

Journal/Reflective Writing

Math Journals: Weekly

I will be giving you several prompts throughout the semester, but you are also required to write one journal entry a week on your own. These entries allow you to enhance your mathematical thinking and writing skills. They also allow you to reflect on your own learning process. I recommend writing your entry after you have worked on a homework set or reviewed the week's materials. This will provide you with material to write about. The writing should take about 10-15 minutes. You are encouraged to focus on your strengths and weaknesses and your own learning process. Be as specific as possible, focusing on one or two concepts or problems and detailing how you worked through them.

Math Journal Prompts To Get You Started:

"I knew I was right when....."

"The thing you have to remember with this kind of problem is....."

"Tips I would give a friend to solve this problem are...."

"I wish I knew more about..."

How many times did you try to solve the problem? How did you finally solve it?

Could you have found the answer by doing something different? What?

What method did you use to solve this problem and why?

Was this hard or easy? Why?

Where else could you use this type of problem solving?

What would happen if you missed a step? Why?

What other strategies could you use to solve this problem?

Write 4 steps for somebody else that will be solving this problem.

What would you like to do better next time?

Were you frustrated with this problem? Why or why not?

What decisions had to be made when solving this problem?

What do you like about this type of math? What don't you like about this type of math?

Specific Prompts

Journal Prompt 1– Your Auto-math-ographical tale

Purpose: A light-hearted introduction to writing in your journal, this is meant to be an exercise in reflecting on where you've been and where you're going (mathematically, that is).

Guiding Questions:

- 1) What is your history with mathematics? What experiences, if any, in your education encouraged you to continue studying mathematics? Do any classes or teachers stand out (in a good or bad way- but please do not include real names!)?
- 2) Why are you in 211? What are your goals in this class? How will you measure your own success? What can I do to help you achieve your goals? What can you do to help you achieve your goals?

Journal Prompt 2–Discrete Math: This isn't Calculus anymore

Purpose: Discrete Mathematics is a gateway course to higher-level mathematics and will provide you with ideas and proof-writing techniques necessary to be successful in the world of mathematics. This entry is to help you think about the differences and similarities between Discrete Mathematics and your previous math courses and to reflect on the way you approach this course.

Guiding Questions:

- 1) Before the semester started, what did you expect Discrete Mathematics would be like? Is Discrete different than what you expected? How has it lived up to your expectations?
- 2) What skills and knowledge have you been able to use from your previous math courses? How have you had to approach this course differently?
- 3) Have you encountered any struggles in this course? If so, what are they? What are you doing to overcome these struggles? What can I do to help you? What have you found to be your strengths so far in Discrete?
- 4) Describe a typical week in the course, especially how you negotiate the cycle of preparing for class, engaging in class, and completing homework questions.

Journal Prompt 3- Peer Review Groups So Far

Purpose: You will work in your peer-review group throughout the semester. For this group to be successful, you must be giving and receiving constructive feedback. This entry is to help you think about the feedback you have received and how you and your group can work together so that you are benefitting from your interaction.

Guiding Questions: Have you been bringing portfolio questions to class to share with your peer review group? Has your group formed a method for distributing papers amongst yourselves and sharing feedback? Do you write on each other's papers or give your feedback in the form of conversation? Can you name one thing you have learned or changed because of this feedback? Now, as you think about the way you have been working with your group, is there anything you would change so that it can be more helpful? How will you incorporate Knuth's writing tips (and other writing tips distributed earlier) into your peer review discussions? After Justine's discussion of types of concerns in mathematical writing, can you give an example of a higher-order concern and an example of a lower-order concern?

In your groups you will be giving your assessment of another student's work. While this may be uncomfortable at first, remember it is for everyone's benefit and will only provide help if comments and suggestions are offered.

Journal Prompt 4- Patterns

Purpose: Now that we've been writing proofs in earnest for a few weeks now, I'd like you to reflect on the feedback you've gotten from me and your peers. It is believed that transfer of learning is not an automatic process, but is aided by self-reflection.

Guiding Questions: After gathering all of your returned homework, look for any patterns in the comments. Are the comments aimed at higher-order concerns (like, fundamental flaws in the flow or structure, or mistakes in the mathematics) or lower-order concerns (like, format or mathematical notation convention)? Reading a proof from Section 4.1 or 4.2, then compared with a later proof, what changes do you notice in your writing? Elaborate on your writing process; after doing so, explain at what stage in the process you can make improvements based on these patterns.

In many ways, every homework set you submit is a paper, where the topic is set by the mathematical content of that section. Of your work so far, which is your favorite "paper" and why?

Journal Prompt 5- Final Reflections

Purpose: You are now finishing a course on mathematical writing. Though we have also learned a lot of new math along the way (the discrete mathematics topics of divisibility, parity, sets, functions, etc.), we have primarily focused on proof writing throughout the course. In this last journal, you are to provide a synopsis of your experience of learning to write mathematics. You will integrate this into your understanding of mathematics and your (first) journal entry about your own auto-math-ography.

Guiding Questions: Please answer *all* of these questions in your journal response.

- 1) In a few sentences, give your best explanation (to a non-expert) about what it means to write a mathematical proof.
- 2) What exactly is a mathematician? How is a mathematician different from someone who just uses mathematics in his work like, say, an engineer, a theoretical physicist, an accountant, or a used car seller?
- 3) What is mathematics? How can we define it? How do we decide if some activity should be considered mathematics?
- 4) In your first journal essay you wrote about your own experiences in mathematics. After finishing this course, do you feel your trajectory has changed? In what ways have you changed?
- 5) What 3 pieces of advice would you give someone starting this class next semester?