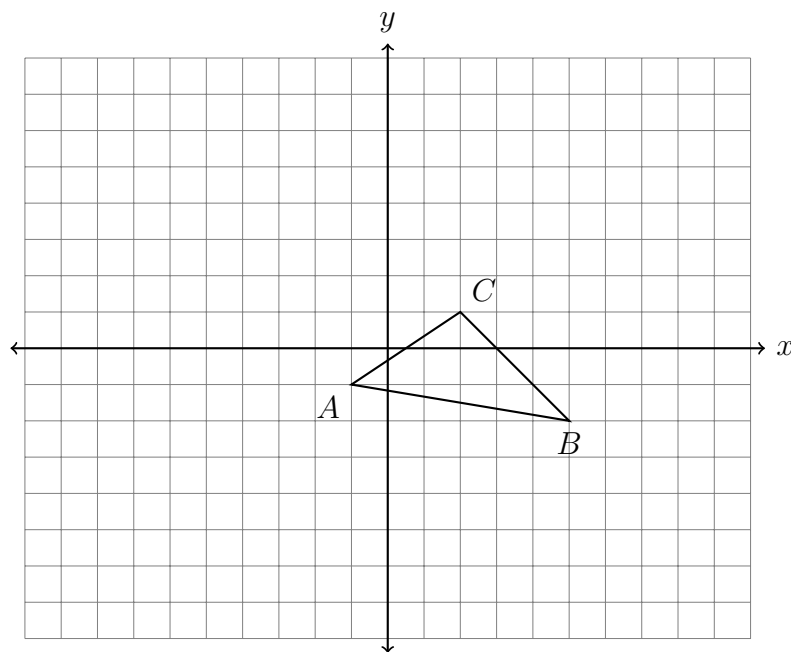


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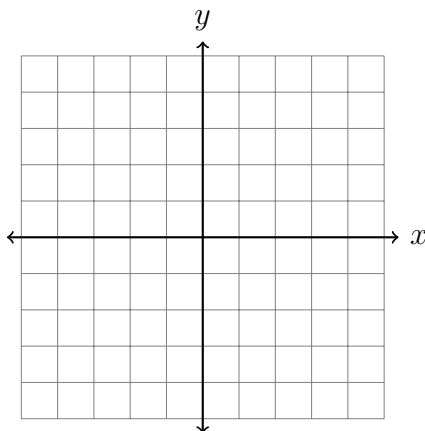
**9.5b Exam: Rigid motions, translation, reflection, rotation (No Calculator)**

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

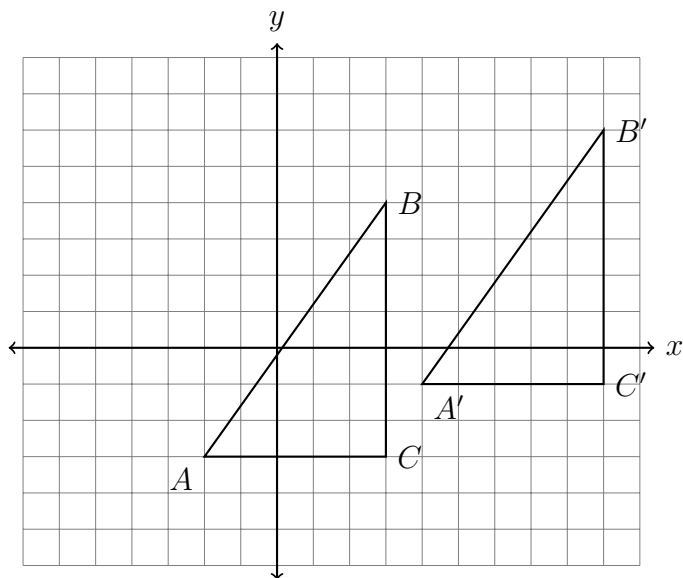


2. Apply the translation  $(x, y) \rightarrow (x - 3, y + 5)$  to the point  $P(-2, -5)$ .

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.



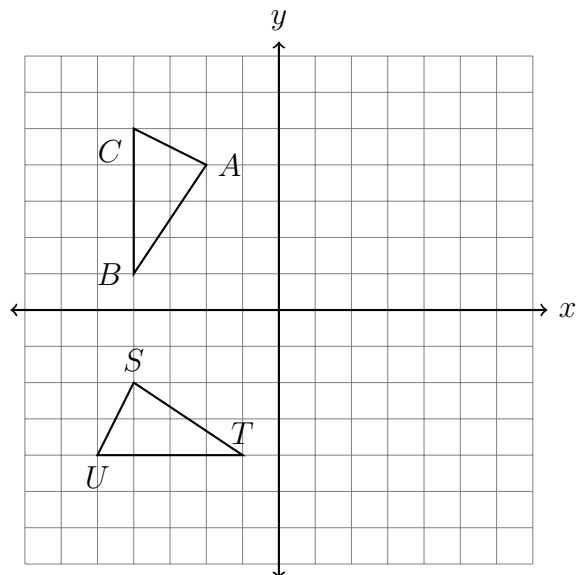
4. Identify the transformation that maps  $\triangle ABC$  onto its image  $\triangle A'B'C'$ .



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

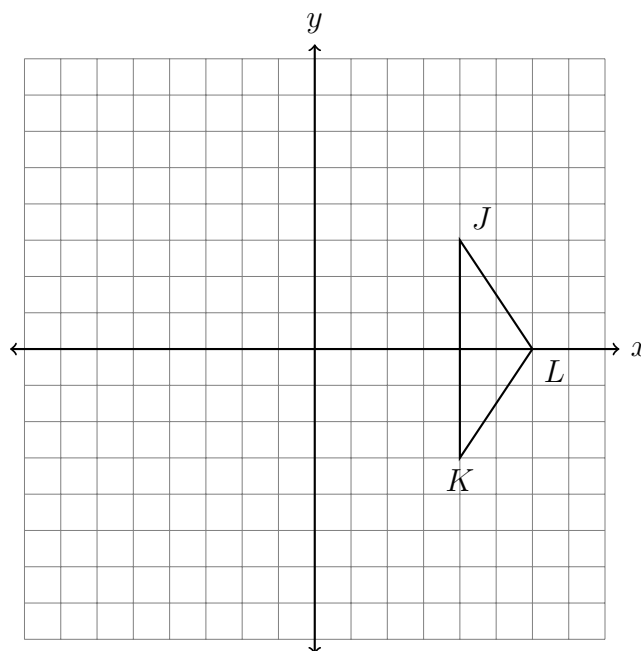
6. On the set of axes below,  $\triangle ABC \cong \triangle STU$ .

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

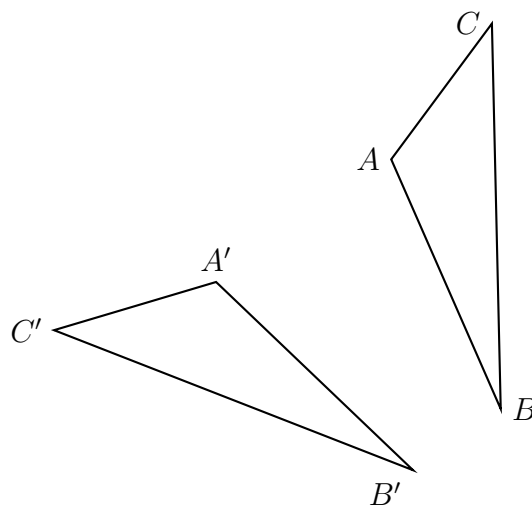


7. Triangle  $A'B'C'$  is the image of triangle  $ABC$  after a translation of 2 units to the right and 3 units up. Is triangle  $ABC$  congruent to  $A'B'C'$ ? Explain why.

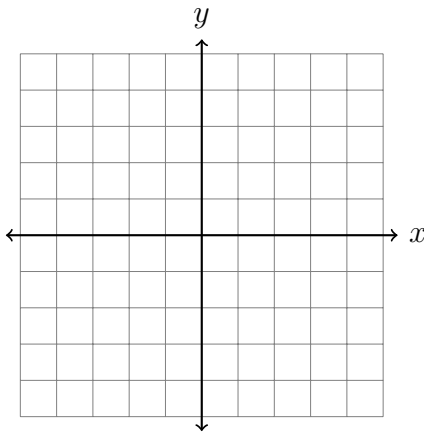
8. Rotate  $\triangle JKL$   $90^\circ$  counterclockwise around the origin on the axes below, labeling the image  $\triangle J'K'L'$ .



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

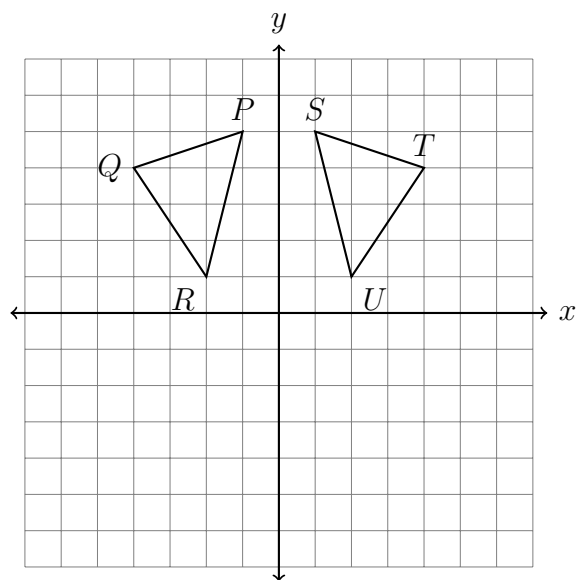


10. On the axes below, plot the point  $A(-4, -1)$  and its image,  $A'$ , after the translation  $(x, y) \rightarrow (x + 6, y - 3)$ . Label the image as a coordinate pair.



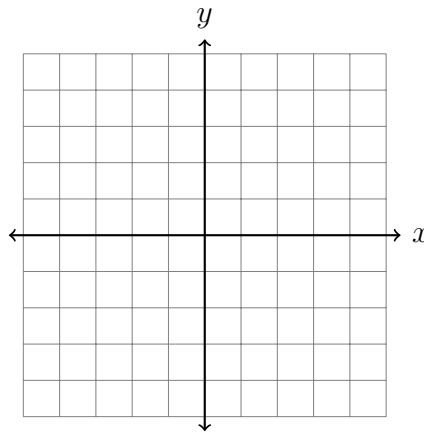
11. The image of triangle  $ABC$  after a translation is  $\triangle A'B'C'$ . Is the area of the triangle greater, smaller, or the same after the translation? Justify your answer.

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

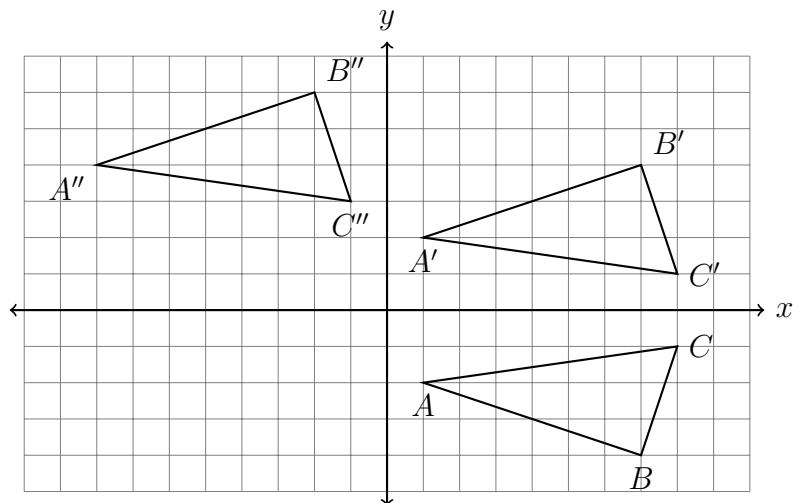


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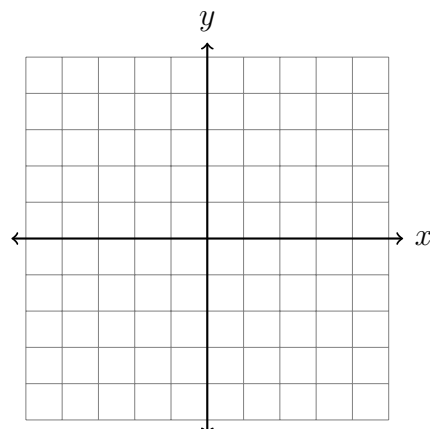
13. State the translation that would map  $C(-4, 0)$  onto  $C'(3, -3)$ . (the use of the grid below is optional)



14. Two transformations have been applied to a triangle in the diagram below,  $\triangle ABC \rightarrow \triangle A'B'C' \rightarrow \triangle A''B''C''$ . Fully characterize each transformation.

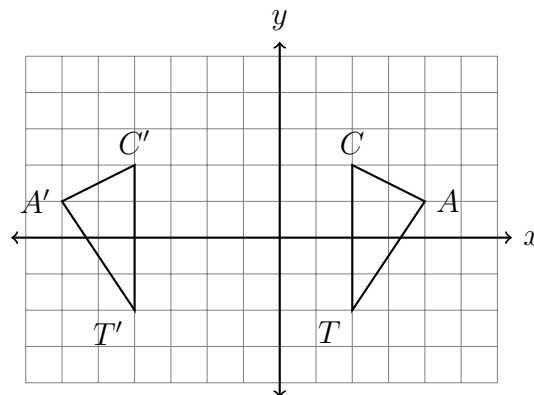


15. What are the coordinates of the image of  $B(2, 5)$  after a reflection across the  $x$ -axis?

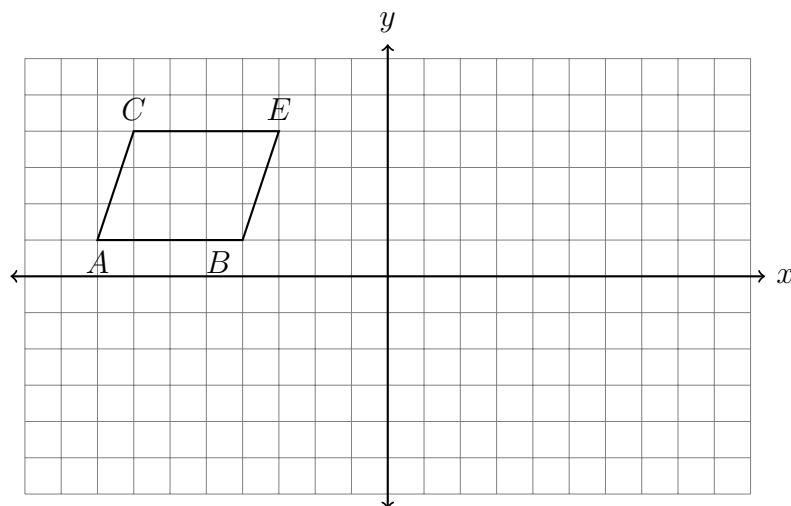
(a)  $(-2, 5)$ (b)  $(5, 2)$ (c)  $(2, -5)$ (d)  $(-5, -2)$ 

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

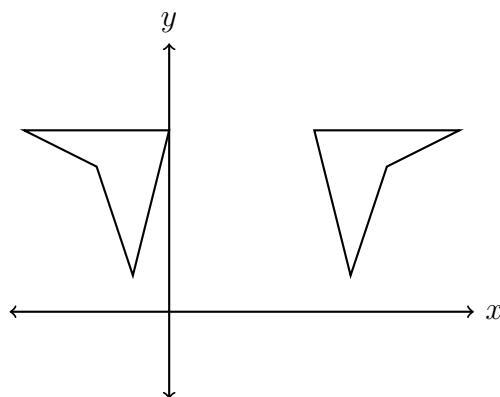
- T F Reflected across the  $y$ -axis  
 T F Translated six to the left, down zero  
 T F Reflected across the  $y$ -axis, then slid to the left two  
 T F  $(x, y) \rightarrow (x - 6, y + 0)$   
 T F Rotated  $90^\circ$  counterclockwise around the origin  
 T F Reflected across the line  $x = -1$



17. First reflect the trapezoid  $BECA$  across the  $x$ -axis, then move it down 1 and right 7. Label the images  $B'E'C'A'$  and  $B''E''C''A''$ .

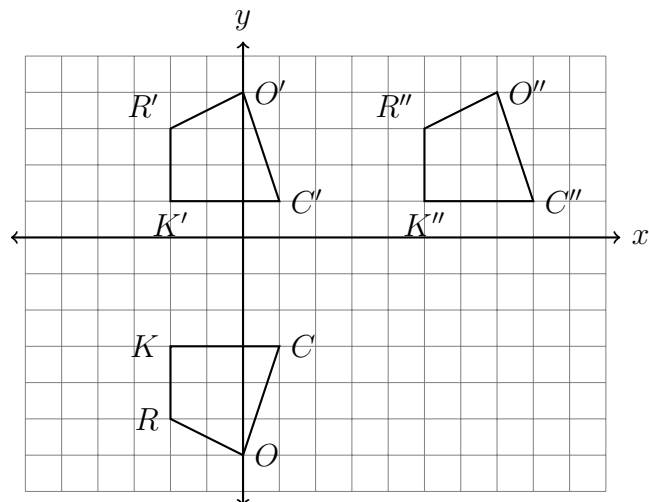


18. Draw the line of reflection for quadrilaterals in the diagram below.



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19. The quadrilateral  $ROCK$  undergoes rigid motions, shown below. Describe the sequence of transformations applied.



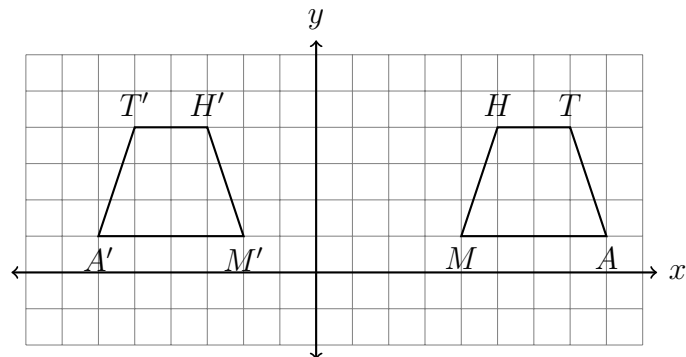
20. The quadrilateral  $MATH$  is mapped to  $M'A'T'H'$  by a rigid motion. What transformation has been applied?

(a) Dilation

(b) Reflection

(c) Rotation

(d) Translation



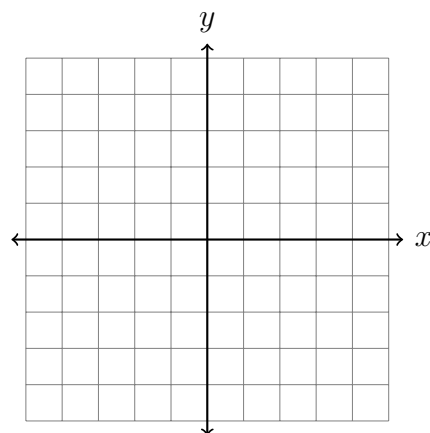
21. What are the coordinates of the image of  $C(4, 0)$  after a rotation of  $90^\circ$  counterclockwise around the origin?

(a)  $(4, 4)$

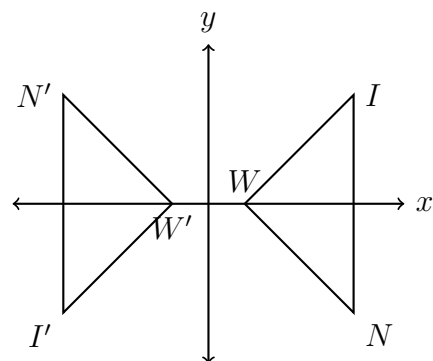
(b)  $(0, 4)$

(c)  $(-4, 0)$

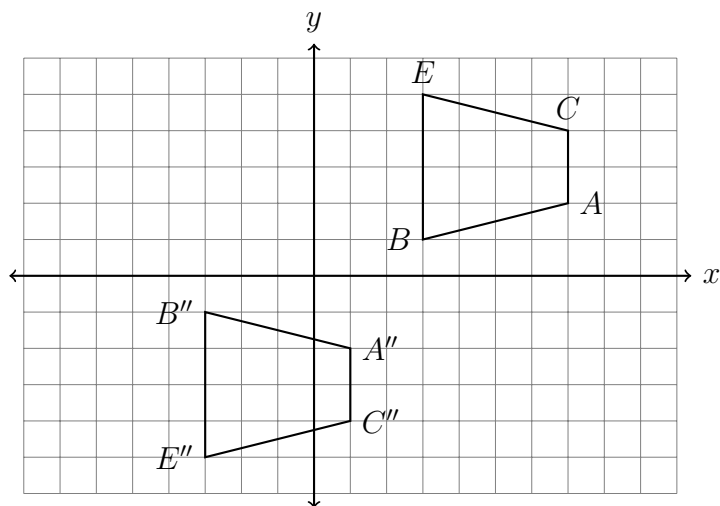
(d)  $(0, -4)$



22. Given  $\triangle WIN \cong \triangle W'I'N'$ . Describe the rigid motion mapping  $\triangle WIN \rightarrow \triangle W'I'N'$ .



23. Determine and state the sequence of transformations applied to map  $BECA$  to  $B''E''C''A''$ .



24. Determine and state the transformation mapping  $\triangle NOP$  onto  $\triangle QRP$ .

