

# **BASIC ALGEBRA**

## *One Step at a Time*

NEW Fourth Edition

*by*

*Dr. Robert J. Rapalje, Retired*

*Altamonte Springs Campus*

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# **BASIC ALGEBRA: ONE STEP AT A TIME**

Fourth Edition

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## PREFACE TO NEW FOURTH EDITION

As a math instructor at Seminole Community College for thirty six years, my goal has always been to make math easy for students to understand, especially those who have had trouble with it in the past. Since the completion of my doctorate in 1987, I have written several books designed to provide easy-to-understand explanations, examples, and exercises from Basic Algebra through College Algebra. These books integrate carefully selected examples and exercises in a work-text format, allowing students to show all work right in the book and learn the necessary skills *One Step at a Time*. My own students have found these books very helpful and easy to understand.

Now, fifteen years after the third edition of Basic Algebra: One Step at a Time, finally a NEW improved fourth edition! In this edition, you will find dramatic improvements in exercises, examples, and explanations. If you like the book, then please let me know that you found it useful, and tell me how it has aided you in your quest to conquer mathematics. If it works for you, then tell your friends about “One Step.” **Write your own “Success Story,”** and send me a copy of it for my collection!!

It is my belief that, with the appropriate background, good instruction, step-by-step explanations, and enough time to practice the exercises, you can and will learn mathematics. So, take the time to do ALL the homework, showing your work right in the book (remember, you won’t have to copy the problems down if you just write in the book!), and make sure you learn and practice the skills.

REMEMBER, YOU CAN SUCCEED IN MATH—*ONE STEP AT A TIME*.

Dr. Robert J. Rapalje



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*- To Martha*  
*My One True Love -*

*Fear not, for you will not be put to shame*

*neither feel humiliated,*

*for you will not be disgraced . . .*

*Isaiah 54: 4*





## ***MATH STUDY SKILLS***

### ***STUDYING SMART vs. STUDYING HARD***

**Dr. Robert J. Rapalje**

1. **PREREQUISITE SKILLS.** Find the appropriate level. Nothing is more frustrating than being lost in a math class. If you are lost, perhaps you started out over your head. See your instructor for placement advice. According to research, 50% of the variables affecting student success in class has to do with cognitive skills--skills that you have when you walk in the door.
2. **TEACHER SELECTION.** According to research, 25% of the variables that affect student success in class are instructional. This has to do with the instructor's ability to communicate and present clear explanations. Input concerning instructors from other students should be weighed carefully.
3. **CLASS ATTENDANCE.** The classroom setting is the most efficient way to learn math. You should attend class faithfully, sit near the front. If you do miss a class, check with the instructor or someone in the class to find out what you missed. If you have a friend in the class (see #4), have them pick up handouts you missed and get the assignment for you. Most important, keep up with the work. Getting behind is like erosion! Catching up is like patching a dike.
4. **STUDY GROUP or FRIENDS.** Do not isolate yourself! It is definitely helpful to have a study group or at least a friend or two to work with and to help one another. It is much easier (and enjoyable) to do homework with a friend. However, while friends are important, be careful that your friends share your motivation to succeed in math. However, **DO NOT RELY ENTIRELY UPON OUTSIDE HELP.** If you receive help from an instructor or tutor, be sure to follow it up by doing the problems yourself without help from anyone else. In the end, be sure that you understand the material. Even if you completely understand what was done in class, and it looked very easy, you still need to practice homework. **MATH IS NOT A SPECTATOR SPORT.** Only when you do homework yourself does it become your own, and learning is transferred from **short-term to long-term memory.**
5. **HOMEWORK.**
  - a) Do homework as soon as possible after class.
  - b) Homework with friends is better than alone.
  - c) Do not wait until you are too tired to concentrate.

- d) Do not violate your own attention span.
- e) Develop neatness and organizational skills. Take pride in your work.
- f) Turn off the TV.
- g) Have a comfortable place to work.
- h) Use a sharp pencil and a BIG eraser.
- i) If you do not have time to do all the homework, do the odds (or alternate odds), in order to finish the assignment. In emergencies, it is better to do some of all than all of some. **However, when you study for the test, come back and finish ALL of the homework.**
- j) At the beginning of the assignment check the answers to make sure you are doing the problems right. As you continue through the assignment, check answers only periodically (but DO check the answers!) to **avoid ANSWER DEPENDENCE!** Remember that on exams, you must do an hour or more of problems with NO feedback.
- k) Use colored pencils where possible to liven up the homework, to show contrast and similarities.
- l) Review previous material.
- m) Practice as if you were a professional athlete. You need to have a good coach, you need to know the plays, but you still need to practice in order to perfect execution and develop excellence.

6. **LOCATE YOUR RESOURCES.** Struggling on your own after a time becomes frustrating and unproductive. Before frustration sets in, get help from your instructor, tutors, learning center, classmates, friends, family, videos, computer software, study guides, etc. Your study time is valuable, so spend it wisely and productively. Make friends with someone who knows what he/she is doing and, most importantly, is able to communicate on your level.

7. **HAVE CONFIDENCE IN YOURSELF AND KEEP A POSITIVE ATTITUDE.** Perhaps you have been told since the third grade, “You’re no good at math.” Perhaps parents have told you, “That’s okay, I was never any good at math either. You’re just dumb at math like I am!” If so, then stop listening to such negative talk, and certainly stop saying it. Have faith in yourself and your math ability . . . but remember, “Faith without works is dead.” (James 2:20)

**ESTABLISH PRIORITIES AND SPEND TIME ACCORDINGLY.** If school is a party, then have a good time, but do not expect to remain in school long enough to graduate. If school is to be serious business, then plan to spend time studying. Do not allow your employment or your social life and friends to rob you of the hours of study necessary to reach your long-range career goals.

**As long as there are tests, there will always be prayer in schools.**

## *Karen's Success Story*

April 29, 2001

Dear Dr. Rapalje,

I know that this is not the ultimate success story in many eyes, but in my eyes I have jumped a great hurdle.

I don't know if you remember me arriving at your office in the beginning of the term. I was nervous about taking basic algebra for the second time. I had heard wonderful things about you as a teacher. I, as many students, was a "math dummy!" I was returning to school after almost ten years to get my nursing degree but could not pass basic algebra. The semester previous, I spent hours and hours studying and completing homework and still ended up failing the course. I was embarrassed and humiliated. My highest test score in the class was a 65. My self-esteem was shot; I pondered the idea of even bothering to return and face another semester of failure. But I decided that I would give it one more shot with the teacher that I had heard could "work miracles".

I bought your book *Achieving Success in Math* and read it like a bible. I took many of your tips; for example, I sat in the front row to the right of you, I did my homework right away while the explanations were still fresh in my mind, and I made sure that I arrived to class on time everyday. I remember doing my homework in the first chapter of our book and realizing that I was done in 45 minutes! I actually understood what I was doing. You might not have seen the joy in my eyes when I received my first exam back from you in class, a 98! How was this possible? My first exam last semester was a 59. Could I be learning math? Me, a math idiot?

The term has come to an end with only our exit exam left to take. I have succeeded in basic algebra. My lowest test grade was a 94 and it was dropped. You can't imagine how great it feels to pass basic algebra with an A, when last semester I received an F. I just wanted to say thank you for your excellent teaching skills and faith in your students. I wouldn't have been able to do it without you. I will see you in the fall for Intermediate Algebra.

Sincerely,

Karen

## *Rob's Success Story*

Math has always been my weakest subject. In ninth grade I failed Algebra I and for the following two years barely squeezed by with C's in both Applied Math I and Applied Math II. Not only was I poor in math, but in most of my academic studies I failed to meet the standards of achievement. What was my problem? Attitude. I didn't feel that I could ever succeed in anything except the arts. Due to my lack of confidence and poor self-image, I became more and more reluctant to put forth any effort in my homework, and then eventually, even in class. I soon came to the point in my life where everything came to a crashing halt. I had not only relinquished all hope of succeeding in school, but I also acquired some bad habits that increased my inability to perform mental tasks. At this point, I considered dropping out of school altogether. Eventually I came to realize that I would need to reach outside of my own physical limitations for some help. My choice? I turned to God who created both my brain and math and began praying for help.

Now, five years later, I've completed my Associate of Arts degree with straight A's and B's in all my courses--even in math! I graduated from **Seminole Community College with a 3.5 GPA, an Honors diploma, and I was even a member of Phi Theta Kappa Honor Society.** My mind is sharper than it's ever been, and my attitude has been completely reformed. Everything wasn't just dropped in my lap though, and it didn't happen over-night. Through persistence and prayer, I slowly gained the self-confidence and guidance I needed to not only become successful in math, but also in all other areas of my life. I had to make the right choices, but this time my persistent efforts began to pay off. I began putting more time into my homework and classes again, but this time I succeeded! I even started to gain recognition for my achievements by being nominated for the Dean's List and the Who's Who Among Students in American Junior Colleges. Because I learned to live right, I've not only become successful in math, but I have experienced more fulfillment than I ever imagined.

