Developing Essential Understanding of Functions

Lloyd, Gwendolyn; Beckmann, Sybilla and Zbiek, Rose Mary

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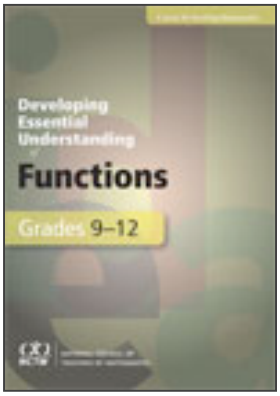
DESCRIPTION



Developing Essential Understanding of Functions, by Gwendolyn Lloyd, Sybilla Beckmann, and Rose Mary Zbiek, declares functions are one of the most important topics in secondary school mathematics because of their connections to other mathematical topics and their role in college-level mathematics. The authors use the perspective of calculus to examine functions students need to study and understand before they take calculus.

Five big ideas of functions are identified and described as follows:

1. The Function Concept
2. Co-variation and Rate of Change
3. Families of Functions
4. Combining and Transforming Functions
5. Multiple Representations of Functions

Embedded in these big ideas are essential understandings that should be explicitly addressed in the teaching and learning of functions.

Chapter 2 explores the connections of high school functions to middle school and collegiate mathematics. Chapter 3 identifies difficulties students encounter in learning about functions and discusses what implications these learning difficulties have for teaching. Finally, strategies for assessing for understanding of the big ideas are described including extending problems and reversing problems.

STAGE 1 LEADERSHIP DEVELOPMENT

Developing Essential Understanding of Functions, by Gwendolyn Lloyd, Sybilla Beckmann, and Rose Mary Zbiek, supports stage 1 leadership development of leaders working to collaborate and implement the Teaching and Learning Principle. Specialists wanting to deepen their understanding of functions and the challenges in teaching functions will find this book a useful tool. Working alone or with a colleague, specialists may begin by reading about the challenges of teaching, learning, and assessing understanding of functions along with possible approaches to them in chapter 3. With this perspective in mind, they read and reflect on the mathematical ideas in chapters 1 and 2.