

# Developing Mathematical Reasoning

## Avoiding the Trap of Algorithms

Pamela Weber Harris

Author Pam Harris argues that teaching real math—math that is free of distortions—will reach more students more effectively and result in deeper understanding and longer retention. This book is about teaching undistorted math using the kinds of mental reasoning that mathematicians do.

Memorization tricks and algorithms meant to make math “easier” are full of traps that sacrifice long-term student growth for short-lived gains. Students and teachers alike have been led to believe that they’ve learned more and more math, but in reality their brains never get any stronger.

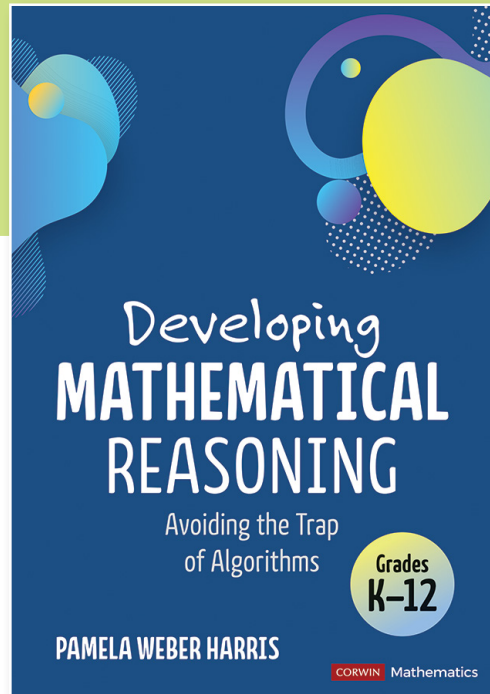
Using these tricks may make facts easier to memorize in isolation, but that very disconnect distorts the reality of math. The mountain of trivia piles up until students hit a breaking point. Humanity’s most powerful system of understanding, organizing, and making an impact on the world becomes a soul-draining exercise in confusion, chaos, and lost opportunities.

***Developing Mathematical Reasoning: Avoiding the Trap of Algorithms*** emphasizes the importance of teaching students increasingly sophisticated mathematical reasoning and understanding underlying concepts rather than relying on a set rule for solving problems. This book illuminates a hierarchy of mathematical reasoning to help teachers guide students through various domains of math development, from basic counting and adding to more complex proportional and functional reasoning.

Everyone is capable of understanding and doing real math. This book:

- Highlights the important mathematical relationships, strategies, and models for students to develop
- Offers personal stories, reflection sections, and extensive practical exercises for easy implementation
- Includes real math—a lot of it—to provide teachers with examples they can put to use in their classrooms immediately

This book is a valuable resource for educators looking to reach more students by building a strong foundation of mathematical thinking in their students.



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## FIVE STAR REVIEWS



“Chock full of real stories about real people engaging with real math, ***Developing Mathematical Reasoning*** lives up to its title. Harris beautifully empowers educators with practical insights and steps to help students become true mathematical thinkers, not just mimickers—essential for a world that needs confident reasoners. Math can lead the way, and Harris leads us to math.”

—Dr. James Tanton

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