CUBES AND CUBE ROOTS

CUBE ROOT OF A CUBE NUMBER

Cube Root of Perfect Numbers

Using ones and tens Method

This method can be used to find cube roots of perfect cubes having at most 6 digits. CUBES of number ending in 0, 1, 4, 5, 6 and 9 also ends in 0, 1, 4, 5, 6 and 9.

However, the cube of a number ending in 2 ends in 8 and vice-versa. Similarly, the cube of a number ending in 3 ends in 7 and vice-versa.

Thus, by looking at the one's digit of a perfect cube number, we can determine the one's digit of its cube roots.

Let us consider the following steps to find the two digits of the cube root of PERFECT cubes.

Ex.1 Find the cube root of the following :

(a) 2197 (b) 531441 (c) 91125

Sol (a) $\sqrt[3]{2197}$ $\rightarrow$ The number is ending with 7.

T O

Step 1: ? 3 (Numbers ending in 7 will have their cube root ending is 3 as $3^3 = 27$)

Step 2: 2 19 (Strike out last three i.e, 'O', 'T', 'H' digits of the number from the right)

T O

Step 3 : 1 3 (For ten's digit, think of a number whose cube is smaller than 2 –

Since $1^3 < 2$ the number left after striking the last three digits)

and $2^3 > 2$ Hence, number is ten's place will be 1.

Hence $\sqrt[3]{2197} = 13$

(b) $\sqrt[3]{531441}$

Since T O Numbers ending in 1 will have their cube root ending in

1 as $1^3 = 1$

$8^3 < 531 \rightarrow$ 8 1 After striking the last three digts, Number left is 531.

and $9^3 > 531$

Hence, $\sqrt[3]{531441} = 81$

(c) $\sqrt[3]{91125}$ T O

For ten's digit $\leftarrow$ 4 $5 \rightarrow$ For one's digit

($4^3 < 91$ and $5^3 > 91$) (Numbers ending in 5 have their cube roots ending in 5 as $5^3 = 125$)

Hence, $\sqrt[3]{91125}$