CHAPTER → 8

Date 20.7.21
Page

# QUADRILATERALS

## Exercise → 8.1

Q1) The angles of quadrilateral are in ratio 3 : 5 : 9 : 13.
Find all the angles of the quadrilateral.
The angles be $3x, 5x, 9x, 13x$.

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

$\Rightarrow 30x = 360°$

$x = \frac{\cancel{360}}{\cancel{30}}\ 12°$

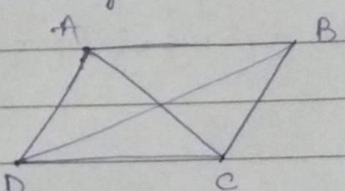
$3x = 36°$

$5x = 60°$

$9x = 108°$

$13x = 156°$

Q2) Let ABCD is a parallelogram such that
AC = BD




In $\Delta ABC$ & $\Delta DCB$

AC = DB (given)

AB = DC (opposite sides of a parallelogram)

BC = CB (common)

$\therefore \Delta ABC \cong \Delta DCB$ (By SSS congruency)

$\Rightarrow \angle ABC = \angle DCB$ (By C.P.C.T)

Date
Page

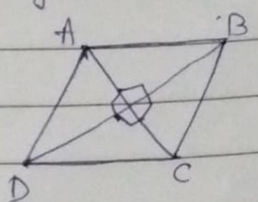
Now AB ∥ DC and BC is a transversal
(∵ ABCD is a parallelogram)

∴ ∠ABC + ∠DCB = 180° (co-interior angles)

From 1 & 2 we have
∠ABC = ∠DCB = 90°
I.e., ABCD is a parallelogram having an equal angle to 90°.

∴ ABCD is a rectangle.

Q3) Let ABCD be a quadrilateral such that the diagonals AC and BD bisect each other at right angles at O.




∴ In △ AOB and △ AOD, we have
AO = AO (given)
OB = OD (O is the midpoint of BD)

∠AOB = ∠AOD (Each 90°)
∴ △AOB ≅ △AOD (By SAS)
∴ AB = AD (By CPCT)
Similarly, AB = BC (2)
BC = CD
CD = DA
∴ From (1), (2), (3) & (4) we have

AB = BC = CD = DA
∴ Quadrilateral ABCD is a rhombus.