

## Algebra I

*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 and graph single variable, absolute value, and linear equations and inequalities.
- Solve linear, quadratic and exponential systems of equations using graphing, substitution or elimination.
- Evaluate and solve quadratic equations and inequalities using graphing, factoring, quadratic formula, and completing the square.
- Interpret and apply the relationship between the independent and dependent variable in a linear, exponential, and quadratic function through algebraic modeling and applications.
- 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.
- 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 such as addition and subtraction, multiplication and division.
- Perform operations with polynomials such as addition and subtraction, multiplication, long division and factoring.
- Interpret and analyze measures of central tendency, sample data and outcome, probability and frequency tables.

Unit 1: Foundations of Algebra		
Assignments		
Algebra I	1. Course Overview	13. Commutative and Associative Properties
	2. Variables and Expressions	14. Distributive Property
	3. Exponents and Order of Operations	15. Simplifying Expressions
	4. Evaluating Expressions	16. Quiz 3: Properties of the Real Numbers
	5. Quiz 1: The Language of Algebra	17. Performance Task
	6. Classifying and Comparing Numbers	18. Alternate Performance Task*
	7. Decimal-Fraction Conversions	19. Special Project*
	8. Fractions	20. Review
	9. Adding and Subtracting Signed Numbers	21. Test
	10. Multiplying and Dividing Signed Numbers	22. Alternate Test*
	11. Absolute Value	23. Glossary and Credits
	12. Quiz 2: The Real Numbers	

Unit 2: Linear Equations		
Assignments		
Algebra I	1. Open Sentences	14. Using a Chart
	2. Addition Property of Equality	15. Quiz 3: Word Problems
	3. Multiplication Property of Equality	16. Percent Problems
	4. Two-Step Equations	17. Mixture and Interest Problems
	5. Quiz 1: Solving Equations	18. Quiz 4: Mixture and Investment Problems
	6. Variables on Both Sides	19. Performance Task
	7. Combining Like Terms	20. Alternate Performance Task*
	8. The Distributive Property	21. Special Project*
	9. Literal Equations	22. Review
	10. Quiz 2: Multi-Step Equations	23. Test
	11. Writing Equations from Word Problems	24. Alternate Test*
	12. Two Unknowns	25. Glossary and Credits
	13. More than Two Unknowns	

Unit 3: Functions		
Assignments		
Algebra I	1. The Coordinate Plane	16. Function Relationships
	2. Identifying Functions	17. Quiz 3: Graphing Linear Functions
	3. Function Notation	18. Writing Linear Equations (1)
	4. Modeling Functions	19. Writing Linear Equations (2)
	5. Quiz 1: Function Basics	20. Writing Linear Equations (3)
	6. Writing a Function Rule	21. Inverse Functions
	7. Arithmetic Sequences	22. Scatter Plots
	8. Direct Variation	23. Quiz 4: Writing Linear Equations
	9. Slope	24. Performance Task
	10. Quiz 2: Patterns	25. Alternate Performance Task*
	11. Linear Equations	26. Special Project*
	12. Slope-Intercept Form	27. Review
	13. Absolute Value Functions	28. Test
	14. Piecewise Defined Functions	29. Alternate Test*
	15. Graphs of Piecewise Functions	30. Glossary and Credits

Unit 4: Inequalities		
Assignments		
Algebra I	1. Graphing	12. Absolute Value Inequalities with One Variable
	2. Addition Property of Inequality	13. Absolute Value Inequalities with Two Variables
	3. Multiplication Property of Inequality	14. Quiz 3: Absolute Value
	4. Multi-Step Inequalities	15. Performance Task
	5. Problem Solving	16. Alternate Performance Task*
	6. Quiz 1: Solving Inequalities	17. Special Project*
	7. Compound Inequality Graphs	18. Review
	8. Solving Compound Inequalities	19. Test
	9. Inequalities with Two Variables	20. Alternate Test*
	10. Quiz 2: Compound Inequalities	21. Glossary and Credits
	11. Absolute Value Solution Sets	

Unit 5: Linear Systems																														
Algebra I	<b>Assignments</b>																													
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Unit 9: Quadratics		
Assignments		
Algebra I	1. Pythagorean Theorem	17. Completing the Square (1)
	2. Distance	18. Completing the Square (2)
	3. Systems of Linear and Exponential Equations	19. Quadratic Formula (1)
	4. Midpoint	20. Quadratic Formula (2)
	5. Quiz 1: Formulas	21. Systems of Equations
	6. Quadratic Functions	22. Comparing Functions
	7. Transformations	23. Function Composition
	8. Transformations (2)	24. Quiz 3: Solving Quadratic Equations
	9. Line of Symmetry	25. Performance Task
	10. Quadratic Inequalities	26. Alternate Performance Task*
	11. Quiz 2: Graphing Quadratic Functions	27. Special Project*
	12. Solving by Factoring	28. Review
	13. Project: Solving Polynomials by Factoring	29. Test
	14. Square Root Method	30. Alternate Test*
	15. Applications of Quadratics	31. Glossary and Credits
	16. Rate of Change	

Unit 10: Rational Expressions		
Assignments		
Algebra I	1. Simplifying Rational Expressions	10. Applications of Rational Equations
	2. Multiplying and Dividing Rational Expressions	11. More Problems
	3. Adding and Subtracting with Like Denominators	12. Quiz 2: Rational Equations and Inequalities
	4. Adding and Subtracting with Unlike Denominators	13. Performance Task
	5. Quiz 1: Operations with Rational Expressions	14. Alternate Performance Task*
	6. Proportions	15. Special Project*
	7. Using the LCD	16. Review
	8. Complex Fractions	17. Test
	9. Inequalities	18. Alternate Test*
	19. Glossary and Credits	

Unit 11: Probability and Statistics		
Assignments		
Algebra I	1. Measures of Central Tendency	13. Compound Events
	2. Dispersion	14. Two-Way Frequency Tables
	3. Interpreting Data	15. Project: Probability
	4. Statistical Relationships	16. Quiz 3: Probability
	5. Project: Plotting Residuals	17. Performance Task
	6. Project: Data Analysis	18. Alternate Performance Task*
	7. Quiz 1: Measures of Central Tendency	19. Special Project*
	8. Sampling and Outcomes	20. Review
	9. Permutations	21. Test
	10. Combinations	22. Alternate Test*
	11. Quiz 2: Outcomes	23. Glossary and Credits
	12. Probability	

Unit 12: Semester Review and Exam		
Algebra I	<b>Assignments</b>	
	1. Review	3. Alternate Exam - Form A*
	2. Exam	4. Alternate Exam - Form B*

Unit 13: Final Exam		
Algebra I	<b>Assignments</b>	
	1. Exam	4. Performance Task 1*
	2. Alternate Exam - Form A*	5. Performance Task 2*
	3. Alternate Exam - Form B*	

Unit 14: End of Course Exam		
Algebra I	<b>Assignments</b>	
	1. Exam*	3. Alternate Exam - Form B*
	2. Alternate Exam - Form A*	