Study Guide - Exam 2

Date: Exam 2 will be given in-class on Tuesday, November 22. You will have the entire class period to focus on the exam.

Material Covered: The exam will cover everything we have discussed from Sections 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 4.1, 4.2, 4.4, and 4.5 of the textbook.

Exam Aids: You will be permitted to use self-prepared notes. The notes must be hand-written and contained on one-side of an $8.5'' \times 11''$ piece of paper. You will be required to submit the piece of paper with your exam. **You will not be permitted to use any electronic technology (such as a calculator or cell phone) or other aids (notebook, textbook, etc.) during the exam. The only items you can use for the exam are a pen and/or pencil, eraser, and your self-prepared notes.**

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

- What Neutral Geometry is and how it differs from Euclidean Geometry.
- Congruence of line segments, angles, and polygons - definitions and basic facts.
- The Isosceles Triangle Theorem along with its converse and inverse statements.
- The Line Segment Perpendicular Bisector Theorem (Theorem 3.2.8).
- The definition of an exterior angle to a triangle and the Exterior Angle Theorem.
- Congruency conditions for triangles and quadrilaterals.
- The Triangle Inequality Theorem.
- The Hinge Theorem.
- The Alternate Interior Angle Theorem.
- The Converse of the Alternate Interior Angle Theorem and its equivalence to the Euclidean Parallel Postulate.
- The equivalence of Euclid's Fifth Postulate and the Euclidean Parallel Postulate.
- The Saccheri-Legendre Theorem and its two preliminary lemmas (Lemmas 3.5.2 and 3.5.3).
- Saccheri and Lambert quadrilaterals - definitions and facts.
- The relationship between rectangles, angle sums of triangles, and the Euclidean Parallel Postulate.
- Implications of the Euclidean Parallel Postulate stated in Section 4.2.
- Parallelograms, squares, and other special quadrilaterals - definitions and properties.
- The Median Concurrence Theorem and Corollary 4.2.8.
- Similarity of polygons - definition and conditions (AAA, SAS, SSS).
- The Basic Proportionality Theorem.
- Definitions related to circles: circle, radius, chord, diameter, secant, tangent, central angle, semi-circle, minor arc, major arc, measure of an arc, inscribed angle, intercepted arc.
- The fact that in the Euclidean plane, a circle is uniquely determined by three distinct, non-collinear points.
- Basic facts about chords, diameters, and arcs.
- The Arc Addition Theorem.
- The Inscribed Angle Theorem.
- Angle theorems related to chords, secants, and tangents.
- Product theorems related to chord segments, secant segments, and tangent-secant segments.