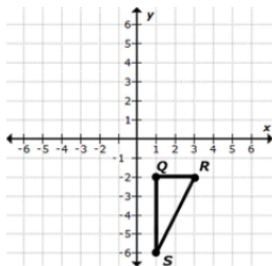


Bell Ringers

Section 9.2 - Reflections

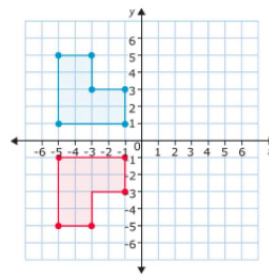
1. Graph $R_{y=-1}(QRS)$.

$Q'(\quad , \quad), R'(\quad , \quad), S'(\quad , \quad),$

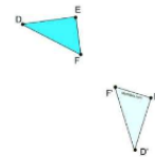


3. What are the coordinates of point $P(3, -5)$ reflected across the y -axis? $P'(\quad , \quad)$

2. Write a rule to describe the transformation below.



4. Draw a line of reflection you can use to map one figure onto the other



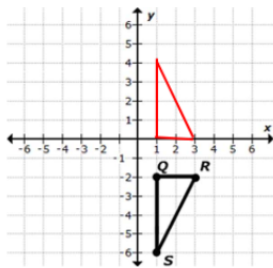
5. Suppose the population of a species of moth grows 15% every year. There are 225 moths initially. Write a function that shows the number of moths after x years. How many moths will there be after 4 years?

Solutions

Section 9.2 - Reflections

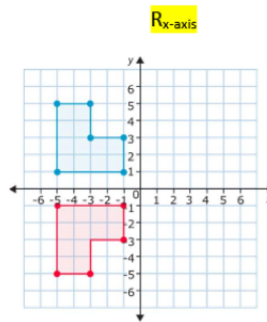
1. Graph $R_{y=-1}$ (QRS).

$Q'(1, 0)$, $R'(3, 0)$, $S'(1, 4)$

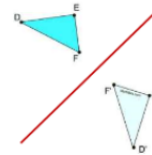


3. What are the coordinates of point P(3, -5) reflected across the y-axis? $P'(-3, -5)$

2. Write a rule to describe the transformation below.



4. Draw a line of reflection you can use to map one figure onto the other

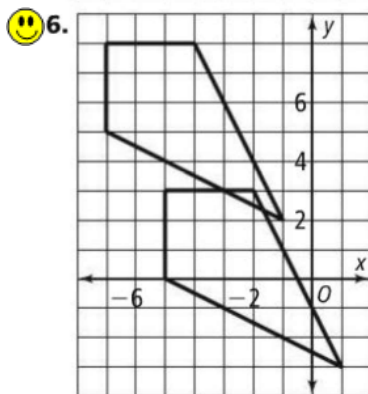
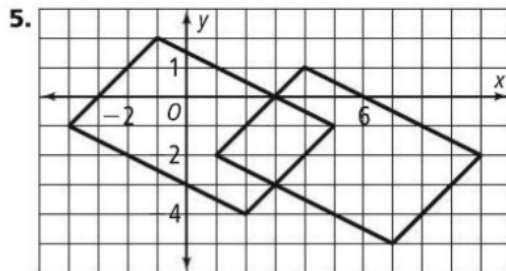


5. Suppose the population of a species of moth grows 15% every year. There are 225 moths initially. Write a function that shows the number of moths after x years. How many moths will there be after 4 years?

$f(x) = 225(1+.15)^x$ or $f(x) = 225(1.15)^x$ $f(4) \approx 394$ moths

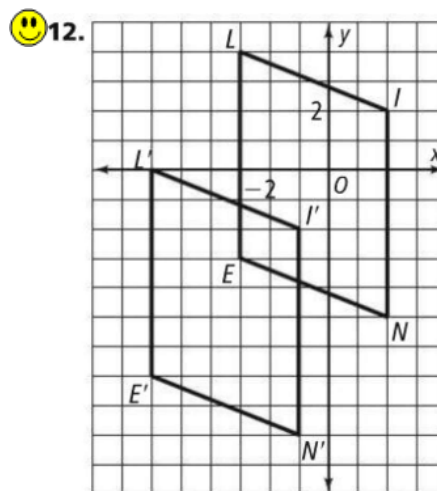
correct 9.1 #s 1-2, 5-13, 15, 17-18, 27-28

- 1. Yes; the distances between the vertices and the angle measures of the image are the same as in the preimage.
- 2. No; distances between corresponding pairs of points are not equal.



- 7. $T_{\langle 1, -1 \rangle}(x, y)$
- 8. $T_{\langle -4, -3 \rangle}(x, y)$
- 9. 1 block west and 7 blocks north
- 10. 24 mi east and 81 mi south

11. $P'; \overline{T'J'}$



13. $T_{\langle -12, 4 \rangle}(H)$

15. The transformation that maps $\triangle ABC$ to $\triangle PQR$ maps A to P and C to R , so it is a reflection, not a translation. The transformation that maps $\triangle ABC$ onto $\triangle RQP$ is a translation.

17. $T_{\langle -3, 1 \rangle}(x, y)$

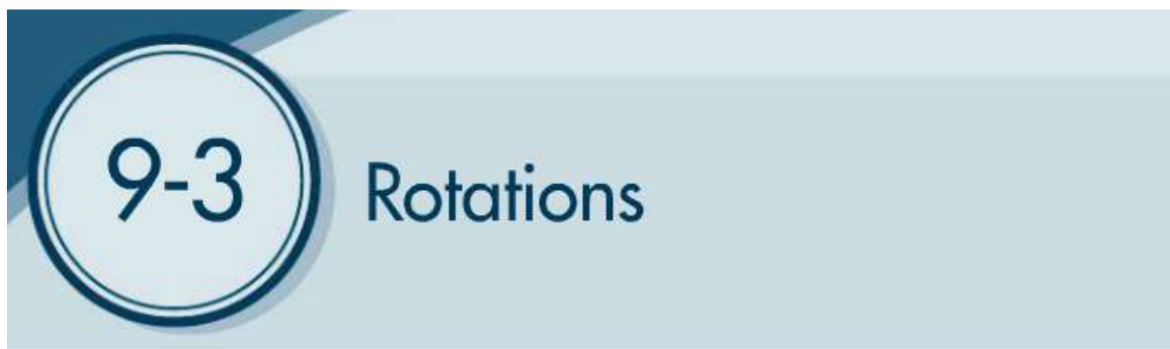
18. $U'(1, 16), G'(2, 12)$

27. $T_{\langle -2, 14 \rangle}(x, y)$

28. $T_{\langle 13, -2.5 \rangle}(x, y)$

due tomorrow:
hw 9.2 #s 1-12, 15-18, 21-23

pg 493

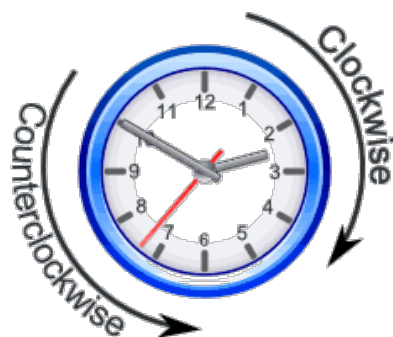


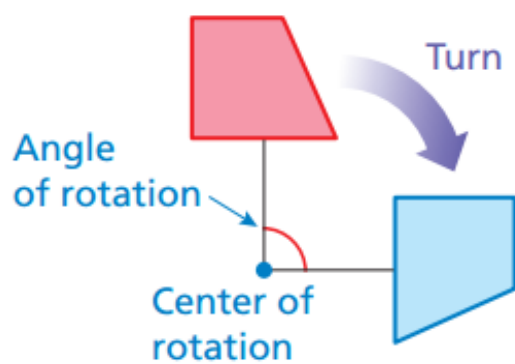
9-3 Rotations

G.CO.4 Develop definitions of rotations . . . in terms of angles, circles, perpendicular lines, . . . and line segments.
Also **G.CO.2**, **G.CO.5**

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Clockwise vs Counter clockwise





 Geogebra

Center of Rotation...

take note

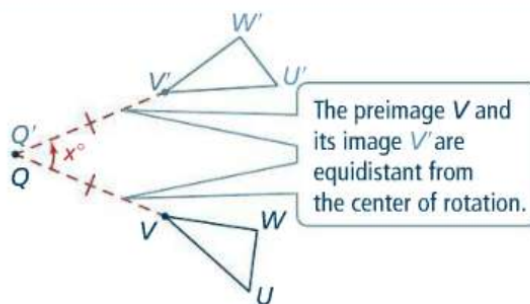
Key Concept Rotation About a Point

A **rotation** of x° about a point Q , called the **center of rotation**, is a transformation with these two properties:

- The image of Q is itself (that is, $Q' = Q$).
- For any other point V , $QV' = QV$ and $m\angle VQV' = x$.

The number of degrees a figure rotates is the **angle of rotation**.

A rotation about a point is a rigid motion. You write the x° rotation of $\triangle UVW$ about point Q as $r_{(x^\circ, Q)}(\triangle UVW) = \triangle U'V'W'$.



Unless stated otherwise, rotations in this book are counterclockwise.

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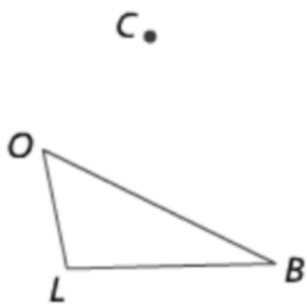
Problem 1

Drawing a Rotation Image

not in book

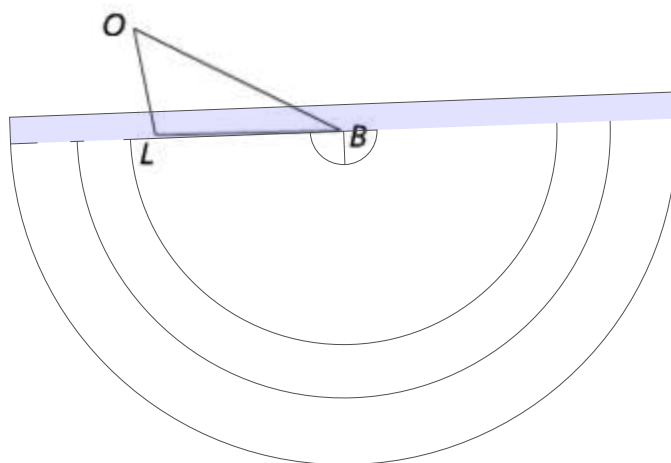


What is the image of $r(100^\circ, C)$ ($\triangle LOB$)?



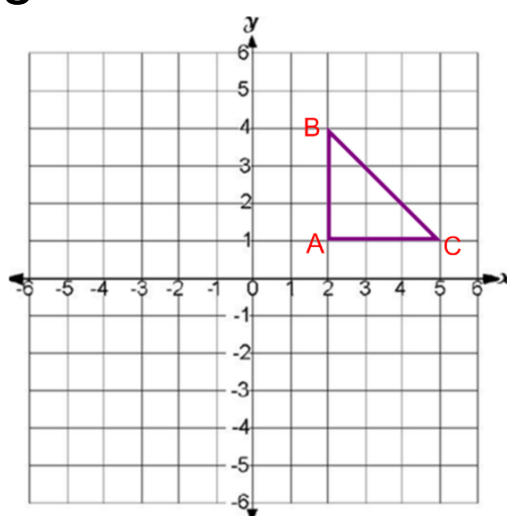
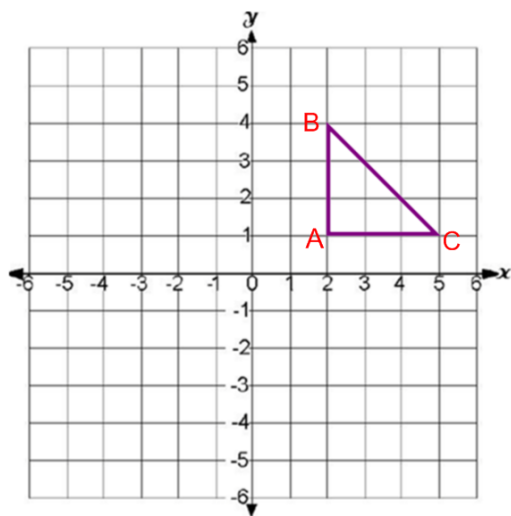
got it pg 494

Got It? Copy $\triangle LOB$ from Problem 1. What is the image of $\triangle LOB$ for a 50° rotation about B ?

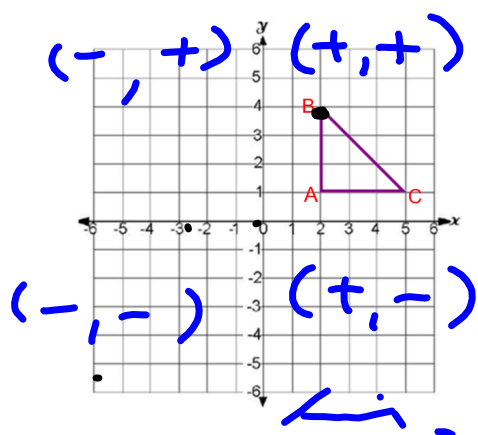


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Rotations are rigid motion!!!



$B(2, 4)$



90 $B'(-4, 2)$ $r(90, 0)$

180 $B'(-2, -4)$

270 $B'(4, -2)$

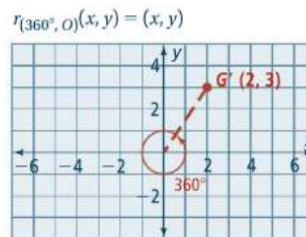
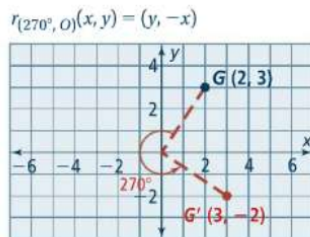
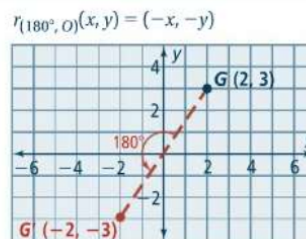
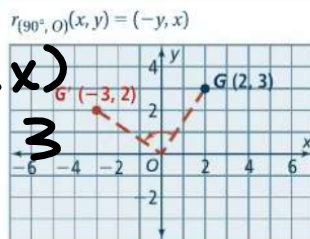
360 $B'(2, 4)$

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When a figure is rotated 90° , 180° , 270° , or 360° about the origin O in a coordinate plane, you can use the following rules.

take note **Key Concept** Rotation in the Coordinate Plane

$(x, y) \rightarrow (-y, x)$
 3 2 -2 3



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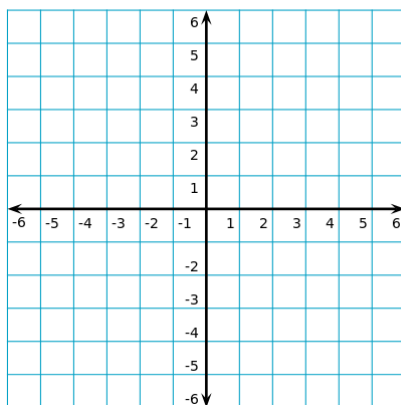
**Problem 2****Drawing Rotations in a Coordinate Plane**

not in book



$PQRS$ has vertices $P(1, 1)$, $Q(3, 3)$, $R(4, 1)$, and $S(3,0)$.

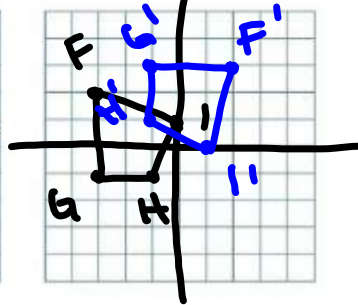
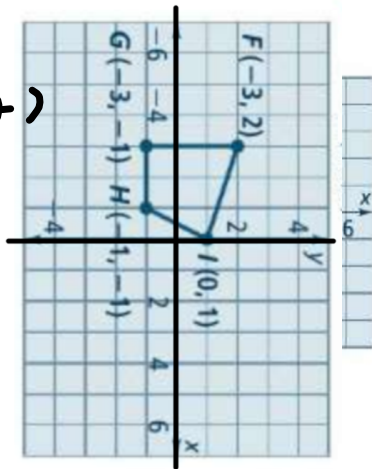
What is the graph of $r_{(90^\circ, O)}(PQRS)$?



got it pg 495

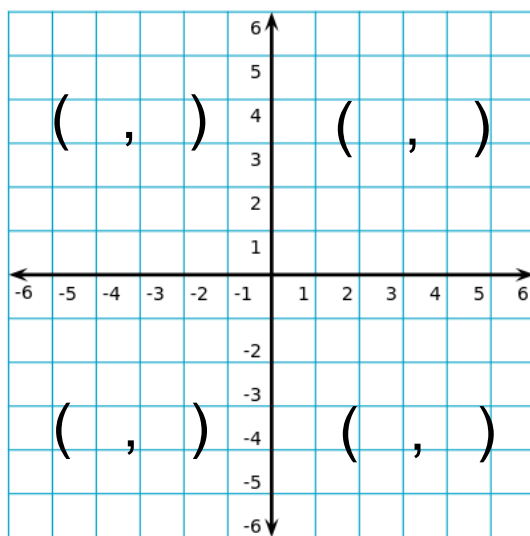
Got It?

$(-, +)$



$r(270, 0)$

$\text{start } (x, y)$
 $\underline{90 (y, x)}$
 $180 (x, y)$
 $\underline{270 (y, x)}$



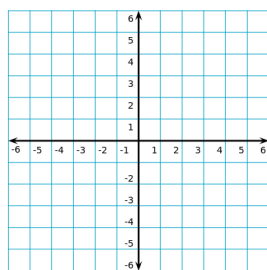
$(4, 1)$

Counter CW

90 (,)

180 (,)

270 (,)



CW

90 (,)

180 (,)

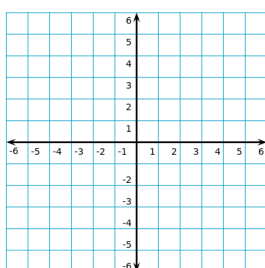
270 (,)

$(3, -5)$

90 ccw (,)

180 ccw (,)

270 ccw (,)



90 cw (,)

180cw (,)

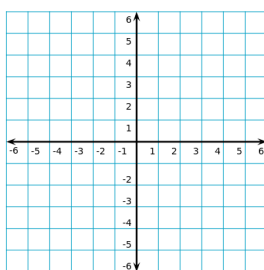
270 cw (,)

$(0, -3)$

90 ccw (,)

180 ccw (,)

270 ccw (,)



90 cw (,)

180cw (,)

270 cw (,)

hw 9.3 #s 1-4, 7-9, 11-14, 20, 27-32