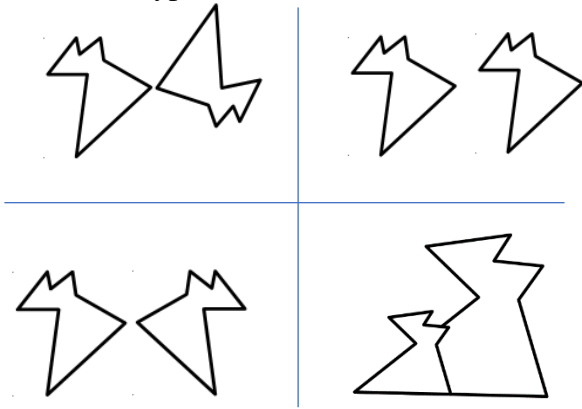
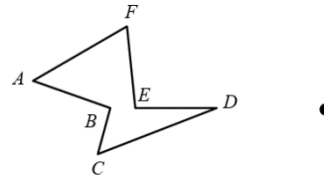


1. Name the type of transformation shown:



2. Rotate the object 120° (counter-clockwise) about the point. You will need tracing paper and protractor.



3. Match the coordinate rule with the transformation.

- a) $(x, y) \rightarrow (-x, y)$ _____
- b) $(x, y) \rightarrow (x + a, y + b)$ _____
- c) $(x, y) \rightarrow (ax, ay)$ _____
- d) $(x, y) \rightarrow (y, x)$ _____
- e) $(x, y) \rightarrow (x, -y)$ _____
- f) $(x, y) \rightarrow (-x, -y)$ _____

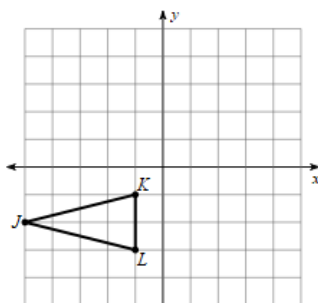
- (J) Reflection over $y = x$
- (K) Reflection over $y -$ axis
- (L) Reflection over $x -$ axis
- (M) Rotation 180° about $(0,0)$
- (N) Dilation with center $(0,0)$ and scale factor a
- (P) Translation horizontally a and vertically b

4. Give the coordinates of the image point A' .

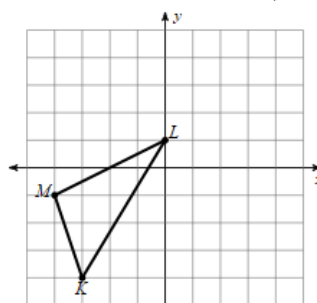
- a) $A(3, -4)$ is reflected over the x -axis. $A'(\quad)$
- b) $A(3, -4)$ is translated by $\langle -5, 7 \rangle$. $A'(\quad)$
- c) $A(3, -4)$ is rotated 180° about $(0,0)$. $A'(\quad)$
- d) $A(3, -4)$ is reflected over $y = x$. $A'(\quad)$

- 5. If the point $A(3, -4)$ is reflected to $A'(-3, -4)$ then the line of reflection is the _____ - axis.
- 6. If $A(3, -4)$ is translated to $A'(-3, -4)$ then the translation vector is:

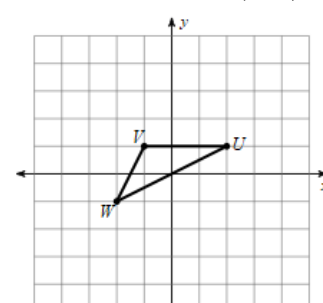
7. Reflect over y -axis



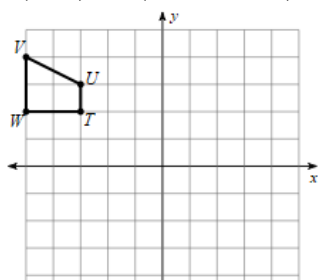
8. Rotate 180° about $(0,0)$



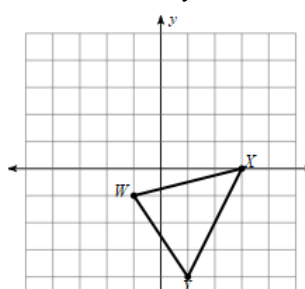
9. Dilate. Center $(0,0)$ $k = 2$



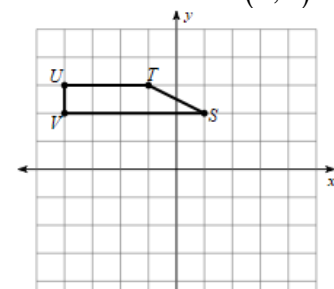
10. $(x, y) \rightarrow (x + 3, y - 5)$



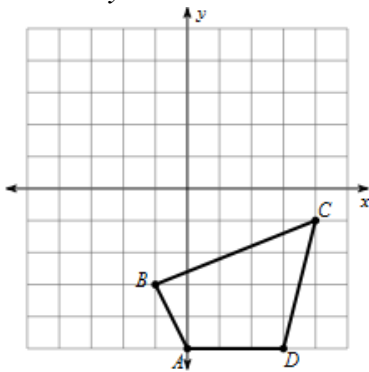
11. Reflect over $y = x$.



12. Rotate 90° about $(0,0)$

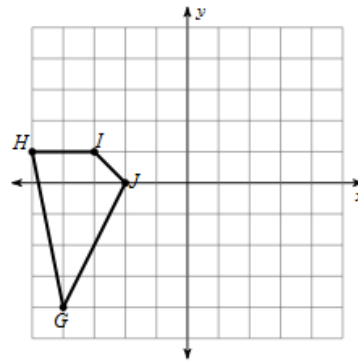


13. Reflect over $y = -1$ and then reflect over the y -axis.



Would the final image be the same if you did the reflections in reverse order?

14. Reflect over the y -axis and then reflect over the x -axis.

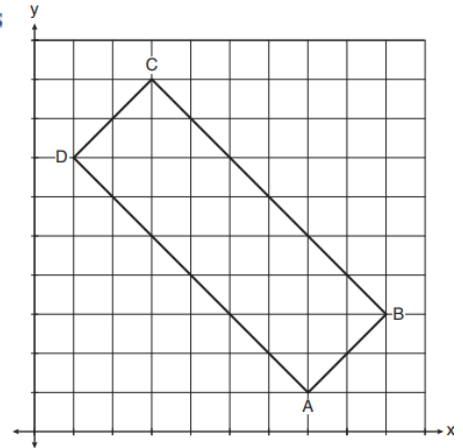


What single transformation could be done to get to the same final image?

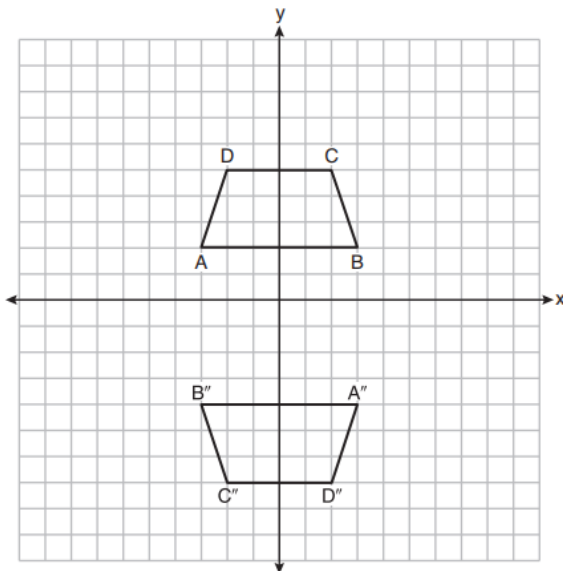
15. In the diagram below, rectangle $ABCD$ has vertices whose coordinates are $A(7,1)$, $B(9,3)$, $C(3,9)$, and $D(1,7)$.

Which transformation will *not* carry the rectangle onto itself?

- (1) a reflection over the line $y = x$
- (2) a reflection over the line $y = -x + 10$
- (3) a rotation of 180° about the point $(6,6)$
- (4) a rotation of 180° about the point $(5,5)$



16. Trapezoids $ABCD$ and $A''B''C''D''$ are graphed on the set of axes below.



Describe a sequence of transformations that maps trapezoid $ABCD$ onto trapezoid $A''B''C''D''$.

17. What is an equation of a line which passes through $(6,9)$ and is perpendicular to the line whose equation is $4x - 6y = 15$?

- (1) $y - 9 = -\frac{3}{2}(x - 6)$
- (2) $y - 9 = \frac{2}{3}(x - 6)$
- (3) $y + 9 = -\frac{3}{2}(x + 6)$
- (4) $y + 9 = \frac{2}{3}(x + 6)$

Show work.