## 16 – IV | Problem Solving

As discussed in the previous "effective studying" section, don't waste time. **Do not** use **everything and anything** to do your homework and get through it as quickly as possible. A 70% on homework is far more than enough, as it is not worth much of the grade if anything at all after a grade adjustment. What you want to do is spend your time on practice exams rather than getting 100s on HW that doesn't affect your grade.

"If you fail every homework assignment and ace every exam, you'll ace the course. If you ace every homework assignment, you are going to become an expert at doing homework!"

Time and time again, students who get 50s-70s on homework and take weekly practice exams ace the course. Students who get 100s on every assignment and do not take practice exams get F's, D's, and C's.

Make sure you understand how the solution works. Don't just go to Chegg and use the solution to plug the correct answer into your online homework. That is pointless, and homework is generally worth so little that getting 100s on every assignment is pointless. With grade adjustments and possible extra credit bonus points, … the homework is ultimately negligible.

Again: A student who gets 100% on every assignment and F's, D's, or C's on the exams is instantaneously understood to be a homework slacker or a homework cheat. Professors are not ignorant. The people who get D's and C's on homework tend to ace the exam because they genuinely worked the material until they understood it, rather than the ones who get 100s who cheated and wasted all their time focusing on a part of the grade that is wiped out at the end of the semester.

If 95% of the grade is based on exams and all you do is homework and use references to help you complete the homework, how do you expect to do well on an exam? All you did was train yourself to do homework with the help of others when an exam is coming up, on your own, with no assistance.

E.g., a football player spends a lot of time in the gym exercising, on the field running, pushing heavy objects, and so forth. Do you think that will make this person a better football player? NO! They have to actually play football to get good at football. So, doing homework is like hitting the gym to prep for a game—it doesn't make sense. No, you must also take many practice exams—i.e., play football. But, you also need strength—i.e., homework and practice problems.

### *i. It's Not a Mystery*

Some people feel or think that math and physics are magical concepts that only a few are blessed to understand. Professors often explain this information in a way that portrays it in this manner. It is all about arrogance. "I know something you don't know." Secrets and mysteries give an insecure person a sense of power.

“Some of the stupidest people I have ever met in my life are college STEM majors.”—Author Jonathan David

Mathematics is an instruction booklet. You wouldn’t teach someone half the alphabet and then ask them to write Shakespeare in sixteen weeks. Math is often presented this way to feed the professor's insecurities. At least it may seem that way, but it isn’t. The truth is: you are in a research degree, not a spoon-fed data degree. The professors structure the information so you can do research in the textbook, not cheat by watching videos on Khan Academy.

Most professors attended high school and are praised for their expertise in science or another field. They go to college and are praised again, then grad school, and then become a professor, only knowing how great they are—never working in the real world. They are professional students with no concept of being told anything other than how great they are. Then this all-mighty, great, and powerful professor has a classroom full of intellectual slaves paying for their punishment. It is truly a sick and outdated form of education. However, in hindsight, it doesn’t matter how the information is relayed; a student will learn it if they are genuinely interested, regardless of who or what explains it.

“There is no such thing as a bad professor; only bad students.”—Me

“There are two types of graduates: those who have jobs and those who complain about the job market.”—Me

Anyways: It is best to think of math-based courses like the instructions that come with a piece of furniture that needs to be assembled, i.e., an algorithm. Every question has an algorithm to solve it—memorize the algorithm and understand it later.

### *ii. It Doesn’t Have to be Confusing*

As previously mentioned, each question has an algorithm. Don’t get caught up in trying to thoroughly understand the course at hand. Just learn the algorithmic solutions and how to structure them. Write them neatly and clearly to maximize points and get through the course efficiently. Even if you did spend countless hours mastering the subject, you’d likely forget it within two weeks of the semester ending. Also, you are not going to school to be an expert on one subject, such as calculus. No, you just need a general understanding of it. And ultimately, you don’t need to know how to do the calculations by hand; you simply need to know how to set up the problem so that a computer can calculate it for you.

That being said, focus on how to set up problems more than how to solve them. In fact, on a test, the majority of the points are just setting up the problems. If you leave it at that, you may get a better grade than if you go through the calculations. After all, you already know introductory algebra, which is all the final calculations are. So, the professor may not care if you finalize the answer. I remember losing 20% credit on a problem for fudging the arithmetic. I said $2 + 3 = 6$ because my mind did multiplication instead of addition. The professor pointed

 

out that the question never stated, “simplify.” I could have just left it unsimplified, saved myself a bunch of time that could have been better used elsewhere, and gotten a better grade.

My ultimate advice: “If you don’t instantaneously know how to solve the problem, you don’t know how to solve the problem. Stop! Go find the solution or algorithm for solving the problem.” It took scientists decades to figure this out. Do you think you can do it in ten minutes?”

*iii. Simplify the Process*

I finished the previous section by stating, “If you don’t instantaneously know how to solve the problem, you don’t know how to solve the problem. Stop! Go find the solution or algorithm for solving the problem.” It took scientists decades to figure this out. Do you think you can do it in ten minutes?”

Why put yourself through excruciating mindful exercises when they are unnecessary? Okay, if you are like me and want to make original discoveries, it may be beneficial to do your best to figure it out on your own, which is what I did for years.

Finding algorithms using online sources, such as Khan Academy (and any content on YouTube), ChatGPT (Artificial Intelligence), Chegg, WyzAnt (private tutors), and similar resources, is unacceptable. You are to become learned in the art of reading and interpreting scientific theorems and definitions. If you run to the internet every time you need a formula or an algorithm, you are not getting the point of college. You should be opening the book, deciphering the theorem/definition, and creating the algorithm for the assigned problems to prepare for the exam—on your own. It involves strategizing and conducting research. Using unaccredited sources from unaccredited companies constitutes plagiarism and irresponsible behavior.

Plagiarism: "The practice of taking someone else's work or ideas and passing them off as one's own."—Oxford Languages

“We are different; some people cannot see past their own reflection. It is best to keep the mirror pointed at them and find someone else to reflect on.”

“I think, therefore I’m right.”—Me, “I speak; therefore, you are wrong.”—Me ← , you.

“If you feel angered or irritated at any moment, there is something wrong with you. Pointing fingers, playing the victim, blaming others, … is just another form of laziness.”

Simplify problem-solving – get the algorithms and memorize them by utilizing the theorems and definitions from the accredited textbook and professor, not YouTube.