Perimeter and Area

1. Perimeter:

Perimeter is the total length of the boundary of a closed shape. It is measured in units like cm, m, km, etc.

Formulas for Perimeter

Shape	Perimeter Formula	Example
Square	4 × Side	A square with side 5 cm \rightarrow Perimeter = 4 × 5 = 20 cm
Rectangle	2 × (Length + Breadth)	A rectangle with L = 8 cm, B = 5 cm \rightarrow Perimeter = 2 × (8 + 5) = 26 cm
Triangle	Sum of all sides	A triangle with sides 3 cm, 4 cm, 5 cm \rightarrow Perimeter = 3 + 4 + 5 = 12 cm
Circle	2 × π × Radius	A circle with radius 7 cm \rightarrow Perimeter = 2 × 3.14 × 7 = 43.96 cm

2. Area:

Area is the amount of space inside a closed shape.

It is measured in square units (cm², m², etc.).

Formulas for Area

Shape	Area Formula	Example
Square	Side × Side	A square with side 5 cm \rightarrow Area = 5 × 5 = 25 cm ²
Rectangle	Length × Breadth	A rectangle with L = 8 cm, B = 5 cm \rightarrow Area = 8 × 5 = 40 cm ²
Triangle	$\frac{1}{2}$ × Base × Height	A triangle with B = 6 cm, H = 4 cm \rightarrow Area = $\frac{1}{2} \times 6 \times 4 = 12 \text{ cm}^2$
Circle	$\pi \times Radius^2$	A circle with radius 7 cm \rightarrow Area = 3.14 × 7 ² = 153.86 cm ²

3. Properties of Perimeter and Area

- i. Perimeter is the total boundary length of a shape, while area is the space inside the shape.
- ii. For the same perimeter, different shapes can have different areas.
- iii. Doubling the sides of a shape doubles the perimeter but quadruples the area.
- iv. Circles have the smallest perimeter for a given area.
- v. Units of Perimeter: cm, m, km, etc.
- vi. Units of Area: cm², m², km², etc.

4. Perimeter and Area Importance:

Used in real-life applications like fencing land, flooring rooms, and building walls. Helps in measuring and comparing spaces.

Essential for geometry, architecture, and engineering.