

THE TRIANGLE & ITS PROPERTIES

01 The angles of a triangle are in the ratio 2 : 6 : 7. Find the measure of the angle with the greatest magnitude.

Given that the angles of a triangle are in the ratio 2 : 6 : 7

let the angles be $2x^\circ$, $6x^\circ$ and $7x^\circ$

we know that $2x + 6x + 7x = 180^\circ$

$$15x = 180^\circ$$

$$x = 12^\circ$$

\therefore The angles of a triangle are 24° , 72° and 84°

Based on angles, it is an acute angle triangle

Based on sides, it is scalar triangle

The greatest magnitude angle = 84°

02 In a right-angled triangle, the other two angles are in the ratio 2 : 3. Find the measures of all the angles of the triangle.

In a right angled triangle the other 2 angles are in the ratio 2 : 3

let the 2 angles are $2x^\circ$ and $3x^\circ$

we know that $2x + 3x + 90^\circ = 180^\circ$

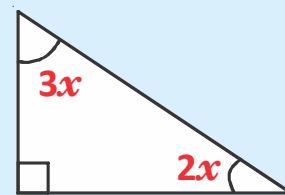
$$5x + 90 = 180^\circ$$

$$5x = 90^\circ \Rightarrow x = 18^\circ$$

$$2x = 2 \times 18 = 36^\circ$$

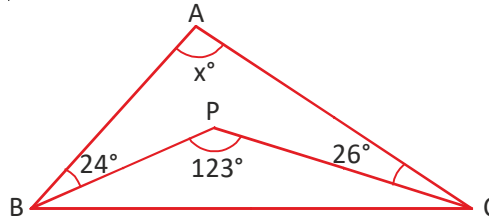
$$3x = 3 \times 18 = 54^\circ$$

\therefore angles of a triangle are 36° , 54° and 90°



03

In the given figure, find the value of x .



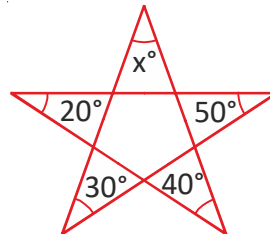
$$180^\circ - 123^\circ = 57^\circ$$

$$x = (180^\circ - (24^\circ + 26^\circ + 57^\circ))$$

$$x = 180^\circ - 107^\circ = 73^\circ$$

04

Find the value of x in the given figure.



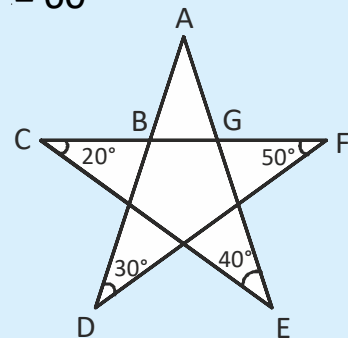
In $\triangle ABG$, $\angle ABG = \angle D + \angle E = 30^\circ + 50^\circ = 80^\circ$

[\because exterior angle is the sum of interior angles]

In $\triangle CEG$, $\angle AGB = \angle C + \angle E = 40^\circ + 20^\circ = 60^\circ$

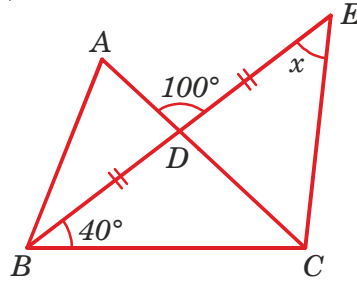
from , $\triangle ABG$, $80^\circ + 60^\circ + x = 180^\circ$

$$x = 180 - 140^\circ = 40^\circ$$



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05 In the given figure, $BD = DE$, $\angle DBC = 40^\circ$ and $\angle ADE = 100^\circ$. Find $\angle x$.



$$\angle BDC = 100^\circ, \angle EDC = 80^\circ$$

$$\angle DCB = 180^\circ - 140^\circ = 40^\circ \Rightarrow BD = CD$$

$$\text{Hence, } DE = CD \Rightarrow \angle DCE = \angle E = x$$

$$\text{In } \triangle CDE, x + x + \angle EDC = 180^\circ$$

$$2x + 80 = 180^\circ$$

$$2x = 100^\circ$$

$$x = 50^\circ$$