RD SHARMA

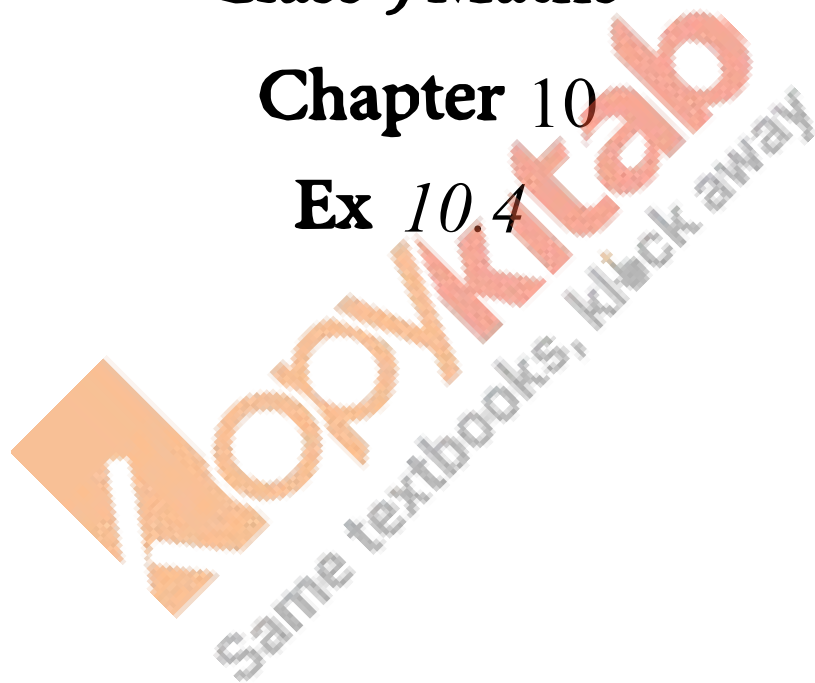## Solutions

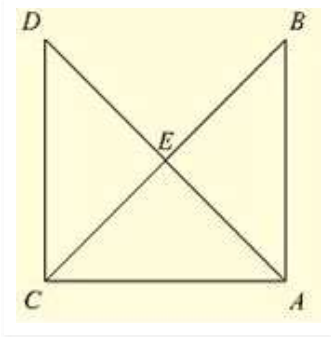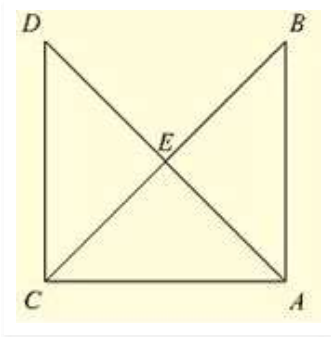## Class 9 Maths

Chapter 10

Ex 10.4

(1) In fig (10).9(2) It is given that AB = CD and AD = BC. Prove that $\triangle ADC \cong \triangle CBA$.

Solution:

Given that in the figure AB = CD and AD = BC.

We have to prove $\triangle ADC \cong \triangle CBA$

Now,

Consider $\triangle$ ADC and $\triangle$ CBA.

We have

AB = CD   [Given]

BC = AD   [Given]

And AC = AC   [Common side]

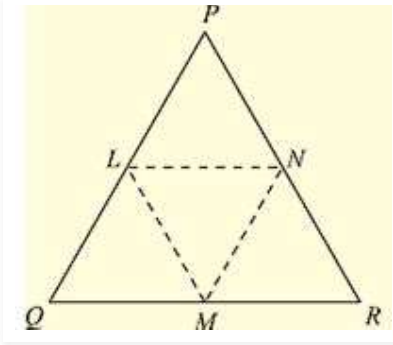So, by SSS congruence criterion, we have

$\triangle ADC \cong \triangle CBA$

Hence proved

(2) In a $\triangle$ 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.

Sol: Given that in $\triangle$ PQR, PQ = QR and L, M and N are the mid-points of the sides PQ, QR and RP respectively

We have 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 Pp. QR and RP respectively]

And also PQ = QR

$PL = LQ = QM = MR = \dfrac{PQ}{2} = \dfrac{QR}{2}$ ......(i) Using mid-point theorem,

We have

$MN \parallel PQ$ and $MN = \dfrac{PQ}{2}$

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

Similarly, we have

$LN \parallel QR$ and $LN = (1/2)QR$

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

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

$PL = LQ = QM = MR = MN = LN$

$LN = MN$