

Digest 8

(A compilation of emailed homework questions, answered around Wednesday.)

Question. (From a student): How should I interpret my midterm grade?

Answer. On midterm 2, the median was 36, and the standard deviation was 9. So, using standard curving practices, a score of 44 is roughly an A, a score of 36 is roughly a B, and a score of 27 is roughly a C.

Also, remember the final course grade can take the maximum of the two midterm scores. (The final course grade has two grading schemes, and you are given the maximum of these two grading schemes automatically.)

Question. (From a student): I am unhappy with my exam performance. What can I do to improve in the class?

Answer. There are a few immediate things you could do. One is to increase the amount of time you are putting into studying outside of class. If you are not doing well in the class, you could maybe aim for around 10 hours a week. The second thing you could do is go to office hours (of mine, of the TAs, and of the student math center). When you are doing the homework or getting extra help through office hours, your goal should be to understand the problem and how to come up with the solution. That is, your goal with extra help should not simply be to get the answer to get the homework done. I don't expect every person to be able to solve every problem, and this is why we have office hours, but any activity which allows you to passively get the answer to a question will not teach you anything. In particular, if you ask for the answer to some question at office hours, you should have thought about that question for at least 30 minutes already. If you haven't done this, then you might not learn anything, and as a result you might not do well on the exams.

There is a saying that mathematics is not a spectator sport. In other words, the best way to learn mathematics is to do mathematics.

Here are some things related to studying for the exam itself (which can apply for any class):

- Start studying for the exam roughly a week before the exam. Study your notes and/or the book. Make your own study guide, i.e. a page or two that summarizes all of the main topics, which can be easily re-read for studying later in the week. (Simply creating a study guide like this will help you focus on the main topics.) Brush up on more confusing things. Do a good mix of easy/hard exercises during the week. After you have done this preliminary studying, take two or three practice exams, and time yourself to try to mimic our testing situation. Your results on the practice exam should then inform which topics you should go over again. It is especially important to try doing hard problems (the practice exams

should help you to get an idea of what I mean by a hard problem; also the “additional and advanced” exercises in the textbook should be a bit harder sometimes).

- I would recommend studying most intensely two days before the exam.
- The day before the exam, I would recommend not studying very much, to conserve your energy.
- The day of the exam, maybe do some “light review” in the morning, but nothing too strenuous.
- During the exam, think before you act. Deciding how to approach a problem, i.e. eliminating potentially bad strategies, can save you a lot of time. Also, during the exam, it may be best to go through the exam rapidly, and then go back later to questions you had the most trouble with. (I usually try to put the hardest questions at the end, so that you won't get hung up on an early difficult problem.) These things can help a lot for a midterm, when time is limited.
- I think it is also helpful to have a sugary or caffeinated drink in the exam, to stay awake.
- Some exam questions are meant to mimic the homework. Other exam questions are meant to be different from the homework, to try to test your understanding of the material, and your ability to extend your understanding. Some questions are meant to be difficult. (For example, only one or two people person got the last question entirely right on this midterm. I didn't intend for this to happen, but it happened.)

I hope this is helpful. Also, I should caution that it is easy, especially in math classes (and I find myself doing this sometimes too), to feel like I understand something, but then when I am asked to do something fairly complicated, then I am unable to do it. This feeling applies really to any class though. If you can complete the homework and a few exercises, it may feel like you understand certain things, but it may also be that there are certain things you missed and you are unaware of. I don't expect everyone to obtain complete mastery of the course in ten weeks, but part of the goal of studying and doing hard problems is to find the gaps in your knowledge, and to fill in the gaps accordingly. Math is difficult and getting details and developing understanding is hard, but I believe if anyone follows the correct procedures, then they have the ability to learn this stuff (and do well on exams).

Also, the midterms have a bit of a time constraint, but the final is quite long (3 hours), so if time constraints were an issue for you on the midterms, then hopefully they will not be on the final.

Lastly, if you show significant improvement over the quarter, then your final course grade may be a bit higher than you would otherwise expect.