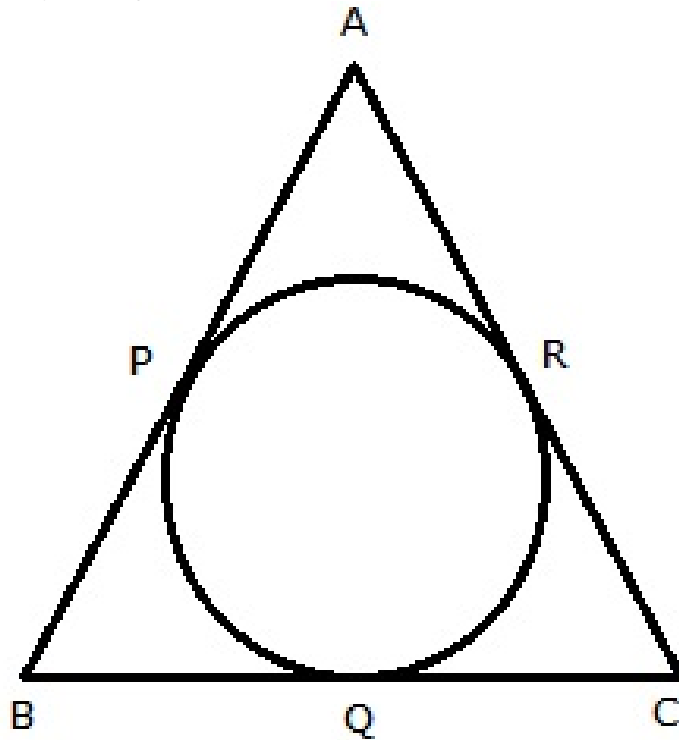




Exercise 12

Question 5:

A circle is inscribed in a triangle ABC touching AB, BC and CA at P, Q and R respectively.



Also, $AB = 10$ cm, $AR = 7$ cm, $CR = 5$ cm

AR, AP are the tangents to the circle

$AP = AR = 7$ cm

$AB = 10$ cm

$BP = AB - AP = (10 - 7) = 3$ cm

Also, BP and BQ are tangents to the circle

$BP = BQ = 3$ cm

Further, CQ and CR are tangents to the circle

$CQ = CR = 5$ cm

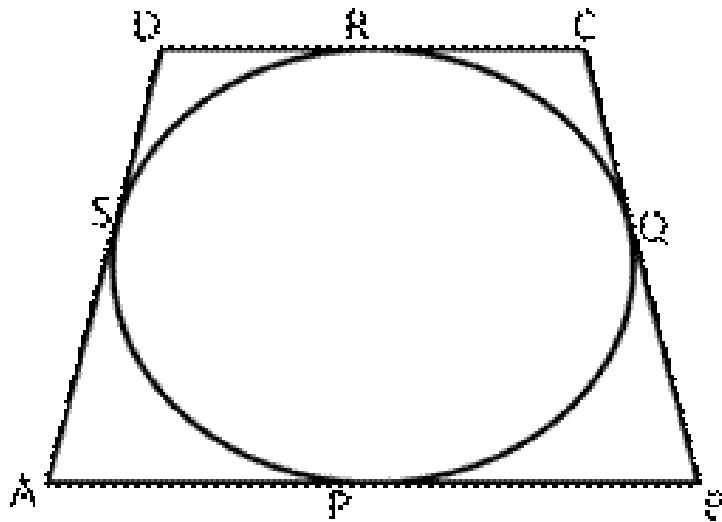
$BC = BQ + CQ = (3 + 5) \text{ cm} = 8 \text{ cm}$

Hence, $BC = 8$ cm

Question 6:

Let the circle touches the sides AB, BC, CD and DA at P, Q, R, S respectively

We know that the length of tangents drawn from an exterior point to a circle are equal



$AP = AS$ ----(1) {tangents from A}

$BP = BQ$ ---(2) {tangents from B}

$CR = CQ$ ---(3) {tangents from C}

$DR = DS$ ---(4) {tangents from D}

Adding (1), (2) and (3) we get

$\therefore AP + BP + CR + DR = AS + BQ + CQ + DS$

$\Rightarrow (AP + BP) + (CR + DR) = (AS + DS) + (BQ + CQ)$

$\Rightarrow AB + CD = AD + BC$

$\Rightarrow AD = (AB + CD) - BC = \{(6 + 4) - 7\} \text{ cm} = 3 \text{ cm}$

Hence, $AD = 3 \text{ cm}$

***** END *****