



Arkansas Comprehensive Testing, Assessment, and Accountability Program

Teacher Handbook

Grade 8 Benchmark Examination

**April 2007
Administration**

This document is the property of the Arkansas Department of Education, and all rights of this document are reserved by the Arkansas Department of Education. Arkansas public schools may reproduce this document in full or in part for use with teachers, students, and parents. All other uses of this document are forbidden without written permission from the Arkansas Department of Education. All inquiries should be sent to Dr. Gayle Potter at the Arkansas Department of Education, 501-682-4558.

Arkansas Department of Education

Teacher Handbook—2007 Benchmark Grade 8

Table of Contents

	Page
INTRODUCTION	1
SCORING STUDENT RESPONSES TO MATHEMATICS AND READING OPEN-RESPONSE ITEMS	
Reader Training.....	2
Scoring Procedures	2
MATHEMATICS RESPONSES	
Mathematics Item A	4
Mathematics Item A Scoring Rubric.....	4
Mathematics Item A Solution and Scoring	5
Mathematics Item A Sample Responses and Annotations	7
Mathematics Item B.....	12
Mathematics Item B Scoring Rubric.....	12
Mathematics Item B Solution and Scoring	13
Mathematics Item B Sample Responses and Annotations	15
Mathematics Item C.....	20
Mathematics Item C Scoring Rubric.....	20
Mathematics Item C Solution and Scoring	21
Mathematics Item C Sample Responses and Annotations	22
Mathematics Item D.....	27
Mathematics Item D Scoring Rubric	27
Mathematics Item D Solution and Scoring.....	28
Mathematics Item D Sample Responses and Annotations.....	29
Mathematics Item E	34
Mathematics Item E Scoring Rubric.....	34
Mathematics Item E Solution and Scoring	35
Mathematics Item E Sample Responses and Annotations	36

Teacher Handbook—2007 Benchmark Grade 8

Table of Contents

	Page
READING RESPONSES	
Reading Passage A	42
Reading Item A	45
Reading Item A Scoring Rubric	45
Reading Item A Sample Responses and Annotations	46
Reading Passage B	49
Reading Item B	51
Reading Item B Scoring Rubric	51
Reading Item B Sample Responses and Annotations	52
Reading Passage C	56
Reading Item C	58
Reading Item C Scoring Rubric	58
Reading Item C Sample Responses and Annotations	59
Acknowledgments	63
WRITING RESPONSES	
Scoring Student Responses to Writing Prompts	65
Domain Scoring	65
Scoring Scale	65
Non-scoreable and Blank Papers	65
Writing Domains and Definitions	66
Writing Prompts	67
Writer’s Checklist	68
Writing Sample Response 1—Prompt 1	69
Writing Annotation for Sample Response 1—Prompt 1	71
Writing Sample Response 2—Prompt 2	72
Writing Annotation for Sample Response 2—Prompt 2	74
Writing Sample Response 3—Prompt 1	75
Writing Annotation for Sample Response 3—Prompt 1	76

Introduction—2007 Benchmark Grade 8

The **Arkansas Comprehensive Testing, Assessment, and Accountability Program (ACTAAP)** Benchmark Examinations are comprehensive examinations currently administered in grades 3 through 8. They consist of multiple-choice items in Mathematics, Reading, and Writing, as well as open-response questions in Mathematics and Reading and a Writing component that directly assess student writing. The *Arkansas Mathematics Curriculum Framework* and *English Language Arts Curriculum Framework* are the basis for the development of the Benchmark Examinations.

This handbook provides information about the scoring of the grade 8 student responses to the open-response items in Mathematics and Reading and to the direct Writing prompts. It describes the scoring procedures and the scoring criteria (rubrics) used to assess student responses. Copies of actual student responses are provided, along with scores given to those responses, to illustrate how the scoring criteria were applied to each content area.

Additional information about the Benchmark Examinations is available through the Arkansas Department of Education. Questions can be addressed to Dr. Gayle Potter at 501-682-4558.

Scoring Student Responses to Mathematics and Reading Open-Response Items—2007 Benchmark Grade 8

The multiple-choice and open-response test items for the Mathematics and Reading components of the Benchmark Examinations are developed with the assistance and approval of the Content Advisory Committees. All passages and items on the Benchmark Examinations are based on the Arkansas Curriculum Frameworks and are developed with the assistance and approval of Content Advisory Committees and Bias Review Committees. These committees are composed of active Arkansas educators.

While multiple-choice items are scored by machine to determine if the student chose the correct answer from four options, responses to open-response items must be scored by trained “readers” using a pre-established set of scoring criteria.

Reader Training

Readers are trained to score only one content area, but the training procedures are virtually identical for both Mathematics and Reading readers. Qualified readers for the Arkansas scoring will be those with a four-year college degree in English, language arts, education, mathematics, science, or related fields.

Before readers are allowed to begin assigning scores to any student responses, they go through intensive training. The first step in that training is for the readers to read the Mathematics open-response item or the Reading passage and its item as it appeared in the test booklet and to respond—just as the student test takers are required to do. This step gives the readers some insight into how the students might have responded. The next step is the readers’ introduction to the scoring rubric. All of the specific requirements of the rubric are explained by the Scoring Director who has been specifically trained to lead the scoring group. Then responses (anchor papers) that illustrate the score points of the rubric are presented to the readers and discussed. The goal of this discussion is for the readers to understand why a particular response (or type of response) receives a particular score. After discussion of the rubric and anchor papers, readers practice scoring sets of responses that have been pre-scored and selected for use as training papers. Detailed discussion of the responses and the scores they receive follows.

After three or four of these practice sets, readers are given “qualifying rounds.” These are additional sets of pre-scored papers, and, in order to qualify, each reader must score in exact agreement on at least 80% of the responses and have no more than 5% non-adjacent agreement on the responses. Readers who do not score within the required rate of agreement are not allowed to score the Benchmark Examinations responses.

Once scoring of the actual student responses begins, readers are monitored constantly throughout the project to ensure that they are scoring according to the criteria. Daily and cumulative statistics are posted and analyzed, and Scoring Directors or Team Leaders reread selected responses scored by the readers. These procedures promote reliable and consistent scoring. Any reader who does not maintain an acceptable level of agreement is dismissed from the project.

Scoring Procedures

All student responses to the Benchmark Examinations open-response test items are scored independently by two readers. Those two scores are compared, and responses that receive scores that are non-adjacent (a “1” and a “3,” for example) are scored a third time by a Team Leader or the Scoring Director for resolution.

This Teacher Handbook includes the Mathematics open-response items and the Reading passages with their open-response items as they appeared in this year’s test. The specific scoring rubric for each item and annotated response for each score point of the rubric follows. The goal is for classroom teachers and their students to understand how responses are scored. It is hoped that this understanding will help students see what kind of performance is expected of them on the Benchmark Examinations.

MATHEMATICS RESPONSES

Mathematics Item A—2007 Benchmark Grade 8

Greg and Pam are each building a pyramid of blocks. The number of blocks needed is represented by the rule $\frac{n(n+1)}{2}$, where n is the number of levels in the pyramid. The pattern for the pyramid is shown below.



1. In your answer document, draw the next pattern in the sequence.
2. How many blocks would be in a 10-level pyramid? Show your work.
3. Greg has 4-inch blocks, and Pam has 2-inch blocks. They are each going to build a 24-inch tall pyramid. Greg predicts he will need half as many blocks as Pam since his blocks are twice as large. Compare the pyramids to explain why Greg is incorrect.

Mathematics Item A Scoring Rubric—2007 Benchmark Grade 8

SCORE	DESCRIPTION
4	The student earns 4 points. The response contains no incorrect work.
3	The student earns 3–3½ points.
2	The student earns 2–2½ points.
1	The student earns ½–1½ points, or some minimal understanding is shown.
0	The student earns 0 points. No understanding is shown.
B	Blank—No Response. A score of “B” will be reported as “NA.” (No attempt to answer the item. Score of “0” assigned for the item.)

Solution and Scoring

Part	Points
1	<p>1 point possible</p> <p>1 point: Correct diagram as shown below.</p> <div style="text-align: center;"> <pre> </pre> </div>
2	<p>1 point possible</p> <p>½ point: Correct answer: 55. AND ½ point: Correct and complete procedure shown and/or explained.</p> <p>Work may contain a calculation or counting error (± 1). Give credit for the following or equivalent:</p> <ul style="list-style-type: none"> • $\frac{(10)(10+1)}{2} = \#$, or • $10 + 9 + 8 + \dots + 3 + 2 + 1 = \#$, or • “Multiply the number of levels (10) by (10 + 1) then divide by 2 to get the number of blocks,” or • Drawing of 10-level pyramid with statement, “I counted the number,” or shows evidence of counting and number is 55 ± 1.

Solution and Scoring (continued)

Part	Points
3	<p>2 points possible</p> <p>2 points: Correct and complete procedure shown and/or explained. Note: If all work is correct, no additional statement comparing the number of blocks is needed. Give credit for the following or equivalent: Greg: $24 \div 4 = 6$ blocks high (levels), $\frac{6(6+1)}{2} = 21$ blocks Pam: $24 \div 2 = 12$ blocks high (levels), $\frac{12(12+1)}{2} = 78$ blocks, $\frac{1}{2}(78) \neq 21$ (may be omitted)</p> <p>OR</p> <p>1 point: Work and/or explanation is incomplete, but correct procedures are used. Work may contain a calculation or copy error. Ex: “Greg needs $6 \times 7 \times \frac{1}{2} = 21$ and Pam needs $12 \times 13 \times \frac{1}{2} = 78$.” (No calculation of number of levels shown.) Ex: Greg: $\frac{24}{4} = 8$ blocks high (calculation error) $8 \times 9 \times \frac{1}{2} = 36$ Pam: $(12)(13)(\frac{1}{2}) = 78$ $\frac{1}{2}(78) \neq 36$.</p> <p>Ex: $24 \div 4 = 6$ and $24 \div 2 = 12$, so Greg needs 21 and Pam needs 78. Ex: Pam needs 78 and Greg needs 21 (no work shown).</p> <p>OR</p> <p>$\frac{1}{2}$ point: Correct number of blocks for Greg <u>or</u> Pam, with or without procedure shown. Or Correct number levels for both Greg and Pam (must be clear that number of levels and not number of blocks is being found).</p>

1) $\frac{5(5+1)}{2} = 15$

2) $\frac{10(10+1)}{2} = 55$
 There would be 55 blocks in a 10-level pyramid.

3) Pam: $\frac{12(12+1)}{2} = 78$
 Greg: $\frac{6(6+1)}{2} = 21$

Greg was incorrect because Pam is going to need a lot more blocks than him because she needs 12 levels and he only needs 6 levels.

SCORE: 4

Points

Part 1:

Correct drawing:

1

Part 2:

Correct answer:

55

$\frac{1}{2}$

Correct and complete procedure:

$$\frac{10(10+1)}{2} = \frac{110}{2} \div \frac{2}{2} = \#$$

$\frac{1}{2}$

Part 3:

Correct comparison with correct & complete procedure:

“Pam is going to need a lot more”

2

$$\begin{array}{r} 12 \\ 2 \overline{)24} \end{array}$$

$$\begin{array}{r} 6 \\ 4 \overline{)24} \end{array}$$

$$\frac{12(12+1)}{2} \text{ Pam}$$

$$\frac{6(6+1)}{2} \text{ Greg}$$

$$\frac{(12)(13)}{2}$$

$$\frac{(6)(7)}{2}$$

78

21

TOTAL POINTS:

4

② $\frac{10(10+1)}{2} = \frac{10(11)}{2} = \frac{110}{2} = 55$ blocks

③ Greg needs 6 levels
 $\frac{6(6+1)}{2} = \frac{42}{2} = 21$ blocks

Pam needs 12 levels
 $\frac{12(12+1)}{2} = \frac{156}{2} = 78$ blocks

He needs fewer than half because for a pyramid needs twelve levels. That means that she must have more blocks to make smaller as well.

SCORE: 3

Points

Part 1:

Correct drawing:

1

Part 2:

Correct answer:

55

$\frac{1}{2}$

Correct and complete procedure:

$$\frac{10(10+1)}{2} = \frac{110}{2} = \#$$

$\frac{1}{2}$

Part 3:

Correct comparison with incomplete procedure:

Greg – 21 blocks

Pam – 78 blocks

1

$$\frac{6(6+1)}{2} = \frac{42}{2} = 21$$

$$\frac{12(12+1)}{2} = \frac{156}{2} = 78$$

No calculation for number of levels is shown.

TOTAL POINTS:

3

2.) 55 blocks

3.)

Greg has 6 levels of blocks

Pam has 12 levels of blocks

$$\begin{array}{r} 6 \\ 4 \overline{)24} \end{array}$$

$$\begin{array}{r} 12 \\ 2 \overline{)24} \end{array}$$

SCORE: 2

Points

Part 1:

Correct drawing:

1

Part 2:

Correct answer:

55

$\frac{1}{2}$

Missing procedure:

—

Part 3:

Missing answer with some correct procedure:

Greg has 6 levels.

Pam has 12 levels.

$\frac{1}{2}$

$$\begin{array}{r} 6 \\ 4 \overline{)24} \end{array}$$

$$\begin{array}{r} 12 \\ 2 \overline{)24} \end{array}$$

No calculation for number of blocks.

TOTAL POINTS:

2

2) $\frac{n(n+1)}{2}$
 $\frac{10(10+1)}{2}$
 $\frac{10(11)}{2} = \frac{110}{2} = 55$

3) $\frac{n(n+1)}{2}$
 $\frac{4(4+1)}{2}$ $\frac{4(4+1)}{2}$
 $\frac{4(5)}{2} = \frac{20}{2} = 10$ Pam $\frac{2(2+1)}{2} = \frac{2(3)}{2} = 3$

SCORE: 1

Points

Part 1:

Incorrect drawing:

—

Part 2:

Correct answer:

55

$\frac{1}{2}$

Correct and complete procedure:

$10(10+1)$

$\frac{1}{2}$

$$\frac{10(11)}{2} = \frac{110}{2} = \#$$

Part 3:

Missing answer with some correct procedure:

Greg - 10

Pam - 3

—

$$\frac{4(5)}{2} = \frac{20}{2} = 10$$

$$\frac{2(3)}{2} = \frac{6}{2} = 3$$

TOTAL POINTS:

1

③ Greg is incorrect because no matter how big your blocks are you still need the same amount of blocks. ②

SCORE: 0

Points

Part 1:

Incorrect drawing:

—

Part 2:

Incorrect answer:

81

—

Incorrect procedure:

Draws 10-level pyramid but numbers complete squares rather than # of blocks.

—

Part 3:

Incorrect answer with missing procedure:

“need the same amount of blocks.”

—

TOTAL POINTS:

0

Mathematics Item B—2007 Benchmark Grade 8

The eighth-grade students at River Middle School were surveyed to see what type of television show was their favorite. Below are the results.

Survey of 200 Eighth-Grade Students' Favorite Type of Television Show

Type of Show	Number of Boys	Number of Girls
comedy	40	32
reality	18	13
cartoons	32	15
drama	10	40

1. On the grid provided in your answer document, draw a double-bar graph of the data given in the table in order to compare the boys to the girls. Remember to use all graphing techniques in completing your graph.

2. According to the shape of the data in your bar graph, what is one conclusion that can be made about the outcome of the survey?

Mathematics Item B Scoring Rubric—2007 Benchmark Grade 8

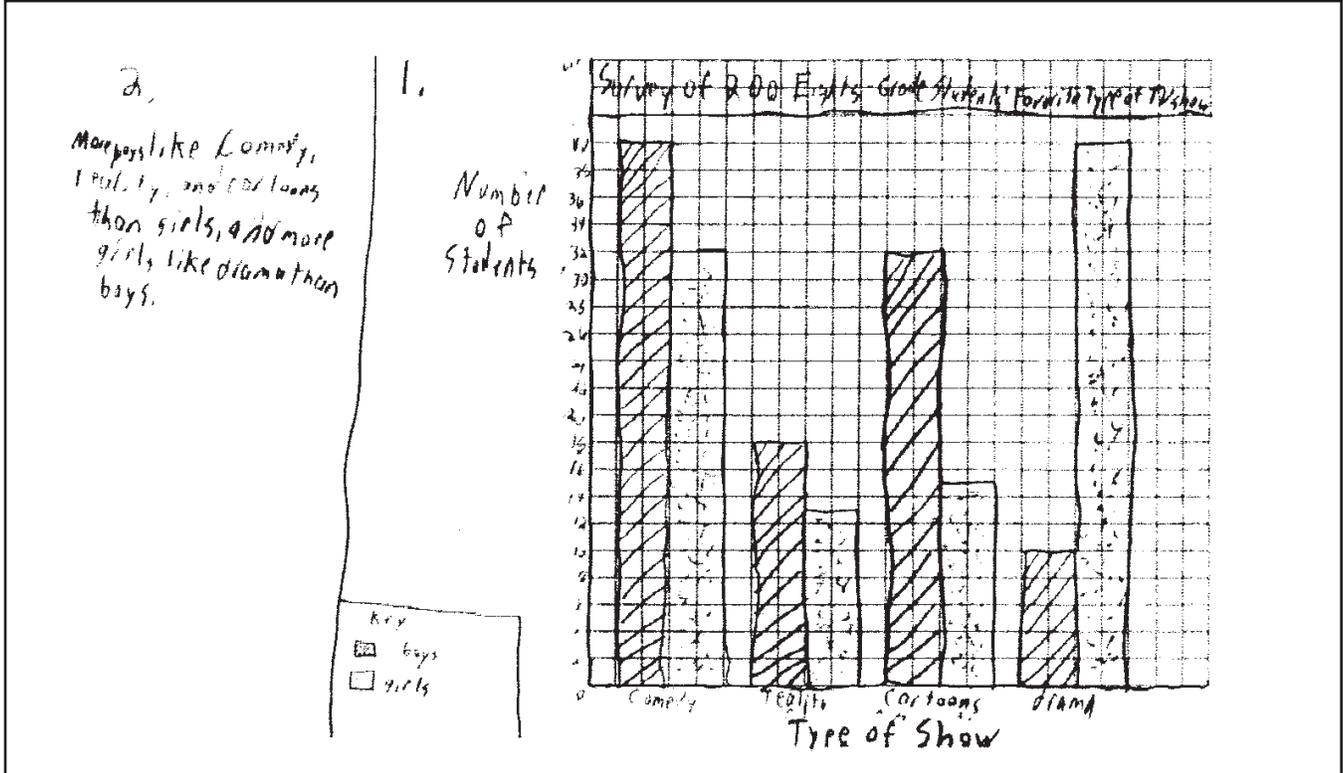
SCORE	DESCRIPTION
4	The student earns 4 points. The response contains no incorrect work.
3	The student earns 3 points.
2	The student earns 2 points.
1	The student earns 1 point, or some minimal understanding is shown. Ex: 2 major errors. Ex: 1 major error and 4 or 5 minor errors if the bar heights are off by no more than 5 units.
0	The student earns 0 points. No understanding is shown.
B	Blank—No Response. A score of “B” will be reported as “NA.” (No attempt to answer the item. Score of “0” assigned for the item.)

Solution and Scoring

Part	Points															
1	3 points possible															
3 points:	<p>Correct and complete double bar graph that contains all of the following:</p> <ul style="list-style-type: none"> • Labels “Types of TV Shows” on the x- axis and “Number of Students” on the y-axis. • Labels “Comedy,” “Reality,” “Cartoons,” and “Drama” on the bars. • Interval on “Number of Students” axis is consistent. • Bars are same width. • All bars are the correct height (correct half of appropriate box). • Key is included to distinguish “Boys” from “Girls.” • “Boys” and “Girls” bars are distinguished in graph. • Title is included (for a score of 4). 															
	<p style="text-align: center;">Survey of 200 Eighth Graders Favorite Type of Television Show</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <caption>Data from Survey of 200 Eighth Graders</caption> <thead> <tr> <th>Type of Television Show</th> <th>Boys</th> <th>Girls</th> </tr> </thead> <tbody> <tr> <td>Comedy</td> <td>40</td> <td>32</td> </tr> <tr> <td>Reality</td> <td>18</td> <td>12</td> </tr> <tr> <td>Cartoons</td> <td>32</td> <td>15</td> </tr> <tr> <td>Drama</td> <td>10</td> <td>40</td> </tr> </tbody> </table>	Type of Television Show	Boys	Girls	Comedy	40	32	Reality	18	12	Cartoons	32	15	Drama	10	40
Type of Television Show	Boys	Girls														
Comedy	40	32														
Reality	18	12														
Cartoons	32	15														
Drama	10	40														
OR	<p>2 points: Graph contains 1 minor error or omission.</p> <p>Ex: One label is missing on bars.</p> <p>Ex: One bar is the incorrect height.</p> <p>Ex: Labels missing on x- and/or y-axes.</p>															
OR	<p>1 point: Some understanding of double bar graphs is shown.</p> <ul style="list-style-type: none"> • Graph contains 2–3 minor errors or omissions. <ul style="list-style-type: none"> Ex: Two bars are the incorrect height or are missing. Ex: The y-axis label is missing, 1 bar incorrect height. <li style="text-align: center;">or • Graph contains 1 major error (inconsistent intervals and up to 3 minor errors, “Boy”–“Girl” bars aren’t differentiated) with or without minor errors. <ul style="list-style-type: none"> Ex: Intervals are inconsistent, x-axis label is missing. Ex: “Boy” and “Girl” bars for “Type of Show” are non-adjacent. 															

Solution and Scoring (continued)

Part	Points
2	<p>1 point possible</p> <p>1 point: One correct conclusion. Examples:</p> <ul style="list-style-type: none"> • “The girls like drama shows more than the boys.” • “The number of boys who like comedy is the same as the number of girls who like drama.” • “The number of boys who like cartoons is the same as the number of girls who like comedy.” • “The boys like reality shows more than the girls.” • “The boys like comedy best and the girls like drama best.” <p>• Give credit for using “watch” instead of “like.” Ex: More boys watch comedy shows than girls do.</p> <p>Note: Do not give credit for conclusions referring only to boys or to girls but not both.</p>



SCORE: 4

Points

Part 1:

Correct and complete double bar graph:

- The graph is titled.
- The axes are labeled correctly.
- The bars are labeled correctly.
- The interval is consistent.
- All bars are the same width.
- All bars are the correct height.
- The key is included to distinguish between boys and girls.
- The girl and boy bars are distinguished on the graph.

3

Part 2:

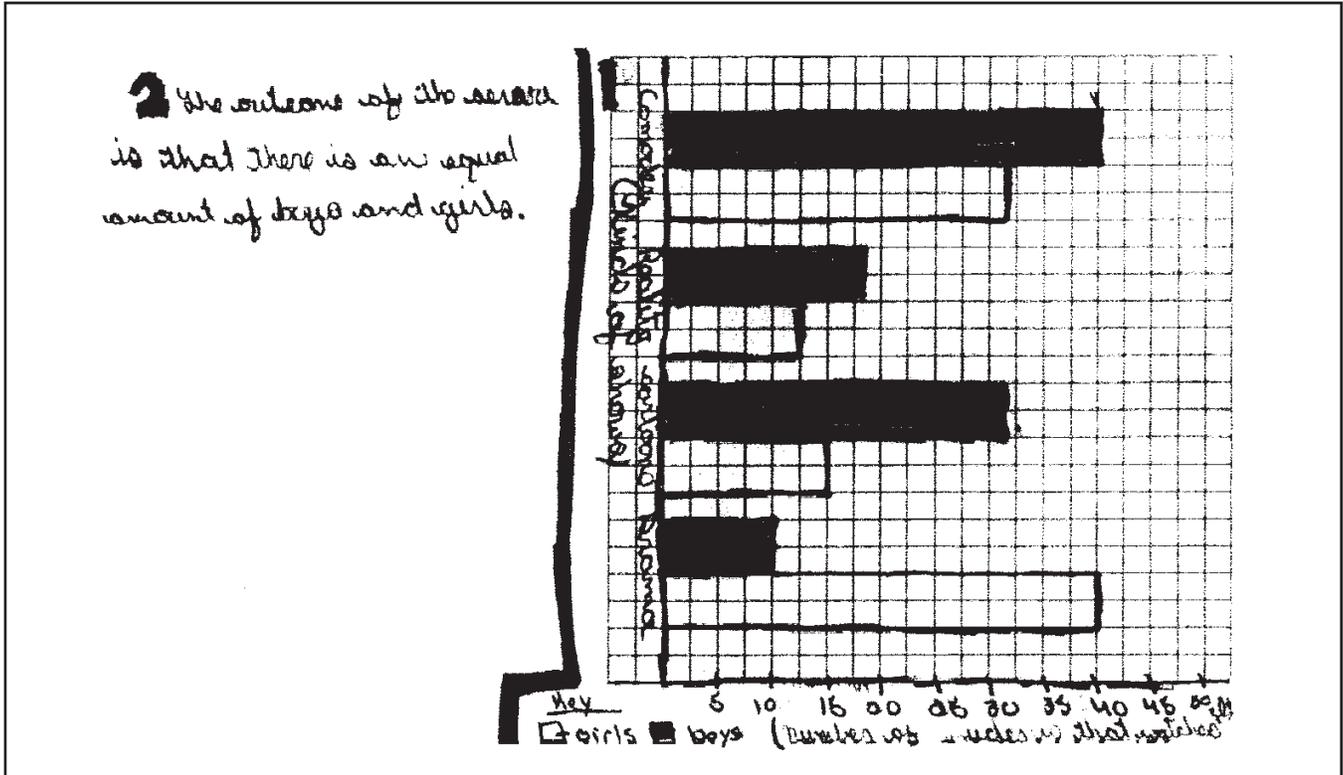
Correct conclusion:

“More boys like comedy, reality, and cartoons than girls, and more girls like drama than boys.”

1

TOTAL POINTS:

4



SCORE: 3

Part 1:

Correct double bar graph:

- The axes are labeled correctly.
- The bars are labeled correctly.
- The interval is consistent.
- All bars are the same width.
- All bars are the correct height.
- The key is included to distinguish between boys and girls.
- The girl and boy bars are distinguished on the graph.
- Note: Students were not directed to use the x-axis for the type of show.

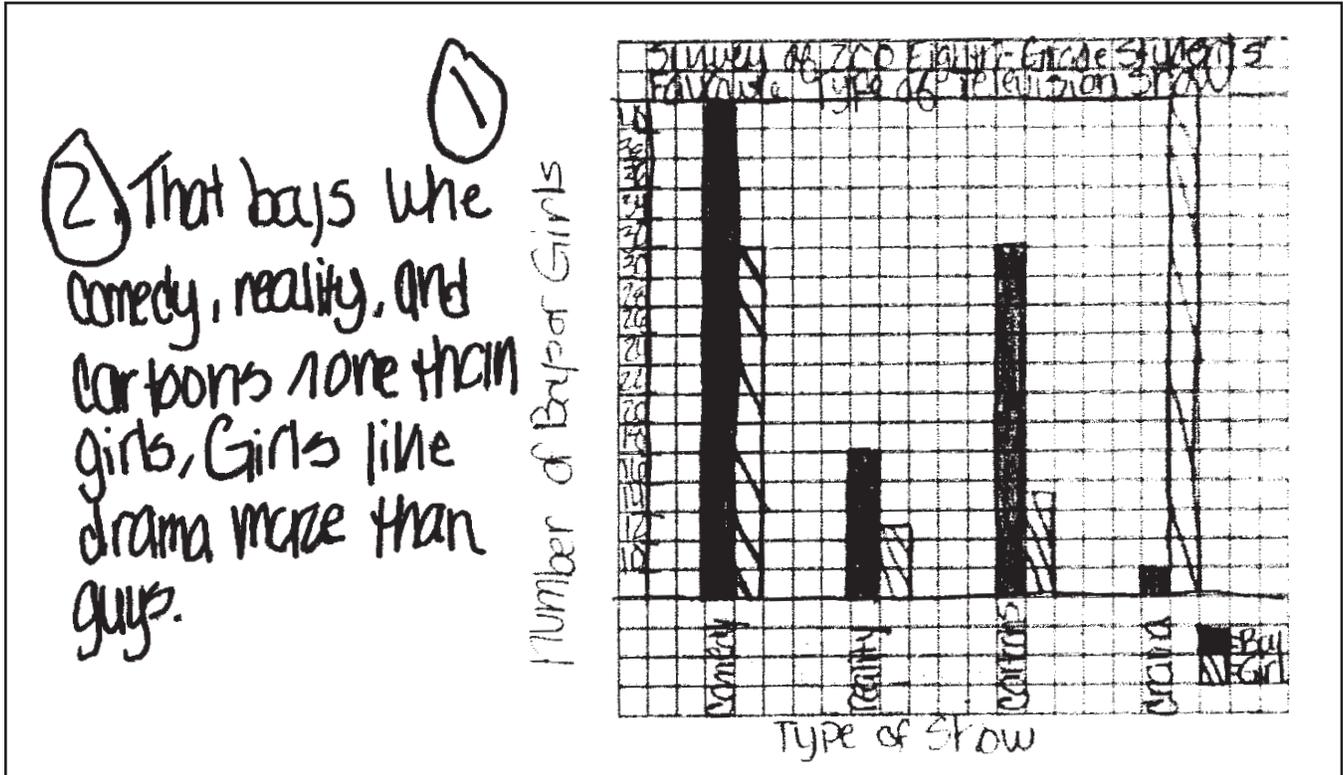
3

Part 2:

Incorrect conclusion:

“There is an equal amount of boys and girls.”
 Conclusion must deal with girls, boys, and types of television programs.

—



SCORE: 2

Points

Part 1:

Partially correct graph:
(1 major and 2 minor errors):

The graph is titled.
The axes are labeled correctly.
The bars are labeled correctly.
The interval is inconsistent.
All bars are the same width.
6 bars are the “correct” height.
2 incorrect—Boys, Comedy, and Girls, Drama.
The key is included to distinguish between boys and girls.
The girl and boy bars are distinguished on the graph.

1

Part 2:

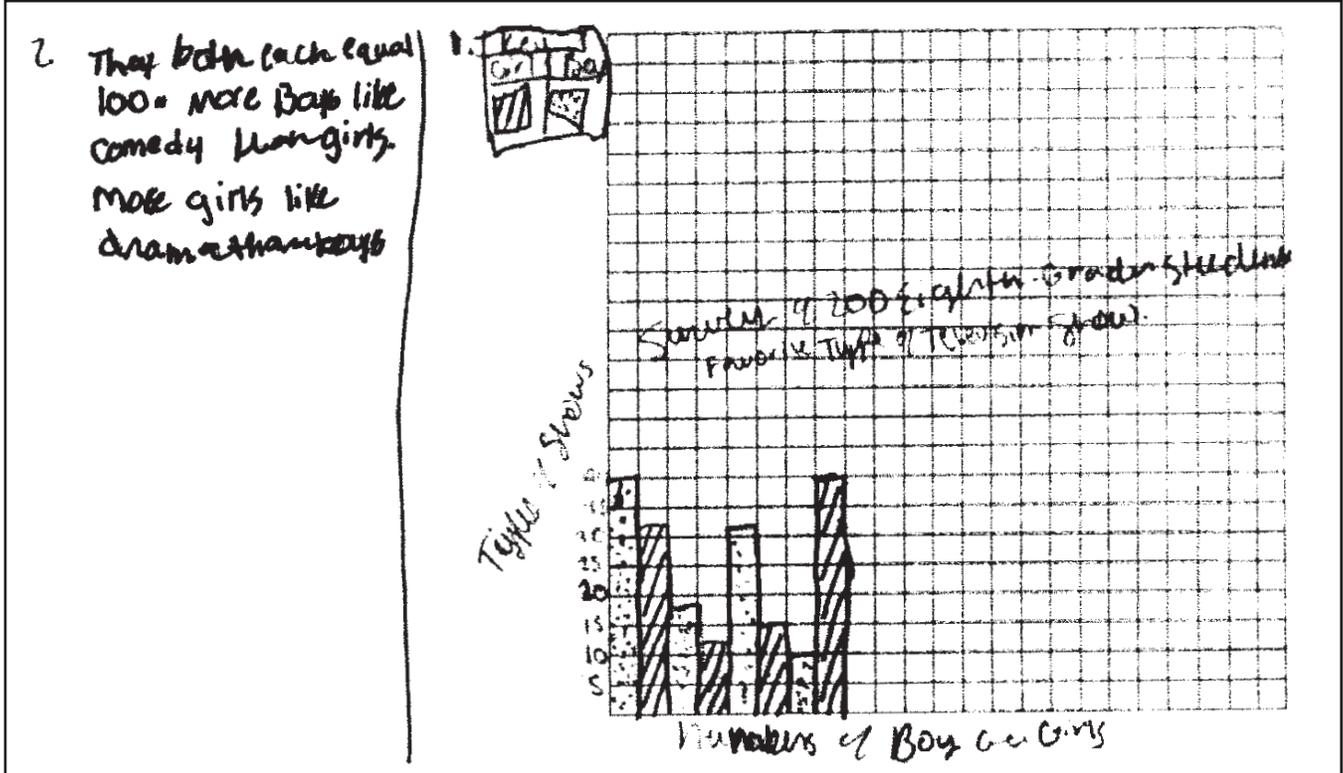
Correct conclusion:

“That boys like comedy, reality, and cartoons more than girls. Girls like drama more than boys.”

1

TOTAL POINTS:

2



SCORE: 1

Points

Part 1:

Graph is incorrect:

The axes are labeled incorrectly.

—

The bars are not labeled—without labels, the heights are meaningless.

Part 2:

Correct conclusion (from table):

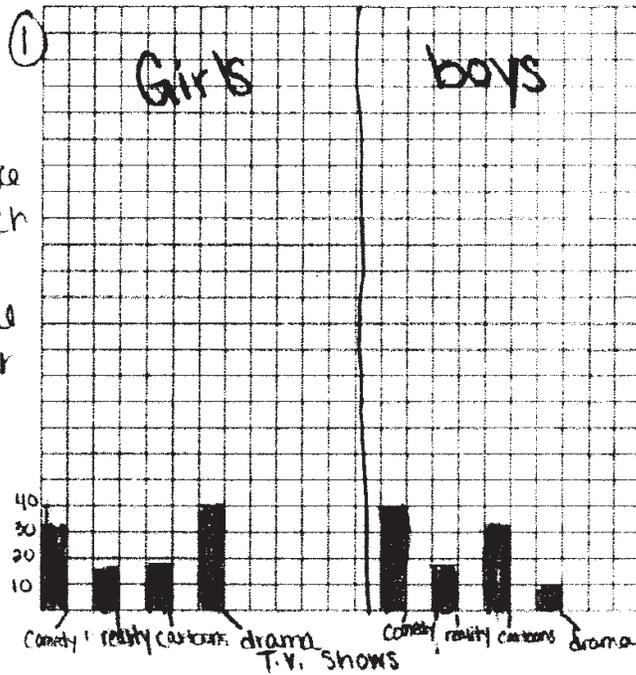
“More boys like comedy than girls.”

1

TOTAL POINTS:

1

② The conclusion that I draw from this is that Girls like drama and reality and the boys like comedy and cartoons much more. I came to this conclusion because of the shape of my double bar graph.



SCORE: 0

Points

Part 1:

Incorrect graph:

Not a double bar graph

—

Part 2:

Incorrect conclusion:

“Girls like drama (true) and reality (false)”

—

TOTAL POINTS:

0

Mathematics Item C—2007 Benchmark Grade 8

Answer the following.

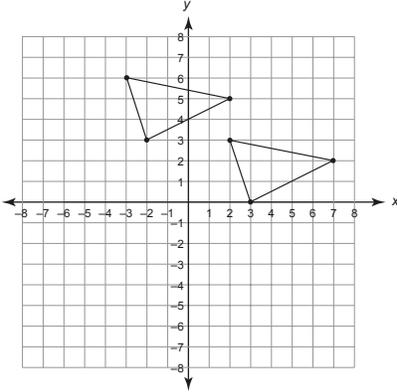
1. On the grid provided in your answer document, plot a triangle with the vertices (2, 5), (–3, 6), and (–2, 3).
2. Plot a triangle congruent to the triangle in Part 1, located 5 units to the right and 3 units down. What are the new coordinates of the vertices after the transformation has been performed?
3. Classify the transformation as being either a reflection, translation, or rotation.

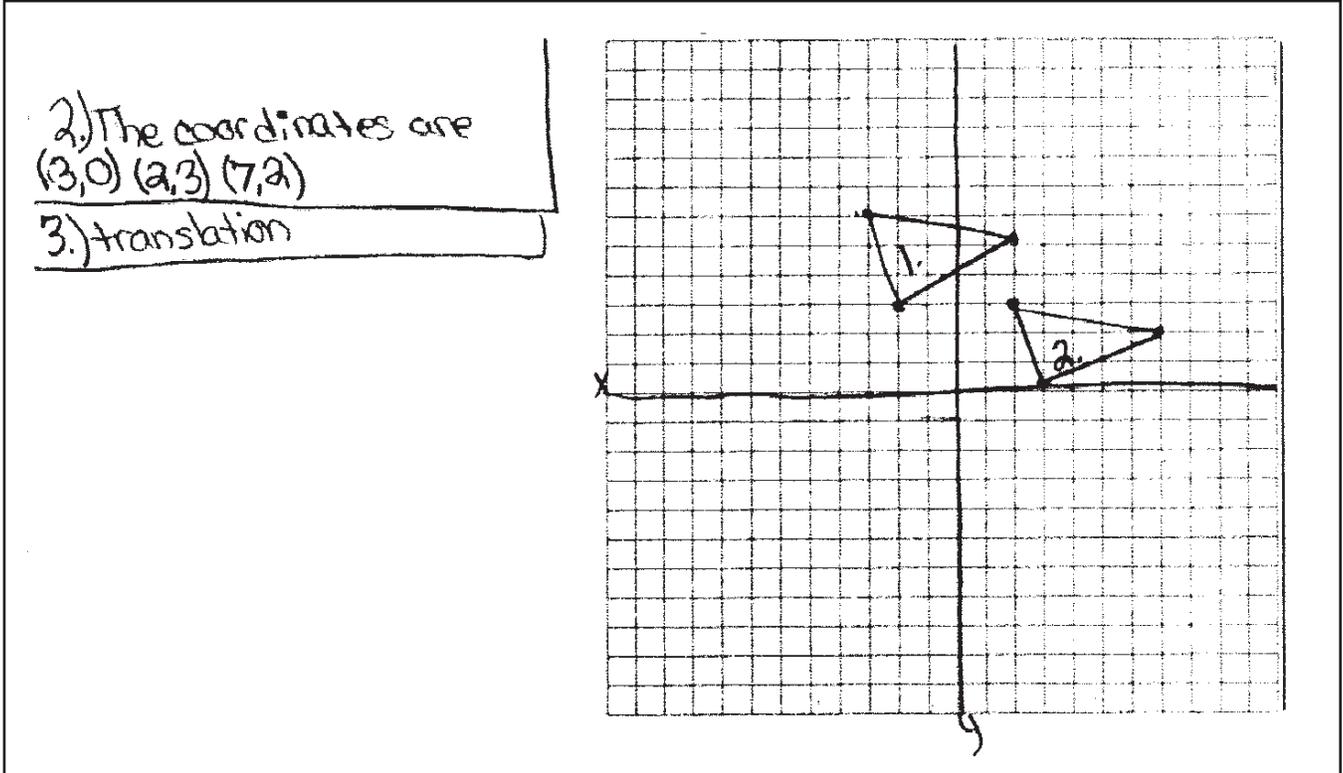
Mathematics Item C Scoring Rubric—2007 Benchmark Grade 8

SCORE	DESCRIPTION
4	The student earns 4 points. The response contains no incorrect work.
3	The student earns 3 points.
2	The student earns 2 points.
1	The student earns 1 point.
0	The student earns 0 points. No understanding is shown.
B	Blank—No Response. A score of “B” will be reported as “NA.” (No attempt to answer the item. Score of “0” assigned for the item.)

Mathematics Item C Solution and Scoring—2007 Benchmark Grade 8

Solution and Scoring

Part	Points
<p>1</p>	<p>1 point possible</p> <p>1 point: The triangle is drawn correctly (see Part 2 for diagram).</p> <ul style="list-style-type: none"> • Three vertices plotted correctly at (2, 5), (-3, 6), and (-2, 3). • Segments between vertices are connected.
<p>2</p>	<p>2 points possible</p> <p>2 points: The response is correct and complete. The triangle in Part 1 is correctly translated 5 units right and 3 units down, and 3 correct ordered pairs of the vertices of the translation are listed: (7, 2), (2, 3), (3, 0). Note: Translation may be based on incorrect triangle drawn in Part 1. Ex:</p> <div style="text-align: center;">  </div> <p>OR</p> <p>1 point: The response is incomplete or incorrect due to 1 counting error ± 1 or 1 copy error. Any other error will be considered a procedural error. Note: The translation may be based on an incorrect triangle in Part 1. Give credit for the following:</p> <ul style="list-style-type: none"> • Translation is correctly plotted (based on Part 1), but ordered pair(s) are incorrect or missing, or • Translation is incorrectly plotted due to a counting error ± 1 or copy error. Three ordered pairs are correct based on counting or copy error, or are named (7, 2), (2, 3), (3, 0). Ex: Part 1 is correct: (2, 5), (-3, 6), (-2, 3) are correctly plotted. Vertices of the translation are plotted and named as follows: (8, 2), (2, 3), (3, 0). First x-coordinate is +1 (counting error +1). Ex: Part 1 is correct: (2, 5), (-3, 6), (-2, 3) are correctly plotted. Vertices of the translation are plotted and named as follows: (7, 3), (2, 4), (3, 1). The y-coordinates are shifted down 2 (copy error - 1). <p>Note: Do not give any credit if translation is incorrect due to a procedural error.</p>
<p>3</p>	<p>1 point possible</p> <p>1 point: Correct answer: Translation. Note: No reason is required, but if one is given, it may not be incorrect.</p>



SCORE: 4

Points

Part 1:

Triangle drawn correctly:

1

Part 2:

Correct translation and vertices: $(3, 0)$, $(2, 3)$, $(7, 2)$

2

Part 3:

Correct answer: Translation

1

TOTAL POINTS:

4

③ the transformation is translation because it just slid over and made another triangle.

transformation: translation

$(8, 2)$
 $(3, 3)$
 $(4, 0)$

$(2, 5), (-3, 6), (-2, 3)$

SCORE: 3

Points

Part 1:

Triangle drawn correctly:

1

Part 2:

Incorrect translation due to copy error:

$(8, 2), (3, 3), (4, 0)$

1

Vertices correct based on copy error.
 (Translation is 6 units to the right.)

Part 3:

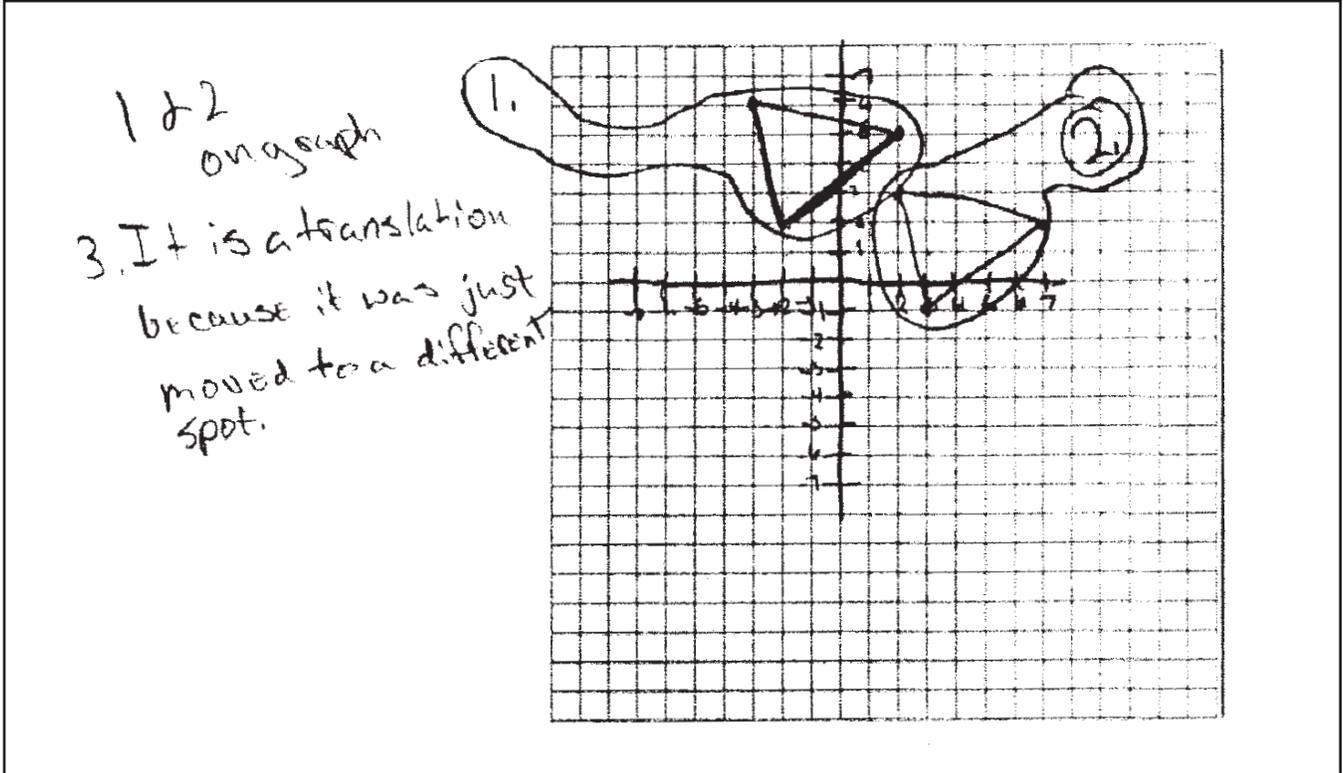
Correct answer:

Translation

1

TOTAL POINTS:

3



SCORE: 2

Points

Part 1:

Triangle plotted incorrectly: $(-2, 3)$ plotted at $(-2, 2)$

–

Part 2:

Correct translation (based on Part 1):

1

Vertices are missing:

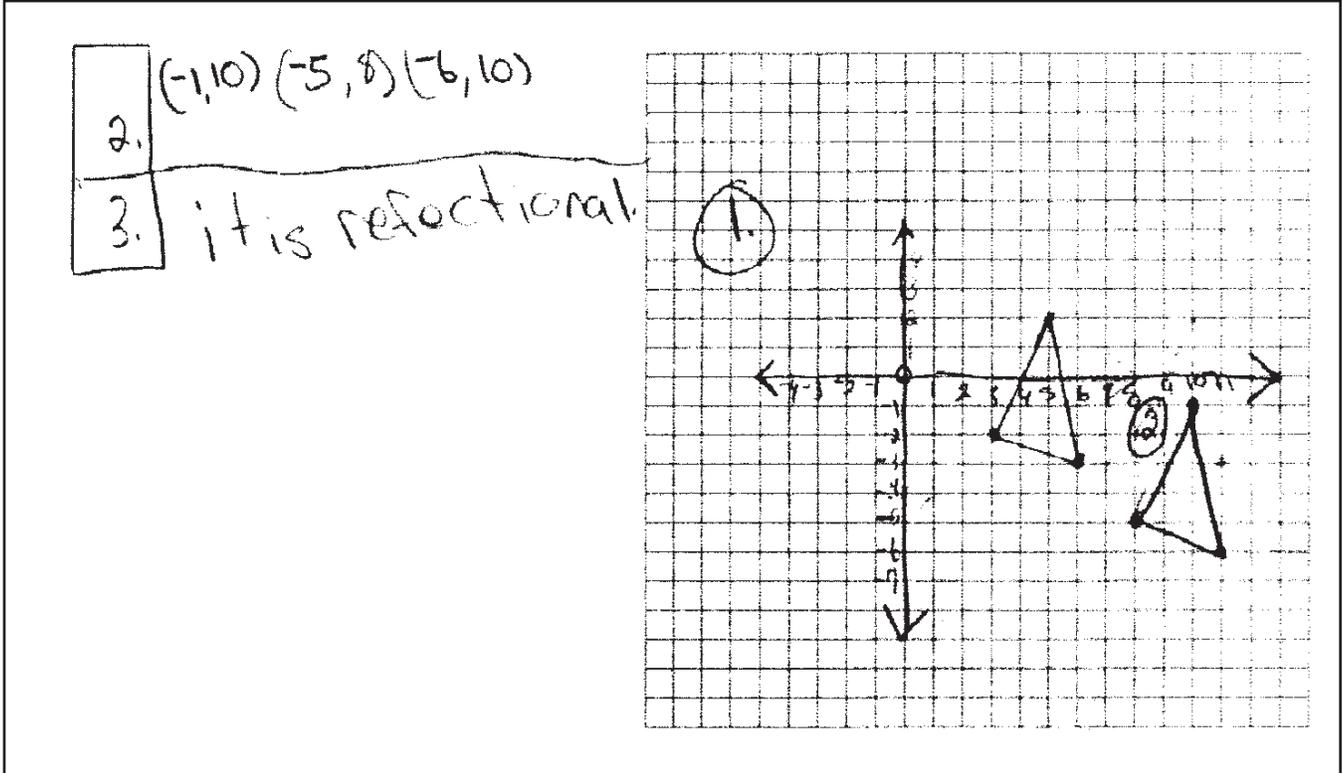
Part 3:

Correct answer: Translation

1

TOTAL POINTS:

2



SCORE: 1

Points

Part 1:

Triangle drawn incorrectly:

—

Part 2:

Correct translation (based on Part 1):

1

All vertices are incorrect:

Part 3:

Incorrect answer:

Reflection

—

TOTAL POINTS:

1

① The new coordinates are $(7, 1)$, $(6, 4)$ and $(10, 3)$

③ They are a reflection because they look the same but the second one is just moved over a little bit.

SCORE: 0

Points

Part 1:

Triangle not drawn:

—

Vertices are correctly plotted:

Part 2:

No triangle drawn:

—

Part 3:

Incorrect answer:

Reflection

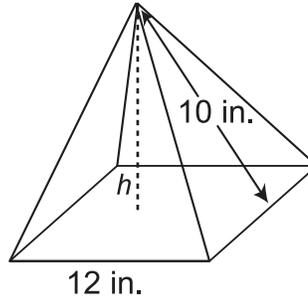
—

TOTAL POINTS:

0

Mathematics Item D—2007 Benchmark Grade 8

The figure below is a pyramid with a slant height of 10 inches and a 12-inch square base.



1. What is the surface area of the pyramid? Show your work.
2. Find the height, h , of the pyramid. Show your work.
3. What is the volume of the pyramid? Show the formula and your work.

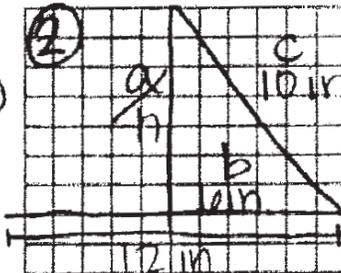
Mathematics Item D Scoring Rubric—2007 Benchmark Grade 8

SCORE	DESCRIPTION
4	The student earns 6 points. The response contains no incorrect work. The response contains the correct labels of “square inches” in Part 1, “inches” in Part 2, and “cubic inches” in Part 3.
3	The student earns 4–5 points.
2	The student earns 3 points or 2 points if the points are from different parts.
1	The student earns 2 from the same part, or the student earns 1 point, or some minimal understanding is shown: Ex. The student finds the area of the base and four triangles in Part 1 but does not add. Ex. The student finds the area of at least one triangle in Part 1.
0	The student earns 0 points. No understanding is shown.
B	Blank—No Response. A score of “B” will be reported as “NA.” (No attempt to answer the item. Score of “0” assigned for the item.)

Solution and Scoring

Part	Points
1	<p>2 points possible</p> <p>1 point: Correct answer: 384 (square inches). Do not give credit for answer if incorrect procedure is used.</p> <p>AND</p> <p>1 point: Correct procedure shown and/or explained. Work may contain a calculation or copy error. Give credit for the following or equivalent:</p> <ul style="list-style-type: none"> • $SA = \text{area of base} + \text{area of four sides} =$ $(12 \times 12) + 4\left(\frac{1}{2} \times 12 \times 10\right) = \text{Total \#, or}$ • “The area of one side is $\frac{(12)(10)}{2}$ or 60, so 4 would be 240, the area of the base is 12^2 or 144, so I added and got 384,” or • $144 + 240 = 384.$
2	<p>2 points possible</p> <p>1 point: Correct answer: 8 (inches). Do not give credit for answer if incorrect procedure is used.</p> <p>AND</p> <p>1 point: Correct and complete procedure shown and/or explained. Work may contain a calculation or copy error. Give credit for the following or equivalent:</p> <ul style="list-style-type: none"> • $h^2 + 6^2 = 10^2, \quad h^2 = 64, \quad h = 8,$ or • “h and 6 are legs of a right triangle with a hypotenuse of 10. This would make a 6-8-10 right triangle, so the height is 8.”
3	<p>2 points possible</p> <p>1 point: Correct answer: 384 (cubic inches)—will also accept 380.16, 383.616 to 384), or correct answer based in an incorrect height given in Part 2 <u>and/or</u> incorrect area of base in Part 1. Do not give credit for answer if incorrect procedure is used.</p> <p>AND</p> <p>1 point: Correct and complete procedure shown and/or explained. Work may contain a calculation or copy error or may be based on an incorrect height given in Part 2. Give credit for the following or equivalent:</p> <ul style="list-style-type: none"> • $\text{Volume} = \left(\frac{1}{3} \times 12 \times 12 \times 8\right) = 384,$ or • $v = .33 \times 12^2 \times 8 = 380.16,$ or • “I multiplied the area of the base 144 by the height of 8 and divided the product by 3 to get the volume.”

① base = lw $\Delta A = \frac{1}{2}bh$
 $b = 12(12)$ $\Delta A = \frac{1}{2}(12)(10)$
 $b = 144$ $\Delta A = \frac{1}{2}(120)$
 $\Delta 4A = 4(60)$ $\Delta A = 60$
 $\Delta 4A = 240$
 $144 + 240 = 384 \text{ in}^2$ surface area

②  $a^2 + b^2 = c^2$
 $a^2 + 36 = 10^2$
 $a^2 + 36 = 100$
 -36 -36
 $\sqrt{a^2} = \sqrt{64}$
 $a = 8 \text{ in}$
 The height of the pyramid is 8 inches.

③ $V = \frac{1}{3}(\text{area of base})h$
 $V = \frac{1}{3}(12 \cdot 12) 8 \text{ in}$
 $V = \frac{1}{3}(144) 8 \text{ in}$
 $V = \frac{1}{3}(1152)$
 $V = 384 \text{ in}^3$

SCORE: 4

Points

Part 1:

Correct answer: 348 in² 1

Correct and complete procedure: Area of $\Delta = \frac{1}{2}(12)(10) = 60$ 1

$4 \times 60 = 240$

Area of base = $12(12) = 144$

$144 + 240 = \#$

Part 2:

Correct answer: 8 inches 1

Correct and complete procedure: $a^2 + 6^2 = 10^2$, $a = \#$ 1

Part 3:

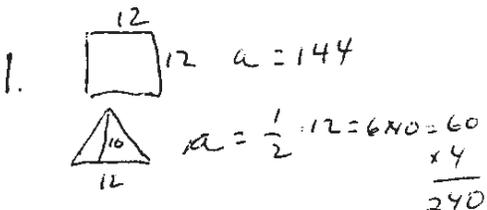
Correct answer: 384 in³ 1

Correct and complete procedure: $v = \frac{1}{3}(12 \cdot 12) 8 \text{ in}$, $v = \#$ 1

TOTAL POINTS:

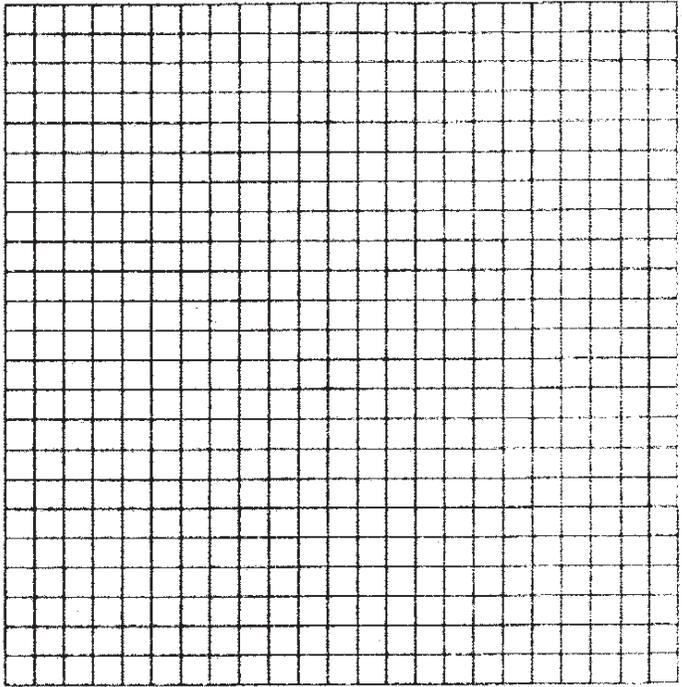
6

Units are correct in all 3 parts.

1.  $a = 144$
 $a = \frac{1}{2} \cdot 12 \cdot 10 = 60$
 $\begin{array}{r} 60 \\ \times 4 \\ \hline 240 \end{array}$
 $144 + 240 = 384 \text{ in}$

2. 8 in

3. $V = \frac{1}{3} \times 144 \times 8 = 284 \text{ in}$



SCORE: 3

Points

Part 1:

Correct answer:	384 (in)	1
Correct and complete procedure:	a (square) = 144 a (Δ) = $\frac{1}{2} \cdot 12 = 6 \times 10 = 60$ $\begin{array}{r} \times 4 \\ 240 \end{array}$ $144 + 240 = \#$	1

Part 2:

Correct answer:	8 in	1
Missing procedure:		—

Part 3:

Incorrect answer due to calculation error:	284 (in)	—
Correct & complete procedure:	$\frac{1}{3} \times 144 \times 8 = 284 \text{ in}$ (calculation error)	1

TOTAL POINTS:

4

1) $12 \times 12 = 144$
 $\frac{1}{2}(12 \times 10) = 120$

120	144
$\times 4$	480
480	624

3) $8 \times 10 = 80$
 $12 \times 80 = 960$

SCORE: 2

Points

Part 1:

Incorrect answer due to calculation error:

624

—

Correct and complete procedure:

$\frac{1}{2}(12 \times 10) = 120$ (calculation error)

1

$120 \times 4 = 480, 144$

480

#

Part 2:

Correct answer:

8

1

Incomplete procedure:

Draws triangle, divides base by 2, no statement regarding Pythagorean triple or use of Pythagorean Theorem.

—

Part 3:

Incorrect answer:

960

—

Incorrect procedure:

$12 \times 80 = \#$

—

TOTAL POINTS:

2

1) A pyramid with a square base of 12 inches has an area of 144 inches. A square has 4 equal sides and if 1 is 12 they all are 12. $A = 12(12)$
 $A = 144$
 2) h is 5 inches

3) $V = \frac{1}{3} (\text{area of base})h$
 $V = \frac{1}{3} (144)(5)$
 $V = 47.52(5)$ $V = 237.6$ inches

SCORE: 1

Points

Part 1:

Incorrect answer:	144	—
Incorrect procedure:	$12 \times 12 = 144$	—
	Finds area of base only.	

Part 2:

Incorrect answer:	5 inches	—
Missing procedure:		—

Part 3:

Correct answer (based on Part 2):	237.6	1
Correct and complete procedure:	$\frac{1}{3} (144) (5) = \#$ (uses $\frac{1}{3} = .33$)	1

TOTAL POINTS:

2

1.) $SA = l \cdot w \cdot h = 1872 \text{ in}^3$

2.) $a^2 + b^2 = c^2$ $h = 15.6 \text{ in}^3$
 $12^2 + 10^2 = c^2$
 $144 + 100 = c^2$
 $244 = c^2$
 $c = \sqrt{244}$ $c = 15.6$

3.) $V = \frac{1}{3} (\text{area of base}) h$
 $V = \frac{1}{3} (12) 15.6$
 $V = 62.4 \text{ in}^3$

SCORE: 0

Points

Part 1:

Incorrect answer:	1872 in. ³	—
Missing procedure:	States $SA = l \cdot w \cdot h$	—

Part 2:

Incorrect answer:	15.6 in. ³	—
Incorrect procedure:	$12^2 + 10^2 = c^2$, $c = 15.6$	—

Part 3:

Incorrect answer:	62.4 in. ³	—
Incorrect procedure:	$\frac{1}{3} (12) (15.6)$	—

TOTAL POINTS:

0

Mathematics Item E—2007 Benchmark Grade 8

Answer the following.

1. On the grid provided in your answer document, write the numbers below in order from **least to greatest**.

$$5 \quad 3.14159 \quad \sqrt{3} \quad -2 \quad \frac{3}{4} \quad -0.5 \quad -1.51511$$

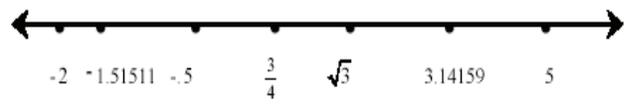
2. Draw a number line on which all the numbers will fit.
3. Plot each number on the number line from Part 2, using a dot for each, and label the number.

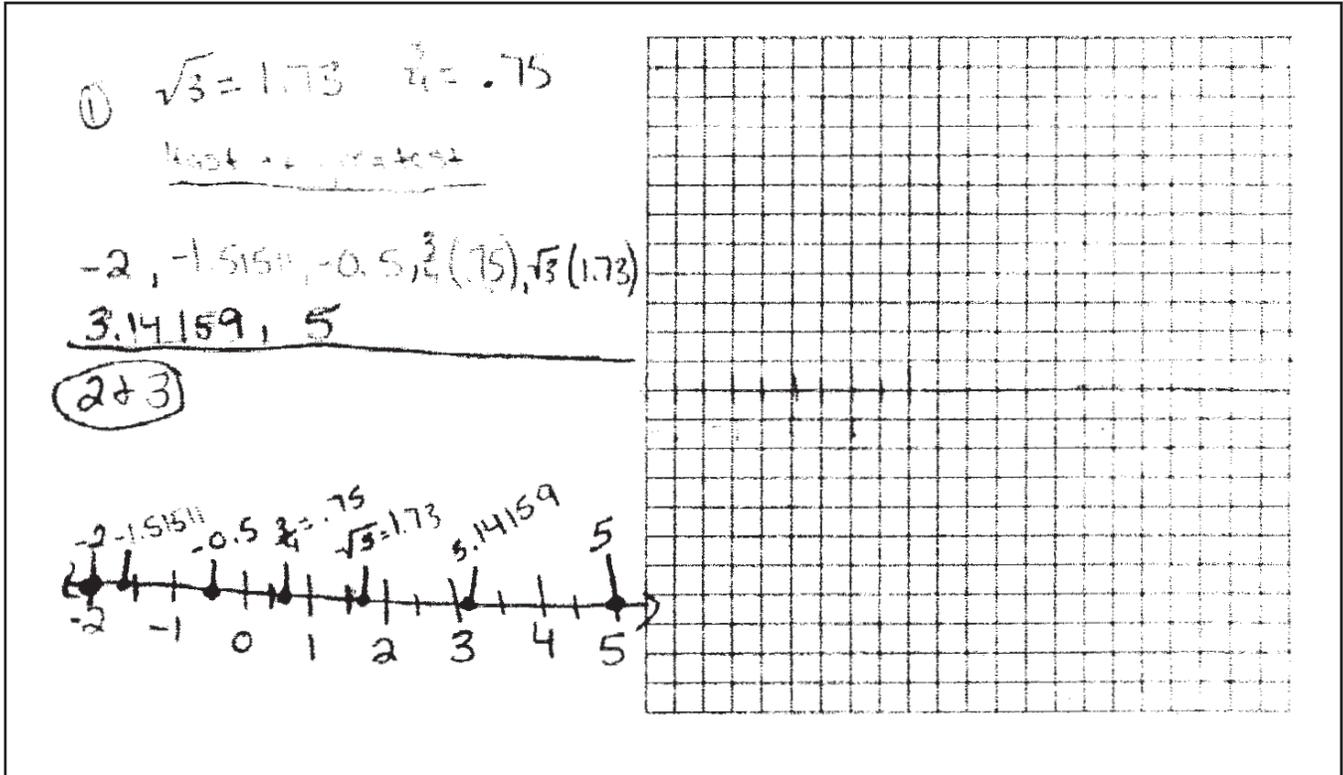
Mathematics Item E Scoring Rubric—2007 Benchmark Grade 8

SCORE	DESCRIPTION
4	The student earns 4 points. The response contains no incorrect work.
3	The student earns 3–3½ points.
2	The student earns 2–2½ points.
1	The student earns ½–1½ points.
0	The student earns 0 points. No understanding is shown.
B	Blank—No Response. A score of “B” will be reported as “NA.” (No attempt to answer the item. Score of “0” assigned for the item.)

Mathematics Item E Solution and Scoring—2007 Benchmark Grade 8

Solution and Scoring

Part	Points
1	<p>1 point possible</p> <p>1 point: Correct listing of the seven numbers from least to greatest. $-2, -1.51511, -.5, \frac{3}{4}, \sqrt{3}, 3.14159, 5$</p> <p>OR</p> <p>½ point: Incorrect listing of numbers due to one number missing or placed incorrectly. Going from left to right, cover up the first number that is placed incorrectly. Give credit if the 6 uncovered numbers are in the correct order.</p>
2	<p>1 point possible</p> <p>1 point: Correct and complete number line that contains the following:</p> <ul style="list-style-type: none"> • Integers from -2 to 5 are identified on the line (#'s and marks.) If the grid is used and each block on the grid represents the distance between consecutive integers, the numbers do not have to be identified. • Distance between integers is consistent. • Arrows show the line extends in both directions (3/4 score issue).
3	<p>2 points possible</p> <p>2 points: All seven points are plotted correctly and labeled. Points are located in the correct half of the appropriate interval (half marks need not be identified.)</p> <p align="center"> $-2 \quad -1.51511 \quad -.5 \quad \frac{3}{4} \quad \sqrt{3} \quad 3.14159 \quad 5$ </p>  <p>OR</p> <p>1 point: All seven points are in order and plotted in the correct half of the appropriate interval, but intervals are inconsistent or points are plotted above or below the number line.</p> <p align="center">Or</p> <p>All the following 1 point responses assume consistent intervals:</p> <p>All seven points are in order with six points plotted in the correct half of the appropriate interval.</p> <p align="center">Or</p> <p>One number is plotted incorrectly or is missing with six points plotted in the correct half of the appropriate interval.</p> <p align="center">Or</p> <p>All points are plotted correctly but are not identified, <u>if Part 1 is completely correct.</u></p> <p align="center">Or</p> <p>All points plotted “correctly” but are above or below the number line.</p> <p>OR</p> <p>½ point: All points are in the correct interval but at least two are in the incorrect half of the interval.</p> <p align="center">Or</p> <p>All points are plotted in the correct relative position.</p> <p>Ex:</p> 



SCORE: 4

Points

Part 1:

Correct answer:

Seven numbers ordered correctly.

1

Part 2:

Correct and complete number line:

Integers from -2 to 5 labeled and marked
 Intervals between integers consistent.
 Arrows on line.

1

Part 3:

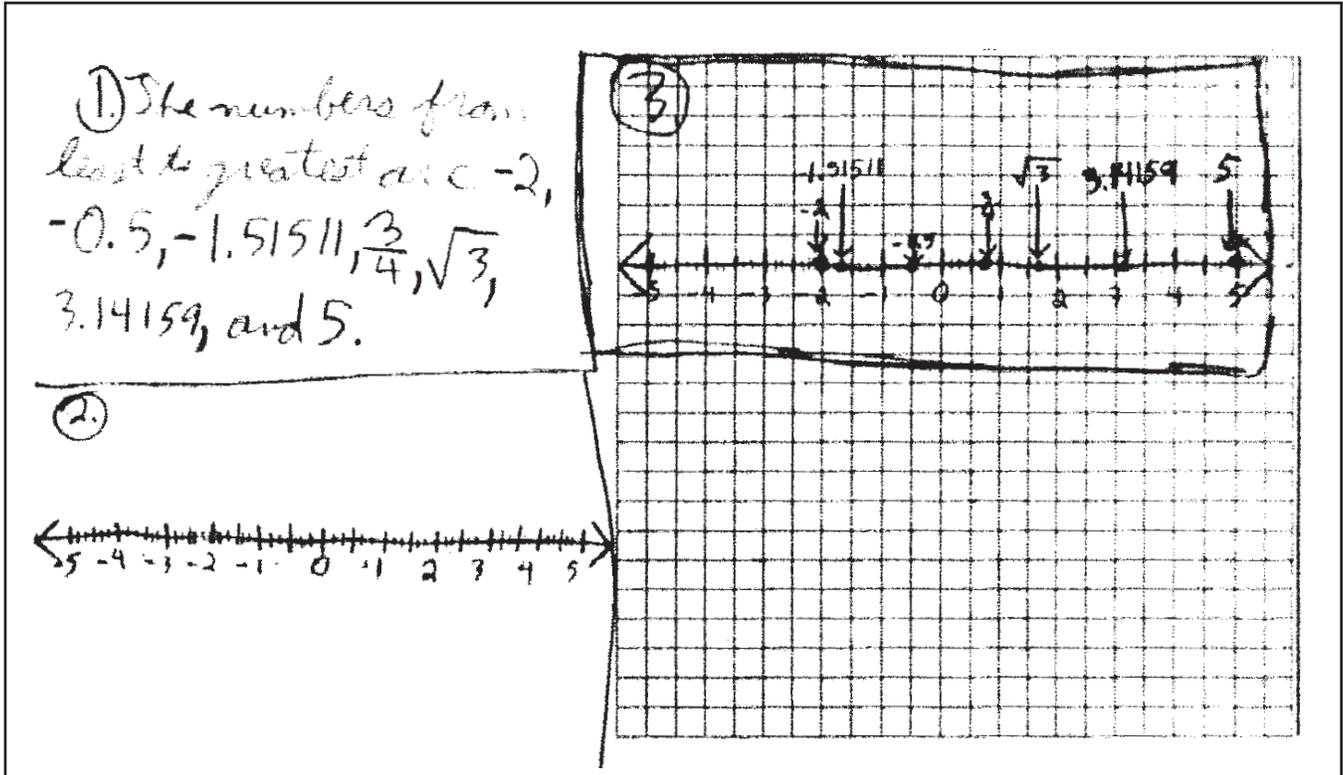
Correct and complete graph:

Seven points plotted in the correct half of the
 appropriate intervals and labeled correctly.

2

TOTAL POINTS:

4



SCORE: 3

Points

Part 1:

Partially correct answer:

Six numbers ordered correctly.
 $-.5 > -1.51511$

$\frac{1}{2}$

Part 2:

Correct and complete number line:

Integers from -2 to 5 labeled and marked.
 Intervals between integers consistent.
 Arrows on line.

1

Part 3:

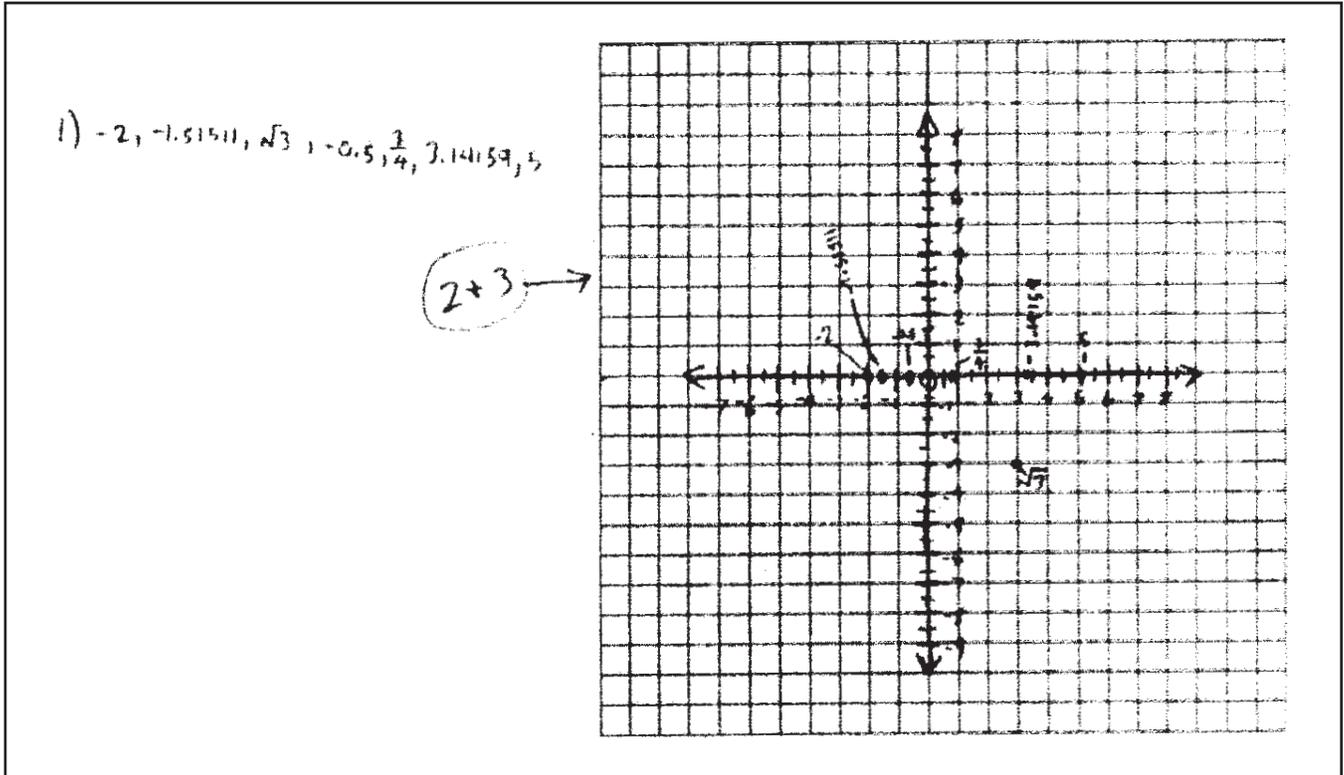
Correct and complete graph:

Seven points plotted in correct half of
 appropriate intervals and labeled correctly.

2

TOTAL POINTS:

$3\frac{1}{2}$



SCORE: 2

Points

Part 1:

Partially correct answer:

Six numbers ordered correctly.
 $\sqrt{3}$ incorrectly placed.

$\frac{1}{2}$

Part 2:

Correct and complete number line:

Integers from -2 to 5 labeled and marked.
 Intervals between integers consistent.
 Arrows on line.

1

Part 3:

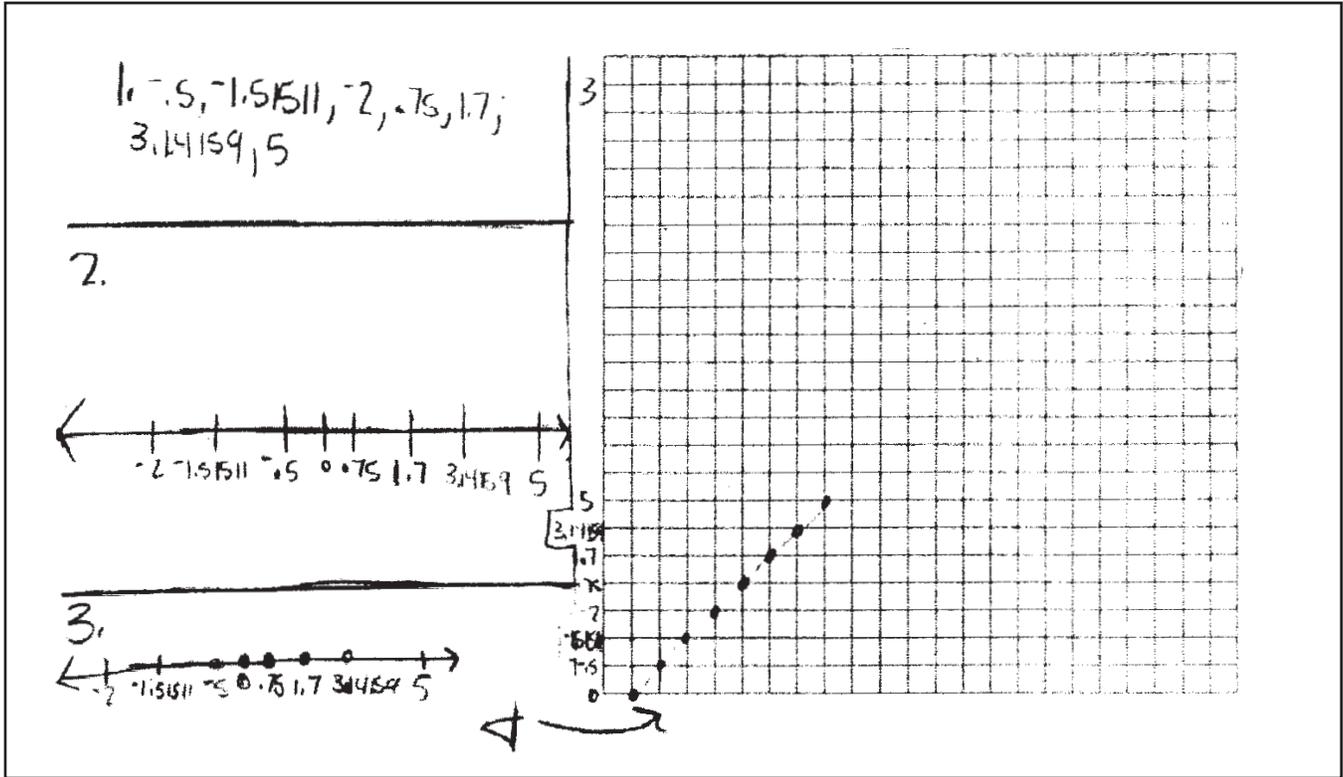
Partially correct graph:

Six numbers plotted in correct half of
 appropriate interval.
 $\sqrt{3}$ plotted incorrectly.

1

TOTAL POINTS:

$\frac{2}{2}$



SCORE: 1

Points

Part 1:

Incorrect answer:

More than one point is out of order.

—

Part 2:

Number line incorrect:

Integers between -2 and 5 not plotted.

—

Part 3:

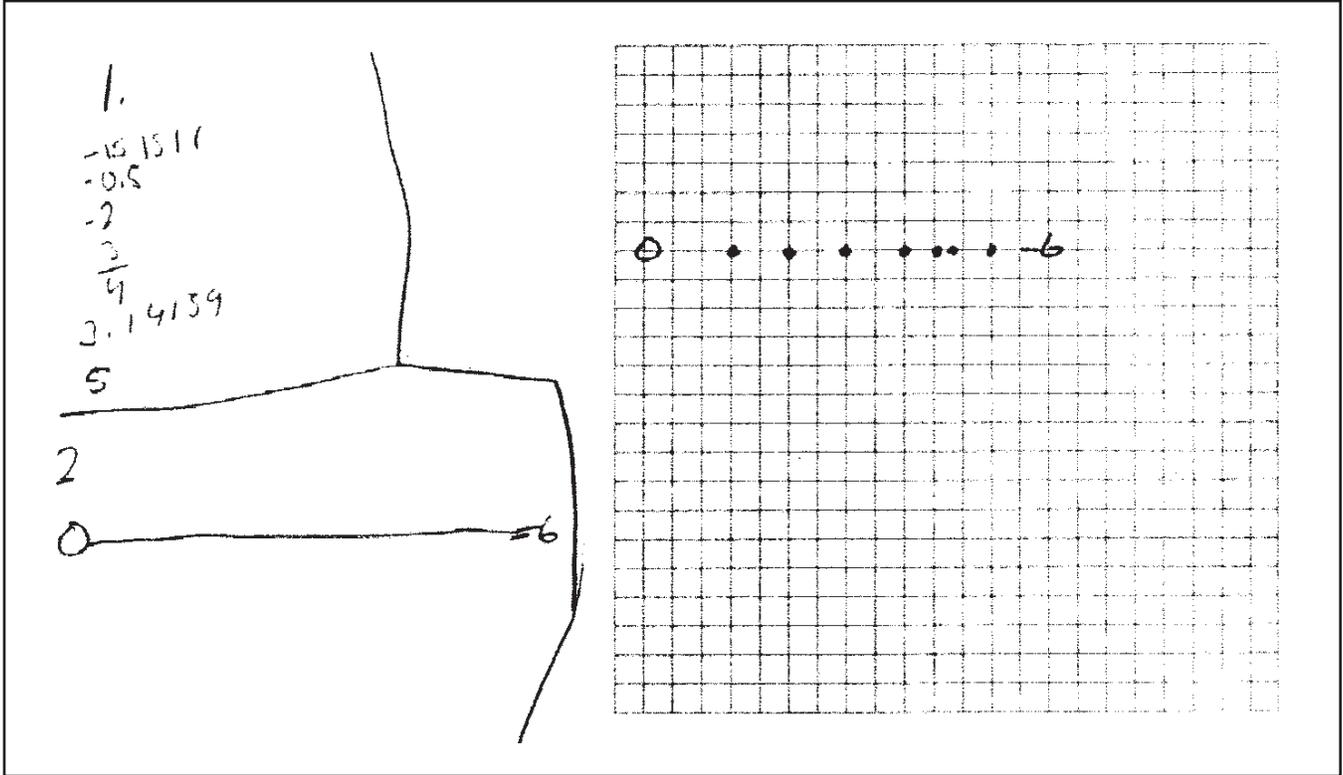
Partially complete graph:

Seven numbers plotted in correct relative position.

$\frac{1}{2}$

TOTAL POINTS:

$\frac{1}{2}$



SCORE: 0

Points

Part 1:

Incorrect answer:

-2 incorrect
 $\sqrt{3}$ missing.

—

Part 2:

Number line incorrect:

0 on left, -6 on right

—

Part 3:

Incorrect graph:

Points plotted but not labeled

-

TOTAL POINTS:

0

READING RESPONSES

EDUCATING A CONQUEROR: HOW
ALEXANDER
BECAME THE GREAT

by Shulamith Levey Oppenheim

One day, when he was six or seven, two Persian envoys¹ arrived at the palace. King Philip was away subduing warring tribes, and Alexander greeted the men. The envoys saw a boy who carried himself proudly. He had fair hair waving about his face and across his shoulders, and his features were near perfect, with deep-set violet eyes. As he spoke, a flush of excitement blushed his cheeks.

The envoys were amazed. The child did not ask about the legendary Hanging Gardens of Babylon or the kinds of games Persian children played. Instead, he asked about the size of the Persian Empire, its customs, and how fast its armies could travel across vast regions. The two diplomats came away more than impressed with the young prince.

At this time Alexander's world included his parents, tutors, servants, and boys his own age from noble families. He learned very early on that he was born to be a king and a commander of armies. He excelled in swordplay, archery, javelin throwing, and horsemanship, riding almost before he could walk.

Besides his military training, supervised by his first tutor, Leonidas, Alexander was taught to read and write. Special emphasis was put on thinking logically and expressing himself clearly.

An accomplished musician, he played the lyre, a stringed instrument.

When Alexander was almost ten, a new tutor took over his education. His name was Lysimachus. This man was far less cultured than Leonidas, but he held one great advantage. He knew that Alexander's mother, Olympias, proudly traced her ancestry back to Achilles, hero of the Trojan War, and that Alexander even now was trying to become another Achilles. So the clever Lysimachus called his pupil "Achilles." He referred to King Philip as "Peleus," the father of Achilles, and called himself "Phoenix," Achilles' legendary tutor.

About three years later, an incident took place that showed Alexander's ability to see what others, much older and more experienced than he, often missed.

It was a beautiful spring day, and father and son stood together, observing a majestic black stallion. His name was Bucephalus, and his purchase price had been beyond anything paid before—about \$75,000 in today's terms. Alexander felt his heart race in his chest. He adored horses, and this was indeed a glorious creature. But Bucephalus refused to be mounted, rearing and bolting and raging at the slightest attempt. In a fit, Philip ordered the horse to be returned to the

¹ envoys: diplomatic messengers

merchant Philonicus.

Suddenly Alexander asked his father if he might try mounting the horse. Philip answered that no one had been able to do so. Alexander insisted. His father relented, asking what he planned to do if he failed. Alexander replied that he would buy the horse himself.

Without hesitation, Alexander took hold of the bridle and turned the magnificent animal directly into the sun. He spoke softly to Bucephalus, and slowly the horse's panting and rearing ceased. As the great stallion lowered his head, Alexander sprang onto his back and rode him. What Alexander had noticed was that, when Bucephalus had his tail to the sun, the horse's shadow lay before him, and as he moved, so did the shadow, growing larger and larger, plunging and rearing, terrifying the horse.

As the onlookers cheered, Philip, filled with relief and pride, uttered these prophetic words: "My son, seek out a kingdom for yourself. Macedonia has no room for you."

From that day, Alexander and Bucephalus became inseparable. Even years later, when the grand creature had grown too old to ride into battle, Alexander would mount him for a few minutes and trot him gently before the troops, then dismount and kiss him. When

Bucephalus died, seventeen years after that radiant spring day, he was given a royal burial and a city was named for him. The ruins of that city, Bucephalia, still remain in what is today Kashmir.

After Alexander's dazzling success with Bucephalus, Philip realized his exceptional son needed an exceptional teacher. And so he chose Aristotle, the brilliant philosopher whose father had been physician to Philip's father.

Aristotle was already celebrated as one of the greatest minds of his time, a reputation that has not lessened to this day. He had a thorough

knowledge of geometry, mathematics, botany, zoology, geology, astronomy, and medicine.

14 Eager to further his son's education, Philip set up an ideal environment for study and contemplation in a place called Mieza, not far from the capital city of Pella. In the calm of shady walks and secluded nooks, stone benches beckoned Alexander and his companions, all sons of nobles, to sit beside the master Aristotle, to listen and debate. Alexander's mind expanded beyond his father's fondest hopes. He loved to learn and, especially, he loved the healing arts.

Aristotle taught that all knowledge was essential to the pursuit of a fruitful life, not just the sciences but also literature and music. First and foremost, however, was the sharpening of the mind. Aristotle encouraged his pupil to observe, to think through, to reason. Alexander had already proven himself when he brilliantly observed Bucephalus and then tamed him. Now Aristotle strengthened

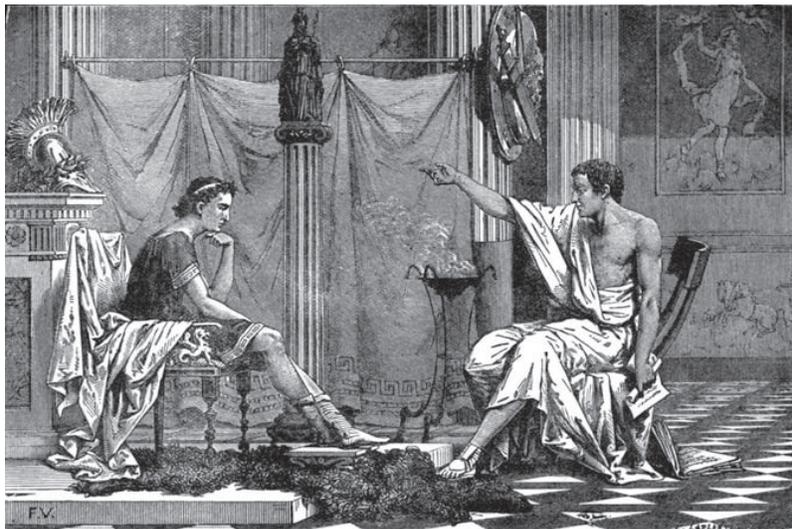
this ability. He taught Alexander the advantage of seeing both sides of a problem and of being able to argue successfully in favor of either.

The one area of disagreement between teacher and student was Aristotle's belief that all who were not Greek were barbarians and possessed the nature

of slaves. He counseled Alexander to be a leader to Greeks and a tyrant to all others. Alexander did not agree. He believed in taking each human being on his or her own merit.

Nonetheless, Alexander thrived under Aristotle's guidance. When he was older, he confided to a friend, "My father gave me life, but it was Aristotle who taught me how to live the noble life."

When Alexander was sixteen, Philip decided it was time his son had a taste of the responsibility that would someday be his alone. The king left



Reading Passage A (continued)—2007 Benchmark Grade 8

Alexander in charge of Macedonia while he went off on an expedition.

The moment Philip's back was turned, an unruly tribe in the north began a revolt, believing their chances of success against a sixteen-year-old boy to be excellent. They were wrong! Alexander subdued the rebels, captured their city, and renamed it Alexandropolis.

Four years later, just as Philip was mounting a campaign to invade Persia, he was assassinated, and Alexander became king. He was twenty years old.

Now began an unparalleled journey of conquest for this brilliant, at times recklessly courageous—but more often calculating—young man.

Reading Item A—2007 Benchmark Grade 8

- A. The passage describes three different tutors who taught the young Alexander. Identify two of these tutors and explain the contributions each made to Alexander’s education. Use information from the passage to support your answer.

Reading Item A Scoring Rubric—2007 Benchmark Grade 8

SCORE	DESCRIPTION
4	The response identifies two of the tutors and explains the contributions each made to Alexander’s education using specific details from the passage.
3	The response identifies two of the tutors and explains the contributions each made to Alexander’s education using general details from the passage.
2	The response identifies one tutor and explains the contributions he made to Alexander’s education using limited or inappropriate details from the passage.
1	The response demonstrates a minimal understanding of the role of the tutors. OR The response provides limited or inappropriate details from the passage.
0	The response is totally incorrect or irrelevant. There is no evidence that the student understands the task, or the response may be off-topic.
B	Blank—No Response. A score of “B” will be reported as “NA.” (No attempt to answer the item. Score of “0” assigned for the item.)

Score Point: 4

The student identifies two of the three different tutors who taught the young Alexander and explains the contributions each made to Alexander's education using specific, accurate, and relevant information from the passage in support (Leonidas—"read and write"; "think logically and express himself clearly"; "helped him learn to play the lyre"; Aristotle—"encouraged Alexander to observe and to reason"; "taught him the advantage of seeing both sides of a problem and being able to argue in favor of either"). The response demonstrates a thorough understanding of the passage.

Alexander had three different tutors. The first tutor was Leonidas. Leonidas taught Alexander to read and write. He also taught him to think logically and express himself clearly. Leonidas helped him learn to play the lyre. The third tutor he had was Aristotle. He was a brilliant person. He taught Alexander all he needed to know. He encouraged Alexander to observe and to reason. He taught him the advantage of seeing both sides of a problem and being able to argue in favor of either. Alexander had great tutors during his life who taught him very well.

Score Point: 3

The student identifies two of the three different tutors who taught the young Alexander and explains the contributions each made to Alexander’s education; however, one of the explanations is general and not specific enough for a detail (“Aristotle had a thorough knowledge of geometry botany and zoology and much more” and “Lysimachus held one great advantage. He knew that Alexander’s mother, Olympias, proudly traced her ancestry back to Achilles, hero of the Trojan war”). The response provides evidence of general but not comprehensive understanding of the passage.

The two tutors are Aristotle and Lysimachus. Aristotle had a thorough knowledge of geometry botany and zoology and much more. Lysimachus held one great advantage. He knew that Alexander's mother, Olympias, proudly traced her ancestry back to Achilles, hero of the Trojan war.

Score Point: 2

The student identifies one of the three different tutors who taught the young Alexander and explains the contributions made to Alexander’s education (Leonidas—“taught Alexander to read and write. He taught him to put special emphasis on thinking logically and expressing himself”). This is an example of a basic understanding of the passage.

The first tutor was Leonidas. He taught Alexander to read and write. He taught him to put special emphasis on thinking logically and expressing himself.

Score Point: 1

The student does not identify a tutor but demonstrates a minimal understanding of the role of the tutors. The response is inadequate and provides evidence of minimal understanding.

Alexander was taught to read and fight by two tutors.
The tutors are who helped him out over the years.
At first he did not know how to read or fight.

Score Point: 0

There is no evidence that the student understands the task. The response is irrelevant.

I think that Alexander's soul asked his father to
buy the horse for him because his father
gave him life and his father could buy
the horse for his son.

For a copy of the reading passage, “The Sky’s the Limit” by Heather M. Hopkins, please refer to the hard copy version of the Teacher Handbook.

For a copy of the reading passage, “The Sky’s the Limit” by Heather M. Hopkins, please refer to the hard copy version of the Teacher Handbook.

Reading Item B—2007 Benchmark Grade 8

- B.** Guion Bluford and Vance Marchbanks have a common background experience which makes them especially suited to the space program. Identify this experience. Explain how past experiences make both of them good choices for their specific jobs at NASA. Use specific information from the passage to support your response.

Reading Item B Scoring Rubric—2007 Benchmark Grade 8

SCORE	DESCRIPTION
4	The response identifies what Guion Bluford and Vance Marchbanks have in common. The response explains how their past experiences make both of them good choices for their specific jobs at NASA.
3	The response identifies what Guion Bluford and Vance Marchbanks have in common. The response explains how past experiences make one of them a good choice for his specific job at NASA.
2	The response identifies what Guion Bluford and Vance Marchbanks have in common. The response attempts to explain how past experiences make one of them a good choice for his specific job at NASA.
1	The response attempts to identify what Guion Bluford and Vance Marchbanks have in common. OR The response attempts to explain how past experiences make one of them a good choice for his specific job.
0	The response is totally incorrect and irrelevant. There is no evidence that the student understand the task, or the response may be off-topic.
B	Blank—No Response. A score of “B” will be reported as “NA.” (No attempt to answer the item. Score of “0” assigned for the item.)

Score Point: 4

The student identifies what Guion Bluford and Vance Marchbanks have in common (“being in the Air Force”) and thoroughly and accurately explains how their past experiences make both of them good choices for their specific jobs at NASA (“Since Guion Bluford had experience in flying planes it helped him be able to fly an airshuttle. His degree in aerospace engineering helped him...with his math while he was a mission specialist”; “He got awarded for his bravery and research...His research helped him design spacesuits, backpacks, and monitoring systems”). The response demonstrates a thorough understanding of the passage.

Guion Bluford and Vance Marchbanks have a common background experience which especially made them suited to the space program. The experience they both have is being in the Air Force. Since Guion Bluford had experience in flying planes it helped him be able to fly an airshuttle. His degree in aerospace engineering helped him too. The degree helped him with his math while he was a mission specialist. Vance Marchbanks also was in the airforce. He got awarded for his bravery and research while in the Air force. His research helped him design spacesuits, backpacks, and monitoring systems. The Air force helped them for their careers with NASA.

Score Point: 3

The student identifies what Guion Bluford and Vance Marchbanks have in common (“both in the Air Force”) and explains how past experiences make one of them good choices for their specific jobs at NASA but not both (“[Bluford] already knew how to fly missions”), but the other explanation is lacking detail (“[Marchbanks] got medals for bravery and research... he knew what all the controls and other things were”). The response provides evidence of general but not comprehensive understanding of the passage.

Guion Bluford and Vance Marchbanks had many things they both liked to do. But before they went to work at NASA they were both in the Air Force. Mr. Bluford flew 144 combat missions over Vietnam. This made him a good choice for NASA because he already knew how to fly missions. Mr. Vance on the other hand only got medals for bravery and research. This made him a good choice because he knew what all the controls and other things were. These are some reasons why Bluford and Marchbanks were good choices for NASA.

Score Point: 2

The student identifies what Guion Bluford and Vance Marchbanks have in common (“Both...served in the air force”); however, the explanations of how past experiences makes them good choices are not specific enough examples (“Bluford piloted an aircraft in the vietnam war”; “Marchbanks was in the air force for twenty-three years”). This is an example of a basic understanding of the passage.

The experiences they have are very common. Both Guion Bluford and Vance Marchbanks served in the air force. Although they both served in the air force, Bluford piloted an aircraft in the vietnam war. Marchbanks was in the air force for twenty-three years. These experiences in the air force make them great for NASA.

Score Point: 1

The student does not identify what Guion Bluford and Vance Marchbanks have in common, but there is an attempt at an explanation for why one of them would be a good choice (“Marchbanks he earned several medals for his bravery and resarch”). This response is inadequate and provides evidence of minimal understanding.

Guion Bluford in 1978
 when Bluford applied to become
 an astronaut NASA chose him for
 among 8,000 applicants
 Vance Marchbanks he earned
 several medals for his bravery
 and resarch. from they, Marchbanks
 monitored Glenn's vital signs using
 reports set by the electronic
 sensing devices in Glenn's
 body suit.

Score Point: 0

There is no evidence that the student understands the task. The response is irrelevant.

It would be great to work in Nasa because
 they do alot of stuff, they also go into space
 and they get really rich so that would
 be so cool to work for Nasa.



Farmer Washington Plants a Nation

by Peggy Thomas

When George Washington wasn't busy leading rows of soldiers into battle, he was planting rows of fruit trees. While he was helping to invent a new form of government, he was also inventing new farm tools and equipment. Of all the jobs that George Washington had in his lifetime, being a farmer was his favorite. "It is true," he wrote, "that to be a cultivator of Land has been my favorite amusement."

And he knew that being a good farmer was just as important to the success of the new nation as being a good president. "In the present State of America our welfare and prosperity depend upon the cultivation of our lands and turning the produce of them to the best advantage." He believed that the improvements he made at his Mount Vernon farms would eventually benefit the nation.

Washington's farming practices were as revolutionary as his battle plans. He became one of the first American "scientific farmers," experimenting with seeds and soil and planting crops no one else had tried. He designed new barns and plows and was one of the first farmers to breed better mules in America.

Most landowners in the 1700s grew tobacco, but Washington soon realized that it was expensive to grow and ship to England, and it ruined the soil. Other planters would simply buy more land, but Washington believed that this was wasteful. Instead,

he conserved his land by using fertilizer and rotating his crops.

While Washington was helping the colonies break away from England, he was also making his farm less dependent on British goods. By 1766, Washington was planting wheat and corn to be ground into flour, and he grew flax and cotton for cloth. He had built buildings to house shoemakers and weavers who made the clothing for all the slaves. Washington ordered his managers to "buy nothing you can make within yourselves." Eventually Mount Vernon also had its own carpenters, blacksmiths, and brickmakers.

Running America's "first farm" was not easy. Most of the time Washington had to manage his farms from far away. Every week he wrote lengthy letters to his farm managers, directing how much seed to sow and when to harvest. From his desk as first president of the United States, Washington even drew up plans for a revolutionary new threshing barn that had two stories and sixteen sides.

Seeing portraits of Washington in his starched white wig and elegant military uniform, it's hard to imagine him getting his hands dirty, but he enjoyed conducting experiments with manure and anything else that could be used as fertilizer. He knew that his crops were only as good as his soil. "Every experiment is a treasure," Washington

wrote. He tried cow manure, sheep manure, and other types of dung. But he also used fish heads and plaster of Paris and had his men dredge mud from the bottom of the Potomac River to fertilize the soil.

On his farm he conducted experiments in a large wooden bin that was divided into three sections. In each section he mixed soil with a different type of fertilizer. Then he planted the same number of seeds in each compartment and recorded which seeds grew the fastest and produced the best plants.

He even built the first giant colonial compost bin. It was located near the stables and was called a stercoreary, or dung repository. Its sunken floor held the waste, while the long open sides let air flow in and out. Once it was built, Washington ordered his farm manager to “let others rake, and scrape up all the trash, of every sort and kind about the houses, and in the holes and corners, and throw it (all I mean that will make dung) into the Stercoreary.”

10 Nothing escaped Washington’s notice. He kept daily records as well as a personal diary. He knew how many hoes, rakes, and shovels he owned, and even calculated how many bricks it would take to build his new threshing barn—30,820! When he

saw a tool that did not work properly, he rolled up his sleeves and invented a new one. The ingenious barrel plow he designed performed three jobs in one. It neatly sliced a planting row through the soil, then dropped seeds from the barrel into the row. An attached harrow covered the seeds with soil.

Washington shared all of his best planting tips with his fellow farmers so that they, too, could help the nation grow. The year he died, 1799, he made the cover of the Citizen and Farmer’s Almanac and was dubbed “Farmer Washington.”

More than two hundred years ago George Washington wrote, “I hope, someday or another, we shall become a storehouse and granary for the world.” And because of his ingenuity as a farmer and his leadership as the nation’s first president, his wish came true. Today the United States is the world leader in agricultural production. Farmer Washington would be proud.

*“Liberty,
when it begins to take root,
is a plant of rapid growth.”*

—GEORGE WASHINGTON

Winter Window Sill Gardening

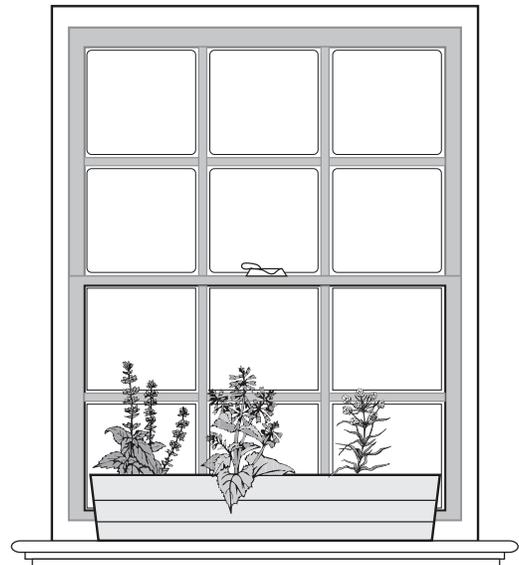
When you think of winter, you may think of barren, snow-covered soil blanketing the delicious fruits of the earth from the past summer. Now you can extend the season of plenty by making an in-house window sill planter to provide flavorful herbs that will enhance meals throughout the year.

What You’ll Need:

potting soil
container that will fit securely on window sill
seeds (basil, parsley, or other herbs of your choice bought new or saved from previous spring)

What to Do:

1. Place potting soil in container.
2. Make quarter-inch holes throughout the soil in the container and add seeds, then cover with soil.
3. Sprinkle water on the soil and place the container on a window sill (or in another bright place).
4. Label the container to indicate which seeds you’ve planted. Then watch them grow!



Reading Item C—2007 Benchmark Grade 8

- C. George Washington invented the barrel plow. Describe how this farm tool was used. Explain how the invention improved life for farmers.

Reading Item C Scoring Rubric—2007 Benchmark Grade 8

SCORE	DESCRIPTION
4	The response describes how the barrel plow was used by citing the three tasks it performed and explains, by providing a detailed reason, how the invention improved life for farmers.
3	The response describes how the barrel plow was used by citing the three tasks it performed and explains, by providing a general reason, how the invention improved life for farmers.
2	The response describes how the barrel plow was used by citing the three tasks it performed and attempts to explain how the invention improved life for farmers.
1	The response describes how the barrel plow was used by citing three, two, or one of the tasks it performed. OR The response attempts to explain how the invention improved life for farmers.
0	The response is totally incorrect or irrelevant. There is no evidence that the student understands the task, or the response may be off-topic.
B	Blank—No Response. A score of “B” will be reported as “NA.” (No attempt to answer the item. Score of “0” assigned for the item.)

Score Point: 4

The student thoroughly describes how the barrel plow was used by citing three accurate and relevant details from the passage on the tasks it performs (“neatly sliced a planting row through the soil”; “dropped seeds from the barrel into the soil”; “covered the seeds back up with soil”) and explains, by providing a detailed reason, how the invention improved life for farmers (“This helped farmers because instead of them having to do three separate jobs, they could do it as one and much more quickly”). The response demonstrates a thorough understanding of the passage.

Even though already had plowing tools, George Washington invented the barrel plow that was more efficient. It did three jobs in one. First it neatly sliced a planting row through the soil. Next it dropped seeds from the barrel into the soil. Last it covered the seeds back up with soil. This helped farmers because instead of them having to do three separate jobs, they could do it as one and much more quickly.

Score Point: 3

The student describes how the barrel plow was used by citing three tasks it performs (“It neatly sliced a planting row through the soil, then it dropped the seeds from the barrell and into the row. And then an attached harrow covered the seeds with soil”). However, the explanation is general and lacks detail from the passage (“It made their digging and planting faster. It also probally made work alot easier for them”). The response provides evidence of general but not comprehensive understanding of the passage.

When George Washington invied the barrell plow
it was used for three jobs at one time. It neatly
sliced a planting row through the soil, then it dropped
the seeds from the barrell and into the row. And
then an attached harrow covered the seeds with soil.
This invention also helped improve life for farmers.
It made their digging and planting faster. It also
probally made work alot easier for them.

Score Point: 2

The student describes how the barrel plow was used by citing three tasks it performs (“It neatly sliced planting rows through the soil, then it dropped the seeds from a barrel to the row, and finally, a harrow covered the seeds with the soil”). However, the explanations use little or no evidence from the passage as to how the invention helped improve life for farmers and are merely attempts at providing a reason. This is an example of a basic understanding of the passage.

George Washington invented the barrel plow that improved life for many farmers. As stated in the passage, the barrel plow performed three jobs in one. It neatly sliced planting rows through the soil, then it dropped the seeds from a barrel to the row, and finally, a harrow covered the seeds with the soil. This invention was shared with many of George Washington's fellow farmers as stated in the passage. In the passage it stated that George Washington had a wish. This wish was "Someday, I hope we become a storehouse and granary for the world." By his invention of the barrel plow, today the United States is the world leader in agricultural production. His invention of the barrel plow has improved the lives of many farmers.

Score Point: 1

The student identifies the three tasks the barrel plow performs but there is no attempt to explain how it improved life for farmers. The response is inadequate and provides evidence of minimal understanding.

The barrel plow neatly sliced a planting row through the soil, then dropped seeds from the barrel into the row, an attached harrow covered the seeds with soil.

Score Point: 0

There is no evidence that the student understands the task. The response is incorrect.

George Washington was a great inventor, he invented many things. One of the things Washington invented was a barrel plow. He used near the stables and was called a stercorary, or dung repository. The sunken floor held the the waste, while the long open sides let air flow in and out. After it was built Washington ordered his farm manager to "let others rake, and scrape up trash, of every sort and kind around the houses, in the holes and corners, and throw it into the Stercorary. All he ment was that" this would make dung.

Acknowledgments

The Arkansas Department of Education would like to thank those who have granted permission to reproduce the following copyrighted material:

Pages 42–44: “Educating a Conqueror: How Alexander Became the Great” Reprinted by permission of *Cricket Magazine*, August 2004, copyright © 2004 by Shulamith Levey Oppenheim.

Pages 49–50: “The Sky’s the Limit” From FOOTSTEPS’ May/June 2004 issue: Science Pioneers, © 2004, Carus Publishing Company, published by Cobblestone Publishing, 30 Grove Street, Suite C, Peterborough, NH 03458. All Rights Reserved. Used by permission of the publisher.

Pages 56–57: “Farmer Washington Plants a Nation” and “Winter Window Sill Gardening” Reprinted by permission of *Cricket Magazine*, February 2005, copyright © 2005 by Peggy Thomas.

WRITING RESPONSES

Domain Scoring

In domain scoring, which was developed in conjunction with Arkansas educators, the observation of writing is divided into several domains (categories), each composed of various features. The domains scored for Arkansas compositions are Content, Style, Sentence Formation, Usage, and Mechanics. (These domains are defined on the following page.) Each domain is evaluated holistically; the domain score indicates the extent to which the features in that domain appear to be under the control of the writer. The score reflects the student's performance for the entire domain, with all features within the domain being of equal importance.

All responses are read independently by at least two readers. The two scores are averaged by domain. In cases where the two readers' scores are non-adjacent (a "1" and a "3," for example) in any domain, the response is read a third time by a Team Leader or the Scoring Director for resolution.

The domain scores, along with an awareness of the features comprising each domain, can be used to plan developmental or remedial instruction for the student.

Scoring Scale

Each domain is scored independently using the following scale:

- 4** = The writer demonstrates **consistent**, though not necessarily perfect, control* of almost all of the domain's features.
- 3** = The writer demonstrates **reasonable**, but not consistent, control* of most of the domain's features, indicating some weakness in the domain.
- 2** = The writer demonstrates **inconsistent** control* of several of the domain's features, indicating significant weakness in the domain.
- 1** = The writer demonstrates **little** or **no** control* of most of the domain's features.

*Control: The ability to use a given feature of written language effectively at the appropriate grade level. A response receives a higher score to the extent that it demonstrates control of the features in each domain.

The application of the scale, using actual student writing, was done with the assistance of a committee of Arkansas teachers and representatives of the Arkansas Department of Education.

Non-scoreable and Blank Papers

Compositions are scored, unless they are off-topic, illegible, incoherent, refusals to respond, written in a language other than English, or too brief to assess. A score of "NA" indicates that the student's writing entry was non-scoreable and that entry will receive a score of "0."

Content (C)

The Content domain includes the focusing, structuring, and elaborating that a writer does to construct an effective message for a reader. It is the creation of a product, the building of a composition intended to be read. The writer crafts his/her message for the reader by focusing on a central idea, providing elaboration of the central idea, and delivering the central idea and its elaboration in an organized text. Features are:

- Central idea
- Elaboration
- Unity
- Organization

Style (S)

The Style domain comprises those features that show the writer is purposefully shaping and controlling language to affect readers. This domain focuses on the vividness, specificity, and rhythm of the piece and the writer’s attitude and presence. Features are:

- Selected vocabulary
- Selected information
- Sentence variety
- Tone
- Voice

Sentence Formation (F)

The Sentence Formation domain reflects the writer’s ability to form competent, appropriately mature sentences to express his/her thoughts. Features are:

- Completeness
- Absence of fused sentences
- Expansion through standard coordination and modifiers
- Embedding through standard subordination and modifiers
- Standard word order

Usage (U)

The Usage domain comprises the writer’s use of word-level features that cause written language to be acceptable and effective for standard discourse. Features are:

- Standard inflections
- Agreement
- Word meaning
- Conventions

Mechanics (M)

The Mechanics domain includes the system of symbols and cueing devices a writer uses to help readers make meaning. Features are:

- Capitalization
- Punctuation
- Formatting
- Spelling

Writing Prompts—2007 Benchmark Grade 8

These are the two writing prompts administered to all grade 8 students in April 2007.

Prompt #1

Your social studies class has been discussing the power of the President of the United States. Your teacher has asked you to write an essay discussing what you would do if you could be President for one day.

Before you begin to write, think about being President. What would you do if you were the President for one day?

Now write an essay about what you would do if you could be President for one day. Give specific details and examples. Explain your ideas clearly so that your teacher will understand.

Prompt #2

As an assignment in your history class, your teacher has asked you to write an essay on the following topic:

What great event in the history of the world do you find the most interesting?

Before you begin to write, think about a great event in history. It might have been a scientific discovery, an invention that changed the world, or an idea that changed the way people think. Why is that event interesting to you?

Now write an essay for your history teacher about a great event in the history of the world that you find interesting. Be sure to name the event and give specific reasons you find it interesting. Give enough detail so that your teacher will understand.

Writer's Checklist

1. Look at the ideas in your response.
 - Have you focused on one main idea?
 - Have you used enough detail to explain yourself?
 - Have you put your thoughts in order?
 - Can others understand what you are saying?
2. Think about what you want others to know and feel after reading your paper.
 - Will others understand how you think or feel about an idea?
 - Will others feel angry, sad, happy, surprised, or some other way about your response? (Hint: Make your reader feel like you do about your paper's subject.)
- Do you have sentences of different lengths? (Hint: Be sure you have a variety of sentence lengths.)
- Are your sentences alike? (Hint: Use different kinds of sentences.)
3. Look at the words you have used.
 - Have you described things, places, and people the way they are? (Hint: Use enough detail.)
 - Are you the same person all the way through your paper? (Hint: Check your verbs and pronouns.)
 - Have you used the right words in the right places?
4. Look at your handwriting.
 - Can others read your handwriting with no trouble?

If I were President for a day, I would not change, but improve some of the things that the President has done. The President has done some wonderful things during his term. He has improved schools and roads. If I were President I would try to build more schools and hire more teachers. Therefore, teachers could spend more individual time with the students. Our children's future would be better if they were able to read and write.

I would build and open more homeless shelters for the poor and for those without a home. I would start a nationwide business where people could donate supplies or money to help to build homes for the unwealthy. I would also build more Good Will stores and try to encourage more people to donate things that they have no use for.

I would create a system where people can adopt children who need care. This system would be more simple than the adoption process that we have now. It would not take as long to adopt a child or cost as much. The parents who wish to adopt would have to qualify as someone who would care and love that child. With this system our adoption shelters would not be so crowded and

more children would be in and off of the streets.

I would build more nursing homes. They would not be as crowded and each patient would be treated as if they lived there. The patients would have a nice room with heating and air conditioning. I would make a garden area with fountains, benches, and walkways where they could talk with others and enjoy the outdoors. The elderly would enjoy the last few years of their life if they could live in a place where it is peaceful and where they are cared for.

I would also try to preserve forests. Oxygen is produced from trees and without oxygen we can not live. If we would reduce, reuse, and recycle our landfills would not be so crowded and our world would begin to be a better place for future generations to come.

If I were President for a day I would try to make this world a better place for everyone to live. Though I may not get much done, I will have started something that others can finish after I have left. Little by little, great jobs can be accomplished.

Content: 4

This response is clearly and thoughtfully focused on the agenda the writer would adopt as president for a day. The writer includes enough details to give the reader an understanding of each facet of this plan and elaborates these details evenly. There is a clear progression of ideas and a thoughtful closure. The writer demonstrates consistent control of the Content domain.

Style: 4

The vocabulary in this response is precise and specific. It suits the writer's purpose and topic, detailing the positive outcomes of his or her actions. The voice is strong and the tone of responsibility is sustained throughout. This response demonstrates consistent control of the Style domain.

Sentence Formation: 4

This response displays mature sentence structure. There is expansion through coordination as well as subordination. There are complex sentences throughout the response, demonstrating the writer's consistent control of the features of the Sentence Formation domain.

Usage: 4

The writer skillfully handles inflections, agreement, tenses, and conventions. This response demonstrates consistent control of the Usage domain.

Mechanics: 4

This response demonstrates consistent control of the features of the Mechanics domain. The writer skillfully handles formatting, spelling, capitalization, and punctuation.

One of the biggest changes I can think of in history that changed the world is the coming of the computer.

Well they were certainly help full. At the beginning of the computer they were useful but practically a pain. They were enormous. The first computers were so big they took up entire rooms.

But as the years went on theses enormous monsters became smaller. To either sit on a desk or be carried around in a briefcase form. Through out the years computers have changed the lives of thousands. The man made wonders can be programed to do almost anything. From making cars to shopping at home or even just to entertain. Computers also save lives! From heart monitors to x-ray machines to sindling in robots to do jobs to dangerous for people. Why they even let us go to the moon. Also computers are everywhere they are in anything mechanical. They make it easier to have fun to! Through TV's, nintendo, sega, absorts of games, going to the movies or just to go to the pool. In pools their used to pump water. In hospitals their also used to keep medical or any kind of record. I would bet money that you couldn't go through an entire day without

using a computer or something made by one. Computers are used many times over for artificial organs or limbs, or for making tools to build the builds we work and live in. You even use computers when you eat. If you were at home what do you think runs that microwave or what do you think made that stove. If your out camping and you make a fire what do you think made the lighter or matches. Even some of your clothes or shoes. Their all made easy with the computer! Even the books you read are made by computers.

So the next time you play the sega or cook a meal or just anything. Remember the one true thing that makes cooking, cleaning, business, medical research, or anything else remember that one true friend the computer! Because its all made possible by the one the only, the computer!

Content: 3

The features of the Content domain are reasonably controlled in this response. There is a clear central idea and no digressions. Specific details support the central idea. There is a consistent point of view and a sense of closure. However, there are lapses in organization and the progression of ideas. Tighter focus and further elaboration are necessary to earn a higher score.

Style: 3

There is precise vocabulary and purposefully selected information in this response (“broufcase form”; “changed the lives of thousands”; “man made wonders”). The tone is appropriate and the writer’s voice is fairly strong. Although there is some sentence variety, the presence of choppy sentences inhibits a rhythmic reading of the response. The writer demonstrates reasonable control of the Style domain.

Sentence Formation: 2

This response demonstrates inconsistent control of the features of the Sentence Formation domain. Although the writer demonstrates control over some complex sentences, there are too many sentence fragments for this response to merit a higher score.

Usage: 2

This response has a variety of errors in several features of the Usage domain, including several verb tense errors. The variety of errors demonstrates inconsistent control.

Mechanics: 2

Although this response is correctly formatted, the writer makes numerous spelling and punctuation errors. Additionally, there are a few capitalization errors. However, these errors do not interfere with the writer’s message. This response demonstrates inconsistent control of the Mechanics domain.

The Lightbulb

What would we do without the lightbulb? A long time ago there was a man named Thomas Edison who invented something extraordinary called the lightbulb. Before it was invented people depended on fire and candles to make warmth and light, but now since it has been invented it has been a lot easier for people. I find many things about this that are very interesting like how would people get around without light, and in present day what would they do about it. I can not imagine coming home from school and eating my milk and cookies in the dark.

The people in the world should be very thankful to Thomas Edison because of his maracullus discovery. He changed everything in just one simple invention. Who could think that just an average scientist like Thomas Edison could come up with a little tiny invention that turned up to being one of the most usefull items in the whole world. Because of this little invention he became to be known as one of the best scientists in the world.

Content: 2

This response is focused on a clear central idea. No digressions are present and there is a sense of closure. However, the elaboration is general with little extension of detail, and the response is repetitive. Additionally, the organization is weak with a limited progression of ideas. The writer demonstrates inconsistent control of the Content domain.

Style: 2

The writer has attempted to affect the reader through the use of rhetorical questions (“What would we do without the lightbulb?”) and purposefully selected vocabulary (“something extrodanary”; “moracullus discovery”; “simple invention”). However, much of the information is general and repetitive. Although there is a faint voice throughout, the tone is flat. This response demonstrates inconsistent control of the Style domain.

Sentence Formation: 4

This response demonstrates consistent control of Sentence Formation. The writer demonstrates the ability to form competent, mature sentences. There are examples of both simple and compound sentences, and the sentences vary in both length and structure.

Usage: 3

The writer reasonably controls the features of the Usage domain. However, several errors do exist (“Who could think”; “turned up to being”; “he became to be known”), earning the response a score of “3.”

Mechanics: 2

This response contains comma errors in introductory clauses, an appositive, and an omitted semicolon. Additionally, there are spelling errors of common words. Due to the variety of errors, the writer demonstrates inconsistent control of the Mechanics domain.

ACTAAP

Arkansas Comprehensive Testing, Assessment, and Accountability Program

DEVELOPED FOR THE ARKANSAS DEPARTMENT OF EDUCATION, LITTLE ROCK, AR 72201