2022 MCAS Sample Student Work and Scoring Guide

Grade 6 Mathematics
Question 14: Constructed-Response

Reporting Category: Expressions and Equations
Standard: 6.EE.A.2 - Write, read, and evaluate expressions in which letters stand for numbers.
Item Description: Write expressions using substitution and use the expressions to solve real-world problems.
Calculator: Not allowed

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Scoring Guide
Select a score point in the table below to view the sample student response.

Score*	Description
4A	The student response demonstrates an exemplary understanding of the Expressions and Equations concepts involved in writing, reading, and evaluating expressions in which letters stand for numbers. The student writes expressions and evaluates them at specific values of their variables.
4B	
3	The student response demonstrates a good understanding of the Expressions and Equations concepts involved in writing, reading, and evaluating expressions in which letters stand for numbers. Although there is significant evidence that the student was able to recognize and apply the concepts involved, some aspect of the response is flawed. As a result, the response merits 3 points.
2	The student response demonstrates a fair understanding of the Expressions and Equations concepts involved in writing, reading, and evaluating expressions in which letters stand for numbers. While some aspects of the task are completed correctly, others are not. The mixed evidence provided by the student merits 2 points.
1	The student response demonstrates a minimal understanding of the Expressions and Equations concepts involved in writing, reading, and evaluating expressions in which letters stand for numbers.
0	The student response contains insufficient evidence of an understanding of the Expressions and Equations concepts involved in writing, reading, and evaluating expressions in which letters stand for numbers. As a result, the response does not merit any points.

*Letters are used to distinguish between sample student responses that earned the same score (e.g., 4A and 4B).

Score Point 4A

This question has four parts.

Molly, Ryan, and Bianca are cousins.

- Molly is m years old.
- Ryan is 4 years older than Molly.
- Bianca's age is y years less than twice Ryan's age.

Part A

Write an expression that represents Ryan's age in terms of m.

Enter your expression in the space provided.

$$4 + m$$

Part B

Molly is 5 years old. Use your expression from Part A to find Ryan's age, in years. Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

> Ryan is 4 years older than molly so if molly is 5, $5 + 4 = 9$.
> So Ryan is 9 years old.

Part C

Use your answer from Part B to write an expression that represents Bianca's age in terms of y.

Enter your expression in the space provided.

$$[4 + 5]\, 2 - y$$

Part D

Use your expression from Part C to find Bianca's age, in years, if $y = 6$. Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

> $[4 + 5]\, 2 - 6$
> $[9]\, 2 - 6$
> $18 - 6$
> 12
> Bianaca's age is 12.

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Score Point 4B

This question has four parts.

Molly, Ryan, and Bianca are cousins.

- Molly is m years old.
- Ryan is 4 years older than Molly.
- Bianca's age is y years less than twice Ryan's age.

Part A

Write an expression that represents Ryan's age in terms of m.

Enter your expression in the space provided.

$$M + 4$$

Part B

Molly is 5 years old. Use your expression from Part A to find Ryan's age, in years. Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

$$5 + 4 = 9$$

Part C

Use your answer from Part B to write an expression that represents Bianca's age in terms of y.

Enter your expression in the space provided.

$$18 - y$$

Part D

Use your expression from Part C to find Bianca's age, in years, if $y = 6$. Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

$$18 - 6 = 12$$

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Score Point 3

This question has four parts.

Molly, Ryan, and Bianca are cousins.

- Molly is m years old.
- Ryan is 4 years older than Molly.
- Bianca's age is y years less than twice Ryan's age.

Part A

Write an expression that represents Ryan's age in terms of m.

Enter your expression in the space provided.

$$m + 4$$

Part B

Molly is 5 years old. Use your expression from Part A to find Ryan's age, in years. Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

$$5 + 4 = 9$$

Part C

Use your answer from Part B to write an expression that represents Bianca's age in terms of y.

Enter your expression in the space provided.

$$y - 9 \times 2$$

Part D

Use your expression from Part C to find Bianca's age, in years, if $y = 6$. Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

$$18 - 6 = 12$$
Since Ryan is 9 I doubled his age to get the 18 then I had to subtract y that equiled 6 to get Biancas age.

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Score Point 2

This question has four parts.

Molly, Ryan, and Bianca are cousins.

- Molly is m years old.
- Ryan is 4 years older than Molly.
- Bianca's age is y years less than twice Ryan's age.

Part A

Write an expression that represents Ryan's age in terms of m.

Enter your expression in the space provided.

$4 + m$

Part B

Molly is 5 years old. Use your expression from Part A to find Ryan's age, in years. Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

The answer would 9 because if you add 4 plus 5 which equals 9 you'll get that answer by using that expression.

Part C

Use your answer from Part B to write an expression that represents Bianca's age in terms of y.

Enter your expression in the space provided.

$9 - 2y$

Part D

Use your expression from Part C to find Bianca's age, in years, if $y = 6$. Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

Bianca's age is 3 because if you do $9 - 2\,(6) = 3$ and that gives you your answer using the expression from part c.

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Score Point 1

This question has four parts.

Molly, Ryan, and Bianca are cousins.

- Molly is m years old.
- Ryan is 4 years older than Molly.
- Bianca's age is y years less than twice Ryan's age.

Part A

Write an expression that represents Ryan's age in terms of m.

Enter your expression in the space provided.

$9 > m$

Part B

Molly is 5 years old. Use your expression from Part A to find Ryan's age, in years. Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

$5 > y$

Part C

Use your answer from Part B to write an expression that represents Bianca's age in terms of y.

Enter your expression in the space provided.

$y > 5$

Part D

Use your expression from Part C to find Bianca's age, in years, if $y = 6$. Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

$y = 6$ so Ryan's age (9) multiplyed by 2 would equal 18 and $18 - 6$ would come out as 12. So Bianca is 12 years old.

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Score Point 0

This question has four parts.

Molly, Ryan, and Bianca are cousins.

- Molly is m years old.
- Ryan is 4 years older than Molly.
- Bianca's age is y years less than twice Ryan's age.

Part A

Write an expression that represents Ryan's age in terms of m.

Enter your expression in the space provided.

$$5 - 1 = m$$

Part B

Molly is 5 years old. Use your expression from Part A to find Ryan's age, in years. Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

It says in the bulleted text ryan is 4 years old

Part C

Use your answer from Part B to write an expression that represents Bianca's age in terms of y.

Enter your expression in the space provided.

$$4 \times 2 = 8 - 2$$

Part D

Use your expression from Part C to find Bianca's age, in years, if $y = 6$. Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

$$4 \times 2 = 8 - 2 = 6$$

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