

CUBE ROOT (PRIME FACTORIZATION)

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Introduction to Cube root



"cube root".

In Math, there is always an "opposite" operation! The opposite operation for "cubing" a number is taking the

[Cube root](#) is the opposite of cubing a number.

Term for raising a number to the 3rd power is "cubing a number".

For example:

$2^3 = 8$ this can be read as 2 "cubed" equals 8.

This means that $2 \times 2 \times 2 = 8$.

We represent cube root using this symbol ‘ $\sqrt[3]{}$ ’

And to show that cube root is opposite of cubing a number, let have a look at the following example:

$2^3 = 8$ and $\sqrt[3]{8} = 2$

Finding Cube Root by Prime Factorization

To find the cube root of a number by [prime factorization](#), we follow the following steps:

Step I: Find the [prime factors](#) of the given number.

Step II: Make groups of 3 same factors.

Step III: Take one prime factor from each group of prime factors of the given number.

Step IV: Find the product of these prime factors to get the cube root of the given number.

Let's understand this with example:

Find the cube root of 3375 by prime factorization.

Step I: Find the prime factors of the given number.

$3375 = 3 \times 3 \times 3 \times 5 \times 5 \times 5$

Step II: Make groups of 3 same factors.

$$(3 \times 3 \times 3)$$

$$(5 \times 5 \times 5)$$

Step III: Take one prime factor from each group of prime factors of the given number.

$$(3 \times 3 \times 3) - 3$$

$$(5 \times 5 \times 5) - 5$$

Step IV: Find the product of these prime factors to get the cube root of the given number.

$$3 \times 5 = 15$$

Hence the cube root of 3375 is 15.

Let's try more examples to understand the concept better:

Find cube root of 5832 by prime factorization.

Step I: Find the prime factors of 5832

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

Step II: Make groups of three same factors

$$2 \times 2 \times 2$$

$$3 \times 3 \times 3$$

$$3 \times 3 \times 3$$

Step III: Take one prime factor from each group of prime factors of 5832

$$2 \times 2 \times 2 - 2$$

$$3 \times 3 \times 3 - 3$$

$$3 \times 3 \times 3 - 3$$

Step IV: Find the product of these prime factors to get the cube root of the given number.

$$2 \times 3 \times 3 = 18$$

So, Cube root of 5832 is 18.

Now try it yourself! Should you still need any help, [click here](#) to schedule live online session with e Tutor!

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Reference Links:

- http://en.wikipedia.org/wiki/Cube_root
- <http://www.khanacademy.org/video/prime-factorization?playlist=Developmental%20Math>
- http://en.wikipedia.org/wiki/Prime_factor

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