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# Math Mammoth Division 1

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# Introduction

*Math Mammoth Division 1* is a worktext about the concept of division, basic division facts (as based on the multiplication tables), and the concept of remainder in division. It is most suitable for third grade, after the student knows the multiplication tables.

I recommend the student know the multiplication tables fairly well before starting this book. It is not a problem to study the first two lessons—the basic concept of division—while still learning the multiplication tables, but the lessons after that are designed for a learner who is familiar with the tables.

In fact, the approach taken here to teach division facts is to simply base them on the multiplication tables, and not to teach them as a separate set of facts to memorize. This is very efficient, and works well when the student knows the times tables, but is near useless for someone who doesn't know them.

The division concept in itself is basically “backwards” multiplication, and thus has to do with equal-size groups. There are two basic ways to illustrate division concretely. The first way is **equal sharing**: you divide or share items equally between people. For example, the problem  $12 \div 3$  would be interpreted as, “If you share 12 bananas equally between 3 people, how many bananas does each one get?”

The second way has to do with **grouping**. The problem  $12 \div 3$  is interpreted as, “If you have 12 items, how many groups of three items can you make?” This is often called *measurement division*. It is important to understand these two interpretations of division so that one can solve real-life problems involving division. These two interpretations are taught explicitly in the book and students practice them through a variety of word problems.

We also study division by zero. In that lesson, students should recognize that division by zero “does not work.” I realize that in higher forms of mathematics, division by zero may be defined (such as  $1 \div 0 =$  infinity), but for third graders, we want to keep things fairly simple.

Lastly, students study the concept of remainder, or divisions that are not exact. The lesson starts by letting the student find the remainder by using visual models (you could also use manipulatives). Then students learn how to find the remainder by calculating. This concept is also studied in the Blue series book *Math Mammoth Division 2*.

The book also contains an essentially optional lesson “Number Rules” for some mathematical enrichment.

You can find free videos covering topics of this book at <https://www.mathmammoth.com/videos/> (choose 3rd grade, then division).

The answer key is appended.

*I wish you success in teaching math!*

*Maria Miller, the author*