

6.1, 9.1-9.5 Study Guide
Geometry



Name: Key

Target 6.1.a: Classify polygons based on their sides and angles.

Self-Assess: 1 (Uh oh) 2 3 (I am okay) 4 5 (I got this!!!)

Target 6.1.b: Determine if the polygon is regular, irregular, convex, or concave.

Self-Assess: 1 (Uh oh) 2 3 (I am okay) 4 5 (I got this!!!)

1) Name the polygon by the # of sides. Tell whether each figure is regular or irregular, concave or convex

a) b) c)

Target 6.1.c: Find the sum of the interior angles of a polygon.

Self-Assess: 1 (Uh oh) 2 3 (I am okay) 4 5 (I got this!!!)

3) Find the sum of the interior angles of a pentadecagon.

$$\begin{aligned} (n-2) \cdot 180 \\ (15-2) \cdot 180 \\ 13 \cdot 180 \\ \underline{2,340^\circ} \end{aligned}$$

4) Find the measure of each interior angle of a regular dodecagon.

$$\begin{aligned} (12-2) \cdot 180 \\ 10 \cdot 180 \\ \underline{1800} \\ 12 = \underline{150^\circ} \end{aligned}$$

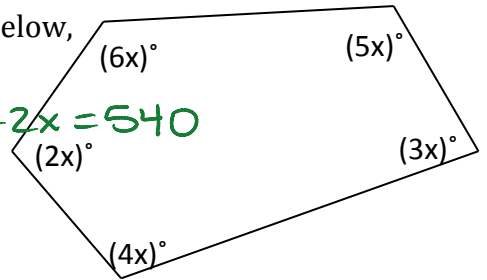
or $\frac{360}{12} = 30^\circ$
each ext \angle .
so $180 - 30 = \underline{150^\circ}$
each int \angle .

5) If an interior angle of a regular polygon has a measure of 144° , what is the name of the polygon?

$$\begin{aligned} \text{ext } \angle &= 180 - 144 = 36 \\ \frac{360}{n} &= 36 \\ n &= 10, \underline{\text{decagon}} \end{aligned}$$

6) Using the pentagon below, find the value of x.

$$\begin{aligned} 6x + 5x + 3x + 4x + 2x &= 540 \\ 20x &= 540 \\ \underline{x=27} \end{aligned}$$



Target 6.1.d: Calculate the sum of the exterior angles of a polygon.

Self-Assess: 1 (Uh oh) 2 3 (I am okay) 4 5 (I got this!!!)

7) Find the sum of the exterior angles of a heptagon.

$$\underline{360^\circ}$$

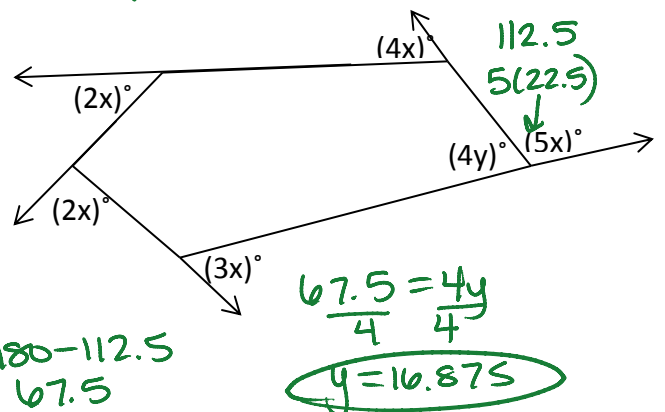
8) Find the measure of each exterior angle of a regular nonagon.

$$\frac{360}{9} = \underline{40^\circ}$$

9) Given the pentagon to the right, find the value of x and y.

$$\begin{aligned} 2x + 4x + 5x + 3x + 2x &= 360 \\ 16x &= 360 \\ \underline{x=22.5} \end{aligned}$$

$$\begin{aligned} \text{ext } \angle &= 112.5 \quad \text{int } \angle = 180 - 112.5 \\ &= 67.5 \end{aligned}$$



Target 9.1: Reflect a polygon across a line in the coordinate plane

Target 9.2: Translate a polygon along the given translation vector and in the coordinate plane

Target 9.3: Rotate a polygon about a given point and rotation angle and in the coordinate plane

Target 9.4: Perform a composition of transformations in the coordinate plane

Self-Assess: 1 (Uh oh)

2

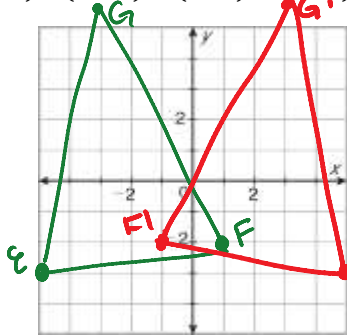
3 (I am okay)

4

5 (I got this!!!)

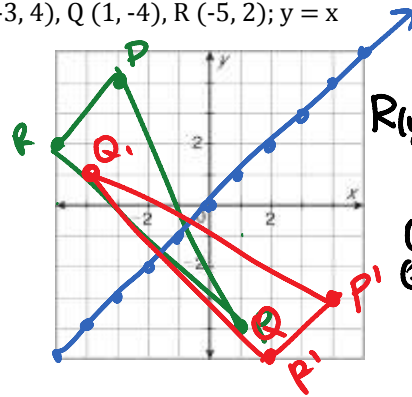
Give the coordinates of the reflection. Write the function rule. (9.1)

10) E (-5, -3), F (1, -2), G (-3, 6); y-axis



$$R_{(y\text{-axis})}(x,y) = (-x, y)$$

11) P(-3, 4), Q (1, -4), R (-5, 2); y = x



$$R_{(y=x)}(x,y) = (y,x)$$

$$Q = (1, -4)$$

$$Q' = (-4, 1)$$

Graph the following and graph the transformation given the vector. (9.2)

12) Describe the translation using vector $\langle -3, -1 \rangle$

In words. Then write the vector using coordinate form.

Left three, down one

$$T(x,y) = (x-3, y-1)$$

13) If B is at (50, -20) and B' is at (-300, -40)

what is the translation vector in vector form?

$$\langle -350, -20 \rangle$$

Rotate the given vertices about the origin using the given angle of rotation. Write the function rule. (9.3)

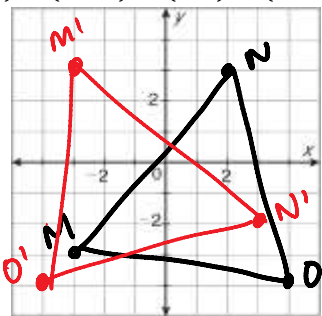
14) M (-3, -3), N (2, 3), O (4, -4); -90°

$$N(2,3)$$

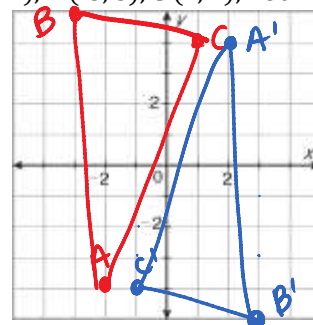
$$-90 = 90^\circ, \text{CW}$$

$$N'(3, -2) \quad O'(-4, -4) \quad M'(-3, 3)$$

$$R_{(-90, (0,0))}(x,y) = (y, -x)$$



15) A (-2, -4), B (-3, 5), C (1, 4); 180°



$$A'(2, -4)$$

$$B'(3, -5)$$

$$C'(-1, -4)$$

$$R_{(180, (0,0))}(x,y) = (-x, -y)$$

Complete the composition of transformations. Write as a composition of transformations. (9.4)

16) Point D (-2, -8) was mapped to point D''(-3, 4)

first by a reflection across the y-axis, and then by what translation vector?

$$D(-2, -8)$$

$$D'(2, -8)$$

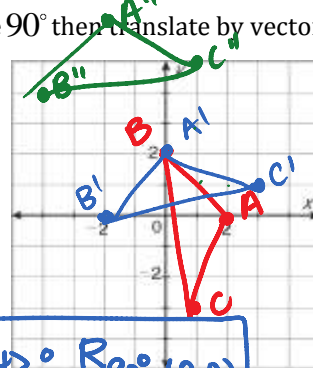
$$D''(-3, 4)$$

$$T_{\langle -5, 12 \rangle} \circ R_{y\text{-axis}}$$

$$\langle -5, 12 \rangle$$

17) Given $\triangle ABC$, A (2, 0), B (0, 2) and C (1, -3)

Rotate 90° then translate by vector $\langle -2, 4 \rangle$



$$C'(3, 1)$$

$$B'(-2, 0)$$

$$A'(0, 2)$$

$$C''(1, 5)$$

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

$$A''(-2, 6)$$

$$T_{\langle -2, 4 \rangle} \circ R_{90^\circ, (0,0)}$$

Target 9.5: Rate a polygon about a given point and rotation angle and in the coordinate plane

Self-Assess: 1 (Uh oh)

2

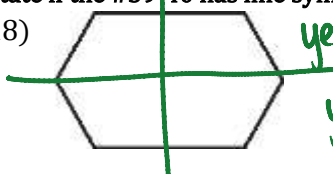
3 (I am okay)

4

5 (I got this!!!)

State if the #39-40 has line symmetry (draw the L.O.S.) or rotational symmetry (give the angle and order).

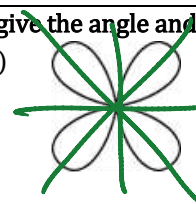
18)



yes line sym (2)

yes rot, 180, order 2

19)



yes line sym (4)
yes Rot sym, 90,
order 4