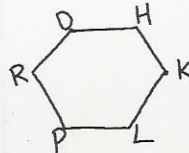


Polygon Angle Sum Theorems

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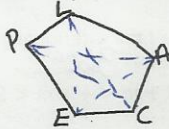
Naming Polygons

- Name the vertices in consecutive order



DHKLPR
PLKHDR

- Convex Polygon: Has no diagonal with points on the outside of a polygon

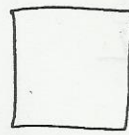


- Concave Polygon: Has at least 1 diagonal with points outside the polygon

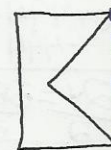


Example 1

- Concave or Convex?



Convex



Concave



Concave

Classification

Number of Sides	Name
3	Triangle
4	Quadrilateral
5	Pentagon
6	Hexagon
7	Heptagon
8	Octagon
9	Nonagon
10	Decagon
12	Dodecagon
n	n-gon

Polygon Interior Angle Sum Theorem

The sum of the measures of the INTERIOR angles of an n-gon is:

$$(n-2) \cdot 180^\circ$$

Example 2

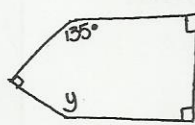
- Let $n = 90$. Find the interior angle sum of the polygon.

$$(90-2)180^\circ$$

$$\underline{15,840^\circ}$$

Example 3

- Find the value of the variable.



$$(5-2)180^\circ$$

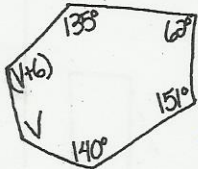
$$540$$

$$90+135+90+90+y=540$$

$$405+y=540$$

$$\underline{y=135^\circ}$$

Example 4



$$V+6+V+135+62+151+140=720$$

$$2V+494=720$$

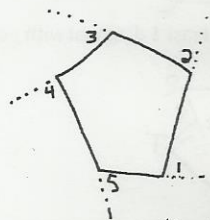
$$\underline{-494 \quad -494}$$

$$\frac{2V}{2} = \frac{226}{2}$$

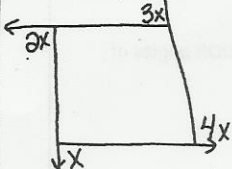
$$\underline{V=113}$$

Polygon Exterior Angle Sum Theorem

- The sum of the measures of the exterior angles of a polygon (one at each vertex) is 360° .
- $m < 1 + m < 2 + m < 3 + m < 4 + m < 5 = 360^\circ$



Example 5



$$x+2x+3x+4x=360$$

$$\frac{10x}{10} = \frac{360}{10}$$

$$\underline{x=36}$$