

THE AGE-OLD MATHEMATICS MISCONCEPTIONS AND HOW TO BREAK THEM

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The evolution of mathematics is a story of human ingenuity. This journey that began with simple counting and basic measurements and grew into a discipline that shapes modern technology, science, and society. In ancient civilizations, people developed rudimentary arithmetic and geometry to solve practical problems related to trade, construction, and astronomy. The Pythagoreans introduced the idea of studying numbers and relationships intrinsically, while Euclid's Elements established the foundational method that is still used in mathematics today for its rigor. These, and many more mathematical wonders and discoveries helped shape the world we know and live in today.

However, despite playing a central role in the progress of civilization, mathematics has long been hindered by misconceptions, especially of education. Most children grow up believing mathematics is inherently tricky and accessible only to a select few. This misconception is perpetuated by teaching methods emphasizing memorization and formula. Mechanical application, rather than fostering a deeper conceptual understanding. As a result, students often experience math anxiety – a psychological barrier where fear and apprehension about the subject impede learning and erode self-esteem (Ashcraft & Krause, 2007).

This anxiety is not simply a reflection of the students' abilities; it is compounded by classroom environments that fail to connect abstract mathematical concepts with real-world applications. Moreover, when traditional teaching methods constrain teachers themselves or have their anxieties about mathematics, the cycle of disengagement and

low confidence is further reinforced. In such an atmosphere, students may internalize that they are not “math people,” a mindset that can have lasting implications on their academic trajectories and career choices (Hiebert & Grouws, 2007).

Dispelling these long-standing misconceptions about mathematics demands a holistic, multi-layered approach. First, educators must shift the focus of mathematics instruction from mere procedural fluency to a deeper conceptual understanding. When students see how mathematical ideas apply to real-life scenarios – whether in tracking the arc of a football, managing personal finances, or understanding patterns in nature – they are more likely to appreciate the subject’s relevance. Encouraging exploration, discussion, and even productive struggle with challenging problems can change the perception of math from a complex puzzle to an engaging field of study. Fostering a growth mindset is also crucial. Students should be taught that mathematical ability is not an innate talent reserved for a few but a skill that can be developed through effort and persistence. By normalizing mistakes as a natural part of the learning process, teachers and parents can help diminish the fear of failure that often leads to math anxiety.

Lastly, utilizing modern technology can be a crucial tool in dispelling these long-standing misconceptions. Interactive educational software, online platforms, and fun math games make learning fun and allow students to delve into math concepts in a comfortable environment. These tools can be especially effective in demonstrating that mathematics is not merely about memorizing formulas but about problem-solving and creative thinking.

Mathematics has influenced human advancement from ancient times to the latest technological developments of the digital era. However, its complete potential remains unrealized when misconceptions obscure its teaching and comprehension. Reevaluating math education to highlight conceptual comprehension, promote a growth mindset, offer quality teacher training, and incorporate technology can debunk these myths. By doing

this, you enhance the learning journey for students and empower upcoming generations to leverage the transformative influence of mathematics.

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