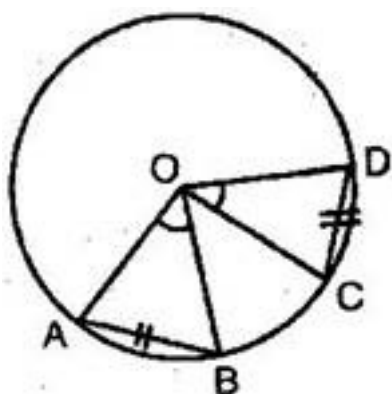


CBSE Class 9 Mathematics
NCERT Solutions
CHAPTER 10
Circles(Ex. 10.2)

1. Recall that two circles are congruent if they have the same radii. Prove that equal chords of congruent circles subtend equal angles at their centres.

Ans. I Part: Two circles are said to be congruent if and only if one of them can be superposed on the other so as to cover it exactly.



Let $C(O, r)$ and $C(O', s)$ be two circles. Let us imagine that the circle $C(O', s)$ is superposed on $C(O, r)$ so that O' coincide with O . Then it can easily be seen that $C(O', s)$ will cover $C(O, r)$ completely if and only if $r = s$.

Hence we can say that two circles are congruent, if and only if they have equal radii.

II Part: Given: In a circle (O, r) , AB and CD are two equal chords, subtend $\angle AOB$ and $\angle COB$ at the centre.

To Prove: $\angle AOB = \angle COD$

Proof: In $\triangle AOB$ and $\triangle COD$,

$AB = CD$ [Given]

$AO = CO$ [Radii of the same circle]

$BO = DO$ [Radii of the same circle]

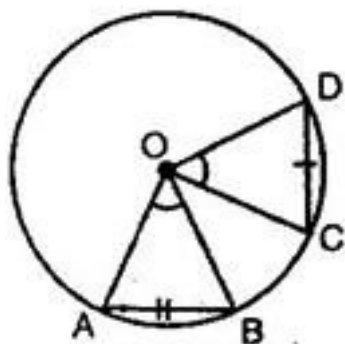
$\therefore \triangle AOB \cong \triangle COD$ [By SSS congruency]

$\Rightarrow \angle AOB = \angle COD$ [By C.P.C.T.]

Hence Proved.

2. Prove that if chords of congruent circles subtend equal angles at their centres, then the chords are equal.

Ans. Given: In a circle (O, r), AB and CD subtend two angles at the centre such that $\angle AOB = \angle COD$



To Prove: $AB = CD$

Proof: : In $\triangle AOB$ and $\triangle COD$,

$AO = CO$ [Radii of the same circle]

$BO = DO$ [Radii of the same circle]

$\angle AOB = \angle COD$ [Given]

$\therefore \triangle AOB \cong \triangle COD$ [By SAS congruency]

$\Rightarrow AB = CD$ [By CPCT]

Hence proved.