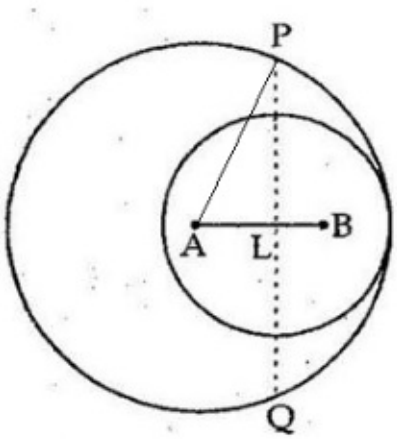
Exercise 11A

Question 15:

Two circles with centres A and B, having radii 5 cm and 3 cm touch each other internally.
The perpendicular bisector of AB meets the bigger circle in P and Q.
Join AP.
Let PQ intersect AB at L.
Then, $AB = (5-3)\ cm = 2\ cm$.
Since PQ is the perpendicular bisector of AB, we have

$$AL = \frac{1}{2} \times AB$$
$$= \left(\frac{1}{2} \times 2\right) cm = 1\ cm$$



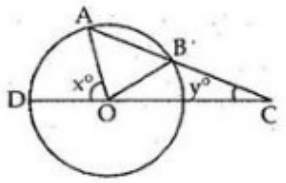
Now, in right angle ΔPLA

$$\therefore \quad AP^2 = AL^2 + PL^2$$
$$\Rightarrow \quad PL = \sqrt{AP^2 - AL^2}\ cm$$
$$= \sqrt{(25-1)}\ cm = \sqrt{24}\ cm = 2\sqrt{6}\ cm$$
$$\therefore \quad PQ = (2 \times PL) = (2 \times 2\sqrt{6})\ cm = 4\sqrt{6}\ cm$$

$\therefore$ the length of $PQ = 4\sqrt{6}$ cm

Question 16:

Given: AB is a chord of a circle with centre O. AB is produced to C such that BC = OB. Also, CO is joined to meet the circle in D. $\angle ACD = y°$ and $\angle AOD = x°$.



To Prove : $x = 3y$

Proof : $OB = BC$ [Given]

$\therefore \angle BOC = \angle BCO = y°$ [isosceles triangle]

Ext. $\angle OBA = \angle BOC + \angle BCO = (2y)°$

Again, $OA = OB$ [radii of same circle]

$\therefore \angle OAB = \angle OBA = (2y)°$ [isosceles triangle]

Ext. $\angle AOD = \angle OAC + \angle ACO$

$= \angle OAB + \angle BCO = 3y°$

$\therefore x° = 3y°$ [$\because \angle AOD = x$ (given)]

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