Properties 0f Cubes of Numbers

Understanding the Concept

- Cubes of numbers show special patterns and properties.

- A cube of a number is the number multiplied by itself three times.

- Cubes help to understand how numbers grow rapidly when raised to power 3.

- Recognizing cube properties makes calculations and estimations easier.

- Cubes are used in volume calculations and higher–level mathematics.

Important Points

- Cube of a positive number is positive and cube of a negative number is negative.

- Cube of an even number is even and cube of an odd number is odd.

- Last digit of the cube depends on the last digit of the number.

- Cube of a number ending with 0, 1, 4, 5, 6, 9 also ends with predictable digits.

- The sum of consecutive odd numbers equals the cube of a natural number.

Examples with Solutions

Example Easy Level

> **Find whether the cube of –2 is positive or negative**

Solution: Cube of a negative number is negative

$(-2)^3 = -8$

Example Easy Level

> **Find whether 7^3 is even or odd**

Solution: 7 is odd so 7^3 is also odd

$7^3 = 343$

Example Moderate Level

> **Find the last digit of 12^3**

Solution: Last digit of $2^3 = 8$

Thus last digit of 12^3 is 8

Example Moderate Level

➢ **Check if the sum 1 + 3 + 5 = 9 is a cube number**

Solution: 1 + 3 + 5 = 9 and 9 = 2^3 is not correct but 9 = 3^2 so not a cube number here

Note Sum of first n odd numbers = n^2

Example Word Problem

➢ **Volume of a cube–shaped container with side 6 meters is**

Solution: Volume = 6^3 = 6 × 6 × 6 = 216 cubic meters

Summary Points

- Cube of positive number is positive cube of negative number is negative.

- Cube of even number is even cube of odd number is odd.

- Last digit pattern of cubes follows rules based on units place.

- Cubes grow very rapidly compared to squares.

- Useful for volume calculations and advanced algebra.