## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>3</td>
</tr>
<tr>
<td>Glossary of Common Terms</td>
<td>4</td>
</tr>
<tr>
<td>Math Grade 4 Question</td>
<td></td>
</tr>
<tr>
<td>Question with description of an accurate response</td>
<td>5</td>
</tr>
<tr>
<td>Question Rubric</td>
<td>6</td>
</tr>
<tr>
<td>Question Samples of responses with annotations</td>
<td>7</td>
</tr>
<tr>
<td>Math Grade 4 Question</td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>16</td>
</tr>
<tr>
<td>Description of an accurate response</td>
<td>17</td>
</tr>
<tr>
<td>Question Rubric</td>
<td>18</td>
</tr>
<tr>
<td>Question Samples of responses with annotations</td>
<td>19</td>
</tr>
</tbody>
</table>
INTRODUCTION

This document provides specific information about the open-ended questions on the Alabama Reading and Mathematics Test (ARMT). It is intended to give an overview of how responses to open-ended questions are scored and to provide responses at each score point.

This document includes two open-ended questions from previous administrations of the ARMT. Each open-ended question is followed by the scoring rubric and three responses for each score point. Sample responses will include annotations and explanations on scoring decisions.
GLOSSARY OF COMMON TERMS

Annotations: A brief explanation of why a paper has received the score it has, emphasizing the specific ways it is representative of that score point and sometimes pointing out what is lacking that may have made it a higher score point.

Invalids: Refers to student responses which do not meet criteria for scorability. For example, blank papers; off-task and/or off-topic papers; papers containing only irrelevant marks or images. These papers receive a score of zero.

Item: A question for which a score or set of scores is to be recorded based on the response.

Logic: The correct operation performed on the correct numbers. An error in transcription or omission of numbers from a list leads to a lack of full logic. Incorrect numbers resulting from a computation, transcription, or omission error in an early part of a response are considered part of correct logic when appropriately used in subsequent sections of the response.

Open-ended response: Complex assessment items/tasks that can be approached or solved in more than one way and have more than one accurate response. Students are asked to include reasons for their conclusions.

Rubric: Written descriptions of the performance evidence or behaviors expected at each level or score point on the scale for open-ended items.

Score point: A numerical value representing the level of success a constructed response achieves in relation to the rubric and the descriptors for each score point.
QUESTION

This problem requires you to show your work and/or explain your reasoning. You may use drawings, words, and/or numbers in your answer. Your answer should be written so that another person could read it and understand your reasoning. It is important that you show all your work.

Jake is sorting pencils for the school supply drive. The corner store donated 771 pencils for the drive.

a. Jake is making packs of 3 pencils each. Find the number of complete packs of 3 that Jake should be able to make using the 771 pencils.

b. Jake decided to change the number of pencils in each pack to 6. Find the number of complete packs of 6 that Jake should be able to make using 771 pencils.

Show all your work and/or explain your reasoning for each part in the space provided in the answer document.

Accurate Response(s):

a. \(771 \div 3 = 257\)

b. \(771 \div 6 = 128.5\), which is 128 complete packs
## RUBRIC

<table>
<thead>
<tr>
<th>Score Points</th>
<th>RESPONSE ATTRIBUTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>All correct.</td>
</tr>
</tbody>
</table>
| 2            | Two logics or explanations are correct.  
               OR  
               One logic or explanation and all answers are correct. |
| 1            | One or more answers to problems are correct.  
               AND/OR  
               Any one logic is correct. |
| 0            | None correct. (Also, blanks, rewrites problem, foreign language, illegible, refusals, off tasks, etc. scored as invalid.) |
Sample Paper 1
Score Point 1

A---The logic (division of correct numbers) is correct, and the answer (257) is correct. The student selected 771 (pencils), divided by 3, and found the correct answer of 257 complete packs of pencils.

B---The logic (wrong operation) is incorrect and the answer is incorrect.

According to the rubric, this answer earned a score point of 1 because one or more answers are correct or one logic is correct.
A---The logic (division of correct numbers) is correct; the answer (256R4) is incorrect. The student selected 771 (pencils), divided by 3, but found an incorrect answer of 256R4.
B---This is not attempted.

According to the rubric, this answer earned a score point of 1 because one or more answers are correct or one logic is correct.
A---The logic (multiplication of correct numbers) is correct. The student worked backwards and selected 257 (number of packs) and multiplied by 3, finding 771 (pencils).

B---The logic is not shown and the answer (6) is incorrect.

According to the rubric, this answer earned a 1 because one or more answers are correct or one logic is correct.
Sample Paper 4
Score Point 2

A---The logic (division of correct numbers) is correct, and the answer (257) is correct. The student selected 771 (pencils), divided by 3, and found the correct answer of 257 complete packs of pencils.

B---The logic (division of correct numbers) is correct, but the answer (128.5) is incorrect. The student selected 771 (pencils) and divided by 6, finding 128.5 packs of pencils. The student fails to indicate that .5 packs of pencils are not complete.

According to the rubric, this answer earned a score point of 2 for two logics or explanations correct.
A---The logic (division of correct numbers) is correct, but the answer is missing. The student selected 771 (pencils) and divided by 3. The problem is not completed.

B---The logic (division of correct numbers) is correct, but the answer is missing. The student selected 771 (pencils) and divided by 6. The problem is not completed.

According to the rubric, this answer earned a score point of 2 for two logics or explanations correct.
Sample Paper 6
Score Point 2

A---The logic (division of correct numbers) is correct, but the answer is incorrect. The student selected 771 (pencils) and divided by 3. The answer 347r30 is incorrect.

B---The logic (division of correct numbers) is correct, but the answer is incorrect. The student selected 771 (pencils) and divided by 6. The answer 46r161 is incorrect.

According to the rubric, this answer earned a score point of 2 for two logics or explanations correct.
Sample Paper 7  
Score Point 3

A---The logic (division of correct numbers) is correct, and the answer (257) is correct. The student selected 771 (pencils), divided by 3, and found the correct answer of 257 complete packs of pencils.

B---The logic (division of correct numbers) is correct, and the answer (128) is correct. The student selected 771 (pencils) and divided by 6, finding 128 whole packets of pencils.

According to the rubric, this answer earned a score point of 3 for all answers and logics correct.
Sample Paper 8
Score Point 3

A---The logic (division of correct numbers) is correct, and the answer (257) is correct. The student selected 771 (pencils), divided by 3, and found the correct answer of 257 complete packs of pencils.

B---The logic (division of correct numbers) is correct, and the answer (128) is correct. The student selected 771 (pencils) and divided by 6, finding 128 whole packets of pencils.

According to the rubric, this answer earned a score point of 3 for all answers and logics correct.
A. Jake is making packs of 3 pencils each. Find the number of complete packs of 3 that Jake should be able to make using the 771 pencils. I got 257 packs of pencils. This is how I got it:

\[
\begin{array}{c|c}
\hline
257 & 3 \hline \\
771 & 66 \hline \\
\hline
15 & \\
0 & \\
\hline
\end{array}
\]

A---The logic (division of correct numbers) is correct, and the answer (257) is correct. The student selected 771 (pencils), divided by 3, and found the correct answer of 257 complete packs of pencils.

B. Jake decided to change the number of pencils in each pack to 6. Find the number of complete packs of 6 that Jake should be able to make using 771 pencils. This is what I got 128 packs.

\[
\begin{array}{c|c}
\hline
257 & 6 \hline \\
771 & 128 \hline \\
54 & 4 \hline \\
12 & 2 \hline \\
0 & \\
\hline
\end{array}
\]

B---The logic (division of correct numbers) is correct, and the answer (128) is correct. One-half of 6 is 3, and one-half of 257 is a correct solution.

According to the rubric, this answer earned a score point of 3 for all answers and logics correct.
This problem requires you to show your work and/or explain your reasoning. You may use drawings, words, and/or numbers in your answer. Your answer should be written so that another person could read it and understand your reasoning. It is important that you show all your work.

The table below shows information about some of the smallest countries in the world.

<table>
<thead>
<tr>
<th>Country</th>
<th>Area in Square Miles (rounded to the nearer thousand)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armenia</td>
<td>12</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>1</td>
</tr>
<tr>
<td>Macedonia</td>
<td>10</td>
</tr>
<tr>
<td>Rwanda</td>
<td>10</td>
</tr>
<tr>
<td>Swaziland</td>
<td>7</td>
</tr>
</tbody>
</table>

Use the information from the table to make and label a bar graph.

Show all your work and/or explain your reasoning in the space provided in the answer document.
Accurate Response:

![Areas of Small Countries Graph]
## RUBRIC

<table>
<thead>
<tr>
<th>Score Points</th>
<th>RESPONSE ATTRIBUTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Table or graph is completely correct.</td>
</tr>
<tr>
<td>2</td>
<td>Table or graph has one to three errors.</td>
</tr>
<tr>
<td>1</td>
<td>Table or graph has more than three errors.</td>
</tr>
<tr>
<td>0</td>
<td>No table or graph, or none correct. (Also, blanks, rewrites problem, foreign language, illegible, refusals, off tasks, etc. scored as invalid.)</td>
</tr>
</tbody>
</table>

Copyright © 2008 by Alabama State Department of Education. Copyright © 2008 by NCS Pearson, Inc. All rights reserved. Printed in the United States of America.
Sample Paper 10
Score Point 1

This bar graph contains 5 errors:
1--- The x-axis, Country, is not labeled.
2--- The y-axis, Area in thousands of square miles, is not labeled.
3--- A scale is not present. It does appear that each square on the y-axis is equivalent to 1000 square miles.
4--- Assuming that the scale is one square per thousand miles, the bar for Macedonia is off by a half-square.
5--- The bar for Rwanda is also off by a half-square.

The bars for Armenia, Luxembourg, and Swaziland are correct.
Note: A title is not required.

According to the rubric, this response earns a score point of 1: “graph has more than three errors.”
This bar graph contains 4 errors:
1--- The x-axis, Country, is not labeled.
2--- The y-axis, Area in thousands of square miles, is not labeled.
3--- Although there is a scale present on the y-axis, it doesn’t start at 0.
4--- The bar for Luxembourg doesn’t match the scale.

All other countries’ bars match the scale and are considered correct.

Note: 1) It doesn’t matter in what order the bars are drawn.
2) The bars do not need to be of equal width, or evenly spaced on the x-axis.

According to the rubric, this response earns a score point of 1: “graph has more than three errors.”
This bar graph contains 4 errors:
1--- The x-axis, Country, is not labeled.
2--- The y-axis, Area in thousands of square miles, is not labeled.
3--- Although there is a scale present on the y-axis, it is not a consistent scale.
4--- The bar for Armenia is missing.

Note: It doesn’t matter in what order the bars are drawn.

According to the rubric, this response earns a score point of 1: “graph has more than three errors.”
This bar graph contains 2 errors:
1--- The x-axis, Country, is not labeled.
2--- The y-axis label is missing “miles”.
The y-axis scale is acceptable. All bars fit this scale correctly.

According to the rubric, this response earns a score point of 2: “graph has one to three errors.”
This bar graph contains 3 errors:
1--- The x-axis, Country, is not labeled.
2--- The y-axis, Area in thousands of square miles, is not labeled.
3--- The bar for Swaziland should be 7, not 12.
All other bars fit the scale.

Note: 1) The placement of the scale on the right side of the graph is acceptable.
2) Letters in place of the full names of the countries are acceptable.

According to the rubric, this response earns a score point of 2: “graph has one to three errors.”
This bar graph contains 3 errors:
1--- The $x$-axis, Country, is not labeled.
2--- The $y$-axis, Area in thousands of square miles, is not labeled.
3--- There is a scale present, but each bar is off by one square. Instead of counting this as 5 errors, it is counted as one scaling error.

According to the rubric, this response earns a score point of 2: “graph has one to three errors.”
This bar graph is completely correct: 2 acceptable labels, acceptable scale on y-axis, and bars drawn correctly. According to the rubric, this response earns a score point of 3. The bars do not need to be of equal width.
This bar graph is completely correct: 2 acceptable labels, acceptable scale on the y-axis, and bars drawn correctly. According to the rubric, this response earns a score point of 3.

Note: A title is not required for 4th grade.
This bar graph is completely correct: uses horizontal bars drawn correctly, acceptable labels for both axes, and an acceptable scale on the “Area in square miles” axis. According to the rubric, this response earns a score point of 3.