INDIAN SCHOOL AL WADI AL KABIR

Class IX, Mathematics (2023-24)

Worksheet– HERON'S FORMULA

CASE STUDY QUESTIONS

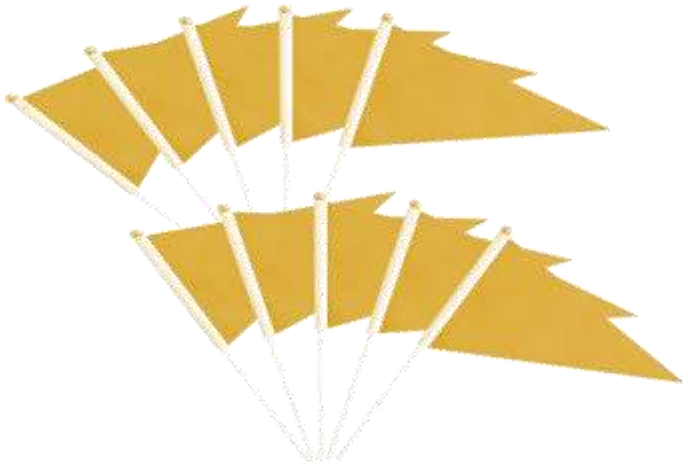
CASE STUDY A:

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.

Q1.	What is the area of the rectangular garden?
Q2.	What is the semi-perimeter of the triangle for the above measurements?
Q3.	Find the area used for growing flowering plants.
Q4.	If the cost of planting the flowering plant is ₹ 75.50 per m^2, then find the total cost of planting the flowering plants.
Q5.	Find the area of the grass to be planted.

CASE STUDY B:

While selling clothes for making flags, a shopkeeper claims to sell each piece of cloth in the shape of an equilateral triangle of each side 10 cm while actually he was selling the same in the shape of an isosceles triangle with sides 10 cm, 10 cm and 8 cm.



Q6.	Find the area of an equilateral triangular flag?
Q7.	If the shopkeeper sells 500 equilateral triangular flags, then find its area.
Q8.	What is the semi-perimeter of an isosceles triangular flag.
Q9.	Find the area of an isosceles triangular flag.
Q10.	How much cloth was he saving in selling each flag ?(use $\sqrt{3} \cong 1.73$ *and* $\sqrt{21} \cong 4.56$)

CASE STUDY C:

Triangles are used in bridges because they evenly distribute weight without changing their proportions. When force is applied on a shape like rectangle it would flatten out. Before triangles were used in bridges, they were weak and could not be very big. To solve that problem engineers would put a post in the middle of a square and make it more sturdy. Isosceles triangles were used to constuct a bridge in which the base and equal sides of an isosceles triangle are in the ratio 1:2:2 and its perimeter is 200 m.

Q11.	What is the value of the common ratio?
Q12.	What are the measurements of the sides of an isosceles triangle?
Q13.	Find the semi-perimeter of the above triangle.
Q14.	What is the area of the above isosceles triangle?
Q15.	Find the cost of painting the so formed triangle at the rate of ₹ 18.25 per m^2.

CASE STUDY D:

A craft mela is organized by Welfare Association to promote the art and culture for tribal people. Fairs and festivals are the custodians of our great cultural heritage. The pandal is to be decorated by using triangular flags around the field. Each flag has dimensions 25 cm, 25 cm and 22 cm.

Q16.	What is the semi-perimeter of the flag for the above mentioned dimensions?
Q17.	What is the area of the flag?(Use $\sqrt{14} \cong 3.74$)
Q18.	Find the area of cloth required for making 300 such flags in m^2.
Q19.	If the rate of the cloth is ₹ 200 per m^2, find the total cost of 300 flags.
Q20.	Find the area of cloth required for making 1500 such flags in cm^2.

CASE STUDY E:

UFO's are any unexplained moving object observed in the sky, especially one assumed by some observers to be of extraterrestrial (coming from a place outside the palne earth) origin.Rahul a student of class IX has an interest in a Space Science. So, he makes a model of a triangular shape of UFO which is shown in the below figure. The measurement of the sides of UFO are in the ratio 5:5:8 and its perimeter is 180 cm respectively.

Q21.	What is the measure of the sides of the triangular UFO?
Q22.	Find the semi perimeter of the given UFO shape.
Q23.	What is the area of the UFO?
Q24.	Find the total cost to make the UFO, if the rate of the material is ₹ 800 per cm^2.
Q25.	What is the altitude of the triangle with respect to its longest side?

Answers

Answers								
	1	$7200\ m^2$	**2**	12 m	**3.**	$96\ m^2$	**4**	₹ 7248
	5	$7104\ m^2$	**6**	$25\sqrt{3}\ cm^2$	**7**	$12500\sqrt{3}\ cm^2$	**8**	14 cm
	9	$8\sqrt{21}\ cm^2$	**10**	$6.77\ cm^2$	**11**	40	**12**	40 m, 80 m, 80 m
	13	100 m	**14**	$400\sqrt{15}\ m^2$	**15**	₹ $7300\sqrt{15}$	**16**	36 cm
	17	$246.84\ cm^2$	**18**	$7.4052\ m^2$	**19**	₹ 1481.04	**20**	$370260\ cm^2$
	21	50 cm , 50 cm, 80 cm	**22**	90 cm	**23**	$1200\ cm^2$	**24**	₹9,60,000
	25	30 cm						