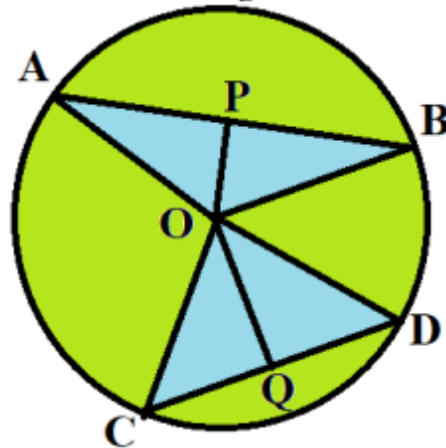




STD IX: CASE STUDY

TOPIC: CIRCLE

. Aditya seen one circular park in which two triangular ponds are there whose common vertex is the centre of the park. After coming back to home, he tried to draw the circular park on the paper. He draws a circle of radius 10 cm with the help of a compass and scale. He also draws two chords, AB and CD in such a way that the perpendicular distance from the center to AB and CD are 6 cm and 8 cm respectively. Now, he has some doubts that are given below.



(i) Show that the perpendicular drawn from the Centre of a circle to a chord bisects the chord using any one triangle. (2)

(ii) What is the length of CD? (2)

OR

(ii) What is the length of AB? (2)

Ans: (i) In $\triangle AOP$ and $\triangle BOP$

$\angle APO = \angle BPO$ ($OP \perp AB$)

$OP = OP$ (Common)

$AO = OB$ (radius of circle)

$\triangle AOP \cong \triangle BOP$

$\therefore AP = BP$ (CPCT)

(ii) In right $\triangle COQ$

$CO^2 = OQ^2 + CQ^2$

$\Rightarrow 10^2 = 8^2 + CQ^2$

$\Rightarrow CQ^2 = 100 - 64 = 36$

$\Rightarrow CQ = 6$

$\Rightarrow CD = 2CQ = 12 \text{ cm}$

OR

(ii) In right $\triangle AOP$

$AO^2 = OP^2 + AP^2$

$\Rightarrow 10^2 = 6^2 + AP^2$

$\Rightarrow AP^2 = 100 - 36 = 64$

$\Rightarrow AP = 8$

$\Rightarrow AB = 2AP$

$\Rightarrow AB = 16 \text{ cm}$