

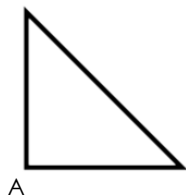
1.5 Rotations

Everything you could ever want to know about rotations AND MORE!

Rotation Vocabulary

There are three key terms you must know when learning about rotations:

Center of Rotation, Direction, and Angle of Rotation



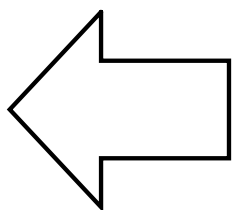
Center of Rotation

A point that an object rotates around

State the Center of Rotation

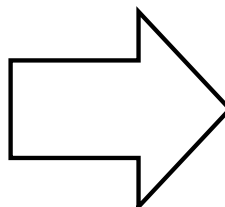
Direction

Rotations can either go in a clockwise or counter - clockwise direction.



Counter-Clockwise

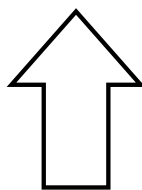
Spins to the Left



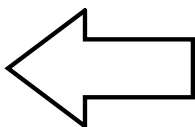
Clockwise

Spins to the right

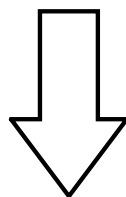
Angles of Rotation



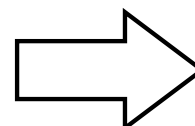
Original



90°

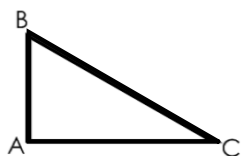


180°



270°

State the center of rotation, direction and angle of rotation of the following rotation

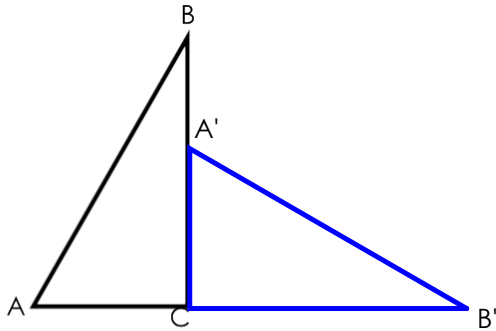


Center of Rotation: _____

Direction: _____

Angle of Rotation: _____

Describe a transformation that maps $\triangle ABC$ onto $\triangle A'B'C'$



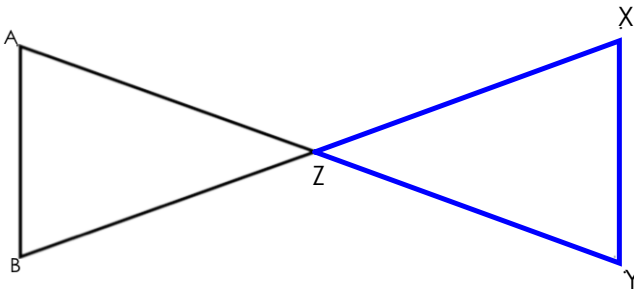
Center of Rotation: _____

Direction: _____

Angle of Rotation: _____

A rotation of _____
 centered at point _____
 maps _____ onto _____

Describe a transformation that maps $\triangle ABZ$ onto $\triangle XYZ$



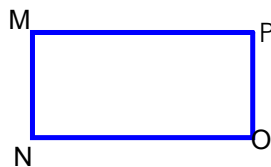
Center of Rotation: _____

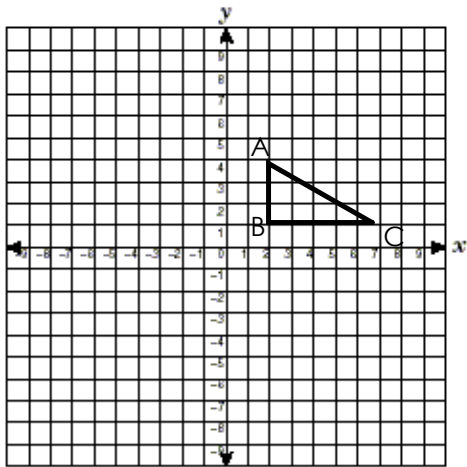
Direction: _____

Angle of Rotation: _____

*You must always say the point of rotation, the direction, and the amount of degrees it is rotated.

Describe a sequence of transformations that would map rectangle WXZY onto rectangle PONM





Rotate $\triangle ABC$ 90° counter-clockwise around the origin.
State the coordinates of $\triangle ABC$ and $\triangle A'B'C'$

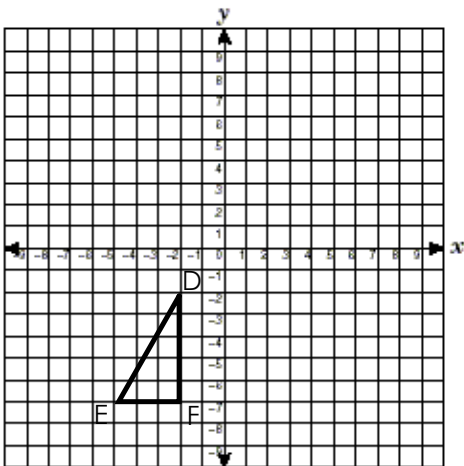
Rule for a 90° rotation

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

$$A(\underline{\quad}, \underline{\quad}) \longrightarrow A'(\underline{\quad}, \underline{\quad})$$

$$B(\underline{\quad}, \underline{\quad}) \longrightarrow B'(\underline{\quad}, \underline{\quad})$$

$$C(\underline{\quad}, \underline{\quad}) \longrightarrow C'(\underline{\quad}, \underline{\quad})$$



Rotate $\triangle DEF$ 180° counter-clockwise around the origin.
State the coordinates of $\triangle DEF$ and $\triangle D'E'F'$

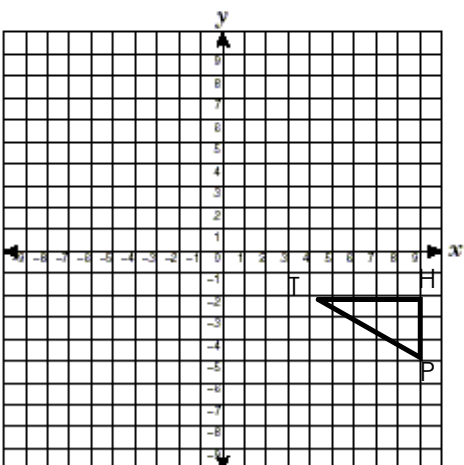
Rule for a 180° rotation

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

$$D(\underline{\quad}, \underline{\quad}) \longrightarrow D'(\underline{\quad}, \underline{\quad})$$

$$E(\underline{\quad}, \underline{\quad}) \longrightarrow E'(\underline{\quad}, \underline{\quad})$$

$$F(\underline{\quad}, \underline{\quad}) \longrightarrow F'(\underline{\quad}, \underline{\quad})$$



Rotate $\triangle HTP$ 270° counter-clockwise around the origin.
State the coordinates of $\triangle HTP$ and $\triangle H'T'P'$

Rule for a 270° rotation

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

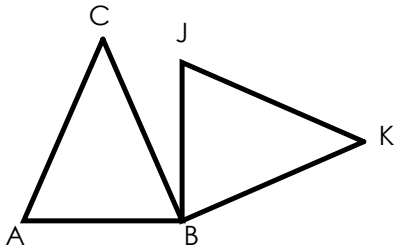
$$H(\underline{\quad}, \underline{\quad}) \longrightarrow H'(\underline{\quad}, \underline{\quad})$$

$$T(\underline{\quad}, \underline{\quad}) \longrightarrow T'(\underline{\quad}, \underline{\quad})$$

$$P(\underline{\quad}, \underline{\quad}) \longrightarrow P'(\underline{\quad}, \underline{\quad})$$

Independent Practice

Describe a transformation that would map $\triangle ABC$ onto $\triangle JBK$



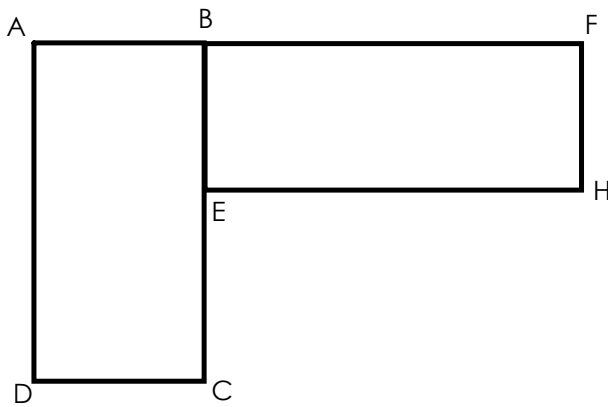
Center of Rotation: _____

Direction: _____

Angle of Rotation: _____

A rotation of _____
centered at point _____
maps _____ onto _____

Describe a transformation that would map rectangle ABCD onto rectangle EBFH



Center of Rotation: _____

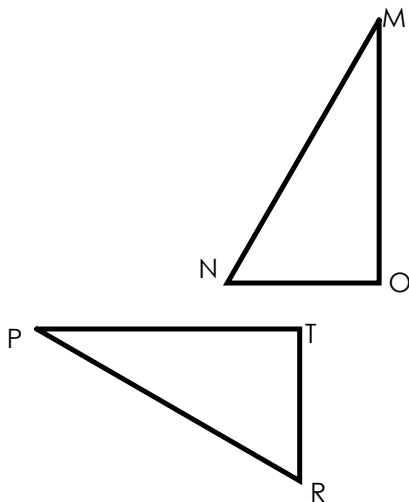
Direction: _____

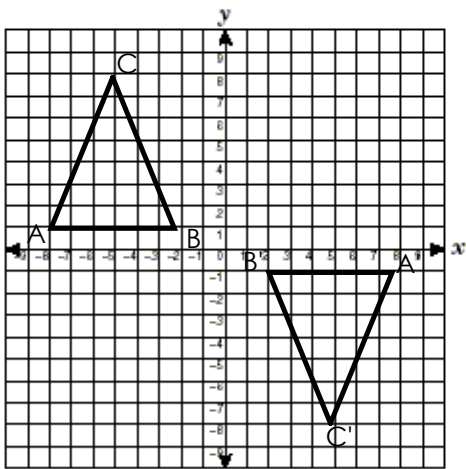
Angle of Rotation: _____



*You must always say the point of rotation, the direction, and the amount of degrees it is rotated.

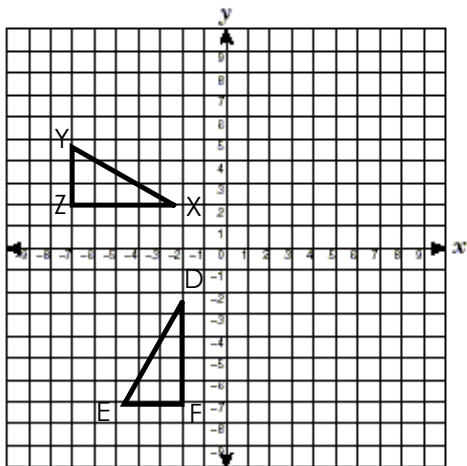
Describe a transformation that maps $\triangle MNO$ onto $\triangle PRT$



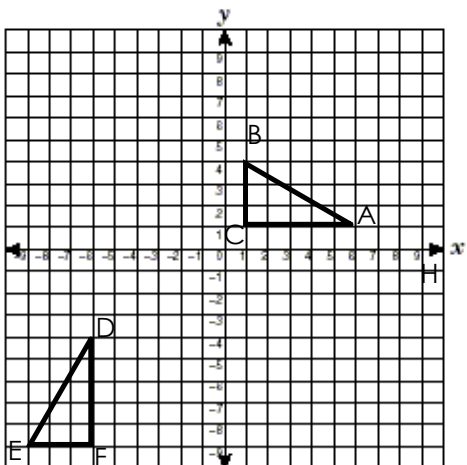


Describe the rotation to map $\triangle ABC$ onto $\triangle A'B'C'$

A rotation of _____
 centered at point _____
 maps _____ onto _____



Describe the rotation to map $\triangle XYZ$ onto $\triangle DEF$

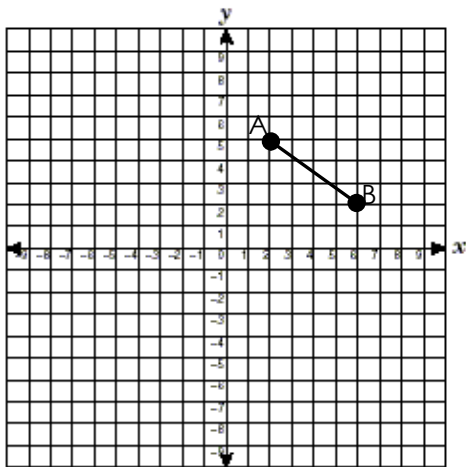


Describe a sequence of two transformations that maps $\triangle ABC$ onto $\triangle DEF$.

First transformation: _____

(please draw on coordinate plane as well)

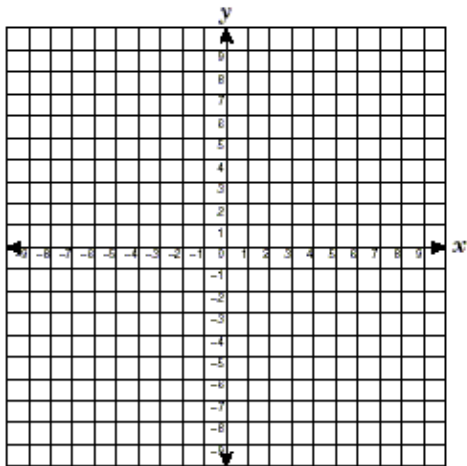
Second transformation: _____



Rotate \overline{AB} 90° counter-clockwise around the origin. State the coordinates of the pre-image and image of the line.

$$A(\underline{\quad}, \underline{\quad}) \longrightarrow A'(\underline{\quad}, \underline{\quad})$$

$$B(\underline{\quad}, \underline{\quad}) \longrightarrow B'(\underline{\quad}, \underline{\quad})$$



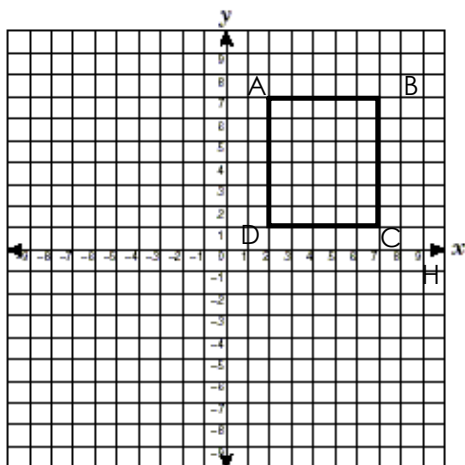
Triangle DEF has coordinates D(-6,-8), E(-2,-7) and F(-4,-1). State the coordinates of triangle DEF after a 270° rotation

$$D(\underline{\quad}, \underline{\quad}) \longrightarrow D'(\underline{\quad}, \underline{\quad})$$

$$E(\underline{\quad}, \underline{\quad}) \longrightarrow E'(\underline{\quad}, \underline{\quad})$$

$$F(\underline{\quad}, \underline{\quad}) \longrightarrow F'(\underline{\quad}, \underline{\quad})$$

Prove $\triangle DEF = \triangle D'E'F'$ using the properties of rigid motions



Reflect rectangle ABCD over the y-axis. Then, reflect $A'B'C'D'$ over the x-axis. State the coordinates of rectangle $A''B''C''D''$

Describe a rotation that could map ABCD onto $A''B''C''D''$

