the maximum possible score and the cut scores all shift by 10 points; since the number of objectives is multiplied by 2.

This method was validated through an examination of the impact data (percentage of students in each performance level) before and after the rubric and cut score transformations. A simulation study was conducted to compare the impact data when transforming cut scores from the 4-point scale to the 6-point scale. The results were identical—the percent classified into each of the performance levels was exactly the same. The mathematical explanation for this is if, for example, a student earns 16 points on

the reading grade 3 test on the 4-point scale, this student is at the Proficient level (cut score of 12). After shifting to the 6-point scale, this student's new score is 26 points and will still be classified in the Proficient level (transformed cut score of 22). In sum, because the raw scores and cut scores are transferred by the same constant, their spatial relationship remains the same.

Figure 1 demonstrates the mathematical association of the scale change using reading grade 3 as an example. Figure 1 shows that raw scores of 0 through 20 on the 4-point scale become 10 through 30 on the 6-point scale. The cut scores (8, 12 and 18 on the 4-point scale) shift in the same manner as raw scores (18, 22, and 28). The linear transformation maintains relations between raw scores and cut scores; hence, maintaining the integrity of achievement standards.

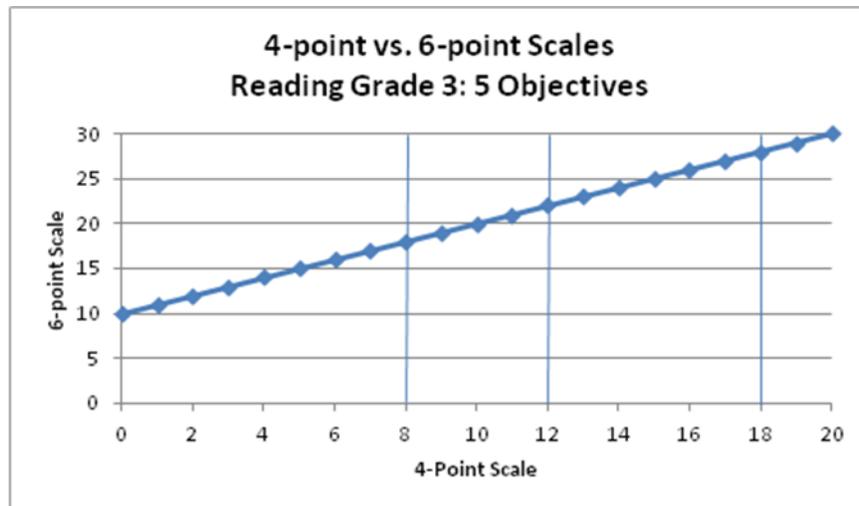


Figure 1: Relation between the 4-point and 6-point Scales

Summary

As a consequence of the above analyses, Pearson recommended moving from the 4-point scale to the 6-point scale by adding two points at the bottom of the scale and shifting the existing points by 2 and following the suggested methodology for transforming the cut scores. The existing cut scores for all OAAP subjects and grades on the 4-point and 6-point scales are presented in Table 1.

Table 1: Cut Scores on the 4-point and 6-point Scales

Subject	Grade	Number of Tasks	4-point Cut Scores			6-point Cut Scores		
			LK	Pro	Adv	LK	Pro	Adv
Math	3	5	8	12	18	18	22	28
	4	6	10	16	21	22	28	33
	5	5	7	12	17	17	22	27
	6	6	9	15	23	21	27	35
	7	5	6	13	19	16	23	29
	8	5	7	13	19	17	23	29
Reading	3	5	6	12	18	16	22	28
	4	5	6	11	17	16	21	27
	5	4	5	9	14	13	17	22
	6	4	5	10	14	13	18	22
	7	6	8	14	20	20	26	32
	8	6	8	14	21	20	26	33
Science	5	7	10	16	25	24	30	39
	8	9	14	22	32	32	40	50
Social Studies	5	8	13	20	29	29	36	45
	7	5	8	12	18	18	22	28
	8	6	9	15	22	21	27	34
Writing	5	5	5	11	18	15	21	28
	8	4	7	11	15	15	19	23
Algebra I	HS	4	6	10	15	14	18	23
Algebra II	HS	3	4	8	11	10	14	17
Biology	HS	10	16	25	35	36	45	55
English II	HS	9	14	22	31	32	40	49
English III	HS	7	10	17	25	24	31	39
Geometry	HS	4	5	10	15	13	18	23
U.S. History	HS	8	12	21	30	28	37	46

Based on peer review (consisting of experts in the fields of standards and assessment), the Oklahoma State Department of Education (OSDE) decided to increase the amount of videos included as part of the evidence to be collected by teachers for the OAAP Portfolio test. Video provides evidence that the task being performed aligns to the content/process standards being assessed. This provides an added measure to ensure content validity in the assessment. It minimizes bias and allows scorers to accurately assess the knowledge and skills of the student. For these reasons, the inclusion of videos signified a major improvement in the assessment. In addition to using the videos as evidence of student performance, the OSDE also uses them for monitoring of appropriate accommodations.

When you see the symbol below, a piece of video evidence is **required**.



End of Instruction (EOI)

Biology

NOTE: Process standards are abbreviated by using a 'P' prior to the numbered standard (e.g., P1.0)
Content standards are abbreviated by using a 'C' prior to the numbered standard (e.g., C1.0)

EOI Biology**Standard Measured** **Observe and Measure, Organ Systems** **P1.0, C5.0****Task Specification** The student will indicate the function of organ systems.**Objective: Observe and measure** **(P1.0)**

6 points	Identify changes in cells, organisms, populations, and ecosystems given conditions before and after an event in 3 out of 4 trials.
5 points	Use appropriate tools and SI units and prefixes when measuring cells, organisms, populations, and ecosystems in 3 out of 4 trials.
4 points	Identify organisms in 3 out of 4 trials.
3 points	Observe organisms in 3 out of 4 trials.
2 points	Respond when exposed to organisms in 3 out of 4 trials.
1 point	React when exposed to organisms in 3 out of 4 trials.
Total points possible	6

Objective: Organ systems **(C5.0)**

6 points	Compare/contrast the function of at least two organ systems in 3 out of 4 trials.
5 points	Indicate the functions of two organ systems in 3 out of 4 trials.
4 points	Indicate the function of an organ system in 3 out of 4 trials.
3 points	Identify an organ system in 3 out of 4 trials.
2 points	Respond when exposed to an organ system in 3 out of 4 trials.
1 point	React when exposed to an organ system in 3 out of 4 trials.
Total points possible	6

Total points possible (P1.0, C5.0) **12**

Process and content standards should be taught in conjunction with one another. You use the process standards to teach the content. Your evidence for these standards should reflect one activity that incorporates both the content and process standards.

Examples provide a way in which the process and content can be combined. They do not reflect any proficiency level as stated.

For example, for P1.0 and C5.0, you could do an animal dissection (virtual lab) and measure structures of the animal and identify function and/or organ systems.

****Respond** refers to any attempted interaction from the student upon exposure to the activity (e.g., assisting, feeling, observing, listening).

****React** refers to any observable change caused by exposure to the activity (e.g., startle reflex, opening eyes, turning head towards sound or touch).

EOI Biology

Standard Measured	Interpret/Communicate, Molecular Basis of Heredity	P4.0, C2.0
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Task Specification	The student will identify the similarities and differences in appearance between parents and offspring.
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Objective: Interpret/communicate	(P4.0)
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6 points	Evaluate a graph or chart from collected data in 3 out of 4 trials.
5 points	Create an appropriate graph or chart from collected data in 3 out of 4 trials.
4 points	Record data from a scientific investigation in 3 out of 4 trials.
3 points	Identify data used in a scientific investigation in 3 out of 4 trials.
2 points	Respond when exposed to data used in a scientific investigation in 3 out of 4 trials.
1 point	React when exposed to a scientific investigation in 3 out of 4 trials.
Total points possible	6

Objective: Molecular basis of heredity	(C2.0)
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6 points	Explain that DNA determines characteristics of organisms in 3 out of 4 trials.
5 points	Compare and contrast appearances between parents and offspring in 3 out of 4 trials.
4 points	Recognize that parents create offspring in 3 out of 4 trials.
3 points	Match parents to offspring in 3 out of 4 trials.
2 points	Respond when exposed to matching parents and offspring in 3 out of 4 trials.
1 point	React when exposed to matching parents and offspring in 3 out of 4 trials.
Total points possible	6

Total points possible (P4.0, C2.0)	12
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Process and content standards should be taught in conjunction with one another. You use the process standards to teach the content. Your evidence for these standards should reflect one activity that incorporates both the content and process standards.

Examples provide a way in which the process and content can be combined. They do not reflect any proficiency level as stated.

Example: Compare the appearances of offspring and parents by using a graphic organizer to record results.

****Respond** refers to any attempted interaction from the student upon exposure to the activity (e.g., assisting, feeling, observing, listening).

****React** refers to any observable change caused by exposure to the activity (e.g., startle reflex, opening eyes, turning head towards sound or touch).

EOI Biology		
Standard Measured	Classify, Biological Diversity	P2.0, C3.0

Task Specification	The student will classify organisms into plant or animal kingdoms.
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Objective: Classify	(P2.0)
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6 points	Compare and Contrast the properties on which a biological classifications system is based in 3 out of 4 trials.
5 points	Create a biological classification system in 3 out of 4 trials.
4 points	Identify the properties of a classification system in 3 out of 4 trials.
3 points	Arrange objects, organisms, and events in serial order in 3 out of 4 trials.
2 points	Respond when exposed to objects, organisms, and events in serial order in 3 out of 4 trials.
1 point	React when exposed to objects, organisms, and events in serial order in 3 out of 4 trials.
Total points possible	6

Objective: Biological Diversity	(C3.0)
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6 points	Compare and contrast the internal structures of animals and plants and classify them into plant or animal kingdoms in 3 out of 4 trials.
5 points	Classify organisms into plant or animal kingdoms based upon structural differences and similarities in 3 out of 4 trials.
4 points	Identify characteristic differences between plants and animals in 3 out of 4 trials.
3 points	Observe a plant and an animal in 3 out of 4 trials.
2 points	Respond when exposed to a plant and an animal in 3 out of 4 trials.
1 point	React when exposed to a plant and an animal in 3 out of 4 trials.
Total points possible	6

Total points possible (P2.0, C3.0)	12
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Process and content standards should be taught in conjunction with one another. You use the process standards to teach the content. Your evidence for these standards should reflect one activity that incorporates both the content and process standards.

Examples provide a way in which the process and content can be combined. They do not reflect any proficiency level as stated.

Example: Use the structural differences of organisms to create a classification system.

****Respond** refers to any attempted interaction from the student upon exposure to the activity (e.g., assisting, feeling, observing, listening).

****React** refers to any observable change caused by exposure to the activity (e.g., startle reflex, opening eyes, turning head towards sound or touch).

EOI Biology

Standard Measured **Model, Interdependence of Organisms** **P5.0, C4.0**

Task Specification The student will describe the life cycle of a plant and animal.

Objective: Model **(P5.0)**

 Video Required	6 points	Select predictions based upon an animal life cycle and a plant life cycle in 3 out of 4 trials.
	5 points	Sequence the life cycles of both plants and animals in 3 out of 4 trials.
	4 points	Identify sequences based on models in 3 out of 4 trials.
	3 points	Observe a life cycle in 3 out of 4 trials.
	2 points	Respond when exposed to a life cycle in 3 out of 4 trials.
	1 point	React when exposed to a life cycle in 3 out of 4 trials.
	Total points possible	6

Objective: Interdependence of organisms **(C4.0)**

 Video Required	6 points	Explain how organisms compete and cooperate in ecosystems in 3 out of 4 trials.
	5 points	Identify examples of how organisms compete and cooperate in ecosystems in 3 out of 4 trials.
	4 points	Identify how one animal depends upon another in 3 out of 4 trials.
	3 points	Observe nurturing in animals in 3 out of 4 trials.
	2 points	Respond when exposed to nurturing in animals in 3 out of 4 trials.
	1 point	React when exposed to nurturing in animals in 3 out of 4 trials.
	Total points possible	6

Total points possible (P5.0, C4.0) **12**

Process and content standards should be taught in conjunction with one another. You use the process standards to teach the content. Your evidence for these standards should reflect one activity that incorporates both the content and process standards.

Examples provide a way in which the process and content can be combined. They do not reflect any proficiency level as stated.

Example: Sequence life cycles of plants and animals and identify ways within the life cycle that different organisms compete and cooperate.

****Respond** refers to any attempted interaction from the student upon exposure to the activity (e.g., assisting, feeling, observing, listening).

****React** refers to any observable change caused by exposure to the activity (e.g., startle reflex, opening eyes, turning head towards sound or touch).

EOI Biology**Standard Measured****Experiment, Cells****P3.0, C1.0****Task Specification**

The student will use mathematics to show relationships and evaluate the design of a biology laboratory investigation and identify that cells are necessary to keep organisms alive.

Objective: Experiment**(P3.0)**

6 points	Evaluate and defend the design of a biological investigation given three choices in 3 out of 4 trials.
5 points	Analyze the design of a biological investigation given two choices in 3 out of 4 trials.
4 points	Identify a testable hypothesis, variables, or controls in a biological investigation in 3 out of 4 trials.
3 points	Record results of a scientific investigation in 3 out of 4 trials.
2 points	Respond when exposed to the results of a scientific investigation in 3 out of 4 trials.
1 point	React when exposed to the results of a scientific investigation in 3 out of 4 trials.
Total points possible	6

Objective: Cells**(C1.0)**

6 points	Describe how the functions of a cell work together in 3 out of 4 trials.
5 points	Identify the functions of at least three parts of a cell in 3 out of 4 trials.
4 points	Identify the different parts of a cell in 3 out of 4 trials.
3 points	Observe a cell under the microscope and draw or find a picture of what it looks like in 3 out of 4 trials.
2 points	Respond when exposed to a drawing or picture of what a cell looks like in 3 out of 4 trials.
1 point	React when exposed to a drawing or picture of what a cell looks like in 3 out of 4 trials.
Total points possible	6

Total points possible (P3.0, C1.0)**12**

Process and content standards should be taught in conjunction with one another. You use the process standards to teach the content. Your evidence for these standards should reflect one activity that incorporates both the content and process standards.

Examples provide a way in which the process and content can be combined. They do not reflect any proficiency level as stated.

Example: Read/listen to a story about cell theory. Identify parts of the scientific method and identify the functions of the cell parts.

****Respond** refers to any attempted interaction from the student upon exposure to the activity (e.g., assisting, feeling, observing, listening).

****React** refers to any observable change caused by exposure to the activity (e.g., startle reflex, opening eyes, turning head towards sound or touch).