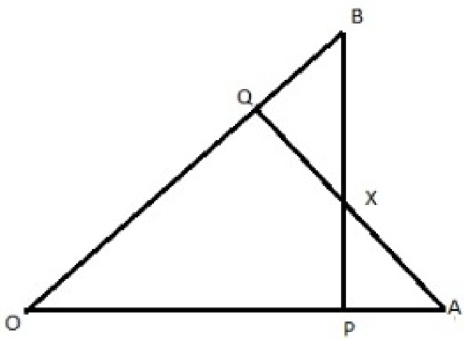
Exercise 5A

Question 26:

Given : OA = OB and OP = OQ



To Prove: (i) PX = QX

(ii) AX = BX

Proof: In ΔOAQ and ΔOPB, we have,

OA = OB [Given]

$\angle O = \angle O$ [Common]

OQ = OP [Given]

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

$\Delta OAQ = \Delta OPB$ [By SAS]

The corresponding parts of the congruent triangles are equal.

$\therefore$ $\angle OBP = \angle OAQ$ ....(1)

Thus , in ΔBXQ and ΔPXA, we have

BQ = OB - OQ

and, PA = OA - OP

But, OP = OQ

and OA = OB [Given]

Therefore, we have, BQ = PA ....(2)

Now consider triangles ΔBXQ and ΔPXA.

$\angle BXQ = \angle PXA$ [Vertical opposite angles]

$\angle OBP = \angle OAQ$ [from (1)]

BQ = PA [from (2)]

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

$\therefore$ $\Delta BXQ \cong \Delta PXA$

PX = QX [C.P.C.T]

AX = BX [C.P.C.T]

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