

**DOBBS FERRY MIDDLE SCHOOL**  
Dobbs Ferry, New York 10522

**COURSE OUTLINE**

**SUBJECT:** Algebra I

**GRADE:** 8

This is a full-year course in Common Core Algebra I that meets every day. Topics include Relationships between Quantities, Linear Relationships, Exponential and Quadratic Relationships, Advanced Functions and Equations, and Data Analysis.

**Anticipated Student Outcomes:**

*By the end of the school year, student will be able to work with:*

- Number Systems
  - Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers
  - Recognize the difference between rational and irrational numbers, as well as the subsets of rational numbers
  - Perform all scientific notation operations
  - Perform all polynomial operations
  - Compute accurately and make reasonable estimates
- Number Theory
  - Identify and apply the properties of real numbers (closure, commutative, associative, distributive, identity, inverse)
- Equations and Inequalities
  - Solve real-life and mathematical problems using numerical and algebraic expressions and equations
  - Analyze and solve linear equations and pairs of simultaneous linear equations.
  - Work with radicals and integer exponents
  - Define variables and evaluate expressions
  - Solve multi-step equations by combining like terms, using the distributive property, or moving variables to one side of the equation
  - Factor expressions
  - Solve and graph one-step and multi-step inequalities
  - Plot linear equations on the coordinate grid
  - Analyze and solve verbal problems whose solution requires solving a linear equation in one variable or linear inequality in one variable
- Proportional Reasoning
  - Analyze proportional relationships and use them to solve real-world and mathematical problems

- Understand the connections between proportional relationships, lines, and linear equations
  - Use percentages while problem solving
- Geometry
  - Understand and apply the Pythagorean Theorem
  - Understand geometric angle relationships and applications
  - Understand and apply transformational geometry
- Patterns, Relations, and Functions
  - Recognize, use, and represent algebraic patterns, relations, and functions

### **Materials Required or Used**

- Chromebook
- TI-83 Plus or TI-84 Plus Graphing Calculator
- One Large 3-Ring Binder
- Pencil Case with 3 Holes (to be inserted in binder)
- Binder Dividers
- Loose Leaf Paper
- Graph Paper
- One Folder with 3 Holes (to be inserted in binder)
- One Ruler with 3 Holes (to be inserted in binder)
- 5 Highlighters (different colors)
- 2 Boxes of Pens (blue or black only)
- 2 Boxes of Mechanical Pencils

### **Criteria for Grading**

Grades will be based on the following:

- Homework
- Tests/Quizzes

*Outline developed by: Math Department*

*Date: Fall 2016*