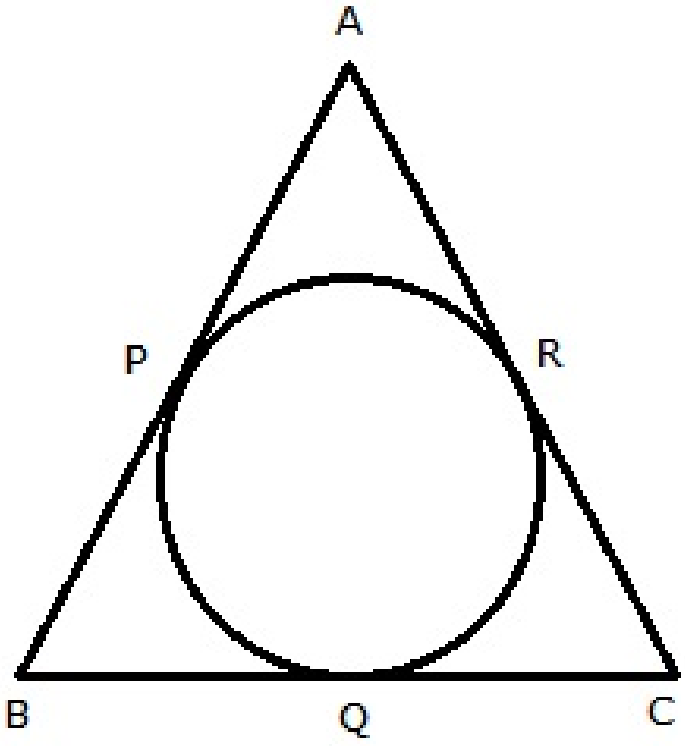
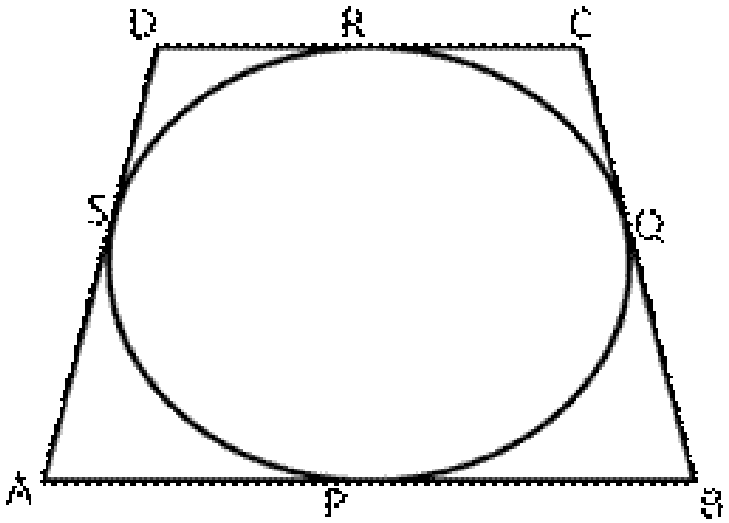
Exercise 12

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 = 7cm, CR = 5cm
AR, AP are the tangents to the circle
AP = AR = 7cm
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 = 5cm
BC = BQ + CQ = (3 + 5) cm = 8 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
∴ AP + BP + CR + DR = AS + BQ + CQ + DS
⇒ (AP + BP) + (CR + DR) = (AS + DS) + (BQ + CQ)
⇒ AB + CD = AD + BC
⇒ AD = (AB + CD) - BC = {(6 + 4) - 7} cm = 3 cm
Hence, AD = 3 cm

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