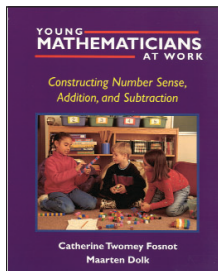


# Young Mathematicians at Work

## OVERVIEW

In our efforts to reform mathematics education, we've learned a tremendous amount about young students' strategies and the ways they construct knowledge, without fully understanding how to support such development over time. The Dutch do. So, funded by the NSF and Exxon, Mathematics in the City was begun, a collaborative inservice project that pooled the best thinking from both countries. In *Young Mathematicians at Work*, Catherine Fosnot and Maarten Dolk reveal what they learned after several years of intensive study in numerous urban classrooms.

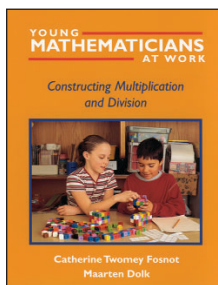
### **Young Mathematicians at Work: Constructing Number Sense, Addition, and Subtraction (Grades PreK–3)**



The first in a three-volume set, *Young Mathematicians at Work: Constructing Number Sense, Addition, and Subtraction* (Grades PreK–3), focuses on young children between the ages of four and eight as they construct a deep understanding of number and the operations of addition and subtraction. Rather than offer unrelated activities, Fosnot and Dolk provide a concerted, unified description of development, with a focus on big ideas, progressive strategies, and emerging models. Drawing from the work of the Dutch mathematician Hans Freudenthal, they define mathematics as "mathematizing"—the activity of structuring, modeling, and interpreting one's "lived world" mathematically. And they describe teachers who use rich problematic situations to promote inquiry, problem solving, and construction, and children who raise and pursue their own mathematical ideas.

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### **Young Mathematicians at Work: Constructing Multiplication and Division (Grades 3–5)**

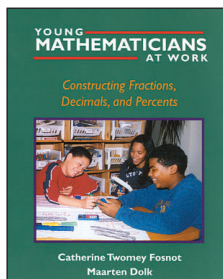


In *Young Mathematicians at Work: Constructing Multiplication and Division* (Grades 3–5), the second book in the three-volume series, Fosnot and Dolk focus on how to develop an understanding of multiplication and division. Their book:

- describes and illustrates what it means to do and learn mathematics
  - provides strategies to help teachers turn their classrooms into math workshops that encourage and reflect mathematizing
  - examines several ways to engage and support children as they construct important strategies and big ideas related to multiplication
- takes a close look at the strategies and big ideas related to division
  - defines modeling and provides examples of how learners construct models—with a discussion of the importance of context
  - discusses what it means to calculate using number sense and whether or not algorithms should still be the goal of computation instruction
  - describes how to strengthen performance and portfolio assessment
  - emphasizes teachers as learners by encouraging them to see themselves as mathematicians.

ISBN 978-0-325-00354-2 / 0-325-00354-8 / 2001 / \$23.50

## Young Mathematicians at Work: Constructing Fractions, Decimals, and Percents (Grades 5–8)



In *Young Mathematicians at Work: Constructing Fractions, Decimals, and Percents* (Grades 5–8), the third book in the three-volume series, Fosnot and Dolk focus on how children construct their knowledge of fractions, decimals, and percents. Their book:

- describes and illustrates what it means to do and learn mathematics.
  - contrasts word problems with true problematic situations which support and enhance investigation and inquiry.
  - provides strategies to help teachers turn their classrooms into math workshops.
- explores the cultural and historical development of fractions, decimals, and their equivalents and the ways in which children develop similar ideas and strategies.
  - defines and gives examples of modeling, noting the importance of context.
  - discusses calculation using number sense and the role of algorithms in computation instruction.
  - describes how to strengthen performance and portfolio assessment.
  - focuses on teachers as learners by encouraging them to see themselves as mathematicians.

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