ADAPTED NJDOE ASSESSMENT

GRADE 8

(To be administered after NPS Grade 8 Scope and Sequence Unit 2)

Assessed Standards:

- 8.G.1
- 8.G.2
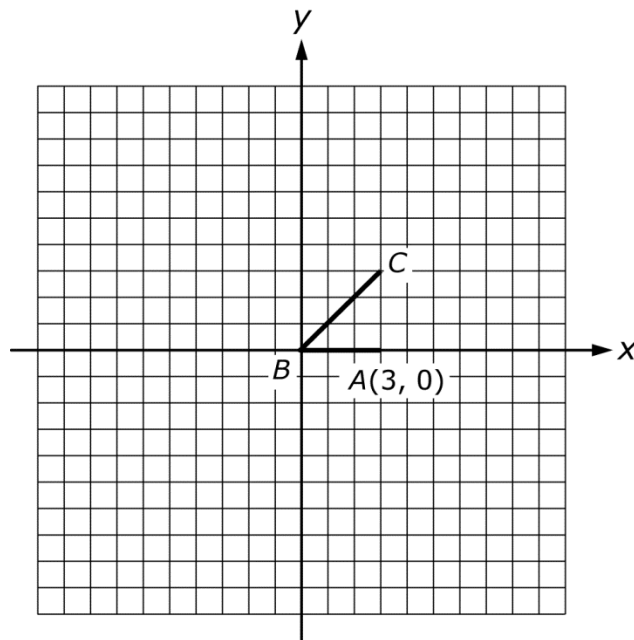- 8.G.3
- 8.G.4
- 8.G.5

Name _____   Period _____   Date _____

Grade 8 Unit 2

For multiple choice questions, circle the best answer.
For all other questions, respond in the space provided.

1.   Angle *ABC* in the coordinate plane below will be rotated 90 degrees
      counterclockwise about the origin. What are the coordinates of the
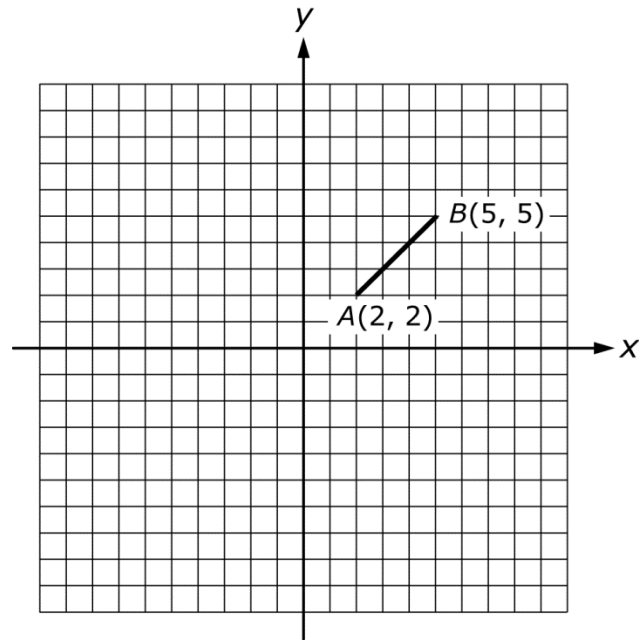   image of point *A* ?

        a.   0, 3
        b.   0, −3
        c.   3, 3
        d.   3, 0

2. Parallel lines ℓ and n (not shown) were each translated. Could lines t and u shown in the coordinate plane below be the image of lines ℓ and n after translation? Explain your reasoning.
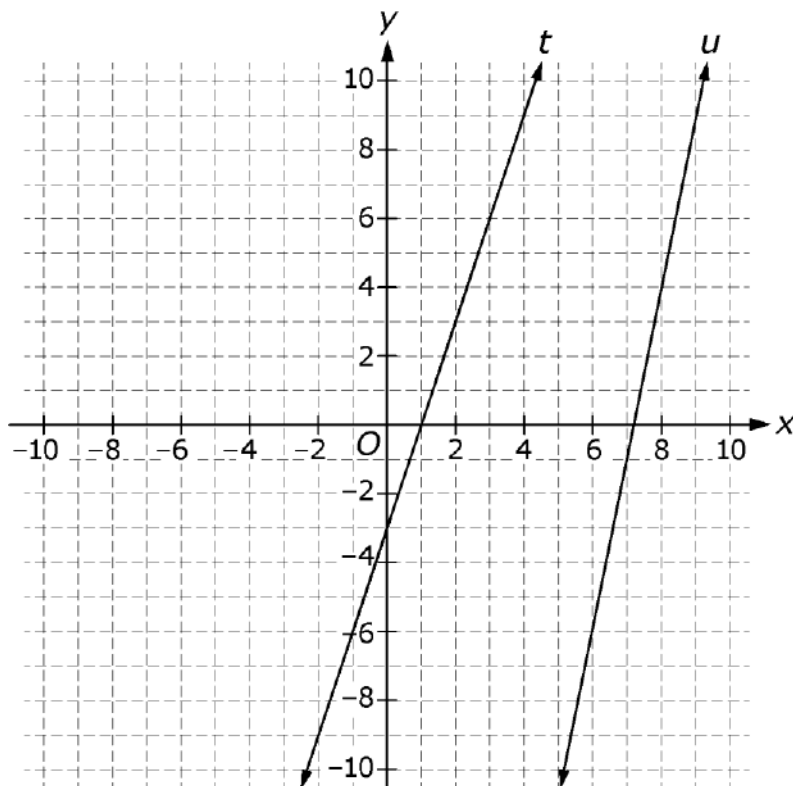
3.

Part A   What are the coordinates of the image of point B when line
         segment $\overline{AB}$ in the coordinate plane above is reflected about
         the x-axis?

Part B   What are the coordinates of the image of point B when line
         segment $\overline{AB}$ in the coordinate plane above is reflected about
         the y-axis?

Part C   What are the coordinates of the image of point B when line
         segment $\overline{AB}$ in the coordinate plane above is reflected about
         the origin?

4.   Describe a sequence of transformations that can be used to show that
   triangle *ABC* is congruent to triangle *XYZ*.
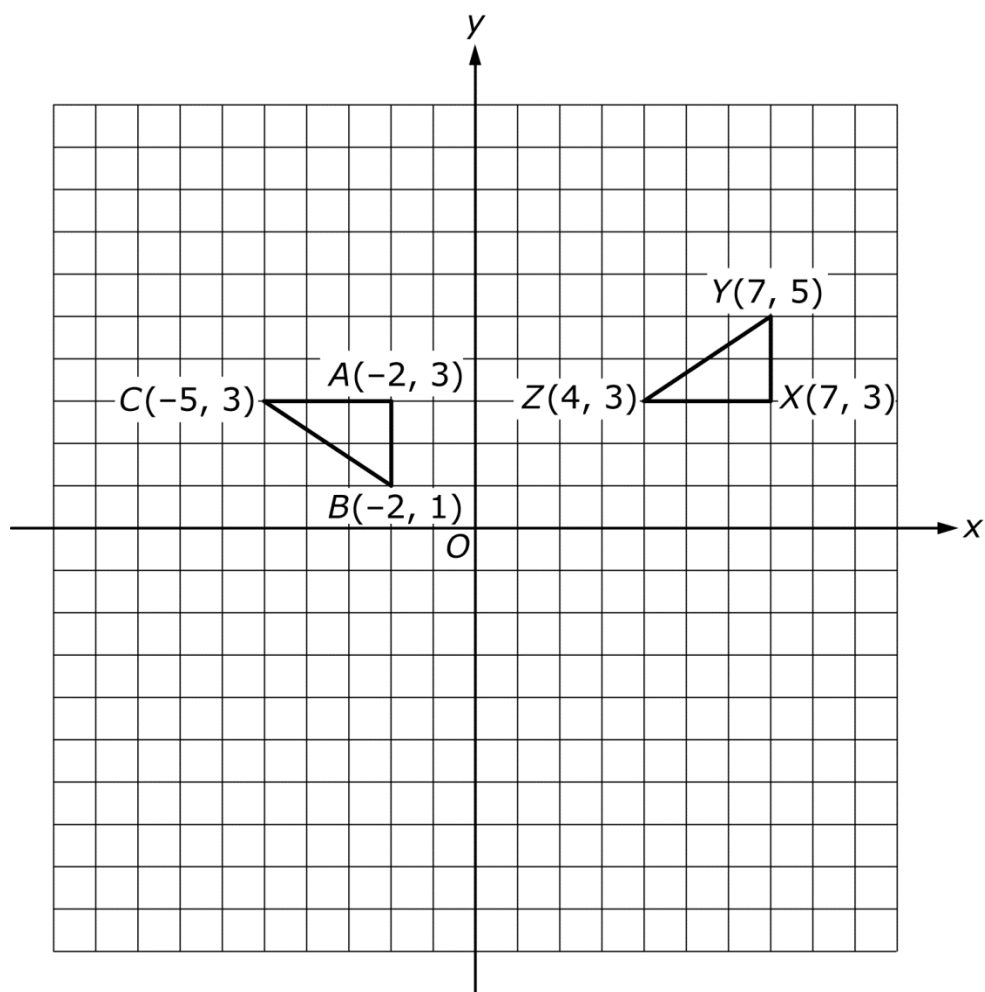
5. Triangle *ABC* is shown in the coordinate plane below. Triangle *XYZ* (not shown) is located in the coordinate plane with vertices at points $X(9, 0)$, $Y(7, 4)$, and $Z(7, 0)$.

y

10

8

B(−7, 6)
6

4

A(−9, 2)   *C*(−7, 2)   2

−10 −8 −6 −4 −2 *O*   2   4   6   8   10   *x*

−2

−4

−6

−8

−10
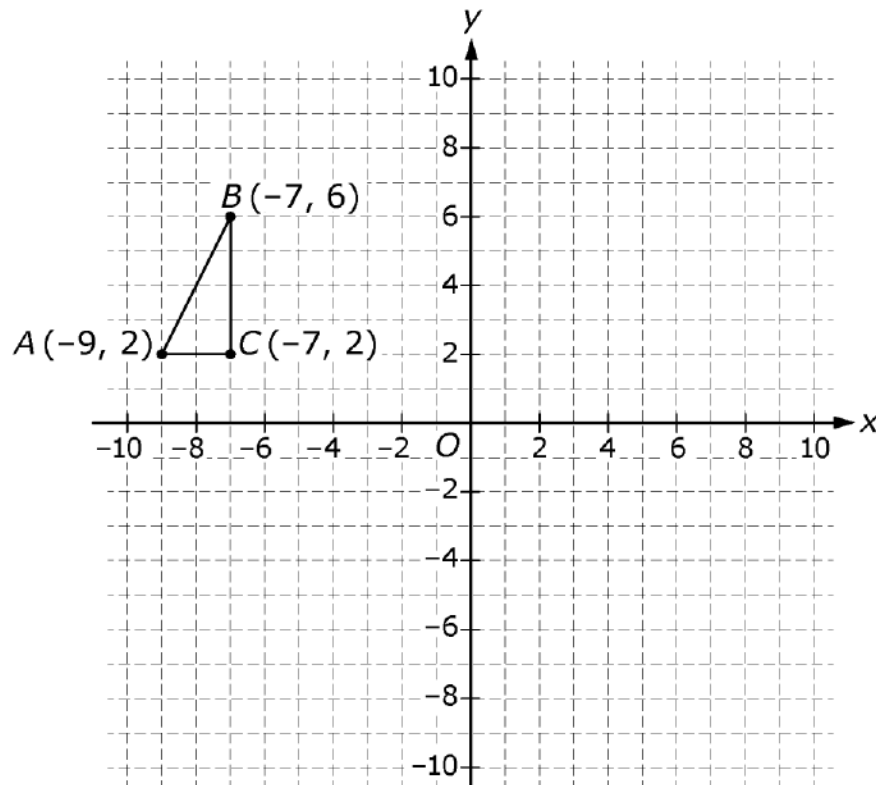
Part A   Which of the following transformations shows that triangle *ABC* is congruent to triangle *XYZ* ?

   a.   Triangle *ABC* is translated 7 units to the right and 2 units down.
   b.   Triangle *ABC* is translated 14 units to the right and 2 units down.
   c.   Triangle *ABC* is reflected over the *x*-axis and translated 2 units down.
   d.   Triangle *ABC* is reflected over the *y*-axis and translated 2 units down.

Part B   Explain your reasoning for the answer you gave in part A.

6. Rectangle *ABCD* is shown in the coordinate plane below. Rectangle *RVTS* (not shown) has coordinates *R* 0, 4 , *V* −9, 4 ,*T* −9, 9 , and *S* 0, 9 . Which of the following is true about rectangles *ABCD* and *RVTS* ?
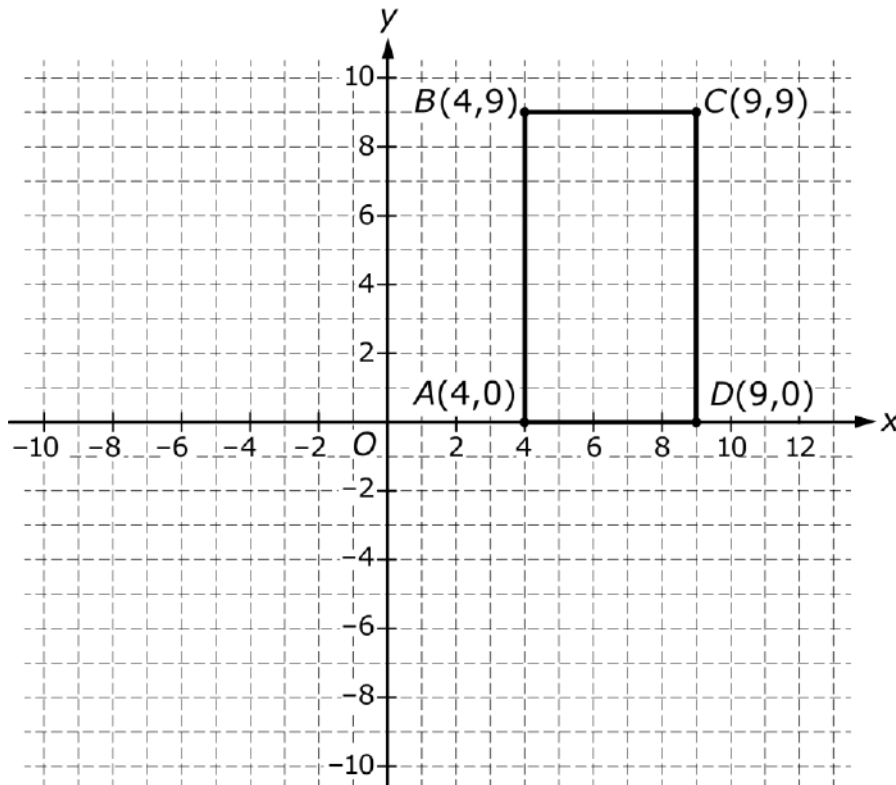
a. *ABCD* ≅ *RVTS* since the image when *ABCD* is reflected over the y-axis is *RVTS*.

b. *ABCD* ≇ *RVTS* since the image when *ABCD* is reflected over the y-axis is not *RVTS*.

c. *ABCD* ≅ *RVTS* since the image when *ABCD* is rotated 90° counterclockwise about the origin is *RVTS*.

d. *ABCD* ≇ *RVTS* since the image when *ABCD* is rotated 90° counterclockwise about the origin is not *RVTS*.

Adapted from the 2012 NJDOE Unit 1_Grade 8 Assessment

7. A transformation maps a preimage triangle to the image triangle shown in the coordinate plane below. If the preimage triangle is reflected over the *y*-axis to get the image triangle, what are the coordinates of the vertices of the preimage triangle?
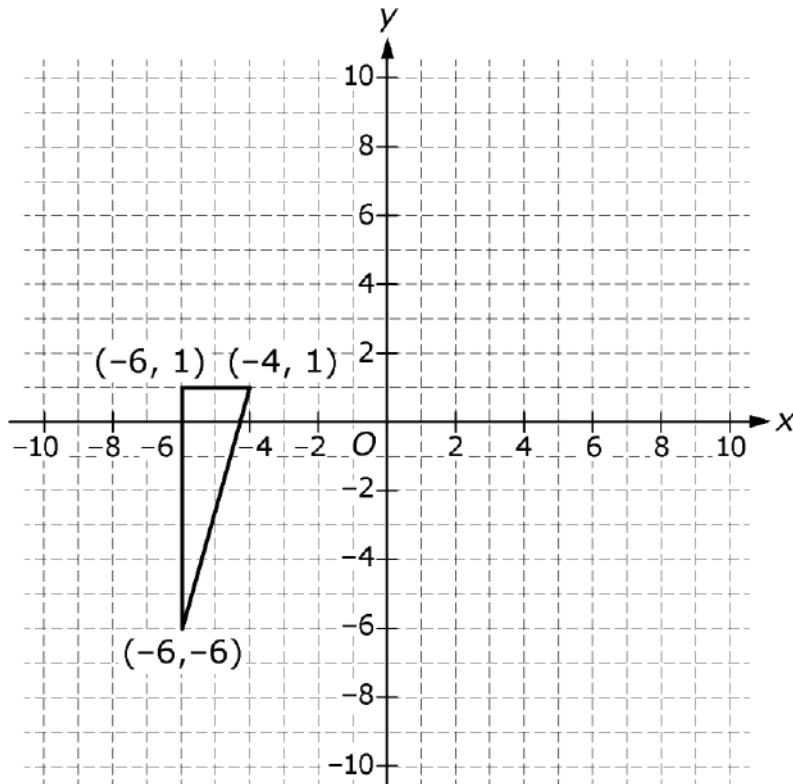

a.   −4, −1 , −6, −1 , −6, −6

b.   4, −1 , 6, −1 , 6, −6

c.   4, 6 , 4, 1 , 6, 1

d.   4, 1 , 6, 1 , 6, −6

8. The circle shown in the coordinate plane below is the preimage under a dilation centered at the origin with scale factor 2. Which of the following points is NOT on the image of the dilation?
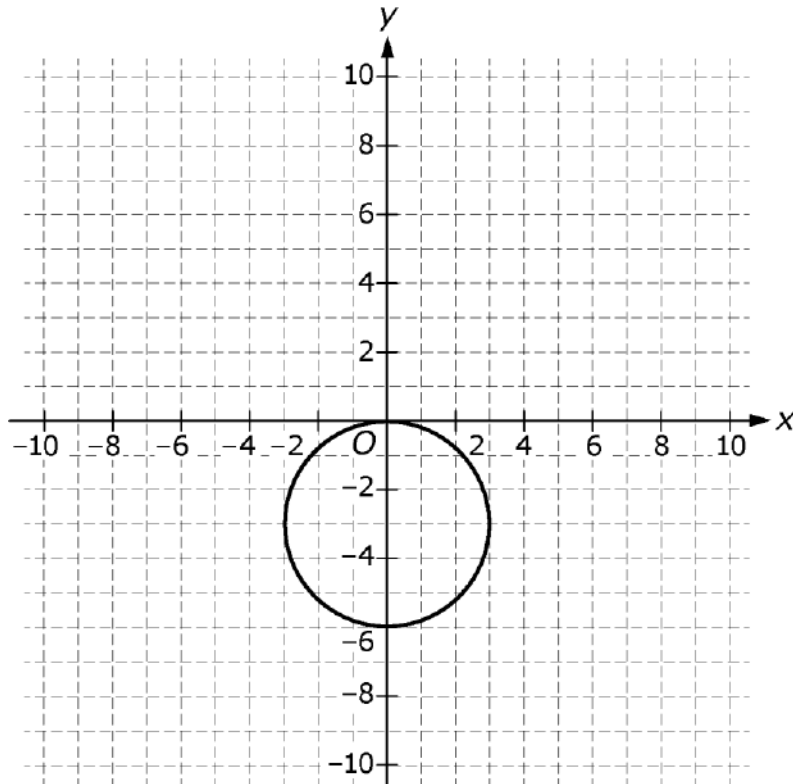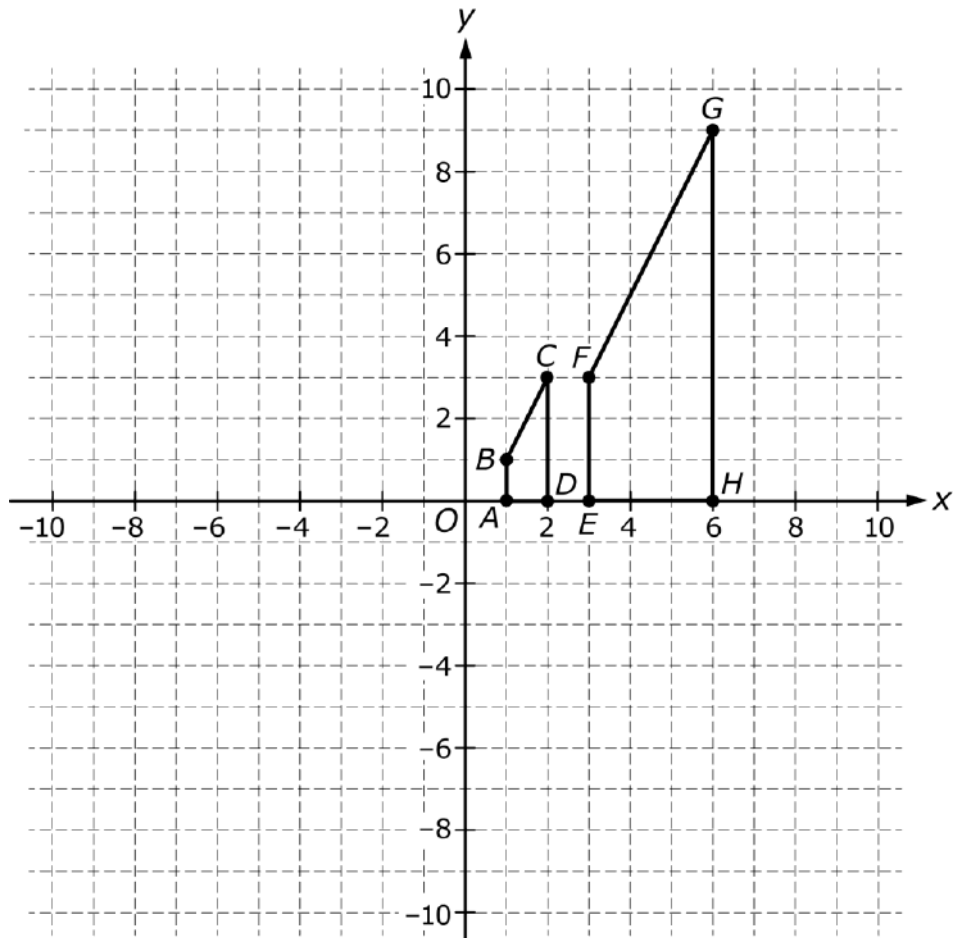

a.   −6, −6

b.   0, 0

c.   0, 6

d.   6, −6

9.   Parallelogram *EFGH* is shown in the coordinate plane below. Rotate *EFGH* 90 degrees clockwise about the origin and then translate it 3 units down. Label the resultant image *PQRS*.
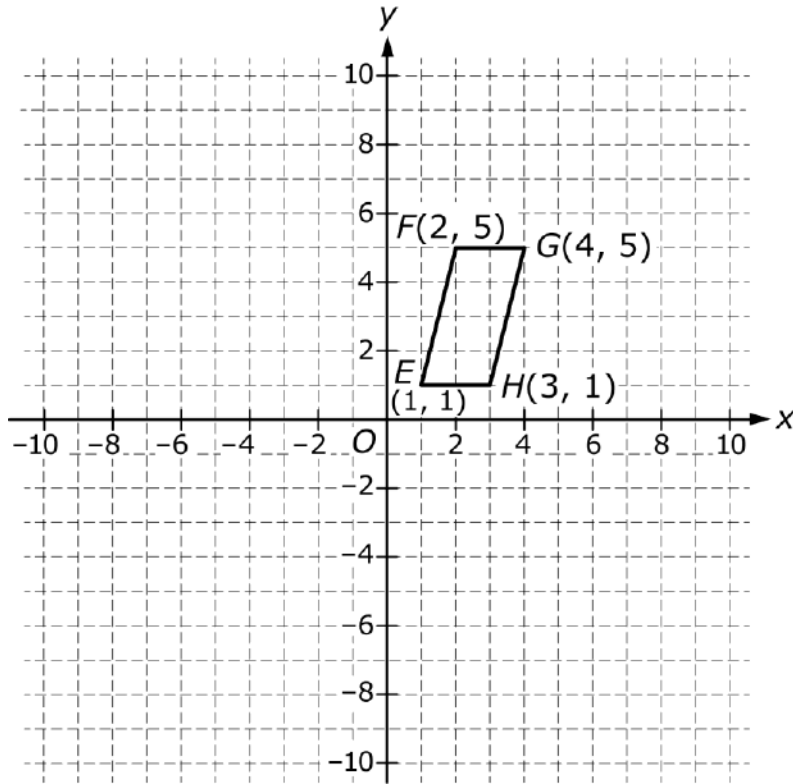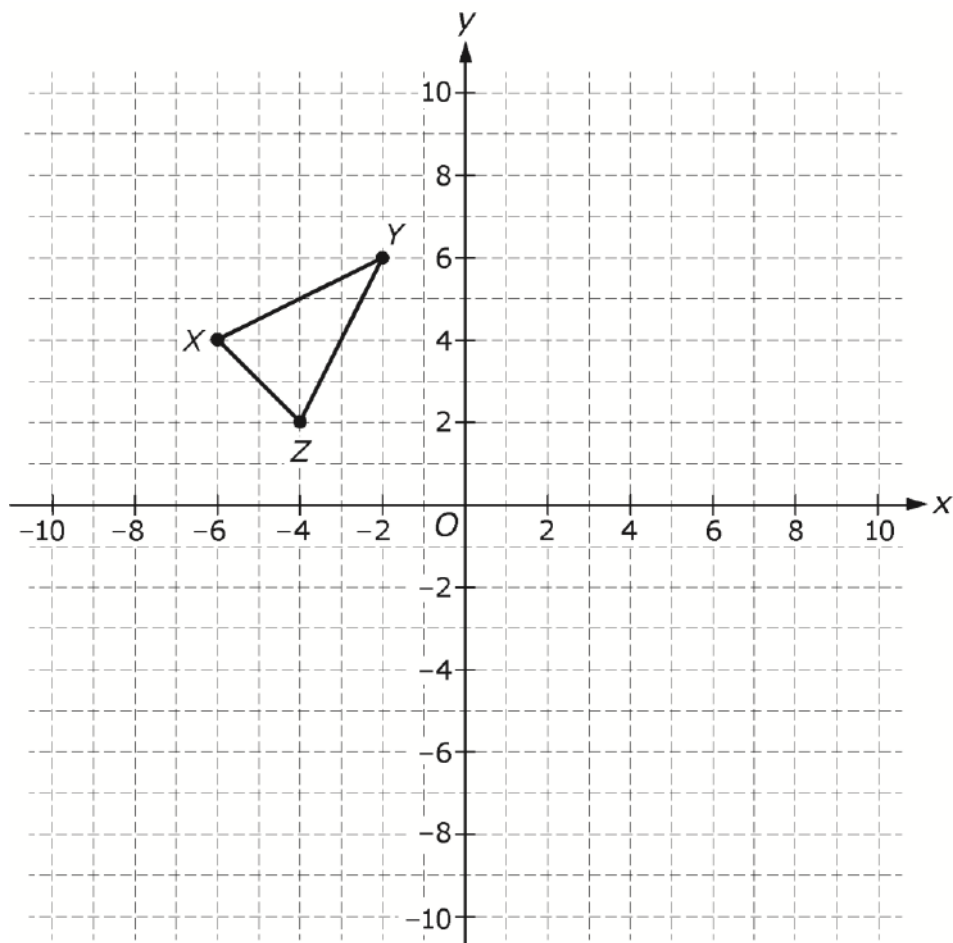
10. Quadrilateral *ABCD*, shown in the coordinate plane below, is dilated with the center at the origin to form quadrilateral *EFGH*. What is the scale factor of the dilation?
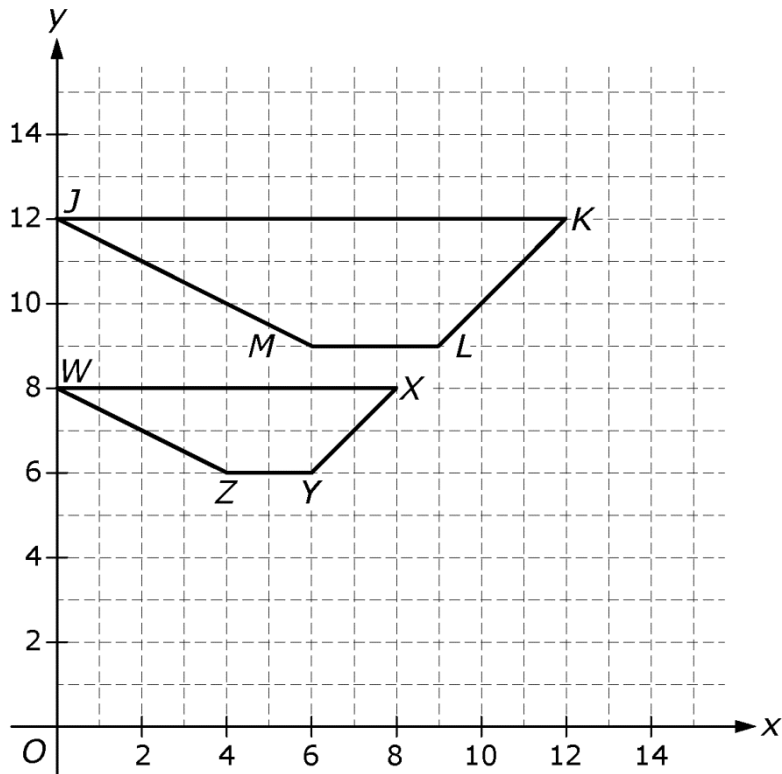

a. $\dfrac{1}{4}$

b. $\dfrac{1}{3}$

c. 3

d. 4

11. Triangle *XYZ* is shown in the coordinate plane below. Dilate *XYZ* with center 0, 0 and scale factor $\frac{3}{2}$. Label the resultant image *PQR*.

12. Quadrilaterals *JKLM* and *WXYZ* are shown in the coordinate plane below. Quadrilateral *WXYZ* is the image of quadrilateral *JKLM* under a transformation. Which of the following best describes the transformation?

a. A dilation with center 0, 0 with a scale factor of $\frac{2}{3}$.

b. A dilation with center 0, 0 with a scale factor of $\frac{3}{2}$.

c. A translation 2 units to the left and 3 units down.

d. A translation 2 units to the right and 3 units up.

13. Triangles *ABC* and *XYZ* are shown in the coordinate plane below.
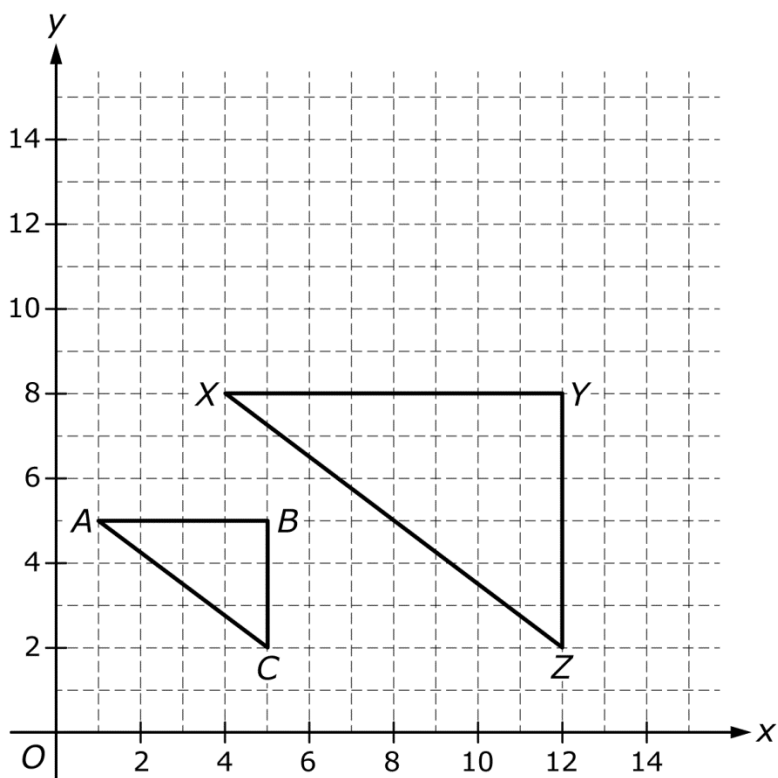
Are triangles *ABC* and *XYZ* similar? Justify your answer using one or more transformations.

14. Triangles *ABC*, *DEF*, *JKL*, and *PQR* can be placed in the coordinate plane below and are related to each other in the following manner.

- Triangle *ABC* is reflected over the *x*-axis to get triangle *DEF*.
- Triangle *DEF* is translated 6 units to the right and 4 units down to get triangle *JKL*.
- A transformation is applied to triangle *JKL* to get triangle *PQR*.
- Triangle *PQR* is similar to triangle *ABC* but **NOT** congruent to triangle *ABC*.

Which of the following could describe the transformation applied to triangle *JKL* to get triangle *PQR* ?
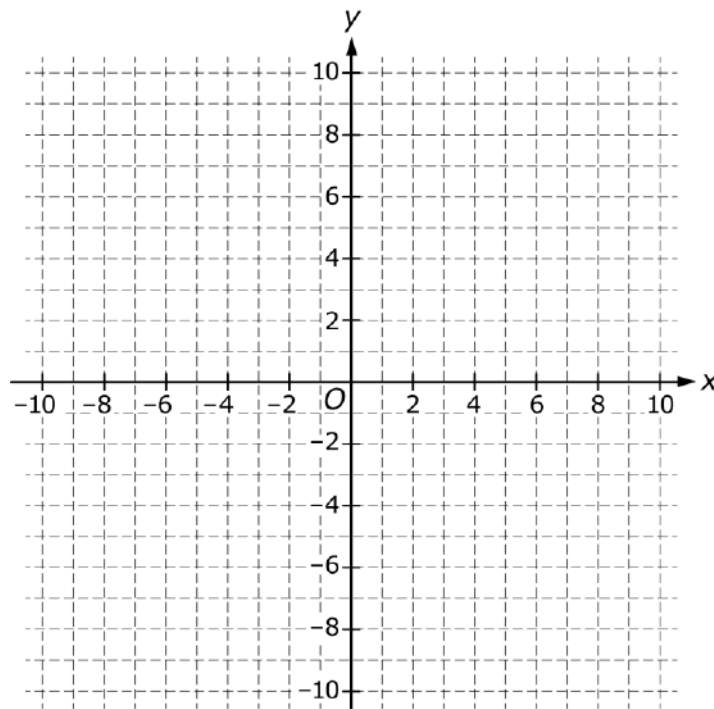
a. Triangle *JKL* is rotated 90° counterclockwise about the origin to get *PQR*.

b. Triangle *JKL* is rotated 180° about the origin to get *PQR*.

c. Triangle *JKL* is dilated with a scale factor of 1 with the center at the origin to get *PQR*.

d. Triangle *JKL* is dilated with a scale factor of 5 with the center at 3, −4 to get *PQR*.

15. Two quadrilaterals are shown in the coordinate plane below. Quadrilateral *ABCD* was dilated with a scale factor of 2 with the center at the origin and then rotated 180° about the origin to get the quadrilateral in Quadrant IV.
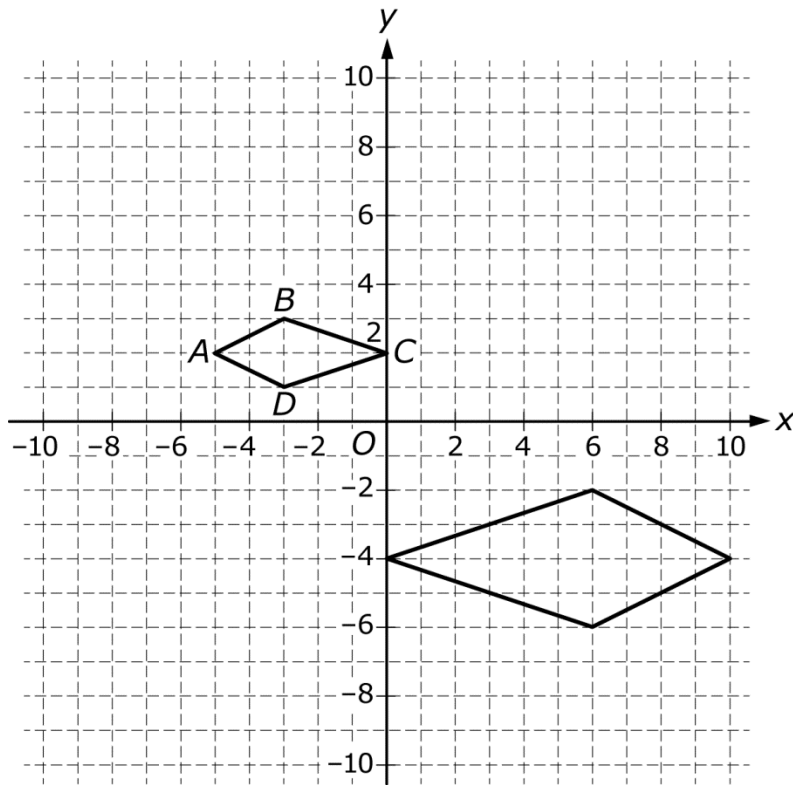
Part A   Label the image quadrilateral in Quadrant IV using *W*, *X*, *Y*, and *Z*.

Part B   Write a sentence that describes the relationship between the two quadrilaterals using the word "congruent" or the word "similar."

16. In the figure below, lines $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$ are parallel, line $\overleftrightarrow{EF}$ is a transversal, and the measure of angle *DGF* is 60°.
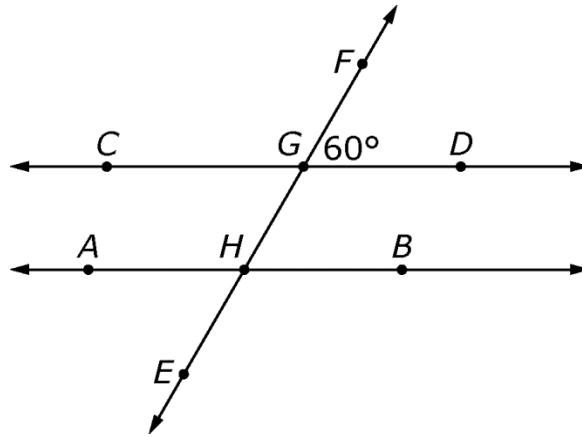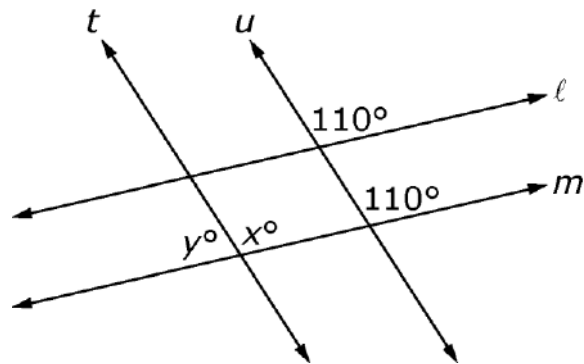

Part A Give the measure of angle *BHF*, and justify your answer using one or more transformations.

Part B Give the measure of angle *AHE*, and justify your answer.

Part C Give the measure of angle *BHE*, and justify your answer.

17. Based on the figure below, determine whether each given statement must be true, and briefly explain why.

Statement	Must the statement be true? (Yes or No)	Explain why.
Line ℓ is parallel to line m.		
Line t is parallel to line u.		
$x = 110$		
$y = 70$		

18. In the figure below, lines $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$ are parallel and line $\overleftrightarrow{EF}$ is a transversal.
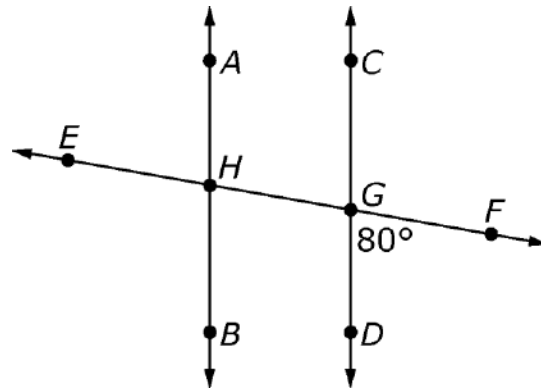

Give an informal argument showing that angles *CGH* and *BHG* are congruent.

19. In the figure below, $x = 23$. Is line k parallel to line m ?
     Explain your answer.

$(2x + 16)°$

m

$(3x - 7)°$

k
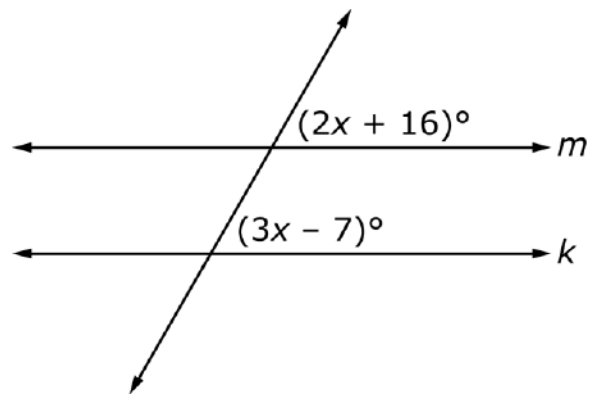
20. In the figure below, line $\overleftrightarrow{AB}$ is parallel to line $\overleftrightarrow{ED}$. Two angles in triangle *ACB* are shown to have measures equal to two other angles in the figure. Use the figure to explain why the sum of the measures of the angles of triangle *ACB* is equal to 180 degrees.
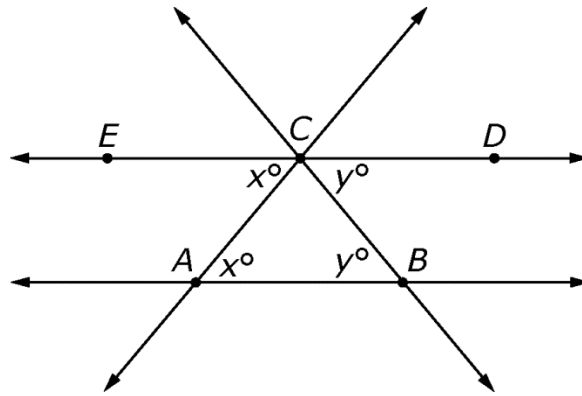
21. Are the two triangles shown below similar triangles? Explain your answer.
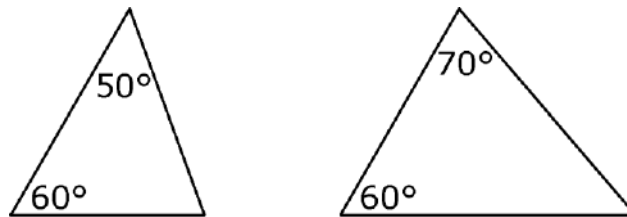
22.	In the figure below, does $a = 120$? Explain your answer.