

College Algebra

Poudre School District

Pacing Overview

Section	Title	Pacing	Notes
Semester 1			
Algebraic Skills (Appendix A)			
15-16 days			
A.3	Polynomials	1 day	<i>Learning Objectives 1-3</i>
A.3	Polynomials	1 day	<i>Learning Objectives 4-6</i>
A.4	Synthetic Division		
A.5	Rational Expressions	2 days	
A.6	Solving Equations	2 days	
A.7	Complex Numbers; Quadratic Equations in The Complex Number System	2 days	
A.9	Interval Notation; Solving Inequalities	2 days	
A.10	n^{th} Roots; Rational Exponents	2 days	
Functions and Their Graphs (Chapter 1 & 2)			
12-13 days			
1.1	The Distance and Midpoint Formulas	1 day	
1.3	Lines	1 day	
1.4	Circles	1 day	<i>1.1 and 1.4 may be taught together (1-2 days)</i>
2.1	Functions	1 day	
2.2	The Graph of a Function	1 day	
2.3	Properties of Functions	1 day	<i>teaching Library of Functions before 2.3 can be helpful</i>
2.4	Library of Functions; Piecewise-defined Functions	1.5 days	
2.5	Graphing Techniques; Transformations	1.5 days	<i>emphasize Piecewise Functions</i>
2.6	Mathematical Models; Building Functions	1 day	
Quadratic Functions (Chapter 3)			
9-10 days			
3.1	Properties of Linear Functions and Linear Models	1 day	
3.2	Building Linear Models from Data	1 day	
3.3	Quadratic Functions and Their Properties	2 days	
3.4	Build Quadratic Models from Verbal Descriptions and from Data	2 days	
3.5	Inequalities Involving Quadratic Functions	1 day	<i>may be combined with Chapter 4</i>
Supplement/SAT Preparation: Right Triangle Trigonometry			
5 days			
	Pythagorean Theorem & Similar Triangles	1 day	
	Special Right Triangles	1 day	
	Sin/Cos/Tan and Applications	1 day	

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Section	Title	Pacing	Notes
Semester 2			
Polynomial and Rational Functions (Chapter 4)			
14-15 days			
4.1	Polynomial Functions and Models	2 days	
4.2	Properties of Rational Functions	2 days	
4.3	The Graph of a Rational Function	2 days	
4.4	Polynomial Inequalities	2 days	
4.5	The Real Zeros of a Polynomial Function	2 days	
4.6	Complex Zeros; Fundamental Theorem of Algebra	2 days	
Exponential Log Functions (Chapter 5.1-5.5)			
8-9 days			
5.1	Composite Functions	1 day	
5.2	One-to-One Functions; Inverse Functions	1 day	
5.3	Exponential Functions	1 day	
5.4	Logarithmic Functions	1 day	
5.5	Properties of Logarithms	2 days	
Applications of Logarithms (Chapter 5.6-5.9)			
8-9 days			
5.6	Logarithmic and Exponential Equations	2 days	
5.7	Financial Models	1 day	
5.8	Exponential Growth and Decay Models; Newton's Law; Logistic Growth and Decay Models	2 days	
5.9	Building Exponential, Logarithmic, and Logistic Models from Data	1 day	<i>optional</i>
Systems of Matrices (Chapter 11)			
9-10 days			
11.1	Systems of Linear Equations: Substitution and Elimination	1 day	
11.2	Systems of Linear Equations: Matrices	2 days	
11.3	Systems of Linear Equations: Determinants	1 day	
11.4	Matrix Algebra	1 day	
11.5	Partial Fraction Decomposition	2 days	
Sequences; Induction; the Binomial Theorem (Chapter 12)			
8-9 days *time permitting			
12.1	Sequences	1 day	
12.2	Arithmetic Sequences	1.5 days	
12.3	Geometry Sequences; Geometric Series	1.5 days	
12.4	Mathematical Induction	1 day	<i>optional</i>
12.5	The Binomial Theorem	1 day	<i>optional</i>

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Algebraic Skills (Appendix A)

Chapter Summary			
Section	Title	Learning Objectives	Pacing
A.3	Polynomials	<ol style="list-style-type: none"> 1. Recognize Monomials 2. Recognize Polynomials 3. Know Formulas for Special Products 	1 day
A.3	Polynomials	<ol style="list-style-type: none"> 4. Divide Polynomials Using Long Division 5. Factor Polynomials 6. Complete the Square 	1 day
A.4	Synthetic Division	<ol style="list-style-type: none"> 1. Divide Polynomials Using Synthetic Division 	
A.5	Rational Expressions	<ol style="list-style-type: none"> 1. Reduce a Rational Expression to Lowest Terms 2. Multiply and Divide Rational Expressions 3. Add and Subtract Rational Expressions 4. Use the Least Common Multiple Method 5. Simplify Complex Rational Expressions 	2 days
A.6	Solving Equations	<ol style="list-style-type: none"> 1. Solve Equations by Factoring 2. Solve Equations Involving Absolute Value 3. Solve a Quadratic Equation by Factoring 4. Solve a Quadratic Equation by Completing the Square 5. Solve a Quadratic Equation Using the Quadratic Formula 	2 days
A.7	Complex Numbers; Quadratic Equations in the Complex Number System	<ol style="list-style-type: none"> 1. Add, Subtract, Multiply, and Divide Complex Numbers 2. Solve Quadratic Equations in the Complex Number System 	2 days
<i>continued on next page</i>			

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Chapter Summary (continued)

Section	Title	Learning Objectives	Pacing
A.9	Interval Notation; Solving Inequalities	<ol style="list-style-type: none"> 1. Use Interval Notation 2. Use Properties of Inequalities 3. Solve Inequalities 4. Solve Combined Inequalities 5. Solve Inequalities Involving Absolute Value 	2 days
A.10	n^{th} Roots; Rational Exponents	<ol style="list-style-type: none"> 1. Work with n^{th} Roots 2. Simplify Radicals 3. Rationalize Denominators 4. Solve Radical Equations 5. Simplify Expressions with Rational Exponents 	2 days

Total: 12 days

Note: Additional days reserved for review and assessment.

Things to Know

Standards

HS.N-CN.A.3 (+)	Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers.
HS.N-CN.C.8 (+)	Extend polynomial identities to the complex numbers. <i>For example, rewrite $x^2 + 4$ as $(x + 2i)(x - 2i)$.</i>
HS.N-CN.C.9 (+)	Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.
HS.A-APR.D.7 (+)	Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.
HS.G-GMD.A.2 (+)	Give an informal argument using Cavalieri's principle for the formulas for the volume of a sphere and other solid figures.

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Functions and Their Graphs (Chapters 1 & 2)

Chapter Summary			
Section	Title	Learning Objectives	Pacing
Chapter 1: Graphs			
1.1	The Distance and Midpoint Formulas	<ol style="list-style-type: none"> 1. Use the Distance Formula 2. Use the Midpoint Formula 	1 day
1.3	Lines	<ol style="list-style-type: none"> 1. Calculate and Interpret the Slope of a Line 2. Graph Lines Given a Point and the Slope 3. Find the Equation of a Vertical Line 4. Use the Point-Slope Form of a Line; Identify Horizontal Lines 5. Find the Equation of a Line Given Two Points 6. Write the Equation of a Line in Slope-Intercept Form 7. Identify the Slope and y-intercept of a Line from Its Equation 8. Graph Lines Written in General Form Using Intercepts 9. Find Equations of Parallel Lines 10. Find Equations of Perpendicular Lines 	1 day
1.4	Circles	<ol style="list-style-type: none"> 1. Write the Standard Form of the Equation of a Circle 2. Graph a Circle 3. Work with the General Form of the Equation of a Circle 	1 day
<i>Note: 1.1 and 1.4 may be taught together (1-2 days)</i>			
<i>(continued on next page)</i>			

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Chapter Summary (continued)

Section	Title	Learning Objectives	Pacing
Chapter 2: Functions and Their Graphs			
2.1	Functions	<ol style="list-style-type: none"> 1. Determine Whether a Relation Represents a Function 2. Find the Value of a Function 3. Find the Difference Quotient of a Function 4. Find the Domain of a Function Defined by an Equation 5. Form the Sum, Difference, Product, and Quotient of Two Functions 	1 day
2.2	The Graph of a Function	<ol style="list-style-type: none"> 1. Identify the Graph of a Function 2. Obtain Information from or about the Graph of a Function 	1 day
2.3	Properties of Functions (NOTE: teaching Library of Functions before 2.3 can be helpful)	<ol style="list-style-type: none"> 1. Determine Even and Odd Functions from a Graph 2. Identify Even and Odd Functions from an Equation 3. Use a Graph to Determine Where a Function is Increasing, Decreasing, or Constant 4. Use a Graph to Locate Local Maxima and Local Minima 5. Use a Graph to Locate the Absolute Maximum and the Absolute Minimum 6. Use a Graphing Utility to Approximate Local Maxima and Local Minima and to Determine Where a Function is Increasing or Decreasing 7. Find the Average Rate of Change of a Function 	1 day
2.4	Library of Functions; Piecewise-defined Functions	<ol style="list-style-type: none"> 1. Graph the Functions Listed in the Library of Functions 2. Graph Piecewise-defined Functions 	1.5 days
2.5	Graphing Techniques: Transformations (NOTE: emphasize Piecewise Functions)	<ol style="list-style-type: none"> 1. Graph Functions Using Vertical and Horizontal Shifts 2. Graph Functions Using Compressions and Stretches 3. Graph Functions Using Reflections about the x-Axis and the y-Axis 	1.5 days
2.6	Mathematical Models: Building Functions	<ol style="list-style-type: none"> 1. Build and Analyze Functions 	1 day

Total: 10 days

Note: Additional days reserved for review and assessment.

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Things to Know		
Absolute Maximum	Absolute Minimum	Average Rate of Change
Constant Function	Decreasing Function	Difference Quotient of f
Distance Formula	Domain	Equation of the Unit Circle
Even Function f	Function	Function Notation
General Form of a Circle	General Form of a Line	Horizontal Line
Increasing Function	Local Maximum	Local Minimum
Midpoint Formula	Odd Function f	Parallel Lines
Perpendicular Lines	Point-Slope Form	Slope
Slope-Intercept Form	Standard Form	Vertical Line
Vertical-Line Test		

Standards	
HS.N-CN.B.6 (+)	Calculate the distance between numbers in the complex plane as the modulus of the difference, and the midpoint of a segment as the average of the numbers at its endpoints.
HS.G-C.A.4 (+)	Construct a tangent line from a point outside a given circle to the circle.

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Quadratic Functions (Chapter 3)

Chapter Summary			
Section	Title	Learning Objectives	Pacing
3.1	Properties of Linear Functions and Linear Models	<ol style="list-style-type: none"> 1. Graph Linear Functions 2. Use Average Rate of Change to Identify Linear Functions 3. Determine Whether a Linear Function is Increasing, Decreasing or Constant 4. Build Linear Models from Verbal Descriptions 	1 day
3.2	Building Linear Models from Data	<ol style="list-style-type: none"> 1. Draw and Interpret Scatter Diagrams 2. Distinguish between Linear and Nonlinear Relations 3. Use a Graphing Utility to Find the Line of Best Fit 	1 day
3.3	Quadratic Functions and Their Properties	<ol style="list-style-type: none"> 1. Graph a Quadratic Function Using Transformations 2. Identify the Vertex and Axis of Symmetry of a Quadratic Function 3. Graph a Quadratic Function Using Its Vertex, Axis, and Intercepts 4. Find a Quadratic Function Given Its Vertex and One Other Point 5. Find the Maximum or Minimum Value of a Quadratic Function 	2 days
3.4	Build Quadratic Models from Verbal Descriptions and from Data	<ol style="list-style-type: none"> 1. Build Quadratic Models from Verbal Descriptions 2. Build Quadratic Models from Data 	2 days
3.5	Inequalities Involving Quadratic Functions (NOTE: may be combined with Chapter 4)	<ol style="list-style-type: none"> 1. Solve Inequalities Involving a Quadratic Function 	1 day

Total: 7 days

Note: Additional days reserved for review and assessment.

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Things to Know	
Linear Function	Quadratic Functions

Standards	
HS.N-CN.A.3 (+)	Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers.

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Supplement/SAT Preparation: Right Triangle Trigonometry

Chapter Summary			
Section	Title	Learning Objectives	Pacing
Supplement	Pythagorean Theorem & Similar Triangles	<ol style="list-style-type: none"> 1. Solve the Pythagorean Theorem to Find Missing Side Lengths. 2. Apply the Pythagorean Theorem to Real World and Mathematical Situations. 3. Apply Similar Triangles to Find the Value of Missing Lengths. 	1 day
Supplement	Special Right Triangles	<ol style="list-style-type: none"> 1. Apply Special Right Triangles to Find Missing Side Lengths. 	1 day
Supplement	Sin/Cos/Tan and Applications	<ol style="list-style-type: none"> 1. Apply Sine, Cosine and Tangent to Find the Value of Missing Lengths. 2. Apply Sine, Cosine and Tangent to Real World and Mathematical Situations. 	1 day

Total: 3 days

Note: Additional days reserved for review and assessment.

Things to Know		
30-60-90 Triangle	45-90 Triangle	Angle of Depression
Angle of Elevation	Cosine	Pythagorean Theorem
Similar Triangles	Sine	Tangent

Standards

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Polynomial and Rational Functions (Chapter 4)

Chapter Summary			
Section	Title	Learning Objectives	Pacing
4.1	Polynomial Functions and Models	<ol style="list-style-type: none"> 1. Identify Polynomial Functions and Their Degree 2. Graph Polynomial Functions Using Transformations 3. Know Properties of the Graph of a Polynomial Functions 4. Analyze the Graph of a Polynomial Function 5. Build Cubic Models from Data 	2 days
4.2	Properties of Rational Functions	<ol style="list-style-type: none"> 1. Find the Domain of a Rational Function 2. Find the Vertical Asymptotes of a Rational Function 3. Find the Horizontal or Oblique Asymptote of a Rational Function 	2 days
4.3	The Graph of a Rational Function	<ol style="list-style-type: none"> 1. Analyze the Graph of a Rational Function 2. Solve Applied Problems Involving Rational Functions 	2 days
4.4	Polynomial and Rational Inequalities	<ol style="list-style-type: none"> 1. Solve Polynomial Inequalities 2. Solve Rational Inequalities 	2 days
4.5	The Real Zeros of a Polynomial Function	<ol style="list-style-type: none"> 1. Use the Remainder and Factor Theorem 2. Use Descartes' Rule of Signs to Determine the Number of Positive and the Number of Negative Real Zeros of a Polynomial Function 3. Use the Rational Zeros Theorem to List the Potential Rational Zeros of a Polynomial Function 4. Find the Real Zeros of a Polynomial Function 5. Solve Polynomial Equations 6. Use the Theorem for Bounds on Zeros 7. Use the Intermediate Value Theorem 	2 days
4.6	Complex Zeros; Fundamental Theorem of Algebra	<ol style="list-style-type: none"> 1. Use the Conjugate Pairs Theorem 2. Find the Polynomial Function with Specified Zeros 3. Find the Complex Zeros of a Polynomial Function 	2 days

Total: 12 days

Note: Additional days reserved for review and assessment.

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Things to Know		
Conjugate Pairs Theorem	Descartes' Rule of Signs	Factor Theorem
Fundamental Theorem of Algebra	Intermediate Value Theorem	Polynomial Function
Power Function	Rational Function	Rational Zeros Theorem
Real Zeros of a Polynomial Function	Remainder Theorem	

Standards	
HS.N-CN.C.9 (+)	Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.
HS.F-IF.C.7d (+)	Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.

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Exponential Log Functions (Chapter 5.1-5.5)

Chapter Summary			
Section	Title	Learning Objectives	Pacing
5.1	Composite Functions	<ol style="list-style-type: none"> 1. Form a Composite Function 2. Find the Domain of a Composite Function 	1 day
5.2	One-to-One Functions; Inverse Functions	<ol style="list-style-type: none"> 1. Determine Whether a Function is One-to-One 2. Determine the Inverse of a Function Defined by a Map or Set of Ordered Pairs 3. Obtain the Graph of the Inverse Function from the Graph of the Function 4. Find the Inverse of a Function Defined by an Equation 	1 day
5.3	Exponential Functions	<ol style="list-style-type: none"> 1. Evaluate Exponential Functions 2. Graph Exponential Functions 3. Define the Number e 4. Solve Exponential Equations 	1 day
5.4	Logarithmic Functions	<ol style="list-style-type: none"> 1. Change Exponential Statements to Logarithmic Statements and Logarithmic Statements to Exponential Statements 2. Evaluate Logarithmic Expressions 3. Determine the Domain of a Logarithmic Function 4. Graph Logarithmic Functions 5. Solve Logarithmic Equations 	1 day
5.5	Properties of Logarithms	<ol style="list-style-type: none"> 1. Work with the Properties of Logarithms 2. Write a Logarithmic Expressions as a Sum or Difference of Logarithms 3. Write a Logarithmic Expressions as a single Logarithm 4. Evaluate Logarithms Whose Base is Neither 10 Nor e 	2 days

Total: 6 days

Note: Additional days reserved for review and assessment.

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Things to Know		
Change-of-Base Formula	Composite Function	Horizontal-Line Test
Inverse Function f^{-1} of f	Natural Logarithm	Number e
One-to-One Function	Properties of the Exponential Function	Properties of the Logarithmic Function
Properties of Logarithms	Property of Exponents	

Standards	
HS.F-BF.A.1c (+)	Compose functions. <i>For example, if $T(y)$ is the temperature in the atmosphere as a function of height, and $h(t)$ is the height of a weather balloon as a function of time, then $T(h(t))$ is the temperature at the location of the weather balloon as a function of time.</i>
HS.F-BF.B.4b (+)	Verify by composition that one function is the inverse of another.
HS.F-BF.B.4c (+)	Read values of an inverse function from a graph or a table, given that the function has an inverse.
HS.F-BF.B.4d (+)	Produce an invertible function from a non-invertible function by restricting the domain.
HS.F-BF.B.5 (+)	Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.
HS.S-MD.A.1 (+)	Define a random variable for a quantity of interest by assigning a numerical value to each event in a sample space; graph the corresponding probability distribution using the same graphical displays as for data distributions.

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Applications of Logarithms (Chapter 5.6-5.9)

Chapter Summary			
Section	Title	Learning Objectives	Pacing
5.6	Logarithmic and Exponential Equations	<ol style="list-style-type: none"> 1. Solve Logarithmic Equations 2. Solve Exponential Equations 3. Solve Logarithmic and Exponential Equations Using a Graphing Utility 	2 days
5.7	Financial Models	<ol style="list-style-type: none"> 1. Determine the Future Value of a Lump Sum of Money 2. Calculate Effective Rates of Return 3. Determine the Present Value of a Lump Sum of Money 4. Determine the Rate of Interest or the Time Required to Double a Lump Sum of Money 	1 day
5.8	Exponential Growth and Decay Models; Newton's Law; Logistic Growth and Decay Models	<ol style="list-style-type: none"> 1. Find Equations of Populations That Obey the Law of Uninhibited Growth 2. Find Equations of Populations That Obey the Law of Decay 3. Use Newton's Law of Cooling 4. Use Logistic Models 	2 days
5.9	Building Exponential, Logarithmic, and Logistic Models from Data (<i>optional</i>)	<ol style="list-style-type: none"> 1. Build an Exponential Model from Data 2. Build a Logarithmic Model from Data 3. Build a Logistic Model from Data 	1 day

Total: 6 days

Note: Additional days reserved for review and assessment.

Things to Know		
Compound Interest Formula	Continuous Compounding	Effective Rate of Interest
Logistic Model	Newton's Law of Cooling	Present Value Formulas
Uninhibited Growth and Decay		

Standards	
HS.F-BF.B.5 (+)	Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.

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Systems and Matrices (Chapter 11)

Chapter Summary			
Section	Title	Learning Objectives	Pacing
11.1	Systems of Linear Equations: Substitution and Elimination	<ol style="list-style-type: none"> 1. Solve Systems of Equations by Substitution 2. Solve Systems of Equations by Elimination 3. Identify Inconsistent Systems of Equations Containing Two Variables 4. Express the Solution of a System of Dependent Equations Containing Two Variables 5. Solve Systems of Three Equations Containing Three Variables 6. Identify Inconsistent Systems of Equations Containing Three Variables 7. Express the Solution of a System of Dependent Equations Containing Three Variables 	1 day
11.2	Systems of Linear Equations: Matrices	<ol style="list-style-type: none"> 1. Write the Augmented Matrix of a System of Linear Equations 2. Write the System of Equations from the Augmented Matrix 3. Perform Row Operations on a Matrix 4. Solve a System of Linear Equations Using Matrices 	2 days
11.3	Systems of Linear Equations: Determinants	<ol style="list-style-type: none"> 1. Evaluate 2 by 2 Determinants 2. Use Cramer's Rule to Solve a System of Two Equations Containing Two Variables 3. Evaluate 3 by 3 Determinants 4. Use Cramer's Rule to Solve a System of Three Equations Containing Three Variables 5. Know Properties of Determinants 	1 day
11.4	Matrix Algebra	<ol style="list-style-type: none"> 1. Find the Sum and Difference of Two Matrices 2. Find Scalar Multiples of a Matrix 3. Find the Product of Two Matrices 4. Find the Inverse of a Matrix 5. Solve a System of Linear Equations Using an Inverse Matrix 	1 day

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Chapter Summary (continued)			
Section	Title	Learning Objectives	Pacing
11.5	Partial Fraction Decomposition	<ol style="list-style-type: none"> 1. Decompose P/Q Where Q Has Only Nonrepeated Linear Factors 2. Decompose P/Q Where Q Has Repeated Linear Factors 3. Decompose P/Q Where Q Has a Nonrepeated Irreducible Quadratic Factor 4. Decompose P/Q Where Q Has a Repeated Irreducible Quadratic Factor 	2 days

Total: 7 days

Note: Additional days reserved for review and assessment.

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Things to Know		
Determinants and Cramer's Rule	Matrix	Matrix Algebra
Systems of Equations		

Standards	
HS.N-VM.C.6 (+)	Use matrices to represent and manipulate data, e.g., to represent payoffs or incidence relationships in a network.
HS.N-VM.C.7 (+)	Multiply matrices by scalars to produce new matrices, e.g., as when all of the payoffs in a game are doubled.
HS.N-VM.C.8 (+)	Add, subtract, and multiply matrices of appropriate dimensions.
HS.N-VM.C.9 (+)	Understand that, unlike multiplication of numbers, matrix multiplication for square matrices is not a commutative operation, but still satisfies the associative and distributive properties.
HS.N-VM.C.10 (+)	Understand that the zero and identity matrices play a role in matrix addition and multiplication similar to the role of 0 and 1 in the real numbers. The determinant of a square matrix is nonzero if and only if the matrix has a multiplicative inverse.
HS.N-VM.C.11 (+)	Multiply a vector (regarded as a matrix with one column) by a matrix of suitable dimensions to produce another vector. Work with matrices as transformations of vectors.
HS.N-VM.C.12 (+)	Work with 2×2 matrices as a transformations of the plane, and interpret the absolute value of the determinant in terms of area.
HS.A-REI.C.8 (+)	Represent a system of linear equations as a single matrix equation in a vector variable.
HS.A-REI.C.9 (+)	Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension 3×3 or greater).

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Sequences; Induction; the Binomial Theorem (Chapter 12)

**time permitting*

Chapter Summary			
Section	Title	Learning Objectives	Pacing
12.1	Sequences	<ol style="list-style-type: none"> 1. Write the First Several Terms of a Sequence 2. Write the Terms of a Sequence Defined by a Recursive Formula 3. Use Summation Notation 4. Find the Sum of a Sequence 	1 day
12.2	Arithmetic Sequences	<ol style="list-style-type: none"> 1. Determine Whether a Sequence is Arithmetic 2. Find the Formula for an Arithmetic Sequence 3. Find the Sum of an Arithmetic Sequence 	1.5 days
12.3	Geometric Sequences; Geometric Series	<ol style="list-style-type: none"> 1. Determine Whether a Sequence is Geometric 2. Find a Formula for a Geometric Sequence 3. Find the Sum of a Geometric Sequence 4. Determine Whether a Geometric Series Converges or Diverges 5. Solve Annuity Problems 	1.5 days
12.4	Mathematical Induction (<i>optional</i>)	<ol style="list-style-type: none"> 1. Prove Statements Using Mathematical Induction 	1 day
12.5	The Binomial Theorem (<i>optional</i>)	<ol style="list-style-type: none"> 1. Evaluate $\binom{n}{j}$ 2. Use the Binomial Theorem 	1 day

Total: 6 days

Note: Additional days reserved for review and assessment.

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Things to Know		
Amount of Annuity	Arithmetic Sequence	Binomial Coefficient
Binomial Theorem	Factorials	Geometric Sequence
Infinite Geometric Series	Principle of Mathematical Induction	Sequence
Sum of a Convergent Infinite Geometric Series	Sum of the first n Terms of an Arithmetic Sequence	Sum of the First n Terms of a Geometric Sequence
The Pascal Triangle		

Standards	
HS.A-APR.C.5 (+)	Know and apply the Binomial Theorem for the expansion of $(x + y)^n$ in powers of x and y for a positive integer n , where x and y are any numbers, with coefficients determined for example by Pascal's Triangle.