CHAPTER TEST: AREAS OF PARALLELOGRAMS AND TRIANGLES

Mathematics | Class IX (2026/AREA/09/NCERT/001)

Time: 1.5 Hours **Max. Marks: 33**

GENERAL INSTRUCTIONS

– All questions are compulsory.

– Section A: 5 MCQs (1 mark each).

– Section B: 4 Short Answer Questions (2 marks each).

– Section C: 4 Long Answer Questions (4 marks each).

– Section D: 4 Objective/NCERT Highlight Questions (1 mark each).

Section A: Multiple Choice Questions (1 Mark Each)

1. Two parallelograms are on the same base and between the same parallels. The ratio of their areas is:
   (a) 1 : 2 (b) 1 : 1 (c) 2 : 1 (d) 3 : 1

2. A median of a triangle divides it into two triangles of:
   (a) Equal area (b) Congruent shape (c) Equal perimeter (d) None of these

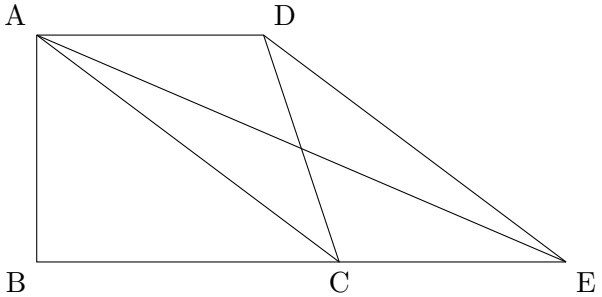
3. If the area of a parallelogram is $54\,\text{cm}^2$ and its base is 9 cm, its corresponding altitude is:
   (a) 4 cm (b) 6 cm (c) 9 cm (d) 12 cm

4. In $\triangle ABC$, E is the mid-point of median AD. The ratio $area(BED) : area(ABC)$ is:
   (a) 1 : 2 (b) 1 : 4 (c) 1 : 3 (d) 1 : 8

5. Parallelogram $ABCD$ and rectangle $ABEF$ are on the same base AB and have equal areas. Then:
   (a) Perimeter of $ABCD$ = Perimeter of $ABEF$
   (b) Perimeter of $ABCD$ < Perimeter of $ABEF$
   (c) Perimeter of $ABCD$ > Perimeter of $ABEF$
   (d) None of these

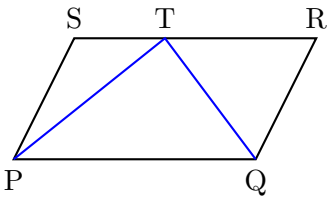
Section B: Short Answer Questions (2 Marks Each)

6. $ABCD$ is a quadrilateral. A line through D parallel to AC meets BC produced at E.

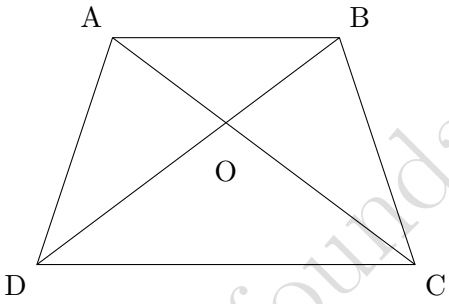


Show that $area(\triangle ADE) = area(ABCD)$.

7. In the given figure, $PQRS$ is a parallelogram and PQT is a triangle. If $area(PQRS) = 48\,cm^2$, find $area(\triangle PQT)$.

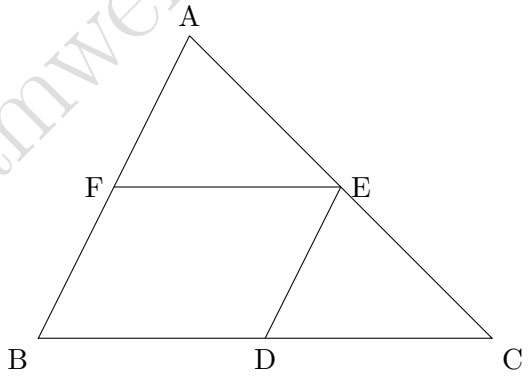


8. Diagonals AC and BD of a trapezium $ABCD$ with $AB \parallel DC$ intersect each other at O.



Prove that $area(\triangle AOD) = area(\triangle BOC)$.

9. If D, E and F are mid-points of sides BC, CA and AB of $\triangle ABC$ respectively,

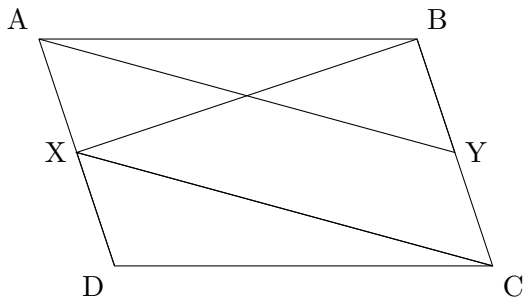


show that $BDEF$ is a parallelogram.

Section C: Long Answer Questions (4 Marks Each)

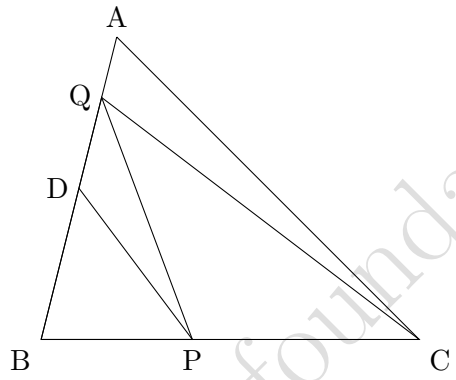
10. Prove that parallelograms on the same base and between the same parallels are equal in area.

11. X and Y are points on the sides AD and BC respectively of a parallelogram $ABCD$.



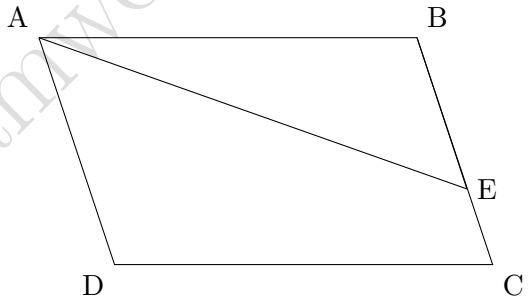
Show that $area(\triangle ABY) + area(\triangle CDX) = area(ABCD) - area(\triangle BXC)$.

12. In $\triangle ABC$, D is the mid-point of AB. P is any point on BC. If $CQ \parallel PD$ meets AB in Q,



prove that $area(\triangle BPQ) = \frac{1}{2} area(\triangle ABC)$.

13. $ABCD$ is a parallelogram. E is a point on BC such that $BE : EC = 2 : 1$. If $area(\triangle ABE) = 20\,\text{cm}^2$,



find the area of $\triangle ABC$ and the area of parallelogram $ABCD$.

Section D: NCERT Important Highlights (1 Mark Each)

1. Triangles on the same base and having equal areas lie between the same _____.
2. The area of a rhombus is _____ the product of its diagonals.
3. If a triangle and a parallelogram are on the same base and between same parallels, then the area of triangle is _____ of the area of parallelogram.
4. D, E, F are mid-points of sides of $\triangle ABC$. $area(DEF)$ is _____ part of $area(ABC)$.

SOLUTIONS & NCERT PREPARATION GUIDE

High-Yield NCERT Questions

For CBSE/ICSE board exams, ensure you practice these specific problems from your NCERT textbook:

- **Exercise 9.2, Q2:** Show that if mid-points of sides of a quadrilateral are joined, the area of the resulting parallelogram is half the quadrilateral.
- **Exercise 9.3, Q5:** Prove that $area(DEF) = \frac{1}{4}area(ABC)$ where D, E, F are mid-points.
- **Exercise 9.3, Q14:** Property of a line through the vertex of a triangle dividing the opposite side in a given ratio and its effect on area.
- **Standard Proof:** The theorem regarding triangles on the same base and between the same parallels.