

More Tips for Getting an A in My Class

Dan Margalit

This document is a followup to [“How to Get an ‘A’ in My Class”](#) by Katie Mann. Note that Prof. Mann’s class and my class are not the same class. But the advice is good.

6. Put away your devices. The distractions of modern technology make it physically impossible to learn. Your brain is the result of millions of years of evolution. As wonderful as it is, your brain is not good at multi-tasking. See, for example, [this video](#). Even having your phone on your desk is a major distraction. Having your laptop out in class distracts you *and all of the people behind you*. Much has been written about the effects of technology on our ability to concentrate. [Here](#) is a good place to start to learn more.

7. Memorize! This one is a cliché among math teachers, but here goes. If you are in a play, you can’t expect to nail the performance if you haven’t memorized your lines. In math, if you don’t know what the words mean, and what the theorems exactly are, then you won’t be able to apply them, string them together to make logical arguments, or answer basic questions about them. In any math class there should be a reasonable number of “double star” definitions and theorems that you absolutely need to know by heart. If your professor doesn’t tell you what they are, and you can’t figure it out, then ask. And then memorize!

8. Don’t just memorize! If your strategy is to memorize a list of facts, then you are unlikely to succeed in a college level math course. It is too much information to simply memorize. As an analogy, think about how you get from the place you live to your math class. If there is construction along your usual route, you can probably figure out an alternate way to get there. Is it because you memorized all possible routes and choose the next one on the list? Of course not? It is because you have some general understanding of your route (this part of town is laid out in a grid, except for this park in the middle...). In your math class you want to achieve a similar higher level of understanding, so that if the exam asks a question about a theorem and uses slightly different words, you can still understand what is going on.

9. Explore! So what should you do if you are not just memorizing? Answer: walk around (metaphorically) in the landscape of mathematics surrounding your course. Think about the definitions and theorems from different points of view, ask questions, and work examples. Write computer programs, or play with existing demos. Think of

this as play! What happens if I do this... what happens if I do that... what if I change a parameter like that...?

10. Office hours! Office hours, office hours, office hours. Go to them. In my office hours, there are usually only a handful of people. Those students are getting almost-one-to-one tutoring from the expert (and the person who is making the exams!). In office hours, you get to have real time feedback on your understanding. This is invaluable. Also, read the next piece of advice.

11. Explain it back! As a researcher, I learn new math every day for a living. When someone explains a new idea to me, what often happens is that it seems like it makes sense to me. And then I ask if I can explain it back. And nothing comes out of my mouth. In that case, I ask the person to explain it to me again. We repeat the process. Only when I can explain the idea in my own words do I start to think I understand the idea. My suggestion is that you should do this with your friends and with your instructors in office hours: ask if you can explain it back.

12. Make your own exam questions. This is a pro tip. I always write my exams with the idea that the students should be able to guess the questions. So try to guess the questions! See if you can take an example question from class and modify it in such a way that it would be a good exam question. Give your exam questions to your friends.

13. Attitude. Try to have a positive attitude. Despite any previous negative experiences you have had in math, I can absolutely assure you that math is fundamentally interesting. Many people (like me) have devoted their entire lives to studying it. It is because the subject is beautiful and mesmerizing. The best thing that can happen between me and one of my students is when they realize that math is beautiful. Unfortunately, the more common reaction is of the form “this is boring”, “I hate it”, “why do we have to do this” etc. If you feel that way, let me know. I’ll try to convince you otherwise. If you come in with the right attitude, your chances for success go way higher.

There is a general principle behind all of the pieces of advice here and in Prof. Mann’s note: success in math comes to those who work hard, work intentionally, and work positively. Most of us are taught from a young age that math is for math geniuses. If there is such a thing as a math genius, it is very rare, and most of the people who are successful at mathematics are not both with an extra large brain. If you want to succeed, then choose to work hard, get the help you need, and redirect if things don’t go as planned. You can do this. I feel that every student who walks in my door has the

power to succeed. I am here to help you in this, so please let me know how I can help.
And good luck!