Topics for Exam 3
Math 10, Fall 2003

General information. Exam 3 will be a timed test of 50 minutes, covering sections 4.5, 7.1–7.3, and 7.5 of the text. Most of the exam will be based on the homework assigned for those sections. If you can do all of that homework, and you know and understand all of the ideas behind it, you should be in good shape.

You are allowed to use a calculator and notes on **ONE** 3×5 note card (both sides).

As mentioned above, your first priority should be to understand the homework and quizzes and the ideas behind them. Besides the list of things you should know, below, you should also be familiar with everything specially emphasized in the text. If time permits, try to do some of the mindscapes that have answers in the back of the book.

Section 4.4. Platonic solids: tetrahedron, cube, octahedron, dodecahedron, icosahedron. What they look like, how to draw them, number of vertices, faces, edges and other stats (table on p. 275). Duality: picture (pp. 277–278), which solids are dual.

Section 7.1. Surprises: Let's Make a Deal, "I have two children...," birthday paradox.

Section 7.2. Definitions: probability, relative frequency. Law of large numbers. Computing probabilities and relative frequencies. Resolution of "I have two children...," birthday paradox. "It either happens or it doesn't." Homework examples. Computing more complicated probabilities (birthday, poker hands, etc.).

Section 7.3. The basic idea: Any particular weird thing has a very small chance of happening; something weird is bound to happen. ("Coincidence happens.") Examples: Dead celebrities, infinite monkeys theorem, market predictions.

Section 7.5. Main idea: Average value/profit. Definition: Expected value. Examples: Unfair games, life insurance, lottery ticket vs. book. Newcomb's paradox.

Not on exam. Sect. 4.5: Golden stuff in the icosahedron. Sect. 7.1: Penny tricks. Sect. 7.3: Needle dropping, random walking.