



## DR. VIRENDRA SWARUP PUBLIC SCHOOL, KALYANPUR

### Revision Worksheet

Class IX Session: 2021-2022

### Chapter: Quadrilaterals

1. In a parallelogram, the bisectors of any two consecutive angles intersect at right angle. Prove it.
2. ABCD is a square E, F, G, H are points on AB, BC, CD and DA respectively such that  $AE = BF = CG = DH$ . Prove that EFGH is a square.
3. ABCD is a parallelogram. If its diagonals are equal, then find the value of  $\angle ABC$ .
4. The diagonals of a parallelogram ABCD intersect at O. A line through O intersects AB at X and DC at Y. Prove that  $OX = OY$ .
5. ABCD is a parallelogram. AB is produced to E so that  $BE = AB$ . Prove that ED bisects BC.
6. If ABCD is a quadrilateral in which  $AB \parallel CD$  and  $AD = BC$ , prove that  $\angle A = \angle B$ .
7. Diagonals AC and BD of a parallelogram ABCD intersect each other at O. If  $OA = 3$  cm and  $OD = 2$  cm, determine the lengths of AC and BD.
8. In quadrilateral ABCD,  $\angle A + \angle D = 180^\circ$ . What special name can be given to this quadrilateral?
9. All the angles of a quadrilateral are equal. What special name is given to this quadrilateral?
10. In  $\triangle ABC$ ,  $AB = 5$  cm,  $BC = 8$  cm and  $CA = 7$  cm. If D and E are respectively the mid-points of AB and BC, determine the length of DE.
11. Diagonals of a quadrilateral ABCD bisect each other. If  $\angle A = 35^\circ$ , determine  $\angle B$ .
12. Angles of a quadrilateral are in the ratio 3 : 4 : 4 : 7. Find all the angles of the quadrilateral.
13. One angle of a quadrilateral is of  $108^\circ$  and the remaining three angles are equal. Find each of the three equal angles.
14. ABCD is a trapezium in which  $AB \parallel DC$  and  $\angle A = \angle B = 45^\circ$ . Find angles C and D of the trapezium.
15. The angle between two altitudes of a parallelogram through the vertex of an obtuse angle of the parallelogram is  $60^\circ$ . Find the angles of the parallelogram.
16. ABCD is a rhombus in which altitude from D to side AB bisects AB. Find the angles of the rhombus.
17. E and F are points on diagonal AC of a parallelogram ABCD such that  $AE = CF$ . Show that BFDE is parallelogram.
18. ABCD is a parallelogram and  $\angle DAB = 60^\circ$ . If the bisectors AP and BP of angles A and B respectively, meet at P on CD, prove that P is the midpoint of CD.
19. ABCD is a parallelogram. AM and BN are respectively, the perpendiculars from A and B to DC and CD produced. Prove that  $AM = BN$ .
20. D, E and F are the mid-points of the sides BC, CA and AB, respectively of an equilateral  $\triangle ABC$ . Show that  $\triangle DEF$  is also an equilateral triangle.
21. E is the mid-point of the side AD of the trapezium ABCD with  $AB \parallel DC$ . A line through E drawn parallel to AB intersect BC at F. Show that F is the mid-point of BC.
22. PQ and RS are two equal and parallel line-segments. Any point M not lying on PQ or RS is joined to Q and S and lines through P parallel to QM and through R parallel to SM meet at N. Prove that line segments MN and PQ are equal and parallel to each other.
23. Prove that "If the diagonals of a quadrilateral bisect each other, then it is a parallelogram".
24. Prove that "A quadrilateral is a parallelogram if a pair of opposite sides is equal and parallel".
25. Prove that "A quadrilateral is a parallelogram if its opposite angles are equal".
26. Show that the diagonals of a rhombus are perpendicular to each other.
27. Two parallel lines  $l$  and  $m$  are intersected by a transversal  $p$ . Show that the quadrilateral formed by the bisectors of interior angles is a rectangle.
28. Show that the bisectors of angles of a parallelogram form a rectangle.
29. If the diagonals of a parallelogram are equal, then show that it is a rectangle.
30. Show that if the diagonals of a quadrilateral bisect each other at right angles, then it is a rhombus.
31. Show that the diagonals of a square are equal and bisect each other at right angles.
32. Show that if the diagonals of a quadrilateral are equal and bisect each other at right angles, then it is a square.
33. The angles of quadrilateral are in the ratio 3 : 5 : 9 : 13. Find all the angles of the quadrilateral.
34. Prove that "The line segment joining the mid-points of two sides of a triangle is parallel to the third side and half of it".
35. Prove that "The line drawn through the mid-point of one side of a triangle, parallel to another side bisects the third side".
36. Show that if the diagonals of a quadrilateral are equal and bisect each other at right angles, then it is a square.
37. ABCD is a rhombus and P, Q, R and S are the mid-points of the sides AB, BC, CD and DA respectively. Show that the quadrilateral PQRS is a rectangle