

## SCI 199Y: Random Walks and Mathematical Discovery

### MINOR PAPER ASSIGNMENT

(Due Monday December 2, 4:00 p.m., in my office, Sid Smith 6011.)

**Identification:** Please include (on a separate page) some information about yourself, including your name, your intended field of study, where you're from, and whatever comments you have about the course so far. Also, to make sure I assign the right participation score to the right person, please include a small photograph if possible, or else a "brief physical description" to identify yourself to me. Thanks!

### The Assignment

You are to write a short (5–10 pages typed double-spaced) paper about some aspect of the course. The main criteria for a successful paper are: It should show that you have thought carefully about the topic; it should add something new to the course (not just repeating what we've already said, not just copying from some other source); it should be interesting; it should be well organized; and it should be well written.

The topic and style of the paper are reasonably flexible, provided that it is clearly linked to things that have been studied in the class. (Free free to discuss your ideas with me in advance.) Possible types of paper include:

**Testimonial:** Write about something from your own experiences with learning mathematics. Be sure to relate your experiences to the class readings, and to general principles in math education; don't just tell a story.

**Critical:** Write a critical essay about some of the readings from class. The essay should indicate in what ways you do and don't agree with the authors you consider, and should give logical reasons for your feelings. You will probably have to do some additional readings (e.g. reading entire articles/chapters/books, from which we have so far read only excerpts).

**Research:** There are numerous books and journals related to mathematics education, psychology of mathematics, gender and mathematics, etc. Do some library research to find writings that interest you and are related to some topic explored in class, and write an essay about the writings you find and your opinions about them.

**Mathematical:** Work on extending some of the mathematical ideas considered in class, either on your own or making use of other math references. The extensions should be related to probability theory and/or to random processes and/or to gambling. Write an essay explaining your extensions, what they mean, and why they are interesting. Your essay should be written in such a way that someone not in this class could still understand it and find it interesting.

**Experimental:** Get a group of people together and perform some experiment related to mathematics education. Write an essay about the results, being sure to draw interesting conclusions which are related to the course topics.

**Other:** If you have another idea for a Minor Paper, which is interesting and related to the content of the course, then feel free to discuss it with me.

**Notes:**

1. You may discuss the general ideas of your paper with others, and you may have others proofread your work. But the main ideas and writing of the paper should be done entirely by you.
2. Some papers may require library research. The University of Toronto library system is well catalogued so you should find lots of interesting items. In particular nearly all of the class readings so far are available in some U of T library (e.g. the Mathematics Library, the Sigmund Samuel / Science and Medicine Libraries, and the OISE / UofT Education Library). If you have trouble finding what you need then you may ask me for assistance.
3. Be sure to include a list of all references (and other sources) which you have used in preparing your paper.
4. In class on **Wednesday November 27**, you should be prepared to present your Minor Paper ideas to other students.
5. As mentioned at the beginning of the year, the Minor Paper will count for 20% of your final course grade.

**And by the way:** The Major Paper (worth 40% of your course grade) will be due around mid-to-late-March. The exact details are not yet determined, but the most likely “suggested paper type” will be a combination of Critical and Research as listed above (though Experimental will also probably be a possibility).