Cube Root of Number

Understanding the Concept

- Cube root is the inverse operation of finding the cube of a number
- If $a^3 = b$ then a is the cube root of b
- Cube root of a number is written using the symbol $\sqrt[3]{\ }$

  Example $\sqrt[3]{27}$ = 3 because 3 × 3 × 3 = 27
- Cube root helps in solving problems related to volume and advanced calculations
- Important Points
- Every positive number has one positive cube root and every negative number has one negative cube root
- Cube root of a perfect cube is always a whole number
- Cube root of negative numbers is also negative
- The cube root of 0 is 0
- Cube roots are used to find side lengths when volume is given

Examples with Solutions

Example Easy Level

➢ **Find $\sqrt[3]{64}$**

Solution: 4 × 4 × 4 = 64

Thus $\sqrt[3]{64}$ = 4

Example Easy Level

➢ **Find $\sqrt[3]{-125}$**

Solution: –5 × –5 × –5 = –125

Thus $\sqrt[3]{-125}$ = –5

Example Moderate Level

➢ **Find $\sqrt[3]{1000}$**

Solution: 10 × 10 × 10 = 1000

Thus $\sqrt[3]{1000}$ = 10

Example Moderate Level

- **Find the cube root of 729**

Solution: 9 × 9 × 9 = 729

Thus $\sqrt[3]{729}$ = 9

Example Word Problem

- **The volume of a cube is 512 cubic cm Find the side length**

Solution: $\sqrt[3]{512}$ = 8

Thus the side length is 8 cm

Summary Points

- Cube root undoes the process of cubing.
- Symbol $\sqrt[3]{\ }$ is used to represent cube root.
- Cube root of a positive number is positive and of a negative number is negative.
- Cube root of 0 is 0.
- Cube root is used to find side when volume is given.