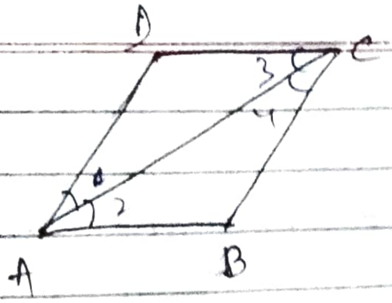
Date
Page

Q6)



Sol^n:-

i) In Δ ADC & Δ CBA,

AD = CB (opposite sides of a parallelogram).

DC = BA (opposite sides of a parallelogram)

AC = CA (common side)

Δ ADC $\cong$ CBA (SSS congruency)

Thus,

$\angle$ACD = $\angle$CAB (By CPCT)

$\angle$CAB = $\angle$CAD (given)

$\Rightarrow$ $\angle$ACD = $\angle$BCA.

Thus, AC bisects $\angle$C also.

ii) $\angle$ACD = $\angle$CAD (proved)

~~$\Rightarrow$ AD = CD (opposite sides of a parallelogram)~~

~~Thus, ABCD is a parallelogram.~~

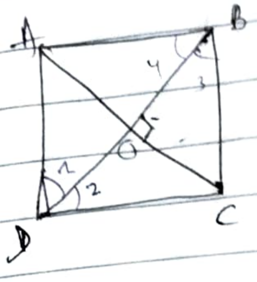
$\angle 1 = \angle 2$ (AC is bisector of $\angle$A).

$\left.\begin{array}{l}\angle 1 = \angle 4 \\ \angle 2 = \angle 3\end{array}\right]$ (alt. int. $\angle$s).

$\angle 3 = \angle 4$
So, AC bisects $\angle C$.

$\angle 1 = \angle 2 = \angle 3 = \angle 4$
In $\triangle ABC$, $\angle 2 = \angle 3$
$\Rightarrow AB = BC$
$AD = CD$ (opp. side of parallelogram)
$BC = AD$ "

Q7)



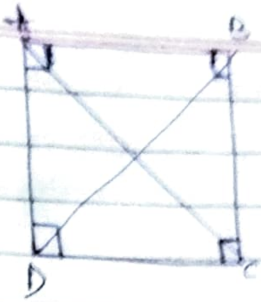
Given:- ABCD is a rhombus.
AC & BD are its diagonals.

To prove:- In $\triangle ABC$
$AB = BC$ (sides of a rhombus)

$\Rightarrow \angle 2 = \angle 3$ —(i)
||ly In $\triangle ADC$
$AD = DC$
$\Rightarrow \angle 1 = \angle 4$ —(ii)

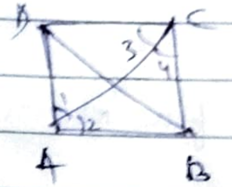
$AB \parallel DC$
$\angle 2 = \angle 4$ & $\angle 1 = \angle 3$ (alt. int. $\angle$s)
$\angle 1 = \angle 2 = \angle 3 = \angle 4$
$\angle 1 = \angle 2 \Rightarrow$ AC bisects $\angle A$.
$\angle 3 = \angle 4$
AC bisects

Q.8)



1) $\angle DAC = \angle DCA$ (AC bisects $\angle A$ as well as $\angle C$)
$\Rightarrow AD = CD$ (sides opposite to equal angles of a ~~...~~ triangle are equal)
$CD = AB$ (opposite sides of a rectangle)
$AB = BC = CD = AD$

Thus ABCD is a square.



Proof :- AC bisects $\angle A$ & $\angle C$
$\angle A = \angle C = 90^\circ$
$\Rightarrow \frac{\angle A}{2} = \frac{\angle C}{2} = 45^\circ$

$\angle 1 = \angle 2 = \angle 3 = \angle 4 = 45^\circ$

In Δ ABC,
$\angle 2 = \angle 4$

$\Rightarrow AB = BC$ (opp. sides of equal $\angle$s of a Δ are equal)

$$\left.\begin{array}{l} AB = CD \\ BC = AD \end{array}\right\}$$ (opp. sides of a rect. are equal)