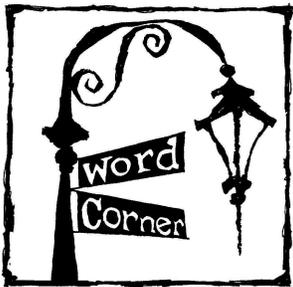


Mastering Algebra

The Three Secrets



By John McCormick

Illustrations by Tiber McCormick

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From the *Language of Math Series*[™]

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Forward

In the days of the Egyptian pyramids the techniques of math were kept secret. Knowledge is power, as Egyptian priests knew, and they kept math to themselves and only taught it to their own.

We are much luckier today. Knowledge is openly available to those who look for it. But, sometimes the truth is obscured¹ by the way information is presented or by what is *not* said.

Valuable data can, for all practical purposes, remain obscure when it's not clearly stated or when it is buried under a mountain of other facts.

This can happen to students who do not realize that success in algebra depends on understanding how algebra is different from other school subjects.

These differences remain hidden to most students and lead to a failure in the subject. This becomes very obvious to educators when they see a straight “A” student in lower math suddenly fall on his face in algebra.

¹ Obscured: hidden from view.

Many grade school math programs try to pave the way for algebra but fail to recognize the full extent of new concepts needed. This failure is so apparent that many schools now have pre-algebra courses to “fill in” the missing data. Judging from the lowered grades of second-semester algebra students one may only conclude that even “pre-algebra” is missing the boat in some respects.

This book is the direct result of the author having tutored algebra students and discovering just what they missed along the way.

Whether you're a struggling algebra student, an educator or a parent, you should find the answers to your algebra difficulties in this book.

John McCormick
November 5, 2008

Introduction

Math is easier than most people think.

We use math quite naturally each time we count, or when we consider the quantity or amount of anything. A toddler asking for “more,” is using a math concept (idea).

Math ideas, such as *amount* or *quantity*, actually come before a child knows the words to describe them.

When a toddler wants something, he doesn’t need words to know what he wants.

It is no different when a student learns math. A student first recognizes different quantities and later learns how to describe them with words. This tells us a student can understand what he is looking at or what he is doing BEFORE he is able to describe it in words².

You might ask, “How can learning occur without words?”

² Thinking without Words: the idea that thinking can occur before there are words to think with is a hotly debated subject. Much of the philosophy behind today’s teaching techniques assumes that if a student can think about a subject he must be using the words of the subject in his mind. If, as recent research seems to show, thinking can occur without words, today’s educational methods might need to be revised to include “wordless learning.”

Much in life is learned by mimicry—words aren't needed. We copy the actions of others. Grade school math is primarily learned by mimicry. Most students avoid written descriptions and learn almost exclusively by example.

It's a "*just show me!*" attitude.

And a very successful attitude it is. It enables most grade school students to learn basic math without a lot of explanation.

But, there is an underlying problem with this approach. Students get A's on their tests, but never really learn the language of math. They don't need to; they have managed to learn by mimicry.

The problem does not arise until later—when math becomes a bit more complicated. At this point, mimicry is no longer enough for learning. The earlier years of disregarding the language of math and using the "*just show me!*" approach begins to take its toll.

Without mimicry, students must rely on their understanding of math terms—they must be able to apply terms that over the years have been largely ignored.

The result: a student will begin to feel he is stupid. Of course, he's not stupid. And the new concepts are only slightly more advanced than the ones he already knows. The real problem is that he must shift gears from learning-by-mimicry to learning-by-explanation.

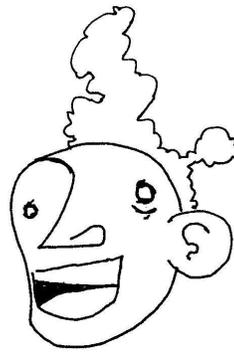
Suddenly, he is expected to understand those very words, that for years, he has been overlooking or giving little attention.

The solution: the student must go back and learn the words.

The funny thing is, he already understands the concepts. He just needs to learn which word goes with which concept.

The result:

Math is easy!



Many math programs try to pave the way for algebra but fail to recognize the full extent of new concepts needed. This failure is so apparent that many schools have pre-algebra courses to “fill-in” the missing data. Judging from the low grades of second-semester algebra students one may only conclude that even “pre-algebra” is missing the boat in some respects.

Mastering Algebra: The Three Secrets is the direct result of the author having tutored hundreds of algebra students and discovering just what they missed along the way. Whether you are a struggling algebra student, an educator or parent, you should find the answers to your algebra difficulties in this book.

I wish I had read this book before I started algebra. It would have cleared up a lot of confusion that I had to work through, especially when it came to words such as coefficient. This book makes the language of math easy to understand. Although I would have liked to have read it sooner, I am glad to have the secrets now before going into more advanced math.

R.T. college student

I hated math before reading Mastering Algebra: The Three Secret; now I love it!

S.S. high school student

Mastering Algebra: The Three Secret is a breakthrough in the teaching of math. My students have gone from thinking algebra a necessary drudgery to actually enjoying it. They now look forward to math class to find what new tricks they're going to learn.

C.L.M. high school math teacher

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