

In Δ^{le}

$\Delta OPA \cong \Delta OQC$

$OP = OQ$ (radii of same circle)

$OA = OC$ (Sides of a Square)

$\angle POA = \angle COQ = 90^\circ$

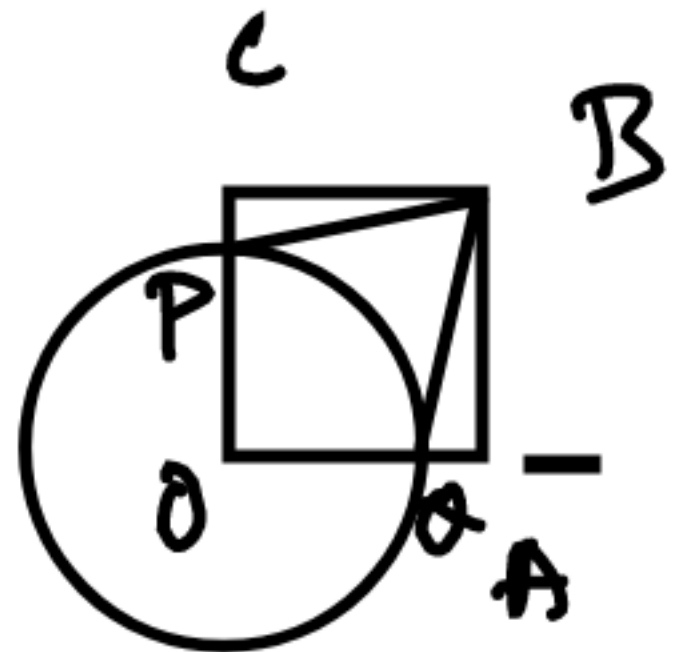
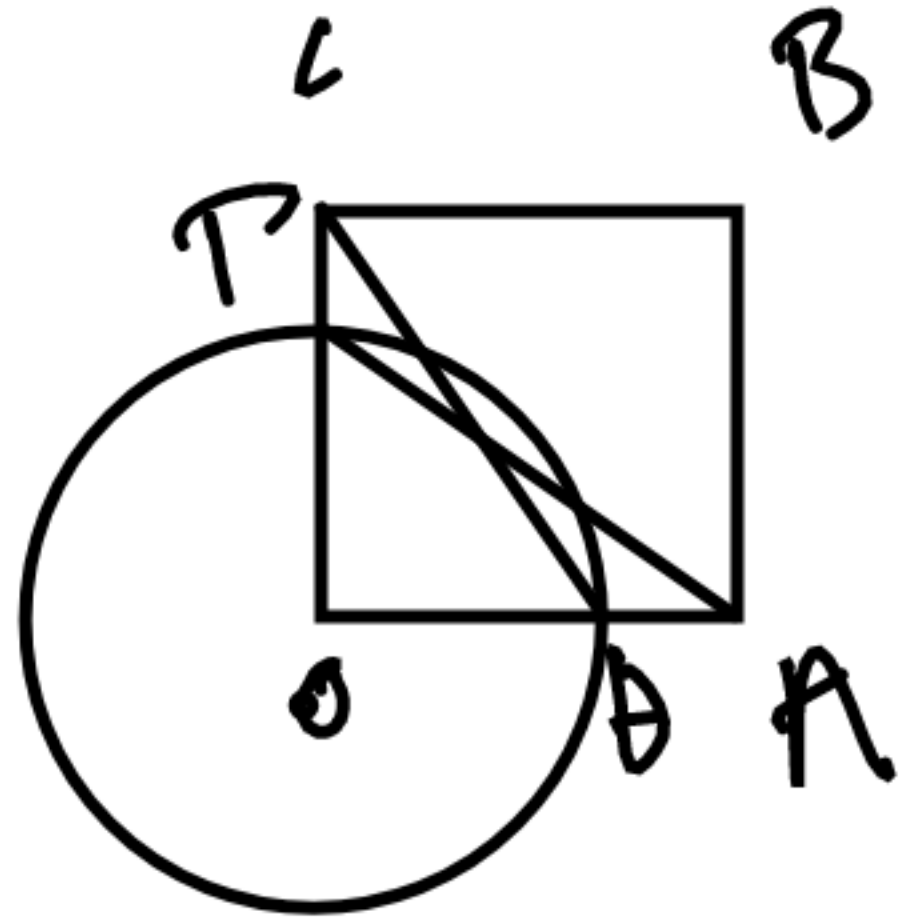
$\Delta OPA \cong \Delta OQC$ (R.H.S Rule)

$\therefore \Delta BPC \cong \Delta BQA$

$BC = AB$ (Sides of Square)

$\Delta BPC \cong \Delta BQC$ $PC = QA$ ($OP = OQ$, Radii, $OC = OA$
Sides of Square)

$\angle BCP = \angle A = 90^\circ$ (Vertex of Square)



$$AB = 30, OA = 17, O'A = 25$$

$$AD = \frac{1}{2} AB = 15$$

$$OA^2 = AD^2 + OD^2$$

$$17^2 = 15^2 + OD^2$$

$$289 - 225 = OD^2$$

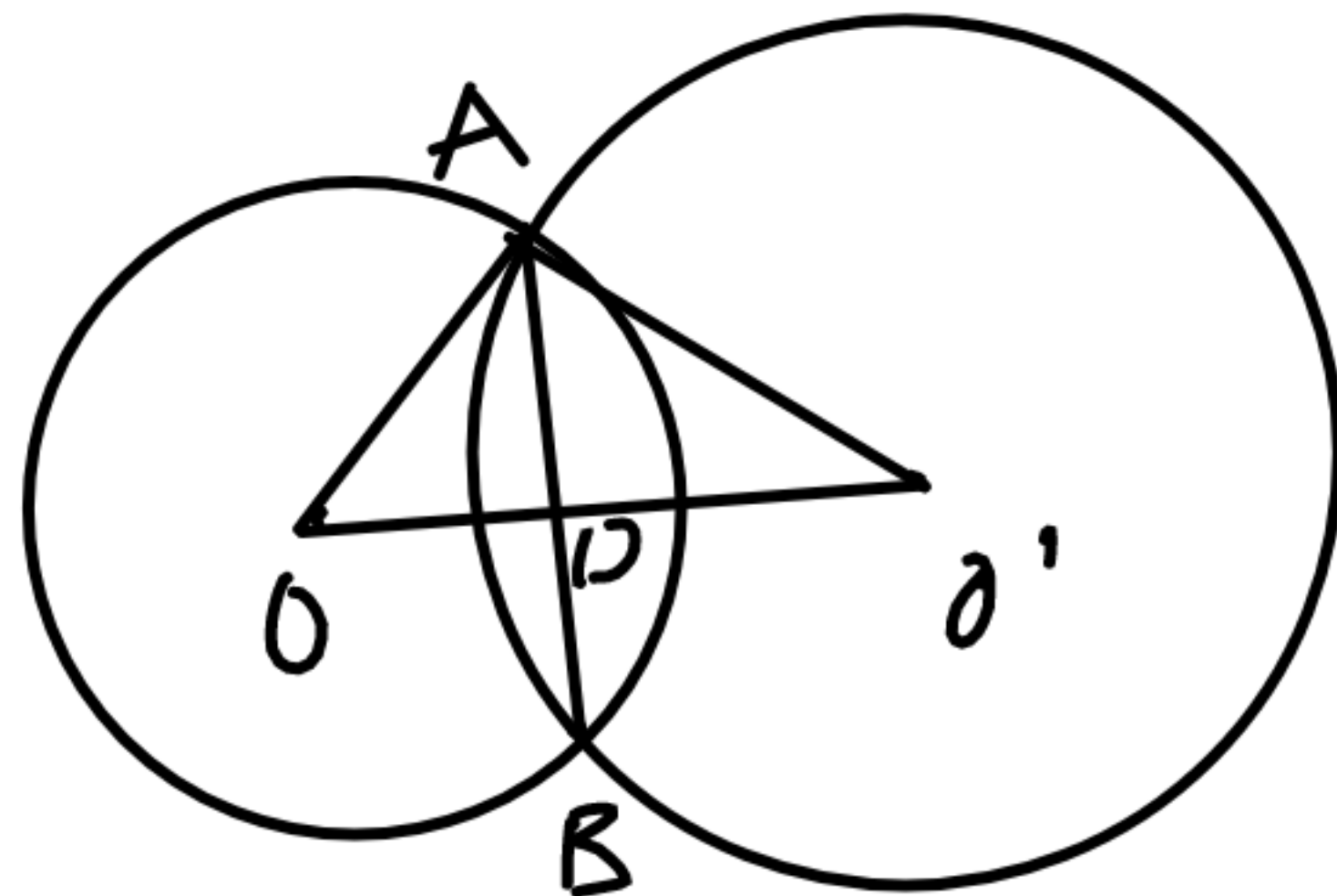
$$OD = 8$$

In $\triangle ADO'$

$$O'D^2 = O'A^2 - AD^2$$

$$= 25^2 - 15^2$$

$$= 10 \times 40 = 400$$



$$O'D = 20$$

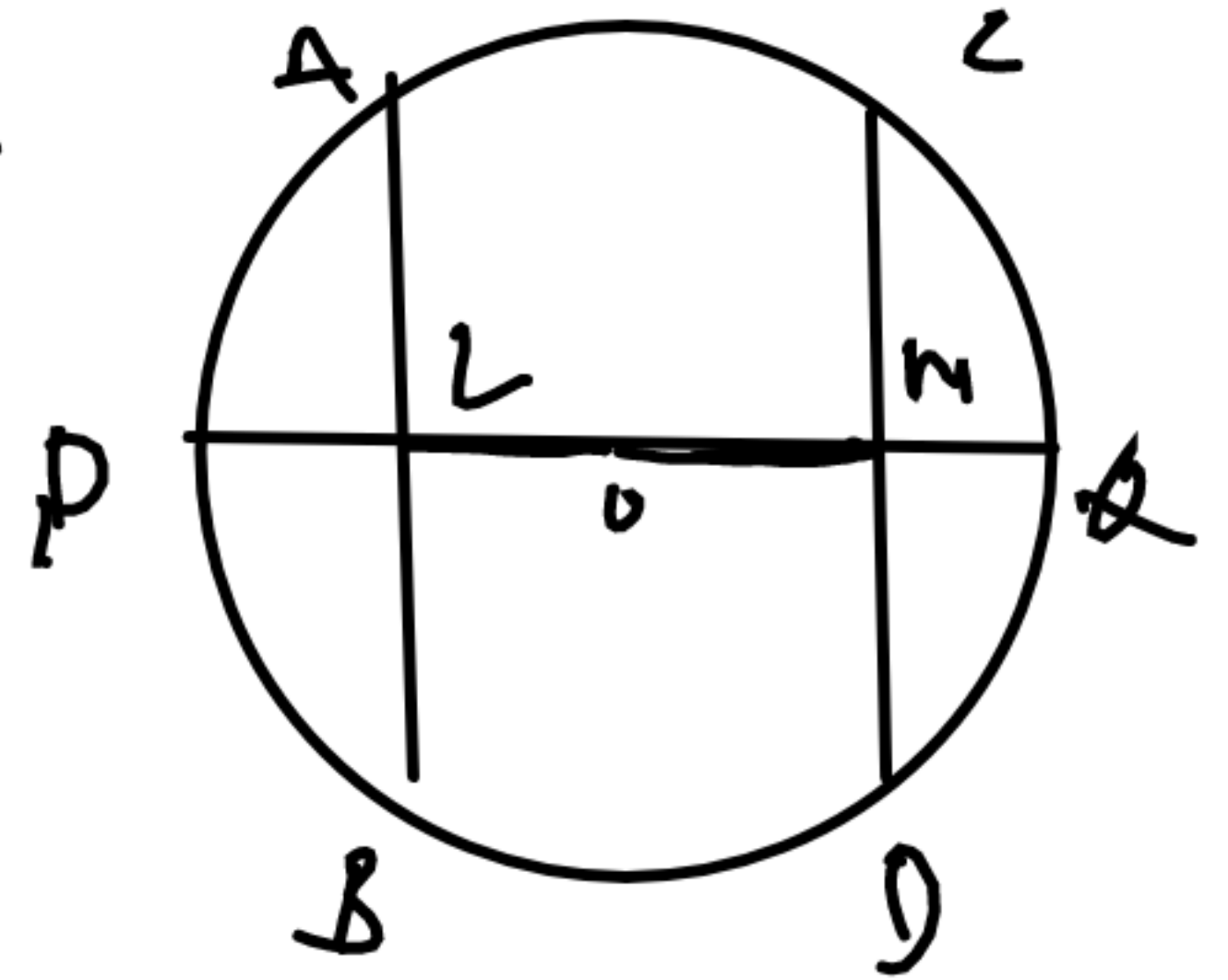
$$OO' = 8 + 20 = 28$$

\rightarrow Given AB & CD are the chords of a circle with centre O , L & M be midpoints of AB & CD respectively

$$OL \perp AB, OM \perp CD$$

$$\angle ALM = \angle LMD = 90^\circ$$

$$AB \parallel CD$$



The perpendicular $OP \perp BC$

$$OB = OC \quad \text{--- (1)}$$

$$OP \perp AD$$

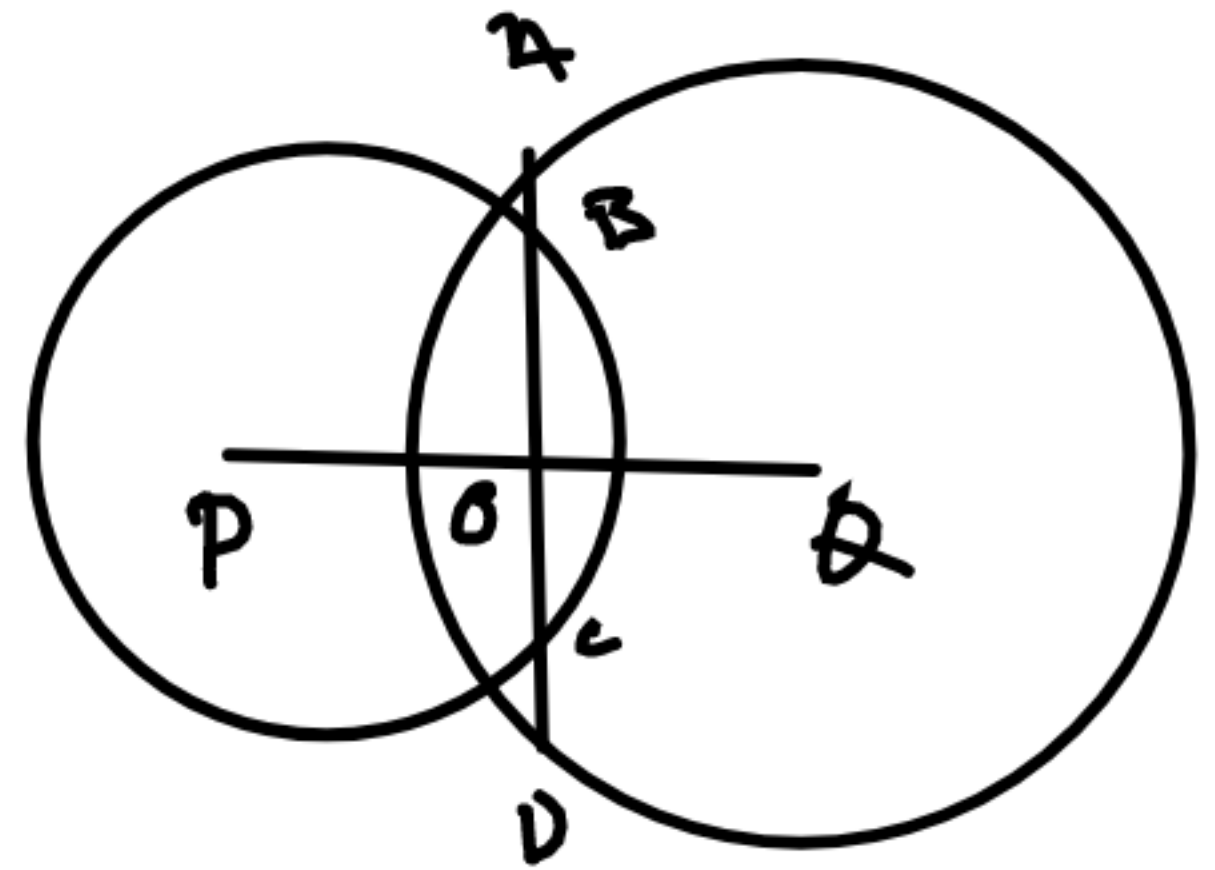
$$OA = OD \quad \text{--- (2)}$$

$$OA = OB + AB$$

$$OD = OC + CD$$

$$\cancel{OB} + AB = \cancel{OC} + CD$$

$$AB = CD$$



$$\underline{OA + OC} = \underline{OB + OD}$$

$$AC = BD$$

AB & CD are equal chords
 The perpendicular $OM = ON$ — (1)

$AB \perp CD$ $MPN = 90^\circ$ — (2)

AB & CD are equal chords point P divides AB & CD
 in equal ratio

$AP = PD$, $LP = PB$,
 $MP = PN$ — (3)

OMPN is Square

