

RD SHARMA

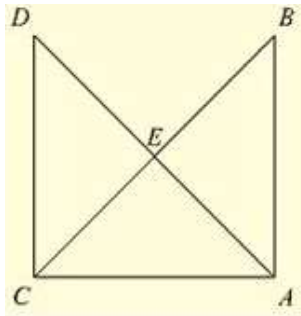
Solutions

Class 9 Maths

Chapter 10

Ex 10.4

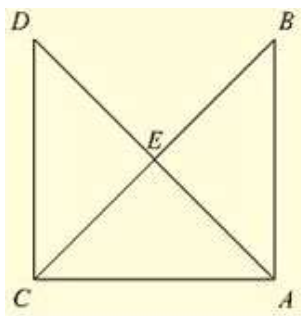
(1) In fig (10).9(2) It is given that $AB = CD$ and $AD = BC$. Prove that $\triangle ADC \cong \triangle CBA$.



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

$$AB = CD \quad [\text{Given}]$$

$$BC = AD \quad [\text{Given}]$$

$$\text{And } AC = AC \quad [\text{Common side}]$$

So, by SSS congruence criterion, we have

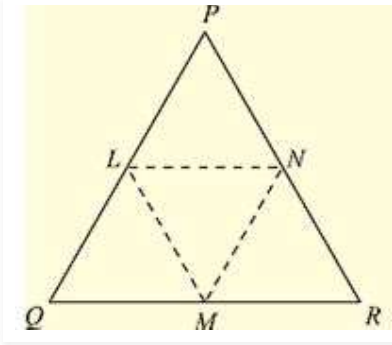
$$\triangle ADC \cong \triangle CBA$$

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 Pq. QR and RP respectively]

And also $PQ = QR$

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

We have

$$MN \parallel PQ \text{ and } MN = \frac{PQ}{2}$$

$$MN = PL = LQ \dots\dots(ii)$$

Similarly, we have

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

$$LN = QM = MR \dots\dots(iii)$$

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

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

$$LN = MN$$