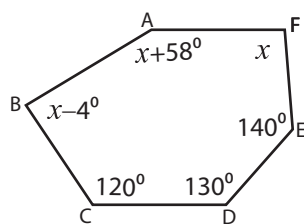


### Angles in Polygon

Example:



$$\begin{aligned} \text{Sum of the interior angles} &= (\text{Number of sides} - 2) \times 180^\circ \\ &= (6 - 2) \times 180^\circ \\ &= 4 \times 180 = \mathbf{720^\circ} \end{aligned}$$

$$\text{Sum of the interior angles} = 120^\circ + 140^\circ + 130^\circ + x + 58^\circ + x - 4^\circ + x$$

$$720^\circ = 444^\circ + 3x$$

$$3x = 720^\circ - 444^\circ = 276^\circ$$

$$x = \frac{276^\circ}{3} = \mathbf{92^\circ}$$

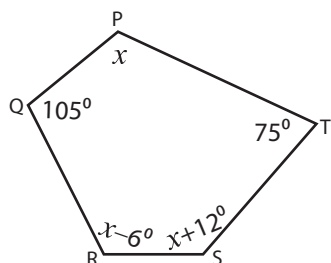
$$\angle A = x + 58^\circ = \mathbf{92^\circ} + 58^\circ = \mathbf{150^\circ}$$

$$\angle B = x - 4^\circ = \mathbf{92^\circ} - 4^\circ = \mathbf{88^\circ}$$

$$\angle F = x = \mathbf{92^\circ}$$

Find the missing angle for each irregular polygon.

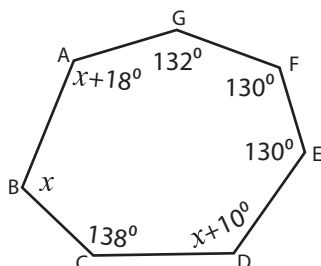
1)



Sum of the interior angles = \_\_\_\_\_

$x = \underline{\quad}; \angle P = \underline{\quad}; \angle R = \underline{\quad}; \angle S = \underline{\quad}$

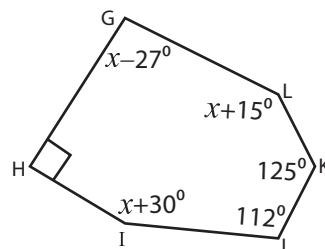
2)



Sum of the interior angles = \_\_\_\_\_

$x = \underline{\quad}; \angle A = \underline{\quad}; \angle B = \underline{\quad}; \angle D = \underline{\quad}$

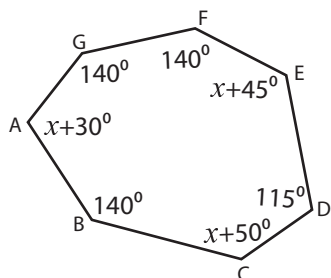
3)



Sum of the interior angles = \_\_\_\_\_

$x = \underline{\quad}; \angle G = \underline{\quad}; \angle I = \underline{\quad}; \angle L = \underline{\quad}$

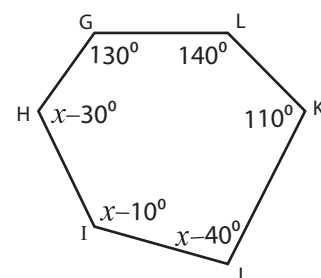
4)



Sum of the interior angles = \_\_\_\_\_

$x = \underline{\quad}; \angle A = \underline{\quad}; \angle C = \underline{\quad}; \angle E = \underline{\quad}$

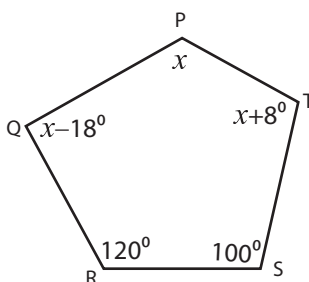
5)



Sum of the interior angles = \_\_\_\_\_

$x = \underline{\quad}; \angle H = \underline{\quad}; \angle I = \underline{\quad}; \angle J = \underline{\quad}$

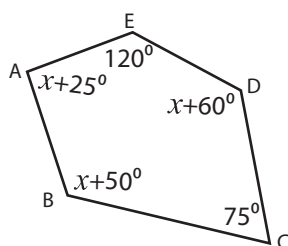
6)



Sum of the interior angles = \_\_\_\_\_

$x = \underline{\quad}; \angle P = \underline{\quad}; \angle Q = \underline{\quad}; \angle T = \underline{\quad}$

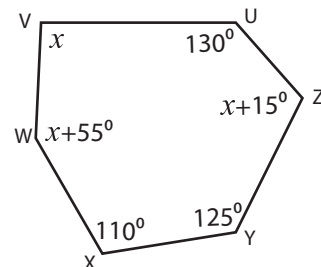
7)



Sum of the interior angles = \_\_\_\_\_

$x = \underline{\quad}; \angle A = \underline{\quad}; \angle B = \underline{\quad}; \angle D = \underline{\quad}$

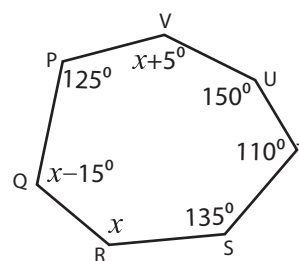
8)



Sum of the interior angles = \_\_\_\_\_

$x = \underline{\quad}; \angle V = \underline{\quad}; \angle W = \underline{\quad}; \angle Z = \underline{\quad}$

9)

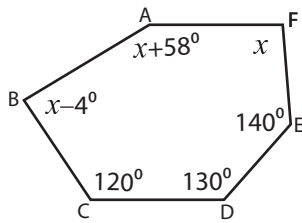


Sum of the interior angles = \_\_\_\_\_

$x = \underline{\quad}; \angle Q = \underline{\quad}; \angle R = \underline{\quad}; \angle V = \underline{\quad}$

**Answer Key**

Example:



$$\begin{aligned}\text{Sum of the interior angles} &= (\text{Number of sides} - 2) \times 180^\circ \\ &= (6 - 2) \times 180^\circ \\ &= 4 \times 180 = \mathbf{720^\circ}\end{aligned}$$

$$\text{Sum of the interior angles} = 120^\circ + 140^\circ + 130^\circ + x + 58^\circ + x - 4^\circ + x$$

$$720^\circ = 444^\circ + 3x$$

$$3x = 720^\circ - 444^\circ = 276^\circ$$

$$x = \frac{276^\circ}{3} = \mathbf{92^\circ}$$

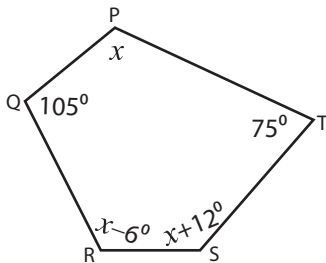
$$\angle A = x + 58^\circ = \mathbf{92^\circ} + 58^\circ = \mathbf{150^\circ}$$

$$\angle B = x - 4^\circ = \mathbf{92^\circ} - 4^\circ = \mathbf{88^\circ}$$

$$\angle F = x = \mathbf{92^\circ}$$

Find the missing angle for each irregular polygon.

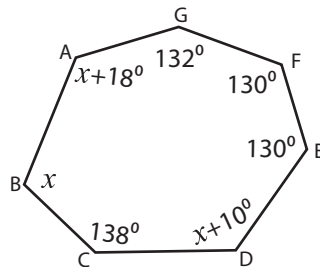
1)



$$\text{Sum of the interior angles} = \mathbf{540^\circ}$$

$$x = \mathbf{118^\circ}; \angle P = \mathbf{118^\circ}; \angle R = \mathbf{112^\circ}; \angle S = \mathbf{130^\circ}$$

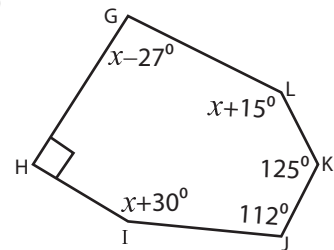
2)



$$\text{Sum of the interior angles} = \mathbf{900^\circ}$$

$$x = \mathbf{114^\circ}; \angle A = \mathbf{132^\circ}; \angle B = \mathbf{114^\circ}; \angle D = \mathbf{124^\circ}$$

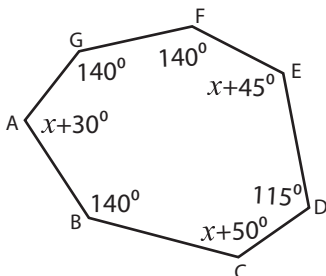
3)



$$\text{Sum of the interior angles} = \mathbf{720^\circ}$$

$$x = \mathbf{125^\circ}; \angle G = \mathbf{98^\circ}; \angle I = \mathbf{155^\circ}; \angle L = \mathbf{140^\circ}$$

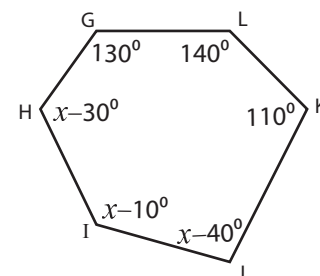
4)



$$\text{Sum of the interior angles} = \mathbf{900^\circ}$$

$$x = \mathbf{80^\circ}; \angle A = \mathbf{110^\circ}; \angle C = \mathbf{130^\circ}; \angle E = \mathbf{125^\circ}$$

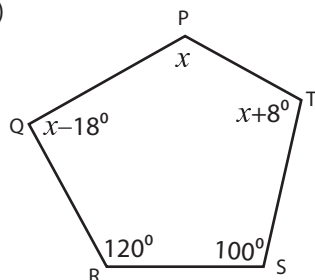
5)



$$\text{Sum of the interior angles} = \mathbf{720^\circ}$$

$$x = \mathbf{140^\circ}; \angle H = \mathbf{110^\circ}; \angle I = \mathbf{130^\circ}; \angle J = \mathbf{100^\circ}$$

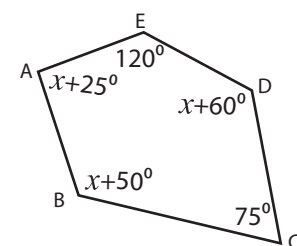
6)



$$\text{Sum of the interior angles} = \mathbf{540^\circ}$$

$$x = \mathbf{110^\circ}; \angle P = \mathbf{110^\circ}; \angle Q = \mathbf{92^\circ}; \angle T = \mathbf{118^\circ}$$

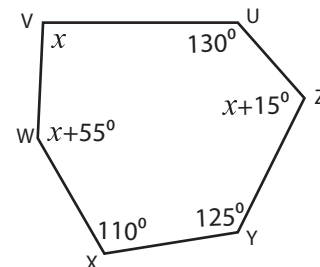
7)



$$\text{Sum of the interior angles} = \mathbf{540^\circ}$$

$$x = \mathbf{70^\circ}; \angle A = \mathbf{95^\circ}; \angle B = \mathbf{120^\circ}; \angle D = \mathbf{130^\circ}$$

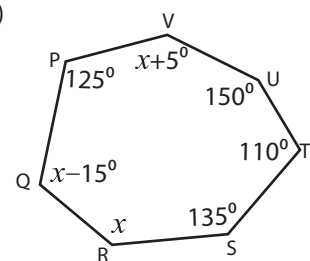
8)



$$\text{Sum of the interior angles} = \mathbf{720^\circ}$$

$$x = \mathbf{95^\circ}; \angle V = \mathbf{95^\circ}; \angle W = \mathbf{150^\circ}; \angle Z = \mathbf{110^\circ}$$

9)



$$\text{Sum of the interior angles} = \mathbf{900^\circ}$$

$$x = \mathbf{130^\circ}; \angle Q = \mathbf{115^\circ}; \angle R = \mathbf{130^\circ}; \angle V = \mathbf{135^\circ}$$