# **Using a Shortcut**

## **Understanding the Topic**

- When we find the volume of cuboids and cubes, we don't have to measure every unit inside.
- We can use a simple shortcut formula to quickly calculate volume.

# **Shortcut Formula**

- Volume of Cuboid = length × breadth × height.
- Volume of Cube = side × side × side.

This method saves time and helps in solving bigger numbers quickly.

All three measurements must be in the same unit.

#### **Unit of Volume**

- Measured in cubic units like cm<sup>3</sup>, m<sup>3</sup>
- 1 m = 100 cm so always check unit before solving.

#### Why Use a Shortcut?

- Quick calculation
- No need to count every cube
- Saves time in exams and real-life use

#### **Examples with Solutions**

1. Cube (Easy)

Question: Find the volume of a cube with side 4 cm.

**Solution:**  $4 \times 4 \times 4 = 64 \text{ cm}^3$ 

2. Cuboid (Moderate)

Question: A box has length 8 cm, breadth 5 cm, height 3 cm Find its volume.

**Solution:**  $8 \times 5 \times 3 = 120 \text{ cm}^3$ 

3. Real-life Use (Moderate)

Question: A water tank is 2 m long, 1.5 m wide, and 1 m high Find its volume.

**Solution:**  $2 \times 1.5 \times 1 = 3 \text{ m}^3$ 

#### 4. Comparing Shapes (Moderate)

**Question:** Cube of side 3 cm or cuboid of 4 cm  $\times$  2 cm  $\times$  3 cm – which has more volume?

**Solution:** Cube =  $3 \times 3 \times 3 = 27$  cm<sup>3</sup>

Cuboid =  $4 \times 2 \times 3 = 24$  cm<sup>3</sup>

Answer: Cube has more volume

5. Word Problem (Moderate)

**Question:** A cupboard is 2 m high, 1 m wide and 0.5 m deep Find its volume.

**Solution:**  $2 \times 1 \times 0.5 = 1 \text{ m}^3$ 

## **Summary Points**

- Shortcut formula helps find volume quickly.
- For cube: side × side × side
- For cuboid: length × breadth × height.
- Always check that all units are same.
- Volume tells how much space a shape holds.
- Use cubic units like cm<sup>3</sup>, m<sup>3</sup>.
- Shortcut is useful in solving word problems.
- Helps in saving time during calculation.
- Convert all values before using the formula if units are different.
- Practice helps in becoming faster and accurate with volume problems.