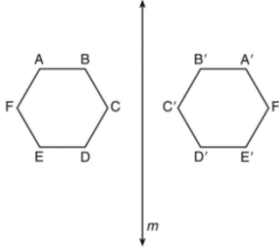


## Unit 1 Test Review: Transformations in the Coordinate Plane

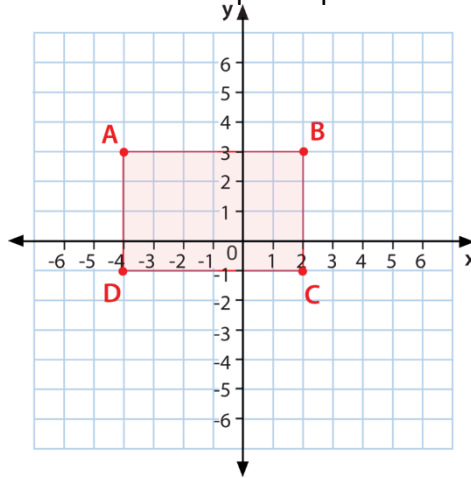
1. As shown in the diagram below, when hexagon  $ABCDEF$  is reflected over line  $m$ , the image is hexagon  $A'B'C'D'E'F'$ .



Under this transformation, which properties are preserved? distance, angles, orientation, area

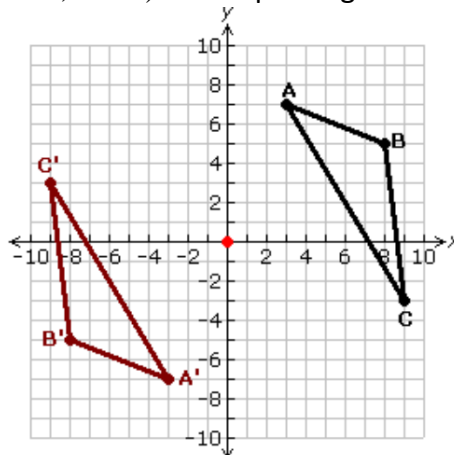
2. Check all of the below series of transformations that will result in a congruent image.
- A translation five units up followed by a dilation using a scale factor of one
  - A 270 degree counter clockwise rotation followed by a reflection over the line  $y = 0$
  - A 90 degree rotation followed by a reflection over the line  $y = x$
  - A reflection over the x-axis followed by a dilation using a scale factor of 2

3. Fill in the blanks to make statements that will map the quadrilateral graphed below onto itself.

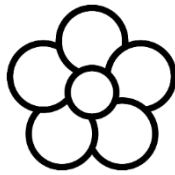


- Reflection over the line \_\_\_\_\_
- 180 degree rotation about the point \_\_\_\_\_
- Reflection over the line \_\_\_\_\_

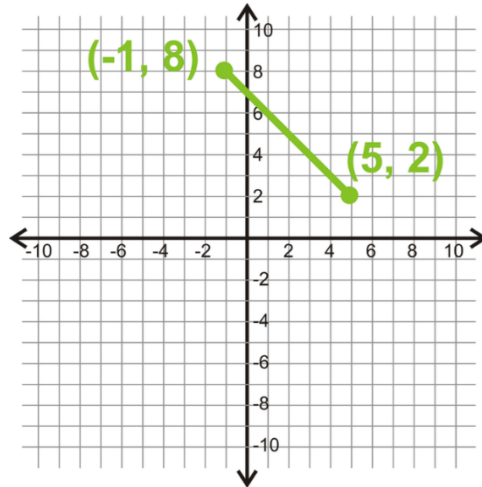
4. The transformation  $(x, y) \rightarrow ( \quad , \quad )$  will map triangle  $ABC$  to triangle  $A'B'C'$ .



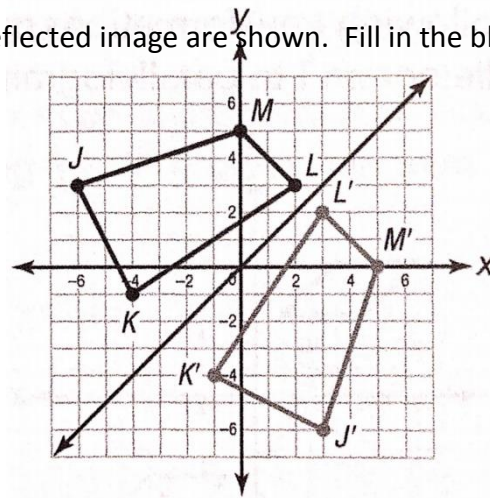
5. List the all the degrees of rotations (less than 360) that will map the figure below onto itself.



6. If the segment below is reflected over the line  $y = 1$ , then translated 3 units to the left, the coordinates of the endpoints of the image are \_\_\_\_\_ and \_\_\_\_\_.

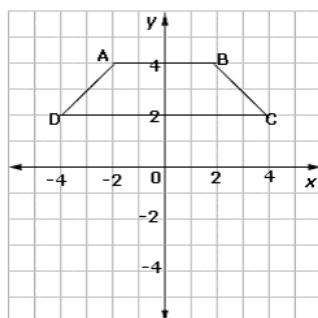


7. Quadrilateral  $JKLM$  and its reflected image are shown. Fill in the blanks



- The image shows the result of a reflection across the line \_\_\_\_\_.
- The path that point  $L$  takes to  $L'$  is \_\_\_\_\_ to the line of reflection.
- Each point  $(x, y)$  on quadrilateral  $JKLM$  maps to a point  $(\_, \_)$  on its image.
- Corresponding sides of quadrilateral  $JKLM$  and its image are \_\_\_\_\_.

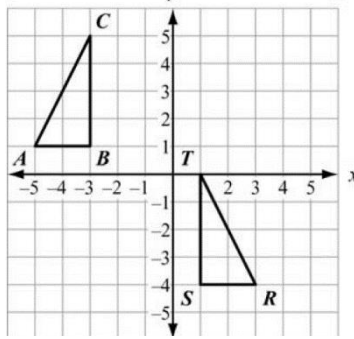
8. The trapezoid below is translated such that  $A' = D$ . The coordinates of the image  $B'$  after the translation is \_\_\_\_\_.



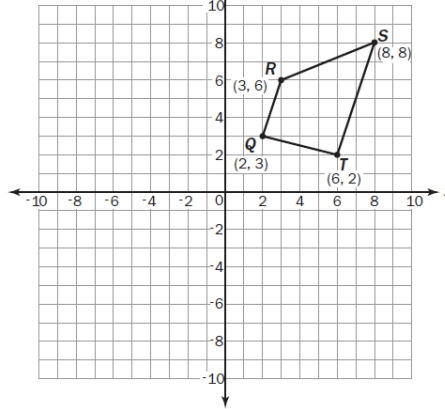
9. Check all of the below transformations on triangle ABC that produces an image congruent to triangle ABC.

- reflection across  $y = x$
- translation 3 units down and 4 units to the right
- dilation by a scale factor of 1.5
- clockwise rotation of 270 degrees

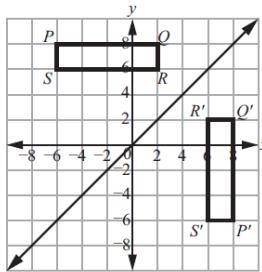
10. Find a series of transformations that maps  $\triangle ABC$  to  $\triangle RST$ .



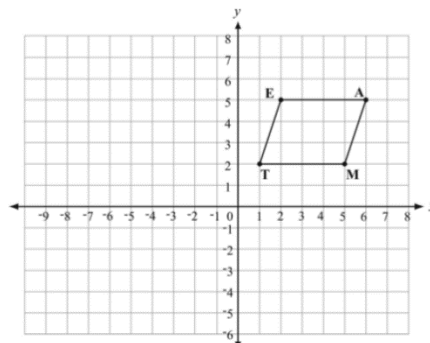
11. The image of point Q after a counterclockwise rotation of 270 degrees about the origin is \_\_\_\_\_.



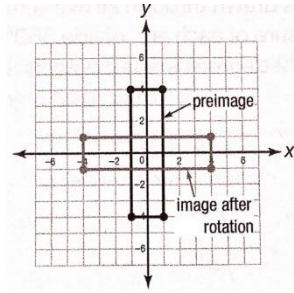
12. The function  $T(x, y) = (\_\_\_\_, \_\_\_\_)$  describes the transformation of rectangle PQRS to  $P'Q'R'S'$ .



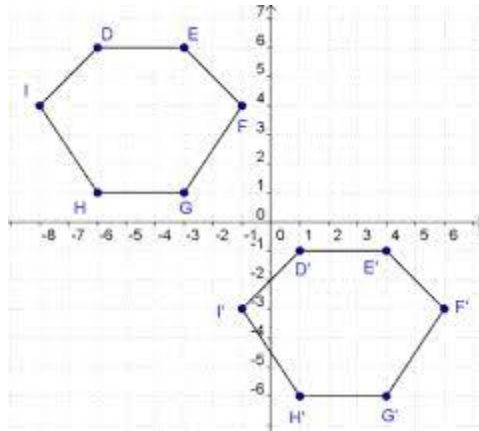
13. The graph below shows parallelogram TEAM. A congruent parallelogram  $T'E'A'M'$  has coordinates  $E'(-7, 0)$ ,  $A'(-3, 0)$ ,  $M'(-4, -3)$ , and  $T(\_\_\_\_, \_\_\_\_)$ ?



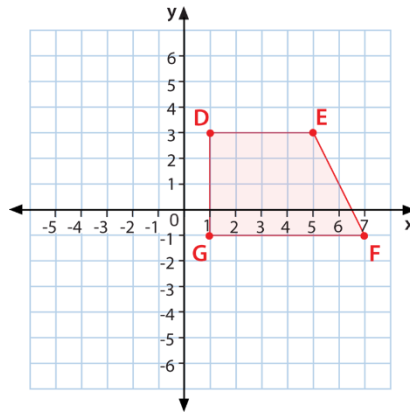
14. List all of the degrees of rotations (less than 360) that will map the preimage to the image below.



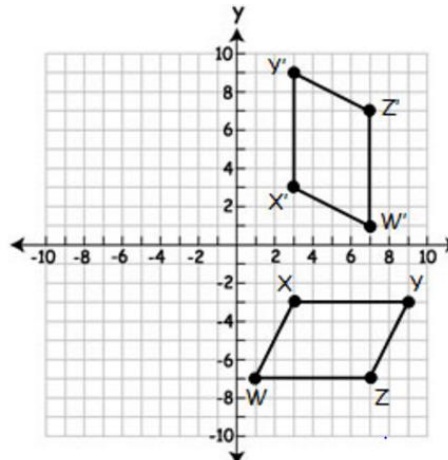
15. The function  $T(x, y) = (\underline{\hspace{2cm}}, \underline{\hspace{2cm}})$  describes the transformation graphed below.



16. If trapezoid  $DEFG$  below is reflected so that  $E' = (1, -5)$ , the line of reflection is  $\underline{\hspace{2cm}}$ .



17. The function  $(x, y) \rightarrow (\underline{\hspace{1cm}}, \underline{\hspace{1cm}})$  describes the rotation.

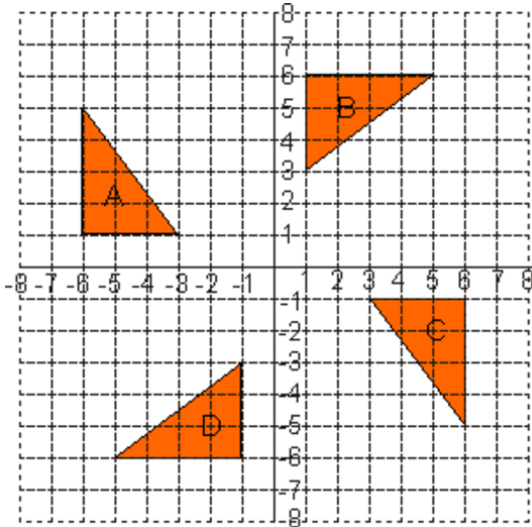


18. The **single** translation  $(x, y) \rightarrow (\underline{\hspace{2cm}}, \underline{\hspace{2cm}})$  accomplishes the same translation as the following series of translations:  $(x, y) \rightarrow (x + 5, y + 3)$  followed by  $(x, y) \rightarrow (x + 2, y - 4)$  followed by  $(x, y) \rightarrow (x - 3, y - 3)$ .

19. List the coordinates for the image of point  $P(-2, 4)$  after each of the following reflections.

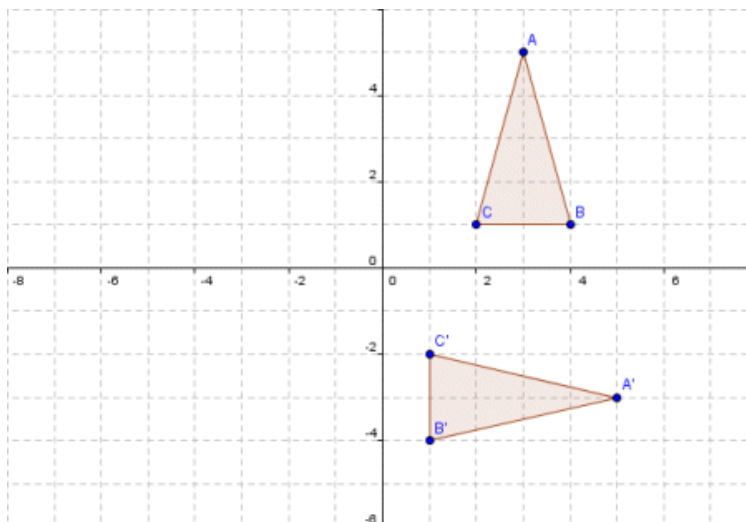
- Point P is reflected over the y-axis.
- Point P is reflected over the x-axis.
- Point P is reflected over the line  $y = x$ .

20.

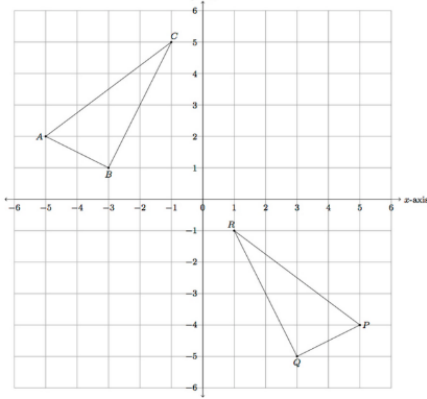


- Triangle \_\_\_ is a 270 degree counterclockwise rotation of triangle C.
- Triangle \_\_\_ is a 90 degree clockwise rotation of triangle B.
- Triangle \_\_\_ is a 180 degree rotation of triangle A.
- Triangle \_\_\_ is a 270 degree clockwise rotation of triangle C.

21. In the graph below  $\triangle ABC \cong \triangle A'B'C'$ . Explain using transformations how you know the triangles are congruent. List the transformation or series of transformations. Also list corresponding angles and sides that are congruent. (*Write in complete sentences.*)

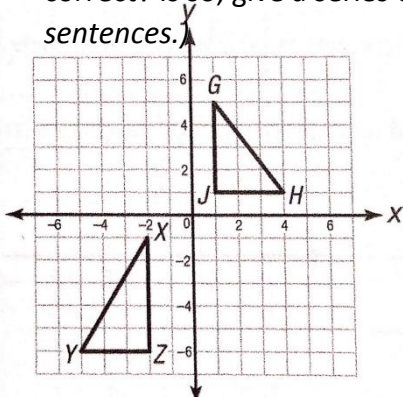


22. Consider the following triangles graphed below. (Write in complete sentences.)

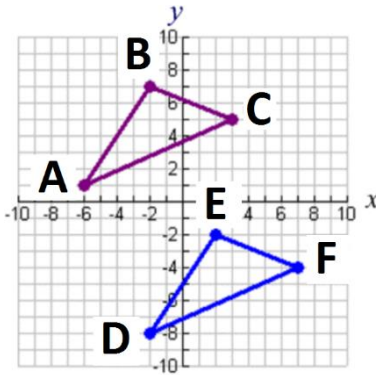


- A. What series of transformations will map one of the graphed triangles onto the other triangle?
- B. Do the transformations ensure that the triangles are congruent? Explain.

23. Liam says that  $\triangle GHJ$  can be mapped to  $\triangle XYZ$  with a series of rigid motion transformations. Is he correct? If so, give a series of transformations that works. If not, explain why not. (Write in complete sentences.)



24. Triangles ABC and DEF are congruent.



- A. Write a function to describe the translation that maps triangle ABC to triangle DEF. \_\_\_\_\_
- B. Write a function to describe the translation that maps triangle DEF to triangle ABC. \_\_\_\_\_

25. List all the **single** transformations that will map the figure onto itself. Rotations should be **clockwise** and **less than 360 degrees**. Name all lines of reflection. (Write in complete sentences.)

