BHARATH COACHING CENTRE

9th CBSE	Quadrilaterals	Total: 50
Mathematics		Time: 1.30 hrs

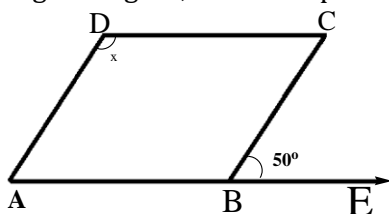## SECTION – A   5 x 1 = 5

1. In which type of quadrilaterals opposite sides are equal and parallel?
2. In given figure, ABCD is a parallelogram in which ∠CBE = 50°. What is the value of x?

3. Two consecutive angles of a parallelogram are in the ratio 1 : 3, then find the smallest angle.
4. Two angles of a quadrilateral are 50° and 80° and other two angles are in the ratio 8 : 15, then find the remaining two angles.
5. If PQRS is a parallelogram, then find ∠Q - ∠S.

SECTION – B   5 X 2 = 10

6. Two opposite angles of a parallelogram are $(3x - 2)°$ and $(63 - 2x)°$. Find all the angles of the parallelogram.
7. ABCD is a parallelogram and AP and CQ are perpendiculars from vertices A and C on diagonal BD (see Fig). Show that (i) Δ APB ≅ Δ CQD   (ii) AP = CQ
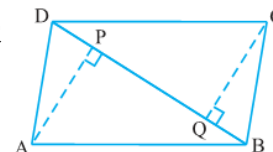

8. Two parallel lines l and m are intersected by a transversal 't'. Show that quadrilateral formed by bisectors of the interior angles is a rectangle.
9. ABCD is a quadrilateral in which P, Q, R and S are the mid – point of the sides AB, BC, CD & DA respectively. Show that PQRS is a parallegram.
10. In ΔABC, AD is the median and DE ∥ AB. Prove that BE is another median.

SECTION – C   5 X 3 = 15

11. In a quadrilateral ABCD, ∠B = 130°, ∠C = 60° and angle bisectors of ∠A and ∠D meet at P. Find ∠APD.
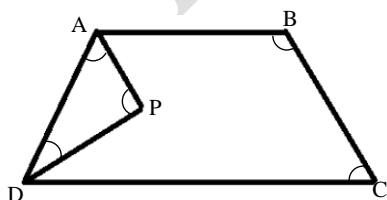
12. If the diagonals of a parallelogram are equal, then show that it is a rectangle.

13. ABCD is a rectangle in which diagonal AC bisects ∠ A as well as ∠ C. Show that: (i) ABCD is a square (ii) diagonal BD bisects ∠ B as well as ∠ D.
14. In a parallelogram ABCD, E and F are the mid-points of sides AB and CD respectively (see Fig). Show that the line segments AF and EC trisect the diagonal BD.
15. ABCD is a rectangle and P, Q, R and S are mid-points of the sides AB, BC, CD and DA respectively. Show that the quadrilateral PQRS is a rhombus.

SECTION – D

4 X 5 = 20
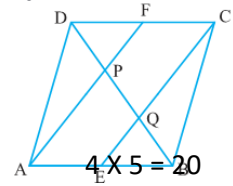
16. In Δ ABC and Δ DEF, AB = DE, AB || DE, BC = EF and BC || EF. Vertices A, B and C are joined to vertices D, E and F respectively (see Fig. 8.22). Show that
    (i) Quadrilateral ABED is a parallelogram
    (ii) Quadrilateral BEFC is a parallelogram
    (iii) AD || CF and AD = CF
    (iv) Quadrilateral ACFD is a parallelogram
    (v) AC = DF
    (vi) Δ ABC ≅ Δ DEF.
17. ABC is an isosceles triangle in which AB = AC.AD bisects exterior ∠PAC and CD ∥ AB. Show that
    (i)   ∠DAC = ∠BCA   (ii) ABCD is a parallelogram
18. In the following fig l, m and n are three parallel lines intersected by transversals p and q such that l, m and n cut off equal intercepts AB and BC on p. Show that l, m and n cut off equal intercepts DE and EF on q also.
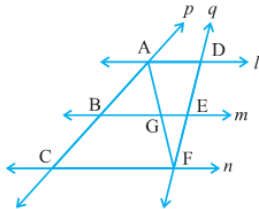
19. Show that the quadrilateral formed by joining the mid-points of the sides of a rectangle is a rhombus.