Ch-8

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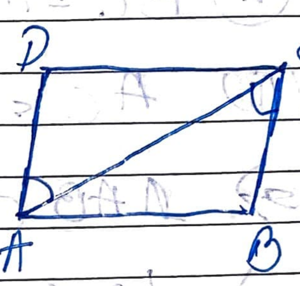
1) In $\triangle ABC$ and $\triangle ADC$



(i) $\angle BAC = \angle DCA$

(ii) $AC = AC$ [common]

(iii) $\angle BCA = \angle DAC$

$\Rightarrow \triangle ABC \cong \triangle AD$

2) Proof

In $\triangle ABC$ and $\triangle ABD$

$AB = AB$

$BC = AD$

[Opposite sides of a parallelogram]

~~AC = BD~~ $AC = BD$ [Given]

$\therefore \triangle ABC \cong \triangle BAD$ [SSS]

$\angle ABC = \angle BAD$

Since ABCD is a parallelogram

$\angle ABC + \angle BAD = 180°$

$\angle ABC + \angle ABC = 180$

$2\angle ABC = 180°$

$\angle ABC = \angle BAD = 90°$

3) ΔABC and ΔCDA

(i) $AB = CD$ [given]

(ii) $BC = AD$ [given]

(iii) $AC = AC$ (common)

$\Rightarrow \Delta ABC \cong \Delta CDA$ [SSS]

$\Rightarrow \angle BAC = \angle ACD$ [by CPCT]

but these two are a.i.a

$\Rightarrow CD \parallel AB$

$\angle BCA = \angle CAD$ [by CPCT]

but these 2 are a.i.a

$\Rightarrow AD \parallel BC$