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CLASS – 9

MATHEMATICS

Chapter – 8

Quadrilaterals

Part - 9

Exercise 8.1 (Question 5 - 6)

Vikas Saini

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5. In parallelogram ABCD, two points P and Q are taken on diagonal BD such that DP = BQ (see Fig.). Show that:

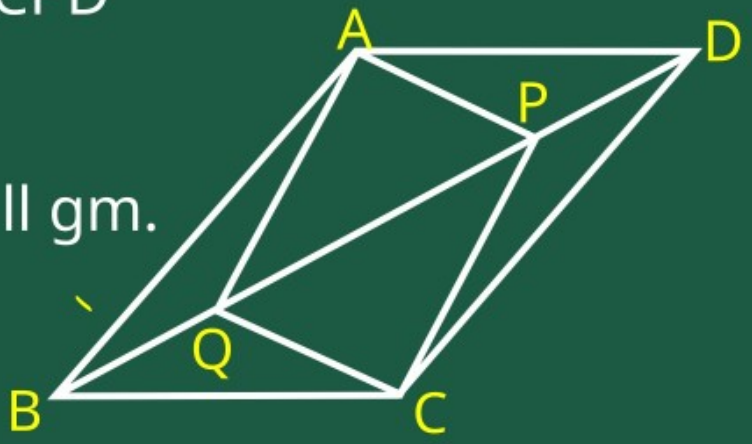
(i) $\Delta APD \cong \Delta CQB$

(ii) AP = CQ

(iii) $\Delta AQB \cong \Delta CPD$

(iv) AQ = CP

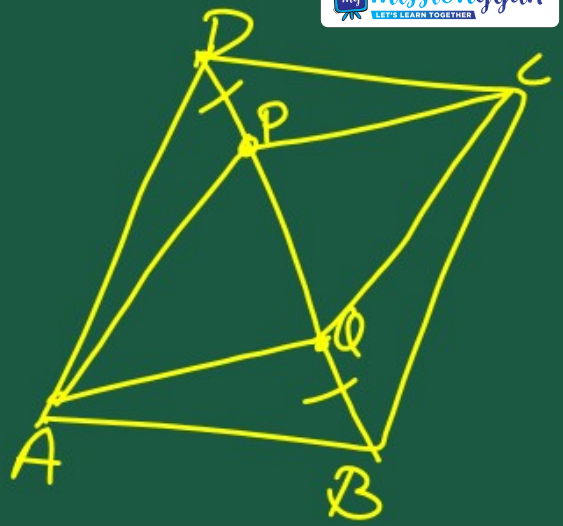
(v) APCQ is a ll gm.



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Given: ABCD is ||gm. whose BD is diagonal On it there two points P & Q. St. DP = BQ



To prove:

(i) $\triangle APD \cong \triangle CQB$

(ii) $AP = CQ$

(iii) $\triangle AQB \cong \triangle CPD$

(iv) $AQ = CP$

(v) APCQ is ||gm.

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Sol:-

(i) $\Delta APD \cong \Delta CQB$

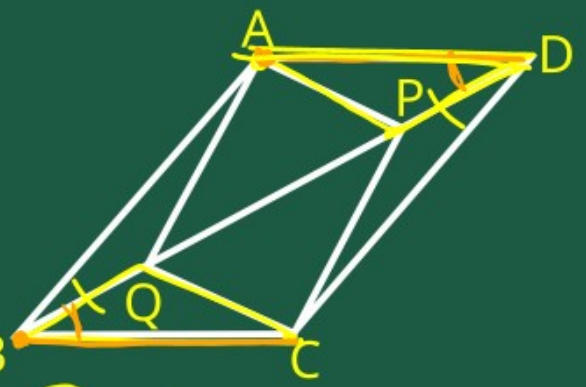
In $\triangle APD$ & $\triangle CQB$

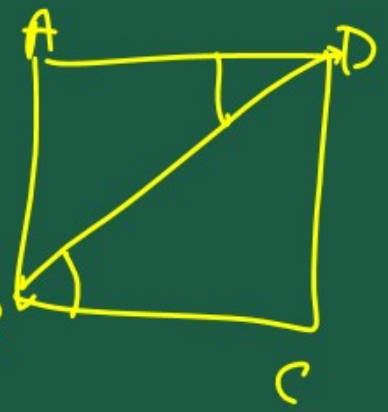
$DP = BQ$ [Given]

$AD = BC$ [$\because ABCD$ is llgm]

$\angle ADP = \angle CBQ$ [A-I-A].

So, $\triangle APD \cong \triangle CQB$ (By SAS Rule)





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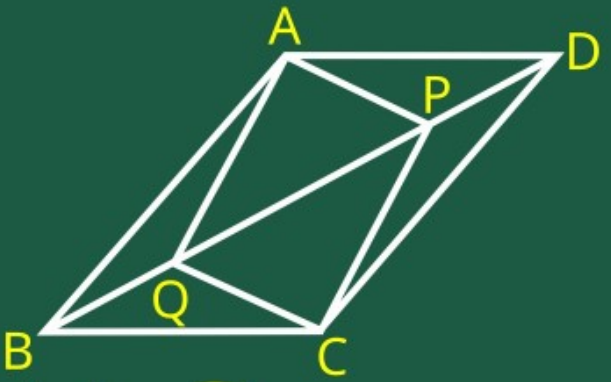
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(ii) AP = CQ

Since

$\triangle APD \cong \triangle CQB$ [Proved above]

$AP = CQ$ [C.P.C.T.]



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(iii) $\Delta AQB \cong \Delta CPD$

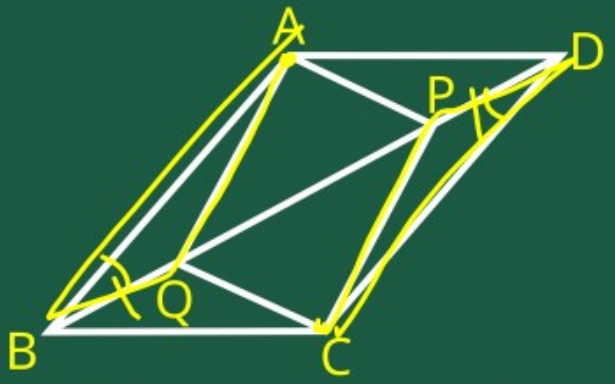
In ΔAQB & ΔCPD

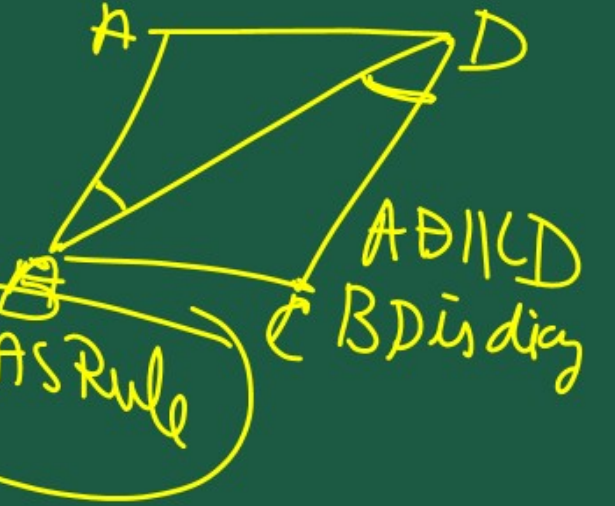
$AB = CD$ [$\because$ ABCD is llgm]

$BQ = DP$ [given]

$\angle ABQ = \angle CDP$ [A-I-A]

$\Delta AQB \cong \Delta CPD$ By SAS Rule





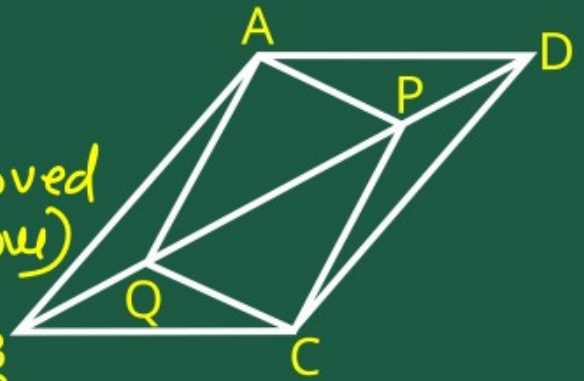
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(iv) AQ = CP

Since $\triangle AQB \cong \triangle CPD$ [Proved above]

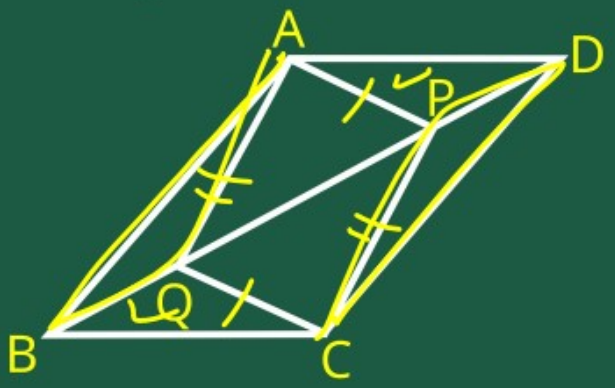
$AQ = CP$ [C.P.C.T.]



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(v) APCQ is a parallelogram.



In Quad. APCQ

AP = CQ

AQ = CP [Proved above]

In Quad. if both pair of opp Sides are equal then it is ||gm

∴ APCQ is ||gm.

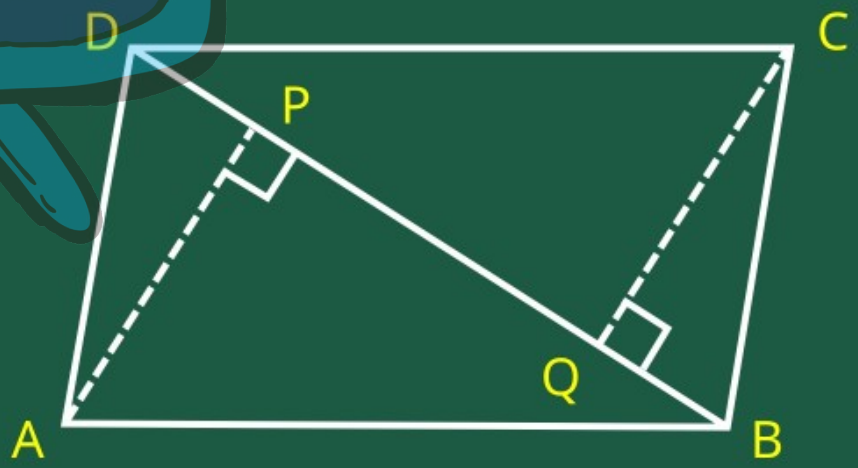
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6. ABCD is a parallelogram and AP and CQ are perpendiculars from vertices A and C on diagonal BD (see Fig.). Show that

(i) $\Delta APB \cong \Delta CQD$

(ii) $AP = CQ$



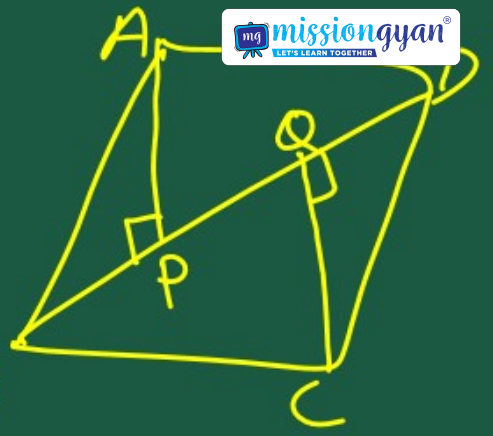
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Given: ABCD is ||gm

BD is diagonal.

AP, CQ are perpendiculars drawn from A & C on BD diagonal



To prove: $\triangle APB \cong \triangle CQD$

$AP = CQ$.

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Soln :-

(i) $\Delta APB \cong \Delta CQD$

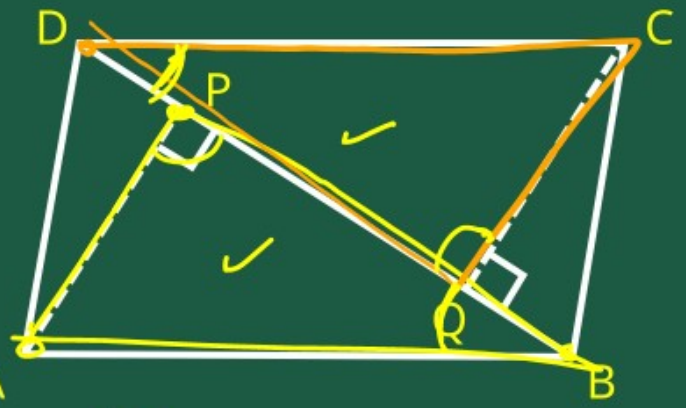
In ΔAPB & ΔCQD

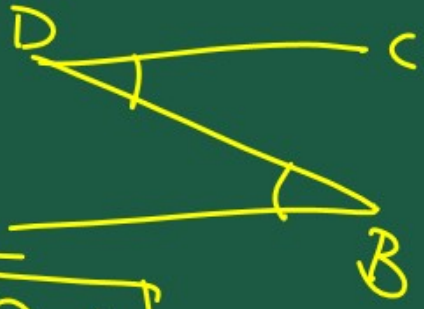
$AB = CD$ [$\because$ ABCD is ||gm]

$\angle APB = \angle CQD = 90^\circ$

$\angle ABP = \angle CDQ$ [A-I-A]

$\Delta APB \cong \Delta CQD$ By AAS Rule





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(ii) AP = CQ

Since

$\triangle APB \cong \triangle CQD$ [Proved Above]

$AP = CQ$ [C.P.C.T].

