

1. Find the perimeter and area of the rectangle of length 17 cm and breadth 13 cm

Ans. Given: length = 17 cm, breadth = 13 cm

Perimeter of rectangle = 2 (length + breadth)

$$= 2 (17 + 13) \text{ cm}$$

$$= 2 \times 30 \text{ cm}$$

$$= 60 \text{ cm}$$

We know that the area of rectangle = length \times breadth

$$= (17 \times 13) \text{ cm}^2$$

$$= 221 \text{ cm}^2$$

2. Find the breadth of the rectangular plot of land whose area is 660 m² and whose length is 33 m. Find its perimeter..

Ans. We know that the breadth of the rectangular plot = $\frac{\text{Area}}{\text{Length}} = \frac{660 \text{ m}^2}{33 \text{ m}} = 20 \text{ m}$

Therefore, the perimeter of the rectangular plot = 2 (length + breadth)

$$= 2(33 + 20) \text{ m}$$

$$= 2 \times 53 \text{ m}$$

$$= 106 \text{ m}$$

3. Find the area of the rectangle if its perimeter is 48 cm and its breadth is 6 cm

Ans. $P = 2 (l + b)$

Here, $P = 48 \text{ cm}$; $b = 6 \text{ cm}$

Therefore, $48 = 2 (l + 6)$

$$\Rightarrow \frac{48}{2} = l + 6$$

$$\Rightarrow 24 = l + 6$$

$$\Rightarrow 24 - 6 = l$$

$$\Rightarrow 18 = l$$

Therefore, length = 18 cm

Now, area of rectangle = $l \times b = 18 \times 6 \text{ cm}^2 = 108 \text{ cm}^2$

4. Find the perimeter and area of a square of side 11 cm.

Ans. We know that the perimeter of square = $4 \times \text{side}$

Side = 11 cm

Therefore, perimeter = $4 \times 11 \text{ cm} = 44 \text{ cm}$

Now, area of the square = (side \times side) sq. units

$$= 11 \times 11 \text{ cm}^2$$

$$= 121 \text{ cm}^2$$

5. The perimeter of a square is 52 m. Find the area of the square.

Ans. Perimeter of square = 52 m

But perimeter of square = $4 \times \text{side}$

Therefore, $4 \times \text{side} = 52 \text{ m}$

Therefore, side = $52/4 \text{ m} = 13 \text{ m}$

Now, the area of the square = (side \times side)

Therefore, area of the square = $13 \times 13 \text{ m}^2 = 169 \text{ m}^2$.

6. The area of a square is 144 m^2 . Find its perimeter.

Ans. Area of square = side \times side

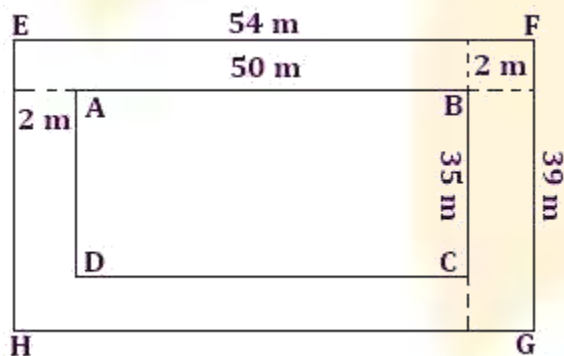
Given; area of square = 144 m^2

Therefore, side² = 144 m^2

Therefore, side = $\sqrt{144 \text{ m}^2} = \sqrt{(2 \times 2 \times 2 \times 2 \times 3 \times 3)} = 2 \times 2 \times 3 \text{ m} = 12 \text{ m}$

Now, the perimeter of the square = $4 \times \text{side} = 4 \times 12 \text{ m} = 48 \text{ m}$

7. A rectangular lawn of length 50 m and breadth 35 m is to be surrounded externally by a path which is 2 m wide. Find the cost of turfing the path at the rate of \$3 per m^2 .



Ans. Length of the lawn = 50 m

Breadth of the lawn = 35 m

$$\begin{aligned}\text{Area of the lawn} &= (50 \times 35) \text{ m}^2 \\ &= 1750 \text{ m}^2\end{aligned}$$

Length of lawn including the path = $[50 + (2 + 2)] \text{ m} = 54 \text{ m}$

Breadth of the lawn including the path = $[35 + (2 + 2)] \text{ m} = 39 \text{ m}$

$$\text{Area of the lawn including the path} = 54 \times 39 \text{ m}^2 = 2106 \text{ m}^2$$

$$\text{Therefore, area of the path} = (2106 - 1750) \text{ m}^2 = 356 \text{ m}^2$$

For 1 m^2 , the cost of turfing the path = \$ 3

$$\text{For } 356 \text{ m}^2, \text{ the cost of turfing the path} = \$3 \times 356 = \$1068$$

8. A painting is painted on a cardboard 19 cm and 14 cm wide, such that there is a margin of 1.5 cm along each of its sides. Find the total area of the margin.

Ans. Length of the cardboard = 19 cm

Breadth of the cardboard = 14 cm

$$\text{Area of the cardboard} = 19 \times 14 \text{ cm}^2 = 266 \text{ cm}^2$$

Length of the painting excluding the margin = $[19 - (1.5 + 1.5)] \text{ cm} = 16 \text{ cm}$

Breadth of the painting excluding the margin = $14 - (1.5 + 1.5) = 11 \text{ cm}$

$$\text{Area of the painting excluding the margin} = (16 \times 11) \text{ cm}^2 = 176 \text{ cm}^2$$

$$\text{Therefore, area of the margin} = (266 - 176) \text{ cm}^2 = 90 \text{ cm}^2$$

9. Find the area of right angled triangle whose hypotenuse is 15 cm and one of the sides is 12 cm.

$$\begin{aligned}\text{Ans. } AB^2 &= AC^2 - BC^2 \\ &= 15^2 - 12^2 \\ &= 225 - 144 \\ &= 81\end{aligned}$$

Therefore, $AB = 9$

Therefore, area of the triangle = $\frac{1}{2} \times \text{base} \times \text{height}$

$$\begin{aligned}&= \frac{1}{2} \times 12 \times 9 \\ &= 54 \text{ cm}^2\end{aligned}$$

10. The base and height of the triangle are in the ratio 3 : 2. If the area of the triangle is 243 cm^2 find the base and height of the triangle.

Ans. Let the common ratio be x

Then height of triangle = $2x$

And the base of triangle = $3x$

Area of triangle = 243 cm^2

Area of triangle = $\frac{1}{2} \times b \times h$ $243 = \frac{1}{2} \times 3x \times 2x$

$$\Rightarrow 3x^2 = 243$$

$$\Rightarrow x^2 = \frac{243}{3}$$

$$\Rightarrow x = \sqrt{81}$$

$$\Rightarrow x = \sqrt{(9 \times 9)}$$

$$\Rightarrow x = \sqrt{9}$$

Therefore, height of triangle = 2×9

$$= 18 \text{ cm}$$

Base of triangle = $3x$

$$= 3 \times 9$$

$$= 27 \text{ cm}$$

11. The base of the parallelogram is thrice its height. If the area is 192 cm^2 , find the base and height.

Ans. Let the height of the parallelogram = $x \text{ cm}$

then the base of the parallelogram = $3x \text{ cm}$

Area of the parallelogram = 192 cm^2

Area of parallelogram = base \times height

$$192 = 3x \times x$$

$$\Rightarrow 3x^2 = 192$$

$$\Rightarrow x^2 = 64$$

$$\Rightarrow x = 8$$

Therefore, $3x = 3 \times 8 = 24$

Therefore, Base of the parallelogram is 24 cm and height is 8 cm .

12. A parallelogram has sides 12 cm and 9 cm. If the distance between its shorter sides is 8 cm, find the distance between its longer side.

Ans. Adjacent sides of parallelogram = 2 cm and 9 cm

Distance between shorter sides = 8 cm

Area of parallelogram = $b \times h$

$$= 9 \times 8 \text{ cm}^2$$

$$= 72 \text{ cm}^2$$

Again, area of parallelogram = $b \times h$

$$\Rightarrow 72 = 12 \times h$$

$$\Rightarrow h = 72/12$$

$$\Rightarrow h = 6 \text{ cm}$$

Therefore, the distance between its longer side = 6 cm.

13. Find the area of the rhombus having each side equal to 17 cm and one of its diagonals equal to 16 cm.

Ans. ABCD is a rhombus in which $AB = BC = CD = DA = 17 \text{ cm}$

$AC = 16 \text{ cm}$

Therefore, $AO = 8 \text{ cm}$

In ΔAOD ,

$$AD^2 = AO^2 + OD^2$$

$$\Rightarrow 17^2 = 8^2 + OD^2$$

$$\Rightarrow 289 = 64 + OD^2$$

$$\Rightarrow 225 = OD^2$$

$$\Rightarrow OD = 15$$

Therefore, $BD = 2 OD$

$$= 2 \times 15$$

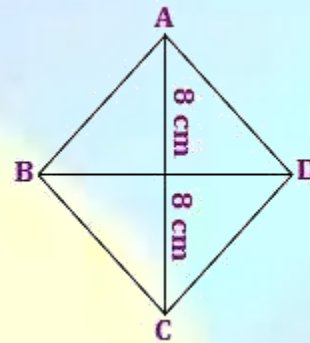
$$= 30 \text{ cm}$$

Now, area of rhombus

$$= \frac{1}{2} \times d_1 \times d_2$$

$$= \frac{1}{2} \times 16 \times 30$$

$$= 240 \text{ cm}^2$$



14. Find the altitude of the rhombus whose area is 315 cm^2 and its perimeter is 180 cm.

Ans. Since, the perimeter of rhombus = 180 cm

$$\text{Therefore, side of rhombus} = \frac{P}{4} = \frac{180}{4} = 45 \text{ cm}$$

Now, area of rhombus = $b \times h$

$$\Rightarrow 315 = 45 \times h$$

$$\Rightarrow h = \frac{315}{45}$$

$$\Rightarrow h = 7 \text{ cm}$$

Therefore, altitude of the rhombus is 7 cm.

15. The length of the parallel sides of a trapezium are in the ratio 3 : 2 and the distance between them is 10 cm. If the area of trapezium is 325 cm^2 , find the length of the parallel sides.

Ans. Let the common ratio be x ,

Then the two parallel sides are $3x, 2x$

Distance between them = 10 cm

Area of trapezium = 325 cm^2

Area of trapezium = $\frac{1}{2} (p_1 + p_2) h$

$$325 = \frac{1}{2} (3x + 2x) 10$$

$$\Rightarrow 325 = 5x \times 5$$

$$\Rightarrow 325 = 25x$$

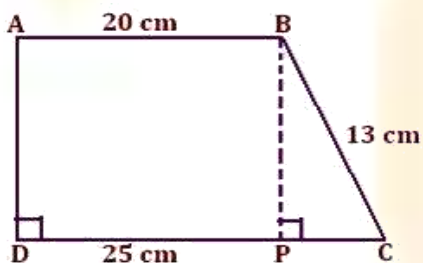
$$\Rightarrow x = \frac{325}{25}$$

Therefore, $3x = 3 \times 13 = 39$ and $2x = 2 \times 13 = 26$

Therefore, the length of parallel sides are 26 cm and 39 cm.

16. ABCD is a trapezium in which $AB \parallel CD$, $AD \perp DC$, $AB = 20 \text{ cm}$, $BC = 13 \text{ cm}$ and $DC = 25 \text{ cm}$.

Find the area of the trapezium.



Ans. From B draw BP perpendicular DC

Therefore, $AB = DP = 20 \text{ cm}$

So, $PC = DC - DP$

$$= (25 - 20) \text{ cm}$$

$$= 5 \text{ cm}$$

Now, area of trapezium ABCD = Area of rectangle ABPD + Area of Δ BPC

Δ BPC is right angled at \angle BPC

Therefore, using Pythagoras theorem,

$$BC^2 = BP^2 + PC^2$$

$$13^2 = BP^2 + 5^2$$

$$\Rightarrow 169 = BP^2 + 25$$

$$\Rightarrow 169 - 25 = BP^2$$

$$\Rightarrow 144 = BP^2$$

$$\Rightarrow BP = 12$$

Now, area of trapezium ABCD = Area of rectangle ABPD + Area of Δ BPC

$$= AB \times BP + \frac{1}{2} \times PC \times BP$$

$$= 20 \times 12 + \frac{1}{2} \times 5 \times 12$$

$$= 240 + 30$$

$$= 270 \text{ cm}^2$$

17. Find the circumference and area of radius 7 cm.

Ans. Circumference of circle = $2\pi r$

$$= 2 \times \frac{22}{7} \times 7$$

$$= 44 \text{ cm}$$

Area of circle = πr^2

$$= \frac{22}{7} \times 7 \times 7 \text{ cm}^2$$

$$= 154 \text{ cm}^2$$

18. A race track is in the form of a ring whose inner circumference is 220 m and outer circumference is 308 m. Find the width of the track.

Ans. Let r_1 and r_2 be the outer and inner radii of ring.

$$\text{Then } 2\pi r_1 = 308$$

$$2 \times \frac{22}{7} r_1 = 308$$

$$\Rightarrow r_1 = \frac{308 \times 7}{2 \times 22}$$

$$\Rightarrow r_1 = 49 \text{ m}$$

$$2\pi r_2 = 220$$

$$\Rightarrow 2 \times \frac{22}{7} \times r_2 = 220$$

$$\Rightarrow r_2 = \frac{220 \times 7}{(2 \times 22)}$$

$$\Rightarrow r_2 = 35 \text{ m}$$

Therefore, width of the track = $(49 - 35) \text{ m} = 14 \text{ m}$

19. Convert the following units: 60 cm^2 in mm^2

Ans. 60 cm^2 in mm^2

$$1 \text{ cm} = 10 \text{ mm}$$

$$1 \text{ cm}^2 = 100 \text{ mm}^2$$

$$\begin{aligned}\text{Therefore, } 60 \text{ cm}^2 &= 60 \times 100 \text{ mm}^2 \\ &= 6000 \text{ mm}^2\end{aligned}$$

20. Convert the following units: 12000 m^2 in hectares

Ans. 12000 m^2 in hectares

$$10000 \text{ m}^2 = 1 \text{ hectare}$$

$$\text{Therefore, } 12000 \text{ m}^2 = \frac{1}{10000} \times 12000 \text{ hectare}$$

$$= \frac{12}{10} \text{ hectare}$$

$$= \frac{6}{5} \text{ hectare}$$