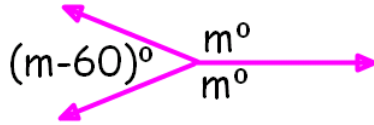


Section 4-4 Rotations

Warm-up:

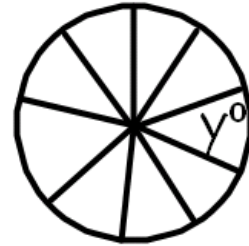
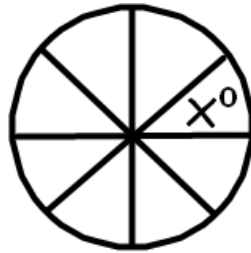
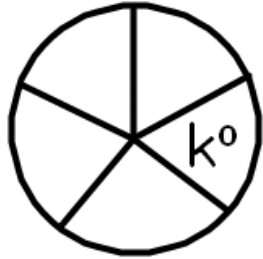
1. Find the measure of all the angles in the figure.



Solution

$$\begin{aligned}
 (m - 60) + m + m &= 360 \\
 3m - 60 &= 360 \\
 +60 \quad +60 & \\
 \underline{3m} &= \underline{420} \\
 3 &= 3 \\
 m &= 140^\circ \\
 m - 60 &= 80^\circ
 \end{aligned}$$

In each figure, the segments divide the circle into equal parts. Find each angle measure.



- 2.
- Solution

$$2. \quad 360/5 = 72$$

- 3.

$$3. \quad 360/8 = 45$$

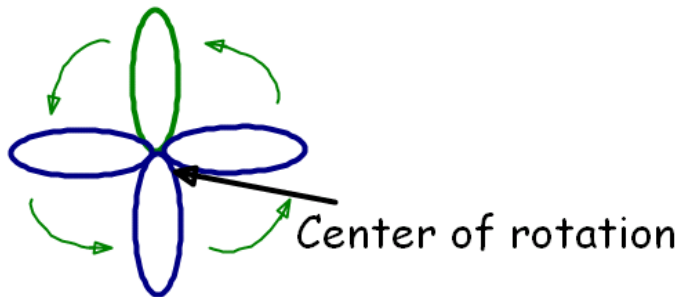
- 4.

$$4. \quad 360/9 = 40$$

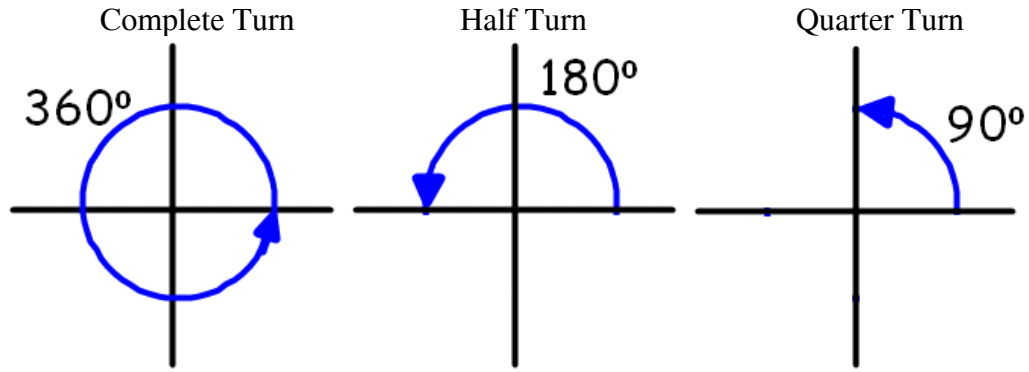
4-4 Rotations

Rotation: A turn around a point called the center of rotation.

Example



Rotate either clockwise or counterclockwise. The "amount of turn" can be stated in degrees.



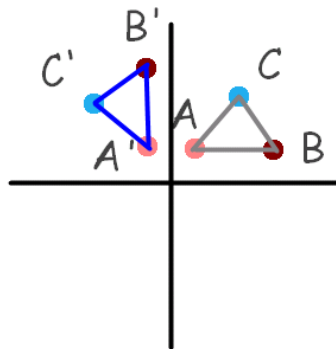
Transformation: A change made to an object or its position.

Two transformations

1. rotation (turn)
2. translation (slide)

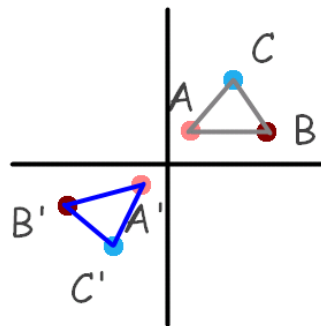
Rotational Symmetry: The symmetry that occurs when an object looks the same after a rotation less than 360° .

Example 1: The graphs show rotations of $\triangle ABC$ around the origin. Describe the direction and amount of rotation.



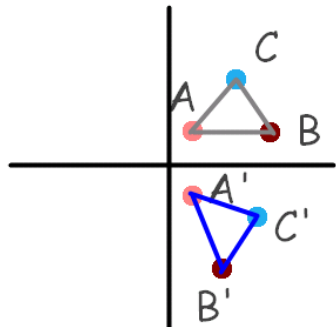
a)

Solution: 90° counterclockwise



b)

180°



c)

Solution: 90° clockwise or 270° counterclockwise

To describe rotation, tell:

- o the amount of turn
- o direction of turn

- o location of center of rotation

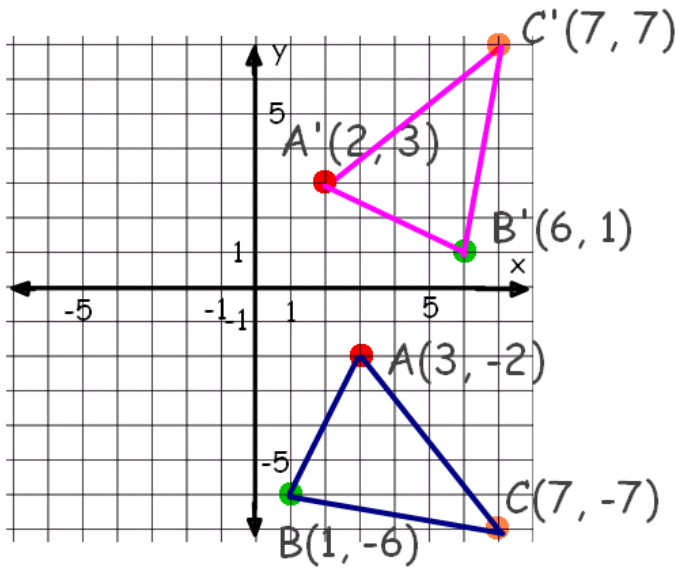
Example 2: Graph both figures then describe the direction and amount of rotation.

$A(3, -2)$ $B(1, -6)$ $C(7, -7)$ $\triangle ABC$

and

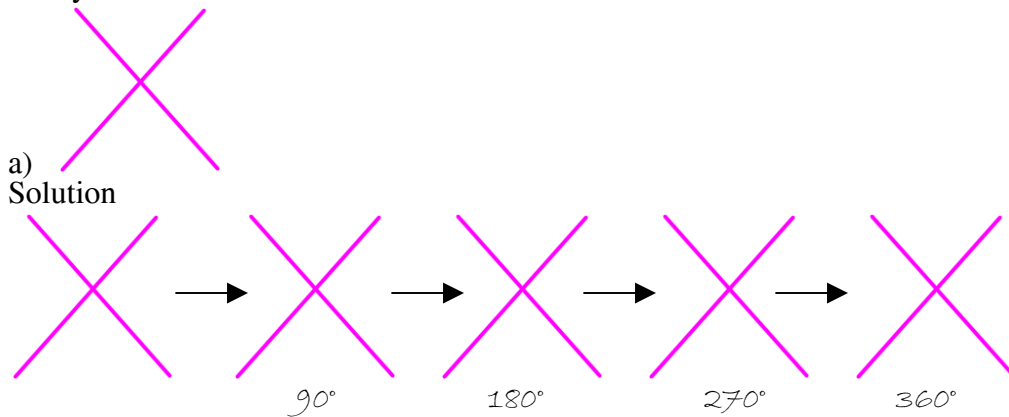
$A'(2, 3)$ $B'(6, 1)$ $C'(7, 7)$ $\triangle A'B'C'$

Solution



90° counterclockwise

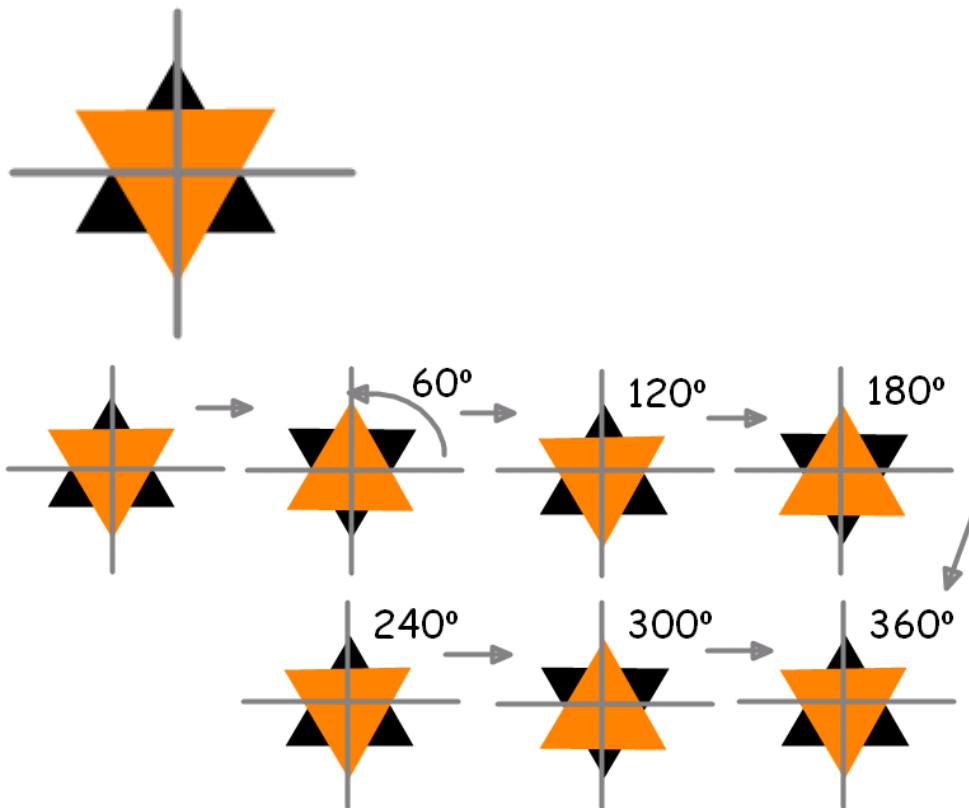
Example 3: Tell whether or not each figure has rotational symmetry. If so, describe the symmetry.



Yes, this has rotational symmetry for 90°, 180°, and 270°



Solution



So, this has rotational symmetry at 120° and 240°

Solution

Homework:

Read pg. 202-206

Pg. 206 #3-5, 6a, 7b, 8ab, 12, 13, 17, 18, 25

Pg. 210 Mid-Unit Review #1-9