

Name \_\_\_\_\_

**Worksheet #61 - How to Find Angles of a Polygon?**

Complete the following chart:

*(in a Regular Polygon)*

Polygon	# of Sides	# of Diagonals	Sum of Interior Angles	Measure of Each Interior Angle	Measure of Each Exterior Angle
Triangle	3	0	180	60	120
Quadrilateral	4	1			
Pentagon	5				
Hexagon	6				
Heptagon	7				
Octagon	8				
Nonagon	9				
Decagon	10				
	12				
	24				
	$n$				

1) What is the sum of the interior angles in a regular polygon with 80 sides?

2) What is the number of sides of a *regular* polygon whose exterior angles each measure  $36^\circ$ ?

3) What is the number of sides of a polygon if the sum of the measure of the interior angles is  $1,800^\circ$ ?

4) What is the number of sides of a *regular* polygon whose interior angles each measure  $135^\circ$ ?

- 6) The measure of an exterior angle of a regular polygon is  $45^\circ$ .
- a) Find the number of sides of the polygon.
  - b) Find the measure of each interior angle.
  - c) Find the sum of the measures of the interior angles.

- 7) Find the SUM of the degree measure of the INTERIOR angles of a polygon that has:
- a) 25 sides
  - b) 102 sides
  - c) 14 sides

- 8) Find the measure of each INTERIOR angle of a regular polygon that has:
- a) 40 sides
  - b) 22 sides
  - c) 19 sides

- 9) Find the measure of each EXTERIOR angle of a regular polygon that has:
- a) 18 sides
  - b) 20 sides
  - c) 15 sides

- 10) Find the number of sides on a polygon whose INTERIOR angles SUM:
- a)  $900^\circ$
  - b)  $1,980^\circ$
  - c)  $2,880^\circ$

- 11) Find the number of sides on a regular polygon whose INTERIOR angles each measure:
- a)  $144^\circ$
  - b)  $135^\circ$
  - c)  $165^\circ$

- 12) Find the number of sides on a regular polygon whose EXTERIOR angles each measure:
- a)  $12^\circ$
  - b)  $40^\circ$
  - c)  $14.4^\circ$

- 13) In quadrilateral  $ABCD$ ,  $m\angle A = x$ ,  $m\angle B = 2x - 12$ ,  $m\angle C = x + 22$ , and  $m\angle D = 3x$ .
- a) Find the measure of each interior angle of quadrilateral.
  - b) Find the measure of each exterior angle of quadrilateral.