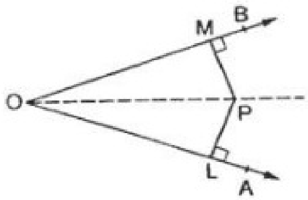
Exercise 5A

Question 31:

Given: An angle AOB and P is a point in the interior of $\angle AOB$ such that PL=PM. Also PL $\perp$ OA and PM $\perp$ OB



To Prove: $\angle POL = \angle POM$

Proof: In ΔOPL and ΔOPM, we have

$\angle OMP = \angle OLP = 90^\circ$ [Given]

OP = OP [Common

PL = PM [Given]

Thus, by Right angle-Hypotenuse-Side criterion of congruence, we have

$\Delta OPL \cong \Delta OPM$ [By R.H.S]

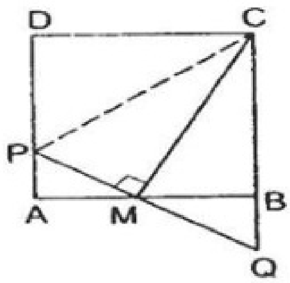
The corresponding parts of the congruent triangles are equal.

$\therefore$ $\angle POL = \angle POM$ [C.P.C.T]

$\Rightarrow$ OP is the bisector of $\angle LOM = \angle AOB$

Question 32:

Given M is the mid-point of side AB of a square ABCD and CM $\perp$ PQ



To Prove : (i) PA = BQ

(ii) CP = AB+PA

Proof: (i) In ΔAMP and ΔBMQ

$\angle$AMP = $\angle$BMQ [Vertically opposite angle]

$\angle$PAM = $\angle$MBQ= 90° [$\therefore$ ABCD is a square]

and AM = MB [Given]

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

ΔAMP $\cong$ ΔBMQ [By AAS]

The corresponding parts of the congruent triangles are equal.

$\therefore$ PA= BQ and MP =MQ .....(1)

(ii) Now ΔPCM and ΔQCM, we have

PM=QM [from (1)]

$\angle$PMC = $\angle$QMC= 90° [Given]

CM=CM [Common]

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

$\therefore$ ΔPCM $\cong$ ΔQCM [By SAS]

The corresponding parts of the congruent triangles are equal.

So, PC = QC [C.P.C.T]

$\Rightarrow$ PC = QB + CB

$\Rightarrow$ PC = AB + PA [$\because$ AB = CB and PA = QB]

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