
Developing Essential Understanding of Algebraic Thinking

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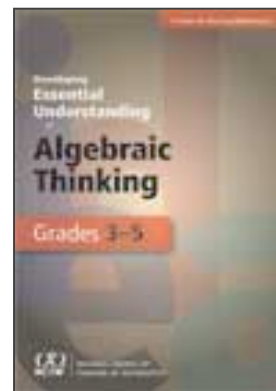
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DESCRIPTION

Developing Essential Understanding of Algebraic Thinking, by Maria Blanton, Linda Levi, Terry Crites, Barbara Dougherty, and Rose Mary Zbiek, presents ideas teachers in grades 3-5 need to understand thoroughly and be able to use flexibly. Thinking algebraically includes opportunities to generalize, express, and justify relationships among quantities, as well as reason with generalizations expressed through a variety of representations. Understanding how computation provides a context for algebraic thinking, understanding how learners generalize fundamental properties of operations, and developing an understanding of equivalence make it essential for teachers of grades 3-5 to understand these aspects of algebraic thinking deeply.



Chapter 1 is organized around five big ideas of algebraic thinking along with related essential understandings:

1. Arithmetic as a context for algebraic thinking
2. Equations as statements of the equivalence of two quantities
3. Variables as versatile tools
4. Using quantitative reasoning to generalize relationships
5. Functional thinking as a path into algebra

Chapter 2 guides the reader in seeing how the ideas in chapter 1 are connected to the mathematics students have encountered earlier or will encounter later in school. Chapter 3 addresses the challenges of promoting the Process Standards in the teaching, learning, and assessing of algebraic thinking.

STAGE 1 LEADERSHIP DEVELOPMENT

Developing Essential Understanding of Algebraic Thinking, by Maria Blanton, Linda Levi, Terry Crites, Barbara Dougherty, and Rose Mary Zbiek, supports stage 1 leadership development of specialists/leaders working to know and model the Teaching and Learning Principle. This book might be used for individual study or with a group of colleagues working together formally or informally. The discussion in chapter 1 of the big ideas and essential understandings of algebraic thinking is interspersed with opportunities to reflect on the reading. These Reflect Prompts can be used for discussion or written reflection. Chapter 3 provides opportunities to discuss the mathematical processes and their role in the development of algebraic thinking. In addition to the classroom practices, chapter 3 provides descriptions of tasks and assessments that support children's algebraic understanding.