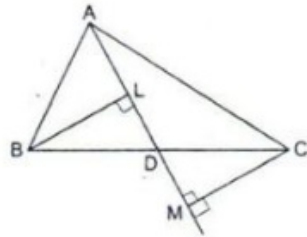Exercise 5A

Question 19:

Given: A Δ in which D is the mid point of BC and BL ⊥ AD and CM ⊥ AD.

To Prove: BL = CM

Proof: In ΔBLD and ΔCMD

$\angle BLD = \angle CMD = 90^0$ [Given]

$\angle BDL = \angle MDC$ [Vertically opposite angles]

?   BD = DC   [Given]
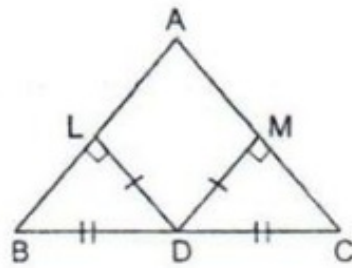
Thus by Angle-Angle-Side criterion of congruence, we have

ΔBLD = ΔCMD   [By AAS]

The corresponding parts of the congruent triangles are equal

So,   BL = CM   [C.P.C.T]

Question 20:

Given: In a ΔABC, D is the mid point of BC and DL ⊥ AB and DM ⊥ AC. Also, DL = DM

To prove: AB = AC

Proof: In right angled triangles ΔBLD and ΔCMD

$$\angle BLD = \angle CMD = 90^0$$

Hypt. BD = Hypt. CD   [Given]

DL = DM   [Given]

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

ΔBLD = ΔCMD   [By RHS]

The corresponding parts of the congruent triangles are equal.

∴ $\angle ABD = \angle ACD$ [C.P.C.T]

In ΔABC, we have

$\angle ABD = \angle ACD$

⇒   AB = AC

[∴ sides opposite to equal angles are equal]

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