NAME: Notes DATE: 1/14/15 Section 12-1E Day 1

12-1E POLYGONS

Polygon	a simple, closed (connected) 2D plane figure formed by three or more line segments (straight)
Simple	has lines that do not cross each other and meet at a common point - vertex
Equilateral	a polygon with ALL congruent sides
Equiangular	a polygon with ALL congruent angles
Regular Polygon	a polygon with ALL sides and angles congruent

CLASSIFYING POLYGONS BY THE NUMBER OF SIDES:

Polygon	# of Sides & Angles	Sum of the measures of interior angles
Triangle	3	180°
Quadrilateral	4	360°
Pentagon	5	540°
Hexagon	6	720°
Heptagon	7	900°
Octagon	8	1080°
Nonagon	9	1,260°
Decagon	10	1,440°
n-gon	n	180(n-2)
Dodecagon 20-gon	12 20	

SUM OF ANGLES:

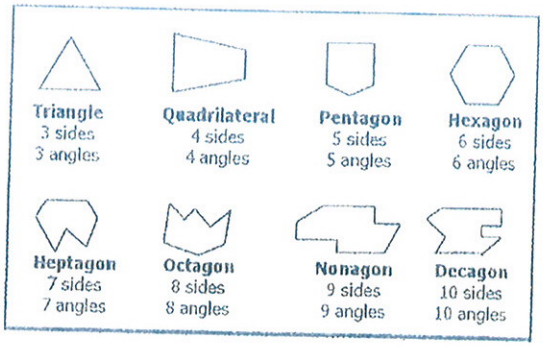
The sum of the angle measures of any polygon is: $180(n-2)$

n: number of sides/angles of polygon

REGULAR POLYGON:

Each angle measure of regular polygon is: $\frac{180(n-2)}{n}$

Remember PEMDAS



Ex. 1: Determine whether the figure is a polygon. If it is, classify the polygon and state whether it is regular. If it is not, explain why.

A. 

No, because the segments intersect or cross

B. 

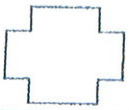
Yes, Quadrilateral, not regular

C. 

No, open

D. 

No, curved

E. 

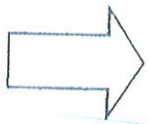
Yes, Dodecagon Not regular

F. 

yes, regular hexagon

G. 

Yes, Octagon not regular

H. 

yes, Heptagon not regular

Ex. 2: Find the sum of the angle measures in each polygon. Assume the polygon is regular, and find the measures of each angle.

A. Heptagon

Sum = $180(7-2) = 180(5) = 900°$

Each angle = $\frac{180(7-2)}{7} = \frac{180(5)}{7} = \frac{900}{7} \approx 129°$

B. 20-gon

Sum = $180(20-2) = 180(18) = 3,240°$

Each angle = $\frac{180(20-2)}{20} = \frac{180(18)}{20} = \frac{3240}{20} = 162°$

C. 72-gon

Sum = $180(72-2) = 180(70) = 12,600°$

Each angle = $\frac{180(72-2)}{72} = \frac{180(70)}{72} = \frac{12600}{72} = 175°$