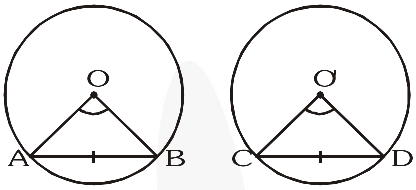
Ex - 10.2

Q1. 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.

Sol. **Given :** Two congruent circles C(O, r) and C(O', r) which have chords AB and CD respectively such that AB = CD.



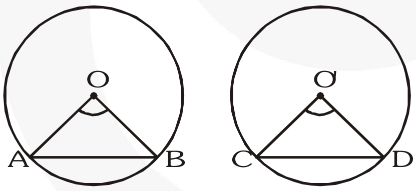
To prove : ∠AOB = ∠CO'D

Proof : From ΔAOB and ΔCO'D, we have

	AB = CD	[Given]
	OA = O'C	[Each equal to r]
	OB = O'D	[Each equal to r]
∴	AOB ≅ ΔCO'D	[By SSS-congruence]
⇒	∠AOB = ∠CO'D [C.P.C.T.]	

Q2. Prove that if chords of congruent circles subtend equal angles at their centres, then the chords are equal.

Sol. **Given :** Two congruent circle C(O, r) and C(O', r) which have chords AB and CD respectively, such that ∠AOB = ∠CO'D



To prove : AB = CD

Proof : In Δ AOB and Δ CO'D, we have :

	OA = O'C	[each equal to r]
	OB = O'D	[each equal to r]
	∠AOB = ∠CO'D	[given]
∴	ΔAOB ≅ ΔCO'D	[by SAS - criterion]
Hence, AB = CD		[C.P.C.T.]