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Introduction

Math Mammoth Place Value 5 is a short worktext that covers place value up to the billions—that is, numbers up to 12 digits—rounding them, and using a calculator. It is suitable for 5th and 6th grades. The lessons are taken from the complete curriculum I have written for the 5th and 6th grades (Math Mammoth Light Blue Series).

This book uses the “short scale” commonly used in the USA for naming large numbers; that is, 1 000 000 000 is called one billion (and not a thousand million). We have another version of this book that uses the “large scale”, commonly used in Latin American and European countries, where the number 1 000 000 000 is called a thousand millions.

The first lesson covers place value up to millions. Then, we study place value up to billions. Next we study exponents and powers. After working with addition, rounding, and scientific notation, there are two lessons about calculator usage.

I have received numerous comments on the harm that indiscriminate calculator usage can cause. If children are allowed to use calculators freely, their minds get “lazy,” and they will start relying on calculators even for simple things. It is just human nature!

As a result, students enter college without even knowing their multiplication tables by heart. Then they have tremendous trouble if they are required to use mental math to solve simple problems.

So we educators need to *limit* calculator usage until the students are older. Children can *not* decide this for themselves, and definitely not in fifth grade.

However, I realize that the calculator is extremely useful, and students do need to learn to use it. In this curriculum, I try to show the students not only *how* to use a calculator, but also *when* to use it and when *not* to use it.

This book includes problems where calculator usage is appropriate. We also practice estimating the result before calculating it with a calculator. In the last lesson, students need to choose whether mental math or a calculator is the best “tool” for the calculation.

I wish you success in your math teaching!
Maria Miller, the author

Helpful Resources on the Internet

*Use these free online resources to supplement the “bookwork” as you see fit.
You can access an up-to-date online version of this list at
www.mathmammoth.com/weblinks/place_value_5.htm*

Naming Numbers

These pages teach number naming skills covered in K-8 math courses. Each page has an explanation, interactive practice and challenge games about naming numbers.

<http://www.aaamath.com/B/nam.htm>

Megapenny project

Visualizes big numbers with pictures of pennies.

<http://www.kokogiak.com/megapenny/default.asp>

Powers of ten

A 9-minute movie that illustrates the dramatic changes of scale when zooming in or out by powers of ten (40 powers of ten), starting from a picnic blanket and ending in the universe, and then starting from a hand to the proton inside an atom.

<http://www.youtube.com/watch?v=0fKBhvDjuy0>

Cookie dough

Practices naming big numbers.

www.funbrain.com/numwords/index.html

Keep My place

Fill in the big numbers to this cross-number puzzle.

<http://www.mathsyear2000.org/magnet/kaleidoscope2/Crossnumber/index.html>

Estimation at AAA Math

Exercises about rounding whole numbers and decimals, front-end estimation, estimating sums and differences. Each page has an explanation, interactive practice, and games.

<http://www.aaamath.com/B/est.htm>

Place Value Game

Create the largest possible number from the digits the computer gives you.

Unfortunately, the computer will give you each digit one at a time and you won't know what the next number will be.

<http://education.jlab.org/placevalue/index.html>