Breakout Session #1

Transformations in the Plane

It seems like only yesterday that we were spending time at Immaculata, wrapped up in the joy of math for a whole week. Good times! Good times! Let’s start today by looking at some more “test like” problems that involve transformations (Reflections, translations, rotations, and dilations)

Multiple Choice

\_\_\_\_\_\_\_1. The figure below was transformed from quadrant 1 to quadrant 3.

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This transformation best illustrates a

A. translation B. rotation

C. dilation D. reflection

\_\_\_\_\_\_\_2. If point K is translated 4 units to the left and 3 units down, give the coordinates for point K’s new location.

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A.  B. 

C.  D. 

\_\_\_\_\_\_\_3. The vertices of a triangle are *P*(–8, –4), *Q*(1, –6), and *R*(7, –2). Name the vertices of the image reflected over the ***y*-axis**.

A. 

B. 

C. 

D. 

\_\_\_\_\_\_\_4. The vertices of a triangle are *P*(2, 3), *Q*(–7, 2), and *R*(2, –5). Name the vertices of the image reflected over the ***x*-axis**.

A. 

B. 

C. 

D. 

\_\_\_\_\_\_\_5. Which graph below shows a triangle and its reflection image with respect to

the *x*-axis?

|  |  |
| --- | --- |
| **A** | **B** |
|  |  |
| **C** | **D** |
|  |  |

\_\_\_\_\_\_\_6. What are the coordinates of the point (–10, –3) after a 180 clockwise rotation about the origin?

A.  B. 

C.  D. 

\_\_\_\_\_\_\_7. Square *PQRS* as shown below, is rotated 90clockwise about the origin. Find the coordinates of the image of point *R*.



A.  B. 

C.  D. 

\_\_\_\_\_\_\_8. In the figure below, the dashed triangle is a dilation image of the solid triangle. What is the scale factor?



A.  B. 

C.  D. 

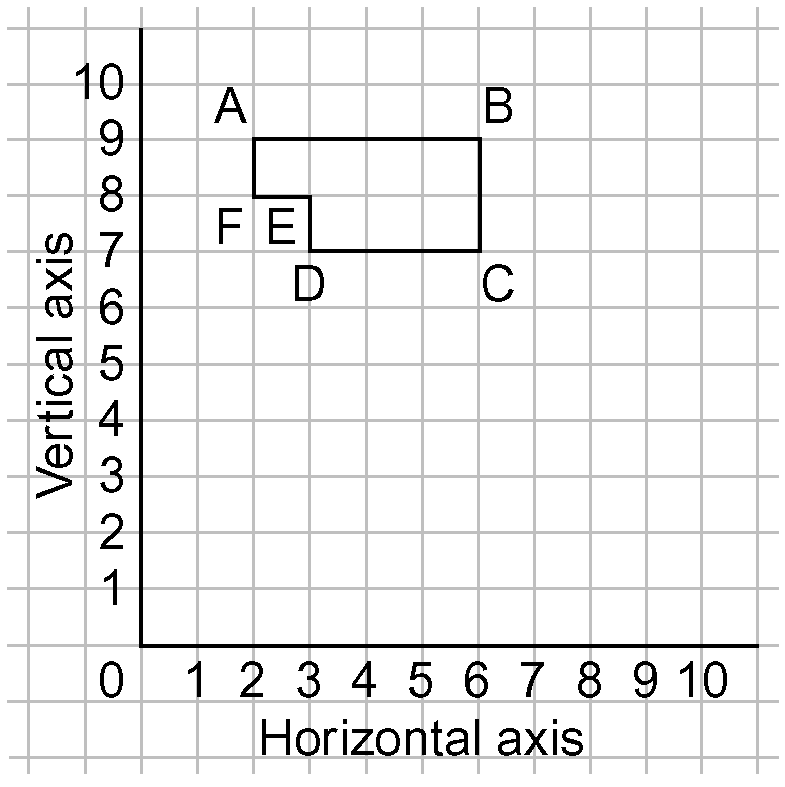
\_\_\_\_\_\_\_9. Which of the following choices shows the translation of the hexagon as depicted in the illustration of the arrow below (1 unit to the right and 2 units down)?



|  |  |
| --- | --- |
| **A** | **B** |
|  |  |
| **C** | **D** |
|  |  |

Free Response

1. Draw the image of this hexagon after a 90° clockwise rotation about (3, 5).



2. A. **Plot the points** (2, 4), (3, 5), (5, 5), (4, 4), (5, 3), and (3, 3) on the coordinate grid

below.

**B. Connect the points** in order and then connect the last point to the first point.

**C. Reflect** the polygon over the *y*-axis.

**D. Translate** the image 6 units down.

**E. List the coordinates** of the vertices of the final image?

**\_\_\_\_\_\_\_\_ , \_\_\_\_\_\_\_\_ , \_\_\_\_\_\_\_\_ , \_\_\_\_\_\_\_\_ , \_\_\_\_\_\_\_\_ , \_\_\_\_\_\_\_\_**



3. Find the image of the figure below using a dilation with center (0,0) and a scale factor of 2. Write the coordinates of the image after the dilation.

A’ \_\_\_\_\_\_\_\_ B’\_\_\_\_\_\_\_\_ C’\_\_\_\_\_\_\_\_\_ D’\_\_\_\_\_\_\_\_\_



4. The coordinates of WXYZ are W(-2,4), X(-6,7), Y(1,2), and Z(4,-5). After a translation of 6 units to the right and 3 units down, the coordinates of the image are:

W’( \_\_\_\_\_ , \_\_\_\_\_ ); X’( \_\_\_\_\_ , \_\_\_\_\_ ); Y’( \_\_\_\_\_ , \_\_\_\_\_ ); Z’( \_\_\_\_\_ , \_\_\_\_\_ )

5. Draw the image of reflected over the *x*-axis, and then give the coordinates of the image.

A’ \_\_\_\_\_\_\_\_ B’\_\_\_\_\_\_\_\_ C’\_\_\_\_\_\_\_\_\_

