


Learning Target(s): I am able to classify and identify polygons.
I am able to find interior and exterior angle measures of polygons.

Notes: 8.1 Find Angle Measures in Polygons

polygon: a closed plane figure formed by

 3 or more sides that intersect at endpoints

classifying polygons: # of sides

convex:



concave:



regular: all sides and angles are \cong

consecutive vertices: connected next to each other

diagonal: a segment that joins two nonconsecutive vertices



Number of Sides	Name of Polygon
3	triangle
4	quadrilateral
5	pentagon
6	hexagon
7	heptagon
8	octagon
9	nonagon
10	decagon
12	dodecagon
n	11-gon, 13-gon, 100-gon, n-gon

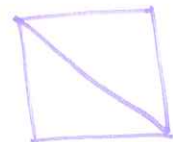
Polygon Interior Angles Theorem:

The sum of the measures of the interior angles of a convex n-gon is $(n-2)180$

$n = \#$ of sides

Corollary to Polygon Interior Angles Theorem:
Interior Angles of a Quadrilateral

The sum of the measures of the interior angles of a quadrilateral is 360°



Ex. 1

Find the sum of the measures of the interior angles of a 15-gon.

$$(15-2)180^\circ = 2,340^\circ$$

Ex. 2

The sum of the measures of the interior angles of a convex polygon is 4140° . Find n .

$$(n-2)180 = 4140$$

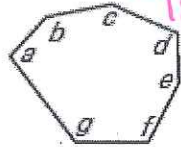
$$180n - 360 = 4140$$

$$+ 360 \quad + 360$$

$$n = 25 \quad 25\text{-gon}$$

Plucker Questions:

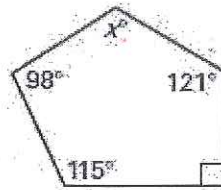
1. What is the sum of the measures of the interior angles of the figure shown?



- (A) 900°
- (B) 1260°
- (C) 720°
- (D) 1080°

$$\frac{180n}{180} = \frac{4500}{180}$$

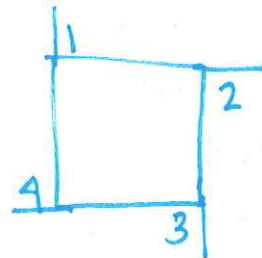
What is the value of x ?



- (A) 105
- (B) 110
- (D) 116
- (E) 121

Polygon Exterior Angles Theorem:

The sum of the measures of the exterior angles of a convex polygon, one angle at each vertex, is 360°



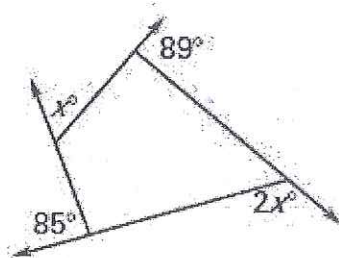
Ex. 3

Find the value of x in the diagram shown.

$$x + 89 + 2x + 85 = 360$$

$$3x + 174 = 360$$

$$-174 \quad -174$$



$$x = 62$$

Ex. 4

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

$$\frac{3x}{3} = \frac{186}{3}$$

← same Ls & sides $n=12$

① Find total sum
 $(12-2)180 = 1800$

② Divide by n

$$\frac{1800}{n} = \frac{1800}{12} = 150^\circ$$

b) each exterior angle of a regular dodecagon.

$$\frac{360}{n} = \frac{360}{12} = 30^\circ$$