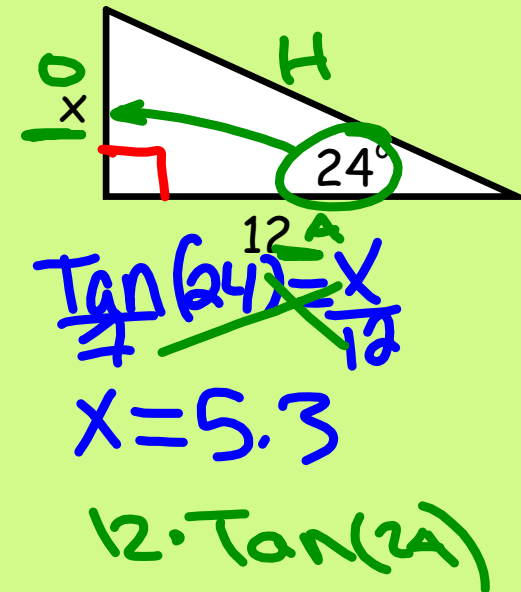
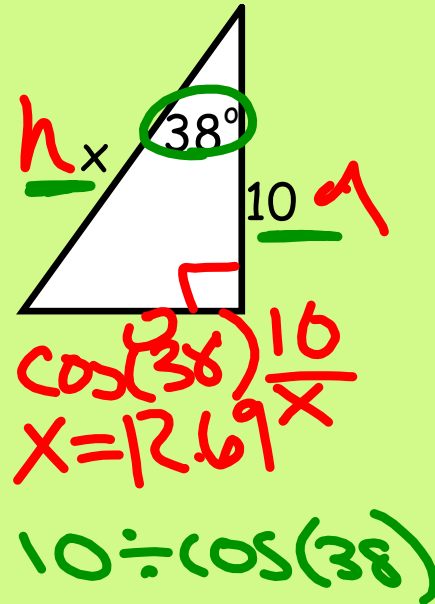
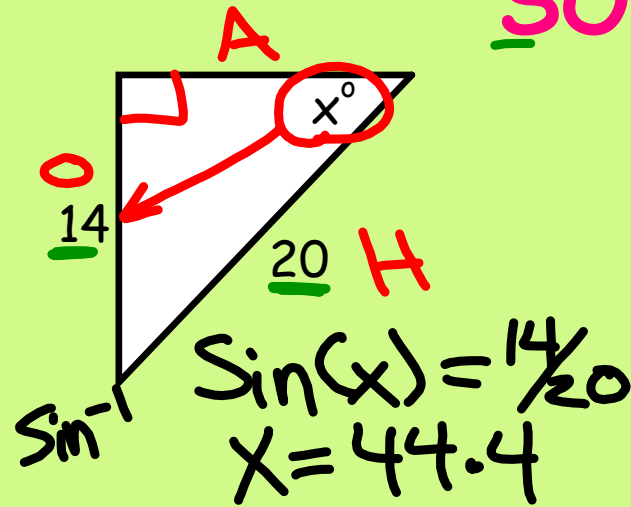


# 2/24/20 - Warm Up Problem

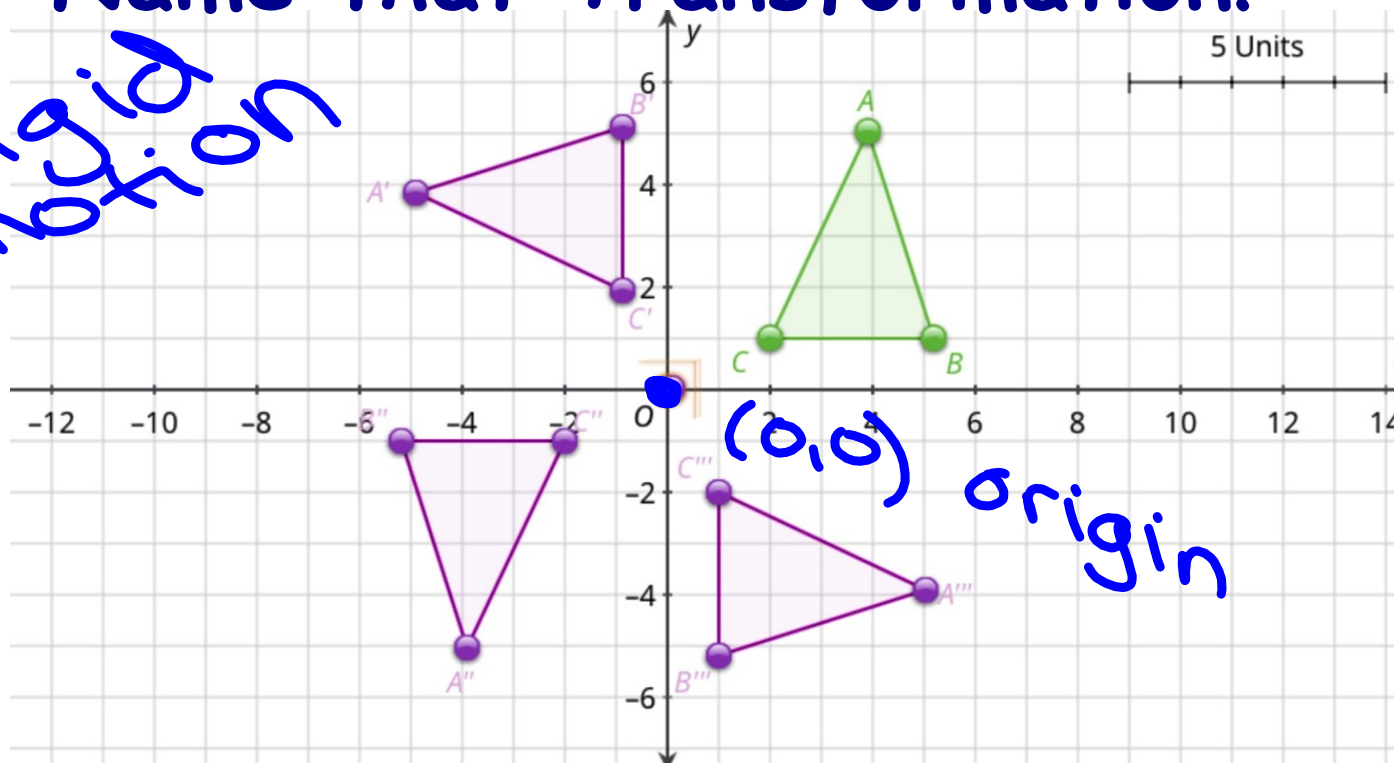
Find the measure of  $x$  in each triangle.

SOH CAH TOA



# Name that Transformation!

rigid  
motion



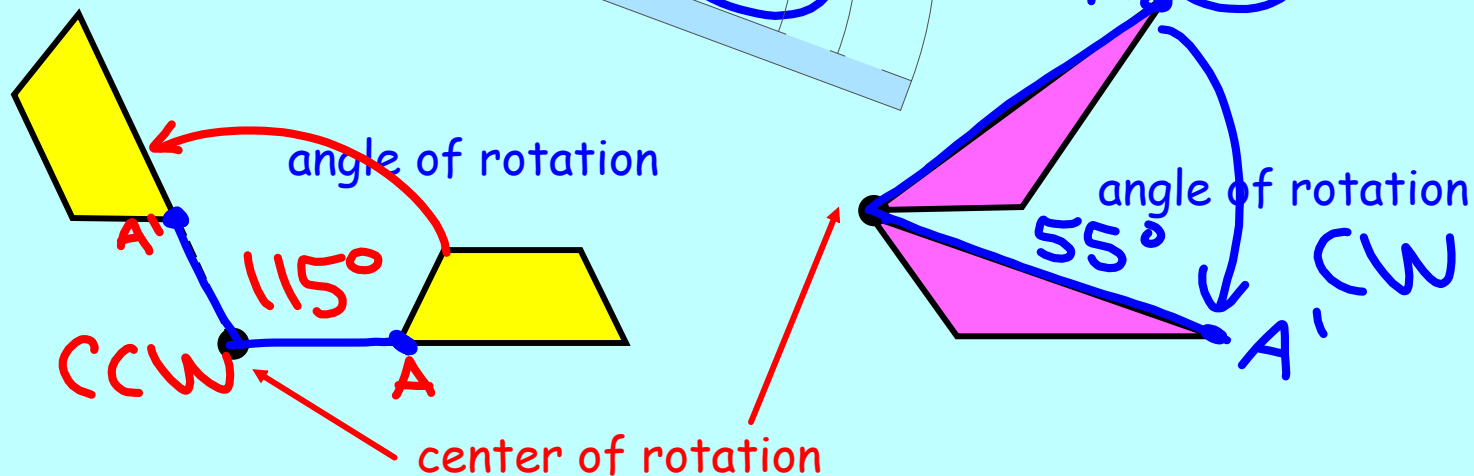
## Section 9.3 - Rotations

goals: measure angles of rotation and draw rotations using graphs

**Rotation:** a rigid motion where the figure **turns** around a point called the center of rotation

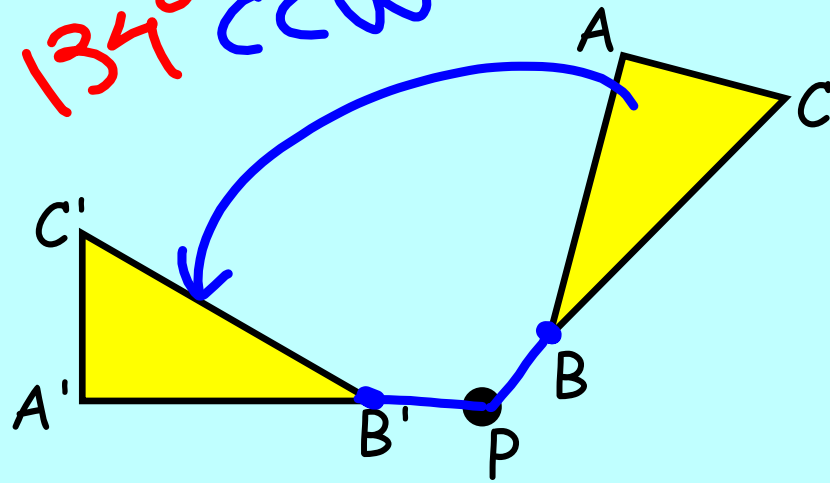
**Center of Rotation** - the point that it is rotating around

**Angle of Rotation** - how many degrees it has been rotated either clockwise or counterclockwise

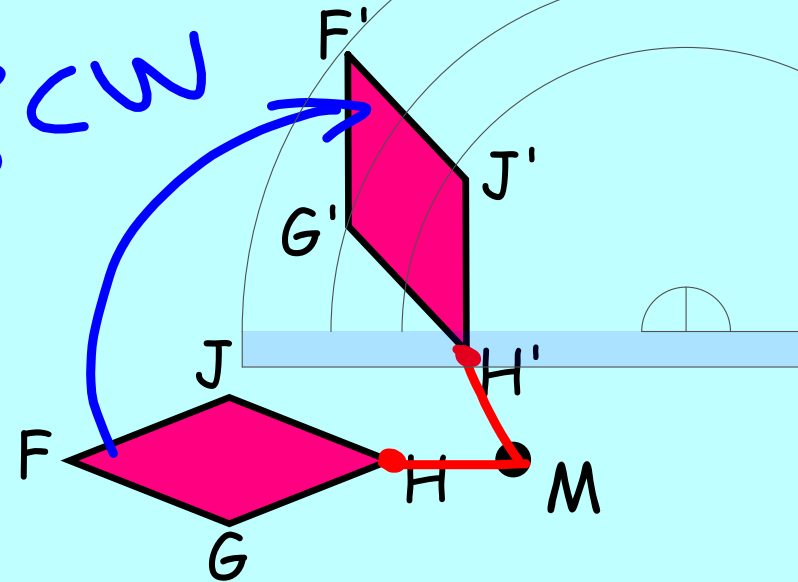


Measure the angle of rotation of each transformation.  
State if it is clockwise or counterclockwise.

$134^\circ$  CCW



$68^\circ$  CW

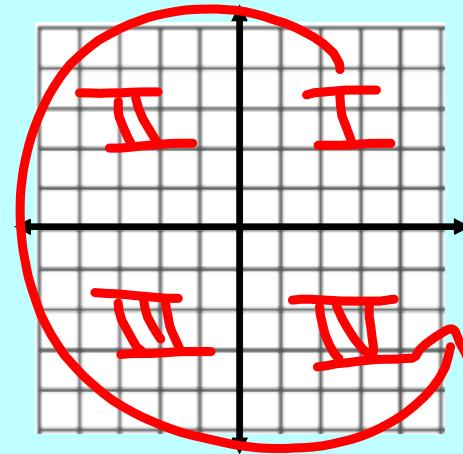


## Function Notation

$r_{(x^\circ, Q)}(A) = A'$  means Point A rotates x degrees  
counterclockwise around point Q

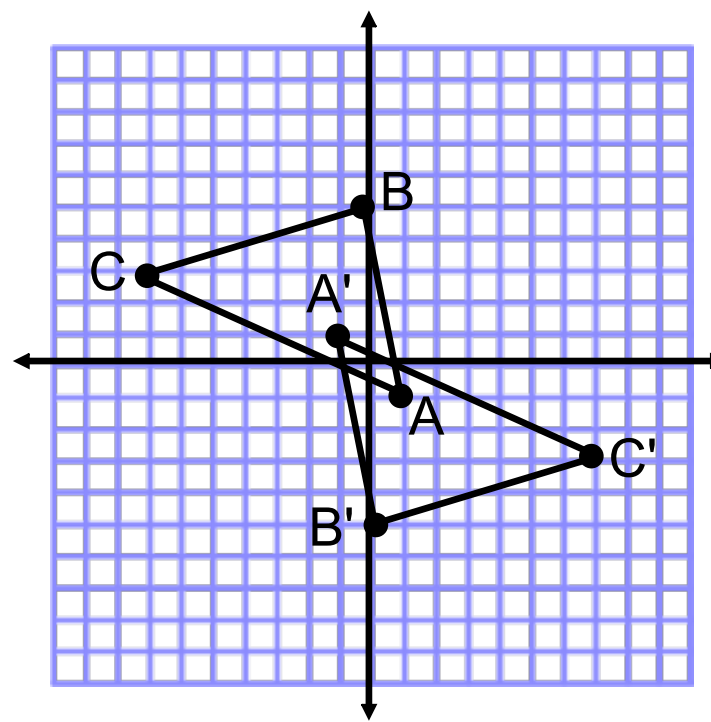
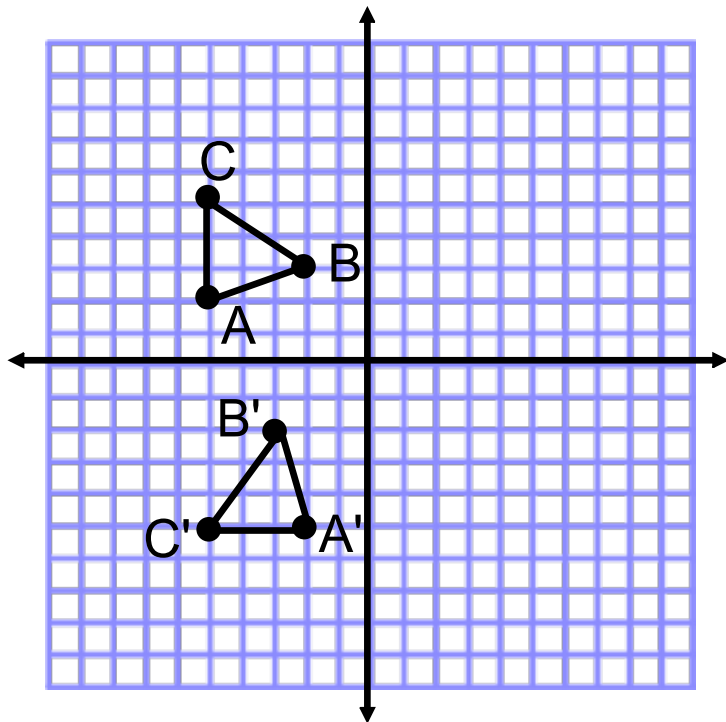
angle → center

- rotations in the coordinate plane are always measured counterclockwise because that is the way the quadrants are numbered



Describe each rotation using function notation.

- rotations in the coordinate plane usually go around the origin



## Rules for Rotations around the Origin

### 90° Rotation

$$r_{(90^\circ, O)}(x, y) = (-y, x)$$

Certain rotations around the origin have helpful rules for how the coordinates change.

### 180° Rotation

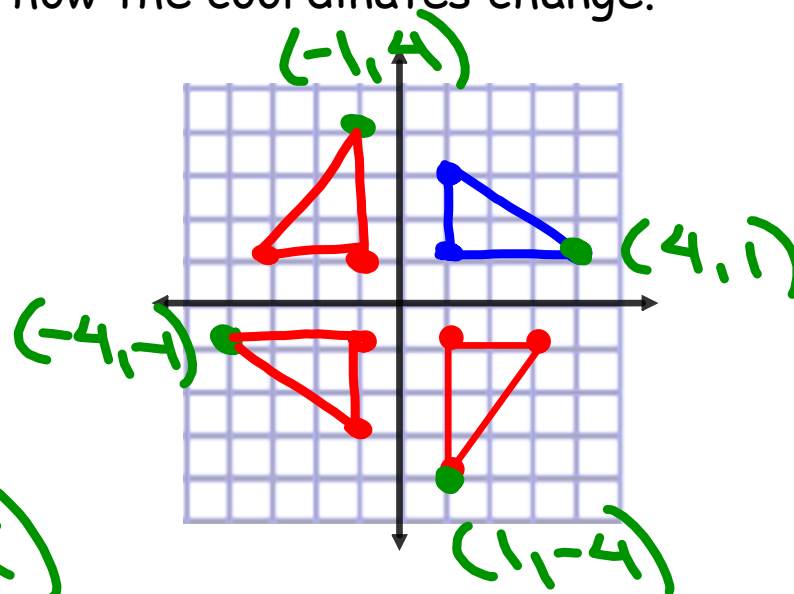
$$r_{(180^\circ, O)}(x, y) = (-x, -y)$$

### 270° Rotation

$$r_{(270^\circ, O)}(x, y) = (y, -x)$$

### 360° rotation

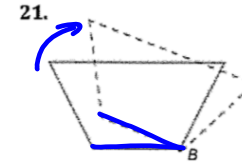
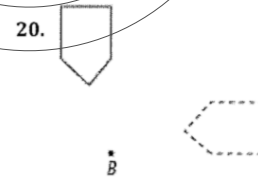
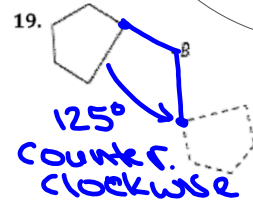
$$r_{(360^\circ, O)}(x, y) = (x, y)$$



# Assignment: Concept 21 Worksheet (19-27)

ROTATIONS

Find the angle of rotation about B that maps the solid-line figure to the dashed-line figure. Also, state if it is a clockwise or counterclockwise rotation.



Use the rules for rotations in the coordinate plane to draw each rotation.

