

HOW TO SUCCEED IN YOUR UIUC MATH CLASS

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WHAT IS THIS?

This note discusses principles of learning mathematics that anyone can use to enrich their experience in a math class. I focus on starting out in a new math course at the University of Illinois at Urbana-Champaign where I am a TA (teaching assistant), but the principles apply more generally.

Disclaimer: The views expressed herein are entirely my own, and do not necessarily reflect the policy or position of the University of Illinois.

WHAT DOES IT MEAN TO SUCCEED?

Not everyone takes a math class for the same reason. Person A might take a math class to pass off a general education requirement, whereas Person B might be in a major where this math class is the first of many. Because people have different reasons for taking math classes, what it means to “succeed in a math class” will be different for each person.

Grades are the most obvious indicators that we use for success, but they are not the only or even the most reliable indicators. In the college setting you can’t get away from grades—they’re part of the package—but you also don’t have to make them the focus of everything you do. It is good to set goals to achieve such-and-such grade, but you can still be considered successful whether or not you meet this kind of goal.

You can know you are successful when you:

- Work diligently and effectively to understand the material.
- Persevere through disappointment and temporary setbacks.
- Recognize your mathematical weaknesses and seek to improve them.
- Do your best, and are satisfied with giving your best effort.

PRINCIPLE 0: BE PREPARED

Mathematics is inherently a *cumulative* discipline. Previous math courses form a foundation of understanding upon which future math courses are built. For example, as children we learn about addition and subtraction, multiplication and division. Algebra builds on these basic notions and generalizes them to dealing with equations and graphs and so forth. In calculus we take equations and functions and introduce mathematical notions of change. And so it goes.

Thus, the zeroth principle is to only take math classes for which you are prepared. If you do not have the necessary foundation, it will be very difficult for you to absorb the new language and concepts. At UIUC we have the ALEKS placement test that helps assess whether you are prepared for a certain class. If you are unsure as to whether you are prepared for a class, meet with an undergraduate adviser (313 Altgeld Hall, mathadvising@illinois.edu).

PRINCIPLE 1: YOU CAN DO IT!

You might be uneasy about taking a college math class. Maybe you think you are “just not a math person.” Maybe you had a bad experience with a math class or math teacher in the past. Maybe you are the first person in your family to go to college. Maybe you come from a group that is traditionally underrepresented in mathematics. For any of a hundred reasons, stepping into a math class on the first day can be daunting.

With all of these fears and anxieties, it is natural to feel that maybe you don’t have what it takes to be successful. The first principle for being successful in your math class is to realize that this is a lie! You *can* be successful, regardless of your background or past mathematical experiences. This new class represents new opportunities to learn and new possibilities to explore.

The worst thing you can do is tell yourself you can’t succeed when you haven’t even started.

It is important not to confuse this principle with some sort of “power of positive thinking.” Rather, this principle is simply an honest recognition that you have the capacity to succeed.

PRINCIPLE 2: YOUR ROLE AS A LEARNER

Learning is hard work. You go to lectures, professors or instructors write things on a blackboard, and you take notes. But this is not where the learning happens.

You are an agent to make choices and to *act for yourself*; you are not an object that is merely acted upon. In lectures you listen to the presentation and take notes; here you are *acted upon* as the instructor imparts to you whatever information they see fit to give. The real learning happens as you wrestle with the ideas and concepts presented in lecture, as you *act for yourself* to learn the material.

Thus, when lecture is over the learning is not over. Rather, the learning has scarcely begun. To internalize and eventually master the concepts introduced, it is necessary for you to “get your hands dirty” and experience mathematics firsthand.

This is one reason that doing your homework is so important. Homework represents the opportunity to take what you have heard in lecture and apply it on your own. You test things out, you get confused, you make mistakes, you ask questions, and you try again. All of this is part of the learning process. If you view homework as an instrument to help you learn rather than as an unpleasant chore to be done, then your power to learn mathematics will increase dramatically.

No one can force you to learn. You will not master the material in the course merely by being *acted upon* at lecture. It is essential that you *act for yourself* and take charge of your own learning.

PRINCIPLE 3: USE YOUR RESOURCES

I should point out that *acting for yourself* and taking charge of your learning experience does not mean that you try and do everything by yourself. You have many resources to aid you as you learn math. You have:

- Lectures given by the instructor.
- Office hours, where you can talk to the instructor and ask questions.
- The textbook, which is filled with information and problems to help you learn.
- Peers in the class with whom you can study and learn math.

- Tutoring hours held by the TAs.
- The internet, where you can search for videos, tutorials, and notes on the subject matter.

Part of being an active learner or agent is utilizing all the resources within your reach. You will learn more quickly and more effectively as you use all of the learning resources at your disposal.

PRINCIPLE 4: WORK

Learning is hard work, and it takes hard work to learn. There is no substitute for work. In order to do well in your math class you must be willing to work, and you must work diligently throughout the duration of the course. Some ways in which you can work effectively include:

- Going to every lecture, paying attention, and taking good notes.
- Reviewing your notes after each lecture.
- Doing your homework with the attitude that it will help you learn.
- Being honest with yourself about what your mathematical weaknesses are, and doing practice problems to improve these weaknesses.
- Devoting sufficient time to studying and reviewing. “You get out what you put in.”
- Studying consistently, not just when a test is coming up.
- Asking questions.
- Getting help from the TAs and the instructor sooner rather than later.

Only you know how much time you should devote to studying math. Your math class is but one class among many, and you have to *act for yourself* and determine how much time to spend on your classes, how much time to spend with friends, how much sleep you should get, and so forth.

SUMMARY

The principles we have briefly discussed will help you, if you apply them, to be a more effective student of mathematics. Remember that you can be successful, and that you are not defined or limited by your past mathematical experiences. Remember that you are an agent to *act for yourself*, and that you are in charge of your learning. Remember to use all of the resources at your disposal. Lastly, remember to work hard!

As you diligently apply these principles you will feel pleased that you are doing your best, and you will be able to succeed in your UIUC math class.

Have fun learning!