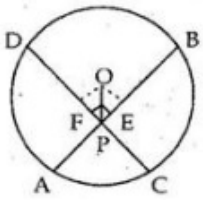
Exercise 11A

Question 9:

Sol. 9. Given : O is the centre in which chords AB and CD intersects at P such that PO bisects ∠BPD.

To Prove: AB = CD

Construction: Draw OE ⊥ AB and OF ⊥ CD



Proof : In Δ OEP and Δ OFP

∠ OEP = ∠ OFP [Each equal to 90°]

OP = OP [common]

∠ OPE = ∠ OPF [Since OP bisects ∠BPD]

Thus, by Angle-Side-Angle criterion of congruence, have,

∴ Δ OEP ≅ Δ OFP [By ASA]

The corresponding the parts of the congruent triangles are equal

⇒ OE = OF [C.P.C.T.]

⇒ Chords AB and CD are equidistant from the centre O.

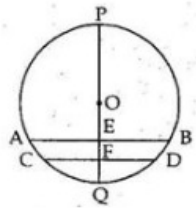
⇒ AB = CD [∵ chords equidistant from the centre are equal]

∴ AB = CD

Question 10:

Given: AB and CD are two parallel chords of a circle with centre O. POQ is a diameter which is perpendicular to AB.

To Prove: PF ⊥ CD and CF = FD



Proof: AB || CD and POQ is a diameter.

∠PEB = 90° [Given]

Then, ∠PFD = ∠PEB [AB || CD, Corresponding angles]

Thus, PF ⊥ CD

So, OF ⊥ CD

We know that, the perpendicular from the centre of a circle to chord, bisects the chord.

∴ CF = FD.

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