
Math Mammoth Decimals 1

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Introduction

Math Mammoth Decimals 1 is an introduction to decimal numbers, and is best suited for 4th to 5th grade math.

This book deals with decimal numbers that have tenths and hundredths - numbers with a maximum of *two decimal digits*. We only deal with some of the basic operations: addition, subtraction, and multiplication by a whole number, with a strong emphasis on mental calculations. The idea is to lay a *solid conceptual foundation* so that the student does not succumb to rote memorization of rules and procedures without understanding.

The two operations not studied in this book are multiplying a decimal by a decimal, and decimal division. Those can be found in *Math Mammoth Decimals 2*.

We use number lines, fraction models, and place value charts to teach the concepts of *tenths* and *hundredths*. In studying addition and subtraction, we compare decimal operations with corresponding fraction operations in order to show why they work.

A common student error is to add $0.4 + 0.8 = 0.12$. Here, the student may be considering the decimal part of a number as a 'separate whole number', and try to apply whole number arithmetic within the decimal part. To help such a student, read the decimals as fractions and emphasize how fractions are added. Think: four tenths plus eight tenths equals twelve tenths, which is 1.2.

When we add decimals of different “length” (numbers with different amounts of decimal digits), such as $0.4 + 0.08$, you can “tag” a zero to the end of 0.4 to make adding easier. The problem becomes $0.40 + 0.08$. and Now, both addends have hundredths, so the answer is simply 48 hundredths or 0.48. This is the same thing as converting the corresponding fractions (four tenths and eight hundredths) to have the same denominator (forty hundredths and eight hundredths).

Other topics covered are comparing decimals, multiplying a decimal by a whole number, rounding, estimating, and money problems.

I wish you success in teaching math!

Maria Miller, the author

Helpful Resources on the Internet

Use these free online resources to supplement the “bookwork” as you see fit.

Mathematical Interactivities

<http://mathematics.hellam.net/>

Find several games related to fractions and decimals in the **Number Puzzles** section, including:

- **Decimal Challenge** - Guess the decimal number between 0 and 10. Each time feedback tells whether your guess was too high or too low.
<http://www.interactivestuff.org/sums4fun/decchall.html>
- **Switch** - Put the sequence of decimal numbers into ascending order by switching them around. Refresh the page from your browser to get another problem to solve.
<http://www.interactivestuff.org/sums4fun/switch.html>
- **Scales** - Move the pointer to match the decimal number given to you. Refresh the page from your browser to get another problem to solve.
<http://www.interactivestuff.org/sums4fun/scales.html>

Smaller and smaller maze

Practice ordering decimal numbers and find your way through the maze.

<http://www.counton.org/magnet/kaleidoscope/smaller/index.html>

A Decimal Puzzle

Make every circle add up to 3.

http://nlvm.usu.edu/en/nav/frames_asid_187_g_2_t_1.html?open=instructions&from=category_g_2_t_1.html

Fraction/Decimal Worksheets

Change fractions to decimal numbers or decimal numbers to fractions.

<http://www.homeschoolmath.net/worksheets/fraction-decimal.php>

Decimal and Square Root Gizmos from Explorelearning.com

Interactive “Gizmos” illustrating comparing and ordering decimals, multiplying with decimals, sums and differences with decimals, solving equations with decimals, and exploring square roots. Exploration guide and assessment questions included. By subscription, but has Free 30-day trial account. *Excellent resources.*

<http://www.explorelearning.com/index.cfm?method=cResource.dspResourcesForCourse&CourseID=211>