2021 MCAS Sample Student Work and Scoring Guide

Grade 8 Mathematics
Question 17: Constructed-Response

Reporting Category: Geometry
Standard: 8.G.A.2 - Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.
Item Description: Describe the transformation on a quadrilateral that produced a given image and demonstrate an understanding of the preservation of congruence.
Calculator: 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 understanding that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations. Given two congruent figures, the student describes a sequence that exhibits the congruence between them.
4B	
3	The student response demonstrates a good understanding of the Geometry concepts involved in understanding that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations. 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 understanding that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations. 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 understanding that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations.
0	The student response contains insufficient evidence of an understanding of the Geometry concepts involved in understanding that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations. 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.

Parallelogram $EFGH$ was transformed to create its image, parallelogram $E'F'G'H'$, as shown on this coordinate plane.
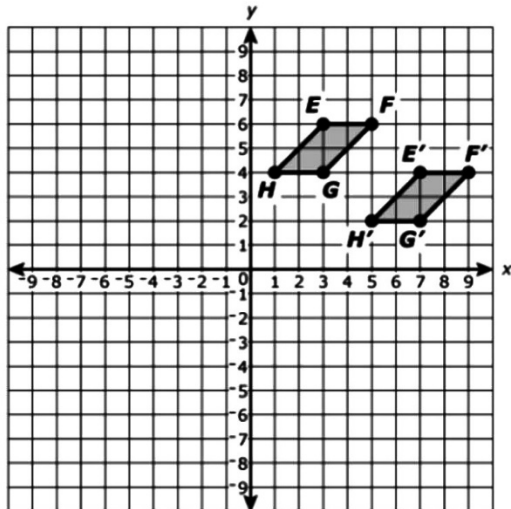
Part A

Describe the transformation that was performed on parallelogram $EFGH$ to create parallelogram $E'F'G'H'$. Show or explain how you got your answer.

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

> The transformation that was performed is from each point on the figure was moved 4 units to the right and then moved 2 units down.

Part B

Is parallelogram $EFGH$ congruent to parallelogram $E'F'G'H'$? Explain your reasoning.

Enter your answer and your explanation in the space provided.

> Parallelogram EFGH is congruent to E'F'G'H' because they are the same shapes and the same size meaning they are equal its just that E'F'G'H is on a different point on the graph. Although the figure is overall the same thing.

Part C

Parallelogram $E'F'G'H'$ will be reflected over the x-axis to create its image, parallelogram $E''F''G''H''$.

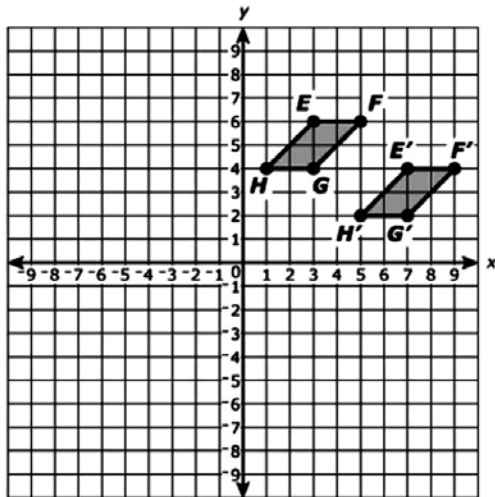Will parallelogram $E''F''G''H''$ be congruent to parallelogram $EFGH$? Explain your reasoning.

Enter your answer and your explanation in the space provided.

> Parallelogram E"F"G"H" will be congruent to EFGH even if it is refelected over the x-axis. This is because even though it is reflected it will still remain the same size and the same shape it will just be reflected over another axis.

Score Point 4B

This question has three parts.

Parallelogram $EFGH$ was transformed to create its image, parallelogram $E'F'G'H'$, as shown on this coordinate plane.

Part A

Describe the transformation that was performed on parallelogram $EFGH$ to create parallelogram $E'F'G'H'$. Show or explain how you got your answer.

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

> parallelogran EFGH moved 4 units right and 2 unites down to get to parallelogram E'F'G'H'.

Part B

Is parallelogram $EFGH$ congruent to parallelogram $E'F'G'H'$? Explain your reasoning.

Enter your answer and your explanation in the space provided.

> Yes parallelogram EFGH and parallelogram E'F'G'H' are congruent because they are the same size and same shape and have the same side lengeths, there was only transoformation which is moving the shape to the right and down not changing the size or the shape.

Part C

Parallelogram $E'F'G'H'$ will be reflected over the x-axis to create its image, parallelogram $E''F''G''H''$.

Will parallelogram $E''F''G''H''$ be congruent to parallelogram $EFGH$? Explain your reasoning.
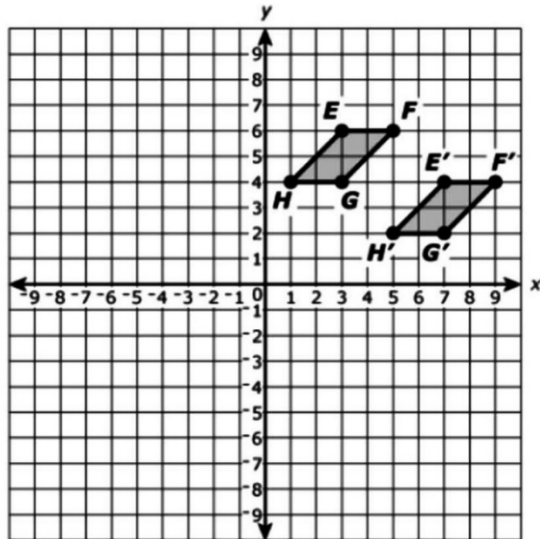
Enter your answer and your explanation in the space provided.

> Yes again they will still be comgruent because it is just reflecting the shape not changing the size or the shape in general.

Score Point 3

This question has three parts.

Parallelogram $EFGH$ was transformed to create its image, parallelogram $E'F'G'H'$, as shown on this coordinate plane.

Part A

Describe the transformation that was performed on parallelogram $EFGH$ to create parallelogram $E'F'G'H'$. Show or explain how you got your answer.

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

> It was translated 4 to the right and 2 down. I got my answer because I counted how many units it was moved right and down.

Part B

Is parallelogram $EFGH$ congruent to parallelogram $E'F'G'H'$? Explain your reasoning.

Enter your answer and your explanation in the space provided.

> It is congruent because they are the same shape and size.

Part C

Parallelogram $E'F'G'H'$ will be reflected over the x-axis to create its image, parallelogram $E''F''G''H''$.

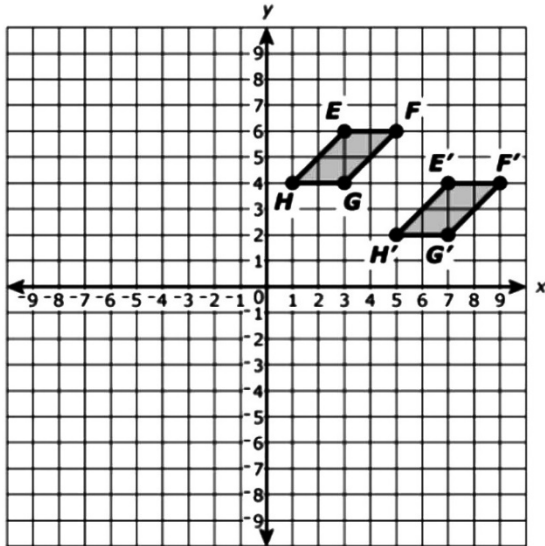Will parallelogram $E''F''G''H''$ be congruent to parallelogram $EFGH$? Explain your reasoning.

Enter your answer and your explanation in the space provided.

> I don't think it will be congruent because yes they do have the same measurements they do not techinacally look like the same shape anymore.

Score Point 2

This question has three parts.

Parallelogram $EFGH$ was transformed to create its image, parallelogram $E'F'G'H'$, as shown on this coordinate plane.

Part A

Describe the transformation that was performed on parallelogram $EFGH$ to create parallelogram $E'F'G'H'$. Show or explain how you got your answer.

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

> EFGH was rotated.

Part B

Is parallelogram $EFGH$ congruent to parallelogram $E'F'G'H'$? Explain your reasoning.

Enter your answer and your explanation in the space provided.

> yes because it is the same size and shape.

Part C

Parallelogram $E'F'G'H'$ will be reflected over the x-axis to create its image, parallelogram $E''F''G''H''$.

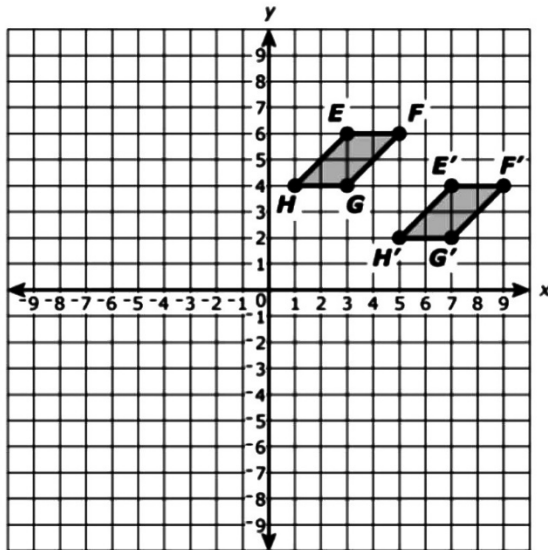Will parallelogram $E''F''G''H''$ be congruent to parallelogram $EFGH$? Explain your reasoning.

Enter your answer and your explanation in the space provided.

> yes they will be congruent. They are the same size and shape.

Score Point 1

This question has three parts.

Parallelogram $EFGH$ was transformed to create its image, parallelogram $E'F'G'H'$, as shown on this coordinate plane.

Part A

Describe the transformation that was performed on parallelogram $EFGH$ to create parallelogram $E'F'G'H'$. Show or explain how you got your answer.

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

> Yes. It was simply a reflection.

Part B

Is parallelogram $EFGH$ congruent to parallelogram $E'F'G'H'$? Explain your reasoning.

Enter your answer and your explanation in the space provided.

> Yes it is because it was the same shape and size.

Part C

Parallelogram $E'F'G'H'$ will be reflected over the x-axis to create its image, parallelogram $E''F''G''H''$.

Will parallelogram $E''F''G''H''$ be congruent to parallelogram $EFGH$? Explain your reasoning.
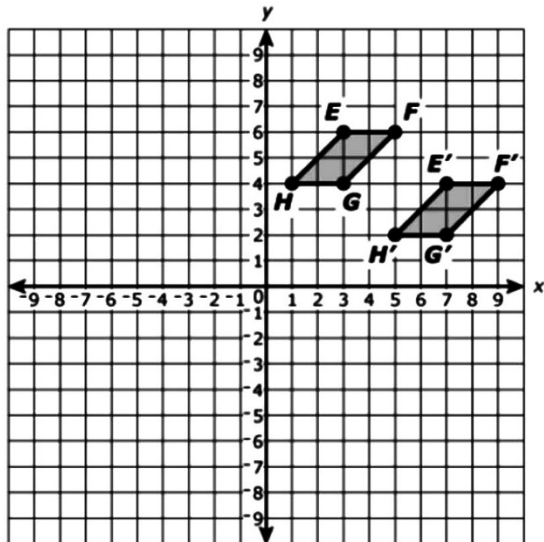
Enter your answer and your explanation in the space provided.

> Yes because it is the same shape being reflected.

[Back to Scoring Guide](#)

Score Point 0

This question has three parts.

Parallelogram $EFGH$ was transformed to create its image, parallelogram $E'F'G'H'$, as shown on this coordinate plane.

Part A

Describe the transformation that was performed on parallelogram $EFGH$ to create parallelogram $E'F'G'H'$. Show or explain how you got your answer.

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

> The transformation that was performed was that E'F'G'H moved on the graph.

Part B

Is parallelogram $EFGH$ congruent to parallelogram $E'F'G'H'$? Explain your reasoning.

Enter your answer and your explanation in the space provided.

> No, the parallelogram is not congruent.

Part C

Parallelogram $E'F'G'H'$ will be reflected over the x-axis to create its image, parallelogram $E''F''G''H''$.

Will parallelogram $E''F''G''H''$ be congruent to parallelogram $EFGH$? Explain your reasoning.

Enter your answer and your explanation in the space provided.

> Yes, the parallelogram will be congruent.

Back to Scoring Guide