

Walter Payton College Prep
Honors Algebra 1 Course Outline 2017- 2018

Textbook: CME Algebra 1

Students learn to manipulate algebraic expressions and use them to model real world phenomena. An emphasis is placed on representing problems both graphically and symbolically. Students learn problem-solving strategies and how to recognize, describe, and use number patterns.

1st Semester: Properties of Equality, Substitution and Distribution, Signed Numbers, Algorithms for Solving linear Equations and Inequalities, Linear Graphing, Systems of Equations

2nd Semester: Functions, Exponents, Radicals, Polynomials, Proportions, Quadratics

Quarter 1

Chapter 1 & 3 : “Arithmetic to Algebra” and “Data & Graphs”

- Calculate, identify, and interpret mean, median, and mode of data sets
- Create and interpret basic coordinate graphs
- Create and interpret data displays for univariate (one variable) data
- Analyze Bivariate (two-variable) data
- Perform basic operations with rational numbers (Working with the number line, addition table, and multiplication table)

Chapter 2: “Expressions and Equations”

- Simplify and Evaluate variable expressions
- Express word problems using variable expressions
- Solve single variable linear equations and literal equations
- Express word problems as equations and solve

Quarter 2

Chapter 3: “Graphs”

- Transform graphs using algebraic expressions
- Evaluate expressions and solve equations using absolute value
- Calculate distance between two points (Pythagorean Theorem)
- Sketch and identify graphs of basic relations
- Identify and interpret intersection points of graphs

Chapter 4: “Lines” (Part I)

- Calculate & Interpret the slope a line
- Determine/Use the equation of a line
- Calculate Average Rate of Change

Quarter 3

Chapter 4 Continued: “Lines”

- Graph lines and write equations of linear graphs
- Interpret slope within a given context
- Solve linear systems of equations algebraically
- Identify if lines are parallel, perpendicular, or intersecting

- Solve inequalities with one variable and graph solutions (prepare for triangle inequality; emphasize and/or)

Chapter 5: “Introduction to Functions”

- Evaluate functions (in function notation)
- Write functions for real world scenarios
- Determine whether or not a relation is a function
- Determine a function from a table or graph
- Write and use recursive rules

Chapter 6 “Exponents and Radicals”

- Simplifying Expressions with Exponents
- Operations in Scientific notation
- Simplifying Radical Expressions
- Classifying Real Numbers
- Exponential Functions
- Vocabulary: base, exponent, radical, root
- Laws of Exponents
- Zero and Negative Exponents
- Scientific notation
- Radicals: arithmetic rules, simplifying, conventions
- Rational and Irrational Numbers, number classification

Quarter 4:

Chapter 7: “Polynomials”

- Multiply Polynomials
- Polynomials: Adding/Subtracting & Normal Form
- Factoring
- Solving equations by factoring
- Equivalent expressions: creating and identifying
- Naming polynomials by degree and number of terms
 - Vocabulary: degree, coefficient, normal/standard form
- Zero Product Property
- Factoring: GCF, Difference of Squares, Completing the Square, Perfect Square Trinomial

Chapter 8 : “Quadratics”

- Solve quadratic equations (using the quadratic formula and factoring)
- Graphs of quadratic functions
- Write quadratic functions
- Quadratics Equations and Solving: Number of Solutions, Quadratic Formula, Factoring
 - Deriving Quadratics based on roots
- Quadratic Graphs and Applications: vertex, axis of symmetry, parabola, optimization