Developing
Essential
Understanding
of

Functions

Grades 9–12

Developing Essential Understanding

Are sequences functions? Why can't the popular "vertical line test" be applied in some cases to determine whether a relation is a function? How does the idea of rate of *change* connect with simpler ideas about proportionality as well as more advanced topics in calculus?

How much do you know ... and how much do you *need* to know?

Helping your high school students develop a robust understanding of functions requires that you understand this mathematics deeply. *But what does that mean?*

This book focuses on essential knowledge for teachers about functions. It is organized around five big ideas, supported by multiple smaller, interconnected ideas—*essential understandings*. Taking you beyond a simple introduction to functions, the book will broaden and deepen your mathematical understanding of one of the most challenging topics for students—and teachers. It will help you engage your students, anticipate their perplexities, avoid pitfalls, and dispel misconceptions. You will also learn to develop appropriate tasks, techniques, and tools for assessing students' understanding of the topic.

Focus on the ideas that you need to understand thoroughly to teach confidently.

Move beyond the mathematics you expect your students to learn. Students who fail to get a solid grounding in pivotal concepts struggle in subsequent work in mathematics and related disciplines. By bringing a deeper understanding to your teaching, you can help students who don't get it the first time by presenting the mathematics in multiple ways.

Essential Understanding Series

The Essential Understanding Series addresses topics in school mathematics that are critical to the mathematical development of students but are often difficult to teach. Each book in the series gives an overview of the topic, highlights the differences between what teachers and students need to know, examines the big ideas and related essential understandings, reconsiders the ideas presented in light of connections with other mathematical ideas, and includes questions for readers' reflection.

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