# ARMT GRADE 3 MATHEMATICS

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

There are 300 students at the school.

a. Of the total number of students, 132 are wearing blue shirts. How many students are not wearing blue shirts?

b. There are 87 students wearing red shirts, and all the other students are wearing white shirts. How many students are wearing white shirts?

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

Accurate Response(s):

a. \[300 - 132 = 168\]
b. \[168 - 87 = 81\]
<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            | Both logics are correct.  
|              | OR                  
|              | One logic and both answers are correct. |
| 1            | One or both answers are correct.  
|              | OR                  
|              | One logic is correct. |
| 0            | None correct. (Also, blanks, rewrites problem, foreign language, illegible, refusals, off tasks, etc. scored as invalid.) |
A---The logic (subtraction of correct numbers) is correct, and the answer (168) is correct. The student selected 300 (total student population), subtracted 132 (students who wear blue shirts), and found the correct answer of 168 (students not wearing blue shirts).

B---The logic is incorrect because 87 is added, not subtracted, and the answer is incorrect.

According to the rubric, this response earned a score point of 1 because one answer is correct OR 1 logic is correct.
A---The logic (subtraction of correct numbers) is correct, and the answer (168) is correct. The student selected 300 (total student population), subtracted 132 (students who wear blue shirts), and found the correct answer of 168 (students not wearing blue shirts).

B---This is not attempted.

According to the rubric, this response earned a score point of 1 because one answer is correct OR 1 logic is correct.
A---The logic (subtraction of correct numbers) is correct, but the answer is not determined. The student selected 300 (total student population) and subtracted 132 (students who wear blue shirts). The correct answer is not calculated.

B---This is not attempted.

According to the rubric, this response earned a score point of 1 because one logic is correct.
Sample Paper 4
Score Point 2

A--The logic (subtraction of correct numbers) is correct, but the answer is incorrect. The student selected 300 (total student population) and subtracted 132 (students who wear blue shirts). The resulting answer is incorrect.

B--The logic (subtraction of “correct” numbers, based on error in part a) is correct. Subtracting 87 from 268 was the next correct step, even though 268 was an incorrect answer to part a. The student subtracted the correct number, and the subtraction was completed correctly.

According to the rubric, this work earns a score point of 2 because both logics are correct.
Note: The student is not penalized a second time in part b after making a computational error in part a.
A---The logic (subtraction of correct numbers) is correct, and the answer (168) is correct. The student selected 300 (total student population), subtracted 132 (students who wear blue shirts), and found the correct answer of 168 (students not wearing blue shirts).

B---The logic (subtraction of one correct number) started out correctly, subtracting the number of students wearing red shirts from the overall population. In order to achieve the correct answer, the number of students wearing blue shirts would have needed to be subtracted as well. The answer (113) is “accurate” based on this omission.

According to the rubric, two correct answers with one correct logic meets the requirements for a score point of 2.

Note: The minus signs are omitted in both logics, but it is obvious that subtraction was performed.
A---The logic (subtraction of correct numbers) is correct, and the answer (168) is correct. The student selected 300 (total student population), subtracted 132 (students who wear blue shirts), and found the correct answer of 168 (students not wearing blue shirts).

B---The logic is not shown, but the correct answer (81) is found.

According to the rubric, two correct answers with one correct logic meets the requirements for a score point of 2.
A---The logic (subtraction of correct numbers) is correct, and the answer (168) is correct. The student selected 300 (total student population), subtracted 132 (students who wear blue shirts), and found the correct answer of 168 (students not wearing blue shirts).

B---The logic (subtraction of correct numbers) is correct, and the answer (81) is correct. Part a establishes that 168 of the 300 students are not wearing a blue shirt. To find out how many shirts are white, the 87 students wearing red shirts must be subtracted from 168.

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

A---The logic (subtraction of correct numbers) is correct, and the answer (168) is correct. The student selected 300 (total student population), subtracted 132 (students who wear blue shirts), and found the correct answer of 168 (students not wearing blue shirts).

B---The logic (subtraction of correct numbers) is correct, and the answer (81) is correct. Part a establishes that 168 of the 300 students are not wearing blue shirts. To find out how many shirts are white, the 87 students wearing red shirts must be subtracted from 168.

According to the rubric, all logics and answers correct meet the requirements for a score point of 3.
Note: Thorough explanations are given in this response, but are not necessary for a top score.
A---The logic (subtraction of correct numbers) is correct, and the answer (168) is correct. The student selected 300 (total student population), subtracted 132 (students who wear blue shirts), and found the correct answer of 168 (students not wearing blue shirts).

B---The logic (subtraction of correct numbers) is correct, and the answer (213) is correct. This alternate answer is accepted because the question’s wording in part b states, “There are 87 students wearing red shirts, and all the other students are wearing white shirts”. The student is allowed to interpret “all the other students” to mean out of the total of 300.

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

Victoria used $1.00 to buy ice cream. The ice cream cost $0.55, including tax.

a. How much change should Victoria have received?

b. Using words or pictures, show two different groups of coins that Victoria could have received as her change.

Accurate Response(s):

a. $1.00 - $0.55 = $0.45
b. 1 quarter, 2 dimes; 4 dimes, 1 nickel
   $0.25 + $0.10 + $0.10 = $0.45; $0.10 + $0.10 + $0.10 + $0.10 + $0.05 = $0.45
### RUBRIC

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<tr>
<th>Score Points</th>
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</thead>
<tbody>
<tr>
<td>3</td>
<td>Both parts are correct.</td>
</tr>
</tbody>
</table>
| 2            | Part a is correct with logic; part b has only one correct combination.  
               OR  
               Part a is correct with no logic; part b is correct.  
               OR  
               Part b is correct. |
| 1            | Part a is correct with logic; part b has no correct combinations.  
               OR  
               Part a is correct with no logic; part b has one or no correct combinations.  
               OR  
               Part a is incorrect; part b has one combination.  
               OR  
               Part a is incorrect with correct logic. |
| 0            | None correct. (Also, blanks, rewrites problem, foreign language, illegible, refusals, off tasks, etc. scored as invalid.) |
A---The logic (subtraction of correct numbers) is not shown, but the correct answer (45¢) is identified.
B---This is not attempted.

According to the rubric, this response earned a score point of 1 because part a is correct with no logic; part b has no correct combinations.
A--- The logic (subtraction of correct numbers) is correct, but the answer is incorrect. The student subtracted $.55 (cost of ice cream) from $1.00 (amount used by Victoria). The resulting answer is incorrect.

B--- There are no correct combinations of coins shown.

According to the rubric, this response earned a score point of 1 because part a is incorrect with correct logic.
A--- The logic (subtraction of correct numbers) is correct, and the answer (45¢) is correct. The student subtracted $.55 (cost of ice cream) from $1.00 (amount used by Victoria). The resulting answer is correct.

B--- This is not attempted.

According to the rubric, this response earned a score point of 1 because part a is correct with logic; part b has no correct combinations.
A---The logic (subtraction of correct numbers) is not shown, but the correct answer (45¢) is identified.

B---Two different groups of coins that show the change that Victoria could have received are correctly drawn.

According to the rubric, this response earned a score point of 2 because part b is correct.
Sample Paper 14
Score Point 2

A---The logic is not shown, but the correct answer (45¢) is identified.

B---Two different groups of coins that show the change that Victoria could have received are correctly drawn.

According to the rubric, this response earned a score point of 2 because part a is correct with no logic; part b is correct.
Sample Paper 15
Score Point 2

A---The logic (subtraction of correct numbers) is correct, and the answer (45¢) is correct. The student subtracted $.55 (cost of ice cream) from $1.00 (amount used by Victoria). The resulting answer is correct.

B---Only 1 group of coins that show the change that Victoria could have received are drawn.

According to the rubric, this response earned a score point of 2 because part a is correct with logic; part b has only one correct combination.
Sample Paper 16
Score Point 3

A---The logic (subtraction of correct numbers) is correct, and the answer (45¢) is correct. The student subtracted $.55 (cost of ice cream) from $1.00 (amount used by Victoria). The resulting answer is correct. Use of both the “$” and “¢” signs does not detract.

B---Two different groups of coins that show the change that Victoria could have received are correctly drawn.

According to the rubric, having both parts correct meets the requirements for a score point of 3.
Sample Paper 17
Score Point 3

A---The logic (subtraction of correct numbers) is correct, and the answer (45¢) is correct. The student subtracted $.55 (cost of ice cream) from $1.00 (amount used by Victoria). The resulting answer is correct.

B---Two different groups of coins that show the change that Victoria could have received are correctly stated.

According to the rubric, having both parts correct meets the requirements for a score point of 3.
Sample Paper 18
Score Point 3

Victoria used $1.00 to buy ice cream. The ice cream cost $0.55, including tax.

a. How much change should Victoria receive.

$1.00
-0.55

$0.45

b. Using words or pictures show two different groups of coins that Victoria could have received as her change.

A---The logic (subtraction of correct numbers) is correct, and the answer (45¢) is correct. The student subtracted $.55 (cost of ice cream) from $1.00 (amount used by Victoria). The resulting answer is correct.

B---Two different groups of coins that show the change that Victoria could have received are correctly drawn.

According to the rubric, having both parts correct meets the requirements for a score point of 3.