# Chapter – 7
# Cubes and Cube Root

- **Cube number**: Number obtained when a number is multiplied by itself three times. $2^3 = 2\times2\times2 = 8$, $3^3 = 3\times3\times3 = 27$, etc.
- Numbers like 1729, 4104, 13832, are known as Hardy – Ramanujan Numbers. They can be expressed as sum of two cubes in two different ways.
- Numbers obtained when a number is multiplied by itself three times are known as cube numbers. For example 1, 8, 27, ... etc.
- If in the prime factorisation of any number each factor appears three times, then the number is a perfect cube.
- The symbol $\sqrt[3]{\ }$ denotes cube root. For example $\sqrt[3]{\ } = 3$
- **Perfect Cube:** A natural number is said to be a perfect cube if it is the cube of some natural number. Example: 8 is perfect cube, because there is a natural number 2 such that $= 2^3$, but 18 is not a perfect cube, because there is no natural number whose cube is 18.
- The cube of a negative number is always negative.
- **Properties of Cube of Number:**
  (i) Cubes of even number are even.
  (ii) Cubes of odd numbers are odd.
  (iii) The sum of the cubes of first n natural numbers is equal to the square of their sum.
  (iv) Cubes of the numbers ending with the digits 0, 1, 4, 5, 6 and 9 end with digits 0, 1, 4, 5, 6 and 9 respectively.
  (v) Cube of the number ending in 2 ends in 8 and cube of the number ending in 8 ends in 2.
  (vi) Cube of the number ending in 3 ends in 7 and cube of the number ending in 7 ends in 3.