Math 111-01, Fall 2022

Worksheets in Math 111-01

The main difference between this "Intensive" section and the other sections of Math 111 is that in addition to the three lecture class meetings, we also have an 80-minute group-work session each week. Every Tuesday, I'll hand out a worksheet, and you'll break into small groups and work collaboratively to solve the problems on it. While you work, Dasha (our TA) and I will circulate around the room, checking in on you and fielding questions.

Here are some things to keep in mind:

- A lot of the worksheet problems are more involved than most homework problems. This is intentional; you should talk and work with your classmates about the math. Most math problems, just like most real-life problems, can't be solved in just a few minutes.
- Remember that the real goal is to *understand* the mathematics, not to solve the problems as quickly as possible.
- It's important to explain your ideas to the other students in your group, and just as important to listen carefully to their ideas.
- It's also important to **write up your solutions clearly**, almost always **using words**.
- Worksheet sessions should be relaxed, informal times, where it is safe to try out half-baked ideas.
- "Math ability" is not an innate gift or fixed trait. Like playing an instrument or a sport, getting good at it comes with lots of practice. The worksheet sessions are part of that practice. By the way, "chain" is one of the secret words for Homework 0.
- Everyone in the group should participate. No hiding; everyone needs to get practice not just at solving math problems, but also at explaining their ideas to others.
- If you don't finish the required problems by the end of the class period, finish them later that day and hand them in by the **start** of the next class (i.e., Wednesday, usually).
- The challenge of cooperative learning is threefold:
    1. Can you take the "private speech" in your head (often jumbled and a bit incoherent, especially on harder problems) and make it into clearer "public speech" as you explain your solution to others?
    2. Can you become an effective questioner? This means that rather than just uncritically accepting other peoples' explanation, you ask them (in a **friendly, respectful, and supportive manner**) to fill in missing details and/or explain their intuition.
    3. Can you get used to learning from wrong turns, dead ends, and mistakes? Hard problems (found in homework, exams, and real life) are often like this, where you rarely take a direct path to the solution.

- For most worksheets, you will already have seen all of the math concepts and methods you need to do them in previous lectures. But can you figure out how to put those concepts and methods together in order to get a solution? Are you able to survey your math knowledge to see what applies to a problem and what doesn't? This "putting together" skill is essential, especially in math, science, and economics.
- **Every Monday night, be sure to read over your recent lecture notes.**
- **Bring your notes to every class, including on Tuesdays.**