Math Mammoth Multiplication 1

Contents

Introduction

This text is a basic tool - a self-teaching, self-explanatory worktext - to learn multiplication concept and the times tables. It has two parts: The first part concentrates on the concept of multiplication, order of operations, and word problems. The second part is all about memorizing the times tables.

Math Mammoth Multiplication 1 book is intended to be a ***TOOL for teaching.*** You do not have to study every lesson in this exact order, or have your child or students complete every exercise, if something else works better. Use the lessons as you need them. Skip around, back and forth, if need be. Remember the goal is to understand the multiplication concept and memorize the times tables. After that, the student can go on to division.

I have created a systematic approach to memorizing times tables: you study one table at a time to mastery. However, the best way to memorize the tables is NOT to start down the line: 1 x 7 = 7, 2 x 7 =14, etc. Always start by memorizing the skip-counting pattern 7, 14, 21, 28, etc. first. Then work on memorizing which fact is associated with which answer. This way your child not only knows what is 8 x 7 but also knows all of it 'backwards' - that 56 is in tables of 8 and 7. That is an enormous help later, when studying division, factorizing, finding LCM's or GCF's.

Besides that, the book includes a 12x12 grid at the end of almost every lesson in part 2. The answer boxes for facts not yet studied are shaded dark and are not to be filled. Little by little, the shaded areas get less and less, and the progress and how little is left is very visible to the student.

The individual multiplication tables are NOT studied in the order of 2, 3, 4, etc. but instead the 'easy' tables first, to lessen the memorization efforts. The lessons emphasize to the student that one multiplication fact is always in two different tables. This way, in the last tables studied, the tables of 7, 8, and 12, are only very few totally new facts.

While this book does not include games, I encourage you to use games for motivation and for practice. However, the main memorization requires a mental effort from the student: sitting down with the skip-counting list, then with the facts, reading them, and then trying to remember them. The basic age-old technique of covering the list and trying to remember it is still very effective!

I do not want to discount the value of songs or mnemonic devices. But they tend to isolate the facts in the child's mind as separate 'odd trivia'. This book intends to always keep showing and studying the patterns found in the times tables - and emphasizing the 'backwards' part of it to facilitate later learning of division.

If you study the tables one time well and get a solid foundation, the students do not need to come back to them in fourth, fifth, sixth, etc. grade. One time is enough, and they can move on to division and other topics.

Part 1: Multiplication Concept

The first lessons introduce the multiplication concept as groups of same size. Then the lesson *Multiplication as an Array* shows another model for multiplication: objects arranged in rows and columns. In this lesson the rows are thought of as groups - and so it follows the same model of multiplication as the idea of having many same-size groups. The whole lesson is still presented with pictures.

Multiplication on a Number Line shows how the the same-size groups correspond to repeated 'jumps' or 'skipping' on a number line. In this lesson, the child should connect skip-counting with multiplication.

Multiplication in Two Ways concentrates on the fact that it does not matter in which order the factors are. Objects presented in an array show this fact nicely when you either consider the rows as groups, or the columns as a group. Jumping on the number line is studied also.

Multiplying By Zero is illustrated with both the model of several groups of zero size (and zero groups of some size) and with the model of making several zero jumps on a number line (and making zero or no jumps).

Understanding Word Problems shows how word problems including multiplication have the idea of "each", "every one", or "all": each thing is doing or having the same number of something. If the problems are difficult, the student can draw a picture to help, such as drawing flowers in pots, pizza slices, etc.

Order of Operations teaches that multiplication is to be done before addition or subtraction, and addition and subtraction are done from left to right.

Understanding Word Problems, part 2 has more challenging problems. Often the word problems in school books are far too easy, and that causes students to just take the numbers that appear in the problem, apply the operation the lesson is about, and get by without really understanding. If is too difficult, skip it for now and come back to it later - for example after some times tables practice. However, before you give up, first try to help your student by drawing a picture for each problem.

Part 2: Memorizing Multiplication Tables

Effective Oral Drilling is meant for the teacher. It is a guide to how to do drilling practice.
Table of 2 - 11 new facts to learn.
Table of 4 - 10 new facts. These are doubles of those in the table of two.
Table of 10 - 9 easy facts.
Table of 5 - 8 new facts.
More Practice and Review is a break from memorizing new tables.
Table of 3 - 7 new facts.
Table of 6 - 6 new facts. These are doubles of those in the table of 3.
Table of 11 - 5 new facts, four of them are easy.
Table of 9 - 4 new facts.
More Practice and Review - Another break.
Table of 7 - 3 new facts.
Table of 8 - 2 new facts.
Table of 12 - 1 new fact.

I wish you success with math teaching!

Maria Miller, the author