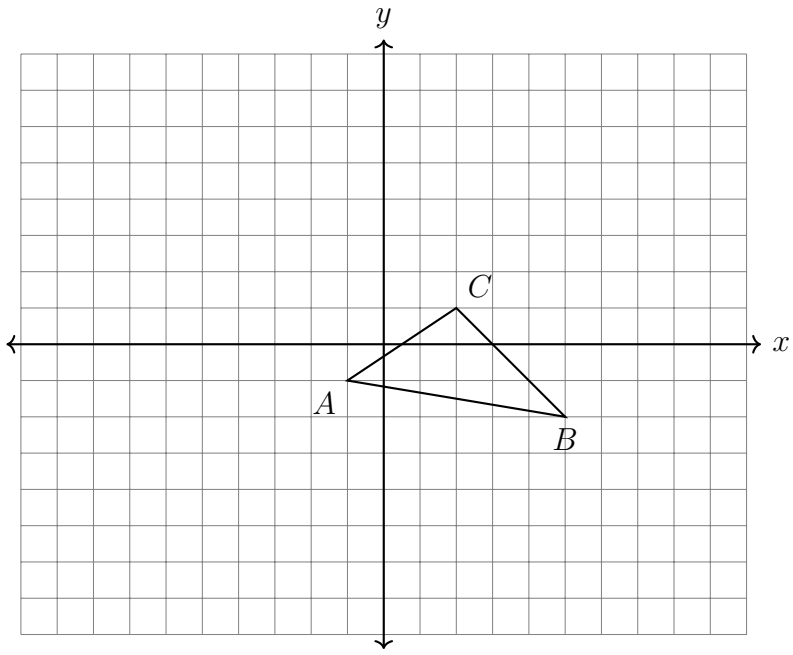
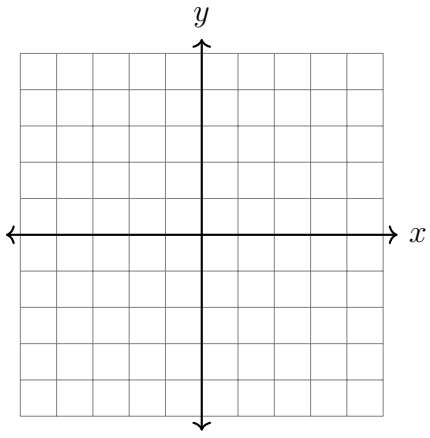
7.10 Test: Rigid motions, translation, reflection, rotation

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

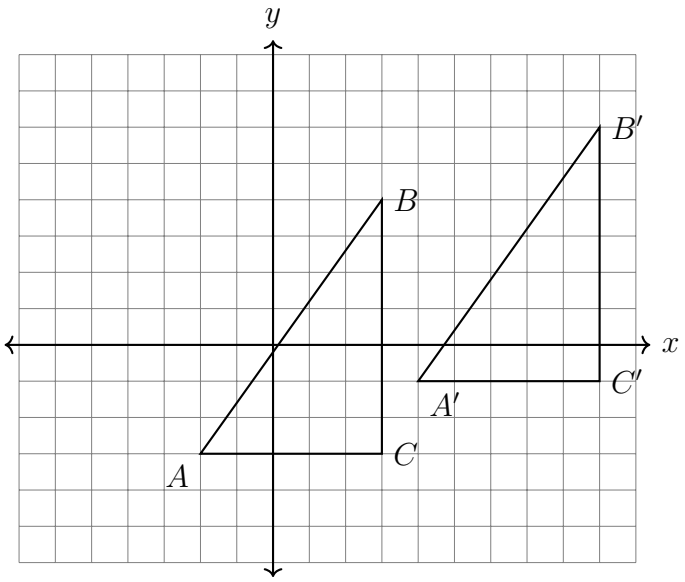


2. Apply the translation $(x, y) \to (x - 3, y + 5)$ to the point $P(-2, -5)$.

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.



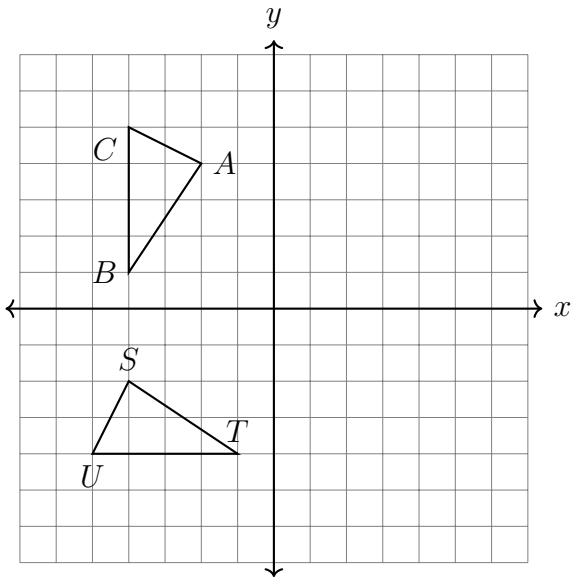
4. Identify the transformation that maps $\triangle ABC$ onto its image $\triangle A'B'C'$.



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

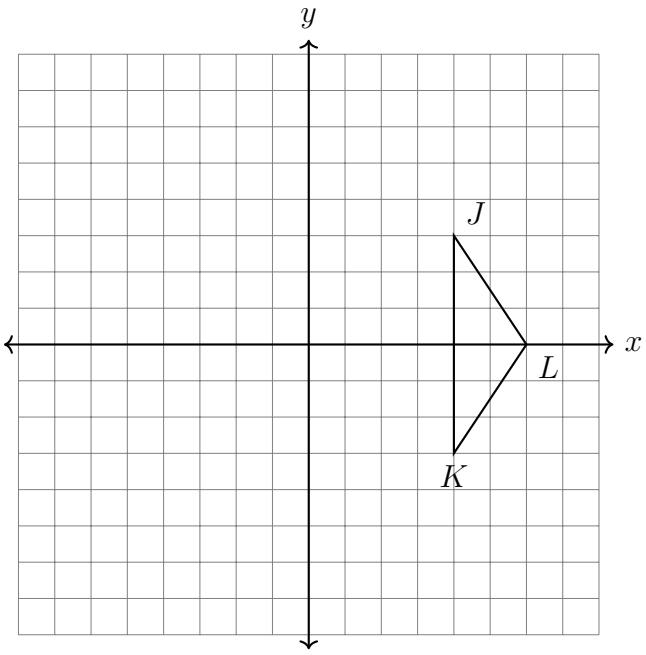
6. On the set of axes below, $\triangle ABC \cong \triangle STU$.

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

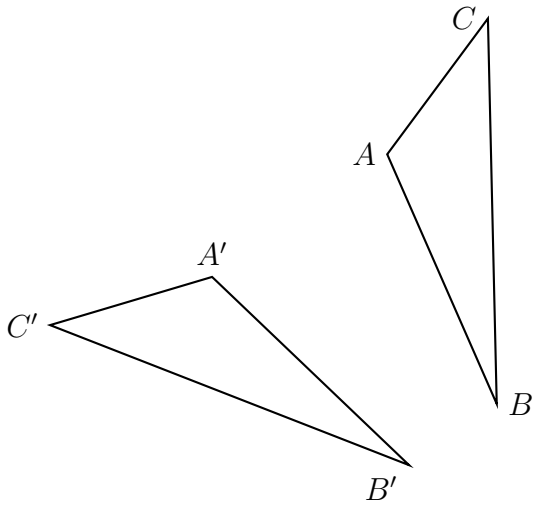


7. Triangle $A'B'C'$ is the image of triangle ABC after a translation of 2 units to the right and 3 units up. Is triangle ABC congruent to $A'B'C'$? Explain why.

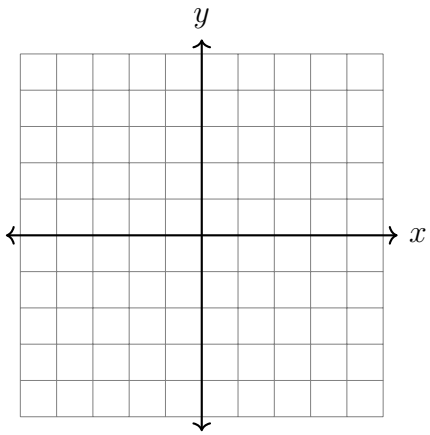
8. Rotate $\triangle JKL$ 90° counterclockwise around the origin on the axes below, labeling the image $\triangle J'K'L'$.



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

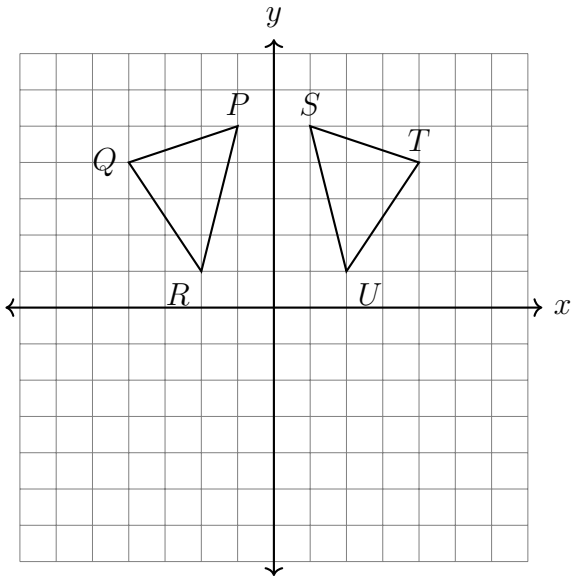


10. On the axes below, plot the point $A(-4, -1)$ and its image, A', after the translation $(x, y) \rightarrow (x + 6, y - 3)$. Label the image as a coordinate pair.

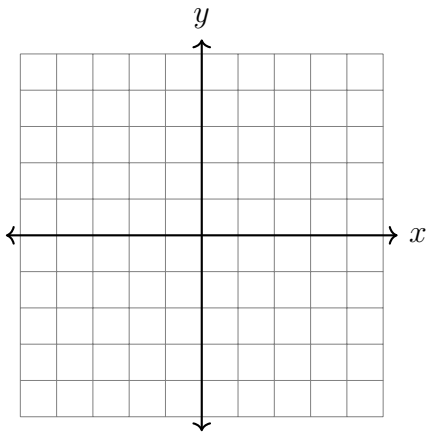


11. The image of triangle PQR after a reflection is $\triangle P'Q'R'$. Is the area of the triangle greater, smaller, or the same after the reflection? Justify your answer.

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



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



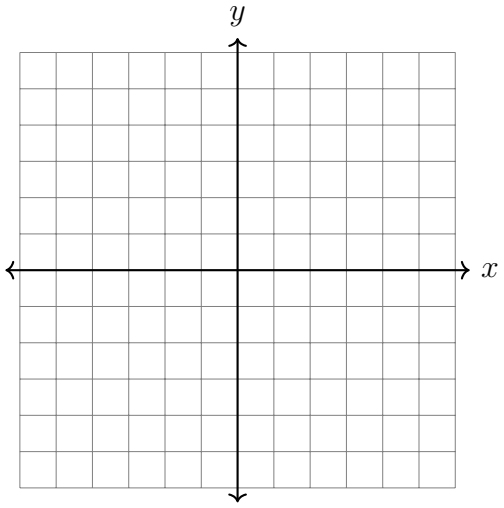
14. What are the coordinates of the image of $B(2, 5)$ after a reflection across the x-axis?

(a) $(-2, 5)$

(b) $(5, 2)$

(c) $(2, -5)$

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

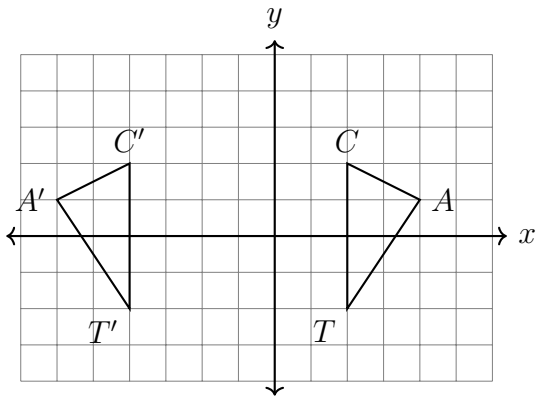


15. Check those transformations that are rigid motions.

☐ Dilation
☐ Translation
☐ Reflection
☐ Rotation
☐ An isometry
☐ Horizontal stretch

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

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	$(x, y) \to (x - 6, y + 0)$
T	F	Rotated 90° counterclockwise around the origin
T	F	Reflected across the line $x = -1$



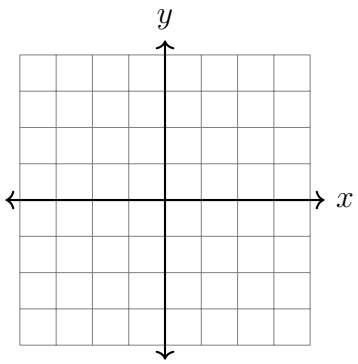
17. What are the coordinates of the image of $C(3, 1)$ after a rotation of 90° counterclockwise around the origin?

(a) $(3, -1)$

(b) $(-1, 3)$

(c) $(-3, 1)$

(d) $(1, -3)$



18. Apply a translation of $(x, y) \to (x + 7, y + 3)$ 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.