



CALVERT HOMESCHOOL™ CURRICULUM CATALOG

Coordinate Algebra

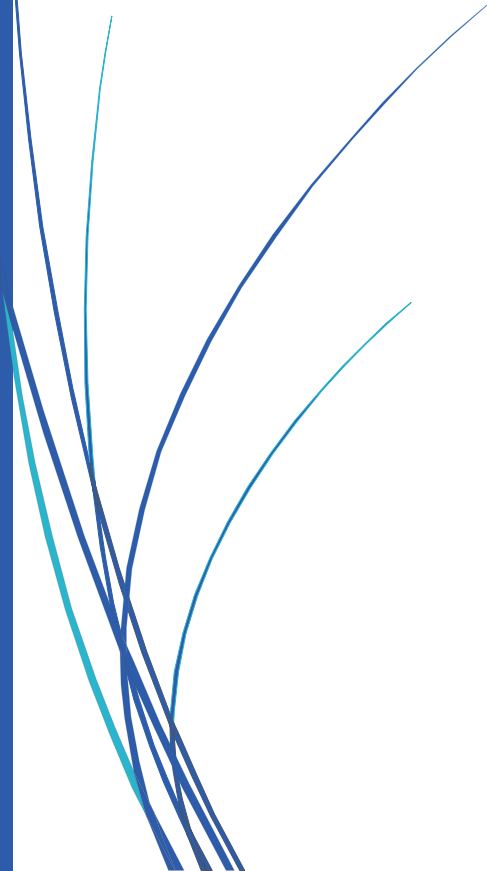


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Coordinate Algebra Course Overview

Coordinate Algebra is a full-year mathematics course intended for high school students who have successfully completed general mathematics for grade 8 or pre-algebra. This course focuses on complex operations of integers and variables while incorporating algebraic techniques and methods in order to develop student understanding of mathematical expressions, and concepts involving linear, quadratic, exponential and polynomial functions. Coordinate Algebra also integrates statistical theory with computational practices as well as to include coordinate geometry and geometric concepts, theorems and skills. Students are exposed to several branches of mathematics and will explore ways in which each one can be used as a mathematical model in understanding the world.

- **Relationships between Quantities:** Student will use the rule of exponents to simplify products, write equations of direct variation, find the distance between two points, and factor polynomials in various ways.
- **Reasoning with Equations and Inequalities:** Student will solve equations containing rational expressions and proportions, calculate slopes of lines in various manors, and write equations of a line given different pieces of information.
- **Linear and Exponential Functions:** Student will identify sets of data as functions or inverse functions, and graph them, evaluate perimeters, areas, volumes, and linear expressions, as well as identify an arithmetic or geometric sequence, find the common difference or ratio, and extend it to the nth term.
- **Describing Data:** Student will find the central tendencies of data, construct and interpret different plots of data, and calculate numbers of permutations or combinations of sets of data.
- **Transformations in the Coordinate Plane:** Student will identify different types of angles, analyze relationships between parallel lines and a transversal, and what happens to images after a translation, rotation, or reflection.
- **Connecting Algebra and Geometry through Coordinates:** Student will solve for the slope of the sides and diagonals of geometric figures, classify quadrilaterals using various manors, and find the areas of geometric figures.

Unit 1: Relationships Between Quantities	
Assignments	
1. Course Overview	18. Distance
2. Expressions	19. Applications of Percents
3. Multiplication and Raising to a Power	20. Mixture and Interest Problems
4. Division	21. Quiz 4
5. Expressions and Operations	22. F.O.I.L. and Special Cases
6. Quiz 1	23. Factoring Out the GCF
7. Evaluating Expressions and Absolute Value	24. Factoring Trinomials
8. Variables and Expressions	25. Complete Factorization
9. Algebraic Expressions, Equations and Inequalities	26. Quiz 5
10. Equations with Multiple Operations	27. Simplifying Rational Expressions
11. Quiz 2	28. Adding and Subtracting with Unlike Denominators
12. Two Unknowns, More Than Two Unknowns	29. Project: Work Word Problems
13. Real World Applications	30. Project: Regularity in Repeated Activity
14. Writing Equations from Word Problems	31. Review
15. Quiz 3	32. Test
16. Direct Variation	33. Alternate Test - Form A*
17. Literal Equations	

Unit 2: Reasoning With Equations and Inequalities	
Assignments	
Coordinate Algebra	1. Solving Equations with Rational Expressions
	2. More Operations with Rational Expressions
	3. Quiz 1
	4. Inequalities
	5. Compound Inequality Graphs
	6. Problem Solving
	7. Quiz 2
	8. Slope Review
	9. Linear Equations
	10. Slope-Intercept Form
	11. Inequalities with Two Variables
	12. Quiz 3
	13. Writing Linear Equations: Slope-Intercept and General Form
	14. Writing Linear Equations with Given Points
	15. Parallel and Perpendicular Lines
	16. Quiz 4: Writing Linear Equations
	17. Graphing Systems of Equations
	18. Systems of Inequalities
	19. Quiz 5: Solving Linear Systems by Graphing
	20. Substitution Method
	21. Addition Method
	22. Using Formulas
	23. Project: Horizontal and Vertical Lines
	24. Project: Modeling Income
	25. Review
	26. Test
	27. Alternate Test - Form A*

Unit 3: Linear and Exponential Functions	
Assignments	
Coordinate Algebra	1. Identifying Functions
	2. Function Notation
	3. Relations and Functions: Inverses
	4. Modeling Functions
	5. Quiz 1
	6. Evaluating Formula Functions
	7. Writing a Function Rule
	8. Arithmetic Sequences
	9. Quiz 2
	10. Project: Applications of Sequences
	11. Geometric Sequences
	12. Exponential Functions
	13. Graphing Exponential Functions
	14. Quiz 3
	15. Project: Community Beautifying Project
	16. Review
	17. Test
	18. Alternate Test - Form A*

Unit 4: Semester 1 Exam	
Assignments	
1. Exam	2. Alternate Exam*

Unit 5: Describing Data	
Assignments	
Coordinate Algebra	1. Statistics: Mean, Median, and Mode
	2. Range, Interquartile Range, Outliers, and Box and Whiskers Plots
	3. Standard Deviation and Variance
	4. Quiz 1
	5. Bar Graph, Dot Plot, and Stem and Leaf Plot
	6. The Histograms
	7. Correlation and Scatterplots
	8. Project: Creating a Graph
	9. Dispersion
	10. Two-Way Frequency Table
	11. Project: Data Analysis
	12. Quiz 2
	13. Sampling and Outcomes
	14. Permutations
	15. Combinations
	16. Probability
	17. Project: Probability
	18. Quiz 3
	19. Review
	20. Test
	21. Alternate Test - Form A*

Unit 6: Transformations in the Coordinate Plane		
Assignments		
Coordinate Algebra	1. Geometry Undefined Terms: Point, Line and Plane	11. Introduction: Rigid Motion, or Isometry
	2. Geometry and Defined Terms	12. Isometry and Reflection
	3. Angles and Parallels: Angle Definitions	13. Translations and Dilations
	4. Quiz 1	14. Rotations
	5. Angle Relationship Definitions	15. Quiz 3
	6. Angle Relationships and Parallel Lines	16. Project: Creative Transformations
	7. Project: Lifelike Parallel and Perpendicular Lines	17. Review
	8. Circles	18. Test
	9. Quiz 2	19. Alternate Test - Form A*
	10. Project: Creating Parallel Relationships	

Unit 7: Connecting Algebra and Geometry Through Coordinates		
Assignments		
Coordinate Algebra	1. Parallel and Perpendicular Lines	9. Area of Rectangles and Rhombuses
	2. Equations of Parallel and Perpendicular Lines	10. Area of Triangles and Rhombuses
	3. Quiz 1	11. Area of Trapezoids
	4. Plane to Circles in the Coordinate Plane	12. Project: Geometric Figures in the Coordinate Plane
	5. Quadrilaterals in the Coordinate Plane	13. Quiz 3
	6. More Quadrilaterals in the Coordinate Plane	14. Review
	7. Quiz 2	15. Test
	8. Area Concepts of Polygons	16. Alternate Test - Form A*

Unit 8: Semester 2 Exam	
Assignments	
1. Exam	2. Alternate Exam*

Unit 9: Semester 2 Exam	
Assignments	
1. Exam	3. Alternate Test - Form A*
2. Alternate Test - Form A*	

(*) Indicates alternative assignment