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## Developing Essential Understanding of Number and Numeration

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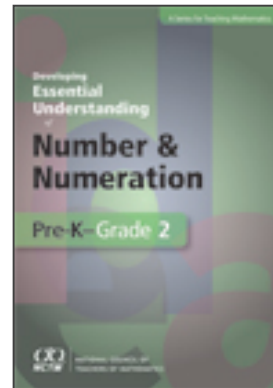
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### DESCRIPTION

*Developing Essential Understanding of Number and Numeration*, by Barbara Dougherty, Alfinio Flores, Everett Louis, Catherine Sophian, and Rose Mary Zbiek, is a resource for those wanting to enrich and extend their own knowledge of the pre-K through grade 2 mathematics they teach or the knowledge of the teachers they lead. Several key concepts, such as unit, place value, and one-to-one correspondence, are considered.



Chapter 1 offers five big ideas of number and numeration along with associated essential understandings:

1. Number is an extension of more basic ideas about relationships between quantities.
2. The selection of a unit makes it possible to use numbers in comparing quantities.
3. Meaningful counting integrates different aspects of number and sets, such as sequence, order, one-to-one correspondence, ordinality, and cardinality.
4. Numbers are abstract concepts.
5. A base-ten positional number system is an efficient way to represent numbers in writing.

Chapter 2 reconsiders the foundational ideas of number and numeration as they connect to children's understanding of other topics in the grade band including addition, subtraction, multiplication, rational number, early algebraic thinking, and other advanced ideas. Chapter 3 focuses on challenges students face in understanding the concepts of number and numeration and offers guidance for presenting ideas to them and assessing understanding.

### STAGE 1 LEADERSHIP DEVELOPMENT

*Developing Essential Understanding of Number and Numeration*, by Barbara Dougherty, Alfinio Flores, Everett Louis, Catherine Sophian, and Rose Mary Zbiek, supports stage 1 leadership development of specialists working to know and model the Teaching and Learning Principle. The topic of number and numeration has traditionally been challenging to teach. This book is a valuable resource for specialists working to enrich their own understanding. They may work alone, with a colleague, or with a group of coaches to read and reflect on the information.

As you read, take time to consider the models and representations provided. Take time to discuss or write about the reflect prompts found in chapter 1. You will find several key concepts woven

throughout the big ideas and essential understandings from chapter 1. Reflect on these concepts and take some time to create your own models or representations as you consider how these concepts are integrated in number and numeration:

- Unit
- Place Value
- One-to-One Correspondence
- Decomposition
- Number Flexibility
- Computational Proficiency

Chapter 2 explores ways the big ideas and essential understandings of number and numeration are connected with other areas of mathematics. As you read chapter 2, reflect on these connections and discuss or write about how the concept of unit permeates many of these topics and their associated concepts.

Chapter 3 provides information on learning, teaching, and assessing number and numeration using rich tasks that can support both instruction and assessment. After reading chapter 3, you may want to plan and implement a task with a group of children.