
Preface

A Different Way of Learning

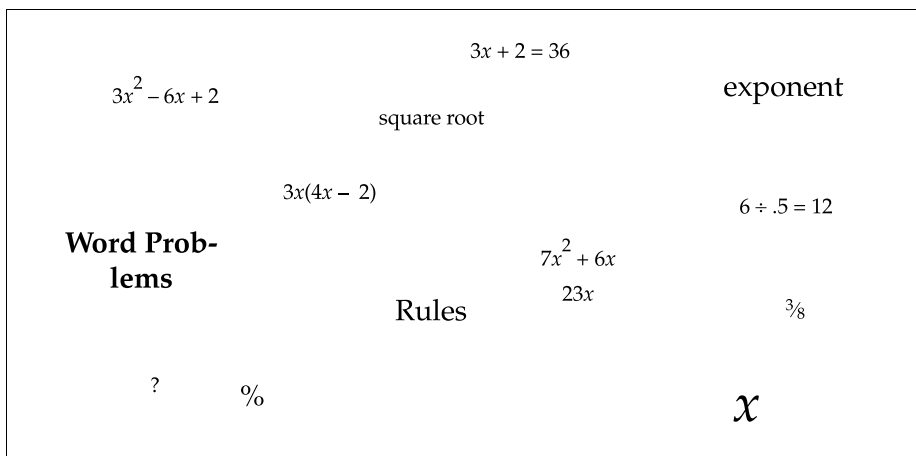
This is not a typical algebra textbook. There will be no rules or meaningless formulas to memorize, no lengthy practice of mysterious techniques.

As you use this book, you will *understand* algebra instead of *memorizing* it. This understanding will be a challenge but it will also be enjoyable; the knowledge will last your whole lifetime instead of a few weeks or years.

Understanding Instead of Memorizing

Pick a word that you know. Does the word represent something you have touched or experienced? If you look at a word like “banana” or “computer” you cannot help visualizing an object, for *language is easy to learn because it means something*.

Mathematics can be difficult to learn because it is often taught with no recognizable meaning. Do you visualize anything at all when you see $2x$, x^2 , or $\frac{2}{3} \cdot \frac{3}{4}$? Do you know what these symbols mean? Because we may not know what the symbols stand for, learning mathematics can be like attempting to memorize a long nonsense poem—a poem that does not even rhyme. Memorizing mathematics is similar to attempting to learn how to read without knowing what the words mean.



Algebra is a language, and as with Spanish, English, or Hebrew, groups of symbols have specific meanings. In algebra each symbol can be represented by a physical object; each rule is something true about all these objects; each formula or technique is just a way of discovering something about a certain group of objects.

Mathematics and Symbols

Working with objects instead of abstract symbols makes many topics of algebra very easy; once the objects have been named using algebraic symbols, the symbol manipulations become as easy and obvious as the manipulations of the objects. Learning algebra takes on the quality of learning a clever board game.

Memorization is almost never necessary because the rules make such perfect sense. (For example: “When counting, all pieces of the same size and shape get counted together.”) Exercises involve a process of discovery; it is usually obvious to each student when a successful answer is found. (For example: “Arrange all of these pieces to form a single rectangle.”) *Flip-Chip Algebra* can be learned by virtually anyone who knows the multiplication tables (and it can help in learning those tables); once the algebra is learned it will not be easily confused or forgotten.

A note to people who have difficulty with mathematics

If you have not been successful in learning algebra when it has been taught with traditional methods, then this book is for you. If you have not enjoyed algebra in the past, it may be that you have either been unable or unmotivated to memorize a large amount of meaningless information.

You *have* learned a great many other meaningful things in your life—reading, history, music—and many were not difficult. When we give algebra meaning, you will learn it in the same natural way.

This change may be difficult because we are asking you to give up the only crutch you may think you have—rote memory—and encouraging you to take the risk of believing that you will be able to understand the material without memorizing it. We know that you will be successful.

Steven Kant
Frank Edge