Power Up! Whole-Number Exponents

Write it short. Multiply it out.



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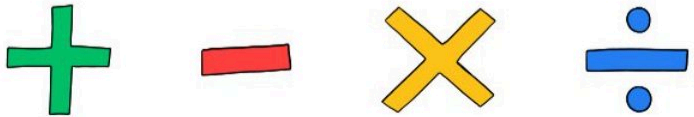
Today we will...

WE ARE LEARNING TO

- Write powers using base and exponent
- Evaluate whole-number exponents
- Use order of operations with powers

SUCCESS LOOKS LIKE

- ✓ I can name the base and exponent
- ✓ I can write expanded form and find value
- ✓ I can simplify 4 + 5 squared correctly



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$a^2+b^2=c^2$

Powers Are Everywhere

Squares: 5 squared

5 x 5 = 25, area of a square.

Cubes: 2 cubed

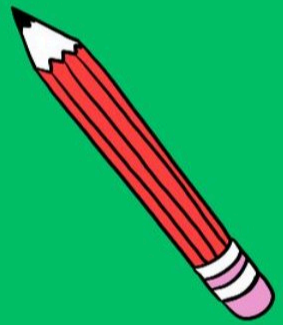
2 x 2 x 2 = 8, volume of a cube.

Powers of 10: 10 cubed

10 x 10 x 10 = 1,000.

Simple: 4 to the first

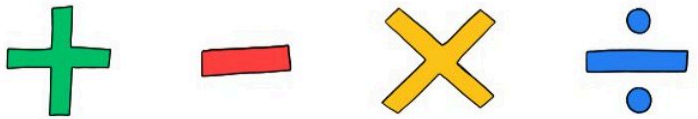
Just the base itself, 4.



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How to Evaluate a Power

1. Spot base (big) and exponent (small)
2. Write expanded multiplication: 3^4 = 3x3x3x3
3. Multiply left to right step by step
4. Do powers first in order of operations



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$a^2+b^2=c^2$

What could this be?

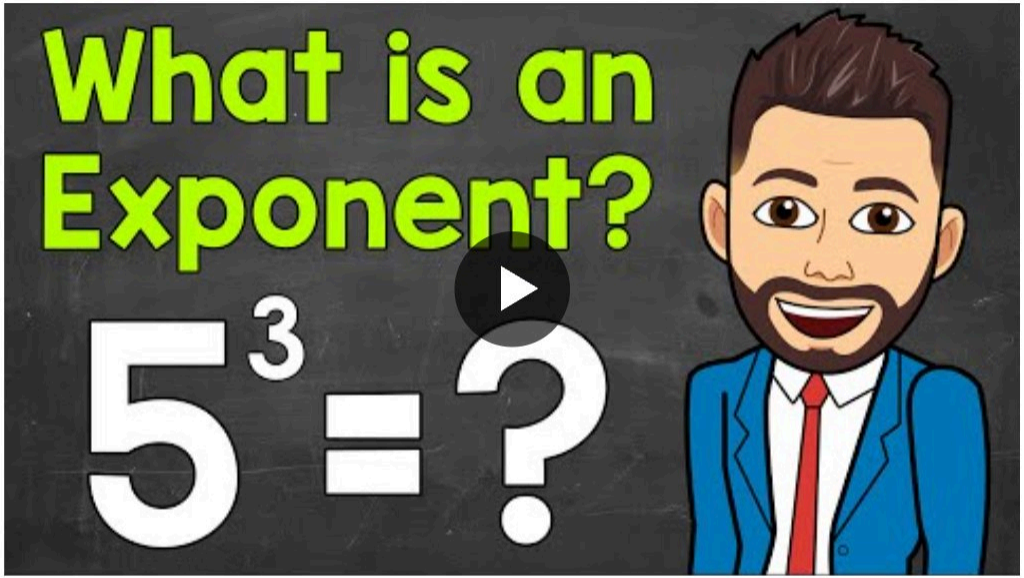
A student writes 2 x 2 x 2 x 2 as 2 to the 4th. Is that short form correct?



Illustration: Clker-Free-Vector-Images · Pixabay

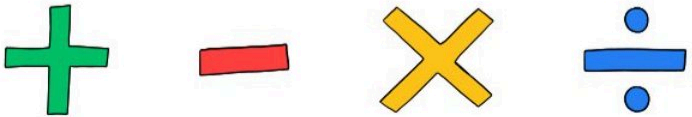
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Watch: What Is an Exponent?



▶ 0:00 – 5:00

- Listen for base vs. exponent
- Spot the expanded form
- Say the value aloud

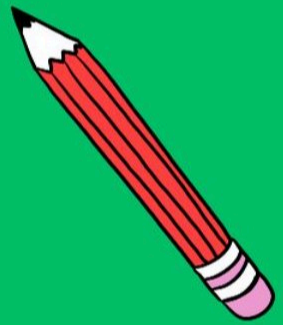


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$a^2+b^2=c^2$

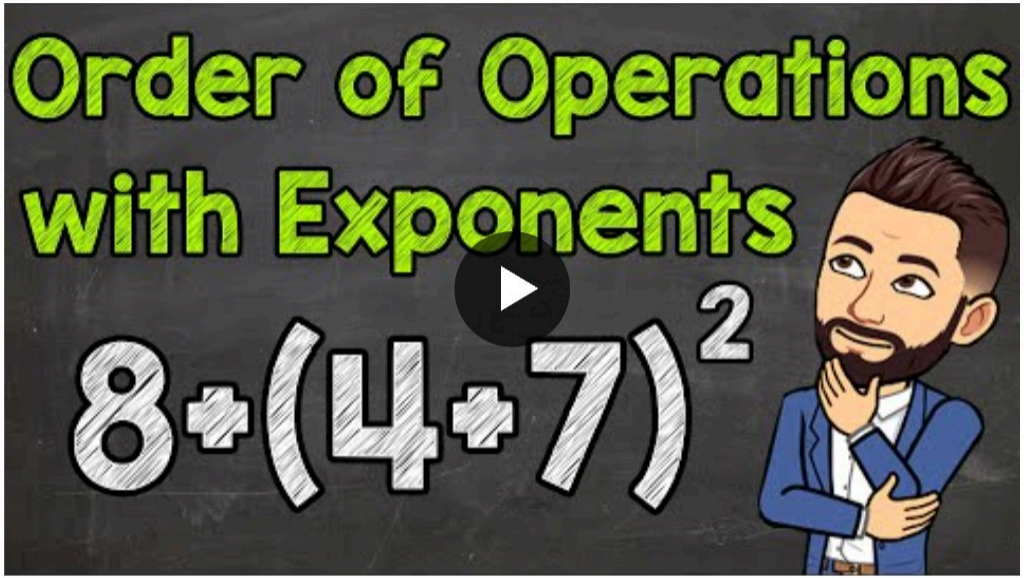
BIG IDEA

An exponent tells how many times to multiply the base by itself.



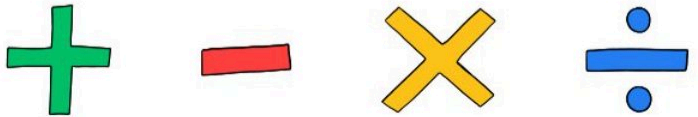
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Watch: Order With Exponents



▶ 0:00 – 5:00

- Watch when to do powers first
- Notice 2 + 3 squared is not 5 squared
- Try the next example before video



$a^2+b^2=c^2$

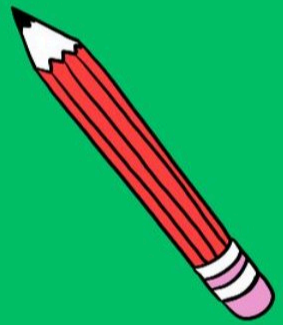
Your task

In pairs, write each power in expanded form, then evaluate it.

1. Student A: 4 squared, 2 to the 5th, 10 to the 4th
2. Student B: 3 cubed, 6 squared, 2 + 5 squared
3. Compare answers and explain any mismatch.

10 min

In pairs



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Key words

base

big number that gets multiplied

exponent

small number showing how many times

power

whole expression like 3 to the 4th

expanded form

written as repeated multiplication

evaluate

find its value

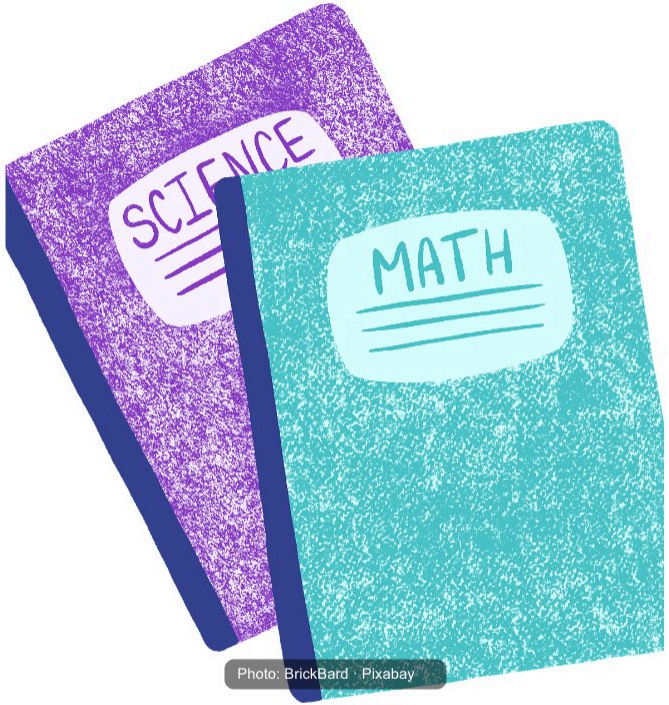
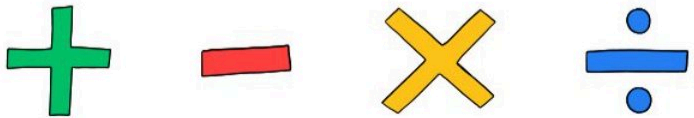


Photo: BrickBard · Pixabay



$a^2+b^2=c^2$

Think, pair, share

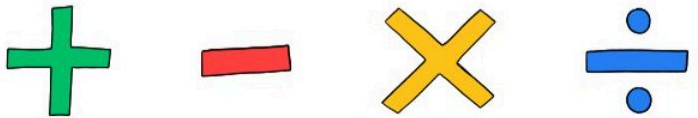
Is 3 squared the same as 2 cubed? How do you know without a calculator?



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Quick quiz

1. Write 4 x 4 x 4 as a power.
2. Evaluate 5 squared.
3. Evaluate 2 to the 4th.
4. Evaluate 3 + 2 cubed.



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