HOW TO USE MATH-U-SEE

Welcome to *PreCalculus*. I believe you will have a positive experience with the unique Math·U·See approach to teaching math. These first few pages explain the essence of this methodology which has worked for thousands of students and teachers. I hope you will take five minutes and read through these steps carefully.

If you are using the program properly and still need additional help, you may visit Math·U·See online at www.mathusee.com/support, or call us at 888-854-6284 (homeschools and individuals) or 800-454-6284 (schools and special education departments). —**Steve Demme**

The Goal of Math-U-See

The underlying assumption or premise of Math·U·See is that the reason we study math is to apply math in everyday situations. Our goal is to help produce confident problem solvers who enjoy the study of math. These are students who learn their math facts, rules, and formulas *and* are able to use this knowledge in solving word problems and real-life applications. Therefore, the study of math is much more than simply committing to memory a list of facts. It includes memorization, but it also encompasses learning underlying concepts that are critical to problem solving.

More than Memorization

Many people confuse memorization with understanding. Once while I was teaching seven junior high students, I asked how many pieces they would each receive if there were fourteen pieces. The students' response was, "What do we do: add, subtract, multiply, or divide?" Knowing *how* to divide is important; understanding *when* to divide is equally important.

THE SUGGESTED 3-STEP MATH-U-SEE APPROACH

In order to train students to be confident problem solvers, here are the three steps that I suggest you use to get the most from the Math·U·See curriculum at this level:

Step 1. Preparation for the lesson.
Step 2. Presentation of the new topic.
Step 3. Progression after mastery.

Step 1. Preparation for the lesson.

This course assumes a knowledge of *Geometry* and *Algebra 2*. There are two review lessons in the appendix covering the Pythagorean theorem and special triangles. Watch the DVD to learn the concepts. Study the written explanations and examples in the instruction manual. Many students watch the DVD along with their instructor. Students in the secondary level who have taken responsibility to study this course themselves will do well to watch the DVD and read through the instruction manual.

Step 2. Presentation of the new topic.

Now that you have studied the new topic, choose problems from the instruction manual to present the new concept to your students.

a. Write: Record the step-by-step solutions on paper as you work them.
b. Say: Explain the *"why"* and *"what"* of the math as you work the problems.

Do as many problems as you feel are necessary until the student is comfortable with the new material. One of the joys of teaching is hearing a student say, *"Now I get it!"* or *"Now I see it!"*

Step 3. Progression after mastery.

Once mastery of the new concept is demonstrated, begin doing the pages in the student text for that lesson. Mastery can be demonstrated by having each student teach the new material back to you. The goal is not to fill in worksheets, but to be able to teach back what has been learned.

After the last student page in each lesson, you will find an "honors" lesson. These are optional, but highly recommended for students who will be taking advanced math or science courses. These challenging problems are a good way for all students to hone their problem-solving skills.

Proceed to the lesson tests. They were designed to be an assessment tool to help determine mastery, but they may also be used as extra worksheets. Your students will be ready for the next lesson only after demonstrating mastery of the new concept.

Confucius is reputed to have said, "Tell me, I forget; show me, I understand; let me do it, I will remember." To which we add, **"Let me teach it and I will have achieved mastery!"**

Length of a Lesson

So how long should a lesson take? This will vary from student to student and from topic to topic. You may spend a day on a new topic, or you may spend several days. There are so many factors that influence this process that it is impossible to predict the length of time from one lesson to another. I have spent three days on a lesson, and I have also invested three weeks in a lesson. This occurred in the same book with the same student. If you move from lesson to lesson too quickly without the student demonstrating mastery, he will become overwhelmed and discouraged as he is exposed to more new material without having learned the previous topics. But if you move too slowly, your student may become bored and lose interest in math. I believe that as you regularly spend time working along with your student, you will sense when is the right time to take the test and progress through the book.

By following the three steps outlined above, you will have a much greater opportunity to succeed. Math must be taught sequentially, as it builds line upon line and precept upon precept on previously learned material. I hope you will try this methodology and move at your student's pace. As you do, I think you will be helping to create a confident problem solver who enjoys the study of math.

Materials Needed

You will need the following items for this course:

- A protractor for measuring angles.
- A ruler with inches and/or metric measure.
- A scientific calculator that does square roots, trigonometric functions, logarithms, and natural log.

You can purchase an inexpensive calculator that does everything you need for this course. If you are planning on using it for more advanced courses, you can always get a more elaborate model.