

9-2 Reflections and Rotations

Objectives:

- I can reflect a point or image across a line
- I can write a reflection rule
- I can rotate around the origin.

Notation

$R_{x=1}(U)$

Reflection

MIRROR

what you reflect

*
X = VERTICAL

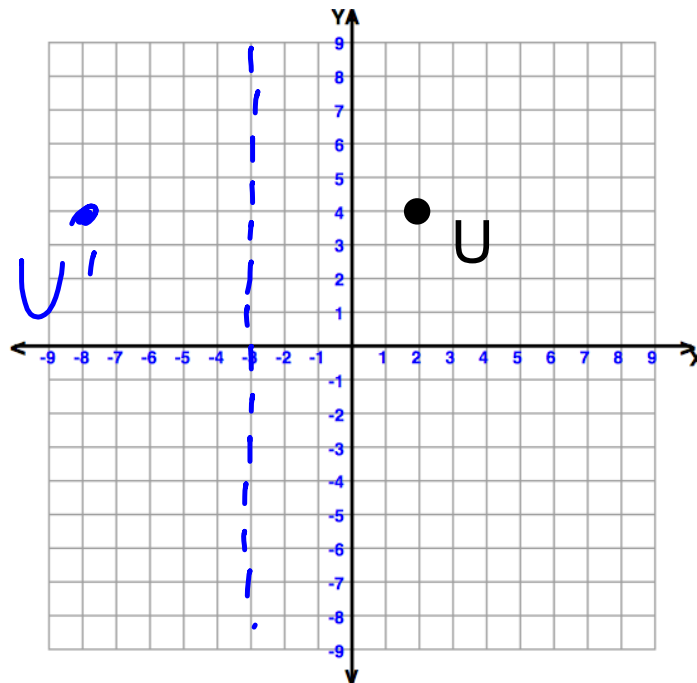
*
y = HORIZONTAL

Find the coordinates of the image

$$R_{x=-3}(U)$$

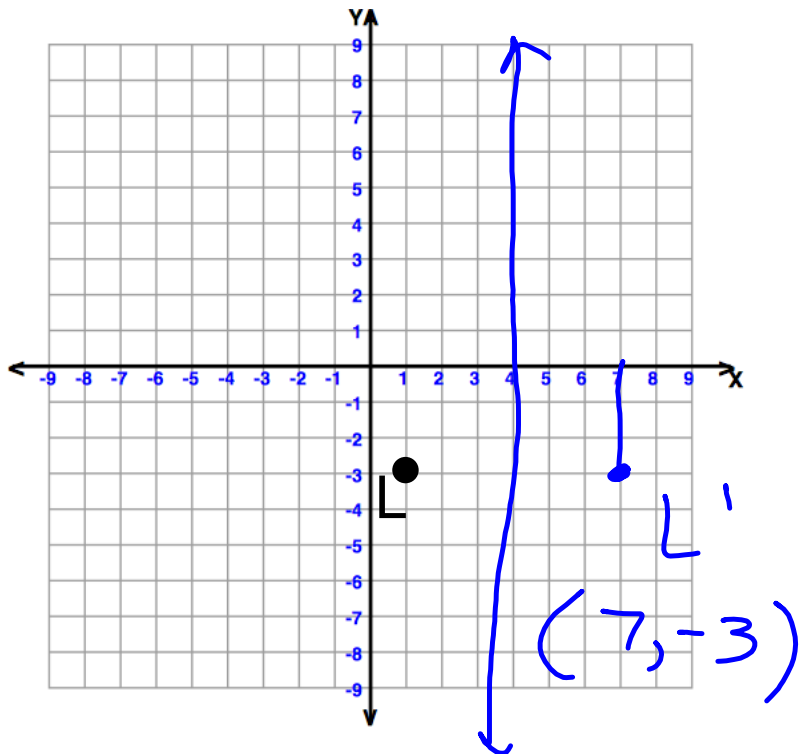
↑
vertical

$$(-8, 3)$$



Find the coordinates of the image

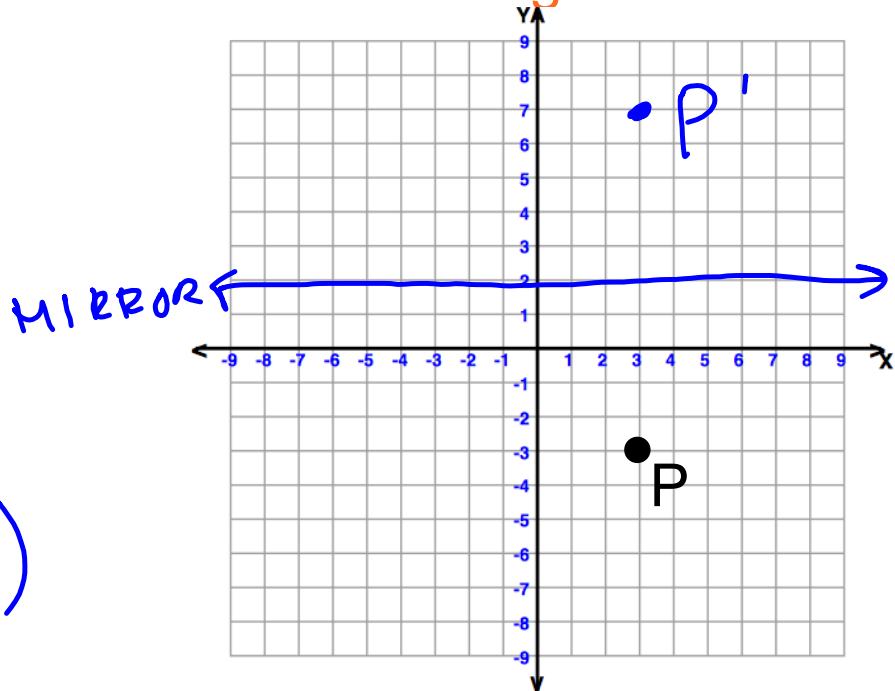
$$R_{x=4}(L)$$



Find the coordinates of the image

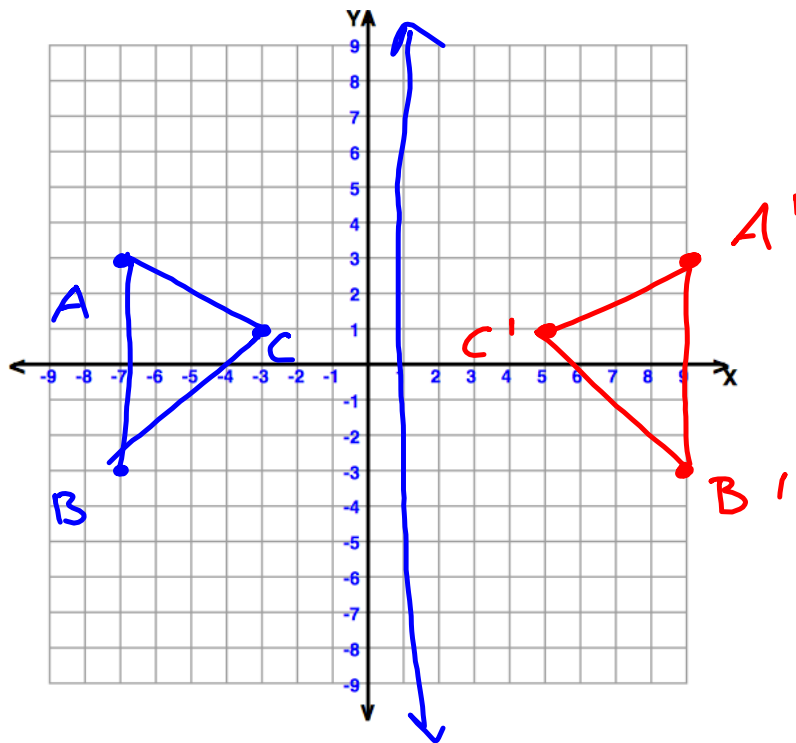
$$R_{y=2}(P)$$

$(3, 7)$



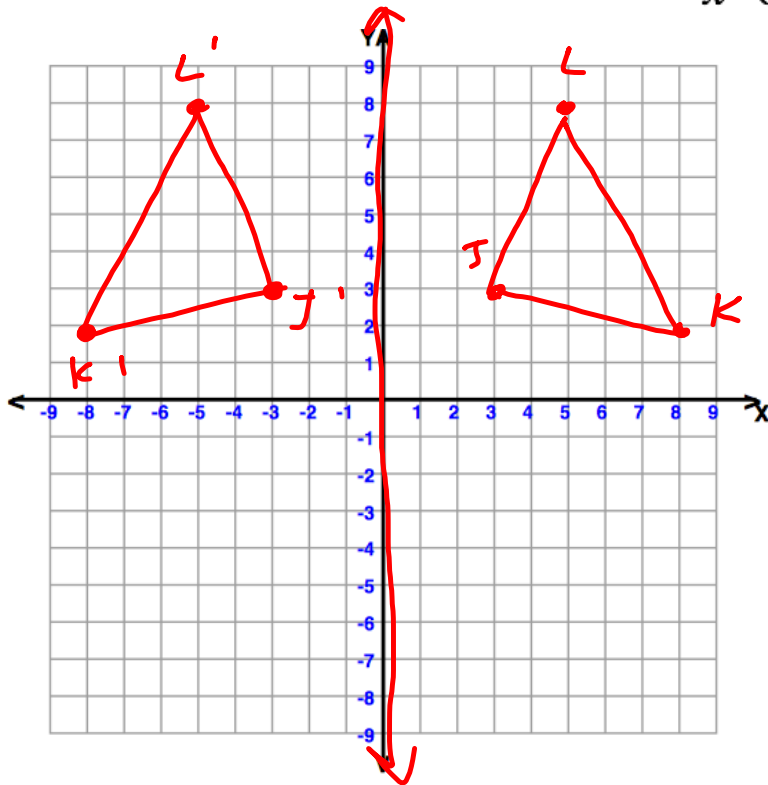
Given $A(-7,3)$, $B(-7,-3)$, $C(-3,1)$

Graph $\triangle ABC$ and find $R_{x=1}$



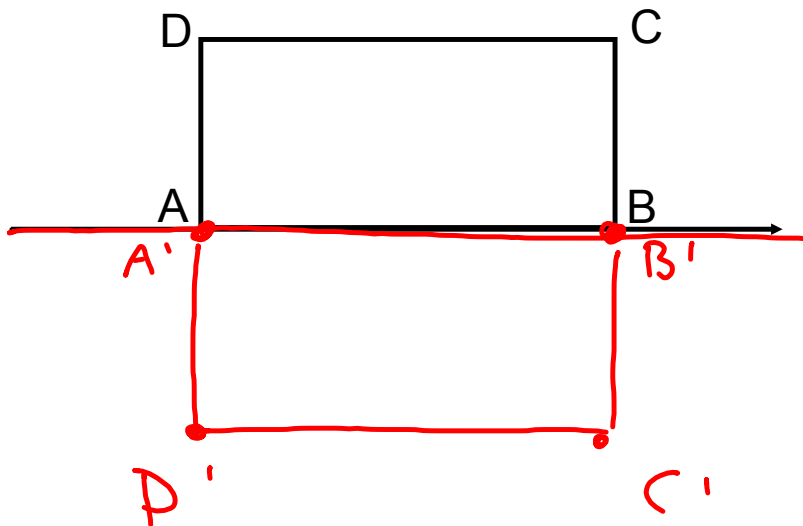
Given $J(3,3)$, $K(8,2)$, $L(5,8)$

Graph $\triangle JKL$ and find $R_{x=0}$



ABCD is a rectangle where $AB=2BC$

Sketch $R_{\overline{AB}}(ABCD)$ and state the resulting figure



Write a reflection rule for each of the following

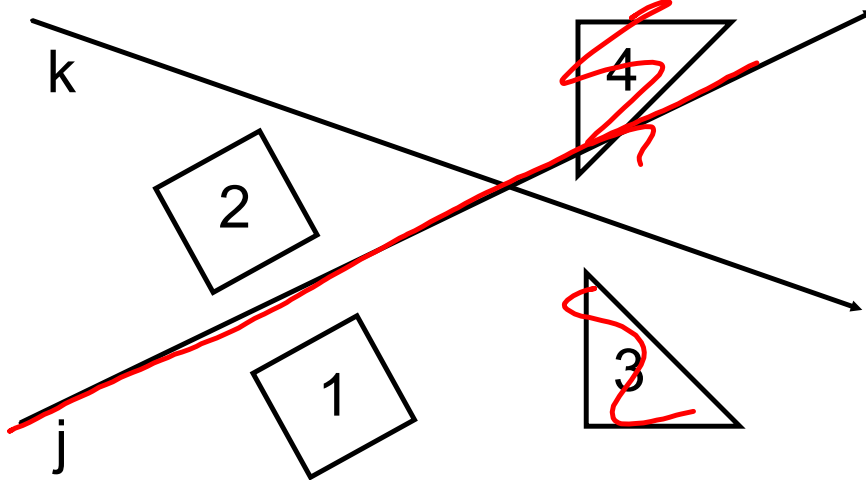


Figure 1:

$$R_j(2)$$

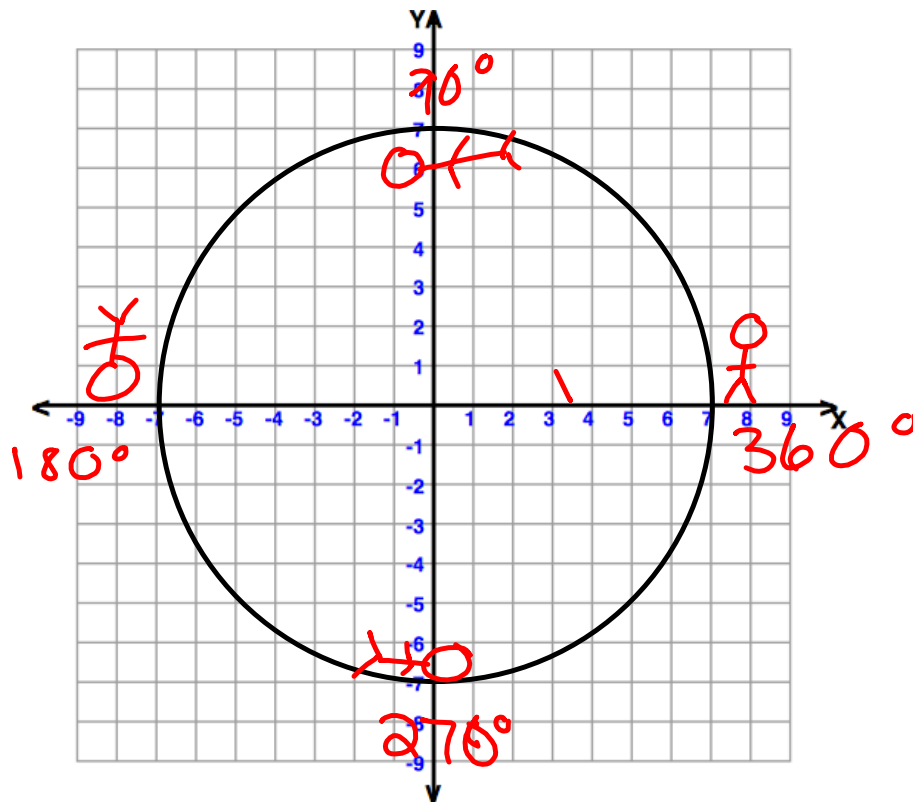
Figure 2:

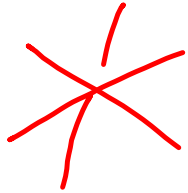
$$R_j(1)$$

Figure 3:

Figure 4:

Angles of Rotation





Switch $x \leftrightarrow y$
change sign 1st

For a rotation of 90° : $(x, y) \rightarrow (-y, x)$

For a rotation of 180° : $(x, y) \rightarrow (-x, -y)$

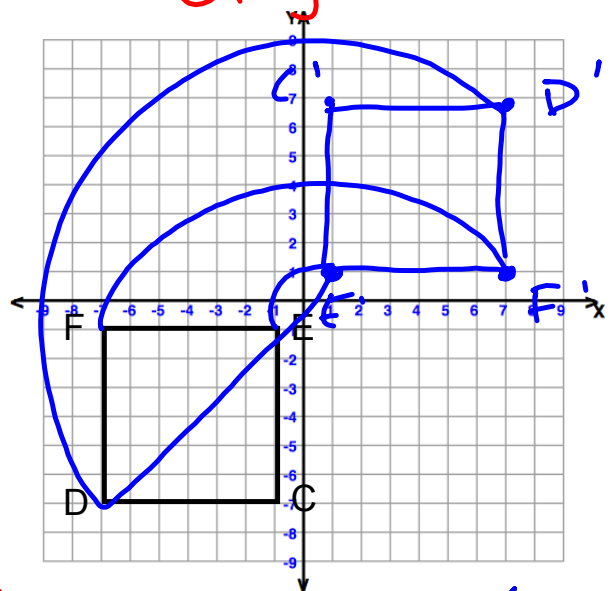
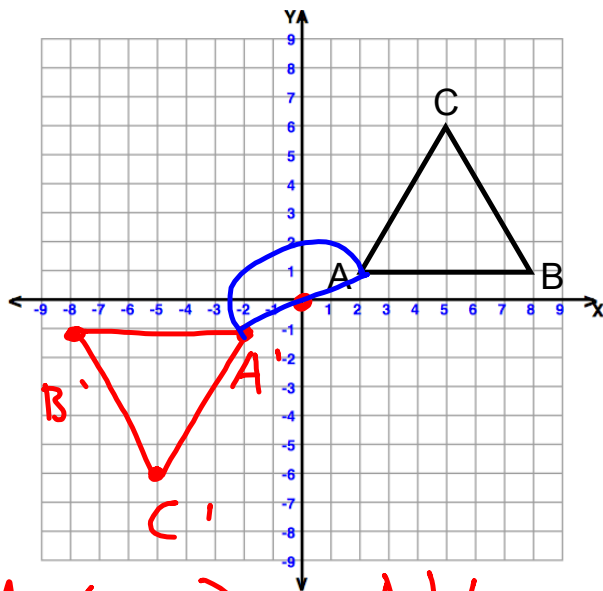
For a rotation of 270° : $(x, y) \rightarrow (y, -x)$

change x sign,
switch $x \leftrightarrow y$

AROUND THE ORIGIN

Rotate the following around ~~point A~~ 180°

ORIGIN



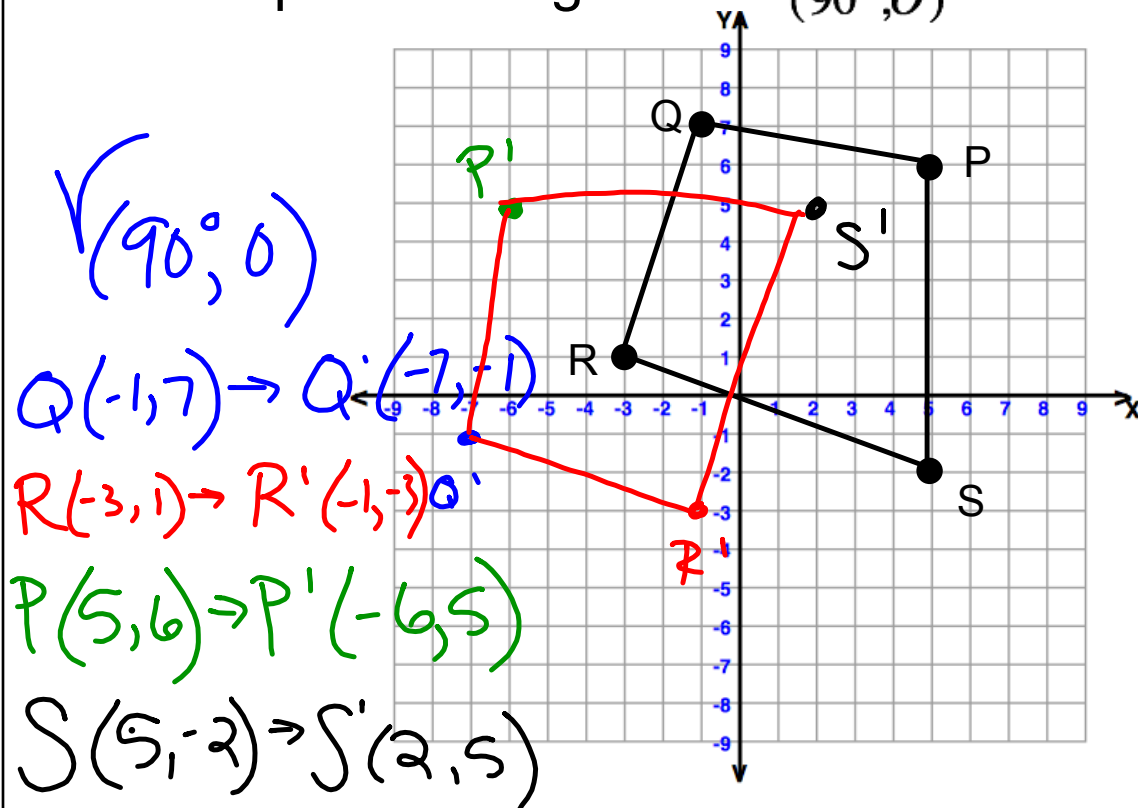
$$A(2, 1) \rightarrow A'(-2, -1)$$

$$B(8, 1) \rightarrow B'(-8, -1)$$

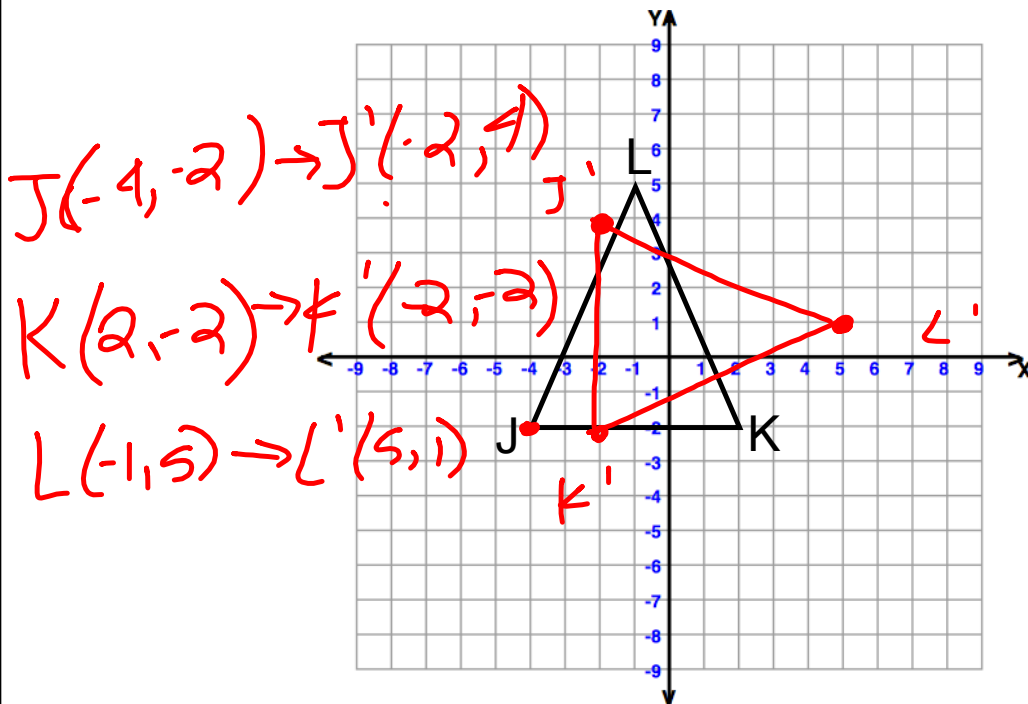
$$C(5, 6) \rightarrow C'(-5, -6)$$

$$E(-1, -1) \rightarrow E'(1, 1)$$

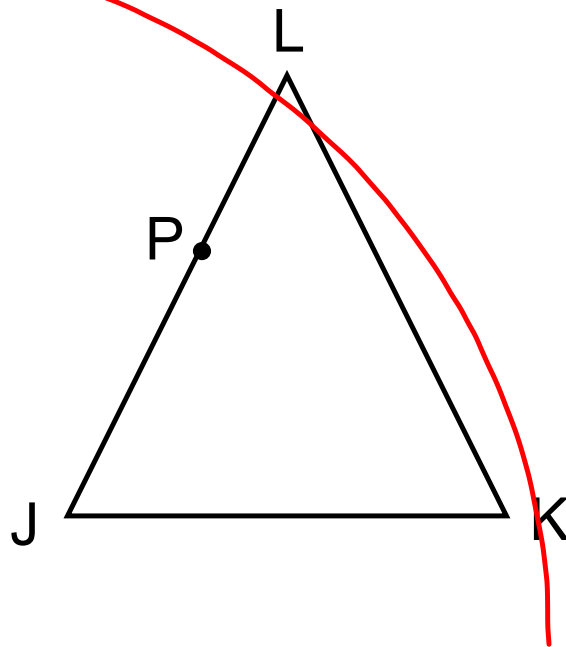
Graph the image of a $r_{(90^\circ, 0)} PQRS$



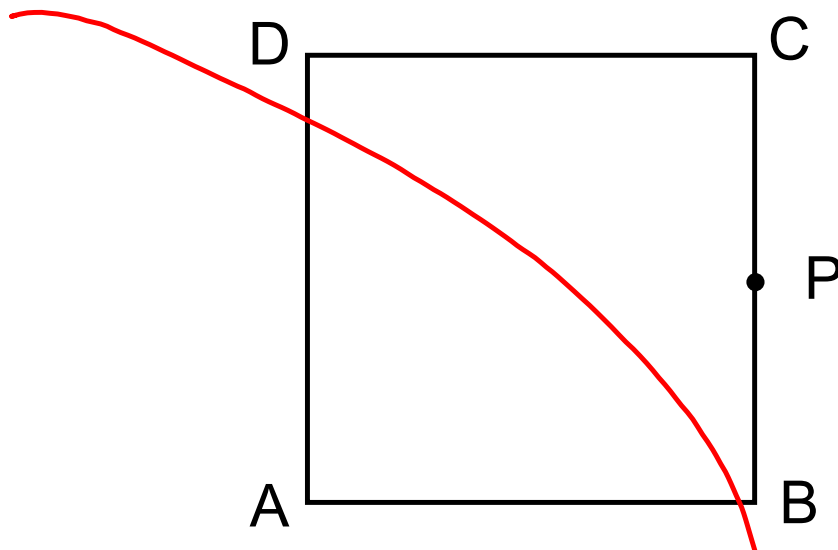
Graph the image of $r_{(270^\circ, \textcircled{A})} JKL$



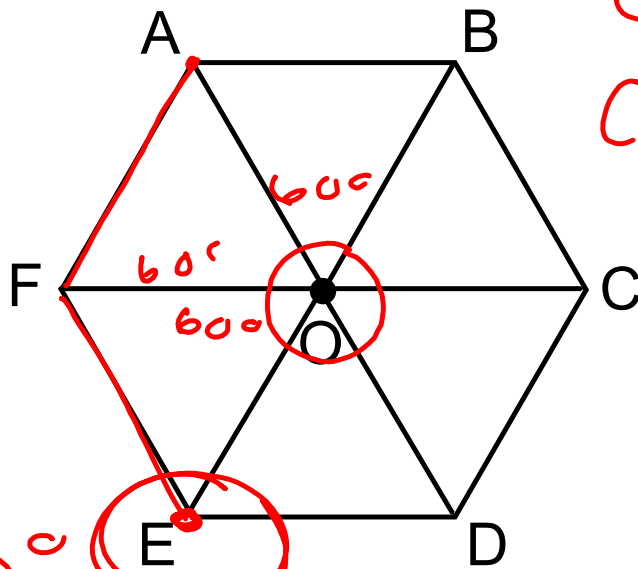
Rotate JKL around Point P 180°



Rotate ABCD around Point P 90°



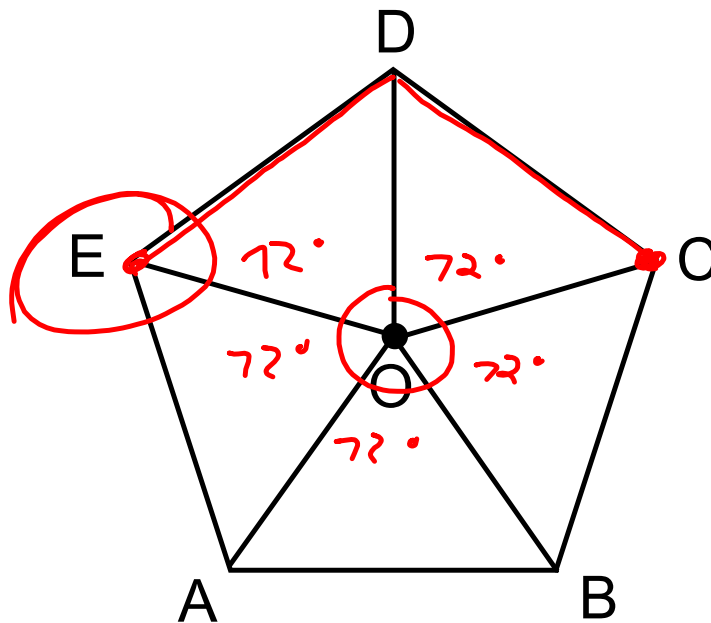
Point O is the center of ABCDEF. Find the image of Point A for $r_{(120^\circ, O)} A$



COUNTER
CLOCKWISE

$$\frac{360^\circ}{6} = 60^\circ$$

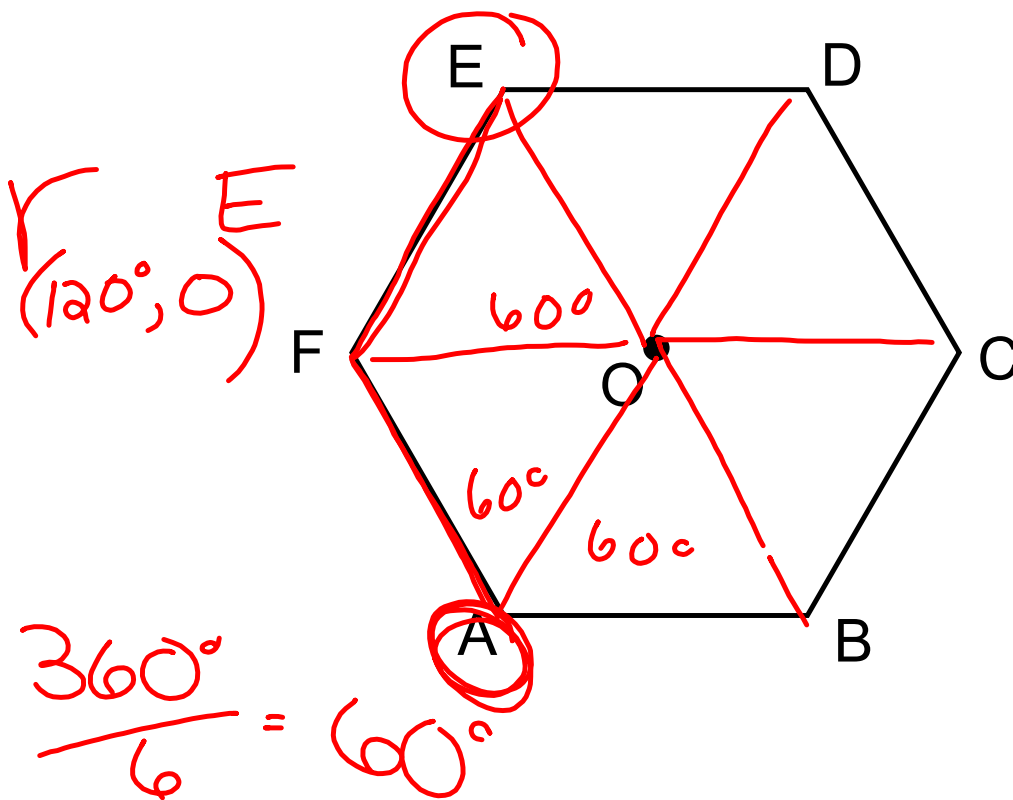
Point O is the center of ABCDE. Find the image of Point C for $r_{(144^\circ, O)}$ $C = E$



$$\begin{array}{r} 72 \\ 72 \\ \hline 144^\circ \end{array}$$

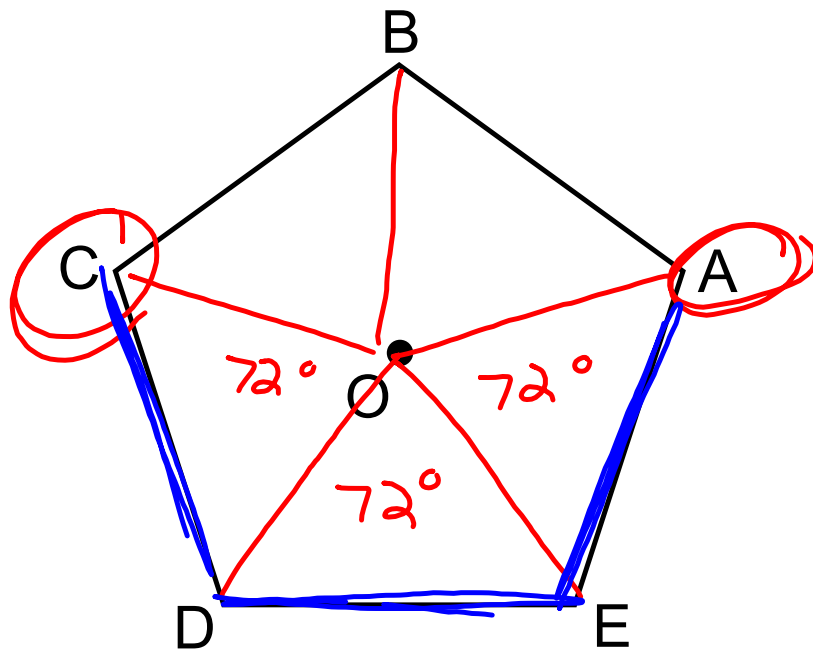
$$\frac{360^\circ}{5} = 72^\circ$$

Find the angle of rotation that maps Point E to Point A around the center O.



Find the angle of rotation that maps Point C to Point A around the center O.

$$\begin{array}{r} 72 \\ 72 \\ 72 \\ \hline 216 \end{array}$$



$$\frac{360^\circ}{5} = 72^\circ$$

$$r(216^\circ, O)$$

