



monarch

Curriculum Catalog

Algebra I

Table of Contents

ALGEBRA I COURSE OVERVIEW	1
UNIT 1: FOUNDATIONS OF ALGEBRA.....	1
UNIT 2: LINEAR EQUATIONS	2
UNIT 3: FUNCTIONS.....	2
UNIT 4: INEQUALITIES.....	2
UNIT 5: LINEAR SYSTEMS	3
UNIT 6: SEMESTER REVIEW AND EXAM.....	3
UNIT 7: POLYNOMIALS.....	3
UNIT 8: EXPONENTIAL AND RADICAL FUNCTIONS	3
UNIT 9: QUADRATICS	4
UNIT 10: RATIONAL EXPRESSIONS	4
UNIT 11: PROBABILITY AND STATISTICS	4
UNIT 12: SEMESTER REVIEW AND EXAM	4
UNIT 13: FINAL EXAM.....	4

Algebra I Course Overview

Algebra I Fundamentals 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, Mathematics 800 Fundamentals. Within the Algebra I Fundamentals course, the student will explore basic algebraic fundamentals such as evaluating, creating, solving and graphing linear, quadratic, and polynomial functions.

- **Foundations of Algebra:** Student will identify different real number properties, and how to use them to solve algebraic expressions.
- **Linear Equations:** Student will translate word problems into algebraic equations, and solve them using real number properties, converting between fractions, decimals, and percents.
- **Functions:** Student will understand the characteristics of functions, how to plot them, how to derive their equations, and determine what type of function a graph represents.
- **Inequalities:** Student will write, graph, and solve inequalities using real number properties.
- **Linear Systems:** Student will determine the solution of a pair of linear equations, using the addition method, substitution method and matrices.
- **Polynomials:** Student will add, subtract, multiply, and divide monomials and polynomials, as well as factor polynomials, using several different methods.
- **Exponential and Radical Functions:** Student will simplify powers of products, a power raised to a power, and quotients of powers, using the rule of exponents, and add, subtract, multiply, and divide radical expressions to solve equations.
- **Quadratics:** Student will identify, write, and graph various triangle, circle and quadratic equations and inequalities using the Pythagorean theorem, and by factoring, completing the square, and using the square root method.
- **Rational Expressions:** Student will add and subtract fractions with like and unlike denominators, solve proportions, equations and inequalities containing rational expressions, and solve different word problems using rational equations.
- **Probability and Statistics:** Student will determine the central tendencies of a given data set, as well as evaluate probability of possible outcomes using multiple methods.

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			
Algebra I	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		
	Unit 3: Functions		
	Assignments		
	Algebra I	1. The Coordinate Plane	13. Absolute Value Functions
		2. Identifying Functions	14. Quiz 3: Graphing Linear Functions
		3. Function Notation	15. Writing Linear Equations (1)
		4. Modeling Functions	16. Writing Linear Equations (2)
		5. Quiz 1: Function Basics	17. Writing Linear Equations (3)
		6. Writing a Function Rule	18. Quiz 4: Writing Linear Equations
		7. Arithmetic Sequences	19. Special Project*
		8. Direct Variation	20. Review
		9. Slope	21. Test
10. Quiz 2: Patterns		22. Alternate Test*	
11. Linear Equations		23. Glossary and Credits	
12. Slope-Intercept Form			
Unit 4: Inequalities			
Assignments			
Algebra I		1. Graphing	11. Absolute Value Solution Sets
		2. Addition Property of Inequality	12. Absolute Value Inequalities with One Variable
		3. Multiplication Property of Inequality	13. Absolute Value Inequalities with Two Variables
		4. Multi-Step Inequalities	14. Quiz 3: Absolute Value
		5. Problem Solving	15. Special Project*
		6. Quiz 1: Solving Inequalities	16. Review
		7. Compound Inequality Graphs	17. Test
		8. Solving Compound Inequalities	18. Alternate Test*
		9. Inequalities with Two Variables	19. Glossary and Credits
	10. Quiz 2: Compound Inequalities		

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

Unit 6: Semester Review and Exam		
Assignments		
Algebra I	1. Review	3. Alternate Exam – Form A*
	2. Exam	4. Alternate Exam – Form B*

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

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

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

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. Special Project*
	5. Quiz 1: Operations with Rational Expressions	14. Review
	6. Proportions	15. Test
	7. Using the LCD	16. Alternate Test*
	8. Complex Fractions	17. Glossary and Credits
	9. Inequalities	

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

Unit 12: Semester Review and Exam		
Assignments		
Alg. I	1. Review	3. Alternate Exam – Form A*
	2. Exam	4. Alternate Exam – Form B*

Unit 13: Final Exam		
Assignments		
Alg. I	1. Exam	3. Alternate Exam – Form B*
	2. Alternate Exam – Form A*	

(*) Indicates alternative assignment