Curriculum Outcomes

(SS3) Demonstrate an understanding of similarity of polygons.

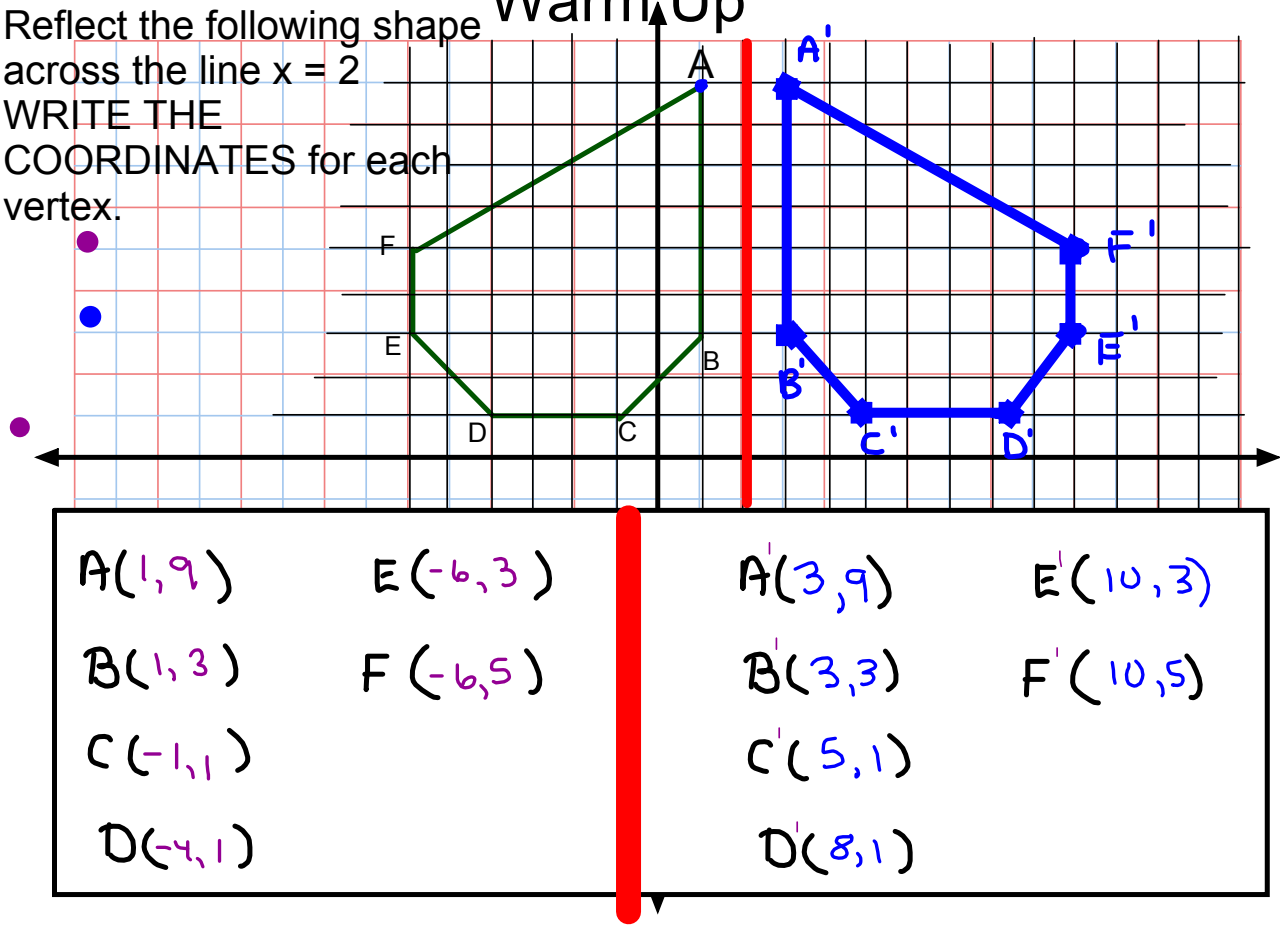
(SS4) Draw and interpret scale diagrams of 2-D shapes.

(SS5) Demonstrate an understanding of line and rotation symmetry.

Student Friendly: Rotating shapes a certain degrees, about specific point.

Warm Up

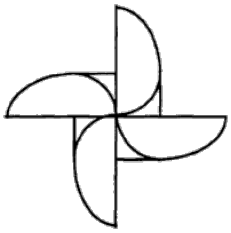
Reflect the following shape across the line x = 2
WRITE THE COORDINATES for each vertex.



A(1,9)	E(-6,3)	A'(3,9)	E'(10,3)
B(1,3)	F(-6,5)	B'(3,3)	F'(10,5)
C(-1,1)		C'(5,1)	
D(-4,1)		D'(8,1)	

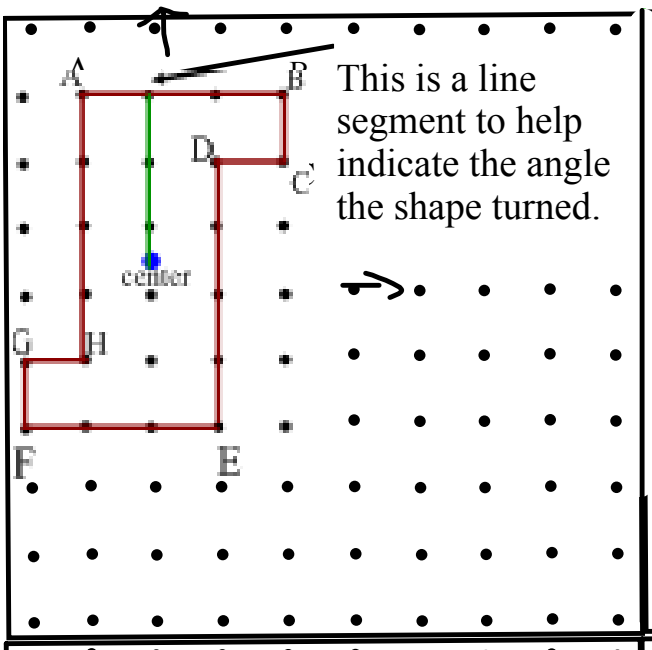
Section 7.6

Rotations & Rotational Symmetry



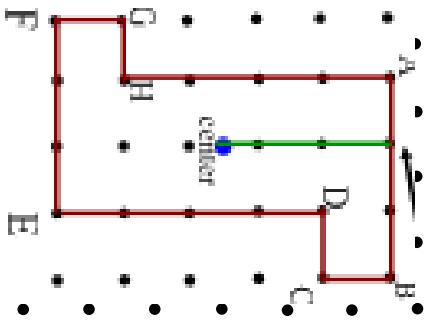
Lets rotate this object about its center

On your copy draw the rotated figure

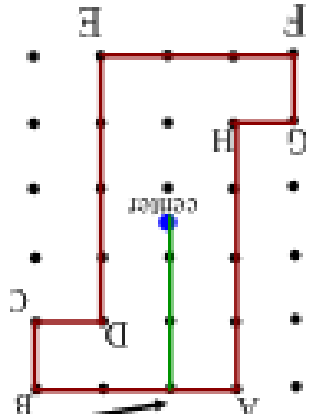


This is a line segment to help indicate the angle the shape turned.

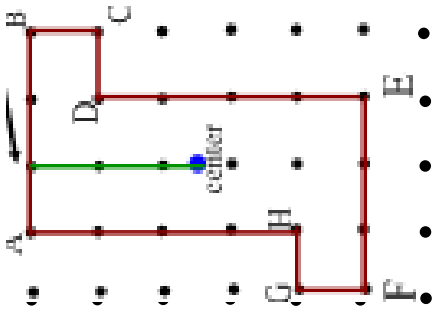
Rotate 90°



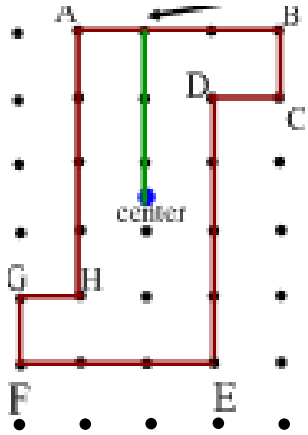
Rotate 180°



Rotate 270°



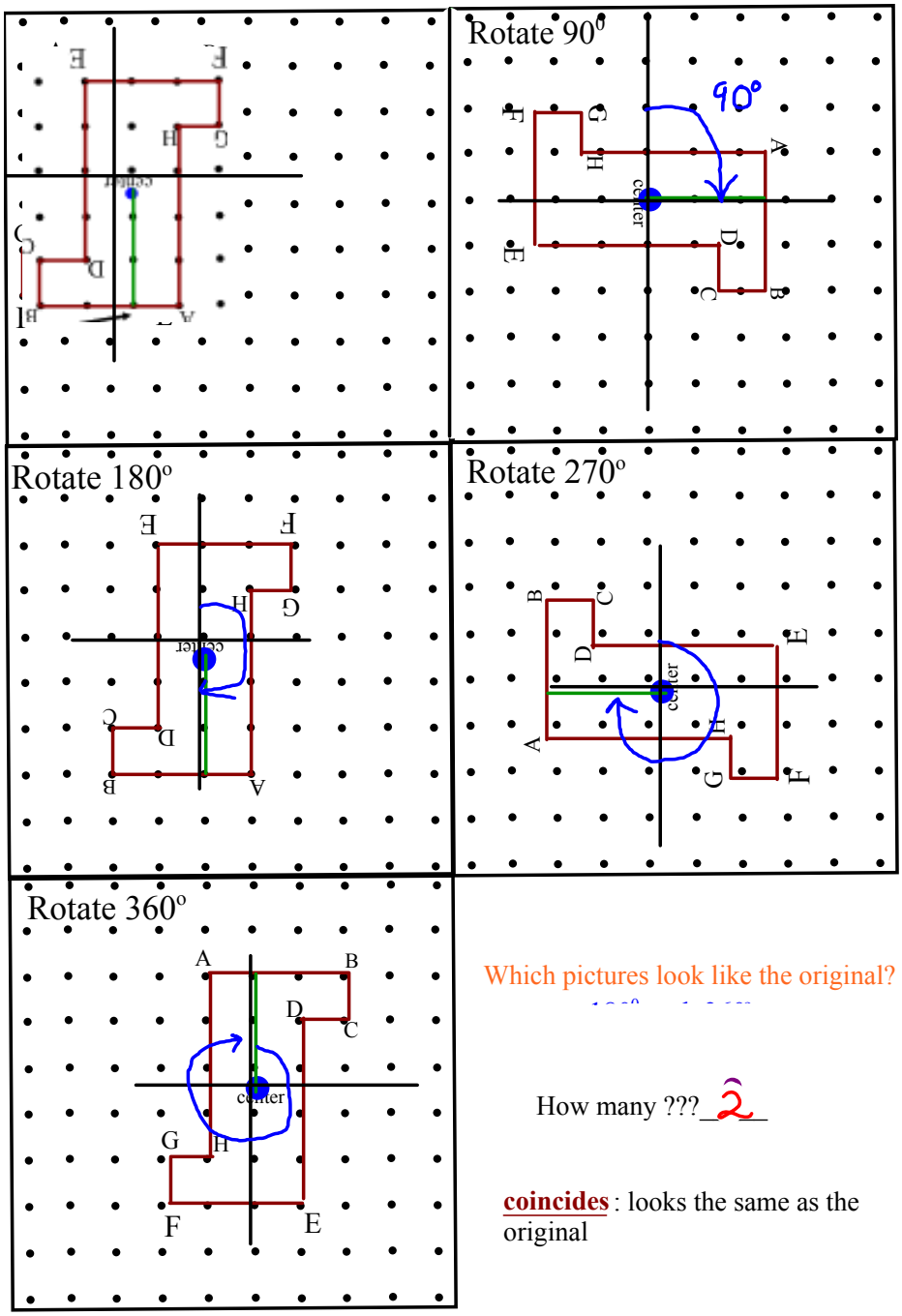
Rotate 360°



Which pictures look like the original?

Lets rotate this object about its center

On your copy draw the rotated figure



Which pictures look like the original?

How many ???_2__

coincides: looks the same as the original

LOOK AT THE NEXT SLIDE THEN COME BACK TO THIS

This object has Rotational symmetry of ord 2.

Angle of Rotaional Symmetry _____

= _____

=

Rotations

A shape has rotational symmetry when it coincides with itself after a rotation of 360° about its centre.

Order of Rotation is the number of times a shape coincides with itself during a 360° rotation

How to state this?

rotational symmetry of order___

Angle of Rotational Symmetry $\frac{360^\circ}{\text{the order of rotation}}$

$$\text{order} = \frac{360^\circ}{\text{angle}}$$

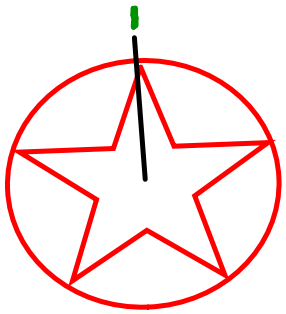
Note:
A shape that requires a rotation of 360° to return to its original shape does not have a rotational symmetry. A shape cannot have a rotational symmetry of 1.

Look at the web book video in rotations

www.mathmakessense.ca

Determine if the following shapes have rotational symmetry. If so state the order of rotation and the angle of rotationsymmetry.

1)

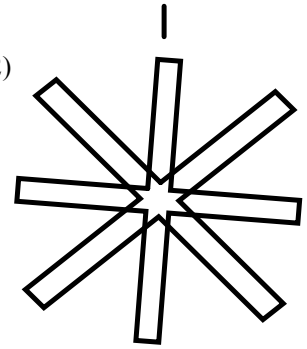


order rot = 5

Angle rot = $\frac{360}{5}$

$= 72^{\circ}$

2)



order rot = 8

Angle rot = $\frac{360}{8}$

$= 45^{\circ}$

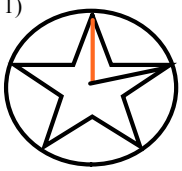
3)

order rot = 0

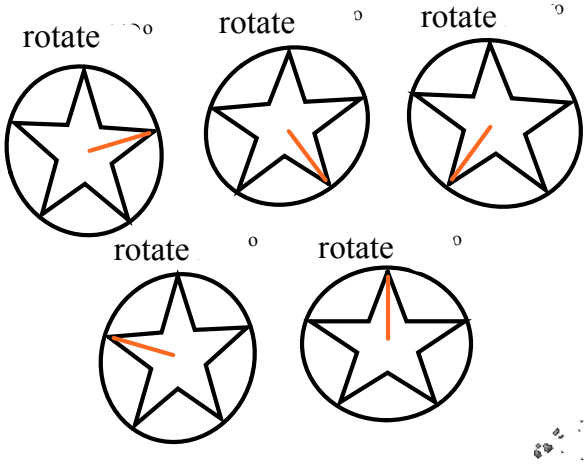
Angle rot = $\frac{360}{0}$

Determine if the following shapes haverotational symmetry. If so state the order of rotation and the angle of rotationsymmetry.

1)



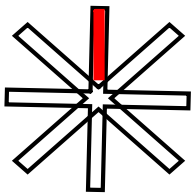
original

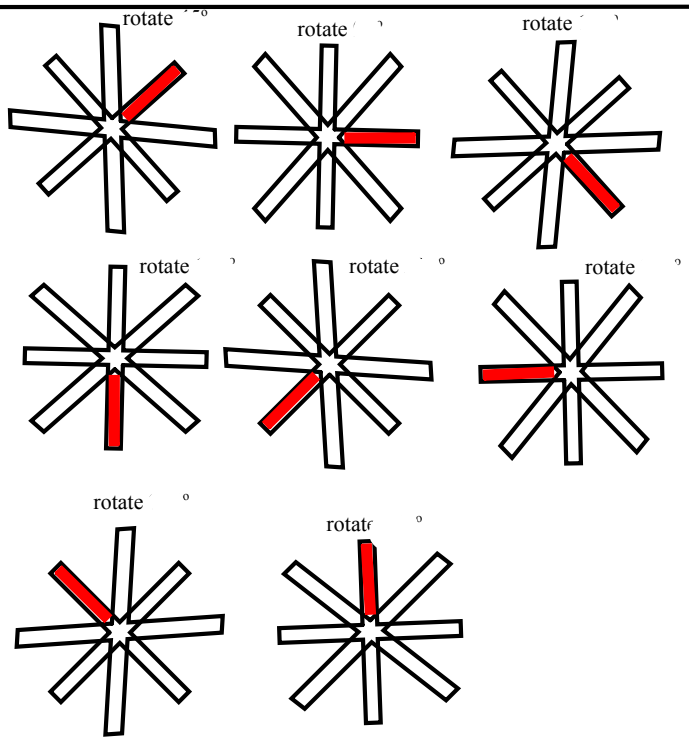


Rotational symmetry of order

Angle of rotation: 360° = °

2)





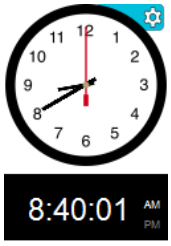
Rotational symmetry of order

Angle of rotation: 360° = °

3)

Is rotated one complete turn before it coincides. It DOES NOT have rotational symmetry.

Rotational Directions



clockwise

-

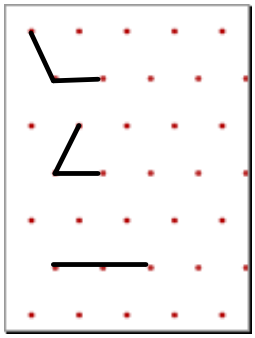
Counter - Clock Wise Rotations

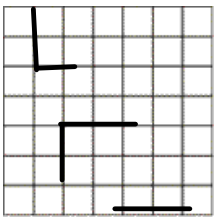
Earth turns counter-clockwise.

Rotations Are Transformations

Text book

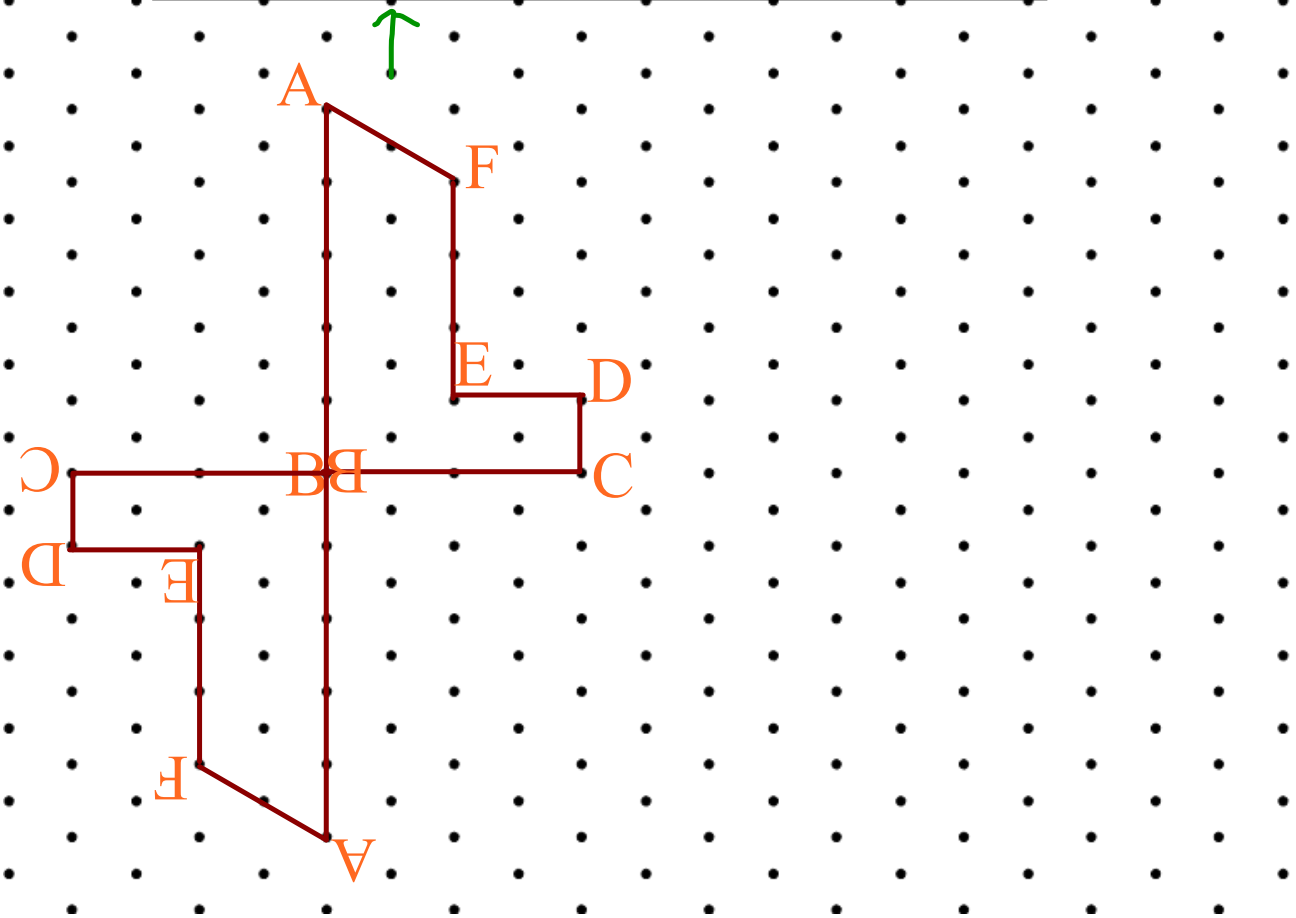
- Grid paper will be used to illustrate rotations of 90̊ (or 180^0 or 270^o)





Rotating Images

Rotate the image 180º clockwise about vertex B.
Draw the rotation image.
Pick a line connected from the vertex of interest



Rotating Images

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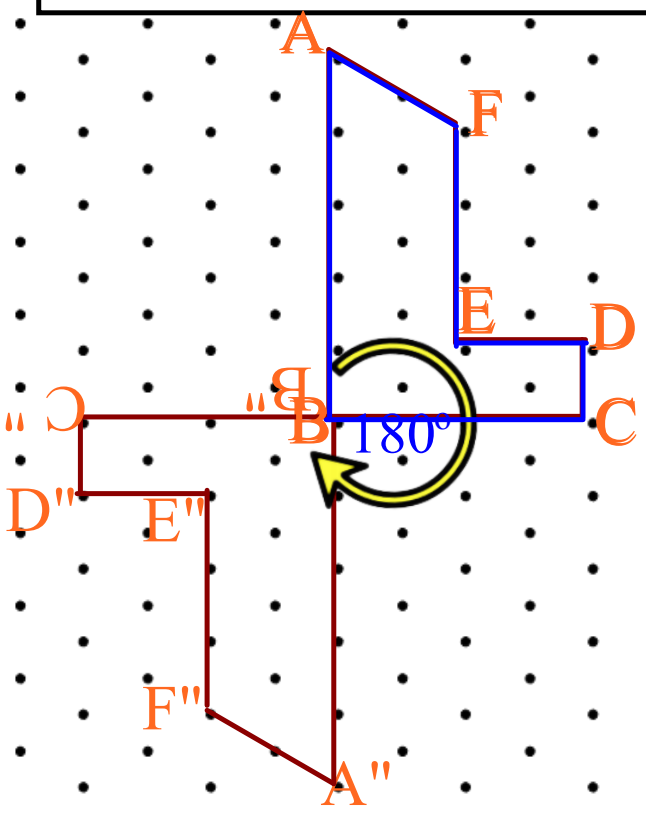
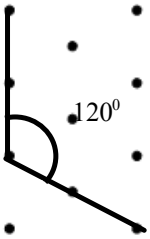
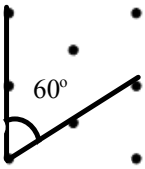
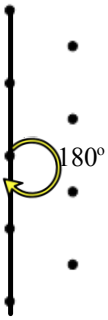
Draw the rotation image.





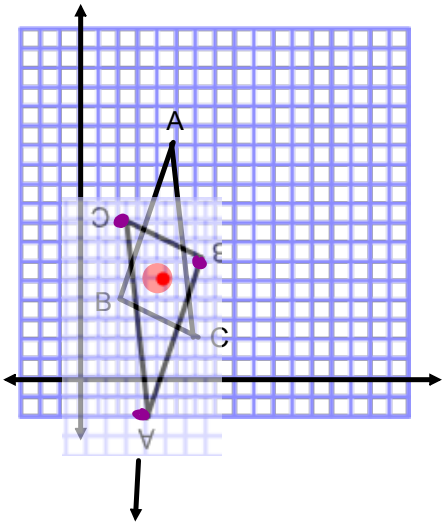




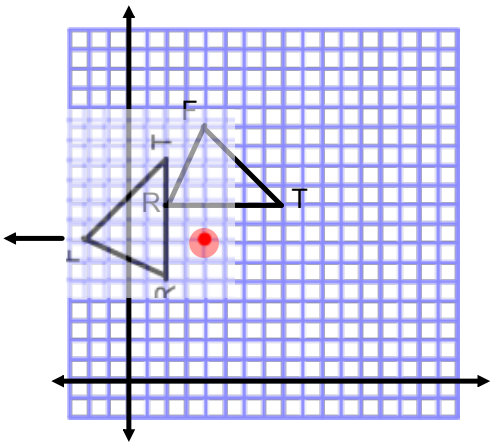
Draw and label the rotated image for each triangle. Label the center of rotation (given in the question)

Step 1) Trace the shape on your own paper and rotate that shape holding your finger or pencil at the rotation center.

1) Rotation 180º counterclockwise, center R(4, 5)



2) Rotation 90º counterclockwise, c



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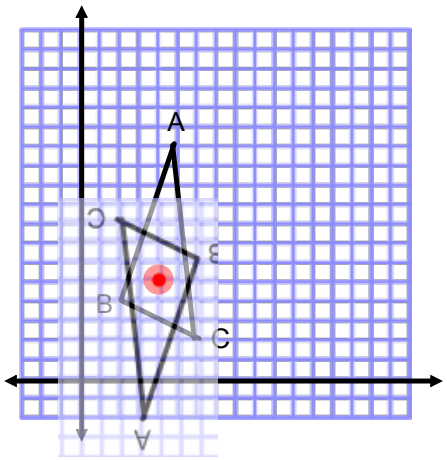

2) Rotation 90º counterclockwise, center R(4, 7)