

Properties of Triangles Ex 15.2 Q7

Answer:

Let the two equal angles of the triangle be x.

Hence, the third angle of the triangle will be $(x + 30^{\circ})$.

Sum of all the three angle of a triangle = 180°

$$\therefore \mathbf{x} + \mathbf{x} + \left(\mathbf{x} + 30^{\circ}\right) = 180^{\circ}$$

$$\Rightarrow \mathbf{x} + \mathbf{x} + \mathbf{x} + 30^{\circ} = 180^{\circ}$$

$$\Rightarrow 3\mathbf{x} + 30^{\circ} = 180^{\circ}$$

$$\Rightarrow 3\mathbf{x} = 180^{\circ} - 30^{\circ}$$

$$\Rightarrow 3\mathbf{x} = 150^{\circ}$$

$$\Rightarrow \mathbf{x} = \frac{150^{\circ}}{3}$$

$$\Rightarrow \mathbf{x} = 50^{\circ}$$

$$\left(\mathbf{x} + 30^{\circ}\right) = 50^{\circ} + 30^{\circ}$$

$$\Rightarrow \left(\mathbf{x} + 30^{\circ}\right) = 80^{\circ}$$

Hence, we can conclude that the angles of the triangle are 50°, 50° and 80°.

Properties of Triangles Ex 15.2 Q8

Answer:

Let the three angles of the triangle be $\angle a$, $\angle b$ and $\angle c$.

Given: $\angle a = \angle b + \angle c$

Also, the sum of all the three angle of a triangle = 180°

Or,
$$\angle a + \angle b + \angle c = 180^{\circ}$$

$$\Rightarrow \angle a + \angle a = 180^{\circ} \ \left(\because \angle a = \angle b + \angle c \right)$$

$$\Rightarrow 2\angle a = 180^{\circ}$$

$$\Rightarrow \angle \mathbf{a} = \frac{180^{\circ}}{2}$$

$$\Rightarrow \angle a = 90^{\circ}$$

Hence, we can conclude that the given triangle is a right angle triangle.

Properties of Triangles Ex 15.2 Q9

Answer:

Let the three angles of the triangle be $\angle a$, $\angle b$ and $\angle c$.

We know: $\angle a < \angle b + \angle c$ (i) (Given)

Which means : $\angle b < \angle a + \angle c$

Or, $\angle c < \angle a + \angle b$

We also know that the sum of all the angles of a triangle is equal to 180°.

Which means: $\angle a + \angle b + \angle c = 180^{\circ}$

Or, $\angle b + \angle c = 180^{\circ} - \angle a$

Putting the value of $\angle b + \angle c$ in equation (i):

 $\angle a < 180^{\circ} - \angle a$

⇒ 2∠a < 180°

 $\Rightarrow \angle a < 90^{\circ}$

Similarly:

∠b < 90°

∠c < 90°

Hence, we can conclude that the given triangle is an acute triangle.