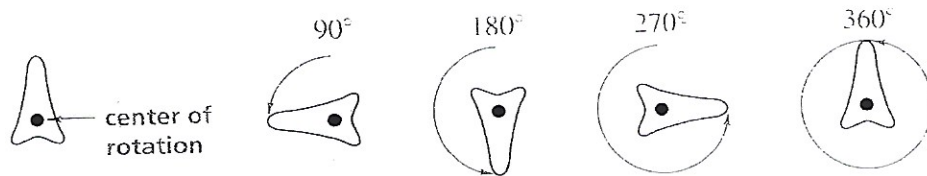


Unit: Transformations

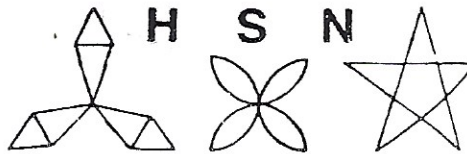
Part III - What Are Rotations?

- A _____ is a transformation that turns a figure about a fixed point called the center of rotation.
- In general, a rotation preserves distance and angle measure. Under a rotation a figure is congruent to its image.
- Unless otherwise stated a rotation is in the counterclockwise direction.

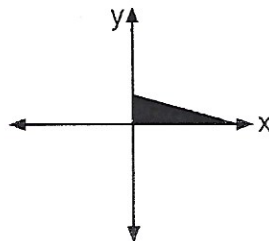


- When a figure can be rotated a certain number of degrees about a center point so that the image fits perfectly on top of the original figure, the figure has _____.

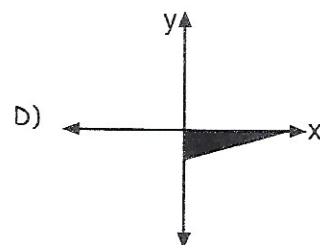
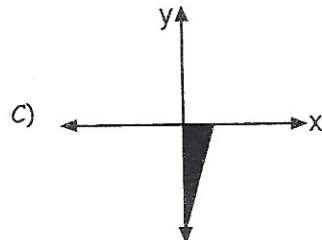
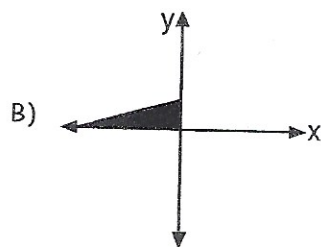
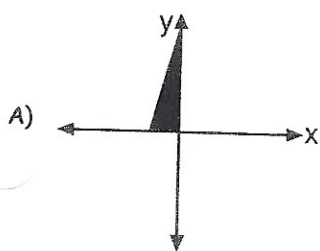
Many letters, as well as designs in the shape of wheels, stars, and polygons have rotational symmetry. Each figure shown at the right has rotational symmetry.



- 1) The accompanying diagram shows a right triangle.



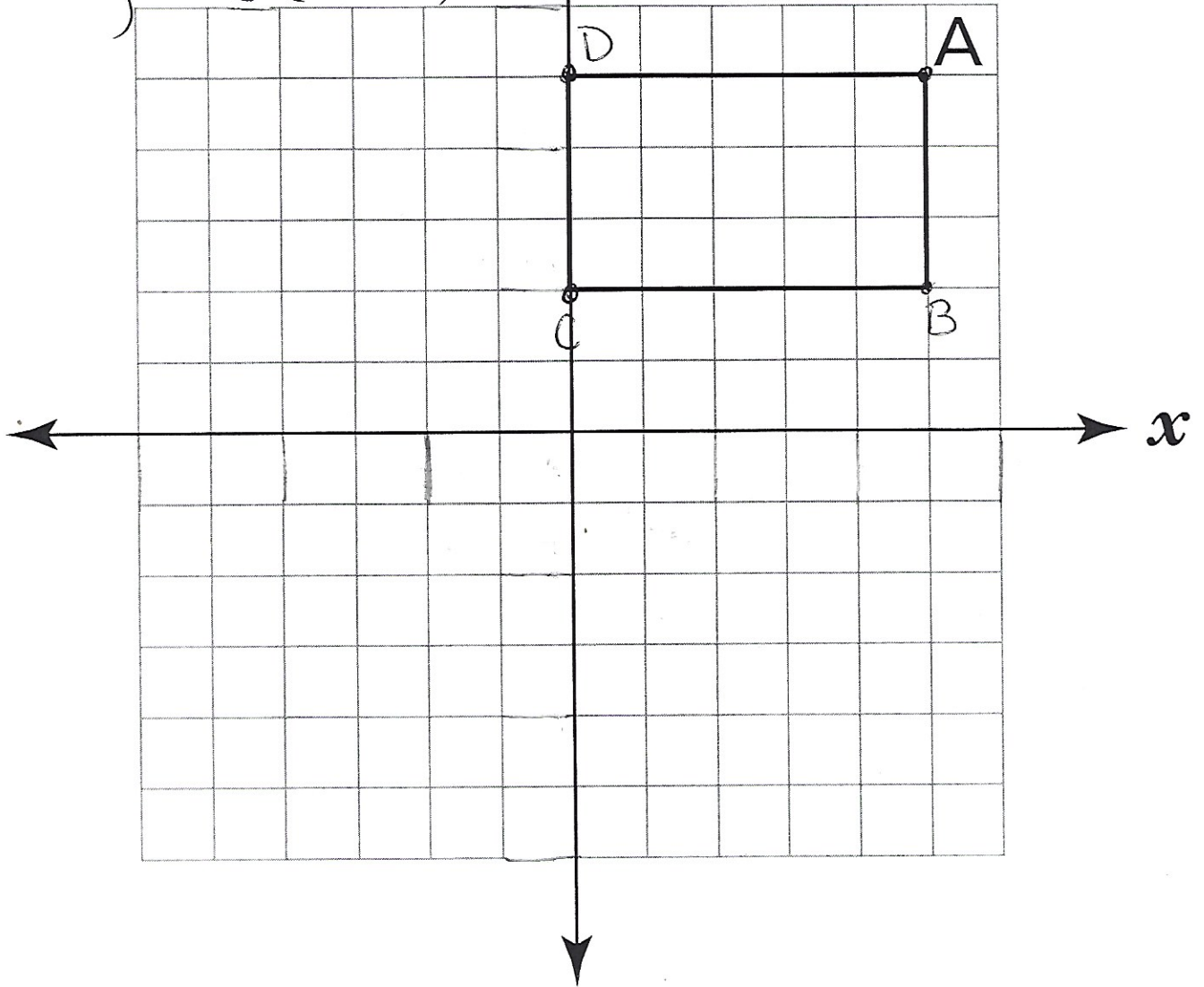
If the triangle is rotated 90° counterclockwise about the origin, what will the image be?



2) Brian drew a rectangle on the grid below. On the same grid, rotate the rectangle

a) 90° counter-clockwise b) 180° c) 90° clockwise

A(	)	a) A'(	)	b) A''(	)	c) A'''()
B(	)	B'(	)	B''(	)	B'''()
C(	)	C'(	)	C''(	)	C'''()
D(	)	D'(	)	D''(	)	D'''()

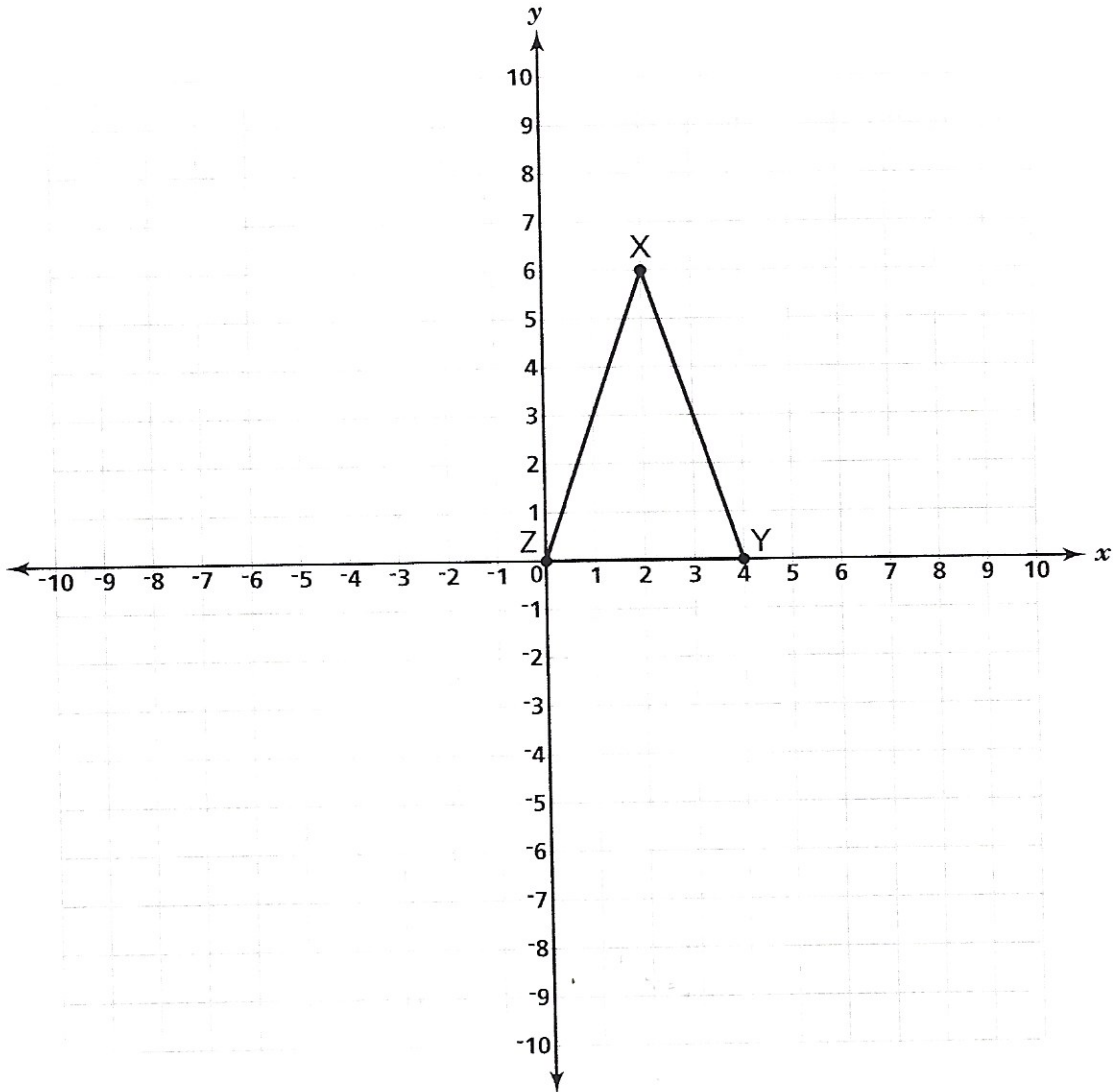


* Rule for: 90° counter-clockwise rotation: _____

* Rule for: 180° ^{clockwise} counter-clockwise rotation: _____

* Rule for: 90° clockwise rotation: _____

3 Triangle XYZ is plotted on the grid below.



Part A

On the grid, draw the image of triangle XYZ after a clockwise rotation of 180° about the origin. Label the new triangle $X'Y'Z'$.

Part B

On the lines below, explain how you determined the location of point Y' .

4

Triangle ABC has the coordinates A(1,1), B(4, 1), and C(4,7).

On the following graph:

(a) Graph and label $\triangle ABC$

(b) Graph and label $\triangle A'B'C'$ the image of $\triangle ABC$ after a rotation of 90° . Rule: _____

A' (____, ____) B' (____, ____) C' (____, ____)

(c) Graph and label $\triangle A''B''C''$ the image of $\triangle ABC$ after a rotation of 180° . Rule: _____

A'' (____, ____) B'' (____, ____) C'' (____, ____)

(d) Graph and label $\triangle A'''B'''C'''$ the image of $\triangle ABC$ after a rotation of 270° . Rule: _____

A''' (____, ____) B''' (____, ____) C''' (____, ____)

