Question

ID: 1109594870

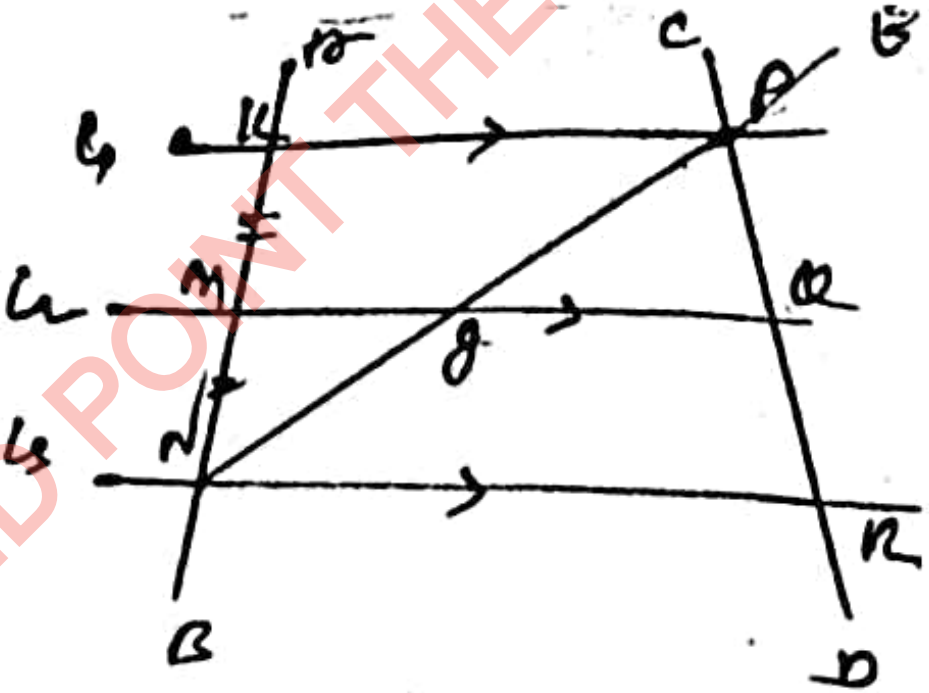
In the given figure, $L_1 \parallel L_2 \parallel L_3$ and $KM = MN$.

(1) If $PQ = 1.8\ cm$, find QR.

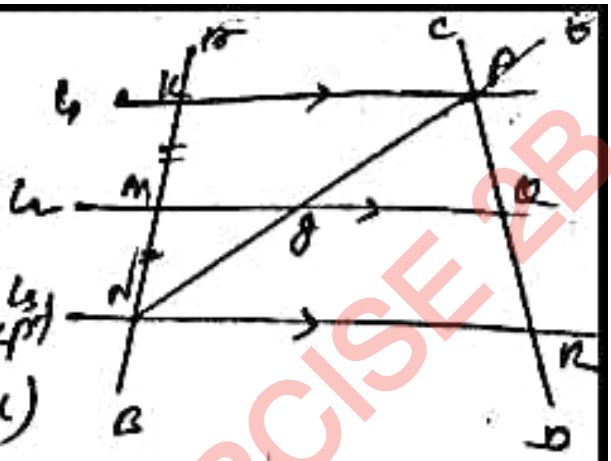
(2) If $PN = 5.8\ cm$, find GN.

(3) If $PR = 4.6\ cm$, find PQ.

(4) If $PG = 2.4\ cm$, find PN.



Solution,



(1) if $PQ = 1.8$ find QR

$L_1 \| L_2 \| L_3$

$KM = MN$ $PN = GN$ (by intercept theorem)

$\therefore PQ = QR$

Hence $QR = 1.8$

(2) if $PN = 5.8$ cm. find GN

$L_1 \| L_2 \| L_3$

$PG = GN$ $PQ = QR$ (by Intercept theorem)

$\frac{PN}{2} = GN$

$GN = \frac{5.8}{2} = 2.9$ cm.

(3) if $PR = 4.6$ cm, find PQ

$L_1 \| L_2 \| L_3$ and $KM = MN$

$PQ = QR$ (by Intercept theorem)

$PQ = \frac{PR}{2} = \frac{4.6}{2} = 2.3$ cm.

(4) if $PG = 2.4$ cm. fin PN

$L_1 \| L_2 \| L_3$ $KM = MN$

Hence $PG \| GN$ (by Intercept theorem)

$PN = 2PG$

$PN = 4.8$ cm

Question

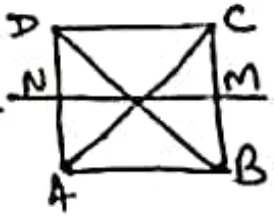
ID: 1106760291

ABCD is a quadrilateral in which $AB \parallel DC$ and $AD \parallel BC$. A line *MN*, parallel to *CD*, is drawn through the midpoint *M* of the side *BC* which meets *AD* at *N*. Prove that *N* is the midpoint of *AD*. Also, prove that *MN* bisects the diagonal *AC*.

Solution

Given; ABCD is a quadrilateral in which AB || DC and AD || BC. A line MN, parallel to CD, is drawn through the midpoint M of the side BC which meets AD at N.

To Prove: N is the mid point of AD, and Prove that MN bisects the diagonal Ac.



Soln: The line MN parallel to CD

CMB and DNA are similar to each other

DN = NA and CM = MD

So, N is midpoint

from midpoint theorem

As, it is mid point it bisects Ac.

Hence, proved.

Question

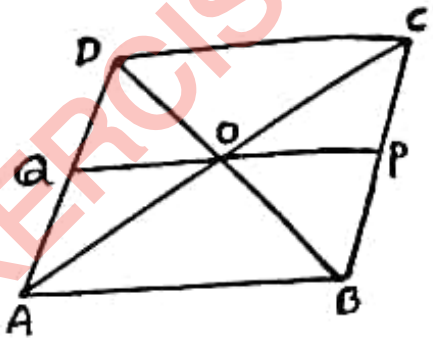
ID: 1104411475

ABCD is a quadrilateral in which $AB \parallel CD$. *P* is the midpoint of *BC*. *PQ* is drawn parallel to *CD* which meets *AD* at *Q*. Prove that *PQ* bisects *AD*. Also, prove that *PQ* bisects both the diagonals, *AC* and *BD*.

Solution

Given : ABCD is a quadrilateral AB||CD. P is the midpoint of BC. PQ||CD which meets AD at Q.

To prove : PQ bisects AD and PQ bisects both the diagonals AC and BD.



Proof : In ΔABC, PO is Parallel to AB
Since P is the midpoint of BC, Parallel line drawn through P bisects the diagonal AC.

Hence $AO = OC$.

Now in ΔACD, OQ||CD.
Line OQ||CD and also passing through midpoint O of AC, bisects the other side AD.
So, PQ bisects AD.

Now in ΔABD, OQ||CD.
Since Q is the midpoint of AD, parallel line drawn through Q bisects the other diagonal BD.

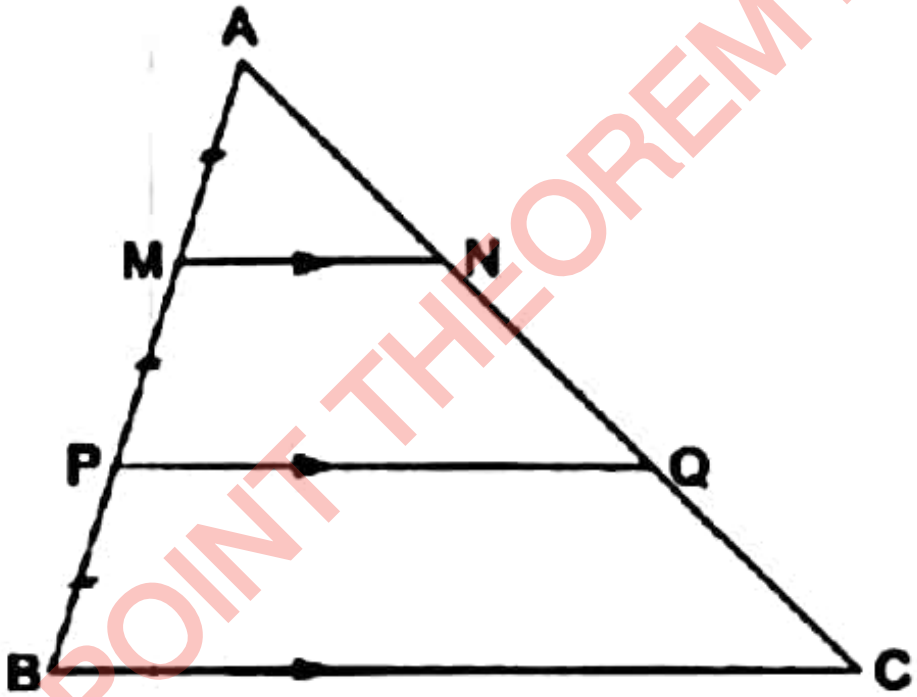
From the proof of ΔABC in which P bisects the other side AC and ΔABD, Q bisects the other side BD.

Hence, PQ bisects AD and also, PQ bisects both the diagonals AC and BD.

Question

ID: 1106760426

In the given triangle ABC, $MN \parallel PQ \parallel BC$ and $AM = MP = PB$. Prove that MN and PQ trisect AC.



Solution

Given

MN || PQ || BC and AM = MP = PB

To Prove

MN and PQ trisect AC

Solution

In ΔAPQ, $MN \parallel PQ$

by mid point theorem

$AN = NQ \longrightarrow (1)$

Similarly

In ΔABC, $NQ = QC \rightarrow (2)$

So, $AN = NQ = QC$

Therefore MN and PQ trisect AC