① let the angles be

$3x^\circ, 5x^\circ, 9x^\circ, 13x^\circ$

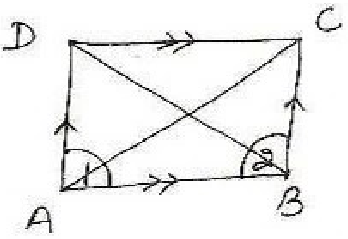
$3x^\circ + 5x^\circ + 9x^\circ + 13x^\circ = 360^\circ$ [angle sum prop. of □]

$\Rightarrow 30x^\circ = 360$

$\Rightarrow x = 12$

$\therefore$ angles are $3 \times 12 = 36^\circ$
$5 \times 12 = 60^\circ$
$9 \times 12 = 108^\circ$
$13 \times 12 = 156^\circ$

②



To Prove ||gm ABCD is a rect.

Proof In $\triangle DAB$ and $\triangle CBA$

$DA = CB$ [opp. sides of ||gm]
$AB = BA$ [common]
$DB = CA$ [given]

$\therefore \triangle DAB \cong \triangle CBA$ by SSS prop.

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

But $\angle 1 + \angle 2 = 180^\circ$ (co. in ∠s)

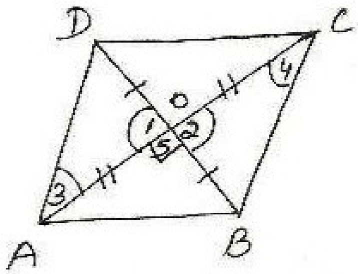
$2\angle 1 = 180$

$\Rightarrow \angle 1 = 90^\circ$

$\therefore$ ||gm ABCD is a rect.

ex 8.1

③



To Prove – □ABCD is a rhombus.

Proof In $\triangle AOD$ and $\triangle COB$

$OD = OB$ [diag. bisect]
$\angle 1 = \angle 2$ [ver. opp. ∠s]
$OA = OC$ [diagonals bisect each other]

$\therefore \triangle AOD \cong \triangle COB$ by SAS prop

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

But these are alternate interior ∠s

$\therefore AD \parallel BC$

Similarly $DC \parallel AB$

□ ABCD is a ||gm.

In $\triangle AOD$ and $\triangle AOB$

$OA = OA$ (common)
$\angle 1 = \angle 5 = 90^\circ$
$OD = OB$ (given)

$\therefore \triangle AOD \cong \triangle AOB$ by SAS prop.

$AD = AB$ (cpct)

$\therefore$ ||gm ABCD is a rhombus

for alternate method see Q5