

Knowre Math: **Algebra 2** Curriculum

Chapter 1 Introduction to Algebra 2

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

Knowre Math: Algebra 2 Curriculum

Chapter 2 Properties and Attributes of Functions

Lesson	Topic	VA MSL
2-1 Relations	A) Relations and their Representations	
	B) Domain and Range of Relations	
2-2 Introduction to Functions	A) Identifying Functions	All.7.f
	B) Domain and Range of Functions	
	C) Identifying Independent and Dependent Variables	
2-3 Interval Notation	A) Inequalities and Interval Notation	
	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	All.7.f
	B) Writing Equations Using Function Notation	
	C) Evaluating Functions	

Chapter 3 Linear Functions

Lesson	Topic	VA MSL
3-1 Linear Equations and Functions	A) Identifying Linear Functions and Equations in Standard Form	All.7.e
	B) Identifying the x- and y-intercepts	
	C) Graphing Linear Functions	
3-2 Rate of Change and Slope	A) Define Rate of Change	All.7.b, All.7.g
	B) Finding Rate of Change and Slope	
3-3 Slope-Intercept Form	A) Define Slope-Intercept Form	All.7.e
	B) Graphing Equations in Slope-Intercept Form	
	C) Writing Equations in Slope-Intercept Form	
3-4 Point-Slope Form	A) Define Point-Slope Form	All.7.g
	B) Graphing Equations in Point-Slope Form	
	C) Writing Equations in Point-Slope Form	
3-5 Special Lines	A) Horizontal and Vertical Lines	All.7.e
	B) Parallel and Perpendicular Lines	
3-6 Linear Inequalities	A) Graphing Linear Inequalities	

Knowre Math: Algebra 2 Curriculum

Chapter 4 Linear Systems

Lesson	Topic	VA MSL
4-1 Solving by Graphing	A) Solutions of Systems of Equations	
	B) Solving Systems by Graphing	
4-2 Solving by Substitution	A) Solving Systems with Substitution	
4-3 Solving by Elimination	A) Directly Eliminating x or y	
	B) Elimination After Scalar Multiplication	
4-4 Systems of Inequalities	A) Solving Systems of Linear Inequalities	
4-5 Linear Programming	A) Defining the Feasible Region	
	B) Maximizing/Minimizing Using the Feasible Region	
4-6 System of Equations with Three Variables	A) Solving with Substitution	

Knowre Math: Algebra 2 Curriculum

Chapter 5 Exponents and Roots

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

Knowre Math: Algebra 2 Curriculum

Chapter 6 Transformations of Parent Functions

Lesson	Topic	VA MSL
6-1 Parent Functions	A) Graphing Parent Functions	All.6.a
	B) Equations of Parent Functions	
6-2 Translations	A) Identifying Translations	All.7.g, All.6.b
	B) Graphing Translations of Parent Functions	
	C) Writing Equations of Translated Parent Functions	
6-3 Reflections	A) Identifying Reflections	All.7.g, All.6.b
	B) Graphing Reflections of Parent Functions	
	C) Writing Equations of Reflected Parent Functions	
6-4 Dilations	A) Identifying Dilations	All.7.g, All.6.b
	B) Graphing Dilations of Parent Functions	
	C) Writing Equations of Dilated Parent Functions	
6-5 Mixed Transformations	A) Identifying Transformations	All.7.g, All.6.b
	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	All.7.g, All.6.b
	B) Identifying the Transformation that Results when Terms are Replaced in Function Notation	
6-7 Piecewise-Defined Functions	A) Features of Piecewise Functions	All.7.a
	B) Graphing Functions on Intervals	
	C) Graphing Piecewise Functions	

Knowre Math: Algebra 2 Curriculum

Chapter 7 Polynomials

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

Knowre Math: Algebra 2 Curriculum

Chapter 8 Quadratic Functions

Lesson	Topic	VA MSL
8-1 Parabolas	A) Graphs of Quadratic Functions	All.7.e, All.7.c
	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	All.7.e, All.7.g, All.7.c
	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	All.7.e, All.7.g, All.7.c, All.8
8-4 Solving Quadratic Equations by Factoring	A) The Zero Product Property	All.2, All.4, All.7.d, All.8
	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	All.3.b, All.7.c, All.7.d
	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	All.3.b, All.7.d
	B) Solutions and the Discriminant	
	C) Using the Quadratic Formula to Write Quadratic Equations in Factored Form	

Knowre Math: **Algebra 2** Curriculum

Chapter 9 Polynomial Functions

Lesson	Topic	VA MSL
9-1 Dividing Polynomials Using Long Division	A) Polynomial Long Division	
9-2 Dividing Polynomials Using Synthetic Division	A) Polynomial Synthetic Division	
9-3 Polynomial Equations	A) Solutions of Polynomial Equations	All.7.e, All.7.g, All.7.d, All.8
	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	All.7.e, All.7.b, All.7.g, All.7.d, All.7.h, All.8
	B) End Behavior	
	C) Relating Graphs of Polynomial Functions to their Equations	

Knowre Math: **Algebra 2** Curriculum

Chapter 10 Radical Functions and Inverses

Lesson	Topic	VA MSL
10-1 nth Root Functions	A) Domain and Range of Square Root Functions	All.6.a, All.7.a
	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	All.3.d
10-3 Operations on Functions	A) Performing Operations on Functions	All.7.a
	B) Domain and Range of Functions that Result from Operations	
10-4 Composition of Functions	A) Evaluating Compositions of Functions	All.7.j, A.II.7.k
	B) Writing Compositions of Functions	
10-5 Inverse Functions and Relations	A) Inverses of Relations	All.7.a, All.7.j, A.II.7.k
	B) Determining the Inverse of Function Equations	
	C) Composition and Inverse Functions	

Knowre Math: Algebra 2 Curriculum

Chapter 11 Exponential and Logarithmic Functions

Lesson	Topic	VA MSL
11-1 Exponential Functions	A) Writing and Graphing Exponential Functions	All.7.e, All.6.a, All.7.a, All.7.h, All.7.i
	B) Domain and Range of Exponential Functions	
11-2 Solving Exponential Equations	A) Solving Exponential Equations with a Common Base	
	B) Solving Exponential Equations by Finding a Common Base	
11-3 Evaluating Logarithms	A) Defining Logarithms	
	B) Evaluating Logarithms	
11-4 Solving Logarithmic Equations	A) Solving Logarithmic Equations	
11-5 Logarithmic Functions	A) Domain and Range of Logarithmic Functions	All.7.e, All.6.a, All.6.b, All.7.a, All.7.h, All.7.i, All.7.j
	B) Inverses of Logarithmic and Exponential Functions	
	C) Graphing Logarithmic Functions	
11-6 Exponential Growth and Decay	A) Identifying Percent Change	All.7.e, All.7.h
	B) Writing Exponential Growth and Decay Equations	
	C) Modeling Exponential Growth and Decay	

Knowre Math: Algebra 2 Curriculum

Chapter 12 Sequences and Series

Lesson	Topic	VA MSL
12-1 Sequences	A) Common Ratio and Difference	AII.5
	B) Writing Terms of Arithmetic and Geometric Sequences	
	C) Sequences and their Graphs	
12-2 Arithmetic Sequences	A) Recursive Formulas of Arithmetic Sequences	AII.5
	B) Explicit Formulas of Arithmetic Sequences	
12-3 Geometric Sequences	A) Recursive Formulas of Geometric Sequences	AII.5
	B) Explicit Formulas of Geometric Sequences	
12-4 Arithmetic Series	A) Defining Arithmetic Series	AII.5
	B) Partial Sums of Arithmetic Series	
12-5 Geometric Series	A) Defining Geometric Series	AII.5
	B) Partial Sums of Geometric Series	
	C) Infinite Geometric Series	
12-6 Sigma Notation	A) Introduction to Sigma Notation	AII.5
	B) Writing Series in Sigma Notation	
	C) Evaluating Arithmetic and Geometric Series in Sigma Notation	

Knowre Math: Algebra 2 Curriculum

Chapter 13 Rational Functions

Lesson	Topic	VA MSL
13-1 Simplifying Rational Expressions	A) Undefined Values of Rational Expressions	All.1.a
	B) Simplifying Rational Expressions	
13-2 Multiplying and Dividing Rational Expressions	A) Multiplying Rational Expressions	All.1.a
	B) Dividing Rational Expressions	
13-3 Adding and Subtracting Rational Expressions	A) Common Denominators of Rational Expressions	All.1.a
	B) Adding and Subtracting Rational Expressions	
13-4 Reciprocal Functions	A) Defining Reciprocal Functions	All.6.a, All.6.b, All.7.a, All.7.i
	B) Domain and Range of Reciprocal Functions	
	C) Graphing Reciprocal Functions	
13-5 Rational Functions	A) Defining Rational Functions	All.7.g, All.7.a, All.7.i
	B) Asymptotes and Holes	
	C) Graphing Rational Functions	
13-6 Solving Rational Equations	A) Solving Rational Equations	All.3.c
13-7 Direct and Inverse Variation	A) Direct Variation	All.6.b, All.10
	B) Inverse Variation	