Today's Collegian

Mr. Breitsprecher's Edition | June 20, 2005 | *FREE!*

Getting MORE Out of Math!

College math courses are very different than the ones in high school. They usually meet less often and move faster, typically covering material at about twice as fast as a high school course. College professors expect students to keep up. They cannot wait for students that fall behind.

In many cases, it is actually assumed that a few of the students will need to repeat the course. Remember, it isn't fair to hold back the rest of the class when some students have not kept up or sought out help when they need it. Students that have kept up have paid to be in the class.

Most college math professors do not grade homework – students are expected to "practice" math skills and come to class prepared to move on. When a student has questions or problems; they are expected to get help, often, outside of class.

Students are responsible for their learning, not the college professor. The college math class has tests and quizzes spaced farther apart. Each "checkpoint" probably tests on a larger amount of material.

Students can expect to spend more time doing homework in a college math class (even when that homework is not graded). In general, it is expected that a student spend 2 hours of homework for every hour spent in class – and that might not even be enough time for some. In most cases, college math classes are designed to prepare students for higher-level math, science, and a variety of other important courses.

We all need help at some point – especially in math classes. Because college math classes are so different from high school classes, many students, especially freshman or return adults, will find that they need help. PLEASE GET HELP JUST AS SOON AS YOU THINK YOU NEED IT!

Don't wait until you fail a quiz or exam. Instructors appreciate it when students can recognize problems BEFORE they are behind – it makes life easier for everybody.

Asking questions is important – there is no such thing as a "dumb" question, but some questions are more helpful than others. When working with others, try to ask questions that will allow them to see where you need help.

"I don't understand this section," is better than no question at all, but it is hard to see where the problem is. A more meaningful question might be, "I don't see why

Studying Math is Different from Studying Other Subjects

Math is learned by doing problems. Do the homework. The problems help you learn the formulas and techniques you do need to know, as well as improve your problem-solving prowess.

A word of warning: Each class builds on the previous ones, all semester long. You must keep up with the Instructor: attend class, read the text, and do homework every day. Falling a day behind puts you at a disadvantage. Falling a week behind puts you in deep trouble.

A word of encouragement: Each class builds on the previous ones, all semester long. You're always reviewing previous material as you do new material. Many of the ideas hang together. Identifying and learning the key concepts means you don't have to memorize as much.

Math is a skill. To develop that skill you must practice. Do your homework in a quiet place, similar to the classroom if possible. Do not spend "hours" on one problem. If you cannot solve a problem, look for a similar problem in your notes or your text. If you still cannot solve the problem, skip it and work on other problems. Try the problem later. Many times you will come up with an idea after you have done something else for a while. If you still cannot solve the problem, get some help.

Great Math Sites on the 'Net

http://www.aaamath.com
http://www.math.armstrong.edu/MathTutorial
http://www.coolmath.com
http://www.internet4classrooms.com/math_sec.htm
http://www.purplemath.com
http://www.mathleague.com/help/algebra/algebra.htm

f(x+h) doesn't equal f(x) + f(h)." If you ask this question to someone that understands math, for example, they will immediately see that the problem is a misunderstanding about function notation. When doing homework, it can help to create a list of questions to ask the professor in class or during office hours, or to another person.

Creating a study-group for a math class is a great way to meet people, get involved on campus, and make a math class more meaningful and fun. Classmates, friends, or students in other sections can often work together to the benefit of all.

Most campuses have "Academic Support" to provide assistance to students that are ready to get help and take responsibility for doing so. Often, one-on-one tutoring or study groups are available – on some campuses, at no cost. Take advantage of all the resources available.

Today, many high-quality resources are online – virtually any math topic is supported online. Often, there are examples, tutorials, and alternative presentations. They represent a great way to help and builds information and technology literacy skills.

Why Study Algebra?

Sometimes, the hardest part of learning is accepting that the skills are actually going to be valuable. Let's face it, we all feel better about working towards a goal when it has meaning. Why study Algebra?

The simplest answer is because it is going to be part of virtually ALL degree programs. When we make the decision to earn a 4-year degree, we have actually agreed to work towards the standards and requirements of that degree program.

On a more practical level, math skills prepare us for business calculations, money management, and additional courses in sciences, engineering and technology. Algebra shows us the "nuts and bolts" of how numbers work and prepares us to apply mathematics to a wide variety of situations.

Perhaps even more important, but not as tangible, algebra has historically been used to build and reinforce thinking skills. Yes, there are calculations and problem sets, but these are all based on principles and applications of reason and persuasion. We live in an increasingly complex world. Recognizing, understanding, and following the rules and patterns of mathematics, practices and nurtures an ability to think and reason.

An algebra classroom provides a neutral territory for the practice of rule, pattern-based reason, and logic. Reasonable people can disagree on virtually EVERYTHING! It would probably not be possible to teach reason and logic across diverse groups of people outside of a factual, verifiable, and objective context. We all have rights to hold various opinions and viewpoints.

Think of algebra as a "neutral world" where we can talk about reason – we can find areas of agreement in math: 2 + 2 = 4. Are there really these types of clear-cut answers in other parts of life? Personal philosophies and opinions that we all have mean relatively little in a math class.

Algebra classes allow us to set these differences aside and talk about applying reasons and logic. If we disagree, it will be a relatively simple matter to "do the math" and see if the calculations result in a "true" or "false" statement.

Think about it, if math course just gave students formulas and numbers to "plug-in" without a need to apply algebra, it would just be busywork – a waste of time. It is not likely that in the real world we will find problems ready to solve without some additional thought. If life was that easy, those problems would have been solved long ago.

Higher-level math classes are important, because they respect each learner's intelligence. They recognize that the PROCESS of applying math is just as important as the correct answer. Yes, after we graduate, many of us can forget many of the procedures we studied in algebra class. The "self-understanding" and critical thinking skills that are part of an algebra class are valuable life-skills.

Math Study Skills: Active Learning

Be actively involved in your education! Here are some tips to "take charge" of your learning in an algebra class:

- Take responsibility for studying, recognizing what you do and don't know, and knowing how to get your instructor to help you with what you don't know.
- Attend class every day and take complete notes. Instructors formulate test questions based on material and examples covered in class as well as on those in the text.
- Be an active participant in the classroom. Get ahead in the book; try to work some of the problems before they are covered in class. Anticipate what the Instructor's next step will be.
- Ask questions in class! There are usually other students wanting to know the answers to the same questions you have.
- Go to office hours and ask questions. The Instructor will be pleased to see that you are interested and you will be actively helping yourself.
- Keep a glossary of math terms as they are presented in class. Math is a language, getting involved by maintaining a list of terms will keep you involved and learning.
- Show **ALL** work; do not skip steps, even on homework.
- Good study habits throughout the semester make it easier to study for tests.