

Math 1303 - Math in the Liberal Arts - Paper/Presentation Guidelines

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| DUE DATE | Friday, September 26th, during class. If the paper is not turned in by this time, 2 points will be deducted for each class day until it is turned in. Oral presentations can begin on this date. |
| FORMAT | The paper should be word processed, double spaced, with the usual margins and type size. One title page should be stapled to the top. The paper should be spell-checked and grammatically correct. The oral presentation will be give in class. The presentation should cover the main themes of your paper, and should consist of you simply reading your paper to the class. |
| PAPER LENGTH | Your paper should be more than three pages in length, not including the title page and references. |
| PRESENTATION LENGTH | Your presentation should be approximately 10-15 minutes, with an expectation of a minute or two question and answer session at the end. |
| REFERENCES | References should be given at the end of the paper. Web references are fine as long as they are fully cited (along with the date of citation, since information can change quickly on the internet). Plagiarism will not be allowed and is grounds for receiving no credit for the paper. All quotes must be fully cited. Copying and pasting from web sources is plagiarism. Plagiarism includes using someone else's ideas or words as one's own. This must be a new paper, written exclusively for this class; papers written for other classes will receive no credit. |
| PURPOSE | To broaden your mathematical experience by allowing you to explore mathematical ideas and topics that we won't have time to cover in class. |
| GRADING | The paper and oral presentation will be graded based on the following: <ul style="list-style-type: none">• originality• mathematical content• demonstrated understanding of the mathematics• evidence of preparation and research• organization• ability to communicate material to the class• spelling and grammar• format and references• length of paper and presentation• topic approval |
| TOPICS | The following are a list of ideas you may wish to consider for your paper and presentation. Please fill out the topic approval form with your topic. You do not have to chose from the following list. However, if your topic is not approved, it may not be accepted. |

FAMOUS PROBLEMS

There are many problems in math that can be understood without learning the mathematics behind the solutions. This paper should explain the problem and describe the history of the problem, who worked on the solution, how it came up, what subjects were involved in solving the problem in the case where a solution is known, etc. Examples might help the audience to understand the problem, but do not go too deep into the details of the solution unless you can make it understandable to your peers. You should, however, completely understand the problem. The following are examples of topics:

- Fermat's Last Theorem

- The Four Color Problem
- The Traveling Salesman Problem
- The Seven Bridges of Königsberg Problem
- The Problem of Points
- The ABC Conjecture
- The Princess and Monster Game
- Hilbert Problems

MATHEMATICAL SUBJECTS

Mathematics is a collection of subjects, some are relatively new, some are quite old. You could write about a particular subject, how it came about, who was involved with it, what it was used for, etc. You do not have to be able to work problems in the subject, but you should be able to explain what the subject is about. The following are example topics:

- Trigonometry and its uses
- Calculus and the problems it helps to solve
- Primes and perfect numbers
- Graph Theory and its applications
- The numbers π , e , i and 0
- History of complex numbers and their applications
- Sphere Packing

MATHEMATICIANS

There are many mathematicians known throughout history for their sizeable contributions to the field of mathematics. Some are more well known than others, but in any case, you should discuss what they are famous for, their background and what problems they posed and/or solved. Here is a list of a few names:

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| • Euclid | • Women in Mathematics (general) |
| • René Descartes | • Grace Chisolm Young |
| • Ramanujan | • Grace Murray Hopper |
| • Blaise Pascal | • Sophie Germain |
| • Pierre de Fermat | • Sonya Kovalevskaya |
| • Gottfried Wilhelm von Leibniz | • Emmy Noether |
| • Isaac Newton | • Sophie Germain |
| • Archimedes | • Hypatia |
| • Leonard Euler | |
| • Jacob and Johann Bernoulli | |
| • Paul Erdős | |

PRESENTATION SPECIFICS

WHAT TO SAY IN THE PRESENTATION

- Start by introducing yourself and your talk
- State your name and the topic you have chosen
- Write something down on the board to remind the audience of your topic
- You can use power point if you wish

FOR REPORTS ON PEOPLE

- State the name of the mathematician, when they lived and where

- Talk about why they are famous and what they did in mathematics
- Talk about something you learned about them that was inspiring, surprising, admirable, or interesting

FOR REPORTS ON FAMOUS PROBLEMS

- State the name of the problem, when the problem was proposed and when (if) the problem was solved
- Explain what the problem is
- Talk about who worked on the problem and when
- Explain why the problem is difficult, interesting, or important

FOR REPORTS A MATHEMATICAL SUBJECT

- State the subject name
- Briefly talk about the history of the subject
- Briefly talk about the people who made contributions to the subject
- Briefly discuss the importance of the subject