

**Decimal Place Value and Operations**

Guide for using Extending Children’s Mathematics - Fractions and Decimals- Innovations in Cognitively Guided Instruction (Susan B. Empson and Linda Levi) as a resource.

**Why is this book valuable?**

This book is based on research that emphasizes “what children can do when given the chance to *reason things out*

*for themselves* and the kinds of mathematics understanding that emerges”. (page xviii)

**Is this book compatible with Common Core State Standards?**

Yes! See page xxiv for discussion about the CCSS progression of teaching fractions and decimals and how this book aligns with that progression and with the Mathematical Practice Standards.

**Helpful Resources for Teacher Learning**

**Reading these sections before beginning instruction and planning for the units will be beneficial for all teachers.**

**Pages xvii - xxvi**

Introduction - Issues in Learning Fractions and Decimals: Rethinking Our Approach

This provides a great justification for why this book is beneficial when trying to help students understand fractions and decimals

**Pages 225 -232**

Chapter 9 – The Long View – Learning to Use Children’s Thinking to Guide Instruction

Though this chapter is at the end of the book, it gives a good overview of how listening to students can guide your instruction. It explains the benefits, as well as challenges, of learning to truly listen to what students understand. For example, “listening with the intention to hear what a student has to say without imposing your own way of thinking is a significant challenge…It can be hard for a teacher to listen without correcting or providing hints to a child who is hesitating or struggling and to know what question to ask next when a child uses an unfamiliar strategy. However, the more you interact with students about their thinking, the more you will learn and the more curious you will likely become…The way you listen and what you do with what you hear are likely to change.” (page 227)

**Helpful Resources for Teacher Learning and Planning for Unit 3**

**Unit 3: Place Value & Operations with Decimals**

**\*Note** – This document was designed to be a curriculum resource to help you address your grade level standards. If your students are struggling, please refer to our “Grade Level Curriculum Pages” – specifically 4th Grade Unit 4.

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| **Fifth Grade Unit 3 Standards****\*Note – This is not all of the standards for Unit 3. The standards listed below are the only standards addressed in this resource.** | **Pages that Align with the Fifth Grade Unit 3 Standards** |
| * **5.NBT.1** Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.

**5.NBT.2** Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.**5.NBT.3** Read, write, and compare decimals to thousandths.**5.NBT.3a** Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000).**5.NBT.3b** Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.**5.NBT.4** Use place value understanding to round decimals to any place. | * \*Note – Not all of these standards are specifically addressed in the book, but having an understanding of the pages below will be helpful in developing student understanding to meet each standard.

**Chapter 7: Understanding Decimals*** Teacher Learning (Pages 149 – 170)
* Problems to use with students (Pages 171 – 173)
* Instructional Guidelines for Teaching Decimal Numbers (Pages 174 – 177)
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| **5.NBT.7** Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. | **Chapter 7: Understanding Decimals*** Teacher Learning (Pages 149 – 170 Especially page 166)
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