INDIAN SCHOOL AL WADI AL KABIR
Mathematics Worksheet – HERON'S FORMULA

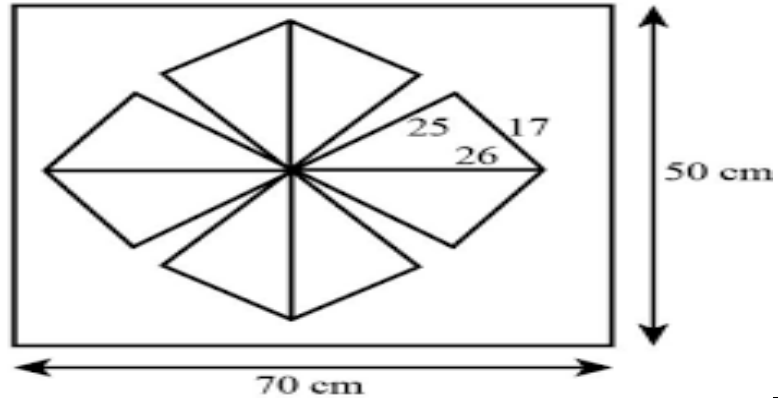**Class IX**   **12-05-2024**

Questions of 1 mark each

Q.1. The area of an equilateral triangle with side $2\sqrt{3}\ cm^2$ is:

A	$\sqrt{3}\ cm^2$	B	$3\sqrt{3}\ cm^2$	C	$3\sqrt{2}\ cm^2$	D	$\sqrt{2}\ cm^2$

Q.2. The semi-perimeter of an equilateral triangle is 27 cm, then the area of the triangle will be:

A	$81\sqrt{3}\ cm^2$	B	$9\sqrt{3}\ cm^2$	C	$6\sqrt{3}\ cm^2$	D	$9\sqrt{2}\ cm^2$

Q.3. The area of triangle with given two sides 18cm and 10cm respectively and perimeter equal to 42 cm is:

A	$20\sqrt{11}\ cm^2$	B	$19\sqrt{11}\ cm^2$	C	$22\sqrt{11}cm^2$	D	$21\sqrt{11}\ cm^2$

Q.4. The side of an isosceles right triangle of hypotenuse $5\sqrt{2}$ cm is:

A	25 cm	**B**	50 cm	**C**	5 cm	**D**	$25\sqrt{2}$ cm

Q.5. Each of equal sides of isosceles right triangle is 10 cm. What is the semi perimeter of the triangle?

A	$20+10\sqrt{3}$ cm	**B**	$20+\sqrt{2}$ cm	**C**	$10+5\sqrt{2}$ cm	**D**	$20+10\sqrt{2}$ cm

Q.6. If the area of an equilateral triangle is $16\sqrt{3}\ cm^2$, then the perimeter of the triangle is

A	48 cm	B	24 cm	C	12 cm	D	36 cm

Q.7. The area of an isosceles triangle having base 2 cm and the length of one of the equal sides 4 cm is:

A	$\sqrt{15}cm^2$	B	$\sqrt{\dfrac{15}{2}}\ cm^2$	C	$2\sqrt{15}cm^2$	D	$4\sqrt{15}cm^2$

Q.8.	The base of a right triangle is 8 cm and hypotenuse are 17 cm. Its area will be						
	A	$60cm^2$	B	$40cm^2$	C	$48cm^2$	D	$80cm^2$

Q.9.	If the perimeter of an equilateral triangle is 180 cm. Then its area will be:						
	A	$900\ cm^2$	B	$900\sqrt{3}\ cm^2$	C	$300\sqrt{3}\ cm^2$	D	$600\sqrt{3}\ cm^2$

ASSERTION AND REASONING

DIRECTION: A statement of Assertion (A) is followed by a statement of Reason (R).

Choose the correct option.

(a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

 (b) Both Assertion (A) and Reason (R) are true and Reason (R) is not the correct explanation of Assertion (A).

(c) Assertion (A) is true but Reason (R) is false.

(d) Assertion (A) is false but Reason (R) is true.

Q.10.	Assertion: The area of an equilateral triangle having side 4 cm is 3 cm^2. Reason: The area of an equilateral triangle having each side a is $\frac{\sqrt{3}}{4}a^2$.

Questions of 2 marks each

Q.11.	Find the cost of laying grass in a triangular field of sides 91 m, 98 m and 105 m at the rate of ₹7 per m^2.
Q.12.	If the perimeter of the isosceles triangle is 22 cm and the base is 10 cm, then what is the area of the isosceles triangle?

Questions of 3 marks each

Q.13.	The perimeter of an isosceles triangle is 32 cm. The ratio of the equal side to its base is 3: 2. Find the area of the triangle.
Q.14.	The length of the sides of a triangle are 4 cm, 6 cm and 8 cm. Find the length of perpendicular from the opposite vertex to the side whose length is 8 cm.
Q.15.	The perimeter of a triangular field is 420 m and its sides are in the ratio 6: 7: 8. Find the area of the triangular field.

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Questions of 5 marks each	
Q.16.	A design is made on a rectangular tile of dimensions 50 cm × 70 cm as shown in the figure. The design shows 8 triangles, each of sides 26 cm, 17 cm and 25 cm. Find the total area of the design and the remaining area of the tile.
Q.17.	Tanya joined four triangles of cardboard to create a mask of Joker as shown in the given figure. Find the total area of the mask. [given $\sqrt{2} = 1.414, \sqrt{3} = 1.732$]
Case study-based (4 marks)	
Q.18.	A triangular park has sides 120 m, 80m and 50 m. A gardener Dharam raj has to put a fence all around it and also plant grass inside.
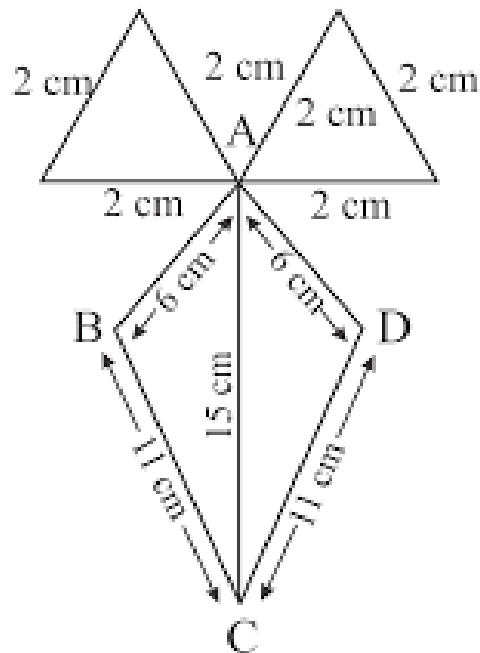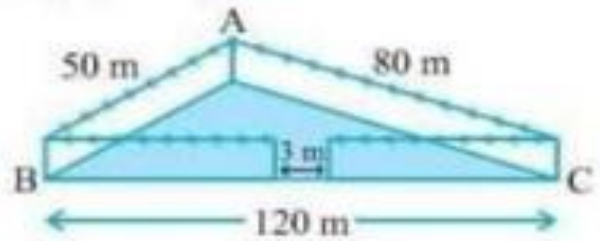
i) What is the semi-perimeter of the park?

ii) How much area does he 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.

ANSWERS

Q.1	B	Q.2	A	Q.3	D	Q.4	C
Q.5	C	Q.6	B	Q.7	A	Q.8	
Q.9	B	Q.10	D	Q.11	₹28812	Q.12	$5\sqrt{11}cm^2$
Q.13	$32\sqrt{2}cm^2$	Q.14	$\frac{3}{4}\sqrt{15}cm^2$	Q.15	$2100\sqrt{15}cm^2$	Q.16	$1632cm^2, 1868cm^2$
Q.17	$60.024cm^2$	Q.18	(i) 125m (ii) 375√15 m^2 (iii) ₹7410					

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