C (1)
२१।७।२१

Ex-8.1

1) The angles of a quadrilateral are in the ratio 3 : 5 : 9 : 13. find all the angles of quadrilateral

Ans) Given that all the angles are in the ratio $3x, 5x, 9x, 13x$.

We know that sum of all angles $= 360°$

Now by putting Angle sum property.

$\Rightarrow 3x + 5x + 9x + 13x = 360°$

$\Rightarrow 30x = 360°$

$\Rightarrow x = \dfrac{\cancel{360}^{12}}{\cancel{30}}$

Now to find all the angles :- $3x = 3 \times 12 = 36°$

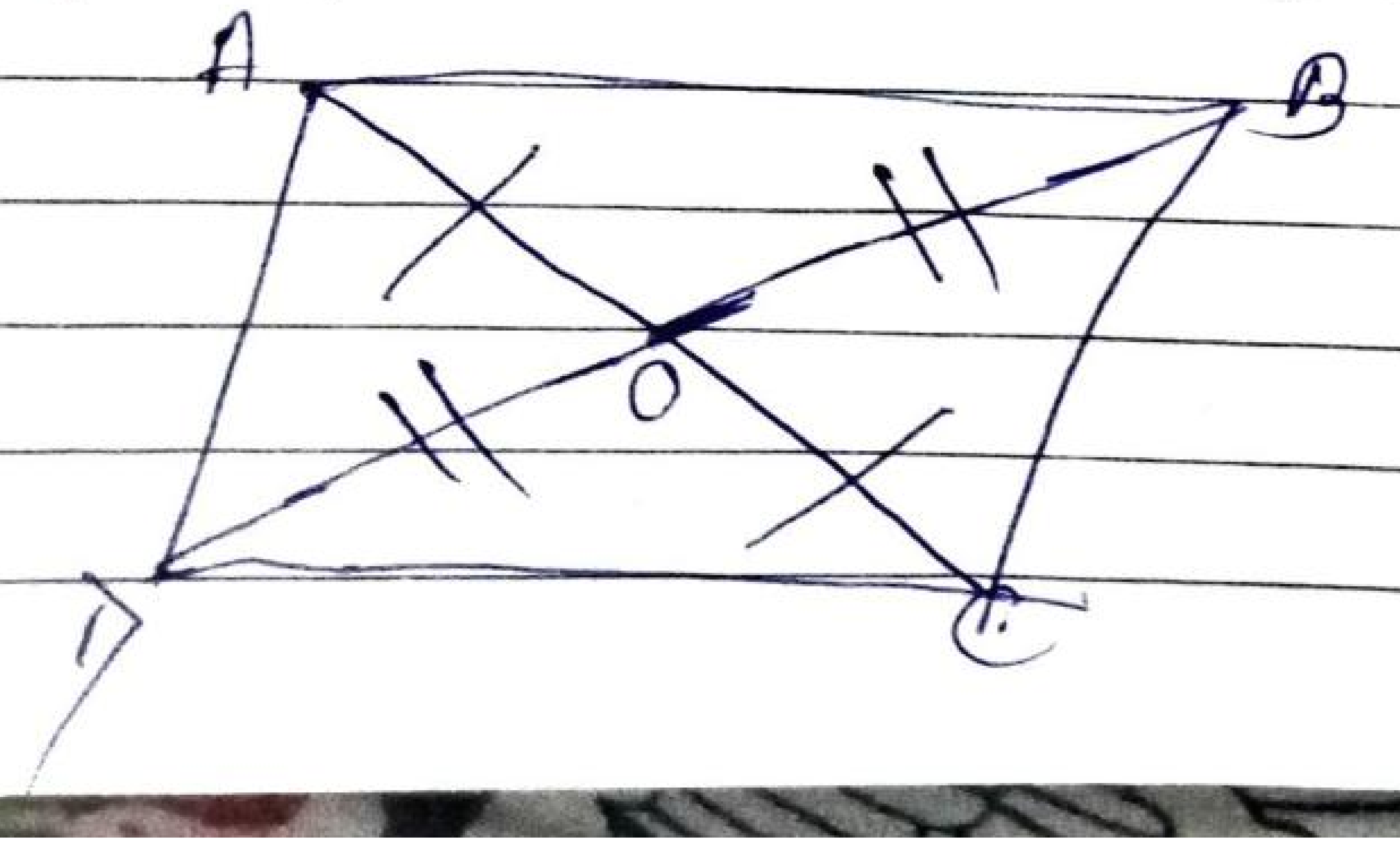
$5x = 5 \times 12 = 60°$

$9x = 9 \times 12 = 108$

$13x = 13 \times 12 = 156$

$\therefore$ Hence all the angles $= 36°, 60°, 108°, 156°$

2) If the diagonal of the parallelogram are equal, then show that is a rectangle



In ΔAOB & ΔCOD

$AO = CO$ (Given) S
$\angle AOB = \angle COD$ (vertically opposite angle) A
$OD = OB$ (Given) S

$\therefore$ Now $AB = CD$ (C.P.C.T)

In ΔAOD & ΔBOC

$AO = CO$ S
$\angle AOD = \angle BOC$ A
$OD = OB$ S

$\therefore \Delta AOD \cong \Delta BOC$ (SAS) & $AD = BC$ (CPCT)

We know that in a rectangle when opposite sides are equal hence the figure is a rectangle.

As now we have proved that $AB = CD$ & $AD = BC$ (Hence proved)

$\therefore$ Hence ABCD is a rectangle.

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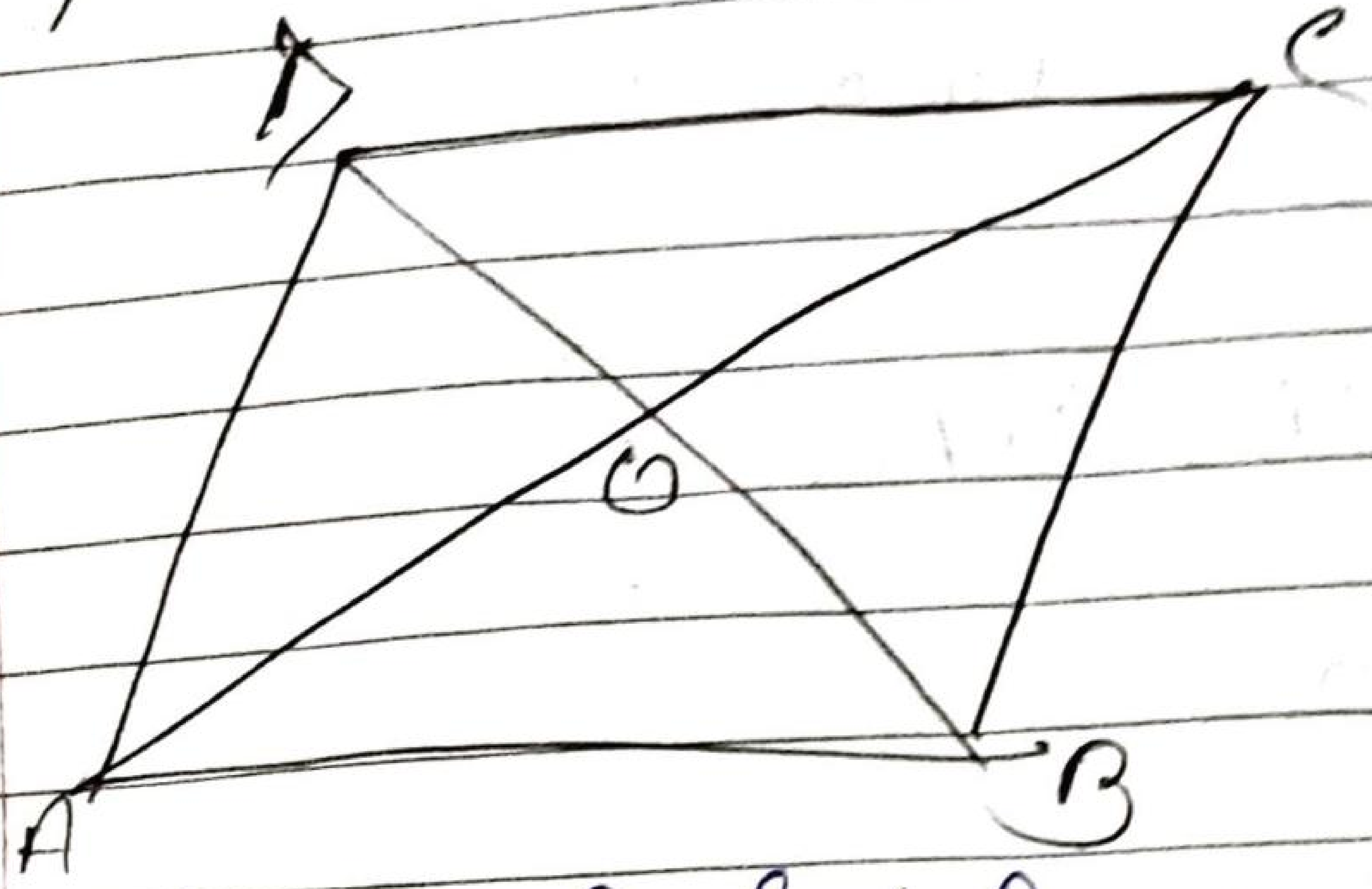

In ΔAOB & ΔBOC

$AO = OC$ (Diagonal AC & BD bisect each other) S

$\angle AOB = \angle COB$ [90°] A

$BO = BO$ [common] S

$\therefore \Delta AOB \cong \Delta BOC$ [SAS]

$AB = BC$ (C.P.C.T)

Since ABCD is a quadrilateral in which $AB = BC$

$\therefore$ Hence ABCD is a rhombus. (proved)