

CBSE Class –VIII Mathematics
NCERT Solutions
CHAPTER - 7
Cubes and Cube Roots (Ex. 7.2)

1. Find the cube root of each of the following numbers by prime factorization method:

(i) 64

(ii) 512

(iii) 10648

(iv) 27000

(v) 15625

(vi) 13824

(vii) 110592

(viii) 46656

(ix) 175616

(x) 91125

Ans. (i) 64

2	64
2	32
2	16
2	8
2	4
2	2
	1

$$\sqrt[3]{64} = \sqrt[3]{2 \times 2 \times 2 \times 2 \times 2 \times 2}$$

$$\sqrt[3]{64} = 2 \times 2 = 4$$

(ii) 512

2	512
2	256
2	128
2	64
2	32
2	16
2	8
2	4
2	2
	1

$$\sqrt[3]{512} = \sqrt[3]{2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2}$$

$$= 2 \times 2 \times 2 = 8$$

(iii) 10648

2	10648
2	5324
2	2662
11	1331
11	121
11	11
	1

$$\sqrt[3]{10648} = \sqrt[3]{2 \times 2 \times 2 \times 11 \times 11 \times 11}$$

$$= 2 \times 11 = 22$$

(iv) 27000

2	27000
2	13500
2	6750
3	3375
3	1125
3	375
5	125
5	25
5	5
	1

$$\sqrt[3]{27000} = \sqrt[3]{2 \times 2 \times 2 \times 3 \times 3 \times 3 \times 5 \times 5 \times 5}$$

$$= 2 \times 3 \times 5 = 30$$

(v) 15625

5	15625
5	3125
5	625
5	125
5	25
5	5
	1

$$\sqrt[3]{15625} = \sqrt[3]{5 \times 5 \times 5 \times 5 \times 5 \times 5}$$

$$= 5 \times 5 = 25$$

(vi) 13824

2	13824
2	6912
2	3456
2	1728
2	864
2	432
2	216
2	108
2	54
3	27
3	9
3	3
	1

$$\sqrt[3]{13824} = \sqrt[3]{2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3}$$

$$= 2 \times 2 \times 2 \times 3 = 24$$

(vii) 110592

2	110592
2	55296
2	27648
2	13824
2	6912
2	3456
2	1728
2	864
2	432
2	216
2	108
2	54
3	27
3	9
3	3
	1

$$\sqrt[3]{110592} = \sqrt[3]{2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3}$$

$$= 2 \times 2 \times 2 \times 2 \times 3 = 48$$

(viii) 46656

2	46656
2	23328
2	11664
2	5832
2	2916
2	1458
3	729
3	243
3	81
3	27
3	9
3	3
	1

$$\sqrt[3]{46656} = \sqrt[3]{2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3}$$

$$= 2 \times 2 \times 3 \times 3 = 36$$

(ix) 175616

2	175616
2	87808
2	43904
2	21952
2	10976
2	5488
2	2744
2	1372
2	686
7	343
7	49
7	7
	1

$$\sqrt[3]{175616} = \sqrt[3]{2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 7 \times 7 \times 7}$$

$$= 2 \times 2 \times 2 \times 7 = 56$$

(x) 91125

3	91125
3	30375
3	10125
3	3375
3	1125
3	375
5	125
5	25
5	5
	1

$$\sqrt[3]{91125} = \sqrt[3]{3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 5 \times 5 \times 5}$$

$$= 3 \times 3 \times 5 = 45$$

2. State true or false:

- (i) Cube of any odd number is even.
- (ii) A perfect cube does not end with two zeroes.
- (iii) If square of a number ends with 5, then its cube ends with 25.
- (iv) There is no perfect cube which ends with 8.
- (v) The cube of a two digit number may be a three digit number.

(vi) The cube of a two digit number may have seven or more digits.

(vii) The cube of a single digit number may be a single digit number.

Ans. (i) False

Since, $1^3 = 1, 3^3 = 27, 5^3 = 125, \dots$ are all odd.

(ii) True

Since, a perfect cube ends with three zeroes.

e.g. $10^3 = 1000, 20^3 = 8000, 30^3 = 27000, \dots$ so on

(iii) False

Since, $5^2 = 25, 5^3 = 125, 15^2 = 225, 15^3 = 3375$

(Did not end with 25)

(iv) False

Since $12^3 = 1728$

[Ends with 8]

And $22^3 = 10648$

[Ends with 8]

(v) False Since $10^3 = 1000$

[Four digit number]

And $11^3 = 1331$

[Four digit number]

(vi) False Since $99^3 = 970299$

[Six digit number]

(vii) True

$1^3 = 1$

[Single digit number]

$2^3 = 8$

[Single digit number]

3. You are told that 1,331 is a perfect cube. Can you guess without factorization what is

its cube root? Similarly guess the cube roots of 4913, 12167, 32768.

Ans. We know that $10^3 = 1000$ and Possible cube of $11^3 = 1331$

Since, cube of unit's digit $1^3 = 1$

Therefore, cube root of 1331 is 11.

4913

We know that $7^3 = 343$

Next number comes with 7 as unit place $17^3 = 4913$

Hence, cube root of 4913 is 17.

12167

We know that $3^3 = 27$

Here in cube, ones digit is 7

Now next number with 3 as ones digit

$$13^3 = 2197$$

And next number with 3 as ones digit

$$23^3 = 12167$$

Hence cube root of 12167 is 23.

32768

We know that $2^3 = 8$

Here in cube, ones digit is 8

Now next number with 2 as ones digit

$$12^3 = 1728$$

And next number with 2 as ones digit

$$22^3 = 10648$$

And next number with 2 as ones digit

$$32^3 = 32768$$

Hence cube root of 32768 is 32.