



Attempt questions first; check the separate key afterward. Show all working. Draw accurate figures where required.

A. Very short answers - 1 mark each

1. Find perimeter of a triangle with sides 7, 8, 9 cm.
2. Find its semiperimeter.
3. State Heron's formula.
4. What condition must three lengths meet to form a triangle?
5. Find area of a triangle with sides 3, 4, 5 cm.
6. Find area for sides 5, 5, 6 cm.
7. Find area of an equilateral triangle of side 8 cm.
8. Find its altitude.

B. Short answers / practice - 2 marks each

9. A triangle has sides 13, 14, 15 cm. Find area.
10. Find altitude to its 14 cm side.
11. Find area of a triangle with sides 10, 10, 12 cm.
12. Find altitude to its 12 cm side.
13. A triangular field has sides 50, 50, 60 m. Find area.
14. Find fencing cost at ₹40 per metre.
15. A parallelogram has base 18 cm and height 11 cm. Find area.
16. Find area of either triangle formed by a diagonal.
17. A rhombus has side 13 cm and one diagonal 10 cm. Find the other diagonal.
18. Find its area.

19. A triangle's sides are doubled. What is the perimeter factor?

20. What is the area factor?

C. Application / reasoning - 3 marks each

21. A quadrilateral is split into triangles of sides 3, 4, 5 and 5, 5, 6 cm. Find total area.
22. Why is perimeter not generally the sum of both triangle perimeters?

23. Find area of a triangle with sides 9, 10, 17 cm.

24. Find its longest-side altitude.

25. Explain why Heron's formula gives zero for lengths 2, 3, 5.

26. Do those lengths form a nondegenerate triangle?

27. Find the area of a triangle with sides 7, 15, 20 cm.

28. Find area of an equilateral triangle with perimeter 36 cm.

29. An isosceles triangle has sides 13, 13, 10 cm. Find its area.

30. A triangular field of area 240 m² has base 30 m. Find altitude to that base.

31. A triangle has sides 6, 8, 10 m. Find paving cost at ₹150/m².

D. Extended practice - 5 marks per pair

32. Find area of an isosceles triangle with perimeter 32 cm and base 12 cm.

33. Find the cost of covering it at ₹5 per cm².

34. A plot has diagonal 26 m splitting it into triangles with remaining sides 10, 24 m and 13, 13 m. Is this a valid nondegenerate quadrilateral?

35. Replace the last two sides by 15, 15 m and find total area.

ANSWER KEY - Numerical / closed questions

- 1) 24 cm. 2) 12 cm. 3) $\text{Area} = \sqrt{s(s-a)(s-b)(s-c)}$.
4) Sum of any two exceeds the third. 5) 6 cm². 6) 12 cm². 7) $16\sqrt{3}$ cm². 8) $4\sqrt{3}$ cm. 9) 84 cm². 10) 12 cm. 11) 48 cm². 12) 8 cm. 13) 1200 m². 14) ₹6400. 15) 198 cm². 16) 99 cm². 17) 24 cm. 18) 120 cm². 19) 2. 20) 4. 21) 18 cm². 22) Shared diagonal counted twice. 23) 36 cm². 24) 72/17 cm. 25) No. 26) 42 cm². 27) $36\sqrt{3}$ cm². 28) 60 cm². 29) 16 m. 30) ₹3600. 31) 48 cm². 32) ₹240. 33) No; second triangle is degenerate. 34) 120 + $26\sqrt{14}$ m².