Study Guide - Exam 1

Date: Exam 1 will be given in-class on Thursday, October 6. You will have the entire class period to focus on the exam.

Material Covered: The exam will cover everything we have discussed in Chapters 1 and 2 of the textbook: Sections 1.1, 1.2, 1.3 (excluding Young's Geometry), 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, and 2.7.

Summary of Key Points: Below is a summary of the key points that you are responsible for.

- History of geometry – materials from the textbook and class discussions. You will not be asked for specific locations or dates.

- Definitions and importance of: Axiomatic Method, primitive/undefined terms, axioms/postulates, theorems, etc.

- Models (concrete and abstract) and isomorphisms between models.

- Properties of Axiomatic Systems: consistency, absolute consistency, relative consistency, independence, completeness. You should know how to test for these properties as well as what the properties mean.

- Finite geometries.

- Euclid's *Elements*: you should be able to state Euclid's 5 postulates in modern English, be aware of some of the definitions, explain the importance of the 5th postulate, know some of the shortcomings of Euclid's axiomatic set.

- Playfair's Postulate.

- Hilbert's, Birkhoff's, and SMSG's Axiom Sets for Euclidean Geometry. (No need to memorize the full details, but know why each one is important and what makes each one unique. Know the names of the postulates and theorems we have used often, such as SAS Congruency or Pasch's Axiom, and in which axiomatic set they are used as a postulate or as a theorem.)

- Properties of Elliptic (spherical) Geometry.

- Properties of Hyperbolic Geometry – Poincaré disk and half-plane models.