

Transformations in the Coordinate Plane

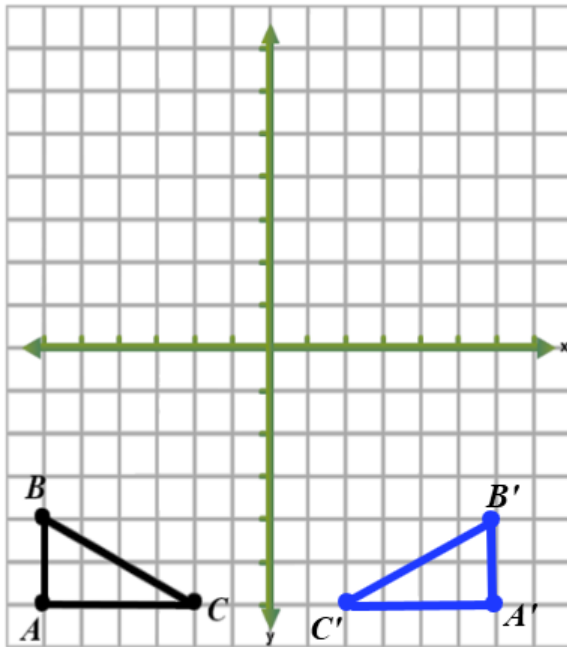
- Goals:**
- *Reflect figures in the coordinate plane across various lines
 - *Translate figures in the coordinate plane
 - *Rotate figures around a point by 90° and 180°
 - *Dilate figures in the coordinate plane by scale factors

Transformations: Movements of geometric figures in the coordinate plane. If a figure has points labeled A , B and C , then the points after the transformation would be labeled A' , B' and C' .

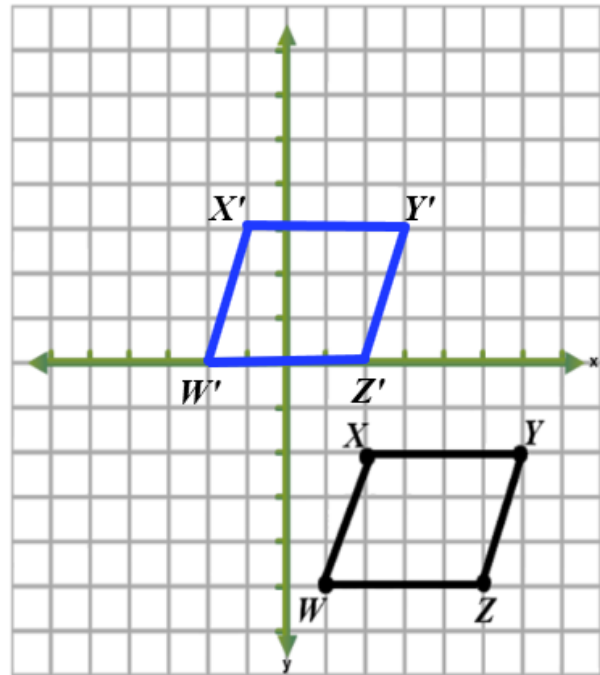
TRANSFORMATIONS			
Type	Explanation	Symbols	Picture
Reflection	A figure flipped over a line.	Reflect over x -axis: $(x, y) \Rightarrow (x, -y)$ Reflect over y -axis: $(x, y) \Rightarrow (-x, y)$	
Translation	A figure slid in any direction.	$(x, y) \Rightarrow (x + a, y + b)$	
Dilation	A figure enlarged or reduced If $k > 1$ the figure is enlarged. If $0 < k < 1$, the figure is reduced	$(x, y) \Rightarrow (kx, ky)$	
Rotation	A figure turned around a point (typically the origin)	90° counterclockwise: $(x, y) \Rightarrow (-y, x)$ 180° rotation: $(x, y) \Rightarrow (-x, -y)$	

Perform the transformation indicated.

Ex: Reflect $\triangle ABC$ over the x -axis.

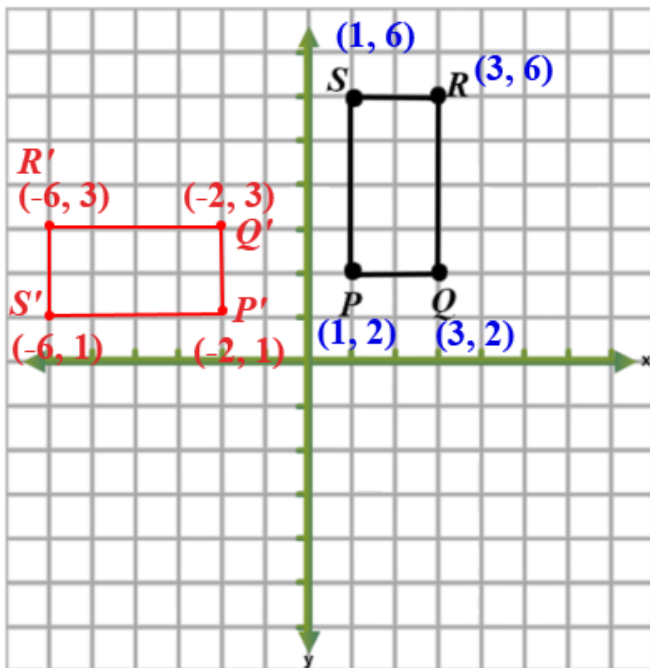


Ex: Translate parallelogram WXYZ 5 units up and 3 units left



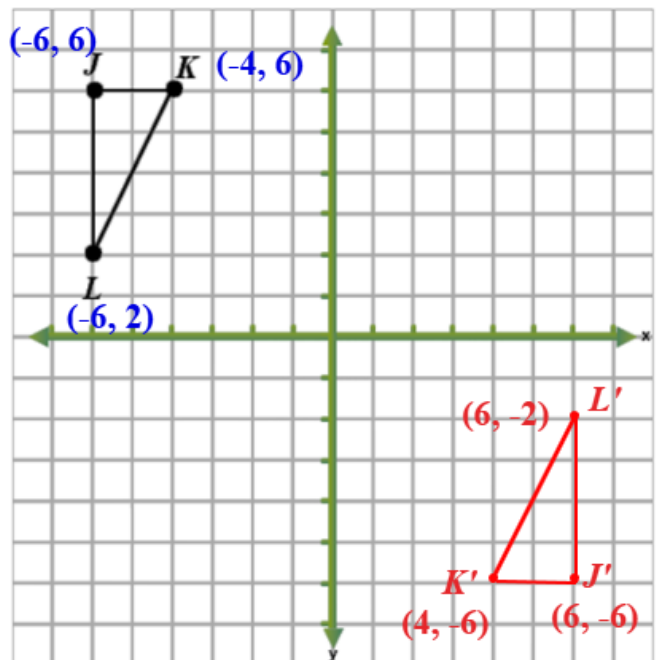
Ex: Rotate rectangle PQRS by 90° counterclockwise about the origin

$(x, y) \rightarrow (-y, x)$



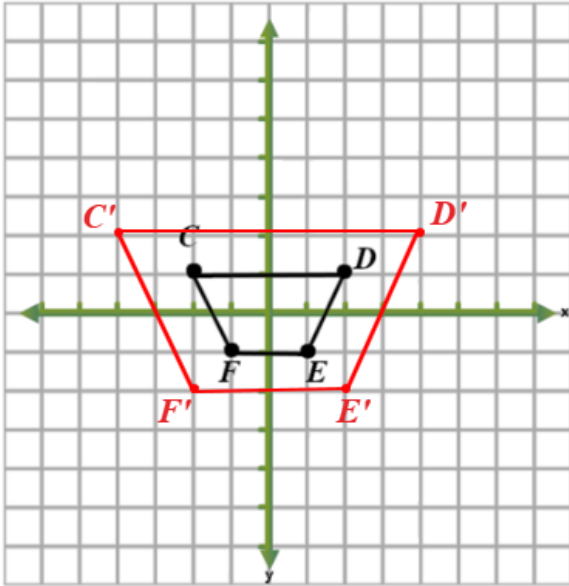
Ex: Rotate $\triangle JKL$ 180° about the origin

$(x, y) \rightarrow (-x, -y)$



Ex: Dilate trapezoid $CDEF$ by a scale factor of 2.

$$(x, y) \rightarrow (2x, 2y)$$



Ex: Reflect pentagon $RSTUV$ across the line $x = -1$

*make sure each point is the same distance from the line of reflection

