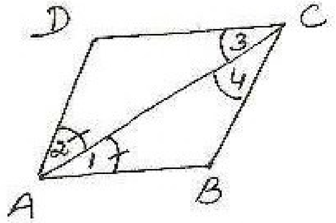
ex 8.1

(6)



To show – AC bisects $\angle C$
ABCD is a rhombus

Proof DC ∥ AB
$\angle 3 = \angle 1$ ...(i) [al. in. ∠s]
AD ∥ BC
$\angle 2 = \angle 3$ ...(ii) [al. in. ∠s]
$\angle 1 = \angle 2$ ...(iii) (given)

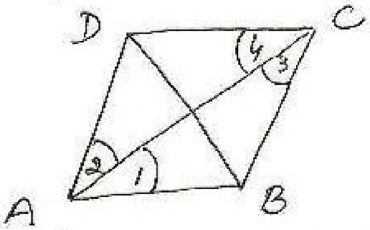
From (i), (ii), (iii)
$\angle 3 = \angle 4$

In △ABC and △ADC
$\angle 1 = \angle 2$ (given)
AC = AC (common)
$\angle 4 = \angle 3$ (Proved)

∴ △ABC ≅ △ADC by ASA prop.
AB = AD (cpct)

∴ ∥gm ABCD is a rhombus

(7)



To Prove AC bisects ∠A, ∠C
BD bisects ∠B, ∠D

Proof – In △ABC and △ADC
AB = AD (Sides of rh.)
BC = DC
AC = AC (common)

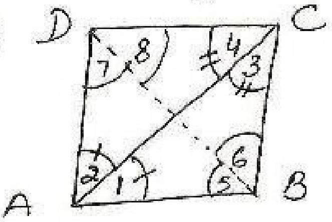
∴ △ABC ≅ △ADC by SSS prop

$\angle 1 = \angle 2$ (cpct)
$\angle 3 = \angle 4$

∴ AC bisects ∠A, ∠C

Similarly ∠B, ∠D.

(8)



To show – (i) rect. ABCD is a square
(ii) diagonal BD bisects ∠B, ∠D

Proof –
In △ABC and △ADC
$\angle 1 = \angle 2$ (given)
AC = AC (common)
$\angle 3 = \angle 4$ (given)

∴ △ABC ≅ △ADC by ASA prop
AB = AD (cpct)
rect. ABCD is a square.

In △ABD and △CBD
AB = CB (Sides of Sq.)
BD = BD (common)
AD = CD (Sides of Sq)
∴ △ABD ≅ △CBD by SSS p
$\angle 5 = \angle 6$, $\angle 7 = \angle 8$ (cpct)
⇒ BD bisects ∠B and ∠D