

# White Paper

*By: Craig Hane, Ph.D.  
aka Dr. Del*

## Homeschool Teachers of a High School Student

There is a way to . . .

**“Give Your Child an Excellent High School Math Education Regardless of Your Own Math Ability.”**

Here's how.

**First, enroll your student in the Dr. Del Practical Mathematics Foundation Course.**

This is an:

- Interactive
- Self-paced
- On-line

**Practical Math Foundations Course delivered online via the Internet, which will teach your student the appropriate topics from:**

- How to use the TI 30XA scientific calculator
- Pre-algebra
- Algebra
- Geometry
- Trigonometry

**he or she will need to know to solve most practical everyday problems that arise in most technical subjects, with No Fluff.**

**How this is accomplished is fully explained at our website:**

**<http://www.triadmhinc.com/the-foundation-course/>**

**Most students take about fifty hours of self paced time to complete this Foundations course.**

**When done your student will know more math than 95% of U.S. adults.**

**Better yet, if by chance your student didn't like math for some reason, that will be changed. Now your student will have gained confidence in his or her math abilities, and will probably now like math and be ready for further math studies.**

**Then you may continue your student with the upper Tiers when they become available until your student has received the best math education possible.**

**The upper Tiers are planned to go through Calculus and far beyond for students who anticipate a career in mathematics.**

**The upper Tiers will also be self paced and interactive.**

**In both the Foundation Course and the upper Tiers, the student is given a Notebook with notes on each topic which accompany the video lesson. Indeed, Tiers 3 and 4 also will utilize the wonderful book by Dr. George Simmons, *PreCalculus Mathematics in a Nutshell*.**

**The student may watch the videos in an interactive and self-paced way on his or her own schedule.**

**Then, there are targeted Exercises in the Notebook, with complete answers, which will lead to complete mastery of the topic.**

**Then the student may take a short online Quiz enabling the student to demonstrate his or her understanding of the topic covered.**

**Working independently a typical student will be able to complete as much mathematics as they desire.**

**This program is not achievable easily in a standard classroom for reasons fully discussed in Dr. Del's book *Teaching Math*.**

**“What will this cost?” is the typical next question.**

**“What would it be worth for a student to be able receive an outstanding mathematics education” is a question you should answer first.**

**Pricing information will be available at the Website:**

**[www.triadmhinc.com/products/](http://www.triadmhinc.com/products/)**

**It may change from time to time, but there is a current Price List on page 5.**

# Special Message for all Parents and Students

Do you know that . . .

**“For less than \$100, and about 50 hours of your time**

**You can become matherate.”**

“So What?”

“Here’s What!”

**In the old 20<sup>th</sup> Century *Second Wave* (Alvin Toffler’s paradigm) Economy you only had to be literate to get most good jobs.**

**In the 21<sup>st</sup> Century *Third Wave* Economy you must be matherate to get many good high paying jobs. (Definition of “matherate” next page)**

**You must be matherate to qualify for training in most modern technical fields.**

**A highly trained technical worker can make a very good living in today’s Third Wave economy. \$25 to \$75 per hour will be common.**

**An untrained or semi-skilled worker, who could get a good job in the old Second Wave economy, will have great difficulty making a good living in today’s economy. Unskilled jobs may pay \$10/Hr or less.**

**Which are you?**

**Do you want to get a really good high paying job with a bright future?**

**If so, read the above Headline again.**

**Then, go immediately to [www.TriadMathInc.com](http://www.TriadMathInc.com) to find out how.**

***The Promise made in this Headline was not possible until the creation of the Dr. Del’s Practical Math Foundation Course, an Online, Self-paced, Interactive course of just the Right Topics to solve most practical everyday technical math problems.***

**Contact: [dgoodman@TriadMathInc.com](mailto:dgoodman@TriadMathInc.com) with questions or  
Phone: 812-355-3030**

## Definitions in The Free Dictionary by Farlex

### I. lit·er·ate

*adj.*

1. a. Able to read and write.  
b. Knowledgeable or educated in a particular field or fields.
2. Familiar with literature; literary.

*n.*

1. One who can read and write.
2. A well-informed, educated person.

### II. math·er·ate

*adj.*

1. a. Able to solve math problems.  
b. Knowledgeable or educated in mathematics.
2. Familiar with mathematics.

*n.*

1. One who knows and can use mathematics
2. A well-informed, educated person.

I. is in this dictionary.

II. is not, , , , yet.

This is more thoroughly discussed in

Chapter 8, “The Matheracy Imperative”

In Dr. Del’s book *Teaching Math*

Available in Kindle format at Amazon:

<http://www.amazon.com/Teaching-Math-ebook/dp/B005NRXTYE>

Or, Paperback at Triad Math, Inc.

<http://TriadMathInc.com/books/>

# 2011 Price List: (U.S. \$)

1. Practical Math Foundation Course: \$77

Payment Plan \$17 plus 9 payments of \$7.77 each

2. In the future, it is anticipated the upper Tiers will be priced at about \$7.77 per month per student, when they become available.

**Money Back Guarantee:** We insist you be fully satisfied that this Course is really the best thing for your student. So, have your student take the course for 30 days. If you do not believe it is right for any reason just cancel the enrollment.

The \$17 just covers the costs of the Books and Set-up enrollment. Within the first 30 days you may return the Book in good condition and cancel your student's enrollment and your \$17 will be fully refunded.

If for some reason the upper Tiers should not become available, your student will be well prepared to enter a more standard high school math curriculum if your student wishes to pursue a professional STEM career.

Also, there will be various "Extensions" to the Foundation to help a student prepare for specific tests such as the ECA and COMPASS tests, if your student does not wish to continue into Tier 3.

Prices subject to change at any time:

For current prices: <http://TriadMathInc.com/products/>

See, <http://TriadMathInc.com/> for details

Or the book *Teaching Math* by Craig Hane, Ph.D.

You might very well be asking yourself, “Just who is this Dr. Del guy, and should I believe what he is telling me?”

That’s a reasonable question, and I would like to answer it for you. So, I have included some additional materials for you.

I have recently written a book, *Teaching Math*, which should answer any questions you have, plus give you some useful information to help you make the best decisions and choices in teaching your child.

So, I am now giving you some excerpts from *Teaching Math* which should help you answer your questions.

They include:

- The Front page
- Forward
- Table of Contents
- Chapter 1 which in some ways give a synopsis of the whole book.

Also, if you download the free *Math Teacher’s Guide* and join our “Club” I will email you links to the *Interludes* which should help you however you choose to teach math to your high school student.

*Craig Hane Ph.D. aka Dr. Del*

## **21<sup>st</sup> Century Mathematics**

# ***Teaching Math***

**A High School Math Curriculum**

**That Works for All Students**

**Delbert Craig Hane, Ph.D. aka Dr. Del** is a mathematician who has taught math as a tutor, in high school, engineering school, university, and adult workers in industry.

He received his Ph.D in math from Indiana University.

He is the creator of the Hane Training Method now used by Learn Maintenance, Inc. to deliver their industrial training programs. [www.learnmaintenance.com](http://www.learnmaintenance.com)

He is the creator of the:

**Dr. Del's Ten Tier High School Math Curriculum.**

You may learn more about him at:

[www.TriadMathInc.com](http://www.TriadMathInc.com)

## **FORWARD      Author's Comments**

This is a book for anyone interested in high school mathematics and its presentation to students.

It is particularly aimed at anyone who has an interest in a student who is struggling with math or is simply not satisfied with a student's high school math education program.

While quite critical of the existing "standard math curriculum" taught at most schools I offer one potential solution that I know, from over fifty years of teaching math at all post elementary levels, including adult technical training, will work for any student.

In the course of this book I will direct you to many resources, some free, and some not free, which may help you. Today there really is no valid excuse with the modern technologies and tools available cost effectively today to have any failing math students.

The Effective Math Education TRIAD, Chapter 2, is the underlying set of principles that guide everything I will recommend to you.

I wish you well in your future endeavors in learning or teaching math at the post elementary level whether your student is going to pursue a non-professional technical career or job, or a demanding STEM profession, or even become a professional mathematician.

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# *Chapter 1*

## **Our “Failing” High School Math Students and Curriculum**

*How and Why is our current high school mathematics curriculum “failing” many of our students, and sometimes handicapping our best students?*

**In a Nutshell, our high school math curriculum . . .**

**. . . is TOO compartmentalized.**

**. . . does NOT utilize the Power Tools of Math.**

**. . . is NOT interactive and self paced enough.**

Consequently, it does not meet the needs of many of our students, both those who might learn at a slower pace, and those who are accelerated. Both groups suffer.

If you are interested in the math education of a high school student, either as the student, parent, principal or the teacher, then you undoubtedly are aware of the dismal statistics pertaining to the performance of math students in the U.S. especially compared to other nations.

*Fortunately, You don't have to contribute to those negative statistics. This book will explain why and how.*

**We all** know that in today's modern economy a successful career or job in any quantitative subject requires math skills and competency, and the ability to use modern tools and technologies.

Manufactured products produced in the U.S. are increasing each year, while employment in manufacturing is declining. The U.S. is still by a large margin the world's leading producer of manufactured goods, even though many don't realize this due to the negative publicity regarding manufacturing's declining employment.

Why is this?

Manufacturing is becoming more and more productive due to the increased use of sophisticated tools and technology. Unskilled jobs, or even semi-skilled jobs, are rapidly disappearing. Today's modern manufacturing jobs require mastery of sophisticated equipment like PLC's, CNC's, and other automated systems.

*This mastery depends on a core mathematical competency, in knowledge and skills.*

**This also** applies to the fastest growing segment of the U.S. economy, health care. Ever more sophisticated

systems are being utilized which require their operators and users to be more skilled mathematically.

Science and engineering require an ever expanding mathematics skill set. Not only mastery of core math concepts and methods, but also the ability to construct and apply sophisticated math models and programs.

**Our current** high school math curriculum is woefully inadequate and is not serving our students.

**Let me be clear at the outset.**

**This is not the fault of the math teachers.**

**Modern high school math teachers are heroes in my opinion.**

**The Problem is a Systemic Problem.**

**Why this** is so, and what to do about it, is the subject of these messages delivered as chapters in this book, and as a series of Blogs at our website:

[www.TriadMathInc.com](http://www.TriadMathInc.com)

*Chapter 1 is an overview look at this problem and one possible solution.*

**First, “. . . is too compartmentalized”.**

Our modern math curricula divide math into a variety of subject areas called “precalculus math” including:

Prealgebra - - - Algebra - - - College Algebra  
Plane Geometry - - - Solid Geometry - - - Trigonometry  
Analytic geometry - - - Finite Math - - - Etc.

This division has its roots in the 19<sup>th</sup> century math curricula and has not advanced much in the sixty years I have been involved with mathematics, as student, teacher, and mathematician.

*The student is often left with the impression that these various subjects are somehow independent areas.*

This is a horrible misconception, unfortunately shared by some teachers who are often forced to “specialize” on one or two topics.

*These subjects are intimately related and interconnected, as any mathematician would tell you.*

It is difficult to solve many modern practical problems without invoking concepts and techniques from several of these areas simultaneously. The sooner a

student realizes this and achieves a basic mastery of several of these topics, the better.

*A student needs such a Foundation as early as possible.*

Let me give you a quick example.

Find the area to two decimal places of the triangle whose sides measure 3.00 ft., 4.00 ft., and 6.00 ft. The Answer is 5.33 sq. ft. This is the type of problem that could arise in a practical situation.

Looks easy, but it is not. The usual area formula from geometry is not applicable. You can solve it with algebra and geometry (simultaneous quadratic equations), but this is tedious and difficult, especially without a calculator. You could apply Heron's formula if you knew it.

A good solution is to use some trigonometry and a calculator. Then it can be solved in less than a minute by any Practical Math Foundation graduate. And, it is just as easy to find the area of any other triangle with three known side lengths. Try 13.5 in, 16.8 in., and 25.6 in. Answer. 102.9 sq. in.

In the standard high school math curriculum this problem probably would not be presented in a geometry class. Problems are rigged to be solvable with the limited tools presented there.

Give this problem to any high school math graduate or teacher and see how long it takes them, if they don't just give up.

So practical problems such as this may require up to three years of math courses to solve, and this is just one of many such examples. This is simply unacceptable considering how unnecessary it is. It's quite unfair to the student.

In a modern curriculum these various subjects should be taught in a tiered or layered manner so the student can realize their interconnections very early on, say within three months.

For example, in the Dr. Del's Practical Math Foundation, basic facts and techniques from Algebra, Geometry, and Trigonometry are all presented so the student can see the interconnections very early on, and solve many practical problems quickly and easily.

It takes all three of these subjects to accomplish this. The Practical Math Foundation takes a student about forty hours (+/- twenty hours) to complete over a one to three month period.



Now, let's address the other two deficiencies.

**Second “ . . . does not utilize the modern power tools of math adequately”.**

**and**

**Third “. . . is not interactive and self-paced enough”.**

I will use the Dr. Del Practical Math Foundation described in detail later in the book to illustrate one possible solution that addresses these two deficiencies.

- The failure to adequately use the power tools of mathematics.
- The failure to give the student a self-paced and interactive experience.

Every student learns best at his or her individual pace and rate. A student may need to go over the material repeatedly until mastery is achieved. This is virtually impossible in today's “batch” teaching environment of the typical classroom.

Lectures just don't cut it for many students. Self study from books is inadequate too. Math is a ‘contact sport’ that requires practice where each student should advance at his or her own pace.

Mistakes should be celebrated as a sign of activity, and successes celebrated and recognized for each and every student, continually and consistently.

This is demonstrated in the Practical Math Foundation which teaches a beginning student all of the math he or she needs to know to solve many practical problems that arise in everyday life and industry. You probably have to witness it to believe it.

**When the** student completes the Foundation he or she will know more math than 95% of the U.S. population and be able to solve most practical problems arising in everyday life and industry efficiently using a scientific calculator.

In just three months? Yes. And, he or she will be prepared for a technical career, not however, a STEM career. More math will be required, but the Practical Math Foundation will provide a good basis for future math studies.

Very few high school graduates today know this much math. It would take at least three or four years of today's high school math to learn this much material, mixed in with a whole lot of other materials not required for everyday practical math.

This is one reason many students discontinue their math studies as soon as permitted.

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## **Here's how the Practical Math Foundation works.**

It is cost effective because it is all accomplished via online videos, targeted homework, and online quizzes, all managed by a Learning Management System. No standard textbook is used. A \$10 calculator is required.

The student is given a Notebook with notes for each lesson or topic and an Exercise Book with exercises and answers for each lesson or topic.

Finally, the student is given an online quiz to let the student measure his or her success and mastery of each lesson or topic.

This is how the course works.

**First**, the student is taught to use a scientific calculator (the TI30XA which costs about \$10). This power tool:

1. Removes much of the drudgery of calculations
2. Increases accuracy
3. Mitigates errors due to consistent checking
4. *Speeds up the learning of the concepts and techniques by at least an order of magnitude*

**Second**, the Foundation materials are presented in a self-paced and interactive way with continual reinforcement via homework and quizzes. This self-pacing is critical. So is the ability to review topics. Both are critical keys to the success of the Foundation.

**Third**, the student's psychology regarding math is "corrected" early on in the Foundation, if necessary. This is explained in Chapter 2 and the materials about the Foundation at: [www.TriadMathInc.com](http://www.TriadMathInc.com)

The Foundation can serve as a model for any teacher in any math program. The Foundation can be a good stand alone resource to supplement their program, if needed.

*Indeed, home school teachers or parents can use it even if they are not math teachers themselves.*

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So to summarize, the “problems” with today’s high school math curricula, are:

Lack of integration of the various subject areas and presentation in a layered or tiered manner

Failure to use the power tools of math adequately

Lack of self-pacing and interactivity tailored to each student’s needs

*Future Chapters address these issues in more detail and one possible modern solution to this problem is discussed in some detail.*

**Ultimately, any math teacher can adopt the concepts and ideas from these messages to improve their presentation of mathematics IF they are permitted to do so.**