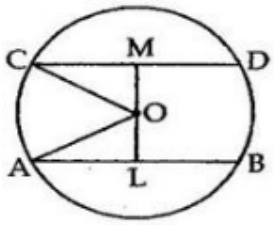
Exercise 11A

Question 5:

Let AB and CD be two chords of a circle having centre O.
AB = 30 cm and CD = 16 cm.



Join AO and OC which are its radii. So AO = 17 cm and CO = 17 cm.
Draw OM ⊥ CD and OL ⊥ AB.
Since the perpendicular from the centre of a circle to a chord bisects the chord, we have

$$AL = \frac{1}{2} \times AB$$

$$= \left(\frac{1}{2} \times 30\right) \text{cm} = 15 \text{ cm}$$

$$CM = \frac{1}{2} \times CD$$

$$= \left(\frac{1}{2} \times 16\right) \text{cm} = 8 \text{ cm}$$

Now, in right angled Δ ALO, we have

$$AO^2 = OL^2 + AL^2$$

$$\Rightarrow \quad LO^2 = AO^2 - AL^2$$

$$= 17^2 - 15^2$$

$$= 289 - 225 = 64$$

$$\Rightarrow \quad LO = \sqrt{64} = 8 \text{ cm}$$

Again, in right angled Δ CMO, we have

$$CO^2 = CM^2 + OM^2$$

$$\Rightarrow \quad OM^2 = CO^2 - CM^2$$

$$= 17^2 - 8^2$$

$$= 289 - 64 = 225$$

$$\Rightarrow \quad OM = \sqrt{225} = 15 \text{ cm}$$

$\therefore$ Distance between the chords = OM + OL = (8 + 15) cm
= 23 cm.

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