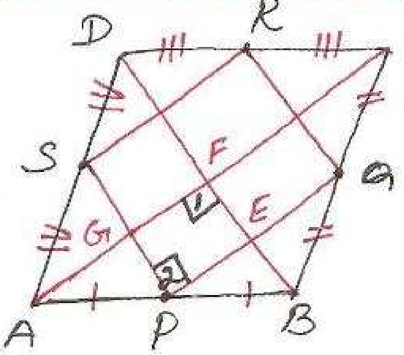
(4)



to prove - □PQRS is a rectangle

proof □PQRS is a ||gm [Same as A3]

PQ || AC (Proved)

$\Rightarrow$ PE || GF

In $\triangle ABD$, PS joins midpts of sides AB and AD respectively

PS || BD (Midpt. theorem)

$\Rightarrow$ PG || EF

□PEFG is a ||gm [PE || GF, PG || EF]

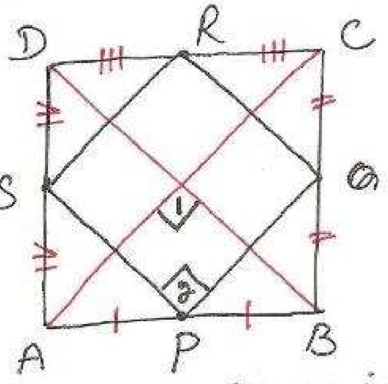
$\angle 1 = \angle 2$ (opp angles of a ||gm)

But $\angle 1 = 90^\circ$ [$AC \perp BD$]

$\therefore \angle 2 = 90^\circ$

||gm PQRS is a rect.

(5)



to prove - □PQRS is a Square

proof □PQRS is a rectangle. [Same as A.4]

$PQ = \frac{1}{2} AC$ ... (i) (proved)

PS joins midpoints of sides AB and AD resp.

$PS = \frac{1}{2} BD$ ... (ii) (Mid pt. th.)

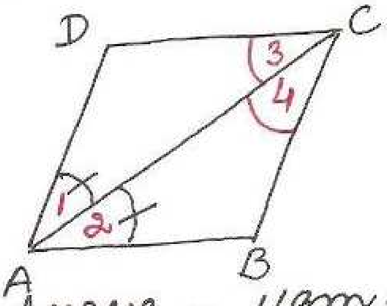
$AC = BD$ ... (iii) (given)

From (i), (ii), (iii)

$PS = PQ$

rect. PQRS is a square.

(6)



to prove - ||gm ABCD is a rhombus

proof DC || AB (opp. sides of ||gm)

$\angle 3 = \angle 2$ (alternate interior $\angle$s) ... (i)

Semelarly $\angle 1 = \angle 4$ ... (ii)

$\angle 1 = \angle 2$ ... (iii) (given)

From (i), (ii), (iii)

$\angle 3 = \angle 4$

In $\triangle ABC$ and $\triangle ADC$

$\angle 1 = \angle 2$ (given)

$AC = AC$

$\angle 3 = \angle 4$ (proved)

$\therefore \triangle ABC \cong \triangle ADC$ by ASA prop

$AB = AD$ (cpct)

||gm ABCD is a rhombus

NCERT Exemplar Solutions by dev anoop (bathinda)