



# Circles Ex 16.4 Q4

**Answer :**

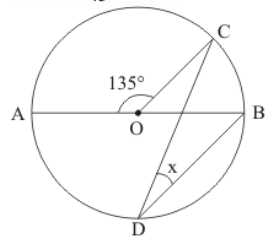
We have to find  $x$  in each figure.

(i) It is given that  $\angle AOC = 135^\circ$

$$\angle AOC + \angle COB = 180^\circ \quad [\text{Linear pair}]$$

$$\angle COB = 180^\circ - 135^\circ$$

$$= 45^\circ$$



As we know the angle subtended by an arc of a circle at the centre is double the angle subtended by it at any point on the remaining part of the circle.

$$\text{Now } x = \frac{1}{2} \angle COB = 22\frac{1}{2}$$

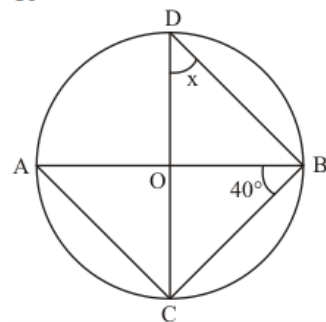
$$\text{Hence } x = 22\frac{1}{2}$$

$$(ii) \angle CAB = \angle CDB = x$$

As we know that  $\angle CAB = \angle CDB$  [Angles in the same segment]

Now  $\triangle CBD$  are isosceles triangle and line  $AB$  is diameter passing through centre.

So



$$\angle CBD + \angle BCD + \angle CDB = 180^\circ$$

$$80^\circ + \angle CDB + \angle BCD = 180^\circ$$

$$2(\angle CDB) = 180^\circ - 80^\circ$$

$$2(\angle CDB) = 100^\circ$$

$$\begin{aligned}\angle CDB &= \frac{100^0}{2} \\ &= 50^0\end{aligned}$$

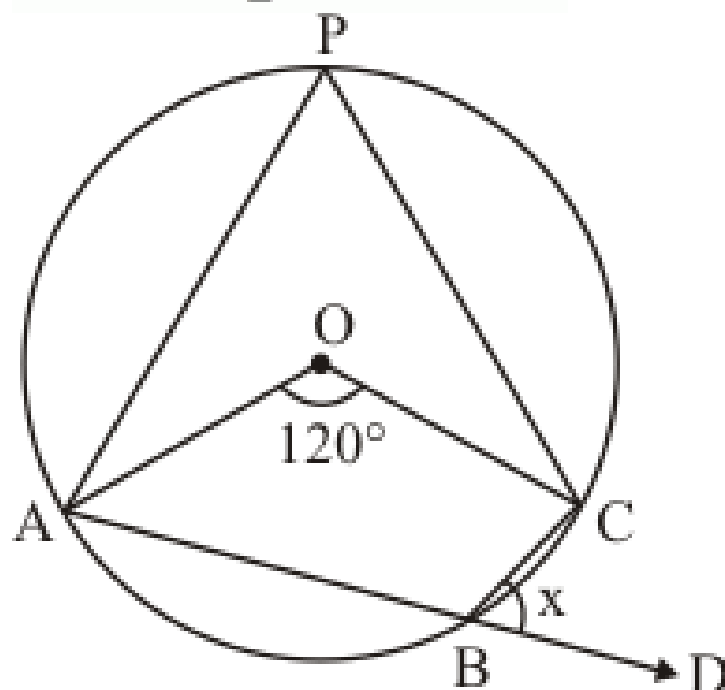
Hence

$$\boxed{x = 50^0}$$

(iii) It is given that

$$\angle AOC = 120^0$$

$$\angle ABC = \frac{1}{2} \text{ (reflexion)}$$



$$\Rightarrow \angle AOC = \frac{1}{2} (360^0 - 120^0)$$

$$\text{So } \angle AOC = 120^0 \dots\dots (1)$$

$$\text{And } \angle ABC + \angle CBD = 180^0$$

$$\angle 120^0 + \angle CBD = 180^0 \dots\dots (2)$$

$$\text{Then } \angle CBD = 60^0$$

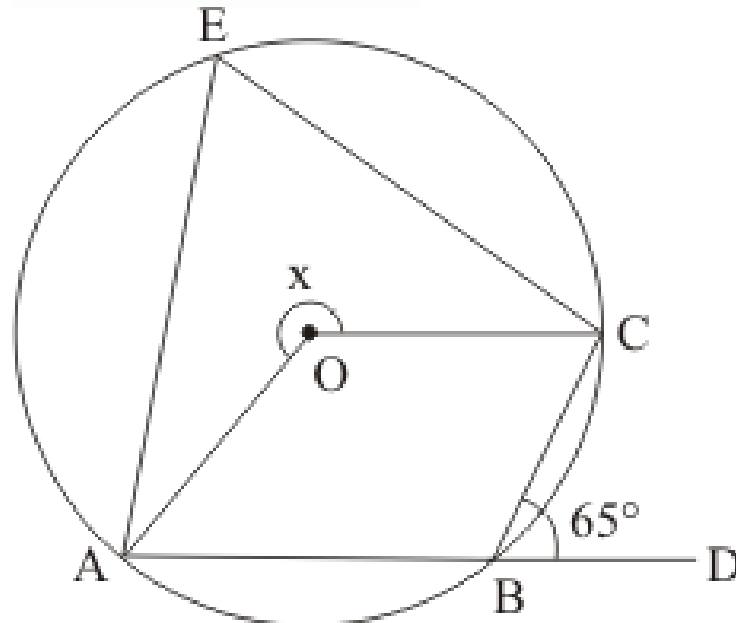
Hence  $x = 60^{\circ}$

(iv)  $\angle DBC = 65^{\circ}$

$$\angle ABC + \angle DBC = 180^{\circ} \text{ (Linear angle)}$$

$$\angle ABC = 180^{\circ} - 65^{\circ}$$

$$= 115^{\circ}$$



And

$$\angle x^{\circ} = 2(\angle ABC)$$

$$= 2 \times 115^{\circ}$$

$$= 230^{\circ}$$

Hence

$$x = 230^{\circ}$$

\*\*\*\*\* END \*\*\*\*\*