

DOBBS FERRY MIDDLE SCHOOL

Dobbs Ferry, New York 10522

2026-2027

COURSE OUTLINE

SUBJECT: Algebra Foundations 7

GRADE: 7

COURSE DESCRIPTION:

This course is designed to provide students with early exposure to the foundational concepts critical to success in Algebra I. As students consider the transition to more advanced mathematics, it becomes increasingly important that they have both the conceptual understanding and the confidence to engage with algebraic thinking. Algebra Foundations focuses on key ideas that serve as building blocks for Algebra 1, including linear relationships, equations, functions, and exponents. By encountering these topics in advance, students can make stronger connections, deepen their understanding, and approach new learning with greater clarity. The course emphasizes reasoning, problem-solving, and multiple representations, helping students move beyond procedures to truly understand how and why mathematics works. This early exposure not only strengthens readiness for Algebra I, but also encourages more students to see themselves as capable of engaging in higher-level mathematics.

Anticipated topics to be covered:

The topics in the Pre-Algebra/Math 8 concepts course will include:

- **Exponents and their Operations**

Students work with exponential expressions and learn to represent very large and very small numbers using scientific notation. This unit supports both Algebra readiness and connections to science.

- **Functions and Comparing Linear/Nonlinear Relationships**

Students develop an understanding of functions as relationships between inputs and outputs. Testing for functions. Analyze how different representations (tables, graphs, and functions) describe the same relationship. Students distinguish between linear and nonlinear functions by examining patterns, graphs, and equations.

- **Linear Relationships and Slope**

Students explore linear relationships through multiple representations, including tables, graphs, and equations. They develop an understanding of slope as a rate of change and learn how to interpret slope in real-world contexts.

- **Graphing and Writing Linear Equations**

Students work with linear equations in slope-intercept form and connect algebraic expressions to graphical representations. Emphasis is placed on interpreting meaning from graphs and equations.

- **Solving Linear Equations**

Students solve one-variable linear equations and deepen their understanding of maintaining balance in algebraic reasoning. They apply these skills in both abstract and contextual problems.

Materials required or used:

- Folder
- Binder - 1 Inch
- Calculator
- Access to a digital device for research and simulations
- Writing utensils and highlighters

Criteria for grading:

Grades will be determined by the number of points earned out of the total number of possible points. These points will be earned through student performance in the following areas:

- Class Work and Homework
- Assessments
- Participation and Engagement
- Projects