

IDS 101-19: Living Mathematics
Fall 2008
Paper #3: Mathematical Exposition

Paper topic: Write a paper explaining a mathematical topic we have seen in the readings. Your paper may have historical and biographical components, but at least half of the exposition should be about mathematical ideas. Write for an audience who has the same general mathematical background as the members of the class, but who haven't read our readings or attended our class discussions.

Possible choices include, but are not limited to: Pythagorean triples and the statement of Fermat's Last Theorem; Excessive, defective, and perfect numbers; The bridges of Königsburg problem and the beginnings of graph theory; Non-unique factorization and Kummer's correction of Cauchy's and Lamé's faulty proofs; The liar's paradox and Gödel's incompleteness theorem; identification diagrams, the torus, Möbius band, and Klein bottle; 3-manifolds and the shape of the universe; non-Euclidean geometries; permutations and the 14-15 puzzle; the Platonic solids; Ramsey numbers and the party problem; cellular automata, the game of life, and Wolfram's New Kind of Science.

An excellent paper should include: All the items in our "features of good expository papers" list developed in class.

What's due when:

1. A short oral presentation about your topic (a few minutes), to give in class Thursday November 6.
2. At least one meeting with Josh or Alicia sometime between now and November 26.
3. A first draft of your paper, 1100–1400 words, Thursday November 13. Bring 3 hard copies of your draft to class and e-mail me an electronic copy.
4. A final draft of your paper, 1100–1400 words, on or before Wednesday November 26. Give me 1 hard copy (in class or at my office) and e-mail me an electronic copy.