



# VIDYA BHAWAN, BALIKA VIDYAPITH

Shakti Utthan Ashram, Lakhisarai-811311(Bihar)

(Affiliated to CBSE up to +2 Level)

CLASS: VIII

SUB.: MATHS

DATE: 06-06-2021

## Cubes and Cube Roots

Question 1. Find the cubes of the following:

(a) 12

(b) -6

(c) 23

(d) -56

Solution:  $12^3 = 12 \times 12 \times 12 = 1728$

Question 2. Find the cubes of the following:

(a) 0.3

(b) 0.8

(c) .001

(d)  $2 - 0.3$

Sol.

(a)  $(0.3)^3 = 0.3 \times 0.3 \times 0.3 = 0.027$

Question 3. Is 135 a perfect cube?

Solution: Prime factorisation of 135, is:

$$135 = 3 \times 3 \times 3 \times 5$$

We find that on making triplet, the number 5 does not make a group of the triplet.

Hence, 135 is not a perfect cube.

3	135
3	45
3	15
5	5
	1

Question 4. Find the cube roots of the following:

(a) 1728

(b) 3375

Solution:

(a) Prime factorisation of 1728 is:

$$1728 = \underbrace{2 \times 2 \times 2 \times 2 \times 2 \times 2}_{2^6} \times \underbrace{3 \times 3 \times 3}_{3^3}$$
$$= 2^3 \times 2^3 \times 3^3$$

$$\therefore \sqrt[3]{1728} = 2 \times 2 \times 3 = 12$$

2	1728
2	864
2	432
2	216
2	108
2	54
3	27
3	9
3	3
	1

Question 5. Examine if

(i) 200

(ii) 864 are perfect cubes.

Solution:

(i)  $200 = 2 \times 2 \times 2 \times 5 \times 5$

If we form triplet of equal factors, the number 2 forms a group of three whereas

5 does not do it.

Therefore, 200 is not a perfect cube.

2	200
2	100
2	50
5	25
5	5
	1

Question 6. Find the smallest number by which 1323 may be multiplied so that the product is a perfect cube.

Solution:  $1323 = 3 \times 3 \times 3 \times 7 \times 7$

Since we required one more 7 to make a triplet of 7.

Therefore 7 is the smallest number by which 1323 may be multiplied to make it a perfect cube.

3	1323
3	441
3	147
7	49
7	7
	1

Question 7. What is the smallest number by which 2916 should be divided so that the quotient is a perfect cube?

Solution: Prime factorisation of

$2916 = 2 \times 2 \times 3 \times 3 \times 3 \times 3 \times 3$

Since we required one more 2 to make a triplet

Therefore, the required smallest number by which 2916 should be divided to make it a perfect cube is  $2 \times 2 = 4$ , i.e.,  $2916 \div 4 = 729$  which is a perfect cube.

2	2916
2	1458
3	729
3	243
3	81
3	27
3	9
3	3
	1

Question 8. Check whether 1728 is a perfect cube by using prime factorisation.

Solution: Prime factorisation of 1728 is

$1728 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3$

Since all prime factors can be grouped in triplets.

Therefore, 1728 is a perfect cube.

Question 9. Using prime factorisation, find the cube root of 5832. (NCERT Exemplar)

Solution:

The prime factorisation of 5832 is

$$5832 = 2 \times 2 \times 2 \times 3 \times 3 \times 3 \\ \times 3 \times 3 \times 3$$

Therefore,

$$\sqrt[3]{5832} = \sqrt[3]{2 \times 2 \times 2 \times 3 \times 3 \times 3 \\ \times 3 \times 3 \times 3 \times 3} \\ = 2 \times 3 \times 3 = 18$$

2	5832
2	2916
2	1458
3	729
3	243
3	81
3	27
3	9
3	3
	1