

Introduction

STANDARDS

Research and Standards

Educators agree that rounding, reasonableness, and estimation are essential skills in many subject areas, not just math. Whether in reading, math, science, or social studies, students learn these skills best when they “see the relationships between what they study and its applications in real-world contexts” (SCANS, 2000).

Basic Math Practice: Rounding, Reasonableness, and Estimation was designed to promote basic mastery for students of all levels. Many of the activities require students to read, write, and apply math skills to solve problems. Research shows that “reading and writing activities can help students analyze, interpret, and communicate mathematical ideas” (*EDThoughts*, 2001). Because “integrating literacy activities into mathematics classes helps clarify concepts and can make mathematics more meaningful and interesting” (*EDThoughts*, 2001), the real-world problems and word problems in this book are written at a low reading level. Therefore, students can successfully read the problems, determine what operations or skills to use, and then apply the skills to find the solutions.

Like reading, writing is an important skill that should be incorporated into math problems. Since “solving mathematics problems is a natural vehicle for increasing students’ writing competence” (*EDThoughts*, 2001), many of the activities in this book include journal-response questions. Students must explain in their own words the steps, process, or justification for their solution. Research suggests that “asking students to write mathematics journals about their problem-solving experiences or to articulate and defend their views about mathematics-related issues provides opportunities to clarify their thinking and develop communications skills” (*EDThoughts*, 2001). Clements points out that all learners develop informal learning strategies, and that teachers should determine and build on these strategies to develop mathematical concepts and procedures (2000).

This book meets both state and national standards (including the National Council of Teachers of Mathematics Standards 2000 Project) regarding rounding, reasonableness, estimation, and mathematical connections. As students complete the activities in this book, they will:

- compute and make reasonable estimates.
- verify and determine the reasonableness of their results with respect to the original problem.
- identify real-world applications for rounding and estimation.
- apply rounding, reasonableness, and estimation in working with quantities, measurement, computation, and problem solving.
- use written explanations to express mathematical ideas precisely.

Clements, D. H. (2000, Summer). Translating lessons from research into mathematics classrooms: Mathematics and special needs students. *International Dyslexia Association: Perspectives*, 26, 31–33.

EDThoughts: What We Know About Mathematics Teaching and Learning. (2001). McREL. Retrieved March 8, 2005, from http://www.mcrel.org/erc/products/edthoughts_math/index.html.

The Secretary’s Commission on Achieving Necessary Skills. (2000). *What Work Requires of Schools: A SCANS Report for America 2000*. U.S. Department of Labor. Retrieved March 8, 2005, from <http://wdr.doleta.gov/SCANS/whatwork/whatwork.pdf>.