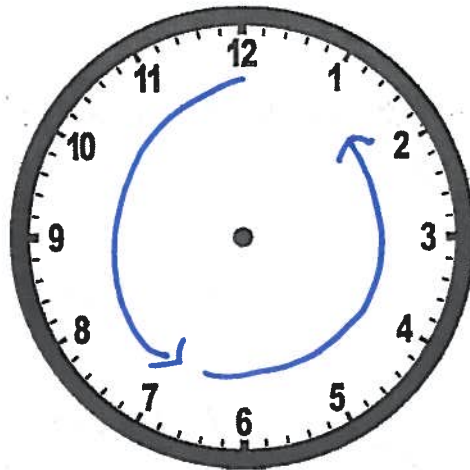
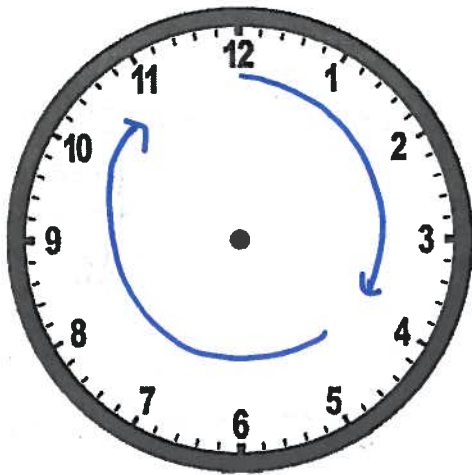
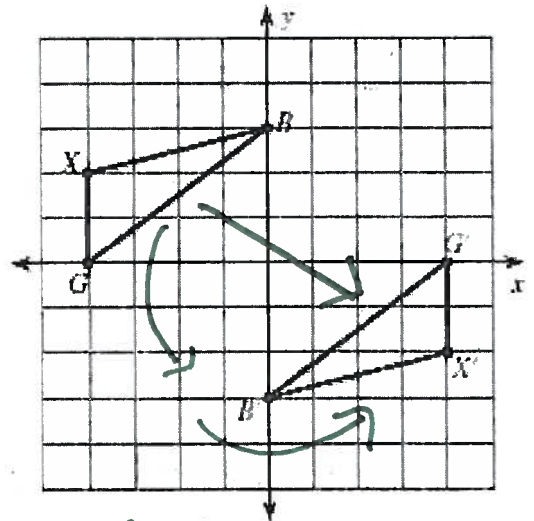
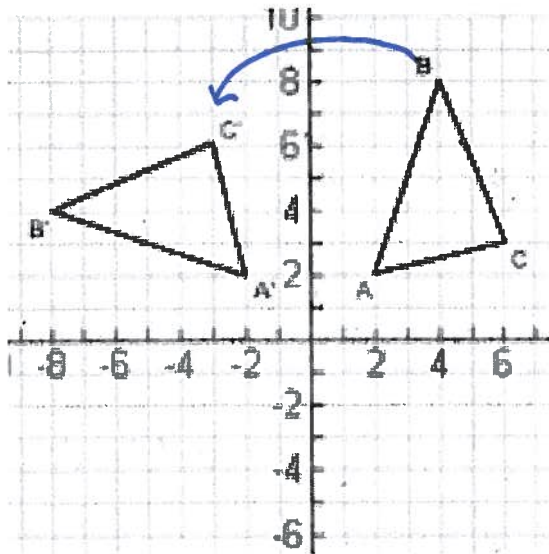


## Rotations

A rotation is a turn around a fixed point. It is like pivoting in basketball. Your body can turn, but you cannot lift up your foot. There are two ways to rotate: clockwise and counter clockwise.



What degrees and direction are these rotations?



What do you notice about each rotation?

$90^\circ$  counter clockwise

2 rotations so  $180^\circ$   
Also-shape is across from its self!

# How to rotate a shape?

**STEP ONE- WRITE DOWN THE ORDERED PAIRS**

**STEP TWO – HIGHLIGHT THE QUADRANT THE SHAPE NEEDS TO BE IN. 90 DEGREES IS ONE ROTATION, 180 IS TWO ROTATIONS. MAKE SURE YOU HAVE THE DIRECTION CORRECT.**

**STEP THREE – TURN THE PAPER UNTIL THE HIGHLIGHTED QUADRANT IS IN THE TOP RIGHT HAND SIDE - This is when your New shape will be!** Turn your paper in the opposite direction!

**STEP FOUR – REPLOT THE ORDERED PAIRS AND CONNECT THE POINTS**

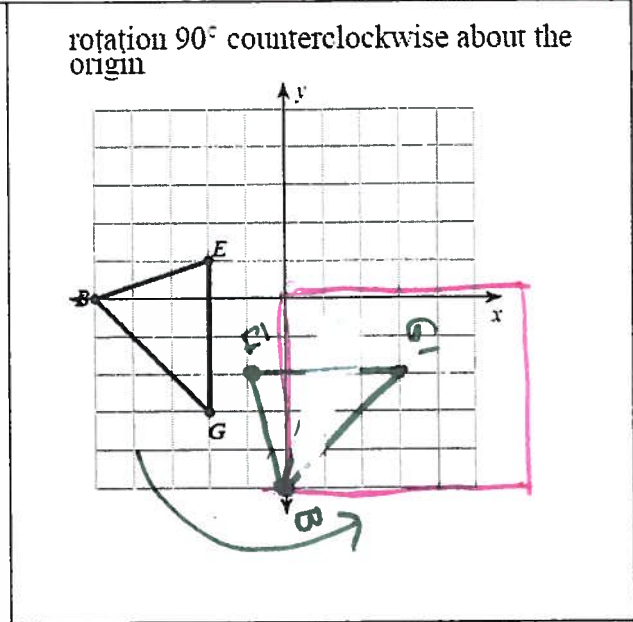
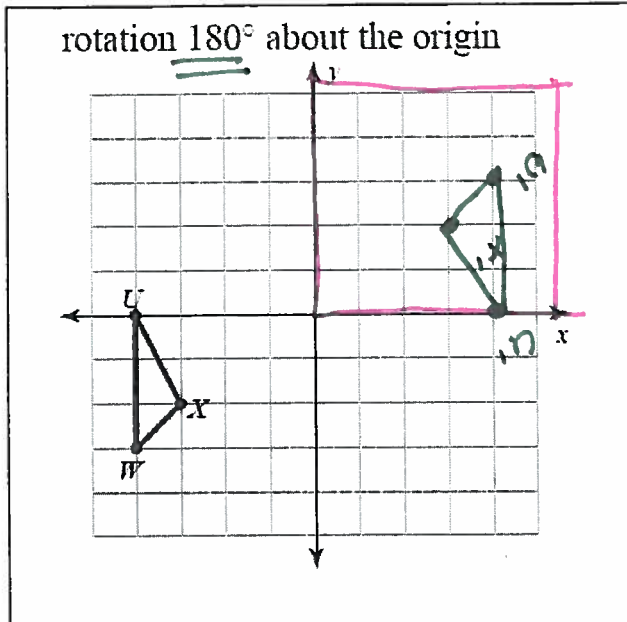
**STEP FIVE – TURN YOUR PAPER TO THE ORIGINAL DIRECTION**

**STEP SIX – REWRITE YOUR ORDERED PAIRS AS PRIMES.**

<p>Rotate the triangle 90 degrees counterclockwise</p> <p><i>1 turn clockwise</i></p>	<p>Rotate the triangle 180 degrees</p> <p><i>2 turns</i></p>
<p>Original points:  <math>A(1, 1)</math> <math>B(5, 1)</math>  <math>C(1, 5)</math></p> <p>New prime points  <math>A'(-1, 1)</math> <math>B'(-1, 5)</math>  <math>C'(-5, 1)</math></p>	<p>Original points:  <math>A(1, 1)</math> <math>C(1, 5)</math>  <math>B(5, 1)</math></p> <p>New Prime points  <math>A'(-1, -1)</math> <math>B'(-5, -1)</math>  <math>C'(-1, -5)</math></p>

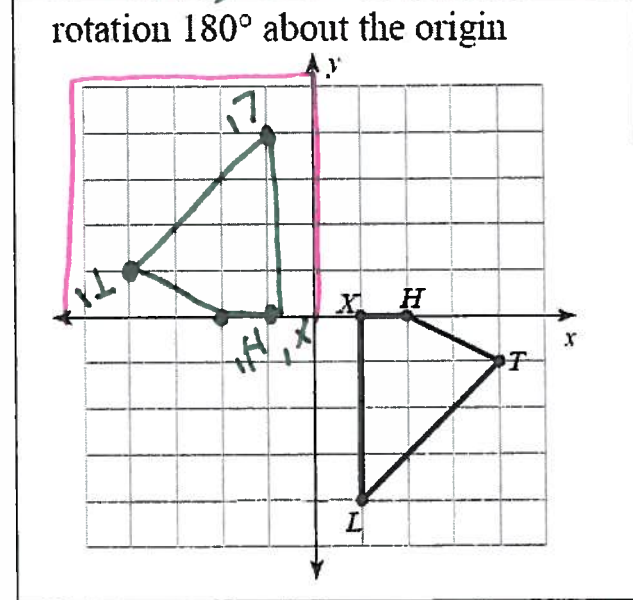
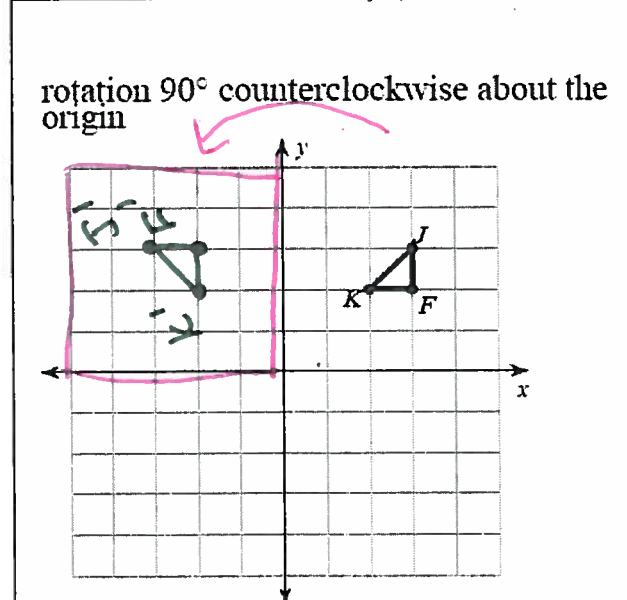
Turn Paper twice Practice

Turn 1 time clockwise



Original points  $W(-4, -3)$   $X(-3, 2)$   
 $U(-4, 0)$   
 Prime:  
 $U'(4, 0)$   $W'(4, 3)$   $X'(3, 2)$

Original points:  
 $B(-5, 0)$   $E(-2, 1)$   $G(-2, -3)$   
 Prime:  
 $B'(0, 5)$   $E'(-1, 2)$   $G'(3, 2)$



Original points  $F(3, 2)$   $J(3, 3)$   $K(2, 2)$   
 Prime:  
 $F'(-2, 3)$   $J'(-3, 3)$   $K'(-2, 2)$

Original points  $H(2, 0)$   $L(1, -4)$   $T(4, -1)$   $X(1, 0)$   
 Prime:  
 $H'(-2, 0)$   $L'(-1, 4)$   $T'(-4, 1)$

turn 2 time

turn 1 time  
 clockwise

$X'(-1, 0)$

