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Chapter 1 Introduction to Algebra 2

Lesson	Topic	NGSSS
1-1 Real Numbers and Order of Operations	A) Number Sets	A2.MAFS.912.A-SSE.1.2
	B) Absolute Value	
	C) Order of Operations	
1-2 Expressions	A) Writing Algebraic Expressions	A2.MAFS.912.A-SSE.1.1.a, A2.MAFS.912.A-SSE.1.2
1-3 Equations	A) Solving Linear Equations	A2.MAFS.912.A-CED.1.1
	B) Solving Literal Equations	
	C) Solving Absolute Value Equations	
1-4 Inequalities	A) Graphing Linear Inequalities	A2.MAFS.912.A-CED.1.1, A2.MAFS.912.A-CED.1.3, A2.MAFS.912.A-CED.1.4
	B) Solving Linear Inequalities	
1-5 Compound Inequalities	A) Writing and Graphing Compound Inequalities	A2.MAFS.912.A-CED.1.1, A2.MAFS.912.A-CED.1.3
	B) Solving Compound Inequalities	
1-6 Absolute Value Inequalities	A) Writing and Graphing Absolute Value inequalities	A2.MAFS.912.A-CED.1.3, A2.MAFS.912.A-CED.1.1
	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	NGSSS
2-1 Relations	A) Relations and their Representations	A2.MAFS.912.F-IF.2.5
	B) Domain and Range of Relations	
2-2 Introduction to Functions	A) Identifying Functions	A2.MAFS.912.F-IF.2.5
	B) Domain and Range of Functions	
	C) Identifying Independent and Dependent Variables	
2-3 Interval Notation	A) Inequalities and Interval Notation	A2.MAFS.912.A-CED.1.3, A2.MAFS.912.F-IF.2.5
	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.MAFS.912.F-IF.1.2
	B) Writing Equations Using Function Notation	
	C) Evaluating Functions	

Chapter 3 Linear Functions

Lesson	Topic	NGSSS
3-1 Linear Equations and Functions	A) Identifying Linear Functions and Equations in Standard Form	A2.MAFS.912.A-CED.1.2, A2.MAFS.912.A-CED.1.4, A2.MAFS.912.F-IF.2.4
	B) Identifying the x- and y-intercepts	
	C) Graphing Linear Functions	
3-2 Rate of Change and Slope	A) Define Rate of Change	A2.MAFS.912.F-IF.2.4, A2.MAFS.912.F-IF.2.6, A2.MAFS.912.F-IF.3.9
	B) Finding Rate of Change and Slope	
3-3 Slope-Intercept Form	A) Define Slope-Intercept Form	A2.MAFS.912.A-CED.1.2, A2.MAFS.912.A-CED.1.4, A2.MAFS.912.F-IF.2.4, A2.MAFS.912.F-IF.2.6
	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.MAFS.912.A-CED.1.2, A2.MAFS.912.A-CED.1.4, A2.MAFS.912.F-IF.2.4, A2.MAFS.912.F-IF.2.6, A2.MAFS.912.F-IF.3.9
	B) Graphing Equations in Point-Slope Form	
	C) Writing Equations in Point-Slope Form	
3-5 Special Lines	A) Horizontal and Vertical Lines	A2.MAFS.912.A-CED.1.2, A2.MAFS.912.F-IF.2.4, A2.MAFS.912.F-IF.2.6
	B) Parallel and Perpendicular Lines	
3-6 Linear Inequalities	A) Graphing Linear Inequalities	A2.MAFS.912.A-CED.1.3

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Chapter 4 Linear Systems

Lesson	Topic	NGSSS
4-1 Solving by Graphing	A) Solutions of Systems of Equations	A2.MAFS.912.A-CED.1.2, A2.MAFS.912.A-REI.4.11
	B) Solving Systems by Graphing	
4-2 Solving by Substitution	A) Solving Systems with Substitution	A2.MAFS.912.A-CED.1.2
4-3 Solving by Elimination	A) Directly Eliminating x or y	A2.MAFS.912.A-CED.1.2
	B) Elimination After Scalar Multiplication	
4-4 Systems of Inequalities	A) Solving Systems of Linear Inequalities	A2.MAFS.912.A-CED.1.3
4-5 Linear Programming	A) Defining the Feasible Region	A2.MAFS.912.A-CED.1.2, A2.MAFS.912.A-CED.1.3, A2.MAFS.912.F-IF.2.5
	B) Maximizing/Minimizing Using the Feasible Region	
4-6 System of Equations with Three Variables	A) Solving with Substitution	A2.MAFS.912.A-CED.1.2

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Chapter 5 Exponents and Roots

Lesson	Topic	NGSSS
5-1 Multiplication and Division Properties of Exponents	A) Product of Powers Property	A2.MAFS.912.A-SSE.1.2
	B) Quotient of Powers Property	
	C) Negative Exponents	
5-2 Power Properties of Exponents	A) Power of a Power Property	A2.MAFS.912.A-SSE.1.2
	B) Power of a Product Property	
5-3 Simplifying Radicals	A) Simplifying Square Roots	A2.MAFS.912.A-SSE.1.2
	B) Square Roots of Variable Expressions	
5-4 Adding and Subtracting Radicals	A) Adding and Subtracting Square Roots	A2.MAFS.912.A-SSE.1.1.a, A2.MAFS.912.A-SSE.1.2
5-5 Multiplying and Dividing Radicals	A) Simplifying Products of Square Roots	A2.MAFS.912.A-SSE.1.2
	B) Simplifying Quotients of Square Roots	
5-6 Rationalizing Radicals	A) Simplifying Square Roots by Rationalizing the Denominator	A2.MAFS.912.A-SSE.1.2
5-7 Rational and nth Root Forms	A) Writing Rational Exponents in Radical Form	A2.MAFS.912.A-SSE.1.2
	B) Writing Radical Expressions in Rational Exponent Form	
5-8 Evaluating nth Roots and Rational Exponents	A) Simplifying nth Roots	A2.MAFS.912.A-SSE.1.2
	B) Writing Rational Exponents in Simplified Radical Form	
5-9 Simplifying nth Roots of Variable Expressions	A) Simplifying nth Roots of Variable Expressions	A2.MAFS.912.A-SSE.1.2

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Chapter 6 Transformations of Parent Functions

Lesson	Topic	NGSSS
6-1 Parent Functions	A) Graphing Parent Functions	A2.MAFS.912.A-CED.1.2, A2.MAFS.912.F-IF.2.4, A2.MAFS.912.F-IF.3.7.b
	B) Equations of Parent Functions	
6-2 Translations	A) Identifying Translations	A2.MAFS.912.A-SSE.1.1.a, A2.MAFS.912.A-CED.1.2, A2.MAFS.912.F-IF.2.4, A2.MAFS.912.F-IF.3.7.b, A2.MAFS.912.F-BF.2.3
	B) Graphing Translations of Parent Functions	
	C) Writing Equations of Translated Parent Functions	
6-3 Reflections	A) Identifying Reflections	A2.MAFS.912.A-SSE.1.1.a, A2.MAFS.912.A-CED.1.2, A2.MAFS.912.F-IF.3.7.b, A2.MAFS.912.F-BF.2.3
	B) Graphing Reflections of Parent Functions	
	C) Writing Equations of Reflected Parent Functions	
6-4 Dilations	A) Identifying Dilations	A2.MAFS.912.A-SSE.1.1.a, A2.MAFS.912.A-CED.1.2, A2.MAFS.912.F-IF.3.7.b, A2.MAFS.912.F-BF.2.3
	B) Graphing Dilations of Parent Functions	
	C) Writing Equations of Dilated Parent Functions	
6-5 Mixed Transformations	A) Identifying Transformations	A2.MAFS.912.A-SSE.1.1.a, A2.MAFS.912.A-CED.1.2, A2.MAFS.912.F-IF.3.7.b, A2.MAFS.912.F-BF.2.3
	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.MAFS.912.A-SSE.1.1.a, A2.MAFS.912.A-CED.1.2, A2.MAFS.912.F-BF.2.3
	B) Identifying the Transformation that Results when Terms are Replaced in Function Notation	
6-7 Piecewise-Defined Functions	A) Features of Piecewise Functions	A2.MAFS.912.F-IF.2.5, A2.MAFS.912.F-IF.3.7.b
	B) Graphing Functions on Intervals	
	C) Graphing Piecewise Functions	

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Chapter 7 Polynomials

Lesson	Topic	NGSSS
7-1 Introduction to Polynomials	A) Classifying Polynomials	A2.MAFS.912.A-SSE.1.1.a, A2.MAFS.912.A-SSE.1.2, A2.MAFS.912.A-APR.3.4
	B) Standard Form	
7-2 Adding, Subtracting, and Multiplying Polynomials	A) Addition of Polynomials	A2.MAFS.912.A-SSE.1.1.a, A2.MAFS.912.A-SSE.1.2, A2.MAFS.912.A-APR.1.1, A2.MAFS.912.A-APR.3.4
	B) Subtraction of Polynomials	
	C) Multiplication of Polynomials	
7-3 Factoring	A) Factoring a GCF	A2.MAFS.912.A-SSE.1.1.a, A2.MAFS.912.A-SSE.1.2
	B) Factoring by Grouping	
	C) Factoring Trinomials	
7-4 Factoring - Special Cases	A) Factoring Perfect Square Trinomials	A2.MAFS.912.A-SSE.1.1.a, A2.MAFS.912.A-SSE.1.2, A2.MAFS.912.A-APR.3.4
	B) Factoring a Difference of Squares	
	C) Factoring a Sum or Difference of Cubes	
7-5 Imaginary Unit i	A) Defining i	A2.MAFS.912.N-CN.1.1, A2.MAFS.912.N-CN.1.2, A2.MAFS.912.A-SSE.1.2
	B) Powers of i	
	C) Simplifying Expressions that Contain Imaginary Numbers	
7-6 Complex Numbers	A) Defining Complex Numbers	A2.MAFS.912.N-CN.1.1, A2.MAFS.912.N-CN.1.2, A2.MAFS.912.N-CN.3.8, A2.MAFS.912.A-SSE.1.1.a, A2.MAFS.912.A-SSE.1.1.b, A2.MAFS.912.A-SSE.1.2
	B) Operations with Complex Numbers	
	C) Conjugates of Complex Numbers	

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Chapter 8 Quadratic Functions

Lesson	Topic	NGSSS
8-1 Parabolas	A) Graphs of Quadratic Functions	A2.MAFS.912.A-CED.1.1, A2.MAFS.912.A-CED.1.3, A2.MAFS.912.F-IF.2.4
	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.MAFS.912.A-SSE.1.1.a, A2.MAFS.912.F-IF.2.4, A2.MAFS.912.F-IF.3.9
	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.MAFS.912.A-CED.1.2, A2.MAFS.912.A-CED.1.3, A2.MAFS.912.A-REI.1.2, A2.MAFS.912.F-IF.2.4
8-4 Solving Quadratic Equations by Factoring	A) The Zero Product Property	A2.MAFS.912.N-CN.1.2, A2.MAFS.912.A-SSE.1.2 A2.MAFS.912.A-APR.2.3, A2.MAFS.912.A-CED.1.1, A2.MAFS.912.A-CED.1.2, A2.MAFS.912.A-REI.1.2, A2.MAFS.912.F-IF.2.4, A2.MAFS.912.F-IF.3.8.a
	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.MAFS.912.N-CN.3.7, A2.MAFS.912.A-SSE.1.1.a, A2.MAFS.912.A-APR.3.4, A2.MAFS.912.A-CED.1.1, A2.MAFS.912.A-CED.1.2, A2.MAFS.912.A-CED.1.4, A2.MAFS.912.A-REI.1.2, A2.MAFS.912.F-IF.2.4, A2.MAFS.912.F-IF.3.8.a
	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.MAFS.912.N-CN.3.7, A2.MAFS.912.A-CED.1.1, A2.MAFS.912.A-REI.1.2, A2.MAFS.912.A-REI.4.11
	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	NGSSS
9-1 Dividing Polynomials Using Long Division	A) Polynomial Long Division	A2.MAFS.912.A-SSE.1.1.a, A2.MAFS.912.A-SSE.1.2, A2.MAFS.912.A-APR.4.6
9-2 Dividing Polynomials Using Synthetic Division	A) Polynomial Synthetic Division	A2.MAFS.912.A-SSE.1.1.a, A2.MAFS.912.A-SSE.1.2, A2.MAFS.912.A-APR.4.6, A2.MAFS.912.A-CED.1.4
9-3 Polynomial Equations	A) Solutions of Polynomial Equations	A2.MAFS.912.N-CN.3.9, A2.MAFS.912.A-SSE.1.2, A2.MAFS.912.A-APR.2.2, A2.MAFS.912.A-APR.2.3, A2.MAFS.912.A-APR.4.6, A2.MAFS.912.A-CED.1.1, A2.MAFS.912.A-CED.1.2, A2.MAFS.912.A-CED.1.3
	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.MAFS.912.N-CN.3.9, A2.MAFS.912.A-SSE.1.1.a, A2.MAFS.912.A-SSE.1.2, A2.MAFS.912.A-APR.2.3, A2.MAFS.912.A-CED.1.2, A2.MAFS.912.F-IF.2.4, A2.MAFS.912.F-IF.3.7.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	NGSSS
10-1 nth Root Functions	A) Domain and Range of Square Root Functions	A2.MAFS.912.F-IF.2.5, A2.MAFS.912.F-IF.3.7.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.MAFS.912.A-CED.1.1, A2.MAFS.912.A-CED.1.4, A2.MAFS.912.A-REI.1.2
10-3 Operations on Functions	A) Performing Operations on Functions	A2.MAFS.912.F-IF.2.5, A2.MAFS.912.F-BF.1.1.b
	B) Domain and Range of Functions that Result from Operations	
10-4 Composition of Functions	A) Evaluating Compositions of Functions	A2.MAFS.912.F-BF.2.4.a
	B) Writing Compositions of Functions	
10-5 Inverse Functions and Relations	A) Inverses of Relations	A2.MAFS.912.F-IF.2.5, A2.MAFS.912.F-BF.2.4.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	NGSSS
11-1 Exponential Functions	A) Writing and Graphing Exponential Functions	A2.MAFS.912.A-CED.1.2, A2.MAFS.912.F-IF.2.4, A2.MAFS.912.F-IF.2.5, A2.MAFS.912.F-IF.3.7.b, A2.MAFS.912.F-IF.3.7.e, A2.MAFS.912.F-IF.3.8.b
	B) Domain and Range of Exponential Functions	
11-2 Solving Exponential Equations	A) Solving Exponential Equations with a Common Base	A2.MAFS.912.A-CED.1.1, A2.MAFS.912.A-CED.1.4
	B) Solving Exponential Equations by Finding a Common Base	
11-3 Evaluating Logarithms	A) Defining Logarithms	A2.MAFS.912.A-SSE.1.1.a, A2.MAFS.912.A-SSE.1.1.b, A2.MAFS.912.A-SSE.1.2, A2.MAFS.912.F-LE.1.4
	B) Evaluating Logarithms	
11-4 Solving Logarithmic Equations	A) Solving Logarithmic Equations	A2.MAFS.912.A-CED.1.1, A2.MAFS.912.A-CED.1.4, A2.MAFS.912.F-LE.1.4
11-5 Logarithmic Functions	A) Domain and Range of Logarithmic Functions	A2.MAFS.912.A-CED.1.2, A2.MAFS.912.F-IF.2.4, A2.MAFS.912.F-IF.2.5, A2.MAFS.912.F-IF.3.7.b, A2.MAFS.912.F-IF.3.7.e, A2.MAFS.912.F-BF.2.3, A2.MAFS.912.F-BF.2.4.a, A2.MAFS.912.F-LE.1.4
	B) Inverses of Logarithmic and Exponential Functions	
	C) Graphing Logarithmic Functions	
11-6 Exponential Growth and Decay	A) Identifying Percent Change	A2.5.B, A2.2.A, A2.2.A
	B) Writing Exponential Growth and Decay Equations	
	C) Modeling Exponential Growth and Decay	

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Chapter 12 Sequences and Series

Lesson	Topic	NGSSS
12-1 Sequences	A) Common Ratio and Difference	A2.MAFS.912.F-IF.2.6
	B) Writing Terms of Arithmetic and Geometric Sequences	
	C) Sequences and their Graphs	
12-2 Arithmetic Sequences	A) Recursive Formulas of Arithmetic Sequences	A2.MAFS.912.A-SSE.1.1.a, A2.MAFS.912.A-SSE.1.1.b, A2.MAFS.912.A-CED.1.1, A2.MAFS.912.A-CED.1.3
	B) Explicit Formulas of Arithmetic Sequences	
12-3 Geometric Sequences	A) Recursive Formulas of Geometric Sequences	A2.MAFS.912.A-SSE.1.1.a, A2.MAFS.912.A-SSE.1.1.b, A2.MAFS.912.A-CED.1.1, A2.MAFS.912.A-CED.1.3
	B) Explicit Formulas of Geometric Sequences	
12-4 Arithmetic Series	A) Defining Arithmetic Series	A2.MAFS.912.A-CED.1.1
	B) Partial Sums of Arithmetic Series	
12-5 Geometric Series	A) Defining Geometric Series	A2.MAFS.912.A-SSE.1.1.a, A2.MAFS.912.A-SSE.1.1.b, A2.MAFS.912.A-SSE.2.4, A2.MAFS.912.A-CED.1.1
	B) Partial Sums of Geometric Series	
	C) Infinite Geometric Series	
12-6 Sigma Notation	A) Introduction to Sigma Notation	A2.MAFS.912.A-SSE.1.1.a, A2.MAFS.912.A-SSE.2.4
	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	NGSSS
13-1 Simplifying Rational Expressions	A) Undefined Values of Rational Expressions	A2.MAFS.912.A-SSE.1.2, A2.MAFS.912.A-APR.4.6, A2.MAFS.912.A-APR.4.7
	B) Simplifying Rational Expressions	
13-2 Multiplying and Dividing Rational Expressions	A) Multiplying Rational Expressions	A2.MAFS.912.A-SSE.1.2, A2.MAFS.912.A-APR.4.7
	B) Dividing Rational Expressions	
13-3 Adding and Subtracting Rational Expressions	A) Common Denominators of Rational Expressions	A2.MAFS.912.A-SSE.1.1.a, A2.MAFS.912.A-SSE.1.2, A2.MAFS.912.A-APR.4.7, A2.MAFS.912.F-BF.1.1.b
	B) Adding and Subtracting Rational Expressions	
13-4 Reciprocal Functions	A) Defining Reciprocal Functions	A2.MAFS.912.A-APR.4.6, A2.MAFS.912.A-CED.1.2, A2.MAFS.912.F-IF.2.4, A2.MAFS.912.F-IF.2.5, A2.MAFS.912.F-IF.3.7.b, A2.MAFS.912.F-BF.2.3
	B) Domain and Range of Reciprocal Functions	
	C) Graphing Reciprocal Functions	
13-5 Rational Functions	A) Defining Rational Functions	A2.MAFS.912.A-SSE.1.1.b, A2.MAFS.912.A-CED.1.2, A2.MAFS.912.F-IF.2.4, A2.MAFS.912.F-IF.2.5
	B) Asymptotes and Holes	
	C) Graphing Rational Functions	
13-6 Solving Rational Equations	A) Solving Rational Equations	A2.MAFS.912.A-CED.1.1, A2.MAFS.912.A-REI.1.2
13-7 Direct and Inverse Variation	A) Direct Variation	A2.MAFS.912.A-CED.1.1, A2.MAFS.912.A-CED.1.2, A2.MAFS.912.F-IF.2.6, A2.MAFS.912.F-BF.2.3
	B) Inverse Variation	