

8 - 1

Angles of Polygons

* sum of all interior angles
 $180(n-2)$

n : # of sides

ex: octagon $\rightarrow 8$

$$180(6) = \boxed{1080^\circ}$$

* one angle of a regular polygon

$$\frac{180(n-2)}{n}$$

ex: one angle of regular nonagon⁽⁹⁾

$$\frac{180(7)}{9} = \frac{1260}{9} = \boxed{140^\circ}$$

ex: The measure of one interior angle of a regular polygon is 108° . Find the number of sides.

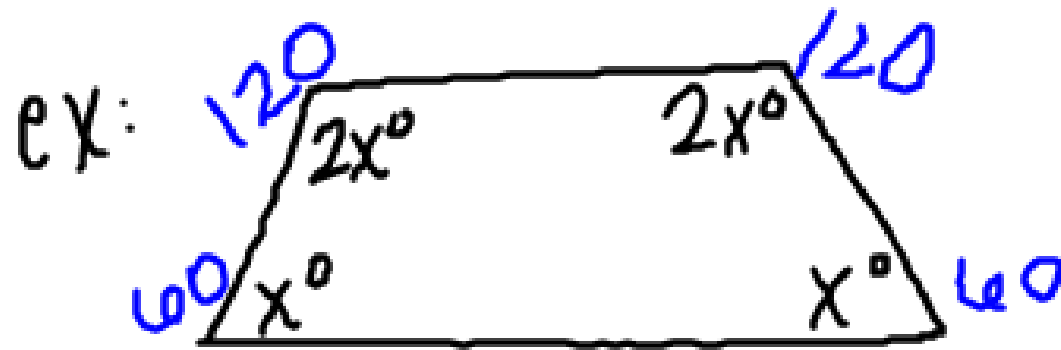
$$n \cdot \frac{180(n-2)}{n} = 108 \cdot n$$

$$180(n-2) = 108n$$

$$\begin{array}{r} 180n - 360 = 108n \\ -180n \qquad \qquad -180n \end{array}$$

$$\begin{array}{r} -360 = -72n \\ \hline -72 \qquad \qquad -72 \end{array}$$

$$\boxed{5 = n}$$

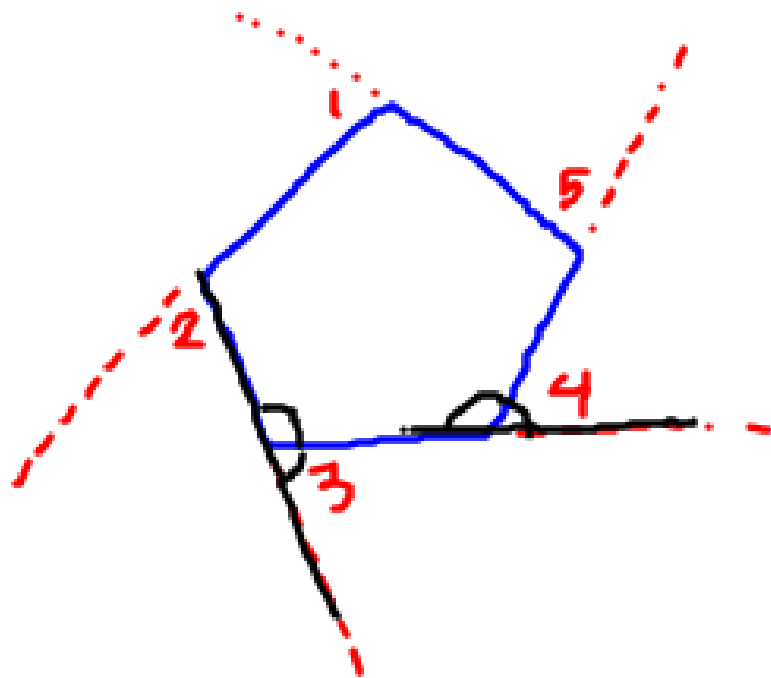


$$180(2) = 360$$

$$x + 2x + 2x + x = 360$$

$$\frac{6x}{6} = \frac{360}{6}$$

$$x = 60$$



$$m\angle 1 + m\angle 2 + m\angle 3 + m\angle 4 + m\angle 5 = \boxed{360}$$

ex: one exterior and one interior
of a regular octagon

$$\frac{\text{ext}}{8} = \frac{360}{8}$$

$$\boxed{x = 45^\circ}$$

ext.

$$\frac{\text{int}}{8} = \frac{180(6)}{8}$$

$$= \boxed{135^\circ}$$

int



Homework:

8-1 WS (#1 - 13 odd)