Exercise 15.1

1. Using Heron's formula, find the area of a triangle whose sides are 5 cm, 12 cm and 13 cm.
2. The sides of a triangular field are 165 m, 143 m and 154 m. Find the cost of ploughing it at 12 paise per sq m.
3. Using Heron's formula, find the area of a triangle whose sides are 10 cm, 24 cm and 26 cm.
4. Using Heron's formula, find the area of an equilateral triangle of side 12 cm.
5. Using Heron's formula, find the area of an isosceles triangle whose perimeter is 16cm and base is 6 cm.
6. The sides of a triangle are 7 cm, 24 cm and 25 cm. Find the length of perpendicular from the opposite vertex to the side whose length is 25 cm.
7. The sides of a triangle are in the ratio 5:4:3. If its perimeter is 96cm, Using Heron's formula, find the area of triangle.
8. The perimeter of a triangular field is 450 m and its sides are in the ratio 13:12:5. Using Heron's formula, find the area of triangle.
9. Using Heron's formula, find the area of a triangle two sides of which are 8cm and 11 cm and the perimeter is 32 cm.
10. Using Heron's formula, find the area of a triangle ABC in which AB = AC, base BC = 5 cm and the perimeter is 14 cm.
11. The lengths of the sides of a triangle are in the ratio 3:4:5 and its perimeter is 144 cm. Using Heron's formula, find the area of the triangle.
12. Find the area of the quadrilateral ABCD in which AB = 7 cm, BC = 6 cm, CD = 12 cm, DA = 15 cm and AC = 9 cm.
13. One of the diagonals of a rhombus of perimeter 140 m is 60 m. Find its area and the length of the other diagonal.

14. A triangle of area $9y$ cm^2 has been drawn such that its area is equal to the area of an equilateral triangle of side 6 cm. Find the value of y.

15. A triangle and a parallelogram have the same base and the same area. If the sides of the triangle are 29 cm, 20 cm and 21 cm, and the parallelogram stands on the base 21 cm, find the height of the parallelogram.

16. The sides of a triangle are 51 cm, 45 cm and 24 cm respectively. Find the length of the perpendicular on the smallest side from the opposite vertex.

17. Two adjacent sides of a parallelogram measures 5 cm and 3.5 cm. One of its diagonal measure 6.5 cm. Find the area of the parallelogram.

18. The sides of a parallelogram are 12 m and 17 m respectively. If one of the diagonals is 25 m long, find the area of the parallelogram.

19. If the area of an equilateral triangle is $24\sqrt{3}$ sq. m, find its perimeter.

20. (*i*) Find the area of the isosceles triangle whose base is 3 cm, and perimeter 8 cm.

(*ii*) If a square and a triangle have the same perimeter, which has the greater area? Illustrate with an example.

(*iii*) If the altitude of an equilateral triangle is $\sqrt{6}$, find its area.

[**Hint:** Let a be the side of equilateral Δ $\therefore \frac{\sqrt{3}}{4}a^2 = \frac{1}{2} \times a \times \sqrt{6}$]

(*iv*) The sides of a field in the form of a quadrilateral ABCD are AB = 25 m, BC = 60 m, CD = 39 m and DA = 52 m. The length of the diagonal AC = 65 m. Find the cost of ploughing it at ₹ 10 per square metre.

ANSWERS

1. 30 cm^2	**2.** ₹ 1219.68	**3.** 120 cm^2	**4.** $36\sqrt{3}$ cm^2
5. 12 cm^2	**6.** 6.72 cm	**7.** 384 cm^2	**8.** 6750 m^2
9. $8\sqrt{30}$ cm^2	**10.** 9.35 cm^2	**11.** 864 cm^2	**12.** 74.98 cm^2
13. 1081.5 m^2; 36.05 m		**14.** $\sqrt{3}$	**15.** 10 cm
16. 45 cm	**17.** $10\sqrt{3}$ cm^2	**18.** 180 m^2	**19.** $12\sqrt{6}$ cm

20. (*i*) 3 cm^2 (*ii*) Square has greater area. (*iii*) $2\sqrt{2}$ sq. units

(*iv*) ₹ 17640