

Tetration (The Math Operation):

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I doubt you have ever heard or learned about tetration in school. Most people consider this math operation pointless, so you might not have heard of it. Tetration is like the next-level exponentiation. While exponentiation involves repeated multiplication, tetration takes you into a whole different world.

Let's break this concept down to understand it better. If exponentiation is a^b , tetration is $a \uparrow b$. Tetration in a way makes a tower of exponentials, an operation that repeatedly exponentiates itself. This will probably sound confusing so let's dive deeper into this math operation.

So to make this simpler, we are going to start with a base number of 2. Normally, if you did 2^3 then this would just mean to do $2 \times 2 \times 2$, which is equivalent to 8. But if you do $2 \uparrow 3$, you would have to do 2^{2^2} , and this is equivalent to 16. Another example of this would be $2 \uparrow 4$, where you would have to do $2^{2^{2^2}}$, and this is equivalent to 65536. This essentially creates an exponential tower that keeps growing with each tetration.

You may think this is as crazy as it gets, but there's more. After tetration, the next level is pentation (which is repeated tetration). But then after that comes hexation (which is repeated pentation). There are also lots of levels after this, but I think you get the main idea.

Looking at these math operations, you can see how quickly numbers can grow. These operations grow at an unbelievable rate, making even seemingly small values result in astronomical numbers. This takes me to one of my previous points before, which is that people may consider this pointless. People consider these operations pointless because they believe all they do is make numbers big. However, these operations do pop up in certain mathematical concepts and theoretical computer science.

Overall, tetration is a fascinating and cool mathematical operation that challenges us. You can also brag to your friends now that you know about a really cool math operation that isn't taught in school. But this is a reminder of how beautiful and complex math truly is.

Sources:

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