## CUBE ROOT (PRIME FACTORIZATION)

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## Introduction to Cube root

4In Math, there is always an "opposite" operation! The opposite operation for "cubing" a number is taking the "cube root".

Cube root is the opposite of cubing a number.

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

## For example:

$23=8$ 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 ',

And to show that cube root is opposite of cubing a number, let have a look at the following example:
$23=8$ and $8=2 \times 2 \times 2=2$

## 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
(5x5x5)-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
$2 \times 2 \times 2-2$
3×3x3-3
$3 \times 3 \times 3-3$

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\ Math
- http://en.wikipedia.org/wiki/Prime_factor

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