

**NUMBER AND OPERATIONS PART 2**

# **Making Meaning for Operations**

**In the Domains of Whole Numbers  
and Fractions**

## **Casebook**

**Updated 2016**

A collaborative project by the staff and  
participants of Teaching to the Big Ideas

**Principal Investigators**

- Deborah Schifter
- Virginia Bastable
- Susan Jo Russell



NATIONAL COUNCIL OF  
TEACHERS OF MATHEMATICS

# **Making Meaning For Operations Casebook**

**Yeping Li, W. James Lewis, James J.  
Madden**



## **Making Meaning For Operations Casebook:**

Making Meaning for Operations Deborah Schifter, Virginia Bastable, Susan Jo Russell, 2016      *Making Meaning for Operations* Deborah Schifter, Virginia Bastable, Susan Jo Russell, 2015-01-21 What are the big Ideas in elementary school mathematics How do students understand them How can teachers best offer help and support as their students grapple with these ideas These and other questions about the practice of teaching K 8 mathematics are the focus of Developing Mathematical Ideas DMI a powerful engaging professional development curriculum for current and future teachers At the heart of a DMI seminar is the casebook sets of classroom episodes cases illustrating student thinking as described by their teachers In addition to case discussions the curriculum offers teachers opportunities to explore mathematics in lessons led by facilitators to share and discuss the work of their own students to view and discuss DVD clips of mathematics classrooms to write their own classroom cases and to read overviews of related research      **Number and Operations** Deborah Schifter, Virginia Bastable, Susan Jo Russell, 1999 Developing mathematical ideas part 2 making meaning for operation s DS21964      Developing Mathematical Ideas 2009 Numbers and Operations (Part 2) Making Meaning of Operations Casebook , 2009-08-14 Focuses on the actions and situations modeled by the addition subtraction multiplication and division of both whole numbers and fractions These actions and situations are used as a means to teach those concepts to young children      Teachers' Professional Development and the Elementary Mathematics Classroom Sophia Cohen, 2004-07-13 This book illustrates the experiences of elementary school teachers across one year s time as they participated in a teacher development seminar focused on mathematics and as a result changed their beliefs their knowledge and their practices It explores these experiences as a means of understanding the learning that takes a teacher from a more traditional teaching practice to one that is focused on the ideas and understandings that students and teachers have of the subject matter The work emerges from and reports on a unique data set from a two year study of teacher learning that was funded by the Spencer and MacArthur foundations The teachers whose work is at the center of this study were participants in the Developing Mathematical Ideas seminar DMI a mathematics teacher development seminar for elementary school teachers This seminar is one example of intensive domain specific professional development In this seminar teachers study elementary mathematics content to deepen their own understanding of it they study the development among children of the ideas central to elementary mathematics and they experience a teaching and learning environment consistent with the pedagogy envisioned by the National Council for Teachers of Mathematics Principles and Standards for School Mathematics The seminar is a nationally available teacher development curriculum thus interested educators can gain access to the resources necessary to offer similar seminars in their own communities Teachers Professional Development and the Elementary Mathematics Classroom Bringing Understandings to Light will be widely interesting to a broad audience including mathematics teacher educators teacher education researchers policymakers and classroom teachers It will serve well as a

text in a range of graduate courses dealing with teacher cognition knowledge for teaching mathematics methods psychology of learning and pedagogical theory      **Knowing and Learning Mathematics for Teaching** National Research Council, Mathematical Sciences Education Board, Center for Education, Mathematics Teacher Preparation Content Workshop Program Steering Committee, 2001-01-25 There are many questions about the mathematical preparation teachers need Recent recommendations from a variety of sources state that reforming teacher preparation in postsecondary institutions is central in providing quality mathematics education to all students The Mathematics Teacher Preparation Content Workshop examined this problem by considering two central questions What is the mathematical knowledge teachers need to know in order to teach well How can teachers develop the mathematical knowledge they need to teach well The Workshop activities focused on using actual acts of teaching such as examining student work designing tasks or posing questions as a medium for teacher learning The Workshop proceedings *Knowing and Learning Mathematics for Teaching* is a collection of the papers presented the activities and plenary sessions that took place      *Developing Teachers and Developing Schools in Changing Contexts* Zijian Li, Ling-po Shiu, 2008 More than ever schools are regarded as a learning community in which its leaders and therefore the school's primary agents of change are expected to stay abreast of the latest developments in education and instruction This book provides important insights for improving professional development activities school university partnerships and networks educational management as well as teaching and learning in schools and colleges It builds on research conducted in the 1990s during which the pursuit of school improvement and skill development first converged

*The Mathematical Education of Teachers* Conference Board of the Mathematical Sciences, 2001 A report on the state of current thinking on curriculum and policy issues affecting the mathematical education of teachers with the goal of stimulating campus efforts to improve programs for prospective K 12 teachers Its primary audience is members of the mathematics faculties and administrators at colleges and universities but the report may also be of interest to math supervisors in school districts and state education departments to education policy bodies at the state and national levels and to accreditation and certification organizations c Book News Inc      Studying Classroom Teaching as a Medium for Professional Development National Research Council, Policy and Global Affairs, Board on International Scientific Organizations, U.S. National Commission on Mathematics Instruction, Division of Behavioral and Social Sciences and Education, Center for Education, Mathematical Sciences Education Board, 2002-08-09 The Mathematical Sciences Education Board MSEB and the U S National Commission on Mathematics Instruction USNCMI took advantage of a unique opportunity to bring educators together In August 2000 following the Ninth International Congress on Mathematics Education ICME 9 in Makuhari Japan MSEB and USNCMI capitalized on the presence of mathematics educators in attendance from the United States and Japan by holding a two and a half day workshop on the professional development of mathematics teachers This workshop used the expertise of the participants from the two countries to develop a better more flexible and more useful

understanding of the knowledge that is needed to teach well and how to help teachers to obtain this knowledge A major focus of the workshop was to discuss teachers opportunities in both societies using teaching practice as a medium for professional development Another focus of the workshop addressed practice by considering the records of teaching including videos of classroom lessons and cases describing teachers and their work These proceedings reflect the activities and discussion of the workshop using both print and video to enable others to share in their experience

**Adding It Up** National Research Council, Division of Behavioral and Social Sciences and Education, Center for Education, Mathematics Learning Study Committee, 2001-12-13 Adding It Up explores how students in pre K through 8th grade learn mathematics and recommends how teaching curricula and teacher education should change to improve mathematics learning during these critical years The committee identifies five interdependent components of mathematical proficiency and describes how students develop this proficiency With examples and illustrations the book presents a portrait of mathematics learning Research findings on what children know about numbers by the time they arrive in pre K and the implications for mathematics instruction Details on the processes by which students acquire mathematical proficiency with whole numbers rational numbers and integers as well as beginning algebra geometry measurement and probability and statistics The committee discusses what is known from research about teaching for mathematics proficiency focusing on the interactions between teachers and students around educational materials and how teachers develop proficiency in teaching mathematics

**Mathematics Matters in Education** Yeping Li, W. James Lewis, James J. Madden, 2017-10-03 This book is inspired by Roger E Howe s contributions to the international communities of mathematics and mathematics education Renowned for his research contributions in the fields of representation theory automorphic forms harmonic analysis and invariant theory Dr Howe has also fundamentally deepened our understanding of the mathematics taught in the early school grades and has challenged and stimulated mathematicians and mathematics educators to work together to examine this part of the mathematical universe more critically and in imaginative new ways This volume will help summarize and highlight Howe s contributions to several topic areas in mathematics education demonstrating the possibility and importance of engaging mathematicians in high impact research in mathematics education and showcasing the importance of cross disciplinary collaboration and exchange

**Making Meaning for Operations**, 2016

**Handbook of Research on Online Pedagogical Models for Mathematics Teacher Education** Wachira, Patrick, Keengwe, Jared, 2019-11-29 Online learning has become an important vehicle for teacher and student learning When well designed online environments can be very powerful in a way that is consistent with the goals of inquiry experimentation investigation reasoning and problem solving so learners can develop a deep understanding of a subject Some subjects however are not well suited for this type of learning due to the need for small group collaborating and hands on problem solving The Handbook of Research on Online Pedagogical Models for Mathematics Teacher Education provides innovative insights into technology applications and tools used in teaching mathematics online

and provides examples of online learning environments and platforms that are suitable for meeting math education goals of inquiry investigation reasoning and problem solving The content within this publication examines access to education professional development and web based learning It is designed for teachers curriculum developers instructional designers educational software developers IT consultants higher education faculty policymakers administrators researchers academicians and students

*Cases in Mathematics Teacher Education* Margaret S. Smith, Susan N. Friel, 2015-10-01  
Originally published in 2008 The goal of AMTE Monograph 4 *Cases in Mathematics Teacher Education Tools for Developing Knowledge Needed for Teaching* is to provide detailed accounts of case use that will inform the mathematics teacher education community on the range of ways in which cases can be used to foster teacher learning and the capacity to reflect on and learn from teaching The chapters in this monograph describe the use of cases with preservice and practicing teachers at all levels K 12 in content and methods courses as well as professional development settings and focus on developing various aspects of teachers knowledge base i e content pedagogy and students as learners Hence Monograph 4 should prove to be a superb resource for mathematics teacher educators

**Teaching in the Standards-based Classroom**, 2001  
Virtually every national standards document every state framework and every local set of standards calls for fundamental changes in what and how teachers teach The challenge for teachers is to implement the vision for mathematics and science classrooms called for in the standards This issue describes that vision and suggests ways to use the standards mandated in your school to improve your practice to help you teach in your standards based classroom

John A. Van de Walle, ( ), 2005

**Becoming Literate in Mathematics and Science**, 2001

**ENC Focus**, 2001

Elementary and Middle School Mathematics John A. Van de Walle, 2007 This leading K 8 math methods book has the most coverage of the NCTM standards the strongest coverage of middle school mathematics and the highest student approval of any math methods book currently available Elementary and Middle School Mathematics provides an unparalleled depth of ideas and discussion to help readers develop a real understanding of the mathematics they teach John Van de Walle one of the foremost experts on how children learn mathematics finds that 80 percent of the students who purchase this book keep it for reference when they begin their professional teaching careers This book reflects the NCTM Principles and Standards and the benefits of constructivist or student centered mathematics instruction Improvements for the sixth edition include sections on planning for a diverse classroom and a completely new section addressing planning in a classroom where there are English language learners

**Journal for Research in Mathematics Education**, 2010

## The Enigmatic Realm of **Making Meaning For Operations Casebook**: Unleashing the Language is Inner Magic

In a fast-paced digital era where connections and knowledge intertwine, the enigmatic realm of language reveals its inherent magic. Its capacity to stir emotions, ignite contemplation, and catalyze profound transformations is nothing short of extraordinary. Within the captivating pages of **Making Meaning For Operations Casebook** a literary masterpiece penned by way of a renowned author, readers attempt a transformative journey, unlocking the secrets and untapped potential embedded within each word. In this evaluation, we shall explore the book's core themes, assess its distinct writing style, and delve into its lasting affect the hearts and minds of those who partake in its reading experience.

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## **Making Meaning For Operations Casebook Introduction**

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