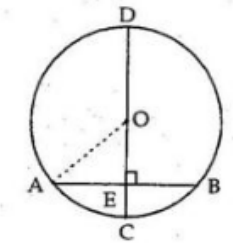
Exercise 11A

Question 6:

CD is the diameter of a circle with centre O, and is perpendicular to chord AB. Join OA.



AB = 12 cm and CE = 3 cm [Given]

Let OA = OC = r cm

Then, OE = (r – 3) cm

Since the perpendicular from the centre of a circle to a chord bisects the chord, we have

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

$$= \left(\frac{1}{2} \times 12\right) cm = 6 \text{ cm}$$

Now, in right angled ΔOEA,

$$OA^2 = OE^2 + AE^2$$

$$\Rightarrow \quad r^2 = (r-3)^2 + 6^2$$

$$\Rightarrow \quad = r^2 - 6r + 9 + 36$$

$$\Rightarrow \quad r^2 - r^2 + 6r = 45$$

$$\Rightarrow \quad 6r = 45$$

$$\Rightarrow \quad r = \frac{45}{6} = 7.5 \text{ cm}$$

$\therefore$ OA, the radius of the circle is 7.5 cm.

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