CUBES AND CUBE ROOTS - Mathematics Form 2 Notes

Cubes

- The cube of a number is simply a number multiplied by itself three times e.g.
  $a \times a \times a = a^3$
  $1 \times 1 \times 1 = 1^3$; $8 = 2 \times 2 \times 2 = 2^3$; $27 = 3 \times 3 \times 3 = 3^3$;

Example 1

What is the value of 6^3?

Solution
$6^3 = 6 \times 6 \times 6$
$= 36 \times 6$
$= 216$

Example 2

Find the cube of 1.4

Solution

$= 1.4 \times 1.4 \times 1.4$
$= 1.96 \times 1.4$
$= 2.744$

Use of Tables to Find Roots

- The cubes can be read directly from the tables just like squares and square root.

Cube Roots Using Factor Methods

- Cubes and cubes roots are opposite. The cube root of a number is the number that is multiplied by itself three times to get the given number

Example

The cube root of 64 is written as;

$\sqrt[3]{64} = 4$ Because $4 \times 4 \times 4 = 64$
$\sqrt[3]{27} = 3$ Because $3 \times 3 \times 3 = 27$

Example

Evaluate: $\sqrt[3]{216}$

Solution

$= \sqrt[3]{(2 \times 2 \times 2 \times 3 \times 3 \times 3)}$
$= 2 \times 3$
$= 6$

Note;

- After grouping them into pairs of three you chose one number from the pair and multiply

Example

Find:
The volume of a cube is 1000 cm^3 .What is the length of the cube

Solution

Volume of the cube, v = l^3
L^3=1 000
L =$\sqrt[3]{1000}$
=10
The length of the cube is therefore 10 cm