

AREA

Main Formulae :

1- Area of the rectangle = length * breadth

2- Area of square = (side of the square)²
 $= \frac{1}{2} (\text{Diagonal})^2$

3- Area of four walls of a room = 2 * height (length + breadth)

4- Area of right angled triangle = $\frac{1}{2}$ * base * height

5- Area of isosceles right angled triangle = $\frac{1}{2} (\text{side})^2$

6- Area of an equilateral triangle = $\frac{\sqrt{3}}{4} (\text{side})^2$

7- Area of scalene triangle = $\sqrt{s(s-a)(s-b)(s-c)}$

Where s = half of the sum of all the three sides and a, b, & c are the three sides of the triangle.

8- Area of parallelogram = base * height

9- Area of rhombus = $\frac{1}{2}$ * (product of the diagonals)

10- Area of trapezium = $\frac{1}{2}$ * (sum of parallel sides) * perpendicular distance between them.

11- Whole surface of cube = 6 (side)²

12- Whole surface of cuboid = 2 (l * b + l * h + b * h)

13- Area of circle = π (radius)²

14- Area of angular ring = $\pi (r_1^2 - r_2^2)$ where r₁ and r₂ are external and internal radii respectively .

Units of Measuring Length :

1 millimetre	=	0.001 metre
1 centimetre	=	0.01 metre = 10 millimetre
1 decimetre	=	0.1 metre = 10 centimetre
1 metre	=	10 decimetre
1 decametre	=	10 metre
1 hectometre	=	10 decametre = 100 metre
1 kilometre	=	10 hectometre = 100 metre

Units of Measuring Area :

1 are	=	100 sq. metre
1 hectare	=	10000 sq. metre
1 sq. metre	=	100 sq. decimeter
1 sq. decimetre	=	100 sq. centimeter
1 sq. centimeter	=	100 sq. millimetre

Some Unsolved Examples -

Example 1 – A rectangular field of 60 metre length and 40 metre wide is to be surrounded by a road 5 metre wide. If the cost of making 1 sq. metre road is Rs. 500, what would be the cost of the entire road.

Example 2 – In numerical value the perimeter of a rectangular field is 1040 less than its area. If the breadth is doubled, in numerical value the perimeter becomes 2200 less than its area. What is the numerical value of the length of the field ?

Example 3 – The length of a rectangular plot is 75 % of its breadth. If the perimeter of the plot be 1050 m, what is its area ?

Example 4 – The length of a plot is 4 times of its breadth. If a play ground of area 1200 m^2 , occupies $\frac{1}{3}$ area of the plot, what is the length of the plot ?

Example 5 – If the length of a rectangular plot is increased by 40 %, by what per cent should its width be increased so that its area may increase by 75 % ?

EXERCISE

- If the length and breadth of a rectangular plot are increased by 50 % and 20 % respectively, how many times will be the new area of the old area ?
 (a) $1 \frac{4}{5}$ (b) 2
 (c) $3 \frac{2}{5}$ (d) $4 \frac{1}{5}$
 (e) None of these
- The area of a square is equal to the area of a rectangle. The side of the square is 6 cm and the breadth of the rectangle is 2 cm less than the side of the square. What is the length of the rectangle ?
 (a) 10 cm (b) 8 cm
 (c) 6 cm (d) 9 cm
 (e) None of these
- The length of a rectangular plot is 30 % more than its breadth. If the area of the plot be 20.8 m^2 , what is the length of the plot ?
 (a) 5.2 m (b) 6.8 m
 (c) 5.2 m (d) 5 m
 (e) None of these
- If the area of a rectangular plot is increased by 30 % while its breadth remains unaltered, what will be the ratio between the area of such formed figure and the area of the original figure ?
 (a) 1 : 3 (b) 10 : 13

- (c) 3 : 1 (d) 4 : 7
(e) None of these
5. Area of a square is equal to the area of a circle. If the radius of the circle is 14 cm, what is the app. Length of a square ?
(a) 20 cm (b) 25 cm
(c) 15 cm (d) 30 cm
(e) None of these
6. The breadth of a rectangular field is 75 % of its length. If the diagonal of the field is 100 m, what it the area of the field ?
(a) 4500 m^2 (b) 4200 m^2
(c) 4550 m^2 (d) 4800 m^2
(e) None of these
7. A rectangular plot is 50 m long and 20 m broad. Inside it there is path of 7 m wide all round it. What is the area of the path ?
(a) 216 sq. m (b) 1000 sq. m
(c) 1216 sq. m (d) 784 sq. m
(e) None of these
8. The length of a rectangular field is 50 % more than its breadth. If the cost of fencing at Rs. 60 per metre is Rs. 12000, what is the length of the field?
(a) 60 m (b) 40 m
(c) 80 (d) 20 m
(e) None of these
9. The length and breadth of a plot are 35 m and 16 m respectively. If the rate of fencing is Rs. 7 per metre, what is cost of its fencing ?
(a) Rs. 3920 (b) Rs. 602
(c) Rs. 714 (d) Rs. 357
(e) None of these

10. Area of a rectangular field is 5732 m^2 . If its length is 60 % more than its breadth, what is its app. Breadth ?

- | | |
|-------------------|----------|
| (a) 90 m | (b) 30 m |
| (c) 80 m | (d) 60 m |
| (e) None of these | |

Answer Key

- | | |
|-------------|--------------|
| 1. a | 6. d |
| 2. d | 7. d |
| 3. a | 8. a |
| 4. e | 9. c |
| 5. b | 10. d |

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