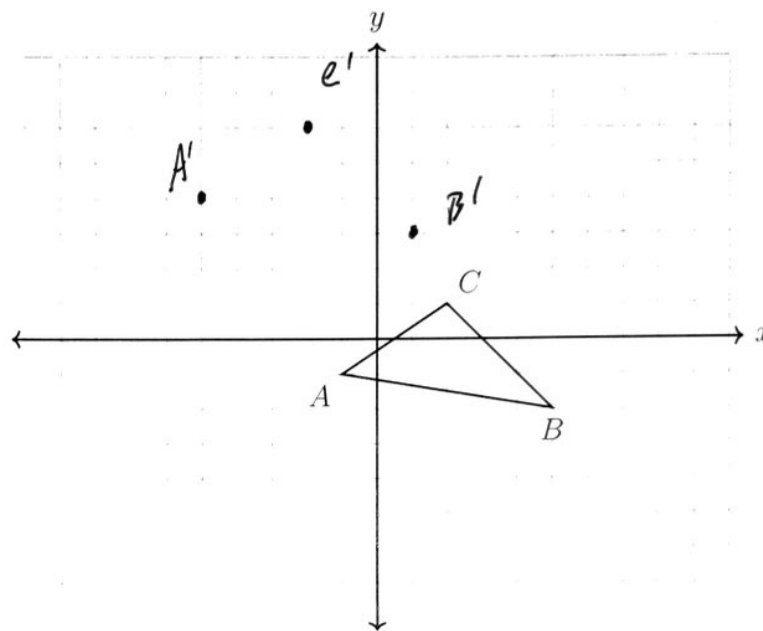


7.10 Test: Rigid motions, translation, reflection, rotation

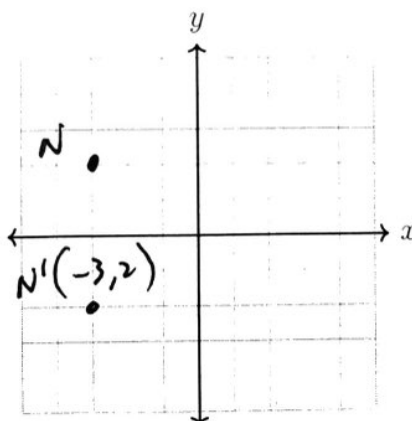
1. Slide $\triangle ABC$ to the left four and up five. Label the image $\triangle A'B'C'$.



2. Apply the translation $(x, y) \rightarrow (x - 3, y + 5)$ to the point $P(-2, -5)$.

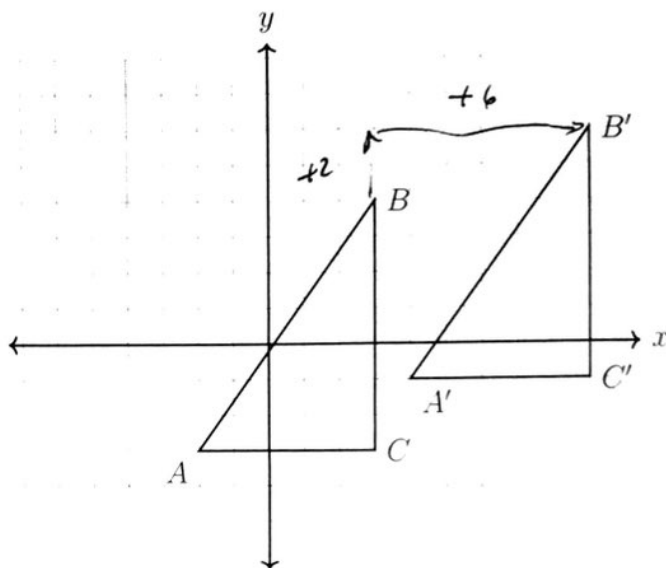
$$P'(-5, 0)$$

3. On the axes below, graph the point $N(-3, 2)$ and its image, N' , after a reflection across the x -axis. Mark N' and write it down as a coordinate pair.



4. Identify the transformation that maps $\triangle ABC$ onto its image $\triangle A'B'C'$.

Right 6, up 2
 $(x, y) \rightarrow (x+6, y+2)$



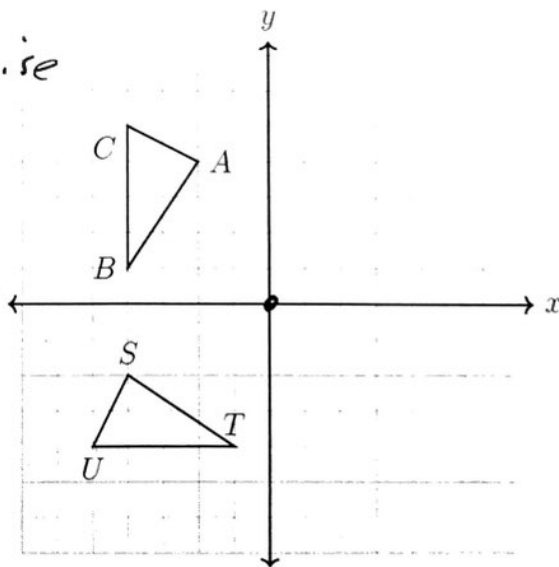
5. State the translation that would map $Q(4, 3)$ onto $Q'(-1, -3)$.

$T_{-5, -6}$ (left 5, down 6)

6. On the set of axes below, $\triangle ABC \cong \triangle STU$.

Describe the rigid motion that maps $\triangle ABC$ onto $\triangle STU$.

Rotate 90° counter clockwise
 around the origin

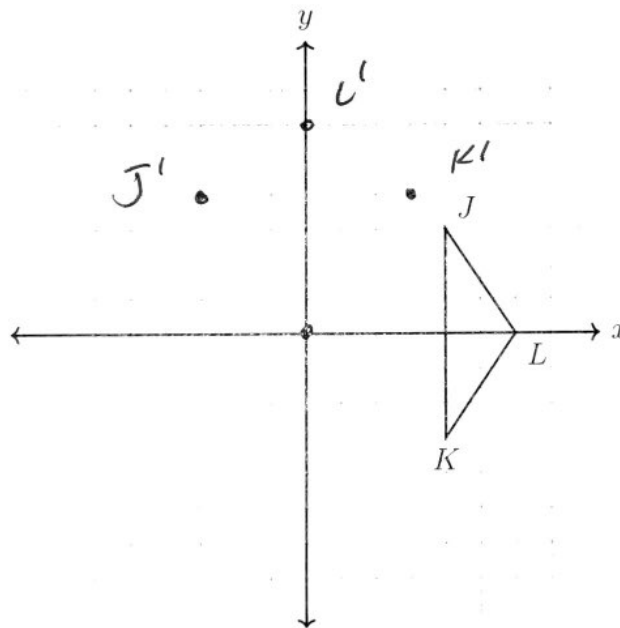


Name:

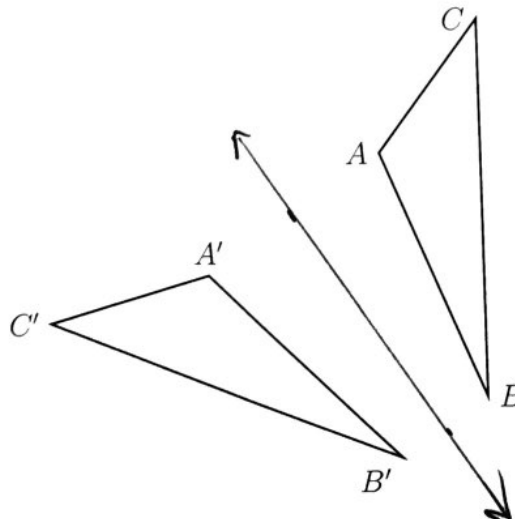
7. Triangle $A'B'C'$ is the image of triangle ABC after a translation of 2 units to the right and 3 units up. Is triangle ABC congruent to $A'B'C'$? Explain why.

Yes. Translation is a rigid motion that leaves lengths and angles invariant
 $\triangle ABC \cong \triangle A'B'C'$ by SSS

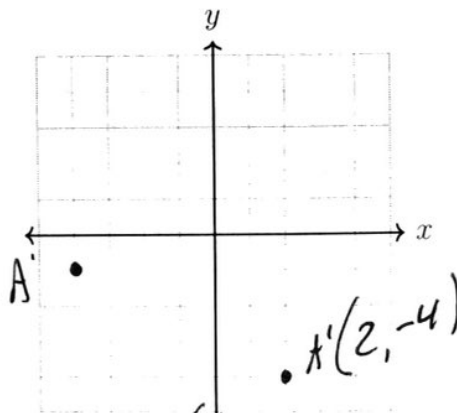
8. Rotate $\triangle JKL$ 90° counterclockwise around the origin on the axes below, labeling the image $\triangle J'K'L'$.



9. Draw the line of reflection that would map $\triangle ABC$ onto $\triangle A'B'C'$.



10. On the axes below, plot the point $A(-4, -1)$ and its image, A' , after the translation $(x, y) \rightarrow (x + 6, y - 3)$. Label the image as a coordinate pair.

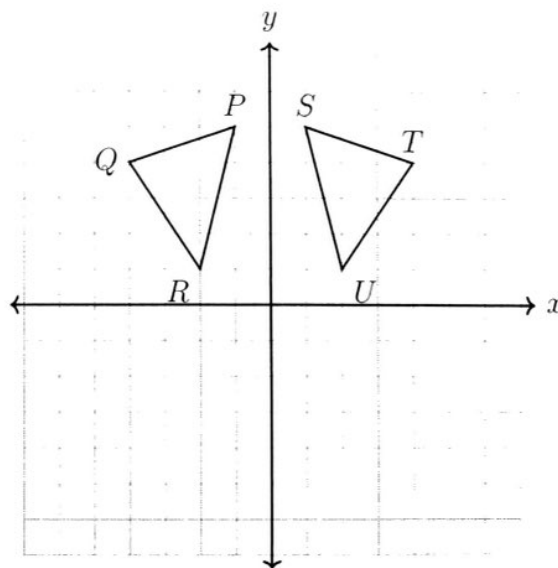


11. The image of triangle ABC after a ~~translation~~ ^{reflection} is $\triangle A'B'C'$. Is the area of the triangle greater, smaller, or the same after the ~~translation~~? Justify your answer.

SAME AREA. Translation is a rigid motion that leaves area invariant.

12. Determine and state the transformation mapping $\triangle PQR$ onto $\triangle STU$.

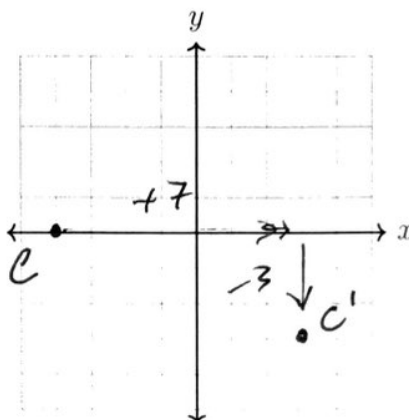
Reflection across the y-axis



Name:

13. State the translation that would map $C(-4, 0)$ onto $C'(3, -3)$. (the use of the grid below is optional)

right 7,
 down 3
 $(x, y) \rightarrow (x+7, y-3)$



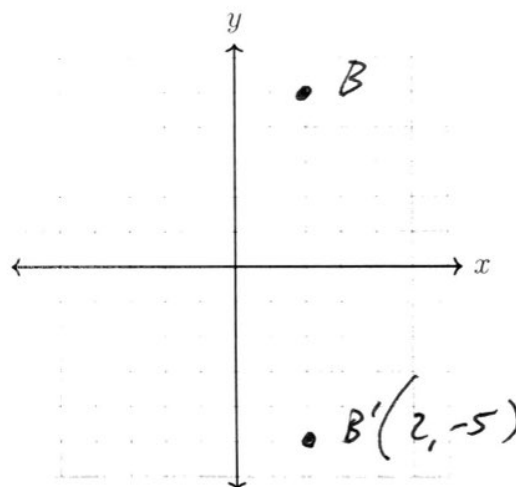
14. What are the coordinates of the image of $B(2, 5)$ after a reflection across the x -axis?

(a) $(-2, 5)$

(b) $(5, 2)$

(c) $(2, -5)$

(d) $(-5, -2)$



15. Check those transformations that are rigid motions.

☐ Dilation

☒ Translation

☒ Reflection

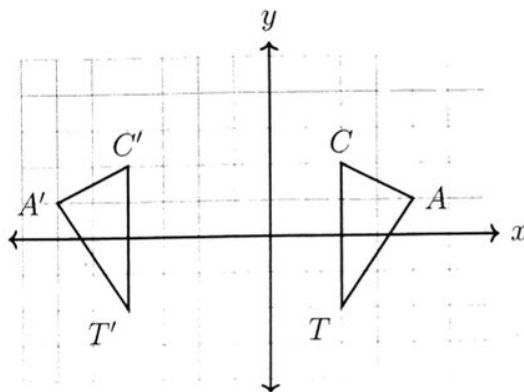
☒ Rotation

☒ An isometry

☐ Horizontal stretch

16. Which of the following would map $\triangle CAT \rightarrow \triangle C'A'T'$?

- T ☒ F Reflected across the y -axis
 T ☒ F Translated six to the left, down zero
☒ T F Reflected across the y -axis, then slid to the left two
 T ☒ F $(x, y) \rightarrow (x - 6, y + 0)$
 T ☒ F Rotated 90° counterclockwise around the origin
☒ T F Reflected across the line $x = -1$



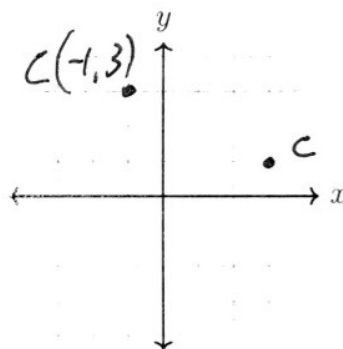
17. What are the coordinates of the image of $C(3, 1)$ after a rotation of 90° counterclockwise around the origin?

(a) $(4, 4)$

☒ (b) ~~$(-1, 3)$~~ $(-1, 3)$

(c) $(-4, 0)$

(d) $(0, -4)$



18. Apply a translation of $(x, y) \rightarrow (x + 7, y + 3)$ to $\triangle JKL$ and then reflect the image across the x -axis. Draw both images $\triangle J'K'L'$ and $\triangle J''K''L''$ on the set of axes below, labeling the vertices.

