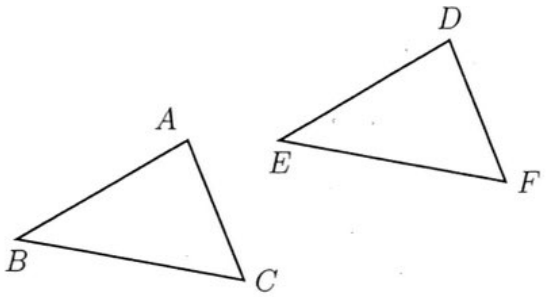
7.4 Classwork: Compositions of multiple transformations CCSS.HSG.CO.A.5

1. A translation maps triangle ABC onto triangle DEF.



Fill in the blank with the corresponding object.

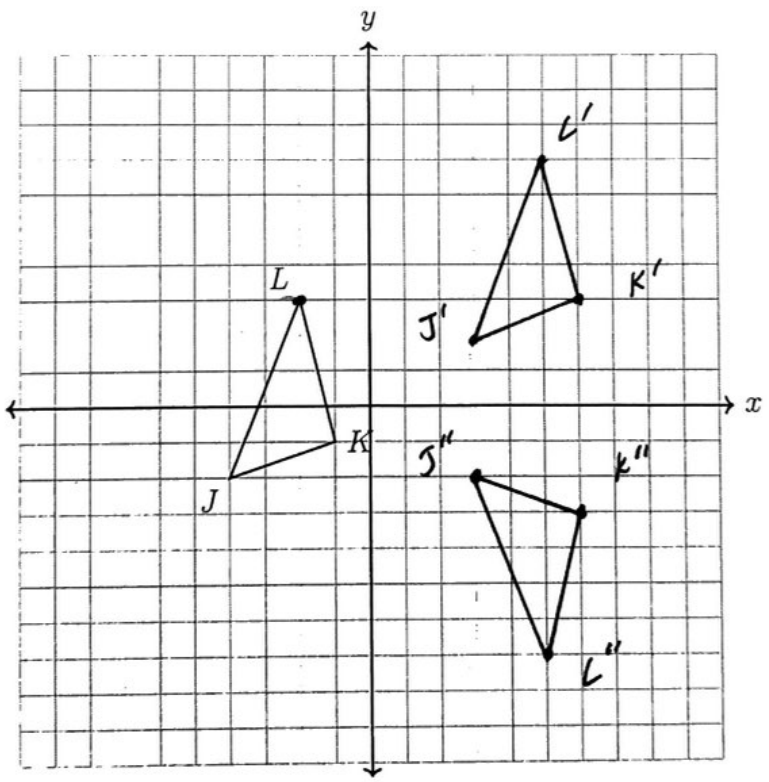
(a) $A \rightarrow$ D

(b) $\angle ABC \cong \angle DEF$

(c) $\overline{BC} \cong \overline{EF}$

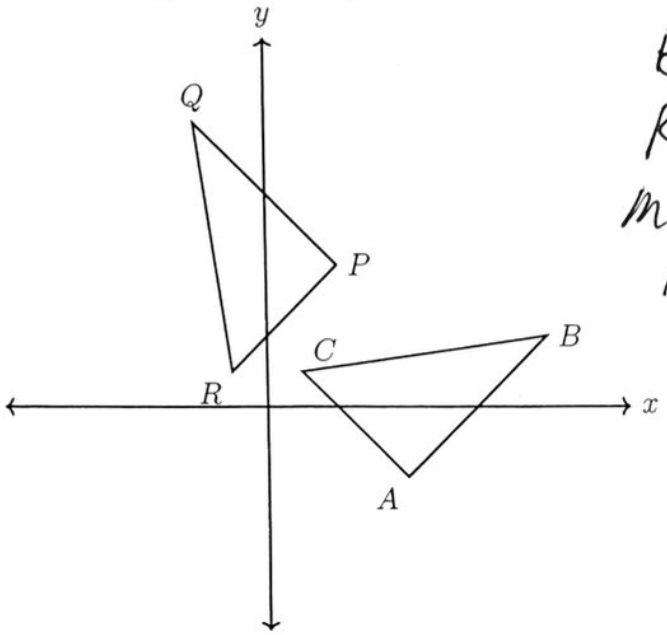
2. The vertices of $\triangle JKL$ have the coordinates $J(-4,-2)$, $K(-1,-1)$, and $L(-2,3)$, as shown below.

Apply a translation of $(x,y) \rightarrow (x+7, y+4)$ 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.



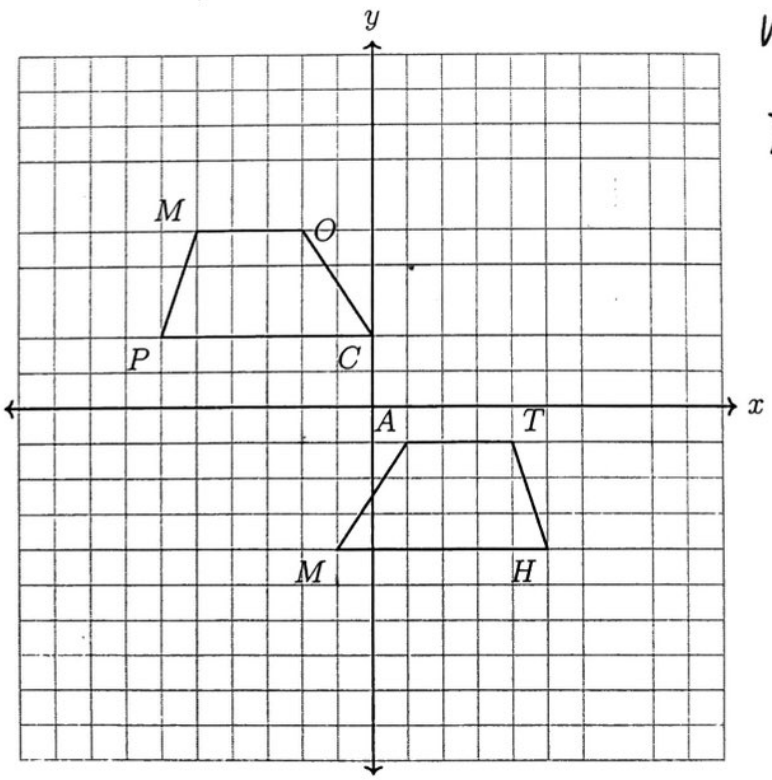
3. A rotation of 90° is applied to $\triangle ABC$, mapping it onto $\triangle PQR$, as shown.

   Which triangle has the larger area, or are they equal? Justify your answer.



Equal area. Rotation is a rigid motion. Area is invariant.

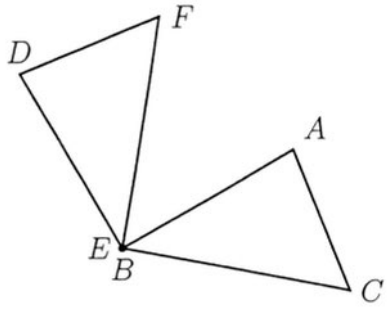
4. The trapezoid $MATH$, shown below, undergoes two rigid motions carrying it onto trapezoid $COMP$. State the two isometric transformations. (there is more than one correct answer)



reflect across y-axis

Translate left 1 down 6

5. A rotation of 90° around the vertex B of triangle ABC carries it onto triangle DEF.



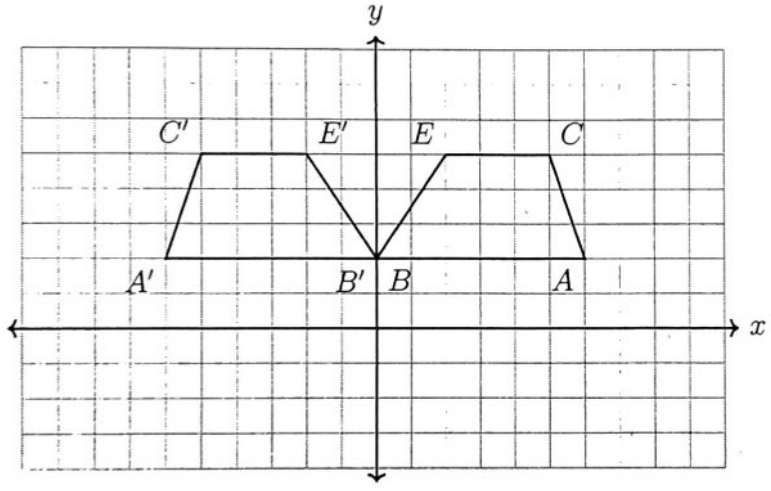
Fill in the blank with the corresponding object.

(a) $A \to$ D

(b) $\angle ABC \cong$ $\angle DEF$

(c) $\overline{BC}$ $\cong \overline{EF}$

6. State the transformation that carries the trapezoid $BECA$, onto $B'E'C'A'$, as shown below.



Reflection over y-axis

Note: For translations, you must state the x and y quantities; for reflections, the line of reflection; for rotations, the center of rotation and quantity in degrees.

7. Find the length of $\overline{AB}$, where $A(5, -6)$ and $B(13, 0)$.

$$\ell = \sqrt{(13-5)^2 + (0-(-6))^2}$$

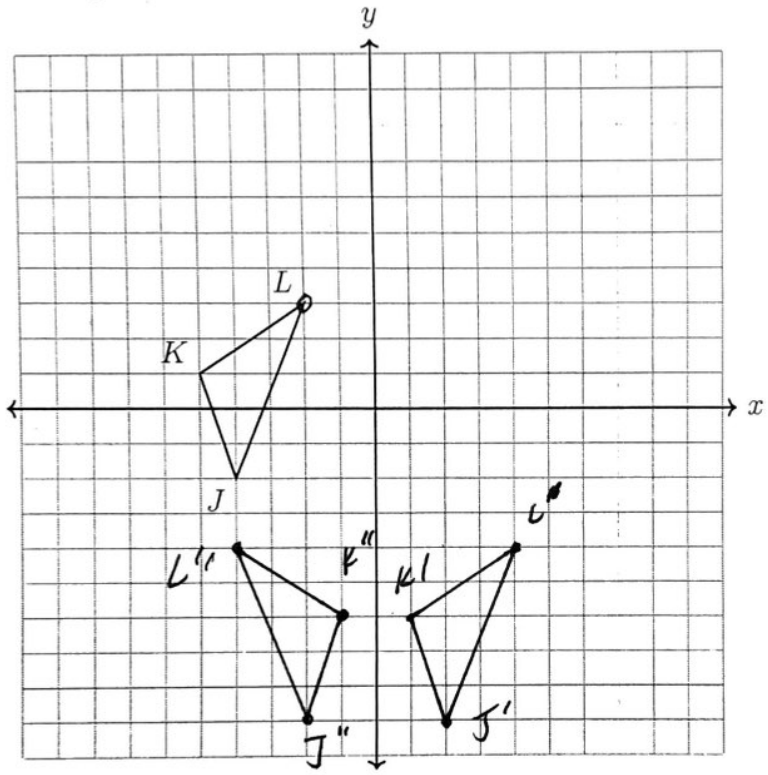
$$= \sqrt{8^2 + 6^2}$$

$$= \sqrt{64+36}$$

$$= \sqrt{100} = 10$$

8. The vertices of $\triangle JKL$ have the coordinates $J(-4,-2)$, $K(-5,1)$, and $L(-2,3)$, as shown below.

   Apply a translation of $(x,y) \to (x+6, y-7)$ to $\triangle JKL$ and then reflect the image across the y-axis. Draw both images $\triangle J'K'L'$ and $\triangle J''K''L''$ on the set of axes below, labeling the vertices.



9. Challenge: Determine relationship of each equation to the line $y = \frac{4}{3}x - 4$, circling either parallel, perpendicular, or neither.

   $m = \frac{4}{3}$

   (a) $4x - 3y = 6$ (Parallel) Perpendicular Neither

   $y = \frac{4}{3}x - 2$

   (b) $3x + 4y = 5$ Parallel (Perpendicular) Neither

   $y = -\frac{3}{4}x + \frac{5}{4}$