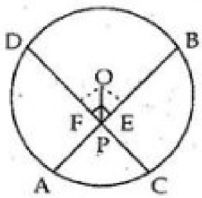
Exercise 11A

Question 9:

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

To Prove: $AB = CD$

Construction: Draw $OE \perp AB$ and $OF \perp CD$



Proof : In Δ OEP and Δ OFP

$\angle OEP = \angle OFP$ [Each equal to 90°]

$OP = OP$ [common]

$\angle OPE = \angle OPF$ [Since OP bisects $\angle BPD$]

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

$\therefore$ $\Delta OEP \cong \Delta OFP$ [By ASA]

The corresponding the parts of the congruent triangles are equal

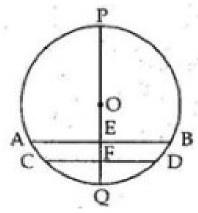
$\Rightarrow$ $OE = OF$ [C.P.C.T.]

$\Rightarrow$ Chords AB and CD are equidistant from the centre O.

$\Rightarrow$ $AB = CD$ [$\because$ chords equidistant from the centre are equal]

$\therefore$ $AB = CD$

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: $PF \perp CD$ and $CF = FD$

Proof: $AB \parallel CD$ and POQ is a diameter.

$\angle PEB = 90°$ [Given]

Then, $\angle PFD = \angle PEB$ [$AB \parallel CD$, Corresponding angles]

Thus, $PF \perp CD$

So, $OF \perp CD$

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

$\therefore$ $CF = FD$.

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