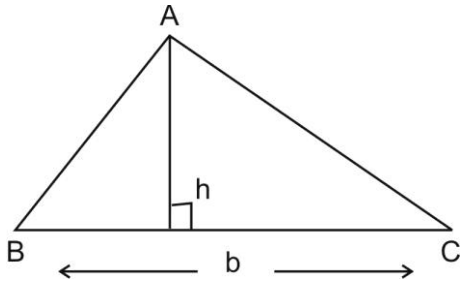
Chapter - 12

(Heron's Formula)

Key Concept

* Triangle with base 'b' and altitude 'h' is

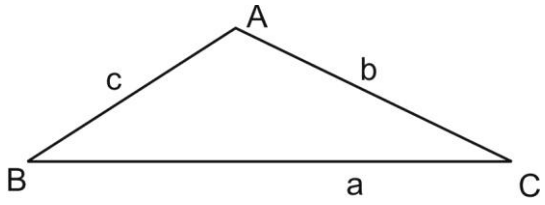
  Area = $\frac{1}{2} \times (b \times h)$



* Triangle with sides a, b and c

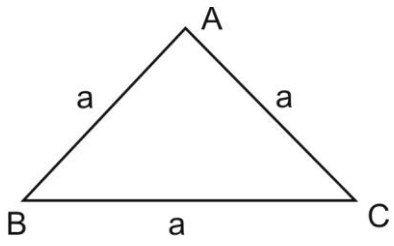
  (i) Semi perimeter of triangle s = $\frac{a+b+c}{2}$

  (ii) Area = $\sqrt{s(s-a)(s-b)(s-c)}$ square units.



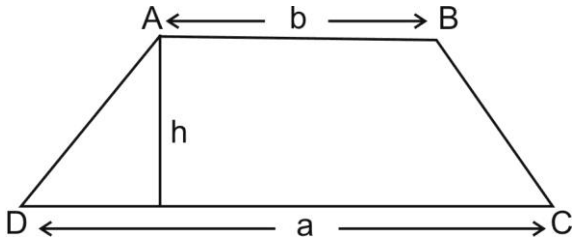
* Equilateral triangle with side 'a'

  Area = $\frac{\sqrt{3}}{4} a^2$ square units



* Trapezium with parallel sides 'a' and 'b' and the distance between two parallel sides as 'h'.

Area = $\frac{1}{2}(a+b)\,h$ square units



Section - A

(1) An isosceles right triangle has an area 8cm^2. The length of its hypotenuse is

(a) $\sqrt{16}\,cm$ (b) $\sqrt{48}\,cm$ (c) $\sqrt{32}\,cm$ (d) $\sqrt{24}\,cm$

(2) The sides of a triangle are 35cm, 54cm, and 61cm, respectively. The length of its longest altitude is

(a) $26\sqrt{5}\,cm$ (b) 28 cm (c) $10\sqrt{5}\,cm$ (d) $24\sqrt{5}\,cm$

Q.3 The sides of a triangle are 56cm, 60cm. and 52cm. long. The area of the triangle is.

(a) 4311 cm^2 (b) 4322 cm^2 (c) 2392 cm^2 (d) None of these

Q.4 The area of an equilateral triangle is $16\sqrt{3}$ m^2. Its perimeter is

(a) 24m (b) 12m (c) 306 m (d) 48m

Q.5 The perimeter of a triangle is 30cm. Its sides are in the ratio 1 : 3 : 2, then its smallest side is.

(a) 15cm (b) 5cm (c) 1 cm (d) 10cm.

Section - B

Q.6 Find the area of a triangular garden whose sides are 40m., 90m and 70m.

(use $\sqrt{5}$ = 2.24)

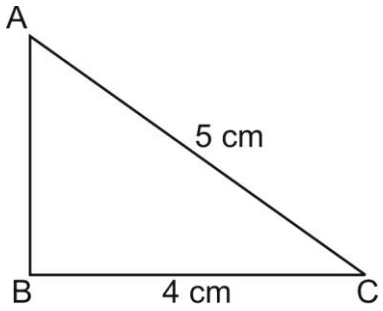
Q.7 Find the cost of leveling a ground in the form of a triangle with sides 16m, 12m and 20m at Rs. 4 per sq. meter.

Q.8 Find the area of a triangle, two sides of which are 8cm and 11cm and the perimeter is 32 cm.

Q.9 The area of an isosceles triangle is 12cm^2. If one of its equal side is 5cm. Find its base.

Q.10 Find the area of a right triangle whose sides containing the right angle are 5cm and 6cm.

Q.11 Find the area of the adjoin figure if $AB \perp BC$



Section - C

Q.12 The diagonals of a rhombus are 24cm and 10cm. Find its area and perimeter.

Q.13 Two side of a parallelogram are 10cm and 7cm. One of its diagonals is 13cm. Find the area.

Q.14 A rhombus shaped sheet with perimeter 40 cm and one diagonal 12cm, is painted on both sides at the rate of ` 5 per m^2. Find the cost of painting.

Q.15 The sides of a quadrilateral ABCD are 6cm, 8cm, 12cm and 14cm (taken in order) respectively, and the angle between the first two sides is a right angle. Find its area.

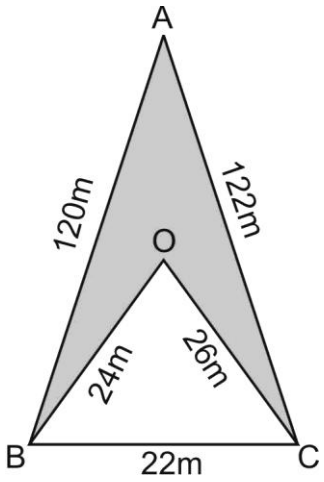
Q.16 The perimeter of an isosceles triangle is 32cm. The ratio if the equal side to its base is 3 : 2. Find the area of the triangle.

Q.17 The sides of a triangular field are 41m, 40m and 9m. Find the number of flower beds that can be prepared in the field, if each flower bed needs 900cm^2 space.

Q.18 The perimeter of a triangular ground is 420m and its sides are in the ratio 6 : 7 : 8. Find the area of the triangular ground.

Section - D

Q.19 Calculate the area of the shaded region.



Q.20 If each sides of a triangle is double, then find the ratio of area of the new triangle thus formed and the given triangle.

Q.21 A field is in the shape of a trapezium whose parallel sides are 25m and 10m. If its non-parallel sides are 14m and 13m, find its area.

Q.22 An umbrella is made by stitching 10 triangular pieces of cloth of 5 different colour each piece measuring 20cm, 50cm and 50cm. How much cloth of each colour is required for one umbrella? $(\sqrt{6} = 2.45)$

Q.23 A triangle and a parallelogram have the same base and some area. If the sides of the triangle are 26cm, 28cm and 30cm and the parallelogram stands on the base 28cm, find the height of the parallelogram.

Answer

Q. 1 (c) $\sqrt{32}\ cm$

Q. 2 (d) $24\sqrt{5}\ cm$

Q. 3 (d) None of these

Q. 4 (a) 24 m.

Q. 5 (b) 5 cm.

Q. 6 1344 sq. m.

Q. 7 ` 384

Q. 8 $8\sqrt{30}\ cm^2$

Q. 9 6cm.

Q. 10 15cm^2

Q. 11 6cm^2

Q. 12 120 sqcm., 52 cm.

Q. 13 $40\sqrt{3}\ cm^2$

Q. 14 ` 960

Q.15 $24(\sqrt{6}+1)$ cm^2

Q.16 $32\sqrt{2}\ cm^2$

Q.17 2000

Q. 18 $2100\sqrt{15}\ m^2$

Q.19 1074m^2

Q. 21 196 sq. m.

Q.22 980 cm^2 each.

Q. 23 12cm.