Exercise 10.4

Question 1: In figure, It is given that AB = CD and AD = BC. Prove that ΔADC ≅ ΔCBA.
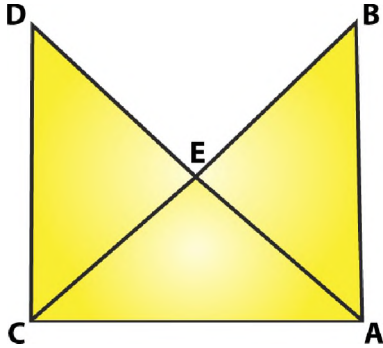
Solution:

From figure, AB = CD and AD = BC.

To prove: ΔADC ≅ ΔCBA

Consider Δ ADC and Δ CBA.

AB = CD   [Given]

BC = AD   [Given]

And AC = AC   [Common side]

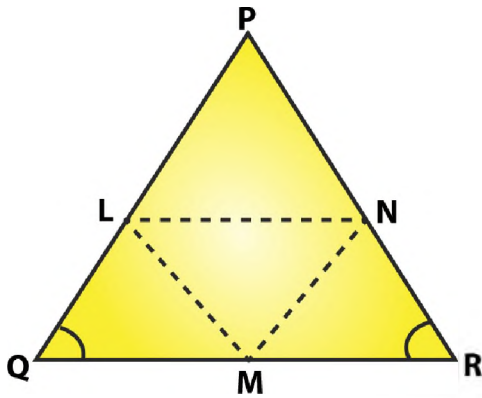So, by SSS congruence criterion, we have

ΔADC≅ΔCBA

Hence proved.

Question 2: In a Δ PQR, if PQ = QR and L, M and N are the mid-points of the sides PQ, QR and RP respectively. Prove that LN = MN.

Solution:
Given: In Δ PQR, PQ = QR and L, M and N are the mid-points of the sides PQ, QR and RP respectively

To prove: LN = MN

Join L and M, M and N, N and L

We have PL = LQ, QM = MR and RN = NP

[Since, L, M and N are mid-points of PQ, QR and RP respectively]

And also PQ = QR

PL = LQ = QM = MR = PN = LR ....(i)
 [Using mid-point theorem]

MN ∥ PQ and MN = PQ/2

MN = PL = LQ ......(ii)

Similarly, we have

LN ∥ QR and LN = (1/2)QR

LN = QM = MR ......(iii)

From equation (i), (ii) and (iii), we have

PL = LQ = QM = MR = MN = LN

This implies, LN = MN

Hence Proved.