Math Mammoth Fractions 1

Contents

Introduction

Math Mammoth Fractions 1 is the first book of two that covers all aspects of fraction arithmetic. This book covers the concepts of fraction and mixed numbers, equivalent fractions, adding and subtracting like and unlike fractions, adding and subtracting mixed numbers, and comparing fractions. The book *Fractions 2* covers simplifying fractions and multiplication and division of fractions.

I have made a set of videos to match many of the lessons in this book. You can access them at https://www.mathmammoth.com/videos/fractions_1.php

Studying fractions involves lots of rules, and many students learn them only mechanically, not really understanding the underlying concepts and principles. Then they end up making lots of mistakes because they confuse the different rules and either apply the wrong one or apply the right rule but don't remember it quite right. All this can make students even fear fractions in math.

To avoid that, this book uses the visual model of a pie divided into slices all the way through the book. It is a very natural model because it uses a circle that can be divided into any number of circle sectors (slices). When students work with this model from lesson to lesson, they will eventually be able to "see" these pies in their mind. This, in turn, gives them the ability to do many of the easier fraction calculations mentally. It also enables students to really UNDERSTAND these concepts, and not just learn mechanical rules.

You are welcome to use manipulatives along with the book; however the visual pie model is probably sufficient for most students in the fifth grade level. I have also included (in the appendix) printable cut-outs for fractions from halves to twelfths. You can use them to make your own fraction manipulatives.

To make the manipulatives sturdier, glue the printed pages onto cardboard, and cut the parts only after gluing. The whole circle is there to illustrate "one whole" - needed when studying mixed numbers. You will probably need to print at least two copies of each cut-out page. You can use the white cut-out fractions if you need to save on ink and let the children color them. Just use consistent colors so that thirds are always the same color, fourths are the same color, etc.

In the first lesson, *Fraction Terminology* explains the various parts of a fraction as well as what the different types of fractions are known as. The student can refer back to this information as needed as he does the lessons in this book.

The lesson *Review: Mixed Numbers* needs to be thoroughly understood before progressing further.

The next lessons, cover adding and subtracting mixed numbers and are well illustrated with "pies" to help the student visualize the concept of regrouping fractions so they can complete the math.

Then, it is time to study equivalent fractions, as a prerequisite for adding unlike fractions. Equivalent fractions are presented as parts that have been split further. The rule is to multiply both the numerator and the denominator by the same number, but try to emphasize the terminology of "splitting the existing parts into so-and-so many pieces" or something similar. That should help students to understand the concept instead of memorizing a mechanical rule.

Adding and Subtracting Unlike Fractions is an introductory lesson in the sense that the student is not yet introduced to the rule for finding the common denominator. In this lesson, the common denominator is either given, or the student figures it out using pictures.

Finding the (Least) Common Denominator emphasizes the idea that we need to find a common denominator, and then convert the fractions to like fractions before adding.

Next we study *Adding and Subtracting Mixed Numbers* with unlike fractional parts. We have some word problems in this lesson to utilize the concept of converting unlike fractions to like fractions.

Then we cover the concept of comparing fractions. Once the student has mastered converting two fractions to equivalent, like fractions, this should be fairly easy.

The last lesson in the book, *Measuring in Inches,* uses pictures to illustrate measuring with inches and fractions of inches. This lesson gives the student a chance to see how fractions can become useful in measuring items in every day life as it also has some word problems to solve using fractions.

Answers are in the end of the book.

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

Helpful Resources and Games on the Internet

We have compiled a list of external Internet resources that match the topics in this book. This list of links includes web pages that offer:

- **online practice** for concepts;
- online **games**, or occasionally, printable games;
- **animations** and interactive **illustrations** of math concepts;
- **articles** that teach a math concept.

We heartily recommend you take a look at the list. Many of our customers love using these resources to supplement the bookwork. You can use the resources as you see fit for extra practice, to illustrate a concept better, and even just for some fun. Enjoy!

https://l.mathmammoth.com/blue/fractions1