

math

MAMMOTH

Decimals 1

Tenths

Hundredths

Add and subtract
decimals with
mental math

Add and
subtract
decimals
vertically

Money with mental math



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By Maria Miller

Sample pages from
<https://www.mathmammoth.com>

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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 grade level.

This book deals with decimal numbers that have tenths and hundredths—numbers with a maximum of two decimal digits. We only deal with addition and subtraction, with a strong emphasis on mental calculation. 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 why it is done that way.

The two operations not studied in this book are multiplication and division of decimals. Those are found in *Math Mammoth Decimals 2*.

This book uses 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 “lengths” (numbers with different amounts of decimal digits), such as $0.4 + 0.08$, you can tag a zero on the end of 0.4 to make adding easier. The problem becomes $0.40 + 0.08$. 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).

While the focus of the book is place value, addition, and subtraction, the book also covers some mental math techniques in the context of money. For example, to find $7 \times \$2.99$, you can multiply $7 \times \$3 = \21 , and then subtract seven cents, to get the total of \$20.93.

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.

Fractions & Decimals Matching Game

Practice converting fractions to decimals while also uncovering a hidden picture in this fun matching game!

<https://www.mathmammoth.com/practice/fractions-decimals>

Decimal Place Value — Hundredths

Practice identifying numbers that have two decimal digits with this interactive multiple-choice quiz.

http://www.henryanker.com/Math/Number_Sense/Writing_Numbers/Writing_Decimals_100ths.swf

Modeling Decimals (Area and Grid Models)

An interactive “gizmo” for modeling decimals in a grid or on a number line. It is by subscription, but you can try the gizmo for 5 minutes for free.

<http://www.explorelarning.com/index.cfm?method=cResource.dspDetail&ResourceID=1007>

Decimals on a Number Line

This multiple-choice quiz asks questions about the position of letters on the number line.

http://www.henryanker.com/Math/Fractions/Number_Line_Fractions_Decimals/Decimals_on_Number_Line_1.swf

Printable Math Puzzles

This page has several brain teasers and puzzles which will help the student apply and practice their math skills to solve a range of challenges and number problems.

<https://www.math-salamanders.com/printable-math-puzzles.html>

Decimal Challenge

Guess the decimal number between 0 and 10. Each time you get a response that tells whether your guess was too high or too low.

<http://www.interactivestuff.org/sums4fun/decchall.html>

Switch

Switch the decimals around until they are in ascending order. 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>

Fraction/Decimal Worksheets

Change fractions to decimal numbers or decimal numbers to fractions.

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

Fraction Snake Game

Arrange the numbers on the snake in order from the largest on the head to the smallest at the tail.

http://www.transum.org/software/SW/fracorder/fraction_order.asp

Rock Hopper

Help the frog reach the other side of the pond by clicking on the rocks that add up to the correct answer.

http://www.eduplace.com/kids/mw/swfs/rockhopper_grade4.html

Bubble Burst

Burst the bubble that has the correct answer to the decimal addition.

<http://www.mathnook.com/math/bubbleburst.html>

Decimals Quiz

Practice adding and subtracting decimals in this 10-question quiz.

<https://www.thatquiz.org/tq-3/?-j163-l5-p0>

Decimal Subtraction—Matching

Match each decimal subtraction with the correct answer.

<http://www.sheppardsoftware.com/mathgames/decimals/matchingDecimalsMinus.htm>

Decimal Mania—Addition and Subtraction

Practice decimal addition and subtraction with this interactive exercise.

<http://cemc2.math.uwaterloo.ca/mathfrog/english/kidz/addsubdec.shtml>

Adding Decimals: Hundredths

Practice adding numbers that have two decimal digits in this interactive online activity.

https://www.khanacademy.org/math/arithmetic/arith-decimals/arith-review-add-decimals/e/adding_decimals

Get to the (Decimal) Point Addition and Subtraction Card Games (pp. 60-63 of the PDF file)

This is a card game with four different variations that practice decimal addition and subtraction.

http://www.pepnonprofit.org/uploads/2/7/7/2/2772238/acing_math.pdf

Decimals Magic Square

Add and subtract decimals to make a “magic square”. Add to find a magic sum and subtract to find the missing addends.

<http://www.hbschool.com/activity/elab2004/gr4/14.html>

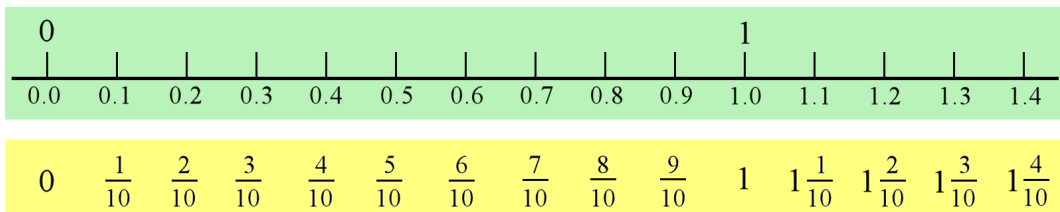
Convert Units (Metrics)

Practice converting between metric units of measurement in this interactive online exercise.

<https://www.khanacademy.org/math/cc-fifth-grade-math/imp-measurement-and-data-3/imp-unit-conversion/e/converting-units>

Decimal Numbers—Tenths

The number line between 0 and 1 is divided into ten parts. Each of these ten parts is $\frac{1}{10}$, a **tenth**.



Under the tick marks, you see **decimal numbers** such as 0.1, 0.2, 0.3, and so on.

These are the same numbers as the fractions $\frac{1}{10}$, $\frac{2}{10}$, $\frac{3}{10}$, and so on.

The digit right after the decimal point (such as the digit 3 in 0.3) tells us **how many tenths** the number has. That digit is in the tenths place. So, 0.3 mean—and is read as—three tenths.

0.6 means six tenths, or $\frac{6}{10}$.

1.5 means 1 whole and 5 tenths, or $1\frac{5}{10}$.

Note: $\frac{1}{8}$ is *not* 0.8. Instead, 0.8 is eight tenths, or $\frac{8}{10}$.
The denominator is always 10!

1. Write the fractions as decimals and vice versa.

a. $\frac{7}{10}$	b. $2\frac{4}{10}$	c. $10\frac{9}{10}$	d. 0.9	e. 29.3
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2. Write the decimal and the fraction that each picture shows.

a.	b.	c.
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3. Shade parts to show the decimals.

a. 0.4	c. 1.6	d. 2.8
b. 0.1		