# 2021 MCAS Sample Student Work and Scoring Guide

## Grade 6 Mathematics
## Question 6: Constructed-Response

**Reporting Category:** Geometry
**Standard:** 6.G.A.3 - Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.
**Item Description:** Solve problems on a coordinate plane by plotting points, finding the distance between points, and finding the coordinates of points given the distance between them.
**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 Geometry concepts involved in drawing polygons in the coordinate plane given coordinates for the vertices; using coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate; and applying these techniques in the context of solving a real-world problem. |
| **4B** | |
| **3** | The student response demonstrates a good understanding of the Geometry concepts involved in drawing polygons in the coordinate plane given coordinates for the vertices; using coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate; and applying these techniques in the context of solving a real-world problem. 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 Geometry concepts involved in drawing polygons in the coordinate plane given coordinates for the vertices; using coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate; and applying these techniques in the context of solving a real-world problem. 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 Geometry concepts involved in drawing polygons in the coordinate plane given coordinates for the vertices; using coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate; and applying these techniques in the context of solving a real-world problem. |
| **0** | The student response demonstrates insufficient evidence of an understanding of the Geometry concepts involved in drawing polygons in the coordinate plane given coordinates for the vertices; using coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate; and applying these techniques in the context of solving a real-world problem. 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 three parts.

A city planner is creating designs for two dog parks.

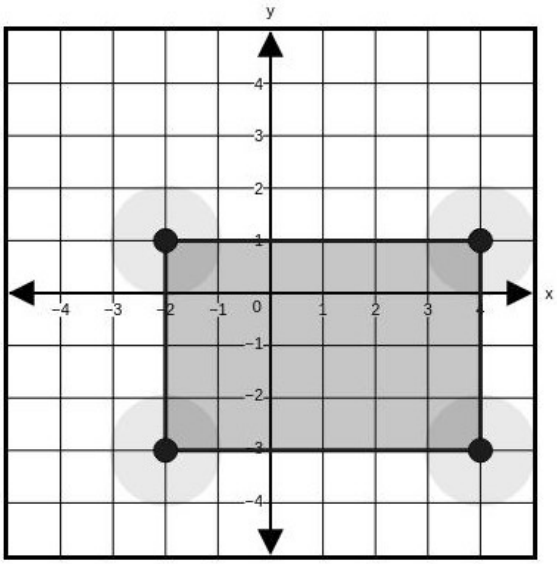
### Part A

The city planner is using a coordinate plane to create the design for the first park. The park will be in the shape of a rectangle. These four points represent the corners of the park.

- point $A$: $(4, 1)$
- point $B$: $(4, -3)$
- point $C$: $(-2, -3)$
- point $D$: $(-2, 1)$

Plot the four points on this coordinate plane to create the rectangle.

To graph the rectangle, select the places on the coordinate plane to plot the vertices. Plot the vertices in the order they should be connected. Your points will be connected in the order they are plotted.




### Part B

What are the length and the width, in units, of the rectangle you created in Part A to represent the park? Show or explain how you got your answer.

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

The length of the rectangle is 6 units and the width is 4 units. To find the length, you need to find the distance between points B and C by counting which is 6. To find the width, you need to find the distance between points A and B by counting which is 4.

## Part C

The city planner is using another coordinate plane to create the design for the second park.

- The perimeter of the second park will be the same as the perimeter of the first park.
- One corner of the second park is represented by the point $(1, -2)$.
- The second park is in the shape of a square.

What could be the coordinates of the other three corners of the second park? Show or explain how you got your answer.

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

The coordinates of the other three corners of the second park could be $(-4, -2)$, $(-4,3)$, and (1,3). Since the perimeter of the second park will be the same as the first park, we need to find the perimeter of the first park by adding all of the dimensions together.

$6 + 6 + 4 + 4 = 20$

Since the second park is a square, the sides will all be the same amount and since there are four sides, we need to divide 20 by 4.

$20 \div 4 = 5$

Since each side is 5 units long, we can count 5 units from point (1,-2) to find the other points.

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## Score Point 4B

### This question has three parts.

A city planner is creating designs for two dog parks.

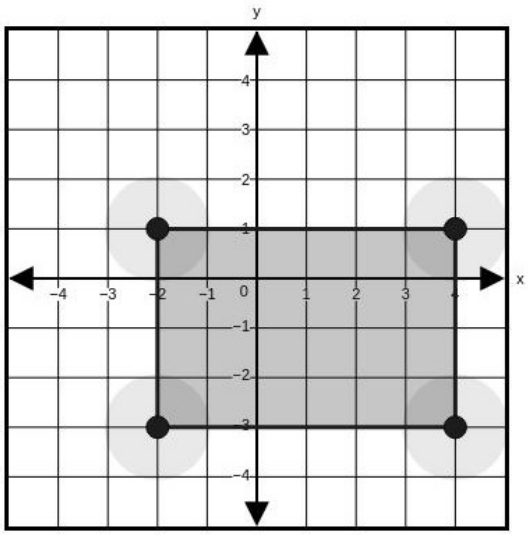
### Part A

The city planner is using a coordinate plane to create the design for the first park. The park will be in the shape of a rectangle. These four points represent the corners of the park.

- point $A$: $(4, 1)$
- point $B$: $(4, -3)$
- point $C$: $(-2, -3)$
- point $D$: $(-2, 1)$

Plot the four points on this coordinate plane to create the rectangle.

To graph the rectangle, select the places on the coordinate plane to plot the vertices. Plot the vertices in the order they should be connected. Your points will be connected in the order they are plotted.




### Part B

What are the length and the width, in units, of the rectangle you created in Part A to represent the park? Show or explain how you got your answer.

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

The length is 4 units long and the width is 6 units long. I did this by adding the y unit of point D and the $|y|$ in point C to get the length. $1 + |-3| = 4$.

To get the width, I added the absulote value of the $x - coordinate$ of point C and the absulote value of the $x - coordinate$ of point B. Which is $|-2| + 4 = 6$.

## Part C

The city planner is using another coordinate plane to create the design for the second park.

- The perimeter of the second park will be the same as the perimeter of the first park.
- One corner of the second park is represented by the point $(1, -2)$.
- The second park is in the shape of a square.

What could be the coordinates of the other three corners of the second park? Show or explain how you got your answer.

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

Since it has the same perimeter, the perimeter of Park 2 is 20. Since Park 2 is a square, then all sides are the same so I can divide 20 by 4 to get the side length. $20 \div 4 = 5$ . Therefore the side legth is 5. Since the side is 5 units long or 5 units wide, I can increase the $x - coordinate$ and the $y - coordinate$ by 5. So one point is (6, $-2$), and another one is (1, $-7$). The last point would have to be on the 6 across and 7 down so the coordinates are (6, $-7$). Those are the three points.

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## Score Point 3

### This question has three parts.

A city planner is creating designs for two dog parks.

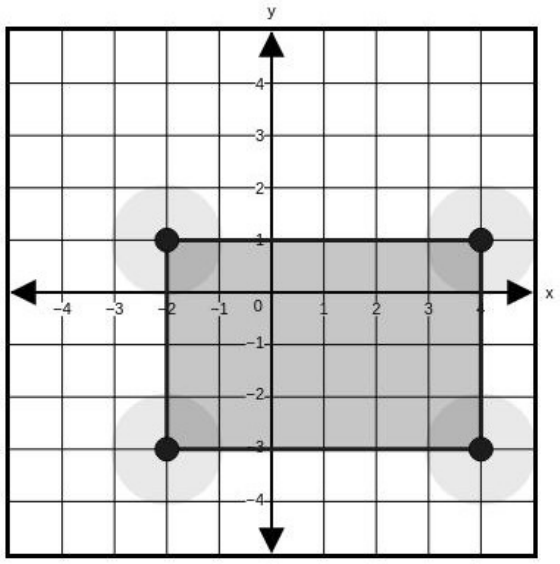
### Part A

The city planner is using a coordinate plane to create the design for the first park. The park will be in the shape of a rectangle. These four points represent the corners of the park.

- point $A$: $(4, 1)$
- point $B$: $(4, -3)$
- point $C$: $(-2, -3)$
- point $D$: $(-2, 1)$

Plot the four points on this coordinate plane to create the rectangle.

To graph the rectangle, select the places on the coordinate plane to plot the vertices. Plot the vertices in the order they should be connected. Your points will be connected in the order they are plotted.




### Part B

What are the length and the width, in units, of the rectangle you created in Part A to represent the park? Show or explain how you got your answer.

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

The length is 6 units .

The width is 4 units.

If you count the number of lines across the length of it you get 6, and if you do the same for the width you get 4.

### Part C

The city planner is using another coordinate plane to create the design for the second park.

- The perimeter of the second park will be the same as the perimeter of the first park.
- One corner of the second park is represented by the point $(1, -2)$.
- The second park is in the shape of a square.

What could be the coordinates of the other three corners of the second park? Show or explain how you got your answer.

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

The other coordinates could be $(-1, -2)$, $(-1,0)$, $(1, 0)$

After plotting the first point I went 2 left, then two up from thet point and 2 right from that point and connected them to get a square. If you then look at all the corners, you get your coordinates.

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## Score Point 2

### This question has three parts.

A city planner is creating designs for two dog parks.

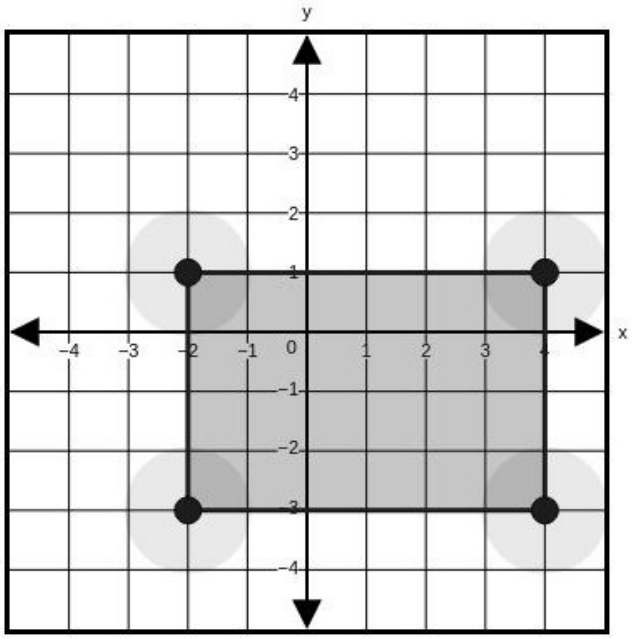
### Part A

The city planner is using a coordinate plane to create the design for the first park. The park will be in the shape of a rectangle. These four points represent the corners of the park.

- point $A$: $(4, 1)$
- point $B$: $(4, -3)$
- point $C$: $(-2, -3)$
- point $D$: $(-2, 1)$

Plot the four points on this coordinate plane to create the rectangle.

To graph the rectangle, select the places on the coordinate plane to plot the vertices. Plot the vertices in the order they should be connected. Your points will be connected in the order they are plotted.




### Part B

What are the length and the width, in units, of the rectangle you created in Part A to represent the park? Show or explain how you got your answer.

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

length 6 width 4

## Part C

The city planner is using another coordinate plane to create the design for the second park.

- The perimeter of the second park will be the same as the perimeter of the first park.
- One corner of the second park is represented by the point $(1, -2)$.
- The second park is in the shape of a square.

What could be the coordinates of the other three corners of the second park? Show or explain how you got your answer.

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

$(1,1)\ (-2,1)\ (-2, -2)$

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## Score Point 1

### This question has three parts.

A city planner is creating designs for two dog parks.

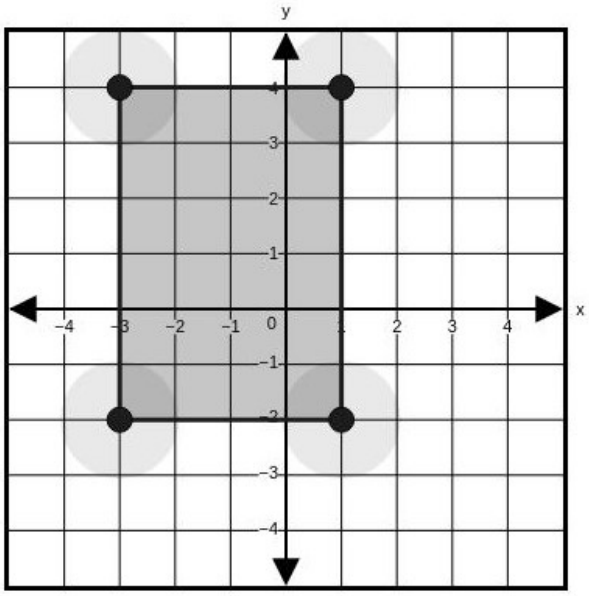
### Part A

The city planner is using a coordinate plane to create the design for the first park. The park will be in the shape of a rectangle. These four points represent the corners of the park.

- point $A$: $(4, 1)$
- point $B$: $(4, -3)$
- point $C$: $(-2, -3)$
- point $D$: $(-2, 1)$

Plot the four points on this coordinate plane to create the rectangle.

To graph the rectangle, select the places on the coordinate plane to plot the vertices. Plot the vertices in the order they should be connected. Your points will be connected in the order they are plotted.




### Part B

What are the length and the width, in units, of the rectangle you created in Part A to represent the park? Show or explain how you got your answer.

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

Length=6

width=4

All you do is count the boxs for the length an width.

## Part C

The city planner is using another coordinate plane to create the design for the second park.

- The perimeter of the second park will be the same as the perimeter of the first park.
- One corner of the second park is represented by the point $(1, -2)$.
- The second park is in the shape of a square.

What could be the coordinates of the other three corners of the second park? Show or explain how you got your answer.

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

One corner= $(1, -2)$

Second corner= $(-2 - 3)$

Third corner= $(4, -3)$

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## Score Point 0

### This question has three parts.

A city planner is creating designs for two dog parks.

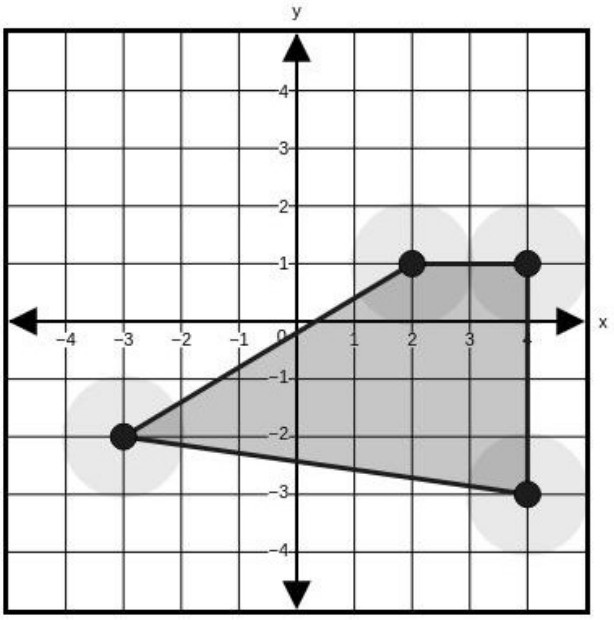
### Part A

The city planner is using a coordinate plane to create the design for the first park. The park will be in the shape of a rectangle. These four points represent the corners of the park.

- point $A$: $(4, 1)$
- point $B$: $(4, -3)$
- point $C$: $(-2, -3)$
- point $D$: $(-2, 1)$

Plot the four points on this coordinate plane to create the rectangle.

To graph the rectangle, select the places on the coordinate plane to plot the vertices. Plot the vertices in the order they should be connected. Your points will be connected in the order they are plotted.




### Part B

What are the length and the width, in units, of the rectangle you created in Part A to represent the park? Show or explain how you got your answer.

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

Its 24 because i counted all the units in the middle of the rectangle that is in part A.

## Part C

The city planner is using another coordinate plane to create the design for the second park.

- The perimeter of the second park will be the same as the perimeter of the first park.
- One corner of the second park is represented by the point $(1, -2)$.
- The second park is in the shape of a square.

What could be the coordinates of the other three corners of the second park? Show or explain how you got your answer.

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

It could be $(-2, -2)$ and (1,1) and the last one could be $(1, -3)$. Because its a rectangle and its a good enogh area and not to big to block the first one.

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