2025 MCAS Sample Student Work and Scoring Guide

Grade 10 Mathematics
Question 27: Constructed-Response

Reporting Category: Algebra and Functions
Standard: F-IF.A.2 - Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.
Item Description: Evaluate a quadratic function for different elements of its domain and interpret these values in terms of a context.
Calculator: Allowed

This item can be found in the released item sets on the MCAS Resource Center.

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

Score*	Description
4A **4B**	The student response demonstrates an exemplary understanding of the Functions concepts involved in using function notation, evaluating functions for inputs in their domains, and interpreting statements that use function notation in terms of a context. The student correctly evaluates a quadratic function for different input values, interprets the results, and then interprets restraints on the domain of the function.
3	The student response demonstrates a good understanding of the Functions concepts involved in using function notation, evaluating functions for inputs in their domains, and interpreting statements that use function notation in terms of a context. 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 Functions concepts involved in using function notation, evaluating functions for inputs in their domains, and interpreting statements that use function notation in terms of a context. 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 Functions concepts involved in using function notation, evaluating functions for inputs in their domains, and interpreting statements that use function notation in terms of a context.
0	The student response contains insufficient evidence of an understanding of the Functions concepts involved in using function notation, evaluating functions for inputs in their domains, and interpreting statements that use function notation in terms of a context. 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.

A ball was kicked from the ground into the air. This function models the approximate height of the ball, above the ground, at any time until it returned to the ground.

$$h(t) = -16t^2 + 80t$$

In the function,

- t represents the number of seconds that have elapsed since the ball was kicked, and

- $h(t)$ represents the height of the ball, in feet, after t seconds.

Part A

What is the value of $h(0)$?

Enter your answer in the space provided.

> 0 feet

Part B

Which of the following is the value of $h(1)$?

○ A. 1   ○ B. 16

◉ C. 64   ○ D. 96

Part C

What is the value of $h(5)$? Explain what this value represents in this situation.

Enter your answer and your explanation in the space provided.

> 0 feet. After 5 seconds, the ball has already reched its max height and hit the ground again. At 5 seconds, the ball is back on the ground.

Part D

What is the value of $h(6)$? Explain what this value represents in this situation.

Enter your answer and your explanation in the space provided.

> The value of h(6) is -96. This value means that if the ball kept on going and was not stopped by the Earth, it would be 96 feet down underneath the ground. This value is not accurate however, as the ball could not go under the ground.

Back to Scoring Guide

Score Point 4B

This question has four parts.

A ball was kicked from the ground into the air. This function models the approximate height of the ball, above the ground, at any time until it returned to the ground.

$$h(t) = -16t^2 + 80t$$

In the function,

- t represents the number of seconds that have elapsed since the ball was kicked, and
- $h(t)$ represents the height of the ball, in feet, after t seconds.

Part A

What is the value of $h(0)$?

Enter your answer in the space provided.

> h(0)=-16(0) +80(0)
>
> h(0)=0

Part B

Which of the following is the value of $h(1)$?

- ○ A. 1
- ○ B. 16
- ◉ C. 64
- ○ D. 96

Part C

What is the value of $h(5)$? Explain what this value represents in this situation.

Enter your answer and your explanation in the space provided.

> h(5)=-16(25)+80(5)
>
> $-400 + 400 = 0$
>
> h(5)= 0
>
> This means after 5 seconds, the ball will hit the ground again.

Part D

What is the value of $h(6)$? Explain what this value represents in this situation.

Enter your answer and your explanation in the space provided.

> h(6)=-16(36)+80(6)
>
> $-576 + 480 = -96$
>
> h(6)=-96
>
> meaning the ball would have already hit the ground before

[Back to Scoring Guide](#)

Score Point 3

This question has four parts.

A ball was kicked from the ground into the air. This function models the approximate height of the ball, above the ground, at any time until it returned to the ground.

$$h(t) = -16t^2 + 80t$$

In the function,

- t represents the number of seconds that have elapsed since the ball was kicked, and

- $h(t)$ represents the height of the ball, in feet, after t seconds.

Part A

What is the value of $h(0)$?

Enter your answer in the space provided.

> h(0)=0

Part B

Which of the following is the value of $h(1)$?

○ A. 1   ○ B. 16

◉ C. 64   ○ D. 96

Part C

What is the value of $h(5)$? Explain what this value represents in this situation.

Enter your answer and your explanation in the space provided.

> h(5)=$-16\left(5^2\right) + 80\left(5\right) = 0$
>
> $-16\left(25\right) + 400 = 0$
>
> After 5 seconds the height of the ball would be 0 feet.

Part D

What is the value of $h(6)$? Explain what this value represents in this situation.

Enter your answer and your explanation in the space provided.

> h(6)= $-16\left(6^2\right) + 80\left(6\right)$
>
> $-567 + 480 = -90$
>
> After 6 seconds the ball will be 90 feet below.

[Back to Scoring Guide](#)

Score Point 2

This question has four parts.

A ball was kicked from the ground into the air. This function models the approximate height of the ball, above the ground, at any time until it returned to the ground.

$$h(t) = -16t^2 + 80t$$

In the function,

- t represents the number of seconds that have elapsed since the ball was kicked, and

- $h(t)$ represents the height of the ball, in feet, after t seconds.

Part A

What is the value of $h(0)$?

Enter your answer in the space provided.

$h(0) = -16(0)^2 + 80\,(0)$

$h(0) = 0$

Part B

Which of the following is the value of $h(1)$?

○ A. 1   ○ B. 16

◉ C. 64   ○ D. 96

Part C

What is the value of $h(5)$? Explain what this value represents in this situation.

Enter your answer and your explanation in the space provided.

$h(5) = (-16\,(5))^2 + 80\,(5)$

$h(5) = -80^2 + 400$

$h(5) = 6400 + 400$

$h(5) = 6800$

Part D

What is the value of $h(6)$? Explain what this value represents in this situation.

Enter your answer and your explanation in the space provided.

$h(6) = (-16\,(6))^2 + 80\,(6)$

$h(6) = -96^2 + 480$

$h(6) = 9216 + 480$

$h(6) = 9690$

Back to Scoring Guide

Score Point 1

This question has four parts.

A ball was kicked from the ground into the air. This function models the approximate height of the ball, above the ground, at any time until it returned to the ground.

$$h(t) = -16t^2 + 80t$$

In the function,

- t represents the number of seconds that have elapsed since the ball was kicked, and
- $h(t)$ represents the height of the ball, in feet, after t seconds.

Part A

What is the value of $h(0)$?

Enter your answer in the space provided.

> 0 feet because if H(0) is showing us the hight of the ball in feet at zero then there cant be hight to record

Part B

Which of the following is the value of $h(1)$?

- ○ A. 1
- ● B. 16
- ○ C. 64
- ○ D. 96

Part C

What is the value of $h(5)$? Explain what this value represents in this situation.

Enter your answer and your explanation in the space provided.

> h(5)=80
>
> because hte ball is 16 feet in the sky when he kicks it and if you change the value of h(0) it changes based onn the number so as when it ws h(1) it was 16 feet

Part D

What is the value of $h(6)$? Explain what this value represents in this situation.

Enter your answer and your explanation in the space provided.

> h(6)=96
>
> because hte ball is 16 feet in the sky when he kicks it and if you change the value of h(0) it changes based onn the number so as when it ws h(1) it was 16 fee

Score Point 0

This question has four parts.

A ball was kicked from the ground into the air. This function models the approximate height of the ball, above the ground, at any time until it returned to the ground.

$$h(t) = -16t^2 + 80t$$

In the function,

- t represents the number of seconds that have elapsed since the ball was kicked, and

- $h(t)$ represents the height of the ball, in feet, after t seconds.

Part A

What is the value of $h(0)$?

Enter your answer in the space provided.

> 338
>
> 16^2 t $= 258 + 80 = 338$

Part B

Which of the following is the value of $h(1)$?

- ⦿ A. 1
- ○ B. 16

- ○ C. 64
- ○ D. 96

Part C

What is the value of $h(5)$? Explain what this value represents in this situation.

Enter your answer and your explanation in the space provided.

> Im gonna assume the ball was 5ft into the air because h(t) represents the height of the ball in feet after the number of seconds it was kicked.

Part D

What is the value of $h(6)$? Explain what this value represents in this situation.

Enter your answer and your explanation in the space provided.

> Same as asnwer above it represents the ball being 6ft

Back to Scoring Guide