



INDIAN SCHOOL AL WADI AL KABIR

Department: Mathematics

Class X

Heron's formula

19 - 04 - 2023

Case study – based questions (4 marks each)

Q.1. SAVE ANIMALS: Animals are an integral part of the nature. Animals also have a role to play in our daily lives. Every animal has a place in the ecosystem in the food chain to keep life in balance. 'Save Animals' must be a made into an awareness program for all to understand the value of animal life. Social workers started a campaign to protect animals. They prepared cardboard banners in the shape of equilateral triangles as shown in the figure.



- (i) If the perimeter of a banner is 120 cm, then find the measure of one side.
- (ii) Find the area of one cardboard banner.
- (iii) If cardboard costs ₹ 1 per 10 cm^2 , find the total cost of 25 such banners. (Take $\sqrt{3} = 1.73$)

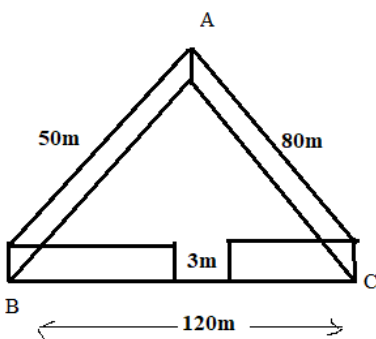
Q.2. According to a data, around one and a half lakh persons die due to road accident per year in India. According to a research, mostly accidents occur due to ignorance of traffic rules. To spread awareness about traffic rules, Delhi Public school initiated a step in this matter and provided all schools of Delhi the traffic signal board, indicating "SCHOOL AHEAD" is an equilateral triangle with side 'a'.



- (i) If a, b, c are the sides of a triangle, then write the formula to find the perimeter.
- (ii) If the perimeter of the triangle is 180 cm, then find the side of the triangle.
- (iii) Find the area of the signal board in the above figure.

Q.3. A triangular park has sides 120 m, 80m and 50 m. A gardener Dhania has to put a fence all around it and also plant grass inside.

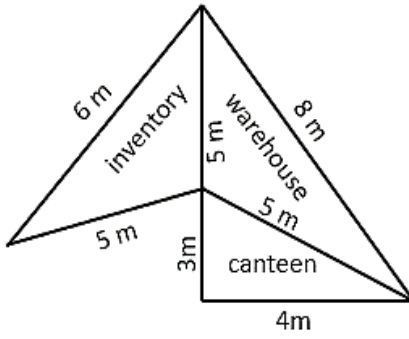
(i) What is the semi-perimeter of the park?
(ii) How much area does she need to plant?
(iii) Find the cost of fencing it with barbed wire at the rate of ₹20 per metre leaving a space 3m wide for a gate in one side.



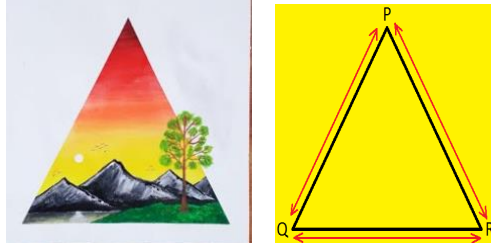
Q.4. Ajay bought some land for carrying out his wholesale business as shown in the figure below. He plans to divide this land into 3 parts for warehouse, inventory and canteen.

Answer the following questions:

(i) Find the area allotted for inventory.
(ii) Find the area allotted for the warehouse.
(iii) Find the cost of tiling the canteen floor at the rate of ₹500 per m².



Q.5. Rahul is fond of sceneries. He has decorated his home with many beautiful sceneries in various shapes. One of his friends visited his house and was impressed to see the triangular sceneries there. The dimensions of each triangular frame are 40 cm, 50 cm and 50 cm.



Based on the above information answer the following questions:

(i) What is the total length of frame of scenery?
(ii) If the area of an equilateral triangle is $5\sqrt{3}m^2$, find the length of each side of the triangle.
(iii) Find the area of the wall covered by two triangular scenery?

ANSWERS

Q.1	(i) 40 cm (ii) $400\sqrt{3} cm^2$ (iii) ₹ 1730	Q.2	(i) $2s = a + b + c$ (ii) 60 cm (iii) $900\sqrt{3} cm^2$
Q.3	(i) 125m (ii) $375\sqrt{15}m^2$ (iii) ₹4940	Q.4	(i) 12 m ² (ii) 12 m ² (iii) ₹ 3000
Q.5	(i) 140 cm (ii) $2\sqrt{5} m$ (iii) $400\sqrt{21}cm^2$		