Properties of Triangles Ex 15.2 Q16

Answer :

We know that one of the angles of the given triangle is 60°. $\left(\text{Given}\right)$
We also know that the other two angles of the triangle are in the ratio $1:2$.
Let one of the other two angles be x.
Therefore, the second one will be 2x.
We know that the sum of all the three angles of a triangle is equal to 180°.

$\Rightarrow 60^\circ + x^\circ + 2x^\circ = 180^\circ$
$\Rightarrow 3x^\circ = 180^\circ - 60^\circ$
$\Rightarrow 3x^\circ = 120^\circ$
$\Rightarrow x^\circ = \frac{120^\circ}{3}$
$\Rightarrow x^\circ = 40^\circ$
$2x^\circ = 2 \times 40$
$\Rightarrow 2x^\circ = 80^\circ$

Hence, we can conclude that the required angles are 40° and 80°.

Properties of Triangles Ex 15.2 Q17

Answer :

We know that one of the angles of the given triangle is 100°.
We also know that the other two angles are in the ratio $2:3$.
Let one of the other two angles be 2x.
Therefore, the second angle will be 3x.
We know that the sum of all three angles of a triangle is 180°.

$\Rightarrow 100^\circ + 2x^\circ + 3x^\circ = 180^\circ$
$5x^\circ = 180^\circ - 100^\circ$
$5x^\circ = 80^\circ$
$x^\circ = \frac{80^\circ}{5}$
$\Rightarrow x^\circ = 16^\circ$
$2x^\circ = 2 \times 16$
$\Rightarrow 2x^\circ = 32^\circ$
$3x^\circ = 3 \times 16$
$\Rightarrow 3x^\circ = 48^\circ$

Thus, the required angles are 32° and 48°.

Properties of Triangles Ex 15.2 Q18

Answer :

We know that for the given triangle, $3\angle A$ is equal to $6\angle C$.

$\Rightarrow \angle A = 2\angle C \quad \ldots (i)$

We also know that for the same triangle, $4\angle B$ is equal to $6\angle C$.

$\Rightarrow \angle B = \frac{6}{4}\angle C \quad \ldots (ii)$

We know that the sum of all three angles of a triangle is 180°. Therefore, we can say that :

$\angle A + \angle B + \angle C = 180^\circ \ (\text{Angles of } \triangle ABC) \quad \ldots (iii)$

On putting the values of $\angle A$ and $\angle B$ in equation (iii), we get :

$2\angle C + \frac{6}{4}\angle C + \angle C = 180^\circ$

$\frac{18}{4}\angle C = 180^\circ$

$\Rightarrow \angle C = 40^\circ$

From equation (i), we have :

$\angle A = 2\angle C = 2 \times 40$

$\Rightarrow \angle A = 80^\circ$

From equation (ii), we have :

$\angle B = \frac{6}{4}\angle C = \frac{6}{4} \times 40^\circ$

$\Rightarrow \angle B = 60^\circ$

$\angle A = 80^\circ, \angle B = 60^\circ, \angle C = 40^\circ$

Therefore, the three angles of the given triangle are 80°, 60° and 40°.

********** END **********