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The Multiplication Property of Zero: Definition & Examples

The number zero has different rules than other numbers; it behaves according to it's own unique properties. This lesson will define the multiplication property of zero and give some examples of how it works.

Marching to the Beat of a Different Drummer

You have those friends, we all do. You know, the people who are a bit quirky, who don't do things quite like anyone else. Fortunately, the world is a better place because we are not all the same. And often, it's those people you know that are the most different that make life the most interesting.

Zero Plays by Its Own Rules

In the math world, zero is the quirky friend. It doesn't follow the same rules as all the other numbers. It has its own unique properties that allow it to make math more interesting.

The Multiplication Property of Zero

One of zero's unique rules is called the **multiplication property**. The multiplication property states that the product of any number and zero is zero. It doesn't matter what the number is, when you multiply it to zero, you get zero as the answer. So:

- 2 x 0 = 0
- 127 x 0 = 0
- 52,004,378 x 0 = 0

And so on and so on. The rule is also true for any algebraic terms.

- x x 0 = 0

- $a^2 \times 0 = 0$
- $x^3y^5z^2 \times 0 = 0$

It doesn't much matter what else is going on, anything you multiply with zero will equal zero.

- $(2 + 5) \times 0 = 0$
- $2(a + b - c^2) \times 0 = 0$

Let's say your mom is baking cookies a dozen at a time. If she has made three batches of cookies, there are three sets of 12 cookies on the counter cooling. That is equal to 3 * 12, or 36 cookies, because if you multiply the amount of each batch of cookies by the number in each batch, you have 36 (three sets of 12 cookies). But what if she had not started baking yet? If you multiply those cookies by zero you have zero sets of 12 cookies, meaning you don't have any cookies at all. The same goes for any number or equation. Anything times zero will always be zero.

Lesson Summary

Zero is a number with its own unique rules and properties. It does not act like the other numbers, positive or negative. One of zero's special properties is the **multiplication property**. This property states that the answer to any multiplication problem with a zero is always zero.

Learning Outcome

Subsequent to studying this video lesson, you could recognize the multiplication property of zero as one of zero's unique rules, and relate it to real-world examples.