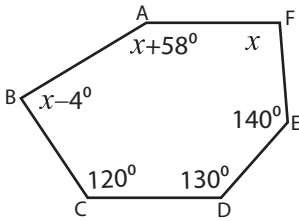


**Angles in Polygon**

Example:



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

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

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

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

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

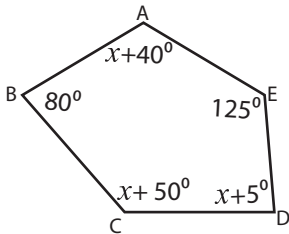
$$\angle A = x + 58^\circ = \mathbf{92^\circ} + 58^\circ = \mathbf{150^\circ}$$

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

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

Find the missing angle for each irregular polygon.

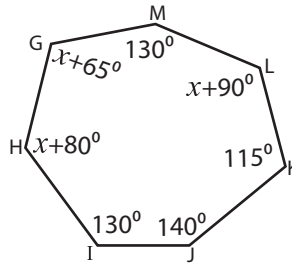
1)



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

$x = \underline{\hspace{1cm}}$ ;  $\angle A = \underline{\hspace{1cm}}$ ;  $\angle C = \underline{\hspace{1cm}}$ ;  $\angle D = \underline{\hspace{1cm}}$

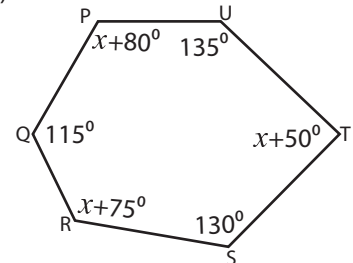
2)



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

$x = \underline{\hspace{1cm}}$ ;  $\angle G = \underline{\hspace{1cm}}$ ;  $\angle H = \underline{\hspace{1cm}}$ ;  $\angle L = \underline{\hspace{1cm}}$

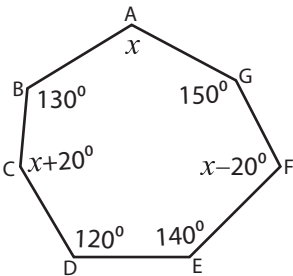
3)



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

$x = \underline{\hspace{1cm}}$ ;  $\angle P = \underline{\hspace{1cm}}$ ;  $\angle R = \underline{\hspace{1cm}}$ ;  $\angle T = \underline{\hspace{1cm}}$

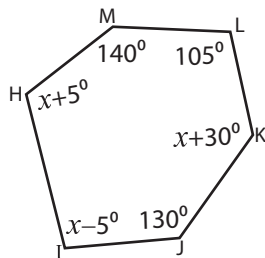
4)



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

$x = \underline{\hspace{1cm}}$ ;  $\angle A = \underline{\hspace{1cm}}$ ;  $\angle C = \underline{\hspace{1cm}}$ ;  $\angle F = \underline{\hspace{1cm}}$

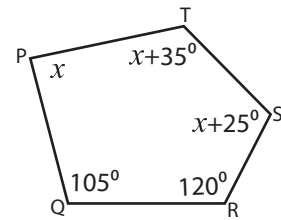
5)



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

$x = \underline{\hspace{1cm}}$ ;  $\angle H = \underline{\hspace{1cm}}$ ;  $\angle I = \underline{\hspace{1cm}}$ ;  $\angle K = \underline{\hspace{1cm}}$

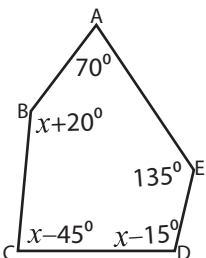
6)



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

$x = \underline{\hspace{1cm}}$ ;  $\angle P = \underline{\hspace{1cm}}$ ;  $\angle S = \underline{\hspace{1cm}}$ ;  $\angle T = \underline{\hspace{1cm}}$

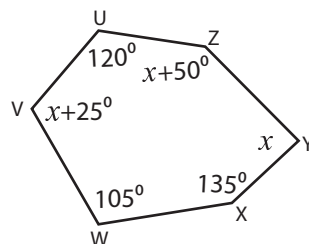
7)



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

$x = \underline{\hspace{1cm}}$ ;  $\angle B = \underline{\hspace{1cm}}$ ;  $\angle C = \underline{\hspace{1cm}}$ ;  $\angle D = \underline{\hspace{1cm}}$

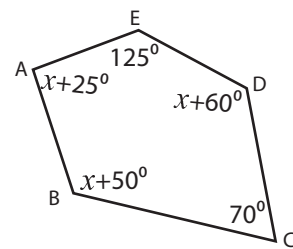
8)



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

$x = \underline{\hspace{1cm}}$ ;  $\angle V = \underline{\hspace{1cm}}$ ;  $\angle Y = \underline{\hspace{1cm}}$ ;  $\angle Z = \underline{\hspace{1cm}}$

9)

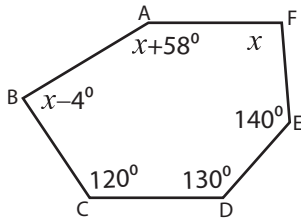


Sum of the interior angles = \_\_\_\_\_

$x = \underline{\hspace{1cm}}$ ;  $\angle A = \underline{\hspace{1cm}}$ ;  $\angle B = \underline{\hspace{1cm}}$ ;  $\angle D = \underline{\hspace{1cm}}$

### Answer Key

Example:



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

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

$$\mathbf{720^\circ} = 444^\circ + 3x$$

$$3x = \mathbf{720^\circ} - 444^\circ = 276^\circ$$

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

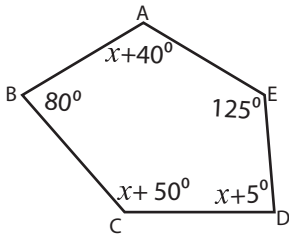
$$\angle A = x + 58^\circ = \mathbf{92^\circ} + 58^\circ = \mathbf{150^\circ}$$

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

Find the missing angle for each irregular polygon.

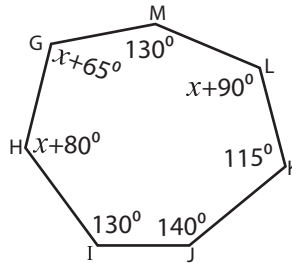
1)



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

$$x = \mathbf{80^\circ}; \angle A = \mathbf{120^\circ}; \angle C = \mathbf{130^\circ}; \angle D = \mathbf{85^\circ}$$

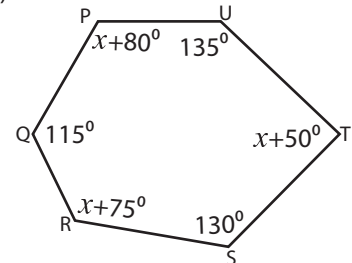
2)



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

$$x = \mathbf{50^\circ}; \angle G = \mathbf{115^\circ}; \angle H = \mathbf{130^\circ}; \angle L = \mathbf{140^\circ}$$

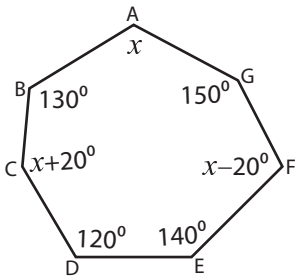
3)



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

$$x = \mathbf{45^\circ}; \angle P = \mathbf{125^\circ}; \angle R = \mathbf{120^\circ}; \angle T = \mathbf{95^\circ}$$

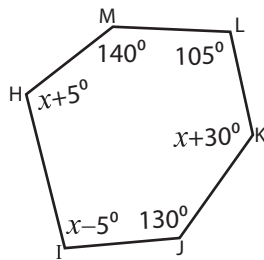
4)



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

$$x = \mathbf{120^\circ}; \angle A = \mathbf{120^\circ}; \angle C = \mathbf{140^\circ}; \angle F = \mathbf{100^\circ}$$

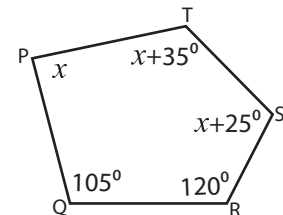
5)



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

$$x = \mathbf{105^\circ}; \angle H = \mathbf{110^\circ}; \angle I = \mathbf{100^\circ}; \angle K = \mathbf{135^\circ}$$

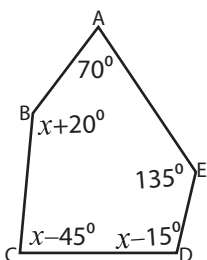
6)



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

$$x = \mathbf{85^\circ}; \angle P = \mathbf{85^\circ}; \angle S = \mathbf{110^\circ}; \angle T = \mathbf{120^\circ}$$

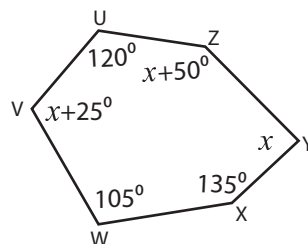
7)



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

$$x = \mathbf{125^\circ}; \angle B = \mathbf{145^\circ}; \angle C = \mathbf{80^\circ}; \angle D = \mathbf{110^\circ}$$

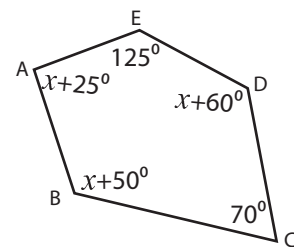
8)



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

$$x = \mathbf{95^\circ}; \angle V = \mathbf{120^\circ}; \angle Y = \mathbf{95^\circ}; \angle Z = \mathbf{145^\circ}$$

9)



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

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