

## Problem Solving Through History

Math 513

Instructor: William Voxman

Grader: Cynthia Piez

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**Course Description and Syllabus:** We will cover the following topics from an historical and a problem solving perspective: Origins, Geometry, Number Theory, a little Calculus, Probability, and The Infinite.

**Course Objectives:** Basic objectives of the course include:

- Provide you with an historical perspective on and a humanistic approach to the evolution of mathematics
- Acquaint you with some of the world's great mathematicians: how they thought, what kinds of problems intrigued them and why, and the influence of the environment in which they worked
- Give you an idea of how a mathematician thinks and does mathematics
- Enhance your ability to think logically in attacking (and solving) a wide variety of problems

**Texts:** We will not follow any particular text. There are many books on the history of mathematics. A couple of the better known resources are David Burton's *The History of Mathematics* and a number of books by Howard Eves.

**Grading:** During the semester there will be four one-hour exams and a comprehensive final. In addition, **problem sets will form an important part of the course, including for the Engineering Outreach students.** And, finally, you will be asked to write an 8 – 10 page paper on a topic of interest to you (preferably related to the course).

Points for these are distributed as follows:

<b>Four one hour exams</b>	<b>100 points each</b>
<b>Final Exam</b>	<b>200 points</b>
<b>Problem Sets</b>	<b>150 points</b>
<b>Paper</b>	<b>75 points</b>
<b>Total</b>	<b>825 points</b>

Grades will be assigned according to the following ranges:

A	742 – 825
B	640 – 741
C	515 – 639
D	495– 514

### **Introduction to the Course:**

Homework can either be sent to Engineering Outreach or directly to:

Cynthia Piez

Dept. of Mathematics

Brink Hall 300

University of Idaho

Moscow, ID 83844-1103

If you have a good quality fax machine – they can be faxed through 208-885-5843. The process is faster if you can send the homework directly to me.

I try to grade the assignments as quickly as I can and get them back to you with feedback. If you are stuck on problems, you can email me with your questions and I will try to give you hints or help. Otherwise, we can set up a time to talk on the phone.

Please feel free to ask me for help. Some things will be clear from the lectures, and other things will not be. It is much better for me to try to help you than to wait for comments from me on your homework.

### **Your Paper**

You need to follow these guidelines:

1. The paper will need to be on a specific topic, and **you do need to okay your topic with me before you start your paper.**
2. It needs to have some mathematics in it. If it is just a written piece about a topic or culture, the highest grade you can get is 70%. I will want you to explain some mathematics in it and not just talk generally about a topic
3. It should not be a "research" paper - meaning it should not read like an excerpt from a book or encyclopedia, and should show some of "you" in it.
4. If you are teaching, it would be appropriate to write a paper that is an extended lesson plan. You would start with an in-depth discussion of the history of the topic, the mathematics involved in the topic, and then what you could give your students to do and what you might expect from them.
5. This paper should not be a recap of the history of math as presented in the lectures (which you avoid by including some mathematics in the paper).