Volume

Understanding the Topic

- Volume is the amount of space occupied by a solid object.
- It tells us how much something can hold inside.
- We measure volume in cubic units like cm³, m³, etc.
- It is used for boxes, containers, tanks, and 3D shapes.

Key Concept

- Volume = Length × Breadth × Height
- This formula is used for cuboids and cubes.

Units of Volume

- 1 cm³ = volume of a cube with side 1 cm
- 1 m³ = volume of a cube with side 1 m
- 1000 cm³ = 1 litre

Use of Volume in Real Life

- Filling water in a tank
- Packing items in boxes
- Measuring liquids in containers

Examples with Solutions

1. Volume of a Cube (Easy)

Question: Find the volume of a cube with side 5 cm.

Solution: Volume = $5 \times 5 \times 5 = 125$ cm³

2. Volume of a Cuboid (Moderate)

Question: A box has length 6 cm, breadth 4 cm and height 3 cm Find its volume.

Solution: Volume = $6 \times 4 \times 3 = 72 \text{ cm}^3$

3. Real-life Use (Easy)

Question: A water tank is 2 m long, 1 m wide, and 1 m high How much water can it hold.

Solution: Volume = $2 \times 1 \times 1 = 2 \text{ m}^3$

4. Word Problem (Moderate)

Question: A wooden block has length 10 cm, breadth 6 cm and height 2 cm Find the volume.

Solution: Volume = $10 \times 6 \times 2 = 120$ cm³

5. Comparing Volumes (Moderate)

Question: Which has more volume – a cube of side 4 cm or a cuboid of 5 cm \times 3 cm \times 2 cm.

Solution: Cube = $4 \times 4 \times 4 = 64$ cm³

Cuboid = $5 \times 3 \times 2 = 30 \text{ cm}^3$

Answer: Cube has more volume

Summary Points

- Volume measures the space occupied inside a solid shape.
- Volume = length × breadth × height.
- Measured in cubic units like cm³ or m³.
- Used in packing, storing, and filling liquids.
- Volume of cube = side × side × side.
- Volume of cuboid = length × breadth × height.
- 1000 cm³ = 1 litre.
- Helps in solving real-life problems like tank filling and box packing.
- Use correct units while solving.
- Practice improves understanding of 3D space and measurement.