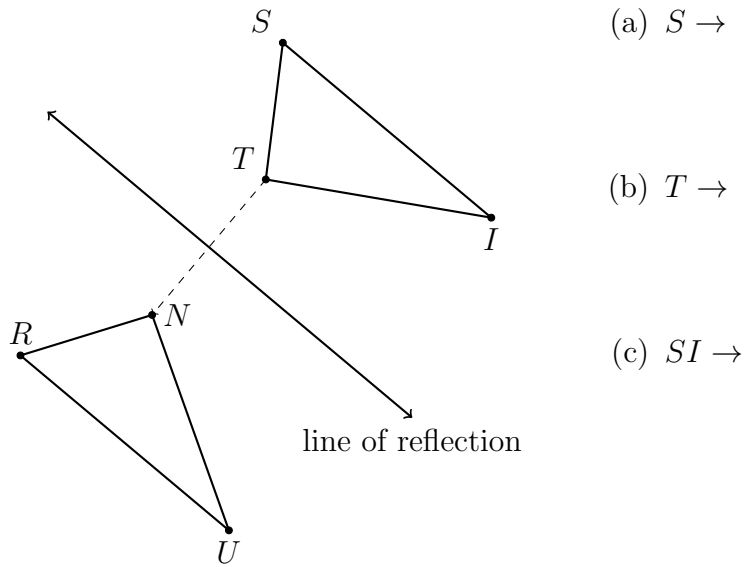**5.11 Quiz: Transformations**

1. A reflection is performed on a triangle, $\triangle SIT \rightarrow \triangle RUN$, as shown below.

Write the letter or letters for each corresponding object.

S

T

I

R

N

U

line of reflection

(a) $S \rightarrow$

(b) $T \rightarrow$

(c) $SI \rightarrow$

2. A translation maps A to A', as shown, $A(1, 3) \rightarrow A'(4, -2)$.

(a) Apply the same translation to $B(4, 4) \rightarrow B'(x, y)$ on the grid. Mark and label point B' as an ordered pair.

(b) Which translation mapped $A \rightarrow A'$?

   (A) Right 3, up 1
   (B) Left 3, down 1
   (C) Right 5, down 3
   (D) Right 3, down 5
   (E) None of the above
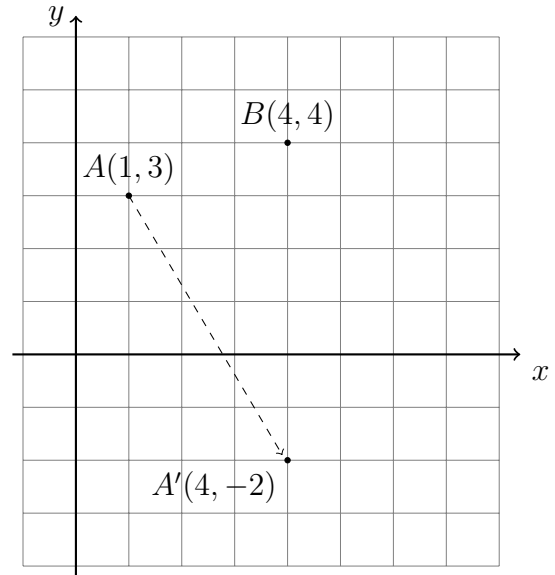
3. A 70° clockwise rotation centered at P maps $\triangle ABC \rightarrow \triangle A'B'C'$, below.

   (a) Complete the diagram by labeling the vertices of the triangle image. (remember the primes)

   (b) True or false: rotation is a rigid motion.

   (c) Is the *orientation* maintained or reversed by the rotation?
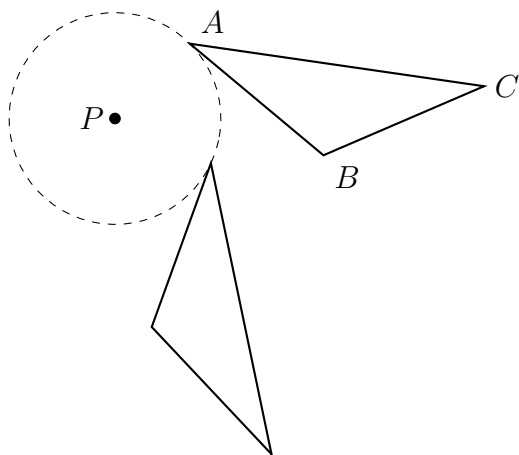
4. A reflection is performed on a line segment, mapping $\overline{AB} \to \overline{A'B'}$, as shown.

   (a) Apply the same reflection to C.
       Plot and label the image C' as an ordered pair.
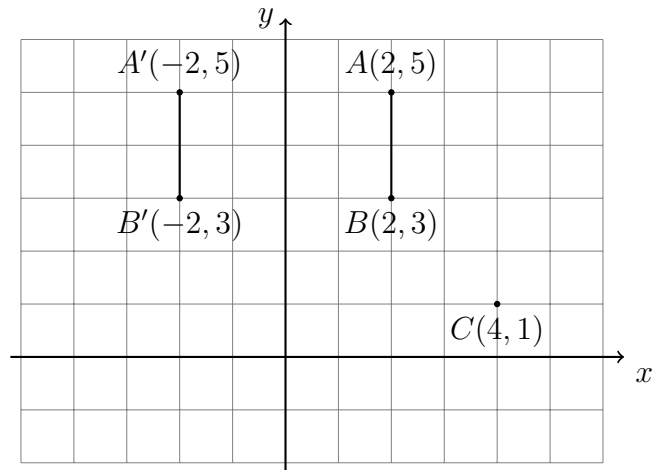
   (b) Which correctly identifies the reflection?

       (A) Reflect over the x-axis
       (B) Reflect over the y-axis
       (C) Reflect over the x-axis, then the y-axis
   (D) Reflect over the y-axis, then the x-axis
       (E) None of the above

5. The transformations we study have specific details that *fully characterize* the transformation. Next to each item, write the name of the appropriate transformation: translation, dilation, rotation, or reflection.

   (a) The center and the scale factor k

   (b) The line over which it is performed

   (c) The center, the degree measure and direction

   (d) The horizontal and vertical distances

6. What are the two transformations applied mapping $\triangle ABC \rightarrow \triangle A'B'C' \rightarrow \triangle A''B''C''$, as shown in the diagram? *Fully characterize* the two transformations, in order.
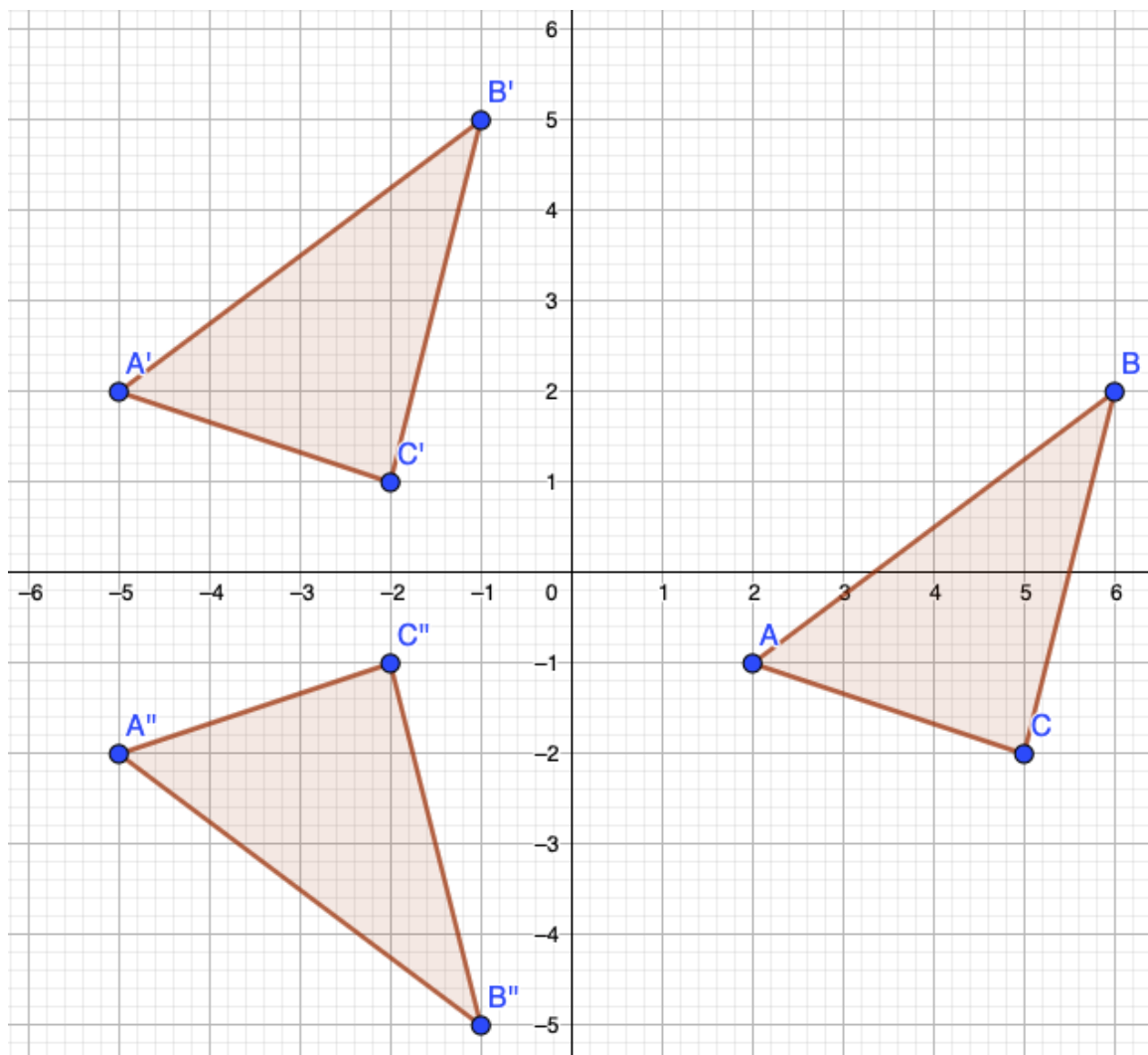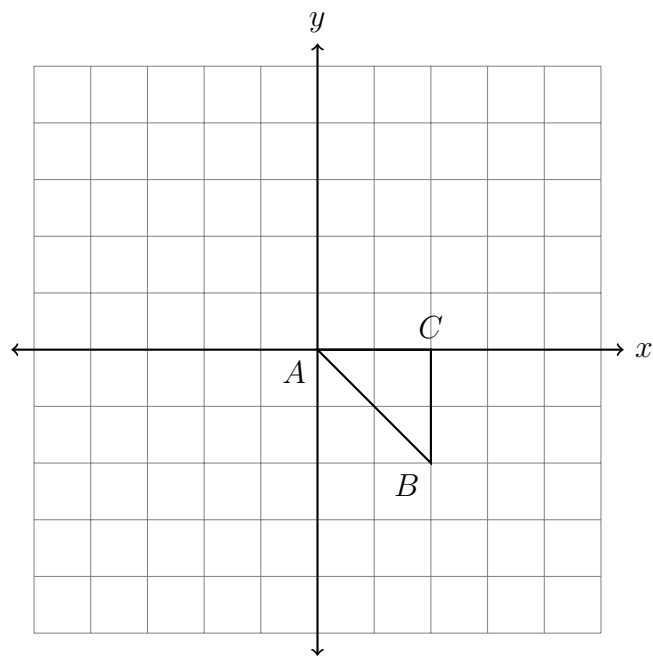
7. Dilate the triangle by a scale factor $k = 2$ centered at the origin, $\triangle ABC \rightarrow \triangle A'B'C'$. Complete the table of the coordinates and plot and label the image on the grid.

$A(0,0) \rightarrow$

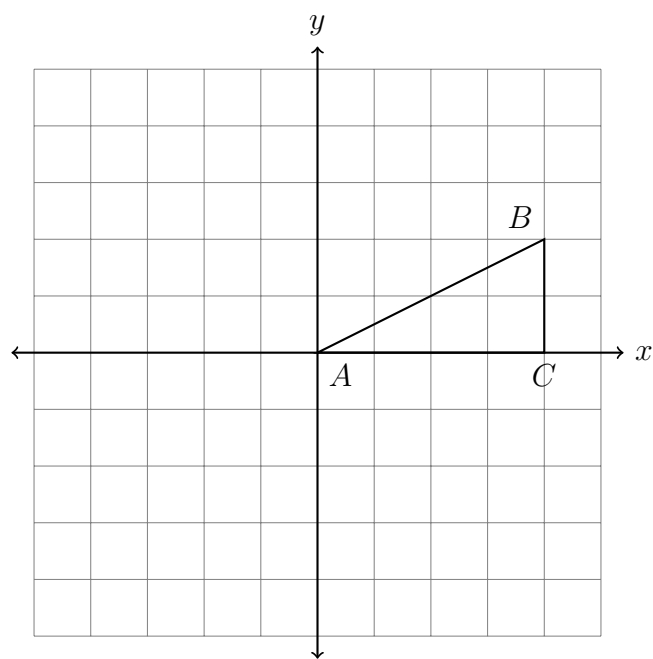$B(2,-2) \rightarrow$

$C(2,0) \rightarrow$

8. Rotate the triangle 180° counterclockwise around the origin, $\triangle ABC \rightarrow \triangle A'B'C'$. Complete the table of the coordinates and plot and label the image on the grid.
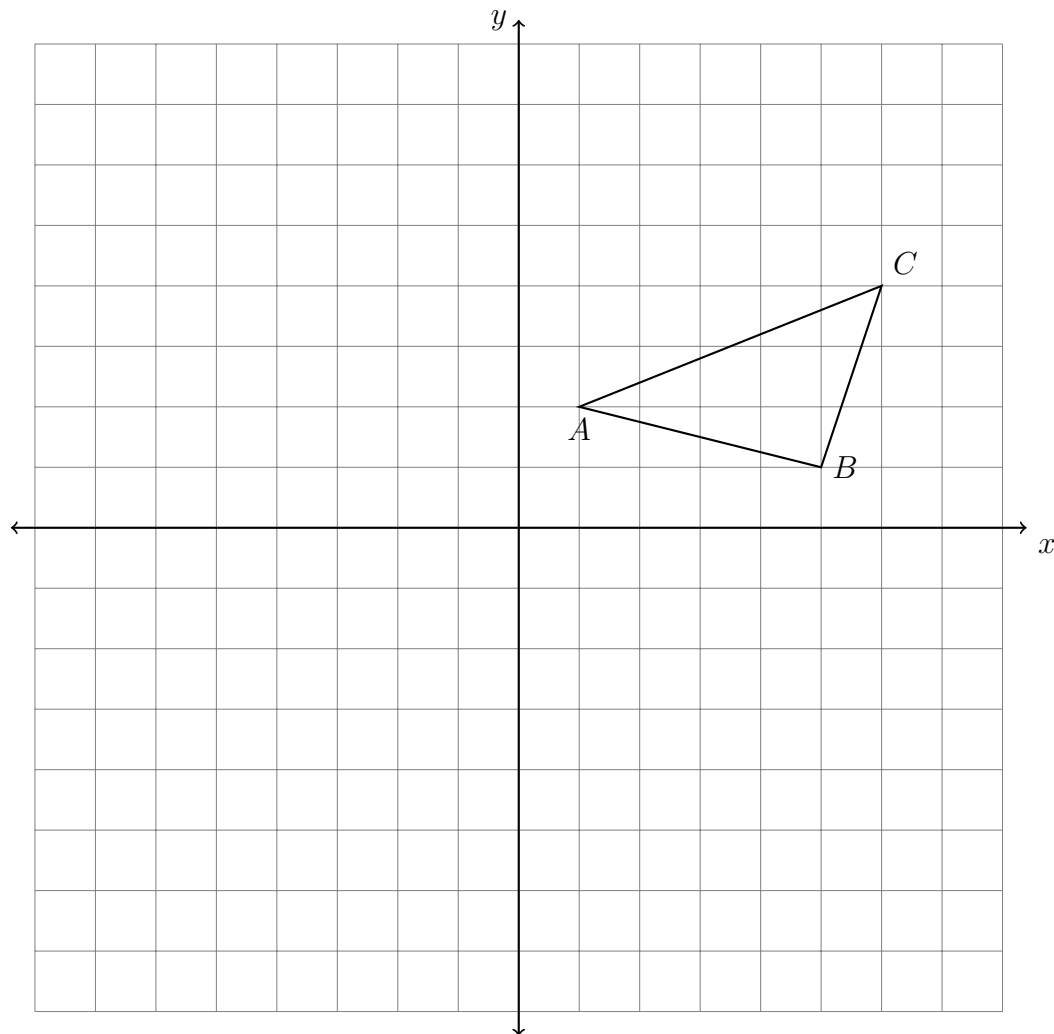
$A(0,0) \rightarrow$

$B(4,2) \rightarrow$

$C(4,0) \rightarrow$

9. $\triangle ABC$ is shown with vertices $A(1, 2)$, $B(5, 1)$, and $C(6, 4)$. First, translate the triangle left 7 and up 2, then reflect it across the x-axis.

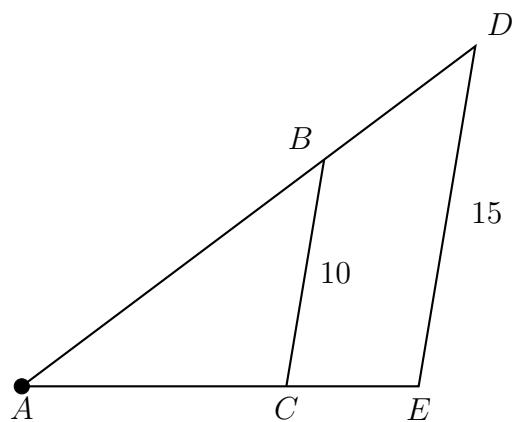Plot and label $\triangle A'B'C'$ and $\triangle A''B''C''$ on the graph.

10. A dilation centered at A maps $\triangle ABC \rightarrow \triangle ADE$. Given that $BC = 10$, $DE = 15$.
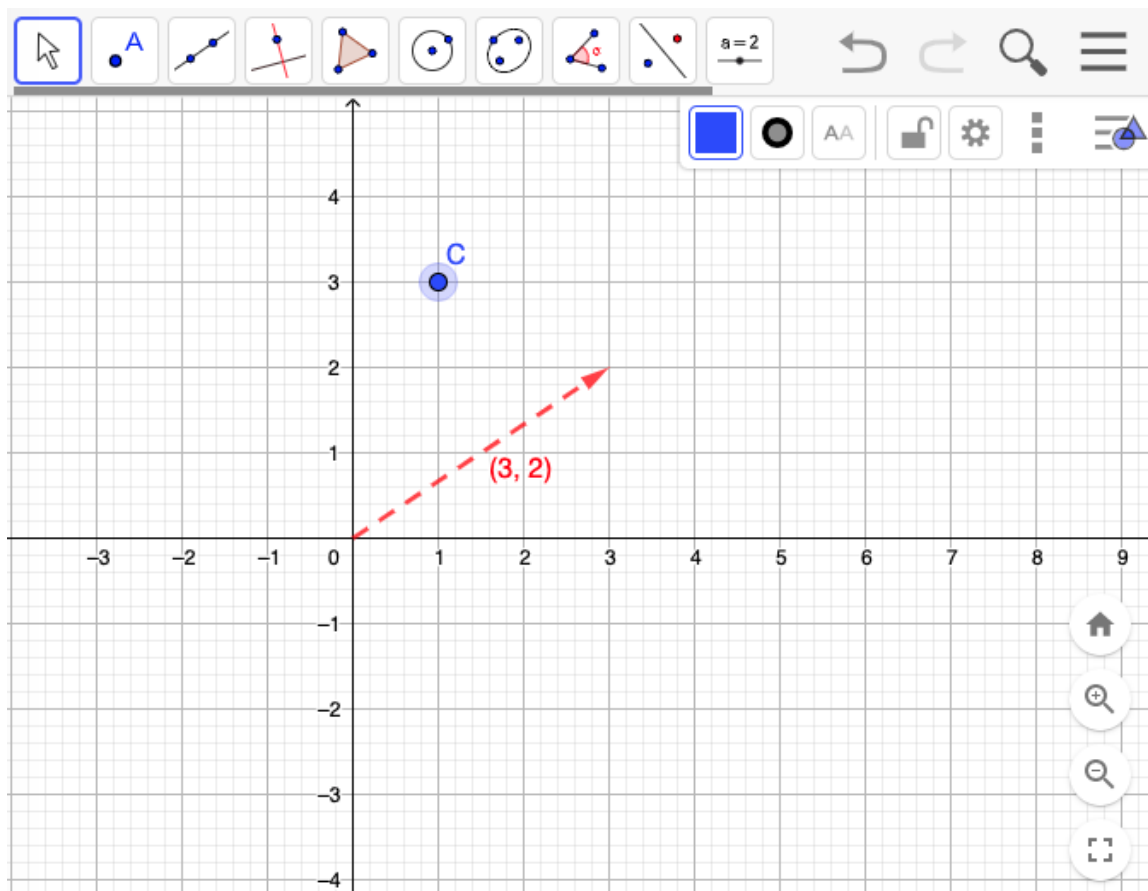
    (a) Find the value of the scale factor k.

    (b) Given $AB = 12$, find AD

    (c) Given $AE = 12$, find AC

11. A point labeled C and vector $(1, 3)$ are shown Geogebra/classic. Identify the following objects and tools.

(a) Circle the vector

(b) Make an "X" where to click for the menu "Name & Value" that will label point C as an ordered pair.

(c) Mark with an arrow the menu where the "Translate by vector" tool is found.

12. Perform a composition of two transformations using Geogebra/classic. Paste an image of your work in this Classkick slide using the "camera" tool.

   (a) Plot $\triangle ABC$, $A(2, 1)$, $B(5, 4)$, $C(5, 1)$

   (b) Mark a point at the origin.

   (c) Rotate the triangle 180° counter clockwise around the origin.

   (d) Reflect the image $\triangle A'B'C'$ across the y-axis, producing $\triangle A''B''C''$.