Area

1. Introduction

Area is the amount of space covered by a closed shape on a flat surface. It is measured in square units (e.g., cm², m², km², etc.).

2. Formulas for Area of Common Shapes

Shape	Formula for Area	Example Calculation
Square	Side × Side	Side = 6 cm \rightarrow 6 × 6 = 36 cm ²
Rectangle	Length × Breadth	$L = 10 \text{ cm}, B = 4 \text{ cm} \rightarrow$ $10 \times 4 = 40 \text{ cm}^2$
Triangle	$\frac{1}{2}$ × Base × Height	B = 8 cm, H = 5 cm → $\frac{1}{2} \times 8 \times 5 = 20 \text{ cm}^2$
Circle	$\pi \times Radius^2$	Radius = 7 cm → 3.14 × 7 ² = 153.86 cm ²
Parallelogram	Base × Height	B = 9 cm, H = 6 cm → 9 × 6 = 54 cm ²
Trapezium	$\frac{1}{2}$ × (Sum of parallel sides) × Height	a = 5 cm, b = 7 cm, h = 4 cm → $\frac{1}{2}$ × (5 + 7) × 4 = 24 cm ²

3. Example Calculations

Example 1:

Find the area of a rectangle with length = 12 cm and breadth = 5 cm.

Solution:

Area = Length × Breadth = $12 \times 5 = 60 \text{ cm}^2$

Example 2:

A circular garden has a radius of 14 m. Find its area.

Solution:

Area = $\pi \times \text{Radius}^2$

 $= 3.14 \times 14 \times 14$ = 615.44 m²



4. Properties of Area

- i. Area is always positive as it represents physical space.
- ii. The area of a shape remains the same regardless of its position.
- iii. Doubling the dimensions of a shape increases its area by four times.
- iv. Shapes with the same perimeter can have different areas.
- v. Two different shapes can have the same area but different perimeters.
- vi. Area is measured in square units (cm², m², km², etc.).