

CLASS NOTES

Class: VIII

Topic: Ch – "MENSURATION"

EXERCISE – 11.1 & 11.2

Subject: MATHEMATICS

EXERCISE – 11.1

Q2.SOLUTION: Area of the plot = side \times side = 25 m \times 25 m = 625 m²

Area of the house = l \times b = 20 m \times 15 m = 300 m²

Area of the garden to be developed =

Area of the plot – Area of the house = 625 m² – 300 m² = 325 m²

Cost of developing the garden = ₹ 325 \times 55 = ₹ 17875

Q3.SOLUTION: Length of the rectangle = 20 – (3.5 + 3.5) = 20 – 7 = 13 m

Area of the rectangle = l \times b = 13 \times 7 = 91 m²

Area of two circular ends = 2 \times ($\frac{1}{2}$ πr^2) = πr^2 = $\frac{22}{7} \times \frac{7}{2} \times \frac{7}{2}$ = 77 m² = 38.5 m²

Total area = Area of the rectangle + Area of two ends = 91 m² + 38.5 m² = 129.5 m²

Total perimeter = Perimeter of the rectangle + Perimeter of two ends

$$= 2l + 2 \times \frac{1}{2} (2\pi r)$$

$$= 2 \times 13 + 2 \times \frac{1}{2} \times \frac{22}{7} \times \frac{7}{2} = 48 \text{ m}$$

Q4.SOLUTION: Area of the floor = 1080 m² = 1080 \times 10000 cm²

= 10800000 cm² [\because 1 m² = 10000 cm²]

Area of 1 tile = 1 \times base \times height = 1 \times 24 \times 10 = 240 cm²

Number of tiles required =

$$= \frac{\text{Area of the floor}}{\text{Area of 1 tile}}$$

$$= \frac{10800000}{240}$$

= 45000 tiles

EXERCISE – 11.2

Q1. Solution:

Area of the trapezium = $\frac{1}{2} \times (a + b) \times h$ = $\frac{1}{2} \times (1.2 + 1) \times 0.8$ = $\frac{1}{2} \times 2.2 \times 0.8$ = 0.88 m²

Hence, the required area = 0.88 m²

Q2.Solution: Area of trapezium = 34 cm²

Let length of one of the parallel sides, a = 10 cm, other side = b cm, height h = 4 cm

Area of the trapezium = $\frac{1}{2} (a + b) \times h$

$$34 = \frac{1}{2} \times (10 + b) \times 4$$

$$\Rightarrow 34 = (10 + b) \times 2$$

$$\Rightarrow 17 = 10 + b$$

$$\Rightarrow b = 17 - 10 = 7 \text{ cm}$$

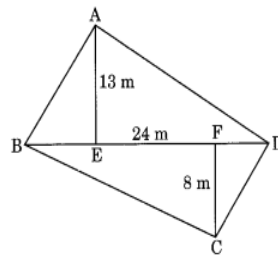
Hence, the required length = 7 cm.

Q4. Solution:

Area of the field = area of ΔABD + area of ΔBCD

$$\begin{aligned}
 &= 12 \times b \times h + 12 \times b \times h \\
 &= 12 \times 24 \times 13 + 12 \times 24 \times 8 \\
 &= 12 \times 13 + 12 \times 8 \\
 &= 12 \times (13 + 8) \\
 &= 12 \times 21 \\
 &= 252 \text{ m}^2
 \end{aligned}$$

Hence, the required area of the field = 252 m².



Q5. Solution: Area of a rhombus = $\frac{1}{2}$ x diagonal 1 x diagonal 2

$$= \frac{1}{2} \times 12 \times 7.5 = 6 \times 7.5 = 45 \text{ cm}^2$$

Q6. Solution: Given, Side = 5 cm, Altitude = 4.8 cm, Length of one diagonal = 8 cm
As, rhombus is also a parallelogram, So,
Area of the rhombus = base x height = 5 x 4.8 = 24 cm²
Area of the rhombus = $\frac{1}{2} \times d_1 \times d_2$ or, 24 = $\frac{1}{2} \times 8 \times d_2$ or, $d_2 = 6$ cm
Hence, the length of other diagonal = 6 cm.

Q7. Solution: Given Number of tiles = 3000
Length of the two diagonals of a tile = 45 cm and 30 cm
Area of one tile = $\frac{1}{2} \times d_1 \times d_2 = \frac{1}{2} \times 45 \times 30 = 45 \times 15 = 675 \text{ cm}^2$
Area covered by 3000 tiles = 3000 x 675 cm² = 2025000 cm² = 202.5 m²
Cost of polishing the floor = 202.5 x 4 = ₹ 810
Hence, the required cost = ₹ 810

Q8 Solution: Let the side of the trapezium (roadside) be x cm.
Then opposite parallel side = 2x m
h = 100 m, Area = 10500 m²
Area of trapezium = $\frac{1}{2} \times (a + b) \times h$
 $10500 = \frac{1}{2} (2x + x) \times 100$, or, $2 \times 10500 = 3x \times 100$
or, 21000 = 300x or, x = 70 m
So, 2x = 2 x 70 = 140 m
Hence, the required length of other parallel side = 140 m.

Q9. Solution:
Area of the octagonal surface = area of trapezium ABCH + area of rectangle HCDG + area of trapezium GDEF
Area of trapezium ABCH = Area of trapezium GDEF = $\frac{1}{2} \times (a + b) \times h$
 $= \frac{1}{2} \times (11 + 5) \times 4 = 16 \times 2 = 32 \text{ m}^2$
Area of rectangle HCDG = l x b = 11 m x 5 m = 55 m²
Area of the octagonal surface = 32 m² + 55 m² + 32 m² = 119 m²
Hence, the required area = 119 m².

Q10 Solution: JYOTI'S METHOD:
Area of the pentagonal shape = Area of trapezium 1 + Area of trapezium 2
 $= 2 \times \text{Area of trapezium 1} = 2 \times \frac{1}{2} (a + b) \times h$
 $= (15 + 30) \times 7.5 = 45 \times 7.5 = 337.5 \text{ m}^2$

KAVITA'S METHOD:
Area of the pentagonal shape = Area of ΔABE + Area of square BCDE

$$= \frac{1}{2} \times b \times h + (15 \times 15) = \frac{1}{2} \times 15 \times 15 + 225 = 112.5 + 225 = 337.5 \text{ m}^2$$

Q11. Solution:

$$h_1 = \frac{1}{2} (28 - 20) = \frac{1}{2} \times 8 = 4 \text{ cm}$$

$$h_2 = \frac{1}{2} (24 - 16) = \frac{1}{2} \times 8 = 4 \text{ cm}$$

Area of the trapezium A

$$\begin{aligned} &= \frac{1}{2} \times (a + b) \times h_1 \\ &= \frac{1}{2} \times (24 + 16) \times 4 \\ &= \frac{1}{2} \times 40 \times 4 \\ &= 80 \text{ cm}^2 \end{aligned}$$

Area of trapezium A = Area of trapezium C
= 80 cm²

Area of trapezium B = Area of trapezium D

$$\begin{aligned} &= \frac{1}{2} \times (28 + 20) \times 4 \\ &= \frac{1}{2} \times 48 \times 4 \\ &= 96 \text{ cm}^2 \end{aligned}$$

Hence, the areas of the four parts A, B, C, and D are 80 cm², 96 cm², 80 cm² and 96 cm² respectively.

NOTE: STUDENTS ARE ADVISED TO WRITE THIS CONTENT IN THEIR MATHS FAIR NOTEBOOK.

ASSIGNMENT: Q1,Q5 OF EX- 11.1 and Q3 of EX – 11.2.

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“ CONTENT ABSOLUTELY PREPARED AT HOME”

