

Rotations

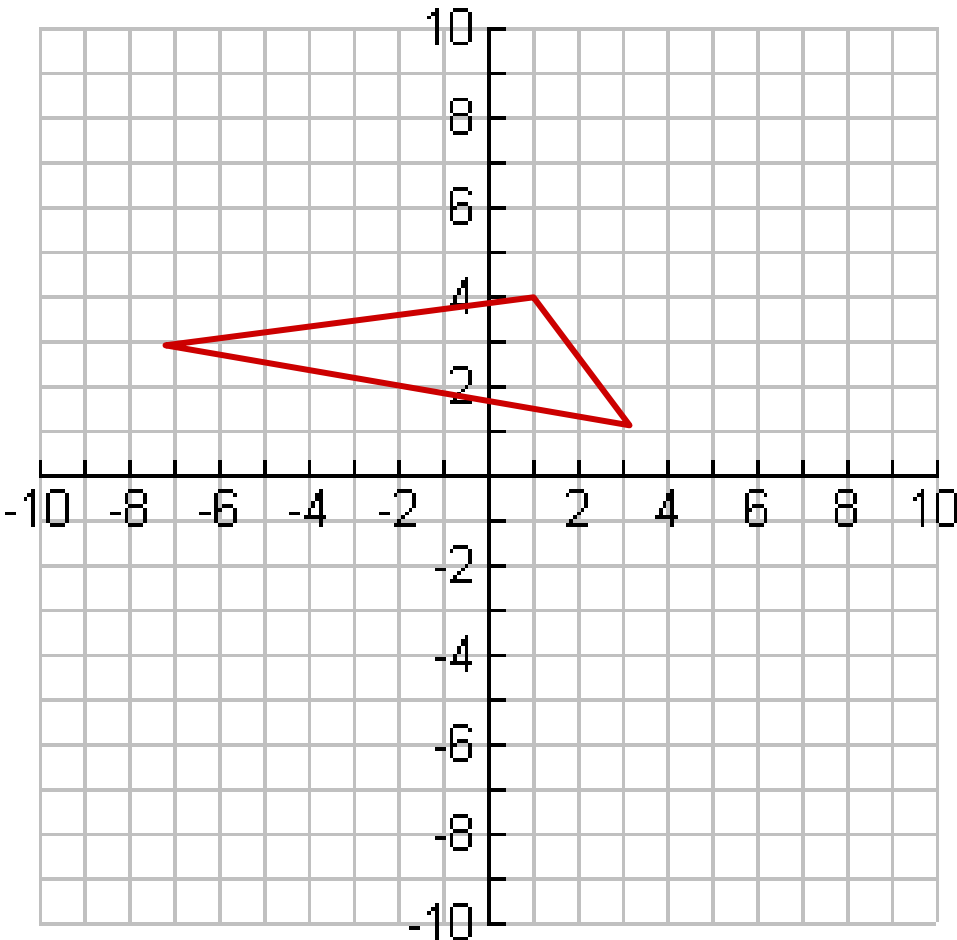
Rotate 90° Clockwise about the Origin

(Same as 270° Counterclockwise)

$$(x, y) \rightarrow (y, -x)$$

Change the sign of x and switch the order

Rotate 90° clockwise about the origin



$$A(-7, 3) \rightarrow A'(3, 7)$$

$$B(1, 4) \rightarrow B'(4, -1)$$

$$C(3, 1) \rightarrow C'(1, -3)$$

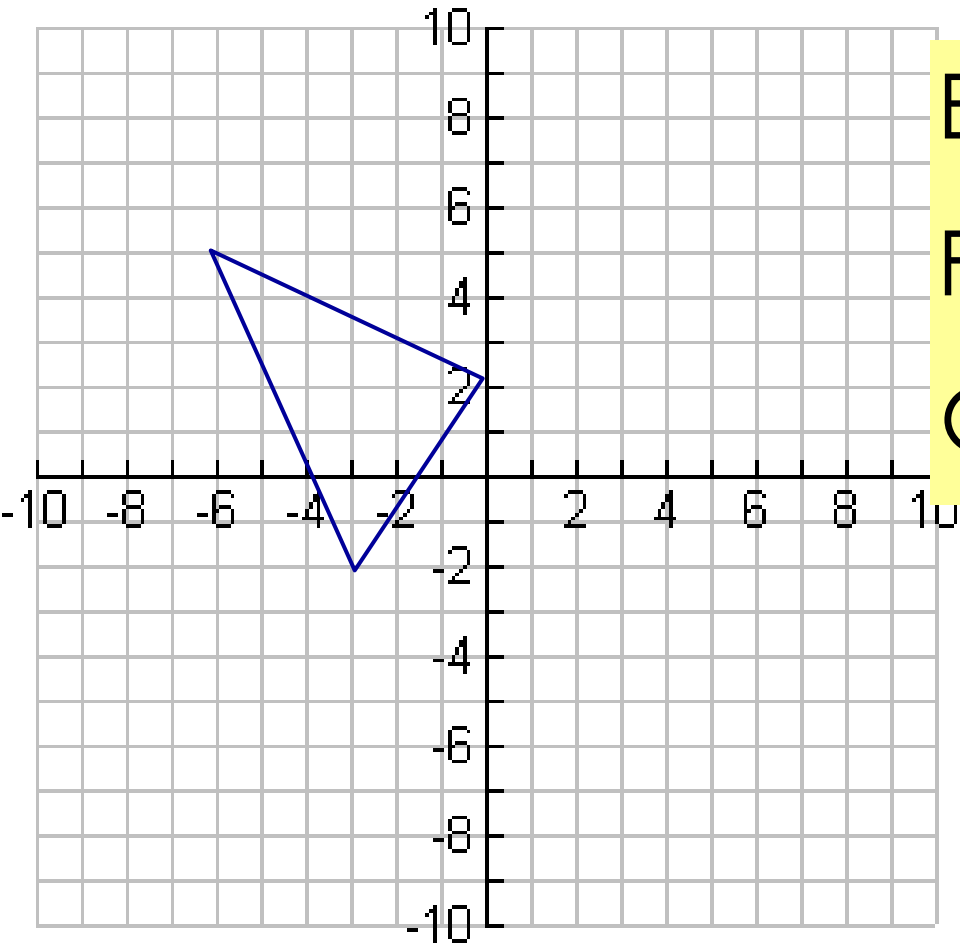
Rotate 90° Counterclockwise about the Origin

(Same as 270° Clockwise)

$$(x, y) \rightarrow (-y, x)$$

Change the sign of y and switch the order

Rotate 90° counterclockwise about the origin



$$E(-3, -2) \rightarrow E'(2, -3)$$

$$F(-6, 5) \rightarrow F'(-5, -6)$$

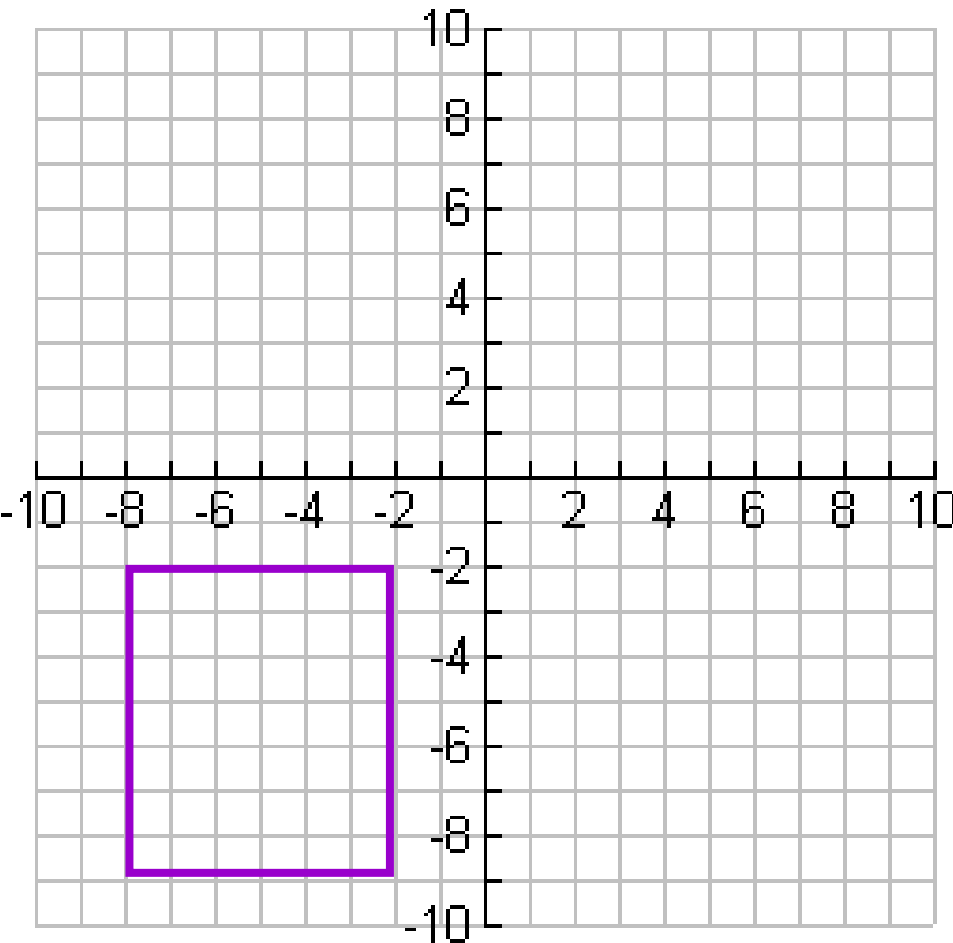
$$G(0, 2) \rightarrow G'(-2, 0)$$

Rotate 180° about the Origin

$$(x, y) \rightarrow (-x, -y)$$

ONLY Change the signs

Rotate 180° about the origin



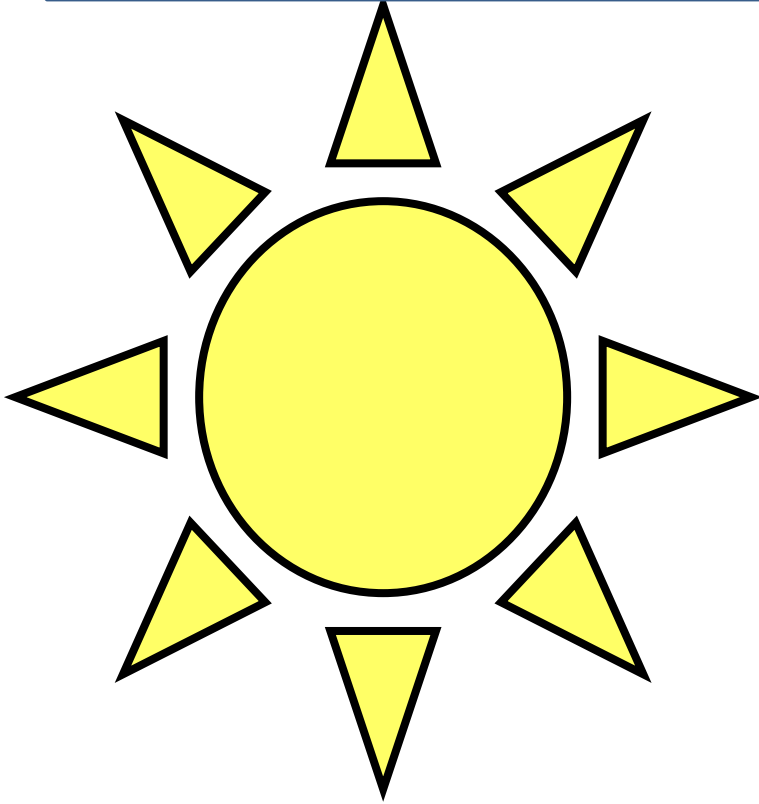
$$Q(-8, -2) \rightarrow Q'(8, 2)$$

$$R(-8, -9) \rightarrow R'(8, 9)$$

$$S(-2, -2) \rightarrow S'(2, 2)$$

$$T(-2, -9) \rightarrow T'(2, 9)$$

Rotational Symmetry



Any figure that can be *turned or rotated* less than 360° about a fixed point so that the figure looks exactly as it does in its original position.

Symmetry

Ambigrams – Look the same right side up and upside down

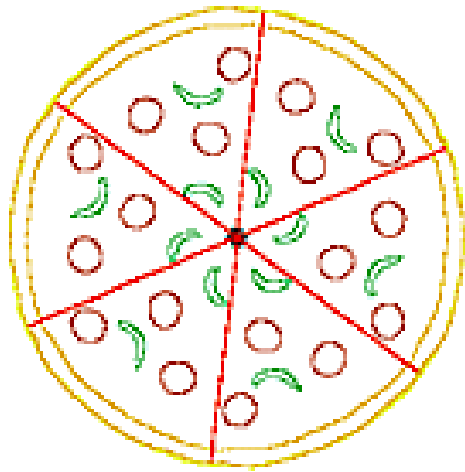
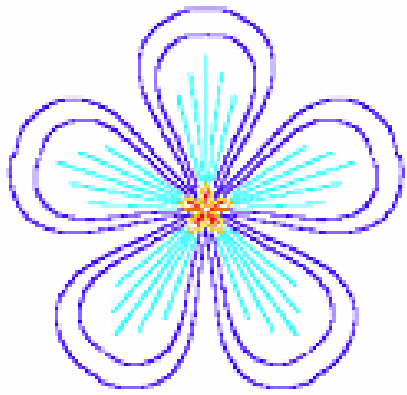
vegeat

Thank you!

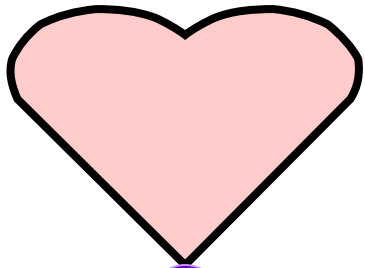
earth
air
fire
water

Rotational Symmetry in the parking lot

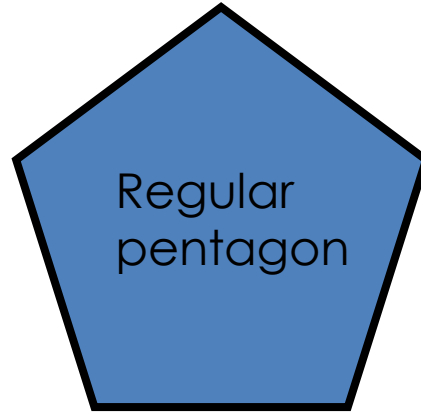




Which figures have rotational symmetry? For those that do, describe the rotation that map the figure onto itself.

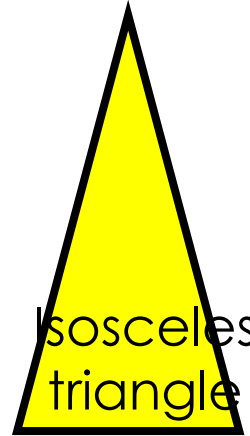


NO



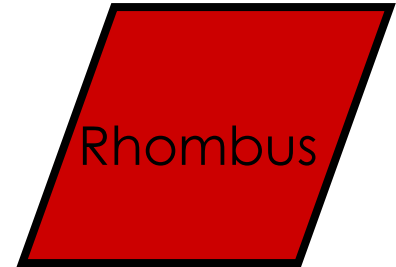
Regular pentagon

Yes every 72° about its center.



Isosceles triangle

NO



Rhombus

Yes every 180° about its center.