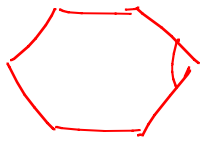


The sum of the measures of the interior angles of a polygon can be determined using the formula:

$$S = 180^\circ(n - 2) \quad \text{where } n \text{ is the number of sides of the shape}$$

Example 1: Outdoor furniture and structures like gazebos sometimes use a regular hexagon in their building plan. Determine the measure of each interior angle of a regular hexagon.



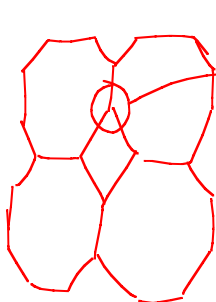
$$\begin{aligned} S &= 180(6-2) \\ &= 720 \\ \frac{720}{6} &= 120 \end{aligned}$$

Example 2: Determine the measure of each interior angle of a regular 15-sided polygon.

$$\begin{aligned} S &= 180(15-2) \\ &= 180(13) \\ &= \frac{2340}{15} = 156 \end{aligned}$$

each exterior
 $180 - 156 = 24^\circ$

Example 3: A floor tiler designs custom floors using tiles in the shape of regular polygons. Can the tiler use congruent regular octagons and congruent squares to tile a floor, if they have the same side length?



$$\begin{aligned} &2 \text{ octagon interiors} = 270 \\ &\text{and } 1 \text{ square interior} = 90 \\ &\hline &360^\circ \checkmark \end{aligned}$$

$$\begin{aligned} S &= 180(8-2) \\ &= \frac{1080}{8} = 135 \times 2 = 270 \end{aligned}$$