

MATH ANXIETY and STUDY SKILLS



Mathematics consists in providing the most obvious thing in the least obvious way.

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Do You Have Math Anxiety?

Let's start by measuring your math anxiety level by clicking on the interactive link:

[Do You Have Math Anxiety?](#)

After completing the analysis, click the back arrow ← to return to this page.

CHECK YOUR MATH ANXIETY SCORE:

40-50 It's a sure thing! You have math anxiety.

30-39 No doubt! You're still fearful about math.

20-29 On the fence!

10-19 Wow! Loose as a goose!

Math anxiety is an emotional reaction to mathematics based on a past unpleasant experience which harms future learning. A good experience learning mathematics can overcome these past feelings and success and future achievement in math can be attained.

12 Ways to Overcome Math Anxiety

1. RELAX! You are not alone! Everybody gets nervous. Even experienced mathematicians! As Einstein said, “Do not worry about your difficulties in mathematics; I assure you that mine are greater.” So relax. You’ll be able to concentrate better on your homework if you are relaxed! And admit when you have anxiety! Ignoring it will not help you to manage it.
2. PRACTICE a little math everyday, maybe 15-30 minutes. Just reading the text will not help. Treat math like a foreign language. It uses both words and symbols to communicate. If you don’t understand its vocabulary or cannot recognize its symbols, then trying to solve a problem will prove difficult. Use flashcards to help familiarize your self with vocabulary and symbols. Quiz yourself regularly.
3. ASK questions. Even if you think it’s silly, chances are your classmates are thinking the same thing. Take charge of your education and SPEAK UP!
4. STUDY smart! “Each mind has its own method.” Do math using your learning style. Be open to other ways of learning which will help you understand the concepts behind the problems you are doing.

Golden Rule of Studying: For every ONE hour of class time, spend TWO hours studying!

12 Ways to Overcome Math Anxiety

5. **ORGANIZE** yourself. Date and number each page of notes. Keep them neatly in a 3-ring binder. Staying organized will help you feel less overwhelmed. And **NEATNESS** counts! The more frustrated or angry you get, the sloppier your writing becomes and the biggest pitfall of most student is their inability to read their own writing. If you notice your work is getting sloppy, take a breather and come back to it.
6. **REMEMBER** the basics! Math builds on itself. If it has been awhile since your last math course, pick up a textbook from the library or go online for a quick refresher. There's plenty of math help out there. The Khan Academy offers help for math classes - basic math through calculus: <https://www.khanacademy.org/math>
7. **GO TO CLASS!** This cannot be stressed enough. Especially if you take a summer or late start math class. Even if you miss one class you may fall behind. And as before, math **BUILDS** on itself...once you're lost it will be difficult to catch up.
8. **UNDERSTAND** math, don't just memorize. Nervousness affects your memory so don't rely on it. Also, math is more than just numbers and symbols but concepts and theorems as well.
9. **READ** the text as well as practicing the problems. If your math book gives you trouble, meet with your professor during office hours to talk about the concepts.

12 Ways to Overcome Math Anxiety

10. USE your resources. Study groups, study buddies, instructor office hours, STEM Center, private tutors, Math Lab, workshops, library, internet, self-teaching guides, etc. there's plenty of help out there and you're not alone!

11. RESPONSIBILITY is key. This is your education! Some instructors only focus on theorems and ideas in class and expect the student (YOU) to do the problem solving at home. Or the instructor may only go over one problem in class. This means you must make it your responsibility to do homework, EVEN IF IT IS NOT GOING TO BE COLLECTED! It is assumed that each student is practicing the application of ideas to problems outside of class. Your successes (and failures) are YOURS!

12. OVERCOME negativity! You are your own worst enemy, so try to stay positive and establish mantras until you believe them! I will learn this. I will learn this. I will learn this.



Asking Questions

Don't be afraid to ask questions. **Any** question is better than no question at all (at least your Instructor/tutor/study group will know you are confused). But a **good question** will allow your helper to quickly identify exactly **what** you don't understand.

- **Not too helpful comment:** *"I don't understand this section."* The best you can expect in reply to such a remark is a brief review of the section, and this will likely overlook the particular thing(s) which you don't understand.
- **Good comment:** *"I don't understand why $f(x + h)$ doesn't equal $f(x) + f(h)$."* This is a very specific remark that will get a very specific response and hopefully clear up your difficulty.
- **Good question:** *"How can you tell the difference between the equation of a circle and the equation of a line?"*
- **Okay question:** *"How do you do #17?"*
- **Better question:** *"Can you show me how to set up #17?"* (the Instructor can let you try to finish the problem on your own), or *"This is how I tried to do #17. What went wrong?"* The focus of attention is on your **thought** process.
- Right after you get help with a problem, work another similar problem by yourself.

Mathematical Note Taking Tips

1. Using the Cornell Method (draw a two inch margin in your notebook, and use the left side of the margin for key words and the right side for notes), record each problem step in the **notes** section.
2. Record the reasons for each step in a designated section by using:
 - a. abbreviations
 - b. short phrases not sentences and
 - c. key words, properties principles or formulas
3. Record **key words/concepts** (*including theorems and formulas*) in the left two-inch margin either during or immediately after lectures by reworking your notes. Copy them EXACTLY as accuracy is key here. Compare notes in your study group.
4. Cover up the **notes** section and recite out loud the meaning of the **key words/concepts** that you did not know.
5. Place a check mark by the **key words/concepts** that you did not know.
6. Review the information that you put a check by until it is understood.
7. Develop a **mathematic glossary** to remember **key words, concepts, definitions, terms, diagrams, graphs, formulas, etc..** Create flashcards to help you study these.
8. Write the page number, lecture number and date on each sheet of notes. File work in an organized binder.

Reworking Your Math Notes

Most forgetting occurs right after learning the material. The following steps should be taken as soon as possible after class to improve your understanding of the lecture:

1. Rewrite the notes that you cannot read or may not understand several days later. You will avoid the frustration of not having this information to help you do your homework.
2. Fill in the gaps. Locate the portions of your notes that are incomplete. Fill in the information that was left out by using your text or reviewing someone else's notes.
3. Place additional key words/concepts in the left hand column. These are key words/concepts not recorded during lecture that are important to mathematics learning.
1. Rework model problems over and over until you can do them without stopping. *This is the crucial step that most students overlook.* Instead of figuring out what is being taught in the model problem, they jump right into doing homework and end up reworking problems several times!

EXTRA TIP: Before class, review terms, theorems and formulas referred to in new material.
Formulate questions to ask the instructor during class.

MATH TEST TAKING TIPS

Suggestions for Word Problems

1. Read the problem for a general sense of what it is about; sometimes putting it into your own words will help.
2. Then reread it to pick out specific information:
 - a. What are asked to find? Usually you choose a variable to represent one unknown and other unknowns will be represented in terms of the first.
 - b. What information is given? Make a list, and then organize it into a diagram, picture, or chart.
 - c. What are the relationships among the information given and the information to be found? Sometimes it helps to think of similar problems from arithmetic and the formulas needed there.
1. Translate the information into an equation - get into the habit of doing this for easy problems. The longer problems will not seem as difficult.
2. Solve the equation you have written and label your answer - then find any other quantities to be found.
3. Return to the original problem and check your answer(s). Do your answers make sense in the original problem and answer the question posed?

Before the Test

TEST YOURSELF: Most text have chapter tests at the end of the chapter. Try at least one problem from each section. Go back to the section in the text where you are having the most problems. Go slowly! Reading math text is not like a novel.

DON'T CRAM: During study sessions you may come up with many questions you would like to ask your instructor. If you cram, you will have no time for this. Study a bit each day and come to class with questions. Ask the instructor about the various types of problems that will be on the test and their differences and similarities.

USE RESOURCES: Instructor office hour, study buddy/study group, tutors, STEM Center

MATH IS CUMULATIVE: This cannot be stressed enough. Understand today's material to understand tomorrow's!

During the Test

1. **BREATHE**, relax and center yourself, pace yourself as you take the test.
2. **GLANCE**: Look over the entire test. Get a feel for it.
3. **READ CAREFULLY**: Understand what is asked of you and make sure you do *ALL PARTS* of a problem.
4. **DO EASY PROBLEMS FIRST**: This will build confidence and ensure points! If you struggle with a problem, come back to it later. Concentrate on those problems that are worth more points.
5. **SHOW ALL WORK**: Most instructors give partial credit even if you don't get the correct answer. Never waste time erasing, either. You may end up erasing something that may help you later in the test.
6. **VERIFY**: Does each answer make sense? If you have time, check your work.

Don't Believe Everything You Hear

1. *MEN ARE BETTER IN MATH THAN WOMEN.* Research has failed to show any difference between men and women in mathematical ability. Men are reluctant to admit they have problems so they express difficulty with math by saying, "I could do it if I tried." Women are often too ready to admit inadequacy and say, "I just can't do math."
2. *MATH REQUIRES LOGIC, NOT INTUITION.* Few people are aware that intuition is the cornerstone of doing math and solving problems. Mathematicians always think intuitively first. Everyone has mathematical intuition; they just have not learned to use or trust it. It is amazing how often the first idea you come up with turns out to be correct.
3. *MATH IS NOT CREATIVE.* Creativity is as central to mathematics as it is to art, literature, and music. The act of creation involves diametrical opposites--working intensely and relaxing, the frustration of failure and elation of discovery, satisfaction of seeing all the pieces fit together. It requires imagination, intellect, intuition, and aesthetic about the rightness of things.
4. *YOU MUST ALWAYS KNOW HOW YOU GOT THE ANSWER.* Getting the answer to a problem and knowing how the answer was derived are independent processes. If you are consistently right, then you know how to do the problem. There is no need to explain it.

Don't Believe Everything You Hear

5. THERE IS A BEST WAY TO DO MATH PROBLEMS. A math problem may be solved by a variety of methods which express individuality and originality-but there is no best way. New and interesting techniques for doing all levels of mathematics, from arithmetic to calculus, have been discovered by students. The way math is done is very individual and personal and the best method is the one which you feel most comfortable.
6. IT'S ALWAYS IMPORTANT TO GET THE ANSWER EXACTLY RIGHT. The ability to obtain approximate answer is often more important than getting exact answers. Feelings about the importance of the answer often are a reversion to early school years when arithmetic was taught as a feeling that you were "good" when you got the right answer and "bad" when you did not.
7. IT'S BAD TO COUNT ON YOUR FINGERS. There is nothing wrong with counting on fingers as an aid to doing arithmetic. Counting on fingers actually indicates an understanding of arithmetic-more understanding than if everything were memorized.
8. MATHEMATICIANS DO PROBLEMS QUICKLY, IN THEIR HEADS. Solving new problems or learning new material is always difficult and time consuming. The only problems mathematicians do quickly are those they have solved before. Speed is not a measure of ability. It is the result of experience and practice.

Don't Believe Everything You Hear

9. MATH REQUIRES A GOOD MEMORY. Knowing math means that concepts make sense to you and rules and formulas seem natural. This kind of knowledge cannot be gained through rote memorization.
10. MATH IS DONE BY WORKING INTENSELY UNTIL THE PROBLEM IS SOLVED. Solving problems requires both resting and working intensely. Going away from a problem and later returning to it allows your mind time to assimilate ideas and develop new ones. Often, upon coming back to a problem a new insight is experienced which unlocks the solution.
11. SOME PEOPLE HAVE A "MATH MIND" AND SOME DON'T. Belief in myths about how math is done leads to a complete lack of self-confidence. But it is self-confidence that is one of the most important determining factors in mathematical performance. We have yet to encounter anyone who could not attain his or her goals once the emotional blocks were removed.
12. THERE IS A MAGIC KEY TO DOING MATH. There is no formula, rule, or general guideline which will suddenly unlock the mysteries of math. If there is a key to doing math, it is in overcoming anxiety about the subject and in using the same skills you use to do everything else.

Get Math Help When You Need It

Center hours are:

Monday through Thursday, 9 a.m. to 7 p.m.

Friday, 9 a.m. to 2 p.m.

Sign in for Math tutoring

[Microsoft Word - Logging in to Microsoft Teams.docx \(citruscollege.edu\)](#)

[Drop-In Tutor Schedule](#) available online

[STEM Center Study Sessions](#) available on line

Check out Stem Center at: www.citruscollege.edu

Or contact them through: mycitruscollege.edu

For more information, contact the STEM Center coordinator at (626) 914-8724.

