Algebra I Fundamentals

Algebra I is a full year, high school credit course that is intended for the student who has successfully mastered the core algebraic concepts covered in the prerequisite course, Pre-Algebra. Within the Algebra I course, the student will explore basic algebraic fundamentals such as evaluating, creating, solving and graphing linear, quadratic, and polynomial functions.

Objectives

- Solve single variable, absolute value, and linear systems of equations.
- Solve and graph single variable, absolute value, and linear inequalities.
- Evaluate, solve, and graph linear and quadratic functions as well as conceptualize the relationship between the independent and dependent variable of a function.
- Understand and know how to apply the distance, midpoint, and slope formulas as well as the Pythagorean theorem.
- Form an equation of a line using the slope-intercept, point-slope and standard forms of a line.
- Organize data in the form of a table or matrix; perform complex matrix operations such as multiplication, evaluating the determinant, and solving a system of linear equations using Cramer's Rule.
- Apply basic fundamental rules of exponents.
- Be able to construct a formula or equation necessary to solve algebraic word problems involving area, perimeter, and linear systems of equations, basic probability and statistical reasoning, distance, and compounding interest.
- Evaluate rational expressions and solve equations with rational expressions.
- Simplify and perform operations with radical expressions and polynomials.

Unit 1: Foundations of Algebra		
Assignments		
1. Course Overview	12.	Quiz 2: The Real Numbers
2. Variables and Expressions	13.	Commutative and Associative Properties
3. Exponents and Order of Operations	14.	Distributive Property
4. Evaluating Expressions	15.	Simplifying Expressions
5. Quiz 1: The Language of Algebra	16.	Quiz 3: Properties of the Real Numbers
6. Classifying and Comparing Numbers	17.	Special Project*
7. Decimal-Fraction Conversions	18.	Review
8. Fractions	19.	Test
9. Adding and Subtracting Signed Numbers	20.	Alternate Test*
10. Multiplying and Dividing Signed Numbers	21.	Glossary and Credits
11. Absolute Value		

Unit 2: Linear Equations		
Assignments		
1. Open Sentences	13.	More than Two Unknowns
2. Addition Property of Equality	14.	Using a Chart
3. Multiplication Property of Equality	15.	Quiz 3: Word Problems
4. Two-Step Equations	16.	Percent Problems
5. Quiz 1: Solving Equations	17.	Mixture and Interest Problems
6. Variables on Both Sides	18.	Quiz 4: Mixture and Investment Problems
7. Combining Like Terms	19.	Special Project*
8. The Distributive Property	20.	Review
9. Literal Equations	21.	Test
10. Quiz 2: Multi-Step Equations	22.	Alternate Test*
11. Writing Equations from Word Problems	23.	Glossary and Credits
12. Two Unknowns		

Algebra I Fundamentals

Unit 3: Functions

Assignments

1. The Coordinate Plane
2. Identifying Functions
3. Function Notation
4. Modeling Functions
5. Quiz 1: Function Basics
6. Writing a Function Rule
7. Arithmetic Sequences
8. Direct Variation
9. Slope
10. Quiz 2: Patterns
11. Linear Equations
12. Slope-Intercept Form
13. Absolute Value Functions
14. Quiz 3: Graphing Linear Functions
15. Writing Linear Equations (1)
16. Writing Linear Equations (2)
17. Writing Linear Equations (3)
18. Quiz 4: Writing Linear Equations
19. Special Project*
20. Review
21. Test
22. Alternate Test*
23. Glossary and Credits

Unit 4: Inequalities

Assignments

1. Graphing
2. Addition Property of Inequality
3. Multiplication Property of Inequality
4. Multi-Step Inequalities
5. Problem Solving
6. Quiz 1: Solving Inequalities
7. Compound Inequality Graphs
8. Solving Compound Inequalities
9. Inequalities with Two Variables
10. Quiz 2: Compound Inequalities
11. Absolute Value Solution Sets
12. Absolute Value Inequalities with One Variable
13. Absolute Value Inequalities with Two Variables
14. Quiz 3: Absolute Value
15. Special Project*
16. Review
17. Test
18. Alternate Test*
19. Glossary and Credits

Unit 5: Linear Systems

Assignments

1. Solution of a System
2. Graphing Systems of Equations
3. Systems of Inequalities
4. Quiz 1: Solving Linear Systems by Graphing
5. Substitution Method
6. Addition Method
7. Matrices
8. Fractional Coefficients
9. Quiz 2: Solving Linear Systems Algebraically
10. Using Two Variables
11. Money and Unit Pricing
12. Using Formulas
13. Quiz 3: Representing Problems Using a Linear System
14. Special Project*
15. Review
16. Test
17. Alternate Test*
18. Glossary and Credits

Unit 6: Semester Review and Exam

Assignments

1. Review
2. Exam
3. Alternate Exam – Form A*
4. Alternate Exam – Form B*

Unit 7: Polynomials

Assignments

1. Adding and Subtracting Polynomials
2. Grouping Symbols
3. Quiz 1: Adding and Subtracting Polynomials
4. Multiplying by a Monomial
6. F.O.I.L. and Special Cases
7. Dividing by a Monomial
8. Long Division
9. Quiz 2: Multiplying and Dividing Polynomials
10. Greatest Common Factor
11. Factoring Out the GCF
12. Factoring by Grouping
13. Factoring Trinomials (1)
14. Factoring Trinomials (2)
15. Special Cases
16. Complete Factorization
17. Quiz 3: Factoring Polynomials
18. Special Project*
19. Review
20. Test
21. Alternate Test*
22. Glossary and Credits

Unit 8: Exponential and Radical Functions

Assignments

1. Negative Exponents
2. Exponential Expressions
3. Scientific Notation
4. Quiz 1: Evaluating Exponential Expressions
5. Multiplication
6. Raising to a Power
7. Division
8. Geometric Sequences
9. Quiz 2: Properties of Exponents
10. Simplifying Radicals
11. Multiplying Radicals
12. Dividing Radicals
13. Adding and Subtracting Radicals
14. Radical Equations
15. Quiz 3: Radical Functions
16. Special Project*
17. Review
18. Test
19. Alternate Test*
20. Glossary and Credits

Unit 9: Quadratics

Assignments

1. Pythagorean Theorem
2. Distance
3. Midpoint
4. Quiz 1: Formulas
6. Transformations
7. Line of Symmetry
8. Quadratic Inequalities
9. Quiz 2: Graphing Quadratic Functions
10. Solving by Factoring
11. Square Root Method
12. Applications of Quadratics
13. Completing the Square
14. Completing the Square
15. Quadratic Formula (1)
16. Quadratic Formula (2)
17. Quiz 3: Solving Quadratic Equations
18. Special Project*
19. Review
20. Test
21. Alternate Test*
22. Glossary and Credits

Unit 10: Rational Expressions

Assignments

1. Simplifying Rational Expressions
2. Multiplying and Dividing Rational Expressions
3. Adding and Subtracting with Like Denominators
4. Adding and Subtracting with Unlike Denominators
5. Quiz 1: Operations with Rational Expressions
6. Proportions
7. Using the LCD
8. Complex Fractions
9. Inequalities
10. Applications of Rational Equations
11. More Problems
12. Quiz 2: Rational Equations and Inequalities
13. Special Project*
14. Review
15. Test
16. Alternate Test*
17. Glossary and Credits

Unit 11: Probability and Statistics

Assignments

1. Measures of Central Tendency
2. Dispersion
3. Interpreting Data
5. Quiz 1: Measures of Central Tendency
6. Sampling and Outcomes
7. Permutations
8. Combinations
9. Quiz 2: Outcomes
10. Probability
11. Compound Events
12. Project: Probability
13. Quiz 3: Probability
14. Special Project*
15. Review
16. Test
17. Alternate Test*
18. Glossary and Credits

Unit 12: Semester Review and Exam

Assignments

1. Review
2. Exam
3. Alternate Exam – Form A*
4. Alternate Exam – Form B*

Unit 13: Final Exam

Assignments

1. Exam
2. Alternate Exam – Form A*
3. Alternate Exam – Form B*