INDIAN SCHOOL NIZWA - WORKSHEET

MATHEMATICS

10. Heron's Formula

Name: _____ Date:_____ Class: IX Sec: ___

1. The sides of a triangle are 7 cm, 8 cm, and 9 cm. The semi-perimeter of the triangle is:

   A. 24 cm B. 12 cm C. 10 cm D. 15 cm

2. The area of a triangle whose sides are 13 cm, 14 cm, and 15 cm is:

   A. 84 cm^2 B. 72 cm^2 C. 90 cm^2 D. 100 cm^2

3. The sides of a triangle are in the ratio 3:4:5 and its perimeter is 72 cm. The area of the triangle is:

   A. 216 cm^2 B. 144 cm^2 C. 288 cm^2 D. 432 cm^2

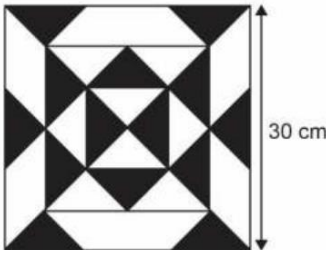
4. The area of an equilateral triangle of side 12 cm is:

   A. $36\sqrt{3}$ cm^2 B. $12\sqrt{3}$ cm^2 C. $24\sqrt{3}$ cm^2 D. $9\sqrt{3}$ cm^2

5. Which of the following is NOT a correct use of Heron's formula?

   A. To find the area of a triangle when all sides are known.
   B. To find the area of an equilateral triangle.
   C. To find the area of a quadrilateral (by dividing into two triangles).
   D. To find the area of a rectangle.

6. The design on a tile is made of isosceles triangles. The side lengths of the triangles are 6cm, 6cm and 8cm.How much area of the tile is black?

   A) 24cm^2 B) $9\sqrt{7}cm^2$ C) 90cm^2 D) $112\sqrt{5}cm^2$

7. The area of the isosceles triangle is $\frac{5}{4}\sqrt{11}cm^2$, if the perimeter is 11cm and the base is 5cm.

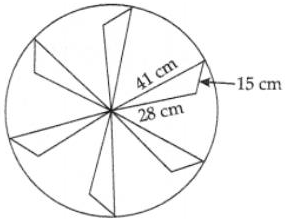
8. The sides of a triangular field are 51m, 37m and 20m. Find the number of rose beds that can be prepared in the field, if each rose bed, on an average occupies 6sq.cm of space.

9. The edges of a triangular board are 6cm, 8cm and 10cm.Find the cost of painting it at the rate of 9 paise per cm^2.

10. The sides of a triangle are 35cm, 54cm and 61cm, respectivley. Find the length of the its longest altitude.

11. The perimeter of a triangle is 50cm. One side of a triangle is 4cm longer than the smaller side and the thrid side is 6cm less than twice the smaller side. Find the area of the triangle.

12. Two identical circles with same inside design as shown in the figure are to be made at the entrance. The identical triangular leaves are to be painted red and the remaining are to be painted green. Find the total area to be painted red.



13. The sides of a rectangular park are 80 m and 90 m respectively. A small triangular area of side 8m, 10m and 6m respectively is to be left out at the four corners of the park for growing flowering plants. The remaining area is be planted with natural grass.



i) What is the area of the rectangular garden?
ii) What is the semi-perimeter of the triangle for the above measurements?
iii) Find the area used for growing flowering plants.
iv) If the cost of planting the flowering plant is ₹ 75.50 per $m2$, then find the total cost of planting the flowering plants.
v) Find the area of the grass to be planted.

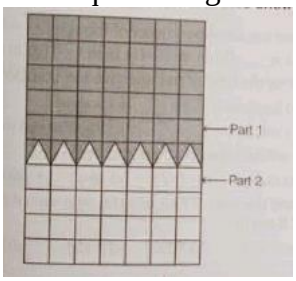
14. Triangles are used to make bridges because a triangle is an undeformable shape, as considered in the civil Engineering field, it can hold the most force when applied to it, compared to quadrilaterals and arches. Isosceles triangles were used to construct a bridge in which the base (unequal side) of an isosceles triangle is(4m and its perimeter is 20m.

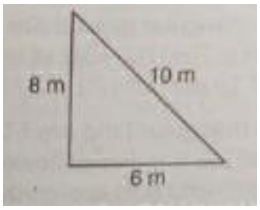


Based on the above information answer the following questions

(i) What is the length of equal sides?
(ii) Give Heron's formula for the triangle.
(iii) What is the semi perimeter of above triangle?
(iv) Calculate the area of above triangle

15. Glass buildings can be strengthened using iron frames. A glass structure and its iron frame as shown below the frame consists of equal triangles. The dimensions of a triangle are shown below.





i) How much area is enclosed by one triangle
ii) What is the area of part 1 of the frame
iii) Is the area of part 1 equal to the area of part 2? Why?