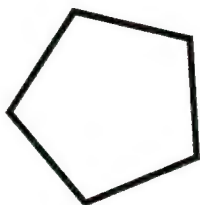


## 3.3 – Angles in a Polygon

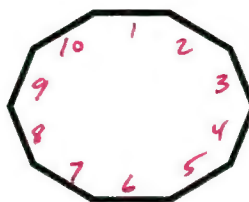
Find the sum of the interior angles of the polygon. (Finding the number triangles may help). Show all work.

1)



$$\begin{aligned} S &= (n-2)180 \\ &= (5-2)180 \\ &= 3(180) \\ &= \boxed{540^\circ} \end{aligned}$$

2)



$$\begin{aligned} S &= (n-2)180 \\ &= (10-2)180 \\ &= (8)180 \\ &= \boxed{1440^\circ} \end{aligned}$$

3)



$$\begin{aligned} S &= (n-2)180 \\ &= (8-2)180 \\ &= (6)180 \\ &= \boxed{1080^\circ} \end{aligned}$$

4)



$$\begin{aligned} S &= (n-2)180 \\ &= (6-2)180 \\ &= (4)180 \\ &= \boxed{720^\circ} \end{aligned}$$

5)



$$\begin{aligned} S &= (n-2)180 \\ &= (7-2)180 \\ &= (5)180 \\ &= \boxed{900^\circ} \end{aligned}$$

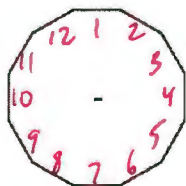
6)



$$\begin{aligned} S &= (n-2)180 \\ &= (4-2)180 \\ &= (2)180 \\ &= \boxed{360^\circ} \end{aligned}$$

Find the measure of just ONE interior angle of the **regular** polygon. SHOW ALL WORK.

7)



$$\begin{aligned} S &= (12-2)180 \\ &= (10)180 \\ &= 1800 \end{aligned}$$

$$\begin{aligned} &\rightarrow \frac{1800}{12} \\ &= \boxed{150^\circ} \end{aligned}$$

8)



$$\begin{aligned} S &= (8-2)180 \\ &= (6)180 \\ &= 1080 \end{aligned}$$

$$\begin{aligned} &\rightarrow \frac{1080}{8} \\ &= \boxed{135^\circ} \end{aligned}$$

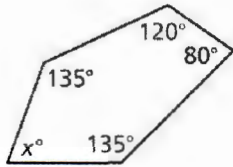
- 9) In pottery class, you are making a pot that is shaped as a regular hexagon. What is the measure of each angle in the regular hexagon

$$\begin{aligned} S &= (n-2)180 \\ &= (6-2)180 \\ &= (4)180 = 720^\circ \end{aligned}$$

$$\frac{720}{6} = 120^\circ$$

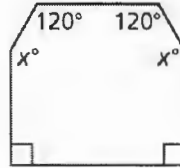
Find the measures of the interior angles. Show all algebraic work.

10)



$$\begin{aligned} x + 135 + 120 + 80 + 135 &= 540 \\ x + 470 &= 540 \\ -470 \quad -470 \\ \hline x &= 70^\circ \end{aligned}$$

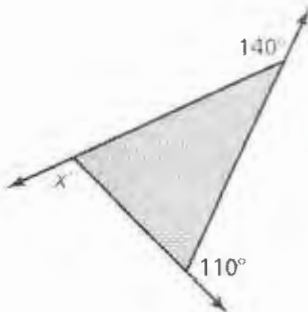
11)



$$\begin{aligned} x + 120 + 120 + x + 90 + 90 &= 720 \\ 2x + 420 &= 720 \\ -420 \quad -420 \\ \hline 2x &= 300 \\ \frac{2x}{2} &= \frac{300}{2} \\ x &= 150^\circ \end{aligned}$$

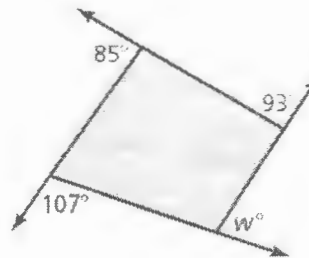
Find the measures of the exterior angles. Show all algebraic work.

12)



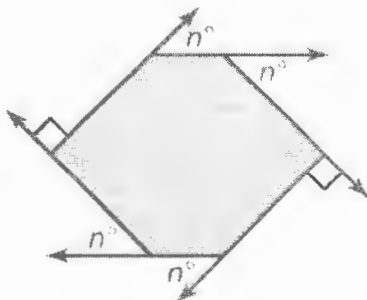
$$\begin{aligned} x + 140 + 110 &= 360 \\ x + 250 &= 360 \\ -250 \quad -250 \\ \hline x &= 110^\circ \end{aligned}$$

13)



$$\begin{aligned} w + 107 + 85 + 93 &= 360 \\ w + 285 &= 360 \\ -285 \quad -285 \\ \hline w &= 75^\circ \end{aligned}$$

14)



$$\begin{aligned} n + n + 90 + n + n + 90 &= 360 \\ 4n + 180 &= 360 \\ -180 \quad -180 \\ \hline 4n &= 180 \\ \frac{4n}{4} &= \frac{180}{4} \\ n &= 45^\circ \end{aligned}$$