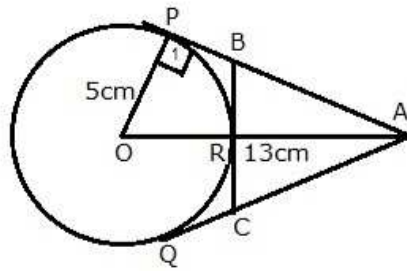


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given - In fig. $OP = 5\text{ cm}$
 $OA = 13\text{ cm}$
 BC is tangent at R

to find - Perimeter of $\triangle ABC$

solution - $\angle = 90^\circ$ (radius \perp tangent)

In rt $\triangle OPA$

$$OA^2 = OP^2 + AP^2 \quad (\text{Pythagoras theorem})$$

$$\begin{aligned} \Rightarrow AP^2 &= OA^2 - OP^2 \\ &= 13^2 - 5^2 \\ &= 169 - 25 \\ &= 144 \end{aligned}$$

$$\begin{aligned} \Rightarrow AP &= \sqrt{144} \\ &= 12\text{ cm} \end{aligned}$$

NCERT Exemplar Solutions by Dev Anoop (Bathinda)

Perimeter of $\triangle ABC$

$$= AB + BC + CA$$

$$= AB + BR + CR + CA$$

$$= AB + BP + CR + CA$$

$$= AP + AC$$

$$= AP + AP$$

$$= 2AP$$

$$= 2 \times 12$$

$$= 24\text{ cm}$$

[$BR = BP$ $CR = CA$
 tangents from
 same external
 point]
 [$AP = AC$ do]