

MATH 220 Writing Assignments

Spring 2012, Section 905

There are three writing assignments in addition to the writing you will do for homework and exams: Two are extended solutions to discussion and discovery exercises from the text (minimum 500 words each, or approximately 2 pages), and a third will be a term paper (minimum 1000 words, or approximately 4 pages typed).

The term paper should be expository, on a topic involving mathematics or mathematics education, written for a reader with at most a standard high school mathematics background. Some types of possible topics are: a major theorem (e.g. Fermat's Last Theorem), a problem that remains unsolved but has led to substantial mathematical activity (e.g. the Riemann Hypothesis), an important mathematical concept (e.g. the axiom of choice), a specific application of mathematics to another subject, or a biography of a famous mathematician. The paper need not contain proofs, but should have significant mathematical content. (For example, in a biography, include a discussion of some of the mathematician's work.) You must use and cite two or more sources, at least one of which must be off-line (e.g. a book, journal, or newspaper article).

Due dates and further details are below.

Wednesday 2/8: Extended exercises (15 points) and paper proposal (5 points) due.

For the extended exercises, choose two or more from the following list:

1.1 D1, D9; 1.3 D4; 1.4 D5, D6, D7, D8, D9; 2.1 D6.

Some of these exercises are open-ended. Write as much and as precisely as you can about each exercise you have chosen, in complete sentences. The emphasis is on the writing, not necessarily on finding complete solutions to the longer exercises. (Typed or hand-written.)

The paper proposal should be a few sentences describing your chosen topic. (Typed or hand-written.)

Wednesday 3/7: Extended exercises (15 points) and detailed outline or rough draft of paper (15 points) due.

For the extended exercises, choose two or more from the following list (instructions the same as above):

3.1 D1, D2, D3, D5, D6; 3.2 D2, D6; 3.3 D1; 5.2 D1.

For the paper, if you choose to submit an outline only, it should be at least one full page and contain most of the ideas that will appear in your final paper. (Typed or hand-written.)

Wednesday 4/11: Final paper due (50 points). This must be a minimum of 1000 words, typed. The grade will be based on mechanics, presentation, and content.

Further possible paper topics: four color problem, party problem and Ramsey numbers, the Tower of Hanoi, random card shuffling, Euler characteristic, Platonic solids, crystal structures and symmetry, fractals, Poincaré conjecture, continuum hypothesis, public key cryptography, sphere packing problem (Kepler's conjecture).