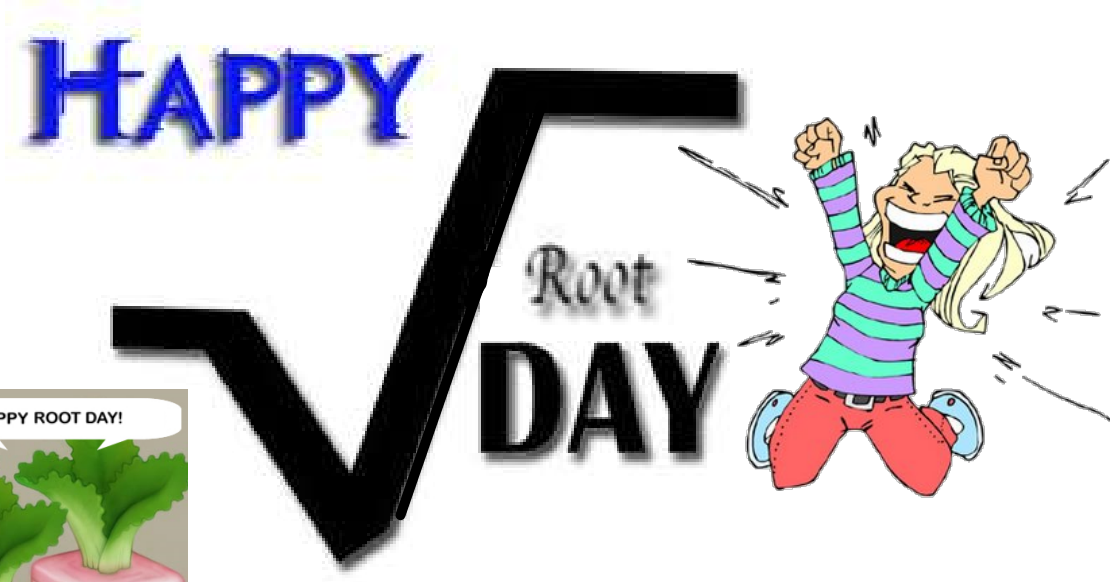
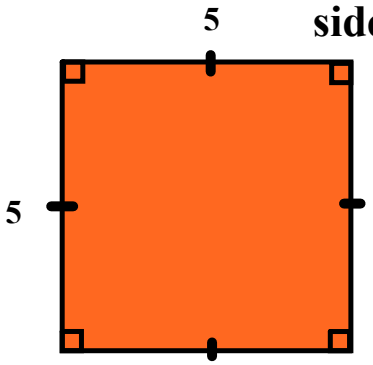

HAPPY ROOT DAY!


HAPPY
Root
DAY

What is a Perfect Square?

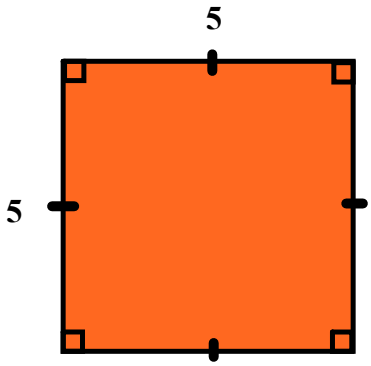
Perfect Square - **Any whole number that can be represented as the area of a square with a whole number as its side length is a *perfect square***



Area = b x h
= 5 x 5
= 25

25 is a perfect Square!!

What is the square root of something?



Square Root- **A number for which, when multiplied by itself, results in a given number.**

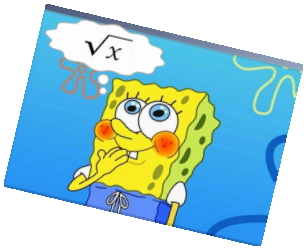
$5^2 = 25$, therefore 5 is the square root of 25

$$\sqrt{25} = 5$$

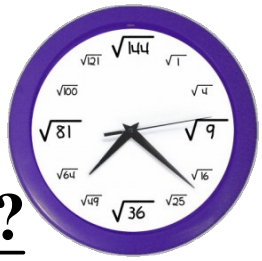
****The side length of the square is the square root of the area.***

Determing the Square Root of a Whole Number

Using Prime Factorization



1. **Write the prime factorization of the number.**
2. **Group the prime factors into pairs.**
3. **Take one number from each group, then multiply**



What is the square root of 1296 ?

Write 1296 as a product of its prime factors.

$\sqrt{1296} = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3 \cdot 3 \cdot 3$

$= (2 \cdot 2)(2 \cdot 2)(3 \cdot 3)(3 \cdot 3)$

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

1. Write the prime factorization of the number.
2. Group the prime factors into pairs.
3. Take one number from each group, then mul

$$\sqrt{1296} = 36$$

What is the square root of 1764 ?

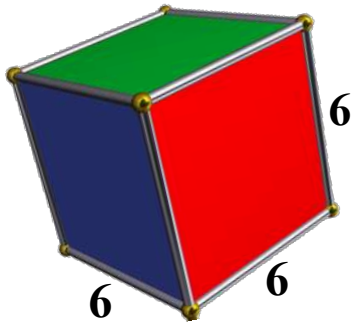
$\sqrt{1764} \Rightarrow 2 \times 2 \times 3 \times 3 \times 7 \times 7$

$2 \times 3 \times 7$

$\sqrt{1764} = 42$

What is a Perfect Cube?

Perfect Cube - Any whole number that can be represented as the volume of a cube with a whole number as its edge length.



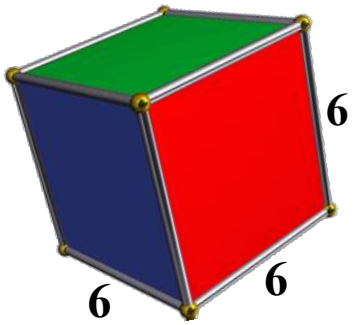
216 is a perfect cube!!

Volume = l x w x h
= 6 x 6 x 6
= 216

What is the cube root of something?

Cube Root - A number which, when raised to the exponent 3, results in a given number.

$6^3 = 216$, therefore 6 is the cube root of 216



The edge length of a cube is the cube root of its volume.

Determing the Cube Root of a Whole Number

Using Prime Factorization

1. Write the prime factorization of the number.
2. Group the prime factors into sets of 3.
3. Take one number from each group, then multiply.

Lets Try!!

What is the cube root of 1728 ?

$$\sqrt[3]{1728} = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3 \cdot 3$$
$$= (2 \cdot 2 \cdot 2)(2 \cdot 2 \cdot 2)(3 \cdot 3 \cdot 3)$$
$$= 2 \times 2 \times 3$$
$$= 12$$

1. Write the prime factorization of the number.
2. Group the prime factors into sets of 3.
3. Take one number from each group, then multiply.

$$\sqrt[3]{1728} = 12$$

What is the cube root of 2744 ?

$\sqrt[3]{2744} \Rightarrow 2 \times 2 \times 2 \times 7 \times 7 \times 7$

2×7

$\sqrt[3]{2744} = 14$

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#4 a,b
#5 d,e
#6 e, f
#7 a, b
#8 a, b
#10 (Tricky)