Exercise 11A

Question 7:

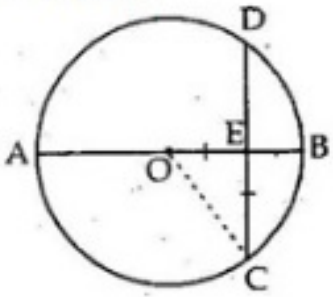
AB is the diameter of a circle with centre O which bisects the chord CD at point E.

CE = ED = 8cm and EB = 4 cm. Join OC.

Let OC = OB = r cm.

Then,

OE = (r – 4) cm



Now, in right angled ΔOEC

$$OC^2 = OE^2 + EC^2$$

$$r^2 = (r-4)^2 + 8^2$$

$$\Rightarrow \quad r^2 = r^2 - 8r + 16 + 64$$

$$\Rightarrow \quad r^2 = r^2 - 8r + 80$$

$$\Rightarrow \quad r^2 - r^2 + 8r = 80$$

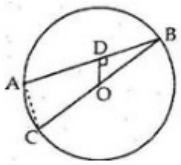
$$\Rightarrow \quad 8r = 80$$

$$\Rightarrow \quad r = \frac{80}{8} = 10 \text{ cm}$$

$\therefore$ the radius of the circle is 10 cm.

Question 8:

Given: OD $\perp$ AB of a circle with centre O. BC is a diameter.
To Prove: AC $\parallel$ OD and AC = $2 \times$ OD
Construction: Join AC.



Proof: We know that the perpendicular from the centre of the circle to a chord bisects the chord.
Here OD $\perp$ AB
$\Rightarrow$ D is the mid – point of AB
$\Rightarrow$ AD = BD
Also, O is the mid – point of BC
$\therefore$ OC = OB
Now, in $\triangle$ ABC, D is the midpoint of AB and O is the midpoint of BC.
Midpoint Theorem: The line segment joining the midpoints of any two sides of a triangle is parallel to the third side and equal to half of it.

$\therefore$ OD $\parallel$ AC and $OD = \frac{1}{2} AC$

$\therefore$ $AC = 2 \times OD$

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