



2019-20

CALVERT HOMESCHOOL™ CURRICULUM CATALOG

Algebra I



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Algebra I Course Overview

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.

- **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 percent's.
- **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	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	
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	
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	
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		
Assignments		
Algebra I	1. Solution of a System	12. Money and Unit Pricing
	2. Graphing Systems of Equations	13. Using Formulas
	3. Systems of Inequalities	14. Quiz 3: Representing Problems Using a Linear System
	4. Applications of Inequalities	15. Performance Task
	5. Quiz 1: Solving Linear Systems by Graphing	16. Alternate Performance Task*
	6. Substitution Method	17. Special Project*
	7. Addition Method	18. Review
	8. Matrices	19. Test
	9. Fractional Coefficients	20. Alternate Test*
	10. Quiz 2: Solving Linear Systems Algebraically	21. Glossary and Credits
	11. 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	13. Factoring Trinomials (1)
	2. Grouping Symbols	14. Factoring Trinomials (2)
	3. Quiz 1: Adding and Subtracting Polynomials	15. Special Cases
	4. Multiplying by a Monomial	16. Complete Factorization
	5. Multiplying Polynomials	17. Quiz 3: Factoring Polynomials
	6. F.O.I.L. and Special Cases	18. Performance Task
	7. Dividing by a Monomial	19. Alternate Performance Task*
	8. Long Division	20. Special Project*
	9. Quiz 2: Multiplying and Dividing Polynomials	21. Review
	10. Greatest Common Factor	22. Test
	11. Factoring Out the GCF	23. Alternate Test*
	12. Factoring by Grouping	24. Glossary and Credits

Unit 8: Exponential and Radical Functions		
Assignments		
Algebra I	1. Negative Exponents	15. Multiplying Radicals
	2. Exponential Expressions	16. Dividing Radicals
	3. Exponential Functions	17. Adding and Subtracting Radicals
	4. Scientific Notation	18. Radical Equations
	5. Applications of Exponential Functions	19. Graphing Radical Functions
	6. Quiz 1: Evaluating Exponential Expressions	20. Quiz 3: Radical Functions
	7. Multiplication	21. Performance Task
	8. Raising to a Power	22. Alternate Performance Task*
	9. Division	23. Special Project*
	10. Geometric Sequences	24. Review
	11. Geometric Sequences (2)	25. Test
	12. Project: Recursive Sequences	26. Alternate Test*
	13. Quiz 2: Properties of Exponents	27. Glossary and Credits
	14. Simplifying Radicals	

Unit 9: Quadratics	
Assignments	
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	
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	
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	

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

Algebra I		Unit 13: Final Exam	
Algebra I		Assignments	
1.	Exam	4.	Performance Task 1*
2.	Alternate Exam – Form A*	5.	Performance Task 2*
3.	Alternate Exam – Form B*		

Algebra I		Unit 14: End of Course Exam	
Algebra I		Assignments	
1.	Exam*	3.	Alternate Exam – Form B*
2.	Alternate Exam – Form A*		

(*) Indicates alternative assignment