Interior and Exterior Angles of REGULAR Polygons

ı Of Figure	Number Of Sides	Number Of Triangles	Sum Of All Interior Angles	Each Interior Angle	Exterior Angles: Each angle (180 - int.)	Exterior Angles: Total Ext.	
	3	1	180	180/3 = 60	120°	120×3 360°	Triangle
	4	2	360	360/4 = 90	90°	90×4 360°	Square
	5	3	540	540/5 = 108	72°	72×5 360°	Pentagon
	6	4	720	720/6 = 120	60°	360°	Hexagon
	7	5	900	900/7 = 128.57	51.43°	360°	Heptagon
	8	6	1080	1080/8 = 135	45°	360°	Octogon
	9	7	1260	1260/9 = 140	40°	360°	Nonagon
	10	8	1440	1440/10 = 144	36°	360°	Decagon
	n	n-2	180(n-2)	180(n-2)/n OR 180 - ext.	180 - int. OR 360/n	360°	N-Gon (n sided figure

Name Key Date

Geometry Pd. 6 Angles of Polygons

Name the following:

3-sided figure triangle

4-sided figure quadrilateral

5-sided figure pentagon

6-sided figure hexagon

8-sided figure octagon

10-sided figure decagon

Theorem: The *sum of the measures of the interior angles* of a polygon of n sides is:

$$180(n-2)$$

Theorem: The *sum of the measures of the exterior angles* of a polygon is 360°.

Practice:

1. A *regular* polygon has 10 sides.
   a) Find the measure of one exterior angle.
   b) Find the measure of one interior angle.
   c) Find the sum of the measures of the interior angles.

a) $\frac{360}{10} = 36°$

b) $180 - 36° = 144°$

c) $144 \times 10 = 1440°$ or $180(10-2)$

2. Find the number of sides of a regular polygon if:
   a) Each exterior angle contains 72°.
   b) Each interior angle contains 150°.
   c) The sum of the interior angles is 2,880°.

a) $\frac{360}{72} = 5$

b) $\therefore$ ext. $= 30°$

$\frac{360}{30} = 12$

c) $\frac{180(n-2)}{180} = \frac{2880}{180}$

$n - 2 = 16$

$+2 \quad +2$

$n = 18$