THE PHILLIPS ACADEMY

P.O. Box 175
Broadway, NJ 08808
908.367.3521

TOPICAL OUTLINE FOR ALGEBRA I

A. BASIC MATHEMATICS/PREALGEBRA REVIEW

1. Introduction to Integers
2. Integers and Inequality Symbols
3. Addition and Subtraction of Integers
4. Multiplication and Division of Integers
5. Exponents and the Order of Operations
6. Factoring Numbers and Prime Factorization
7. Addition and Subtraction of Rational Numbers
8. Multiplication and Division of Rational Numbers

B. VARIABLE EXPRESSIONS

1. Evaluating Variable Expressions
2. Simplifying Variable Expressions
3. Algebraic Substitution
4. Translating Verbal Expressions into Variable Expressions

C. SOLVING EQUATIONS

1. Introduction To Solving Basic First Degree Equations
2. Solving Multivariable Equations and Formulas
3. Solving Complex First Degree Equations
4. Translating Verbal Sentences into Algebraic Equations
5. Coin and Integer Applications
6. Geometry Applications involving Algebraic Equations
7. Mixture and Uniform Motion Problems

D. POLYNOMIALS

1. Addition and Subtraction of Polynomials
2. Multiply Monomials
3. Multiply Polynomials
4. Integer Exponents and Scientific Notation
5. Division of Polynomials by a Monomial
6. Division of Polynomials by a Polynomial

E. FACTORING

1. Greatest Common Factor
2. Factoring by Grouping
3. Factoring Basic Trinomials
4. Factoring Advanced Trinomials
5. Special Factoring including the Difference of Perfect Squares
6. Solving Equations by Factoring
7. Applications Involving Factoring

F. RATIONAL EXPRESSIONS

1. Multiplication and Division of Rational Expressions
2. Find the Least Common Divisor
3. Restrictions and Domains
4. Addition and Subtraction of Rational Expressions
5. Solving Rational Equations
6. Ratio and Proportion
7. Literal Equations

G. LINEAR EQUATIONS IN TWO VARIABLES

1. Introduction to the Rectangular Coordinate System
2. Quadrants and Plotting Points
3. Linear Equations in Two Variables
4. Graphing Linear Equations by Plotting Points
5. Graphing Linear Equations using the Equation of a Line
6. Finding Intercepts and Slopes of Lines
7. Finding the Equations of Lines
8. Parallel and Perpendicular Lines

H. INEQUALITIES

1. Introduction to Sets including Unions and Intersections
2. Solving Basic Algebraic Inequalities
3. Solving Complex Inequalities
4. Graphing Solutions to First Degree Inequalities on a Number Line
5. Graphing Linear Inequalities on a Cartesian Plane

I. RADICAL EXPRESSIONS

1. Simplify Radicals
2. Addition and Subtractions of Radicals
3. Multiplication and Division of Radicals