

PREFACE

ORGANIZATION OF THE BOOK

The title of this resource includes the word *Uncomplicating*. The choice of that term is based on the premise that the way we uncomplicate what we teach is not to come up with a formulaic approach to instruction but to provide the opportunity for a deep and rich understanding of what is being learned. Many teachers have described to me the difficulty their students experience in learning about fractions. Therefore, it seemed valuable to try to “uncomplicate” that particular topic.

This resource is organized by grade level around the Common Core State Standards for Mathematics (CCSSM) related to fractions and to some extent to decimals, ratios, and proportional thinking. The grades covered in this resource begin with Grade 1, where the first relevant standard is found in the geometry domain, and end with Grade 7, where the focus is on operations with rational numbers and proportional thinking. In each case, a portion of the relevant standard is presented, followed by a delineation of important underlying ideas associated with that portion of the standard, as well as some good questions to ask to bring out those underlying ideas.

Those underlying ideas include:

- background to the mathematics of the standard
- suggestions for appropriate representations, including manipulatives, for those specific mathematical ideas
- suggestions for explaining ideas to students, and
- cautions about misconceptions or situations to avoid

Following each set of underlying ideas is a group of questions that can be used for either classroom instruction, practice, or assessment. These include many open questions, as well as more directed conceptual, rather than procedural, questions that might be supplemental to what teachers are normally provided in the resources they use. In addition, specific mention is often made of the Common Core State Standards for Mathematical Practice.

For Whom Is This Book Useful and Why?

This resource is designed to aid math teachers of Grades 1–7 to help students become more proficient and more comfortable working with situations involving fractions. It is also planned as a resource for math coaches in assisting classroom teachers in their transition to teaching mathematics within the demanding framework of the Common Core State Standards. These new standards challenge all of us to help students become mathematical thinkers, not just mathematical “doers”; the goal has become the development of students who can reason and represent mathematical situations in multiple ways, and explain their reasoning to others. I also expect this book to be helpful to preservice teachers as they prepare themselves to understand and teach math to foster a deep level of understanding.

Considering the Bigger Picture

While I hope that all readers will read the entire book, I particularly suggest this approach for math coaches and preservice teachers. For grade-level or grade-band teachers, I suggest reading the Introduction and the grade-level sections that most directly apply for their particular groups of students, but also becoming acquainted with the mathematics related to fractions taught in grades directly below and above. Because students in any classroom are at different levels of knowledge, in order to differentiate instruction appropriately, the teacher must be aware of missing prerequisite knowledge as well as suitable directions for moving forward.

Lastly I hope that reading this book ensures that math makes more sense both to the readers and, ultimately, to their students.

ACKNOWLEDGMENTS

I have been fortunate to work with excellent editors with Teachers College Press, and I would like to thank them for both their faith in me and their support.

I have also had the good fortune to have met so many teachers who have responded positively to my approach to mathematics teaching and learning. They have continued to encourage me to write more. I would like to thank these professionals for their personal support, as well as for sharing my work with colleagues.

I would also like to thank the reviewers who looked at earlier versions of this manuscript and who made very helpful comments.