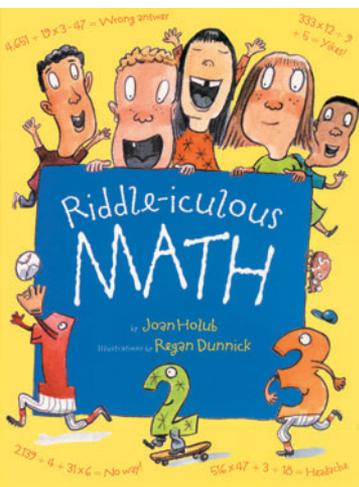


Books

For Students

Riddle-iculous MATH, Joan Holub and Regan Dunnick, 2003. 32 pp., \$14.95 paper. ISBN 0-8075-4966-7. Albert Whitman & Company Publications, 6340 Oakton St., Morton Grove, IL 60053, (800) 255-7675.

I really enjoyed reading this book, which is full of humorous riddles and jokes related to mathematics. As I read the book, I stopped many times to chuckle. Some of the mathematics topics addressed are factors, measurement, fractions, decimal fractions, and multiplication. The riddles and jokes are in the form of poems, stories, short phrases, word



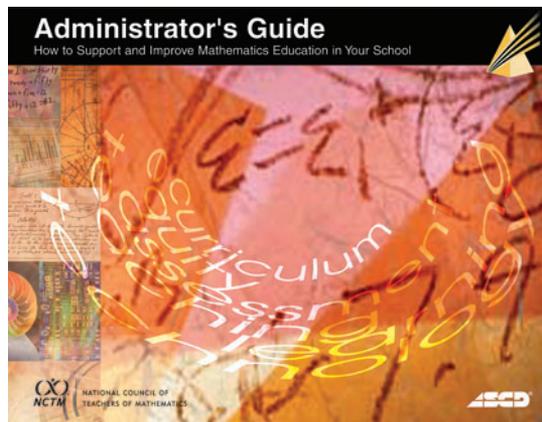
play, illustrations, and drawings. “I Love Fractions by Henry the Eighth” is just one example of the “word play” technique the author uses. Each of the illustrations demonstrates ways to add humor and give an extra spark to a student’s experience of learning mathematics. The riddles are great for math-phobic children who would benefit from light, entertaining illustrations of upper elementary mathematics topics.

I definitely recommend this book to any teacher who has a good sense of humor. The mathematics is not challenging, but the concepts in the riddles enhance any mathematics class by adding a little laughter to the day. Any teacher can use these riddles as a springboard for students to write their own riddles using correct mathematics. Children who enjoy drawing in class will be inspired to learn mathematics so they can make their own riddles. Enjoy and have a good laugh.—*Susan Weiss, Solomon Schechter Day School, Newton, MA 02459.*

For Teachers

From NCTM

Individual NCTM members receive a 20 percent discount on NCTM publications. To order, visit the NCTM online catalog at www.nctm.org/catalog, or call toll free (800) 235-7566. Free print catalogs of NCTM publications also are available by writing to NCTM.



Administrator’s Guide: How to Support and Improve Mathematics Education in Your School, Amy J. Mirra, 2003. \$14.95, 47 pp. paper. ISBN 0-87353-552-9. National Council of Teachers of Mathematics, 1906 Association Dr., Reston, VA 20151-1502, (800) 235-7566.

This booklet aims to tell school administrators what they “need to know about mathematics education and ways [they] can support and improve mathematics education in [their] school.”

Starting with charts that compare the current achievements of students in the United States to those of students in other countries, the author explains what it means to be mathematically literate. The booklet identifies and describes a high-quality elementary, middle, and high school classroom and the activities in which students and teachers engage. The booklet then discusses six NCTM principles that form the foundation of a successful mathematics program, makes suggestions for evaluating the mathematics classroom, and answers thirteen questions that administrators

Prices on software, books, and materials are subject to change. Consult the suppliers for the current prices. The comments reflect the reviewers’ opinions and do not imply endorsement by the National Council of Teachers of Mathematics.

hear, such as “Will calculators hurt computational skills?” Although aimed at administrators, this book provides methods and strategies that will help teachers and therefore students.—*R. Mark Beadle, Cincinnati Hills Christian Academy, Cincinnati, OH 45249.*

Navigating through Measurement in Prekindergarten–Grade 2, *Linda Dacey, Mary Cavanagh, Carol R. Findell, Carole E. Greenes, Linda Jensen Sheffield, and Marian Small, 2003. 82 pp., \$29.95 paper. Includes CD. ISBN 0-87353-543-X. National Council of Teachers of Mathematics, 1906 Association Dr., Reston, VA 20191-1502, (800) 235-7566.*

This book is one of several in NCTM’s *Navigations* series. This volume, aimed at preschool through second grade, contains information and activities to do with young children exploring measurement.

Each chapter includes information first, then a series of activities targeting different levels. Chapter topics include comparing and ordering, and using units and tools. The book also contains an appendix with the blackline masters and solutions. An accompanying CD includes all the blackline masters, extra reading material, and computer applets for students to explore measurement with nonstandard units.

I used one of the activities, “Calendar Logic,” with my second-grade class. We had just finished the unit on measurement from the district-adopted text and I wanted some extensions. The students had to work in pairs and look at a calendar, then use clues to figure out the day of the week and date. The students enjoyed the activity and worked together well, even though we had not done a lot of pair work. The reading level was appropriate for second grade, and all the children were successful on most of the problems.

I was able to pick up this book and use it the next day. The information is not only mathematically accurate but also easy to use, an advantage for teachers who are asked to teach more each year with less time. The book’s activities match the NCTM and state standards. Many activities require very little preparation to use.

I recommend this book to all primary teachers. It is well worth the cost.—*Jill Breslin, Shasta Union Elementary School, 3258 Majestic Oak Circle, Cottonwood, CA 96022.*

Teaching Mathematics through Problem Solving: Prekindergarten–Grade 6, *Frank K. Lester*

Jr. and Randall I. Charles, 2003. 269 pp., \$36.95 paper. ISBN 0-89353-540-5. National Council of Teachers of Mathematics, 1906 Association Dr., Reston, VA 20191-1502, (800) 235-7566.

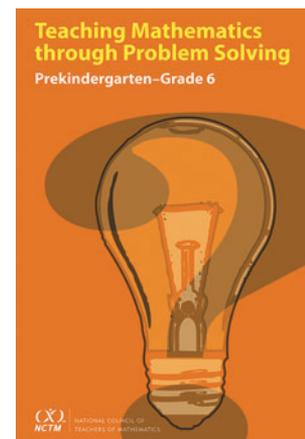
In the four major sections of this book, various authors share their thoughts on and understandings of the issues and perspectives, reflections in the classrooms, the role of technology, and what research tells us about teaching mathematics through problem solving. The collection includes numerous teacher stories to illustrate points.

The articles in the first section are an excellent read for teachers and administrators who value the importance of understanding in the process of learning mathematics. The authors also use the problem-solving focus to describe the habits of mind for young children and present a historical perspective of teaching mathematics through problem solving.

Section two contains chapters that focus directly on the classroom. Teachers and administrators will find a chapter on designing and selecting problem-based tasks very helpful in distinguishing tasks that are effective—have good mathematical depth—from activities or exercises. Another chapter in this section describes how to build a mathematics curriculum around solving problems. This leads to a discussion about the importance of listening to children in order to inform instruction and the importance of establishing social and socio-mathematical norms in the classroom. Again, teacher stories help illustrate the important points of the section.

The last two sections address the role of technology and what research tells us about teaching mathematics through problem solving. The first of the technology chapters contrasts how technology can and cannot support problem solving. The next chapter illustrates how special computer software can enhance the learning of geometry through a problem-based approach.

I highly recommend this book for teachers and administrators who want to investigate the importance of teaching mathematics through problem solving. This publication would make an excellent book study.—*Linda Coutts, Columbia Public Schools, Columbia, MO 65202.*



Using Assessment to Improve Middle-Grades Mathematics Teaching and Learning, Carol S. Parke, Suzanne Lane, Edward A. Silver, and Maria E. Magone, 2003. 155 pp., \$37.95 paper. Includes CD. ISBN 0-87353-522-7. National Council of Teachers of Mathematics, 1906 Association Dr., Reston, VA 20191-1502, (800) 235-7566.

This book and CD set contains a collection of mathematical tasks that can be used for instruction or assessment with students in grades 4–8. Rubrics and ample scoring criteria are provided.

Six activities acquaint students with solving these types of mathematical tasks. Solving problems using multiple strategies and learning to evaluate their own responses are two purposes of these varied activities. The book covers a range of mathematical concepts, including numbers and operations, geometry, measurement, and data analysis.

In the activity “Margarita and Sam,” students compare rates of money that two children earn per day. They must perform tessellations to solve the problem of “Art Class.” In “Tony’s Walk,” students read, interpret, and integrate information presented in a graph to write a short story.

Each of those six “get acquainted” tasks includes a rubric and several examples of scored student responses—a great asset when scoring student work. The CD includes an introduction and all sixteen activities. It is easy to use and provides a convenient way to print out tasks for students.

This book and CD set would be a helpful addition to teacher resources in the middle-grades mathematics classroom. The tasks are set up clearly and the provided scoring is helpful. This would be especially beneficial to teachers who are just starting out.—*Betsy Liebmann, Gotham Avenue School, Elmont, NY 11003.*

From Other Publishers

Algebraic Reasoning, Jaine Kopp and Kimi Hosoume, 2003. 140 pp., \$18.00 paper. Grades 3–5. ISBN 0-924886-70-6. Lawrence Hall of Science, University of California, Berkeley, CA 94720-5200, (800) 227-1150.

This book is part of the GEMS (Lawrence Hall of Science) series designed for students in grades 3–5. The book includes six activities, each with a suggested timeframe, a list of consumable and non-consumable materials, general supplies, and an introduction with an overview. A “Background for

Teachers” section serves as a resource on the algebraic concepts presented and can assist new teachers in preparing for the activities. The section lists vocabulary and properties of numbers and operations. When using some of the activities in our elementary schools, teachers found this section very user-friendly.

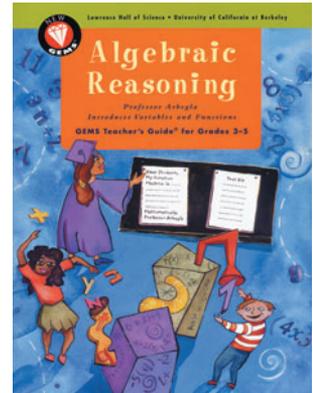
I used “Activity 1: The Fabulous Function Machine” with grades 3–5. I introduced Professor Arbegla, the inventor of the Fabulous Function Machine. Students had some prior knowledge of function machines and delighted in determining which function was at work (the “secret rule”). The students kept an algebra journal for all the activities.

In most cases, their favorite activity was the third, “The Morph Machine.” A number enters the “transformer” part of the machine, where it is changed or “morphed” through a series of arithmetic operations. Then the “morphed” number moves from the transformer chamber to the “restorer” chamber of the machine, where it converts back to the original number that went in. Students use inverse operations to determine numbers to suggest as their input. The students were challenged by creating their own “morph” machines and having their classmates determine the operations to morph the numbers put into the machine.

I highly recommend *Algebraic Reasoning* to elementary teachers of grades 3–5. Students’ mental mathematics abilities will greatly increase, as will their algebraic concepts.—*Carol Newman, mathematics curriculum specialist K–5, Broward County Schools, Ft. Lauderdale, FL 33322.*

Children’s Mathematics: Making Marks, Making Meaning, Maulfry Worthington and Elizabeth Carruthers, 2003. xi + 242 pp., \$26 paper. ISBN 0-7619-4070-7. SAGE Publications, 2455 Teller Road, Thousand Oaks, CA 91320, (800) 818-7243.

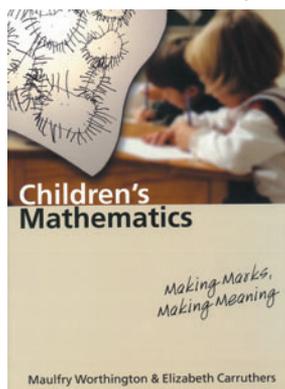
Sandwiched between quotes from *The Little Prince* by Saint-Exupéry (1958), the authors discuss the mathematical development of young children. Drawing on the professional literature and theories from the fields of literacy and mathematics, the authors skillfully explain how children become mathematically literate, describe the early childhood environment that best promotes their learning, and illustrate their claims with children’s work that they have collected over a twelve-year period of working with young children.



The book begins with an overview of the literature on the mathematical development of young children and the authors' own findings from questioning and working with teachers. They present theories of learning and argue that young children's emergent mathematical literacy develops through social interactions and a rich, supportive environment, both at home and at school. The chapters that follow discuss the diverse ways in which children record their informal knowledge of mathematics—through markings, drawings, graphics, and writing. Examples from young children's work help illustrate the various strategies children use to display their thinking. Each chapter includes suggestions and methods to encourage children's mathematical thinking.

The authors discuss the gap between home and school mathematics. They stress the need for teachers to recognize the mathematical knowledge that children own when coming to school and offer ways to bridge the gap. For those working in an

early childhood environment, this book can be an excellent resource in understanding and planning for children's mathematical experiences.—*Deborah Ann Jensen, Hunter College of the City University of New York, New York, NY 10021.*



Engaging Young Children in Mathematics: Standards for Early Childhood Mathematics Education, Douglas H. Clements and Julie Sarama, 2004. xv + 474 pp., \$49.95 paper. ISBN

0-8058-4534-8. Lawrence Erlbaum Associates, 10 Industrial Avenue, Mahway, NJ 07430-2262, (800) 926-6579.

This book is based on the Conference on Standards for Prekindergarten and Kindergarten Mathematics Education. It is divided into two parts that educate and challenge the reader to think deeply about important issues related to mathematics standards in early childhood education.

In the first part, the authors summarize major themes that emerged from the conference. One important theme addresses “big mathematical ideas” for pre-K to grade 2 with respect to the five content Standards in NCTM’s *Principles and Standards for School Mathematics*. Their in-depth discussion of these ideas explores connections within and between the five content areas. The discussion is supported by graphics that contain developmen-

tally appropriate guidelines for children’s knowledge of the big ideas. These developmental guidelines could be very useful to early childhood educators, mathematics educators, and curriculum developers.

The second part of the book is divided into five sections. In these sections, authors discuss issues such as the need for developmentally appropriate mathematics standards for early childhood education, how research related to young children’s thinking might inform the development of standards, and successful instructional and professional development efforts. Two main ideas emerge from these discussions: (a) young children are capable of developing a deep knowledge of big mathematical ideas that extends beyond simple counting and identifying shapes; and (b) when early childhood educators receive appropriate support, they can provide children with rich mathematics learning experiences.

This book has much to offer those who are involved in developing and implementing mathematics standards in early childhood education.—*Nancy K. Mack, Grand Valley State University, Allendale, MI 49401.*

Etcetera

Deca Dice Volume IX Math Games, Joanne Currah and Jane Felling, 2001. \$24.95. 100 games, comes with 8 multisided dice, mathematics journal questions, student samples, place-value probability, all operations, graphing and rounding. ISBN 0-968161-3. *Box Cars and One-Eyed Jacks*, 3930-78th Avenue, Edmonton, AB T6B 2W4, Canada, (780) 440-6284.

“Children are naturally intrigued and captivated by math games.” This is the philosophy of authors Joanne Currah and Jane Felling. The authors stay true to this idea and expound on their belief that games support mathematical thinking by involving students in the learning process so that they create strategies that will help them become independent problem solvers. The book is written for students in grades 1–9, which seems like a wide range but allows for differentiation based on the skill. The book covers the content areas of place value, probability, operations, fractions, money, and measurement.

The games in the book use deca dice, which are multisided dice, and cards. Each game indicates the

grade level, skills addressed, equipment needed, directions with an example, and, in many cases, thought-provoking questions and variations. For example, “Tweenies” is a game for grades 1–3 that involves comparing numbers from 0–90. A variation is added for grades 4–6, in which students compare numbers from 0–9090. In another example, “Deci-Deca,” students use mental mathematics strategies to multiply decimals and whole numbers, where adjusting the decimal is necessary. Many games in the book include examples of student work, which gives the user more insight into the game.

As a believer in mathematics games to increase student achievement, I found this book to be a welcome resource for ideas. It includes reproducible pages in the back so the games are very easy to use. The book is “handbook” size, however; I would have preferred an 8" × 11" size with larger reproducible pages and student work samples. Teachers can use *Deca Dice* games during mathematics lessons, to reinforce a concept in mathematics centers, or they can send the games home as a parent connection. For these reasons, I certainly recommend this book to teachers who wish to motivate their students to become stronger mathematicians.—*Susan Vohrer, Baltimore County Public Schools, Baltimore, MD 21204.*

Technology

Calculation Skills Series: Volumes 1–4. Volume 1: Addition and Subtraction, basic level. ISBN 1-897016-81-6; **Volume 2: Multiplication and Division, basic level.** ISBN 1-897016-82-4; **Volume 3: Addition and Subtraction, advanced level.** ISBN 1-897016-83-2; **Volume 4: Multiplication and Division, advanced level.** ISBN 1-87016-84-0. 2004. School site, \$249; single, \$19.95 each. PC Windows 98/ME/2000/XP, Pentium II, 400 MHZ, 96 MB RAM, CD-ROM Drive, VGADisplay, 25 MB hard-disk space, 16-bit color. Core Learning, 4211 Yonge Street, Suite 619, Toronto, ON M2P 2A9, Canada, (800) 270-4643.

This four-CD set is designed to help develop skills in the fundamental operations of addition, subtraction, multiplication, and division through practice drills. The CDs offer a basic and advanced level of addition, subtraction, and calculating money change, and a basic and advanced level of multiplication and division. Each CD includes a helper site for a parent or teacher to use. This stores records

for students using the drills, with space for three records on the home version and forty on the school version. Additionally, the CDs include brief lessons to teach the processes for each mathematical operation, a tutorial on the use of the number keypad, and specific information in the helper section on what each drill contains.

The drills are designed for use by students in third grade and above. Each drill consists of ten problems drawn from a problem database of one hundred questions. The end of each set of problems shows students’ correct answer score and the time needed to complete the problems, with incorrect problems highlighted. Students’ personal best time is recorded and displayed every time they reattempt the drill. The problems are clearly displayed in a horizontal arrangement (for example, “14 + 5 =”) with a minimum of distractions, and the directions are very clear.

For students who are having difficulty memorizing number facts, these drills could be a useful supplement to teacher or parent instruction. The pace can be fast or slow, and the display of personal best time motivates students to improve with each set of problems. I liked that the program highlights incorrect problems. The record-keeping feature is also very beneficial, storing the last five results for each student and making it possible for only the instructor to have access to those records.—*Colleen Thrailkill, Davidson Elementary School, Davidson, NC 28036.*

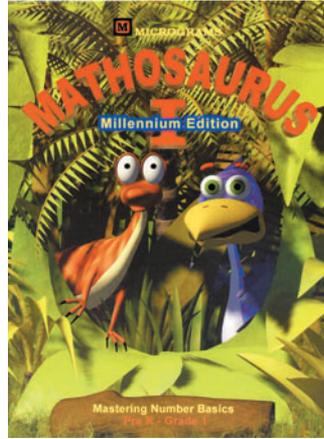
Mathosaurus Millennium Edition, Micrograms Software, 2003. \$29.95 per level for home (1 copy); \$44.95 per level for school pack (2 copies); \$114.95 per level for lab pack (5 copies); \$695.00 per level for unlimited schoolwide network/site for the complete set. Computer system (Windows, Mac): Windows XP/2000/NT, ME/98/95; requires Pentium machines or Power Macs with CD-ROM drives. Micrograms Software, 9934 North Alpine Road #108, Machesney Park, IL 61115, (800) 338-4726.

Anthropomorphized dinosaurs host each program in this series for elementary students, with instruction options in English or Spanish. I explored the “Mastering Number Basics” program designed for grades pre-K–1.

The program opens with a splash screen and vibrant music, but without any instructions on how to begin. One click on the screen moves the user to a main menu where Molly, a pink, baby-voiced

triceratops, asks students to choose the bubble, the ice cream, the balloons, or the baby. These patterns correspond to those on the numbers 1, 2, 3, and 4. Choice 1 is “Counting,” 2 is “Creating and Matching Sets,” 3 is “Comparing Sets,” and 4 is “Counting by Steps” by 1s, 2s, 5s, and 10s. After choosing the number, students move into one of the four activities.

“Mastering Number Basics” seems to be missing many of the features that would allow pre-K–1 students to independently navigate and understand the program. When choosing 1, 2, 3, or 4, nonreaders do not know what each program is about. I would expect a program for children this young to read the choices out loud with a click on the title. Likewise, when entering an activity such as “Counting” (bubbles), no prompts are available to guide students beyond the initial request. I would expect hints behind the bubbles or the bubble blower, and a list



of the choices for students in numbers as well as words. Few students at this age are able to select the word *eight*, even if they have counted correctly. In other activities, children must select a number from the keypad and then press enter or return. If students key in only the number, no prompt exists to suggest the next step.

After each set of five problems, the program returns to a screen where students are awarded a rock for their efforts. I found this break too frequent for a young student’s attention span, and the path back to more problems unclear. Despite the charming dino-hosts and the interesting animation effects, children who are capable of navigating this program will likely have mathematics skills beyond those the program is designed to develop. The program would be difficult for most pre-K–1 students to work through without adult assistance.—*Kari Augustine, Cottage Grove School, Cottage Grove, WI 53527.* ▲