

If there is a foundational building block for understanding fractions, considering fractions as numbers gets my vote. The Common Core State Standards for Mathematics' focus on fractions as number within the Number and Operations—Fractions content domain underscores this importance. And, yes as learners experience, understand, and develop proficiency with fractions a sense of number emerges: Fraction Sense, the desired prerequisite for developing understanding and proficiency, even fluency, with operations involving fractions and decimals, and the readiness for middle grade work with ratio and proportion.

The second edition of *Beyond Pizzas & Pies*, like the first edition, addresses a major challenge for every third- through fifth-grade teacher I have ever met. Fractions—defined as  $a/b$  fractions, decimals, and related percents—are important building blocks for higher-level mathematics. This edition also includes video clips of students filmed in actual classrooms who are engaged in a sampling of the book's activities, thus providing more professional development opportunities for this amazing resource. I could go on and on here, but allow me to provide just a few indicators as to the importance of fractions as numbers—considering partitioning/sharing, equivalence, use of varied representations, and comparing and ordering fractions as elements of these prerequisites of fraction sense and necessary prior to extensive work with operations involving “these” numbers ( $a/b$  fractions and decimals).

- In 2008, more than 740 teachers of algebra responded to a National Mathematics Advisory Panel survey about the preparation of their students for algebra. Teachers identified rational numbers as a major area of concern, and the Panel listed proficiency with fractions as a major goal for preK–8 mathematics education.
- Only 50 percent of eighth-grade students successfully arranged  $\frac{2}{7}$ ,  $\frac{1}{12}$ , and  $\frac{5}{9}$  from least to greatest (NAEP 2004).
- Only 29 percent of seventeen-year-old students translated 0.029 as  $\frac{29}{1000}$  (NAEP 2004).
- Finally, while we all have our favorite fraction stories, consider this one. I once asked a fifth grader where I might place  $\frac{9}{5}$  on a number line, the student insisted that this could not be done, “because nine-fifths is more than one.” By implication, number lines end at 1!

As we consider the “curricular fit” of  $a/b$  fractions, decimals, percent, and their middle grade extensions involving ratio, rate, and proportion, we must attend to the need for teachers to address foundational fraction concepts. Check that off—this book does continues to do this—and the access to classroom videos makes it even better! Take a look at each chapter. First, note how fractions are approached with early opportunities involving partitioning and sharing (which, by the way, is far too frequently disregarded in typical curricular expectations). Next, see the progression toward the importance of equivalence, comparing, and ordering, and making sense of fractions and their more frequently used equivalent: decimals. In addition, this amazing resource examines contexts where,

yep, sometimes you'd rather have  $\frac{1}{3}$  than  $\frac{2}{3}$ . And it also considers the appropriateness of particular representations, a particularly important topic for those implementing the Common Core State Standards for Mathematics (CCSSM).

Importantly, Julie McNamara and Meghan Shaughnessy have found a way not only to insert important research into this work but also to blend it with the issues addressed. And this is done on a consistent basis. I am a firm believer that we must all attend to research, and this book exemplifies the phrase linking research to practice. Even the title grabs me: you'd better believe that foundational work with fractions is beyond the overused references of pizzas and varied and sundry other pies!

At this writing, schools are in the implementation stage of the Common Core State Standards for Mathematics. However, whether you are following the Common Core, your own state's standards or your district's adopted textbook, this resource has got you covered. All fractions are important, and *Beyond Pizzas & Pies* examines the foundations necessary for all students.

I am going to continue to use this book—a lot (I keep one copy at home and one at the office for easy access)! It will be at my side as I think about fractions as critically important mathematical knowledge for teaching. *Beyond Pizzas & Pies* and the accompanying DVD will also help me think of ideas for professional development, for teaching, and for continuing the quest we all have for our students: developing number sense and ensuring that number sense extends to fractions—Fraction Sense. Thanks, Julie and Meghan.

—Francis (Skip) Fennell, L. Stanley Bowlsbey Professor  
of Education & Graduate and Professional Studies,  
McDaniel College Westminster, Maryland, and Past President,  
National Council of Teachers of Mathematics Project  
Director: Elementary Mathematics Specialists and  
Teachers Leaders Project, [MathSpecialists.org](http://MathSpecialists.org)