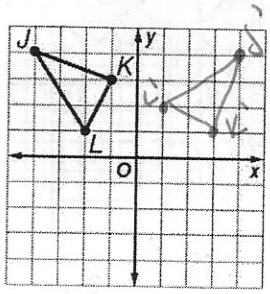
T4-10 Number _____ Name _____ Period _____

For Exercises 1 and 2 graph the image of the polygon after each rotation, label the image. Then give the coordinates of the vertices for the image.

1. 90° about the origin.

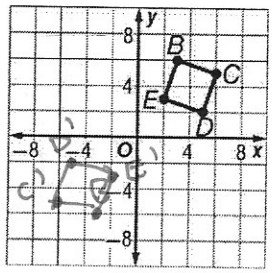


J' (4,4)

K' (3,1)

L' (1,2)

2. 180° about the origin.



B' (-3,-6)

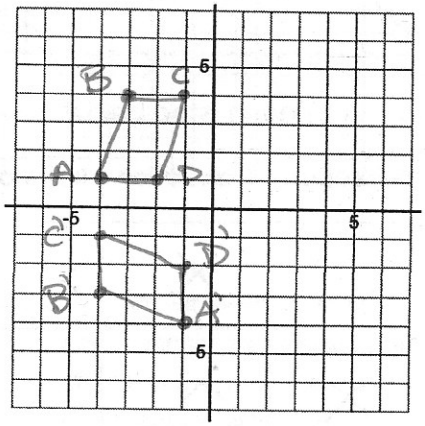
C' (-6,-5)

D' (-5,-2)

E' (-2,-3)

The vertices of a parallelogram are A(−4, 1), B(−3, 4), C(−1, 4), and D(−2, 1). Rotate the parallelogram as described. Find and label the coordinates of the image.

3. 90° counterclockwise about the origin



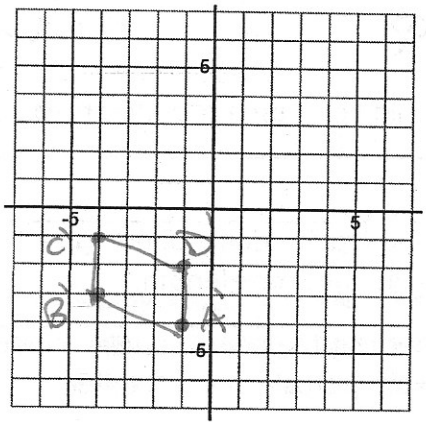
A' (-1,-4)

B' (-4,-3)

C' (-4,-1)

D' (-1,-2)

4. 270° clockwise about the origin



A' (-1,-4)

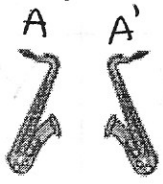
B' (-4,-3)

C' (-4,-1)

D' (-1,-2)

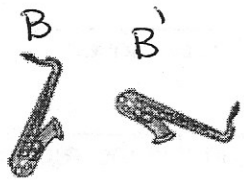
5. Identify the transformation shown.

a.



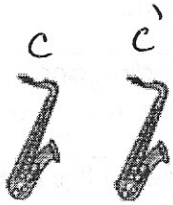
Reflection

b.



Rotation

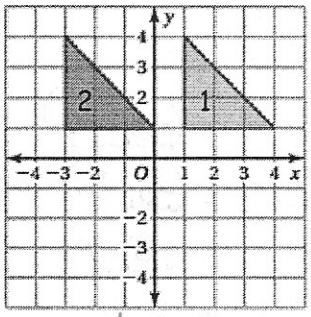
c.



Translation

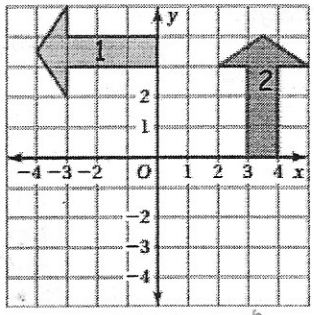
Determine if the blue figure 1 is a rotation of the red figure 2 about the origin. If so, give the angle and direction of rotation.

6.



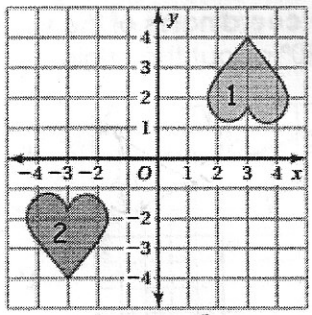
NO

7.



yes; 270° clockwise or 90° counter-clockwise

8.



yes: 180° clockwise

Describe the transformation indicated by each rule.

14. (x, y) → (x-3, y + 2)

translation 3 units left, 2 units up

15. (x, y) → (x+7, y - 4)

Translation 7 units Right 4 units down

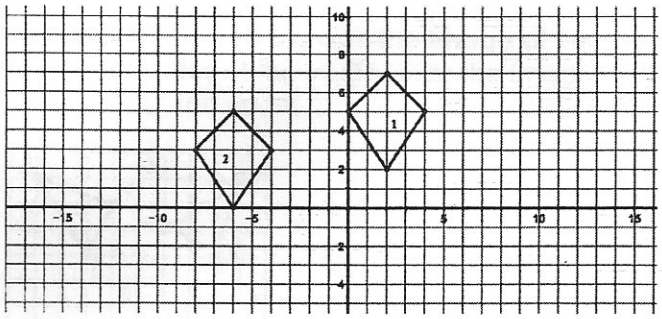
16. (x, y) → (x, y + 5)

Translation 5 units up

23. Determine which of these properties hold true for each type of transformation listed below.

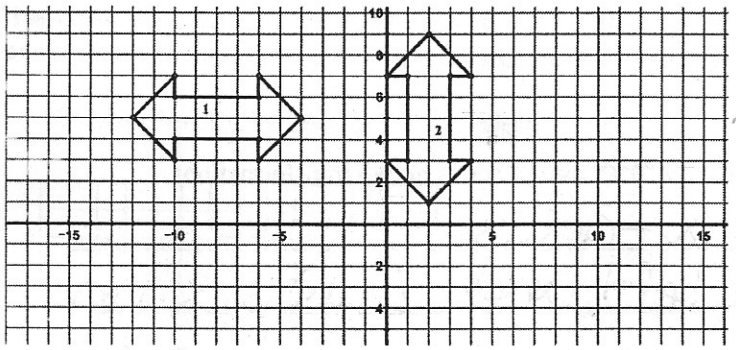
Properties	**Reflection**	**Translation**	**Rotation**
Segments connecting the corresponding vertices of the image and pre-image are the same length.		X	
Segments connecting the corresponding vertices of the image and pre-image are parallel to each other.	X	X	
Corresponding segments in the image and pre-image are the same length.	X	X	X
Corresponding angles in the image and pre-image have the same measure.	X	X	X
Parallel lines in the pre-image remain parallel lines in the image.	X	X	X
Corresponding segments in the image and pre-image have the same slope.		X	
Image has the same orientation as pre-image.		X	

1) Describe a transformation or a series of transformations that would carry figure 1 onto figure 2.



Translation
$(x, y) \rightarrow (x-8, y-2)$

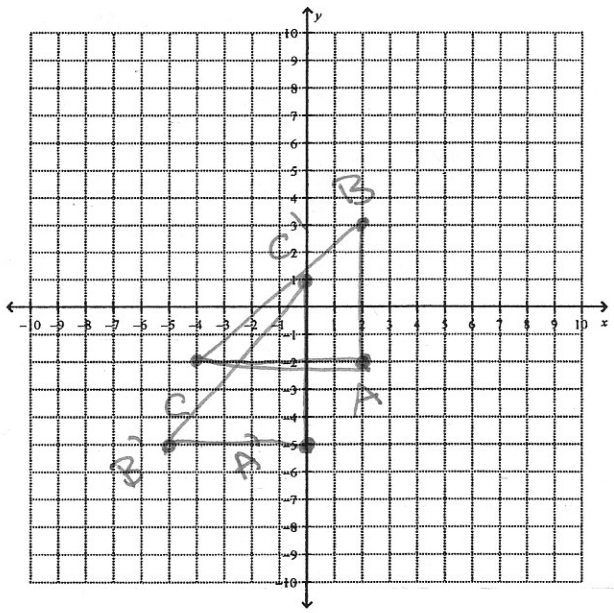
2) Describe a transformation or series of transformations that would carry figure 1 onto figure 2.



Rotation 90° clockwise

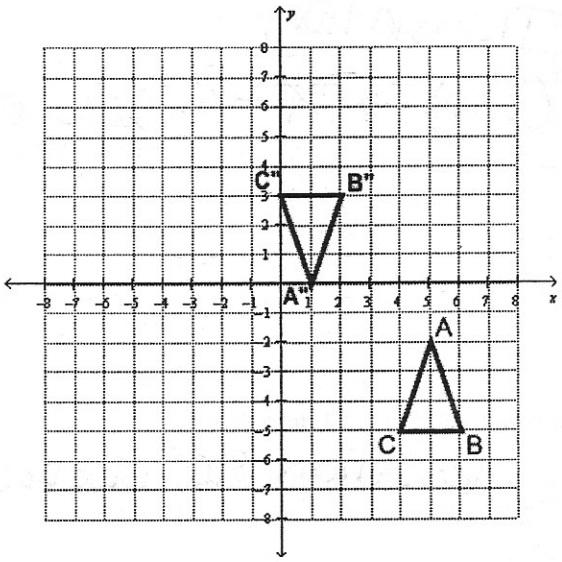
Translation
$(x, y) \rightarrow (x-3, y-3)$

3) A triangle *ABC* with vertices at *A*(2, -2), *B*(2, 3), *C*(-4, -2) is reflected over the *x*-axis, rotated 90° clockwise about the origin, and then translated 3 units down and 2 units left. Graph both the original triangle and the *final* image after all transformations have been performed, labeling all coordinates. Then determine if the two triangles are congruent to each other.



yes, they are congruent

4) Triangle *ABC* and triangle *A"B"C"* are plotted on the coordinate plane below.



Describe how you could move the Δ*ABC* to exactly match Δ *A"B"C"* using a series of two transformations.

Reflect over the x-axis

Translate 4 units left, and 2 units down