

DOBBS FERRY MIDDLE SCHOOL
Dobbs Ferry, New York 10522

COURSE OUTLINE

SUBJECT: Algebra I

GRADE: 8

This is a full-year course in Algebra I that focuses on the concepts outlined in the New York State Next Generation Learning Standards. Topics include relationships between quantities, linear relationships, exponential and quadratic relationships, advanced functions and equations, and data analysis. Students will be exposed to more rigor at a faster pace than they are used to and will be expected to meet those expectations. This high school level course is appropriate for students who excel in math and are highly academically motivated.

ANTICIPATED OUTCOMES:

By June of this year, students in this class will be able to:

- Work with variables and expressions
- Identify and use the order of operations and properties of numbers
- Identify relations and functions and interpret graphs of functions
- Write and solve linear equations (including multi-step, variables on both sides, absolute value, and literal)
- Graph linear functions
- Find zeros of linear functions
- Compute and analyze rates of change and slopes
- Write linear equations in slope-intercept, point-slope, and standard form
- Work with transformations of linear functions
- Evaluate arithmetic sequences
- Graph piecewise, step, and absolute value functions
- Analyze the relationship between parallel and perpendicular lines
- Graph scatter plots and lines of fit
- Write equations of lines of fit
- Determine correlation and causation
- Write and graph median-fit lines
- Find inverses of linear functions
- Solve multi-step and compound inequalities
- Solve inequalities involving absolute value
- Graph inequalities in two variables
- Graph and solve systems of equations and inequalities
- Apply systems of linear equations and inequalities

- Apply the laws of exponents
- Work with rational exponents and radical expressions
- Identify and graph exponential functions
- Transform exponential expressions and functions
- Write exponential functions
- Work with geometric sequences and recursive formulas
- Work with operations on polynomials
- Factor
- Solve quadratic equations and graph quadratic functions
- Solve quadratic linear systems
- Combine functions
- Find measures of center and spread
- Represent data in a variety of ways and compare sets of data
- Summarize Categorical Data

KEY CONCEPTS

- Relationships
- Logic

MATERIALS NEEDED

- TI-84 Plus CE Graphing Calculator
- Binder
- Pencil Case
- Loose Leaf Paper
- One Folder
- One Ruler
- Highlighters
- Pens (blue or black only)
- Pencils

CRITERIA FOR GRADING

Grades will be based on the following:

- Homework
- MYP Projects & Assessments
- Tests & Quizzes

Outline developed by: Math Department

Date: March 2023