

Knowre Math: **Algebra 2** Curriculum

Chapter 1 Introduction to Algebra 2

Lesson	Topic	CA CCSSM
1-1 Real Numbers and Order of Operations	A) Number Sets	A2.A.SSE.2
	B) Absolute Value	
	C) Order of Operations	
1-2 Expressions	A) Writing Algebraic Expressions	A2.A.SSE.1.a, A2.A.SSE.2
1-3 Equations	A) Solving Linear Equations	A2.A.CED.1, A2.A.REI.3.1, A2.A.CED.4
	B) Solving Literal Equations	
	C) Solving Absolute Value Equations	
1-4 Inequalities	A) Graphing Linear Inequalities	A2.A.CED.1, A2.A.CED.3
	B) Solving Linear Inequalities	
1-5 Compound Inequalities	A) Writing and Graphing Compound Inequalities	A2.A.CED.1, A2.A.CED.3
	B) Solving Compound Inequalities	
1-6 Absolute Value Inequalities	A) Writing and Graphing Absolute Value inequalities	A2.A.CED.3, A2.A.REI.3.1
	B) Solving Absolute Value Inequalities	
1-7 The Coordinate Plane	A) Features of the Coordinate Plane	
	B) Scale, Maximum, and Minimum of Coordinate Planes	

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Chapter 2 Properties and Attributes of Functions

Lesson	Topic	CA CCSSM
2-1 Relations	A) Relations and their Representations	A2.F.IF.5
	B) Domain and Range of Relations	
2-2 Introduction to Functions	A) Identifying Functions	A2.F.IF.5
	B) Domain and Range of Functions	
	C) Identifying Independent and Dependent Variables	
2-3 Interval Notation	A) Inequalities and Interval Notation	A2.F.IF.5
	B) Graphing Intervals on a Number Line	
	C) Domain and Range of Continuous Functions	
2-4 Function Notation	A) Identifying Inputs and Outputs of Functions	A1.F.IF.2
	B) Writing Equations Using Function Notation	
	C) Evaluating Functions	

Chapter 3 Linear Functions

Lesson	Topic	CA CCSSM
3-1 Linear Equations and Functions	A) Identifying Linear Functions and Equations in Standard Form	A2.A.CED.2, A2.A.CED.4, A2.F.IF.4
	B) Identifying the x- and y-intercepts	
	C) Graphing Linear Functions	
3-2 Rate of Change and Slope	A) Define Rate of Change	A2.F.IF.4, A2.F.IF.6, A2.F.IF.9
	B) Finding Rate of Change and Slope	
3-3 Slope-Intercept Form	A) Define Slope-Intercept Form	A2.A.CED.2, A2.A.CED.4, A2.F.IF.4, A2.F.IF.6
	B) Graphing Equations in Slope-Intercept Form	
	C) Writing Equations in Slope-Intercept Form	
3-4 Point-Slope Form	A) Define Point-Slope Form	A2.A.CED.2, A2.A.CED.4, A2.F.IF.4, A2.F.IF.6, A2.F.IF.9
	B) Graphing Equations in Point-Slope Form	
	C) Writing Equations in Point-Slope Form	
3-5 Special Lines	A) Horizontal and Vertical Lines	A2.A.CED.2, A2.F.IF.4, A2.F.IF.6
	B) Parallel and Perpendicular Lines	
3-6 Linear Inequalities	A) Graphing Linear Inequalities	A2.A.CED.3

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Chapter 4 Linear Systems

Lesson	Topic	CA CCSSM
4-1 Solving by Graphing	A) Solutions of Systems of Equations	A2.A.CED.2, A2.A.REI.11
	B) Solving Systems by Graphing	
4-2 Solving by Substitution	A) Solving Systems with Substitution	A2.A.CED.2
4-3 Solving by Elimination	A) Directly Eliminating x or y	A2.A.CED.2
	B) Elimination After Scalar Multiplication	
4-4 Systems of Inequalities	A) Solving Systems of Linear Inequalities	A2.A.CED.3
4-5 Linear Programming	A) Defining the Feasible Region	A2.A.CED.2, A2.A.CED.3, A2.F.IF.5
	B) Maximizing/Minimizing Using the Feasible Region	
4-6 System of Equations with Three Variables	A) Solving with Substitution	A2.A.CED.2

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Chapter 5 Exponents and Roots

Lesson	Topic	CA CCSSM
5-1 Multiplication and Division Properties of Exponents	A) Product of Powers Property	A2.A.SSE.2
	B) Quotient of Powers Property	
	C) Negative Exponents	
5-2 Power Properties of Exponents	A) Power of a Power Property	A2.A.SSE.2
	B) Power of a Product Property	
5-3 Simplifying Radicals	A) Simplifying Square Roots	A2.A.SSE.2
	B) Square Roots of Variable Expressions	
5-4 Adding and Subtracting Radicals	A) Adding and Subtracting Square Roots	A2.A.SSE.1.a, A2.A.SSE.2
5-5 Multiplying and Dividing Radicals	A) Simplifying Products of Square Roots	A2.A.SSE.2
	B) Simplifying Quotients of Square Roots	
5-6 Rationalizing Radicals	A) Simplifying Square Roots by Rationalizing the Denominator	A2.A.SSE.2
5-7 Rational and nth Root Forms	A) Writing Rational Exponents in Radical Form	A2.A.SSE.2
	B) Writing Radical Expressions in Rational Exponent Form	
5-8 Evaluating nth Roots and Rational Exponents	A) Simplifying nth Roots	A2.A.SSE.2
	B) Writing Rational Exponents in Simplified Radical Form	
5-9 Simplifying nth Roots of Variable Expressions	A) Simplifying nth Roots of Variable Expressions	A2.A.SSE.2

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Chapter 6 Transformations of Parent Functions

Lesson	Topic	CA CCSSM
6-1 Parent Functions	A) Graphing Parent Functions	A2.A.CED.2, A2.F.IF.4, A2.F.IF.7.b
	B) Equations of Parent Functions	
6-2 Translations	A) Identifying Translations	A2.A.SSE.1.a, A2.A.CED.2, A2.F.IF.4, A2.F.IF.7.b, A2.F.BF.3
	B) Graphing Translations of Parent Functions	
	C) Writing Equations of Translated Parent Functions	
6-3 Reflections	A) Identifying Reflections	A2.A.SSE.1.a, A2.A.CED.2, A2.F.IF.7.b, A2.F.BF.3
	B) Graphing Reflections of Parent Functions	
	C) Writing Equations of Reflected Parent Functions	
6-4 Dilations	A) Identifying Dilations	A2.A.SSE.1.a, A2.A.CED.2, A2.F.IF.7.b, A2.F.BF.3
	B) Graphing Dilations of Parent Functions	
	C) Writing Equations of Dilated Parent Functions	
6-5 Mixed Transformations	A) Identifying Transformations	A2.A.SSE.1.a, A2.A.CED.2, A2.F.IF.7.b, A2.F.BF.3
	B) Graphing Transformations of Parent Functions	
	C) Writing Equations of Transformed Parent Functions	
6-6 Transformations on Function Notation	A) Writing Equations of Functions after Transformations	A2.A.SSE.1.a, A2.A.CED.2, A2.F.BF.3
	B) Identifying the Transformation that Results when Terms are Replaced in Function Notation	
6-7 Piecewise-Defined Functions	A) Features of Piecewise Functions	A2.F.IF.5, A2.F.IF.7.b
	B) Graphing Functions on Intervals	
	C) Graphing Piecewise Functions	

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Chapter 7 Polynomials

Lesson	Topic	CA CCSSM
7-1 Introduction to Polynomials	A) Classifying Polynomials	A2.A.SSE.1.a, A2.A.SSE.2, A2.A.APR.4
	B) Standard Form	
7-2 Adding, Subtracting, and Multiplying Polynomials	A) Addition of Polynomials	A2.A.SSE.1.a, A2.A.SSE.2, A2.A.APR.1
	B) Subtraction of Polynomials	
	C) Multiplication of Polynomials	
7-3 Factoring	A) Factoring a GCF	A2.A.SSE.1.a, A2.A.SSE.2
	B) Factoring by Grouping	
	C) Factoring Trinomials	
7-4 Factoring - Special Cases	A) Factoring Perfect Square Trinomials	A2.A.SSE.1.a, A2.A.SSE.2, A2.A.APR.4
	B) Factoring a Difference of Squares	
	C) Factoring a Sum or Difference of Cubes	
7-5 Imaginary Unit i	A) Defining i	A2.N.CN.1, A2.N.CN.2, A2.A.SSE.2
	B) Powers of i	
	C) Simplifying Expressions that Contain Imaginary Numbers	
7-6 Complex Numbers	A) Defining Complex Numbers	A2.N.CN.1, A2.N.CN.2, A2.N.CN.8, A2.A.SSE.1.a, A2.A.SSE.1.b, A2.A.SSE.2
	B) Operations with Complex Numbers	
	C) Conjugates of Complex Numbers	

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Chapter 8 Quadratic Functions

Lesson	Topic	CA CCSSM
8-1 Parabolas	A) Graphs of Quadratic Functions	A2.A.CED.1, A2.A.CED.3, A2.F.IF.4
	B) Features of Parabolas	
	C) Using the Vertex and the Intercepts to Graph Quadratic Functions	
8-2 Standard Form of Quadratic Functions	A) Standard Form of a Quadratic Function	A2.A.SSE.1.a, A2.F.IF.4, A2.F.IF.9
	B) Using Key Features to Graph a Quadratic Functions in Standard Form	
	C) Writing Quadratic Equations in Standard Form	
8-3 Solving Quadratic Equations by Graphing	A) Solutions and x-intercepts	A2.A.CED.2, A2.A.CED.3, A2.A.REI.2, A2.F.IF.4
8-4 Solving Quadratic Equations by Factoring	A) The Zero Product Property	A2.N.CN.2, A2.A.SSE.2, A2.A.APR.3, A2.A.CED.1, A2.A.CED.2, A2.A.REI.2, A2.F.IF.4
	B) Solving Quadratic Equations by Factoring	
	C) Writing Quadratic Functions in Factored Form	
8-5 Solving Quadratic Equations by Completing the Square	A) Using Square Roots to Solve Quadratic Equations	A2.N.CN.7, A2.A.SSE.1.a, A2.A.APR.4, A2.A.CED.1, A2.A.CED.2, A2.A.CED.4, A2.A.REI.2, A2.F.IF.4, A2.G.GPE.3.1
	B) Solving Quadratic Equations by Completing the Square	
	C) Graphing Quadratic Functions in Vertex Form	
	D) Writing Quadratic Functions in Vertex Form	
8-6 Solving Quadratic Equations Using the Quadratic Formula	A) Using the Quadratic Formula to Solve Quadratic Equations	A2.N.CN.7, A2.A.CED.1, A2.A.REI.2, A2.A.REI.11
	B) Solutions and the Discriminant	
	C) Using the Quadratic Formula to Write Quadratic Equations in Factored Form	

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Chapter 9 Polynomial Functions

Lesson	Topic	CA CCSSM
9-1 Dividing Polynomials Using Long Division	A) Polynomial Long Division	A2.A.SSE.1.a, A2.A.SSE.2, A2.A.APR.6
9-2 Dividing Polynomials Using Synthetic Division	A) Polynomial Synthetic Division	A2.A.SSE.1.a, A2.A.SSE.2, A2.A.APR.6, A2.A.CED.4
9-3 Polynomial Equations	A) Solutions of Polynomial Equations	A2.N.CN.9, A2.A.SSE.2, A2.A.APR.2, A2.A.APR.3, A2.A.APR.6, A2.A.CED.1, A2.A.CED.2, A2.A.CED.3
	B) Writing Polynomial Functions given the Zeros	
	C) Finding all Roots of Polynomial Functions	
9-4 Graphs of Polynomial Functions	A) Classifying Functions Based on their Graphs	A2.N.CN.9, A2.A.SSE.1.a, A2.A.SSE.2, A2.A.APR.3, A2.A.CED.2, A2.F.IF.4, A2.F.IF.7.c
	B) End Behavior	
	C) Relating Graphs of Polynomial Functions to their Equations	

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Chapter 10 Radical Functions and Inverses

Lesson	Topic	CA CCSSM
10-1 nth Root Functions	A) Domain and Range of Square Root Functions	A2.F.IF.5, A2.F.IF.7.b
	B) Graphing Square Root Functions	
	C) Domain and Range of nth Root Functions	
10-2 Solving Radical Equations	A) Solving Square Root and nth Root Equations	A2.A.CED.1, A2.A.CED.4, A2.A.REI.2
10-3 Operations on Functions	A) Performing Operations on Functions	A2.F.IF.5, A2.F.BF.1.b
	B) Domain and Range of Functions that Result from Operations	
10-4 Composition of Functions	A) Evaluating Compositions of Functions	A2.F.BF.4.a
	B) Writing Compositions of Functions	
10-5 Inverse Functions and Relations	A) Inverses of Relations	A2.F.IF.5, A2.F.BF.4.a
	B) Determining the Inverse of Function Equations	
	C) Composition and Inverse Functions	

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Chapter 11 Exponential and Logarithmic Functions

Lesson	Topic	CA CCSSM
11-1 Exponential Functions	A) Writing and Graphing Exponential Functions	A2.A.CED.2, A2.F.IF.4,
	B) Domain and Range of Exponential Functions	A2.F.IF.5, A2.F.IF.7.b, A2.F.IF.7.e
11-2 Solving Exponential Equations	A) Solving Exponential Equations with a Common Base	A2.A.CED.1, A2.A.CED.4
	B) Solving Exponential Equations by Finding a Common Base	
11-3 Evaluating Logarithms	A) Defining Logarithms	A2.A.SSE.1.a,
	B) Evaluating Logarithms	A2.A.SSE.1.b, A2.A.SSE.2, A2.F.LE.4, A2.F.LE.4.3
11-4 Solving Logarithmic Equations	A) Solving Logarithmic Equations	A2.A.CED.1, A2.A.CED.4, A2.F.LE.4, A2.F.LE.4.3
11-5 Logarithmic Functions	A) Domain and Range of Logarithmic Functions	A2.A.CED.2, A2.F.IF.4, A2.F.IF.5, A2.F.IF.7.b,
	B) Inverses of Logarithmic and Exponential Functions	A2.F.IF.7.e, A2.F.BF.3, A2.F.BF.4.a, A2.F.LE.4
	C) Graphing Logarithmic Functions	
11-6 Exponential Growth and Decay	A) Identifying Percent Change	A2.A.SSE.1.b, A2.A.CED.1, A2.A.CED.2, A2.F.IF.4,
	B) Writing Exponential Growth and Decay Equations	A2.F.IF.7.e, A2.F.IF.8
	C) Modeling Exponential Growth and Decay	

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Chapter 12 Sequences and Series

Lesson	Topic	CA CCSSM
12-1 Sequences	A) Common Ratio and Difference	A2.F.IF.6
	B) Writing Terms of Arithmetic and Geometric Sequences	
	C) Sequences and their Graphs	
12-2 Arithmetic Sequences	A) Recursive Formulas of Arithmetic Sequences	A2.A.SSE.1.a, A2.A.SSE.1.b, A2.A.CED.1, A2.A.CED.3
	B) Explicit Formulas of Arithmetic Sequences	
12-3 Geometric Sequences	A) Recursive Formulas of Geometric Sequences	A2.A.SSE.1.a, A2.A.SSE.1.b, A2.A.CED.1, A2.A.CED.3
	B) Explicit Formulas of Geometric Sequences	
12-4 Arithmetic Series	A) Defining Arithmetic Series	A2.A.CED.1
	B) Partial Sums of Arithmetic Series	
12-5 Geometric Series	A) Defining Geometric Series	A2.A.SSE.1.a, A2.A.SSE.1.b, A2.A.SSE.4, A2.A.CED.1
	B) Partial Sums of Geometric Series	
	C) Infinite Geometric Series	
12-6 Sigma Notation	A) Introduction to Sigma Notation	A2.A.SSE.1.a, A2.A.SSE.4
	B) Writing Series in Sigma Notation	
	C) Evaluating Arithmetic and Geometric Series in Sigma Notation	

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Chapter 13 Rational Functions

Lesson	Topic	CA CCSSM
13-1 Simplifying Rational Expressions	A) Undefined Values of Rational Expressions	A2.A.SSE.2, A2.A.APR.6, A2.A.APR.7
	B) Simplifying Rational Expressions	
13-2 Multiplying and Dividing Rational Expressions	A) Multiplying Rational Expressions	A2.A.SSE.2, A2.A.APR.7
	B) Dividing Rational Expressions	
13-3 Adding and Subtracting Rational Expressions	A) Common Denominators of Rational Expressions	A2.A.SSE.1.a, A2.A.SSE.2, A2.A.APR.7, A2.F.BF.1.b
	B) Adding and Subtracting Rational Expressions	
13-4 Reciprocal Functions	A) Defining Reciprocal Functions	A2.A.APR.6, A2.A.CED.2, A2.F.IF.4, A2.F.IF.5, A2.F.IF.7.b, A2.F.BF.3
	B) Domain and Range of Reciprocal Functions	
	C) Graphing Reciprocal Functions	
13-5 Rational Functions	A) Defining Rational Functions	A2.A.SSE.1.b, A2.A.CED.2, A2.F.IF.4, A2.F.IF.5, A2.F.IF.8
	B) Asymptotes and Holes	
	C) Graphing Rational Functions	
13-6 Solving Rational Equations	A) Solving Rational Equations	A2.A.CED.1, A2.A.REI.2
13-7 Direct and Inverse Variation	A) Direct Variation	A2.A.CED.1, A2.A.CED.2, A2.F.IF.6, A2.F.BF.3
	B) Inverse Variation	