

*Montgomery College - Department of Mathematics
Germantown Campus*

**MA115A – Mathematical Ideas
3 Semester Hours**

Description

Intended primarily for students who need only one mathematics foundation course with an emphasis on quantitative reasoning. This course includes support content from intermediate algebra as needed to study major topics selected from (but not limited to) graph theory, voting and apportionment, geometry, growth and symmetry, number theory, and descriptive statistics. Emphasis is on contemporary applications to real-life problems. Credit may not be earned in both MA 115A and MA 110 or MA 115. Not intended for students with a C or better in MA 100 or 100D.

MA115A meets 5 hours each week.

Prerequisites

Appropriate score on the mathematics assessment test, grade of A in MA 091/091A, or consent of department.

Assessment levels: EN 101/101A, RD 120.

Topics

- I. Set Theory
 1. The language of sets
 2. Set operations
- II. Graph Theory
 1. Graphs, Puzzles, and Map Coloring
 2. Digraphs
 3. The traveling salesman problem
- III. Numeration Systems
- IV. Number theory
- V. Algebraic Models
 1. Functions
 2. Linear equations
 3. Quadratic Equations
 4. Exponential and logarithmic equations
- VI. Modeling with Systems of Equations and Inequalities
 1. Systems of linear equations
 2. Systems of linear inequalities

- VII. Mathematics of Social Choice
 - 1. Voting systems
 - 2. Apportionment
- VIII. Statistics
 - 1. Counting using permutations and combinations
 - 2. Probability
 - 3. Descriptive statistics
 - 4. Normal distribution.

Text

For All Practical Purposes, 7th ed., COMAP Inc, Freeman.