Learning Tip:

The Power of Visualization in Math

Dr. Gary Au
au@math.usask.ca

University of Saskatchewan

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- While some mathematical concepts can be abstract, it is often possible (and extremely helpful!) to find concrete visualizations of them.
- For example, given two real numbers $a, b \geq 0$, the product $a \times b$ is the area of a rectangle with side lengths a and b.
- This is such a simple observation! What can we really get out of it?

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Some implications of the area interpretation of multiplication:

- For all real numbers a and b, $a \times b = b \times a$.
- For all real numbers a and b, $(a+b)^2 = a^2 + 2ab + b^2$.

  https://www.desmos.com/calculator/rth5txrz3s
- For every positive integer n, $1 + 2 + 3 + \cdots + n = \dfrac{n(n+1)}{2}$.

  https://www.desmos.com/calculator/cz8bnz6nsl
- For every odd positive integer n, n^2 is a multiple of 8 plus 1.

  https://www.desmos.com/calculator/plgyl002jw

Whenever possible, try to find concrete visual representations of the mathematical expressions and equations you encounter!