# INDIAN SCHOOL AL WADI AL KABIR
## Department: Mathematics
### Class IX        Worksheet – Heron's Formula        09-05-2021

| | **1mark questions** |
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| **Q.1.** | The edges of a triangular board are 6 cm, 8 cm and 10 cm. The cost of painting it at the rate of ₹ 9 per $cm^2$ is <br><br> (a) ₹ 378        (b) ₹ 316        (c) ₹ 256        (d) ₹ 216 |
| **Q.2.** | The area of an equilateral triangle whose each side measures 8 cm is <br><br> (a) $16\sqrt{3}\ cm^2$        (b) $8\sqrt{3}\ cm^2$        (c) $2\sqrt{3}\ cm^2$        (d) $64\sqrt{3}\ cm^2$ |
| **Q.3.** | The sides of a triangle are in the ratio of 25: 14: 12 and its perimeter is 510 m. Then the greatest side is <br><br> (a) 520 cm        (b) 215 cm        (c) 250 cm        (d) 270 cm |
| **Q.4.** | The area of an isosceles right triangle is 24.5 $cm^2$. What is the length of its hypotenuse? <br><br> (a) $7\sqrt{2}$ cm        (b) $\sqrt{14}$ cm        (c) $7\sqrt{14}$ cm        (d) $49\sqrt{2}$ cm |
| **Q.5.** | If the area of an equilateral triangle is $81\sqrt{3}\ cm^2$ , then the semi perimeter of triangle is <br><br> (a) 24 cm        (b) 47 cm        (c) 27 cm        (d) 54 cm |
| **Q.6.** | The height of the triangle is 18 cm and its area are 72 $cm^2$. Find its base. <br><br> (a)72 cm        (b) 9 cm        (c) 81 cm        (d) 8 cm |
| **Q.7.** | The area of a triangle with base 4 cm and height 6 cm is <br><br> (a) 24 $cm^2$        (b) 42 $cm^2$        (c) 12 $cm^2$        (d) 28 $cm^2$ |
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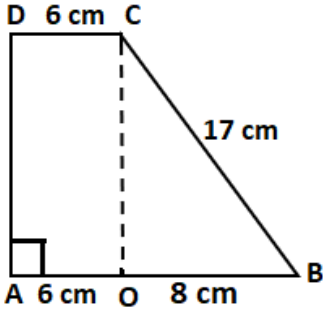| | **Case study question (1 x 4 = 4 marks)** |
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| **Q.8.** | <u>SAVE ANIMALS</u>: Animals are an integral part of the nature. Animals also have a role to play in our daily lives. Every animal has a place in the ecosystem in the food chain to keep life 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. <br><br>  |
| **(a)** | If the perimeter of a banner is 120 cm, then find the measure of one side <br><br> (i) 60 cm       (ii) 40 cm       (iii) 80 cm       (iv) 100 cm |
| **(b)** | Find the area of one cardboard banner. <br><br> (i) $100\sqrt{3}$       (ii) $800\sqrt{3}$       (iii) $200\sqrt{3}$       (iv) $400\sqrt{3}\ cm^2$ |
| **(c)** | Find the area of 25 cardboard banner. <br><br> (i) $10000\sqrt{3}\ cm^2$   (ii) $1000\sqrt{3}\ cm^2$   (iii) $4000\sqrt{3}\ cm^2$   (iv) $40000\sqrt{3}\ cm^2$ |
| **(d)** | If cardboard costs ₹ 1 per 10 $cm^2$, find the total cost of 25 such banners. (Take $\sqrt{3} = 1.73$) <br><br> (i) ₹ 1730       (ii) ₹ 17300       (iii) ₹ 173       (iv) ₹ 173000 |
| | **2 marks questions** |
| **Q.9.** | If the sides of a triangle are 25 cm, 17 cm and 12 cm. Then what will be the length of the altitude on the longest side? |
| **Q.10.** | An isosceles right-angled triangle has an area 8 $cm^2$. Then find the value of perimeter of triangle. |
| **Q.11.** | Sania has a piece of land which is in the shape of a rhombus. She divides the land in to two equal parts. If the perimeter of the land is 400 m and one of the diagonals is 160 m. Find the area of the rhombus. |
| **Q.12.** | The cost of levelling the ground in the form of triangle having sides 51 m, 37 m and 20 m at the rate of ₹ 2 per $m^2$ is |

| Q.13. | If the perimeter of the isosceles triangle is 11 cm and the base is 5 cm, then what is the area of the isosceles triangle? |
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| | **3 marks questions** |
| Q.14. | The sides of a triangular field are 33 m, 44 m and 55 m. Find the cost of levelling the field at the rate of ₹ 2 per $m^2$. |
| Q.15. | Find the percentage increase in the area of a triangle if its each side is doubled. |
| Q.16. | Compute the area of the trapezium shown in the figure.<br> |
| Q.17. | A regular hexagon has a side 6 cm. Find its perimeter and area. |
| Q.18. | Two parallel sides of a trapezium are 120 cm and 154 cm and other sides are 50 cm and 52 cm. Find the area of trapezium. |
| Q.19. | The sides of a triangular plot are in the ratio of 3:5:7 and its perimeter is 300 m. Find its area. |
| Q.20. | The length of two adjacent sides of a parallelogram are 5 cm and 3.5 cm. One of its diagonals is 6.5 cm long. Then find the area of the parallelogram. |
| | **5 marks questions** |
| Q.21. | A triangular park ABC has sides 120 m, 80 m and 50 m. A gardener has to put a fence all around it and also plant grass inside. Area of garden and cost of fencing the garden with barbed wire at the rate of ₹ 20 per meter leaving a space 3 m wide for a gate on one side. Find the total cost. |

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| **Q.22.** | Find the area of quadrilateral ABCD as shown in the figure below:
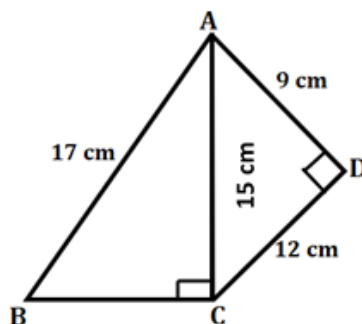
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| **Q.23.** | Two identical circles with same inside design as shown in the figure are to be made at the entrance. The identical triangular leaves are to be painted red and remaining are to be painted green. Find the total area to be painted red.

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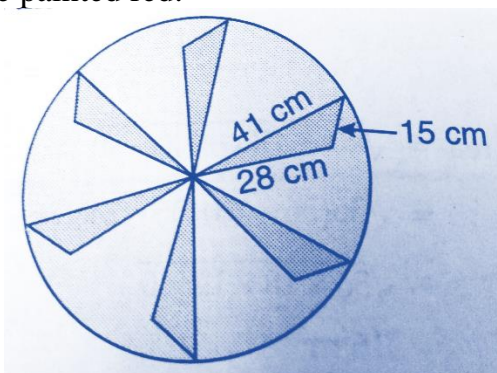
## ANSWERS

| Q.1 | ₹ 216 | Q.2 | $16\sqrt{3}\ cm^2$ | Q.3 | 250 cm | Q.4 | $7\sqrt{2}$ cm |
|---|---|---|---|---|---|---|---|
| Q.5 | 27 cm | Q.6 | 8 cm | Q.7 | $12\ cm^2$ | Q.8 | 40 cm |
| Q.8 | $400\sqrt{3}\ cm^2$ | Q.8 | $10000\sqrt{3}cm^2$ | Q.8 | ₹ 1730 | Q.9 | 7.2 cm |
| Q.10 | $8 + 4\sqrt{2}$ cm | Q.11 | $9600\ m^2$ | Q.12 | ₹ 612 | Q.13 | $\frac{5}{4}\sqrt{11}\ cm^2$ |
| Q.14 | ₹ 1452 | Q.15 | 300 % | Q.16 | $150\ cm^2$ | Q.17 | 36 cm, $54\sqrt{3}\ cm^2$ |
| Q.18 | $6576\ cm^2$ | Q.19 | $1500\ \sqrt{3}\ m^2$ | Q.20 | $10\sqrt{3}\ cm^2$ | Q.21 | $375\sqrt{15}m^2$, ₹ 4940 |
| Q.22 | $114\ cm^2$ | Q.23 | $1512\ cm^2$ | | | | |

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