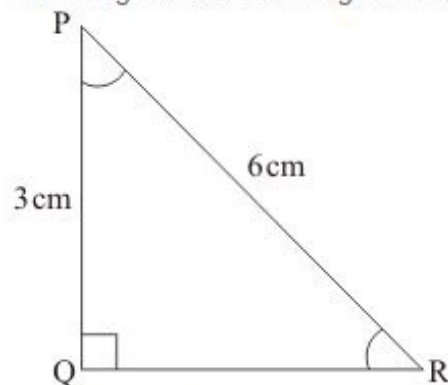Trigonometric Ratios Ex 5.2 Q39

Answer:

We are given the following information in the form of triangle

To find: $\angle P$ and $\angle R$

Now, in $\triangle PQR$

$$\cos P = \frac{PQ}{PR}$$

$$\cos P = \frac{3}{6} \quad \ldots\ldots (1)$$

$$= \frac{1}{2}$$

Now we know that

$$\cos 60° = \frac{1}{2} \quad \ldots\ldots (2)$$

We get,

$$\angle P = 60° \quad \ldots\ldots (3)$$

Now we have

$$\sin P = \frac{QR}{PR}$$

$$\sin 60° = \frac{QR}{6}$$

Now we know that

$$\sin 60° = \frac{\sqrt{3}}{2}$$

Therefore,

$$\frac{\sqrt{3}}{2} = \frac{QR}{6}$$

Now by cross multiplying

We get,

$$6 \times \sqrt{3} = 2 \times QR$$

$$\Rightarrow 6\sqrt{3} = 2QR$$

$$\Rightarrow QR = \frac{6\sqrt{3}}{2}$$

$$\Rightarrow QR = 3\sqrt{3}$$

Therefore,

$$QR = 3\sqrt{3} \text{ cm} \quad \ldots\ldots (4)$$

$QR = 3\sqrt{3}$ cm ...... (4)

Now we know that

$$\cos R = \frac{QR}{PR}$$

$$\cos R = \frac{3\sqrt{3}}{6}$$

$$\Rightarrow \cos R = \frac{\sqrt{3}}{2} \qquad \qquad \ldots\ldots(5)$$

Now we know,

$$\cos 30° = \frac{\sqrt{3}}{2} \quad \ldots\ldots (6)$$

Now by comparing equation (5) and (6)

We get,

$\angle R = 30°$ ...... (7)

Hence from equation (3) and (7)

$\angle P = 60°$ and $\angle R = 30°$

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

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