
Developing Essential Understanding of Addition and Subtraction

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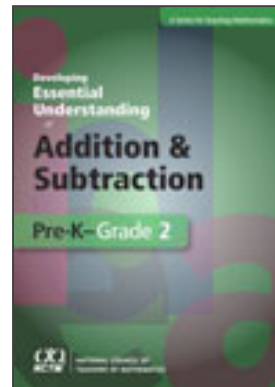
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Mathematical and Pedagogical Knowledge: Books

DESCRIPTION

Developing Essential Understanding of Addition and Subtraction, by Karen Karp, Janet Caldwell, Rose Mary Zbiek, and Jennifer Bay-Williams, is a resource for those wanting to enrich and extend their own knowledge of the Pre-K through Grade 2 mathematics they teach or those wanting to engage teachers in collaborative efforts. The importance of addition and subtraction and the challenge of teaching them well make this book a valuable resource. Read it with teaching, learning, and assessment in mind and consider:



- Selecting tasks
- Developing questions
- Choosing materials
- Ordering topics and ideas over time
- Assessing student work
- Challenging and supporting students' thinking

Chapter 1 offers an overview of addition and subtraction including two big ideas and associated essential understandings:

1. Addition and subtraction are used to represent and solve many different kinds of problems.
2. The mathematical foundations for understanding computational procedures for addition and subtraction of whole numbers are the properties of addition and place value.

Chapter 2 reconsiders the foundational ideas of addition and subtraction and emphasizes connections to other topics including number and numeration, rational number concepts and procedures, algebraic thinking, measurement and data representations. Chapter 3 focuses on the selection and development of appropriate tasks and techniques and tools for assessing student understanding.

STAGE 1 LEADERSHIP DEVELOPMENT

Developing Essential Understanding of Addition and Subtraction, by Karen Karp, Janet Caldwell, Rose Mary Zbiek, and Jennifer Bay-Williams, supports stage 1 development of leaders working to develop their knowledge of addition and subtraction in Pre-K through Grade 2. This book is a

valuable resource for coaches working to enrich their own understanding. Coaches 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. 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 into addition and subtraction.

STAGE 2 LEADERSHIP DEVELOPMENT

Developing Essential Understanding of Addition and Subtraction, by Karen Karp, Janet Caldwell, Rose Mary Zbiek, and Jennifer Bay-Williams, supports stage 2 leadership development of coaches and leaders working to collaborate and implement the Teaching and Learning Principle. This article is an effective tool for coaches to use with teachers in developing Indicator 3: *Every teacher participates in continuous and meaningful mathematics professional development and learning in order to improve his or her practice*. Coaches might use this book in a book study format, helping teachers to deepen their understanding of addition and subtraction.

Teachers working in grade level groups or as a group of teachers across grade levels from pre-kindergarten to grade 2 might collaborate to discuss the big ideas and models or representations in chapter 1. The connections in chapter 2 and the challenges of learning, teaching, and assessing in chapter 3 are useful prompts for reflection. Using the checklist from page 2, coaches might facilitate a group to work through the material in the book and then, as a culminating activity, plan a lesson or unit of study on addition and subtraction.