

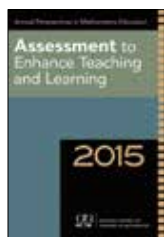
## BOOKS AND PRODUCTS

### FROM NCTM

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### Annual Perspectives in Mathematics Education: Assessment to Enhance Teaching and Learning

Christine Suurtamm and Amy Roth McDuffie, eds., 2015. 254 pp., \$44.95 paper. ISBN 978-0-87353-923-4. Stock no. 14860. National Council of Teachers of Mathematics; <http://www.nctm.org>.



This Annual Perspectives in Mathematics Education (APME) volume contains twenty-one chapters organized into four separate parts:

(1) Assessment in Action, (2) Design of Assessment Tools and Strategies, (3) Professional Learning to Enhance Classroom Assessment, and (4) Assessment as Reasoning from Evidence. This volume contains suggestions to help plan and design formative assessments appropriate for middle school math teachers.

Chapter 5, “Classroom-Based Formative Assessments: Guiding Teaching and Learning,” provides specific evidence supporting the use of daily

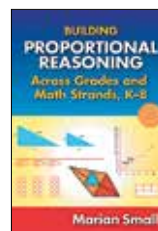
formative assessment in the classroom to guide the teaching and learning of students. The recommendations for using an observation form, interviewing students, and incorporating planned hinge questions and exit slips were put into action during a unit of study about linear functions in secondary mathematics. The observation forms documented evidence of mathematics content, mathematical practices, and the extent of student engagement in the classroom throughout the week. Interviewers collected data on conceptual understanding and procedural fluency and developed strategies. The hinge questions helped guide instruction and provide evidence as to whether students were ready for the next content. The exit tasks supplied evidence of what students actually learned during the classroom experience.

This book is an excellent resource for teachers and educational leaders. Each chapter connects to evidence-based research. Each of the 21 chapters connects directly to various NCTM publications, such as *Principles to Actions: Ensuring Mathematics Success for All* (NCTM 2014).

Jordan B. Smith Jr.  
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### Building Proportional Reasoning across Grades and Math Strands, K–8

Marian Small, 2015. 128 pp., \$26.95 paper. ISBN 978-0-8077-5660-7. Stock no. 15031. Co-published by Teachers College Press and National Council of Teachers of Mathematics; <http://www.nctm.org>.



This straightforward, utilitarian book looks at how proportional reasoning is built throughout the K–grade 8 spectrum and is intended for use by teachers, math coaches, and preservice teachers.

The book begins by describing what proportional reasoning is, how it connects with Common Core State Standards for Mathematics (CCSSM) content and practice standards as well as with NCTM's *Principles to Actions: Ensuring Mathematics Success for All*. Thereafter, it is organized into two parts: developing the foundations of proportional reasoning (K–grade 2) and focusing on proportional reasoning (grades 3–8). A separate chapter devoted to each grade identifies the related CCSSM domains and standards, key underlying ideas, descriptions of activities, and suggested questions. The index is arranged in two ways: the typical fashion and by CCSSM content and practice strands.

Classroom teachers will find this book especially useful for understanding how proportional reasoning relates to the specific CCSSM they teach, finding useful activities to incorporate into their practice, and understanding proportional reasoning in adjacent grades. The book will benefit teachers, preservice teachers, and math coaches as a way of understanding the entire arc of proportional reasoning throughout the K–grade 8 years.

The book's notable strengths are the connections it makes between the early grades and the development of proportional reasoning, the clarity of the writing and organization, and the

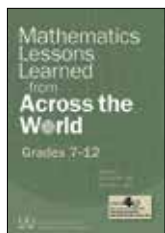
Prices on books and products are subject to change. Consult the suppliers for the current prices. The comments reflect the reviewers' opinions and do not imply endorsement by NCTM.

variety of models it uses to illustrate ideas. Notably absent are a further reading section for each chapter and any consideration of the use of various online or computer- or tablet-based dynamic tools for building proportional reasoning. Nevertheless, *Building Proportional Reasoning across Grades and Math Strands* would be a useful purchase for teachers, math coaches, preservice teachers, and professional development libraries.

Keith Adolphson  
Eastern Washington University  
Cheney, Washington

### Mathematics Lessons Learned from Across the World, Grades 7–12

Johnny W. Lott and Carolyn J. Lott, eds. 2015. 112 pp., \$24.95 paper. ISBN 978-0-87353-746-9; Stock no. 14575. National Council of Teachers of Mathematics; <http://www.nctm.org>.



This practitioner-friendly book includes a series of activities for students ages 5–13 collected from various countries around the world. The open-ended activities include multiple entry points and promote student-controlled discourse as students reason, argue, and make predictions about mathematics. Extensions are often provided for students who finish early or need an additional challenge.

The activities assume quite a bit of background knowledge that students may or may not have. It might have been useful to include a prior knowledge section at the start of each lesson so teachers would understand what knowledge is assumed or needed for each lesson. Vocabulary is seldom a focus in these activities, which is worrisome, especially for classes that include English language learners. Insufficient examples of teacher questioning are included in the lessons, so novice teach-

ers may need more support in understanding what types of questions to ask during each activity. Technology is also insufficiently incorporated. Electronic files of the activities are available as an online supplement. However, they cannot be edited, making it difficult for teachers to change and adapt the materials. As with any educational resource, teachers must take a critical eye to the activities presented in this book to adapt and modify them as necessary to best meet the needs of their unique students.

Euthokia Stephanie Saclarides  
University of Illinois  
Champaign, Illinois

### Mathematics Professional Development: Improving Teaching Using the Problem-Solving Cycle and Leadership Preparation Models

Hilda Borko, Jennifer Jacobs, Karen Koellner, and Lyn E. Swackhamer, 2015. Forewords by Jennie Whitcomb and Paul Cobb. 160 pp., \$32.95 paper. ISBN 978-0-8077-5655-3. Stock no. 15093. Co-published by Teachers College Press and National Council of Teachers of Mathematics; <http://www.nctm.org>.



This work is seminal in its research effort and content. It is a necessary read for anyone in the field of mathematics professional development (PD) or mathematics teacher content knowledge research. The Problem-Solving Cycle (PSC) details a research-based way to assist teachers with changing mathematical instructional practices and increasing content knowledge to effectively promote students' mathematical thinking and increase student achievement. Each workshop centers on a rich mathematical problem that participants work through, develop a lesson for, teach to their students, and

then debrief in their subsequent PD sessions. These activities are what the PSC are built on; through them, mathematical knowledge is built, and teacher change occurs.

The role of video in the PSC is relevant and promotes community within a professional development program. Videos enable teachers to grow in their own practice, and in turn create teacher leaders, thus permitting movement into the Mathematics Leaders Preparation (MLP) model that supports growing teachers into leaders within one framework. This allows the model to not only support teachers but also prepare them to lead the PSC workshops.

The MLP model fosters in-depth discussions and modeling followed by reflection. It uses rehearsals and simulations with the teachers, self-reflection, and individualized coaching to provide opportunities for teachers to grow in their practice. The MLP model offers details on selecting video clips as a teacher versus selecting video clips as a facilitator.

The continuum of the PSC model and MLP model sets forth a strategy to allow teachers and schools to engage in PD effectively, in not only mathematics but also other content areas. Through the use of video to analyze one's practice and student thinking, the effects of that practice impact the participants' mathematics knowledge, their instructional practices, and the mathematics achievement of their students. Using the two models together enables schools and teachers to sustain professional development at their campus.

This research is current and needed in our schools for effective teaching. Through the use of the Problem-Solving Cycle, they can begin having the conversations with other practitioners that will move them into a more confident mathematics practice.

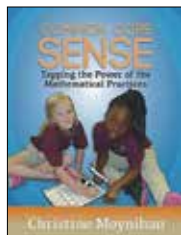
Kimberly Hicks  
University of Houston  
Houston, Texas



## FROM OTHER PUBLISHERS

### Common Core Sense: Tapping the Power of the Mathematical Practices

Christine Moynihan, 2015. 176 pp., \$19.00 paper. ISBN 978-1-62531-004. Stenhouse Publishers; <http://www.stenhouse.com>.



The Common Core's eight Standards for Mathematical Practice are fully unpacked, described, and explained, including

elementary classroom vignettes and student work. This book fully meets its promise of making the mathematical practices “more accessible to elementary teachers.” For each of the eight practices, the author presents goals that fully describe the intent and implementation of the practices. In doing so, the author includes a wonderfully helpful chart relating each of the subgoals that help to unpack each practice. The chart describes what a teacher might observe students doing and might hear students saying while engaged in a particular mathematical practice. In addition, the chart provides tips to help teachers decide what to do as they observe student actions.

For each mathematical practice, the author gives an example of a mathematical task and a classroom vignette to make the mathematical practice come alive. At the end of each chapter, the reader will “hear” teacher and student reflections, which add to the depth of understanding of the mathematical practices.

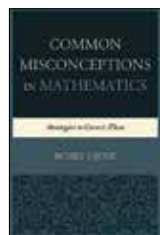
This is an outstanding book that elementary school teachers and teacher educators will find useful. It is practical, engaging, and beneficial in helping mathematics educators better understand and implement the Common Core's mathematical practices in the

classroom. The author is transparent and honest in sharing the challenges and exciting results that can be experienced when working with students to develop these mathematical practices. I highly recommend this book.

Scott Adamson  
Chandler-Gilbert Community College  
Chandler, Arizona

### Common Misconceptions in Mathematics

Bobby Ojose, 2015. 150 pp., \$24.99 paper. ISBN 978-0-7618-5885-0. Rowman & Littlefield; <http://www.rowman.com>.



Bobby Ojose has packed *Common Misconceptions in Mathematics* with information for K-grade 12 educators, dedicating the vast majority of the book to misconceptions that affect middle-grades teachers. Decimal operations, proportional reasoning, integer operations, and scientific notation are just a few of the topics addressed. The table of contents is organized by misconception, making the book easy to navigate. The author offers advice on forty-three misconceptions.

Even though it is packed with information, this is not a book you would necessarily want to read cover to cover. Instead, one of the book's strengths lies in its organizational structure. Teachers can easily navigate to relevant topics because each misconception section is organized and presented in the same way: grade level, sample question, likely student response, explanation of misconception, what teachers can do, and research notes. The author offers a wide range of potential solutions to correct each misconception. He does not limit his suggestions to traditional or hands-on approaches, and the research connec-

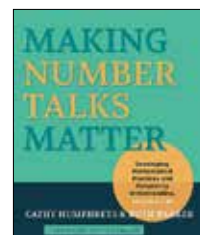
tions are valuable when determining next steps for the classroom.

One drawback of the book is that the author tends to write formally, so readers occasionally may have to read sections more than once to decipher what the author was attempting to convey. Despite that, the book offers a wealth of information that would be good for K-grade 12 teachers to have at their disposal.

Ashley Walther  
University of Tennessee  
Knoxville, Tennessee

### Making Number Talks Matter: Developing Mathematical Practices and Deepening Understanding, Grades 4–10

Cathy Humphreys and Ruth Parker, 2015. Foreword by Jo Boaler. 212 pp., \$23.00 paper. ISBN 978-1-57110-998-9. Stenhouse Publishers; <http://www.stenhouse.com>.



This book offers guidance for teachers on incorporating number talks as a routine part of instruction. It begins with an introduction about why number talks are so important for helping students make sense of mathematics, ideas for how to start using them, and “Guiding Principles for Enacting Number Talks.” Chapters 4–7 provide ideas for Number Talks in subtraction, multiplication, addition, and division. Each chapter identifies strategies that students might use for the given operation and gives examples, ideas for choosing problems that “invite” the given strategy, and suggested discussion questions. Although ideas for applying the strategies to decimals and fractions are included throughout these chapters, the book also includes a chapter on “Making Sense of

Fractions (and Decimals and Percent)” with ideas for number talks, such as “Fractions on a Number Line” and “Reasoning about Division of Fractions.” The book concludes with examples of investigations that might be sparked by number talks, tips for managing implementation challenges, and testimonials from classroom teachers.

This highly readable book strikes a balance between including sufficiently detailed information to allow immediate implementation of the ideas and providing sufficient rationale and background for teachers to tailor the ideas to their unique classroom settings. Although it would be helpful if more classroom vignettes illustrated the specific mathematical strategies and implementation suggestions, I am glad to have this book on my bookshelf and highly recommend it

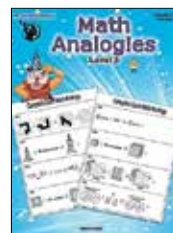
to classroom teachers seeking to help students make sense of mathematics.

*Maureen Grady  
East Carolina University  
Greenville, North Carolina*

### **Math Analogies Level 3, Grades 6–7**

*Darin Beigie, 2014. 57 pp., \$11.99 paper. ISBN 978-1-60144-701-2. The Critical Thinking Co.; <http://www.criticalthinking.com>.*

*Math Analogies Level 3* delivers 200 analogies, covering a variety of concepts, such as unit rates, probability, transformations, and order of operations. The analogies are designed with pictorial representations, algebraic expressions, and/or verbal phrases. Although the title indicates use with sixth-grade and seventh-grade students, eighth graders would also find the analogies interesting and challenging.



The introduction to the workbook is brief, but the teaching suggestions and sample analogies are sufficient for teachers to become comfortable

with the format and introduce their students to these types of analogies.

*Math Analogies* engages students in critical thinking and problem solving. The author recommends that students refrain from using calculators to solve the analogies. I agreed with his suggestion for most of the exercises, but there are one or two places where I would consider giving students the option.

The layout of the workbook lends itself to many different uses. The most basic would be to give a single analogy as a Problem of the Day. Another option is to run a few pages of the workbook (it has three or four analogies

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per page) to keep in a “Fast Finishers” folder for students who finish a task or assignment early. Some of the tougher analogies can be used for a class or grade level Math Challenge/Competition. One final suggestion is to select several analogies on the same topic (e.g., unit rates) and have students solve them as a learning-station activity. I highly recommend the workbook.

Teri Johnson

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# Apply for Grants and Awards

**The NCTM Mathematics Education Trust** channels the generosity of contributors through the creation and funding of grants, awards, honors, and other projects that support the improvement of mathematics teaching and learning.

**Did you know?** As a member of NCTM, you have access to grants and awards to enhance your mathematics teaching and learning. The Mathematics Education Trust (MET) provides funding opportunities to focus on classroom action research, projects that engage students in learning mathematics, professional development, and graduate study to improve teaching skills and classroom practice.

Begin your search at [www.nctm.org/met](http://www.nctm.org/met), where you will find current grants and awards grouped by grades pre-K–5, 6–8, 9–12, and more. Click on any title to see a description of the award or grant, comments from a previous awardee, and eligibility and proposal requirements. The following are examples of MET awards:

- **Future Leaders Initial NCTM Annual Meeting Attendance Awards:** Grants of up to \$1,200 plus meeting registration provide for travel, subsistence expenses, and substitute teacher costs of members who are classroom teachers and have never attended an NCTM annual meeting.
- **School In-Service Training Grants:** Elementary, middle, or high schools receive up to \$4,000 for support of in-service mathematics programs.
- **Mathematics Coursework Scholarships:** Scholarships of up to \$2,000 are awarded to classroom teachers working to pursue courses to improve their mathematics content knowledge.
- **Pre-K–6 Classroom Research Grants:** Awards of up to \$6,000 support collaborative classroom-based action research in precollege mathematics education involving college or university mathematics educators.
- **Engaging Students in Learning Mathematics Grants:** Awards of up to \$3,000 are given to grades 6–8 classroom teachers to incorporate creative use of materials to actively engage students in tasks and experiences designed to deepen and connect their mathematics content knowledge.
- **Connecting Mathematics to Other Subject Area Grants:** Awards of up to \$4,000 are awarded to grades 9–12 classroom teachers to develop classroom materials or lessons connecting mathematics to other disciplines or careers.

A proposal to the Mathematics Education Trust is typically no longer than five pages. Two deadlines occur per year: the first week of May and the first week of November. The MET Board of Trustees reads proposals and notifies awardees by letter in July and February.

The MET Board of Trustees strives to distribute all awards in each funding cycle. Some funds go unused because applications are not received for all grants each year. Take advantage of this opportunity to obtain funding for you or your school. Visit the website on a regular basis to check for updates.

The MET also accepts donations and is always looking to establish new grants and awards. MET is an asset of NCTM and can be an asset for you.



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