

# BHARATH COACHING CENTRE

9<sup>th</sup> CBSE

Area of Parallelograms

Total: 40

Maths

Time: 1.30 hrs

## SECTION – A

5 × 1 = 5

1. What is the relation between areas of parallelograms on the same base and between the same parallels?
2. The diagonals of a rhombus are 10 cm and 12 cm. find its area.
3. If area of a parallelogram ABCD is  $72 \text{ cm}^2$  and its diagonals AC and BD intersect at O, then find the ar (OAB).
4. In the given figure, diagonals AC and BC of quadrilateral ABCD intersect at point E. Then, is ar (AED) × ar (BEC) = ar (ABE) × ar (CDE)?
5. What is the common base and parallel lines between which trapezium PQRS and  $\Delta PSQ$  are lying?

## SECTION – B

5 × 2 = 10

6. In  $\Delta PQR$ , S and T are respectively points on PQ and PR such that ar(QSR) = ar (RTQ). Prove that  $ST \parallel QR$ .
7. ABCD is parallelogram,  $AE \perp DC$  and  $CF \perp AD$ . If  $AB = 16\text{cm}$ ,  $AE = 8 \text{ cm}$ ,  $CF = 10 \text{ cm}$ , find AD.
8. P and Q are any two points lying on the sides DC and AD respectively of a parallelogram ABCD. Show that ar ( $\Delta APB$ ) = ar ( $\Delta BQC$ ).
9. Show that the median of a triangle divides it into two triangles of equal areas.
10. AD is a median of  $\Delta ABC$ . If X is any points on AD, show that ar ( $\Delta ABX$ ) = ar ( $\Delta ACX$ ).

## SECTION – C

5 × 3 = 15

11. The perimeter of an isosceles triangle is 32cm and its base is 12 cm. one of its equal sides forms the diagonal of a parallelogram. Find the area of parallelogram.
12. Prove that the parallelograms on the same base and between the same parallels have the same area.
13. ABCDE is a pentagon. A line through B parallel to AC meets DC produced at F. Show that: (i) ar (ACB) = ar (ACF), (ii) ar (AEDF) = ar (ABCDE)
14. XY is a line parallel to side BC of a triangle ABC passing through A. if  $BE \parallel AC$  and  $CF \parallel AB$  meet XY at E and F respectively, show that ar (ABE) = ar (ACF)
15. In given figure, ar (DRC) = ar (DPC) and ar (BDP) = ar (ARC). Show that both the quadrilaterals ABCD and DCPR are trapeziums.

## SECTION – D

5 × 2 = 10

16. In Fig, P is a point in the interior of a parallelogram ABCD. Show that (i) ar (APB) + ar (PCD) =  $\frac{1}{2}$  ar (ABCD), (ii) ar (APD) + ar (PBC) = ar (APB) + ar (PCD) [Hint: Through P, draw a line parallel to AB.]
17. ABCD is a trapezium with  $AB \parallel DC$ . A line parallel to AC intersects AB at X and BC at Y. Prove that ar (ADX) = ar (ACY). [Hint : Join CX.]

