

Project Guidelines

Math 467W.01

Spring 2008

Each student will complete a paper during the course of the semester. I will provide a list of possible topics. Each student must choose a topic and notify me by Thursday, 24 January 2008. No two students will be allowed to choose the same topic, and topics are first-come first-served, so feel free to notify me of your topic before that date. **The written assignment will be worth 25% of your grade and will require the following:**

- (10 points) Notify me of your topic on or before Thursday, 24 January 2008.
- (10 points) Find a mathematical journal article in some way related to your research. You should acquire this paper and provide me with a copy of it on or before Tuesday, 5 February 2007. This is supposed to give you an idea of what your paper should look like.
- (20 points) Write an outline of the paper - include titles of sections for the paper and a brief (phrase or sentence) of what will be covered in each section. This outline should be TeX-ed and is due on Tuesday, 5 February 2008. This should be a brief outline. A more detailed outline will be due later.
- (30 points) A detailed outline of the paper - include titles of sections and subsections indicating clearly what will be involved in each section. This outline should be TeX-ed and is due on Thursday, 6 March 2008. This is the same date as your mid-term exam. Please plan accordingly. This should include a thorough list of references. If you have any questions about whether or not your references are reliable, please talk to me. Notice that *Wikipedia* is not a reliable reference.
- (50 points) A rough draft of the paper will be due on Tuesday, 1 April 2008. You should use TeX, with the “article” or “amsart” document class, and use the “section” and “subsection” commands. The paper should include a title and an abstract (use `\{begin}abstract` and `\{end}abstract` for the abstract environment). The paper must include references (using the bibliography environment). Feel free to include pictures, figures, etc. Ask me about any typesetting questions. I will not put page restrictions on the paper, but remember that it is a major portion of your grade. Talk to me about these requirements if you have any questions.
- Copies of the rough drafts of the papers will be distributed, to allow one classmate to comment on your rough draft. It is expected that there will be no spelling errors, typos, or grammatical issues in the final version.
- (100 points) The final version of the paper will be due on Tuesday, 29 April 2008. Each student will give a short presentation about their paper in the last 3 class periods. A sign up sheet will be distributed later this semester.
- Any student who plagiarizes any portion of the assignment will receive a 0 on the entire project and will be reported to the Dean of Students. Students may receive a grade of F for the course if caught plagiarizing.

No late assignments will be accepted.

Topics for Papers

- Possible number sense in the animal world
- Advantages and disadvantages of bases other than 10
- Inductive mathematics vs. deductive mathematics
- Grotefend, Rawlinson, and the Behistun Rock
- Napoleon, Champollion, and the Rosetta Stone
- Pythagorean number mysticism
- How the discovery of incommensurable magnitudes produced a crisis in the development of mathematics
- The importance of unsolved problems in mathematics
- Mnemonics in elementary mathematics
- Origin of the axiomatic method, both evolutionary and revolutionary accounts
- Sir Henry Billingsley
- The case for Archimedes as the inventor of integral calculus
- The burning of books in China in 213 BC
- Chinese mathematical works prior to 1200
- Matteo Ricci
- The influence of Chinese and Hindu mathematics on European mathematics
- Hindu mathematical works prior to 1200 AD
- Al-Kashi's contributions to mathematics
- History of early Japanese mathematics
- Gerbert and his influence on mathematics
- The transmission of ancient Greek and Hindu learning to Western Europe after the Dark Ages
- Luca Pacioli
- Leonardo da Vinci and mathematics
- The life and works of Robert Recorde
- Viète as the first really modern mathematician
- Harriot as the father of the modern theory of equations
- Pernicious effects of the Inquisition
- The greatest French mathematician of the seventeenth century
- The five most important French mathematicians of the seventeenth century
- The relation of Zeno's paradoxes to the calculus
- The Greek contribution to the development of the integral calculus

- The five most important British mathematicians of the seventeenth century
- Napoleon Bonaparte and mathematics
- Pierre Méchain's tragic error
- The two Sir William Hamiltons
- De Morgan as one of the most quoted mathematicians
- Some nineteenth century prodigies
- Augustus Ferdinand Möbius
- Giuseppe Peano
- Jacob Steiner and Julius Plücker contrasted
- Why there are so few eminent women in mathematics
- Kurt Gödel and his theorems
- Anna Johnson Pell Wheeler