Pacing Guide   Algebra 1

Chapter 1: Equations and Inequalities (one variable)

Section	Section Title	Learning Target(s) I can…	# of Days
1.2	Evaluate and Simplify Algebraic Expressions	1. Evaluate and simplify numeric and algebraic expressions (order of operations)	1
1.1	Apply Properties of Real Numbers	2. Classify real numbers and describe how the subsets of the real numbers are interrelated. (1.1) 3. Estimate square roots and graph real numbers on a number line. (1.1) 4. Identify and use properties of real numbers. (1.1)	1
1.3	Solve Linear Equations	5. Solve linear equations 6. Solve real world problems using linear equations	2
QUIZ			1
1.4	Rewrite Formulas and Equations	7. Rewrite and evaluate formulas and equations	1
1.5	Use Problem Solving Strategies and Models	8. Solve real world problems using formulas, patterns, diagrams, and equations	1
1.6	Solve Linear Inequalities	9. Solve linear inequalities in one variable and apply to real world problems. 10. Solve compound linear inequalities and apply to real world problems.	3
REVIEW and TEST			3
			Total Days 13

Chapter 2A: Linear Equations and Functions (2 variables)

Section	Section Title	Learning Target(s) I can…	# of Days
2.1	Represent Relations and Functions	1. Represent relations as ordered pairs, tables, graphs, and mappings, and identify their domains and ranges. 2. Use the definition of a function to justify whether a relation is a function, and apply the Vertical Line Test. 3. Graph equations in 2 variables (table). 4. Evaluate functions in function notation (equations and graphs).	4
QUIZ			1
2.2	Find Slope and Rate of Change	5. Calculate the slope of a line and determine whether two lines are parallel, perpendicular, or neither.	2
2.3	Graph Equations of Lines	6. Graph linear functions (using slope and y-intercept, x- and y-intercepts). 7. Graph horizontal and vertical lines.	1
2.4	Write Equations of Lines	8. Write linear equations in point-slope form, slope-intercept form, and standard form (given slope & y-intercept, slope & point, 2 points). 9. Write equations of parallel and perpendicular lines. 10. Model real world situations with linear equations.	2
QUIZ			1
2.6	Draw Scatter Plots and Best-Fitting Lines	11. Describe correlation and estimate correlation coefficients. 12. Approximate a best-fitting line and use to make predictions (by hand and with GC). 13. Plot and analyze residuals to determine how well a linear model fits a set of data.	2
REVIEW TEST			3
			Total Days 16

Chapter 2B: Absolute Value and Inequality

Section	Section Title (days subject to change)	Learning Targets: I can…	# of Days
1.7	Solve Absolute Value Equations and Inequalities (2 days)	1. Solve absolute value equations and inequalities. 2. Solve real world problems using absolute value equations and inequalities.	2
2.7	Use Absolute Value Functions and Transformations (2 days)	3. Graph and write absolute value functions using transformations. 4. Graph the transformations of piecewise functions.	2
QUIZ			2
2.8	Graph Linear Inequalities in Two Variables (2 day)	6. Determine if an ordered pair is a solution of a linear inequality. 7. Graph inequalities in two variables and apply to real world problems.	2
Review and Test			3
			Total Days 11

Chapter 3- Systems of Equations

Section	Section Title	Learning Target(s) I can…	# of Days
3.1	Solve Linear Systems by Graphing	1. Solve a system of two linear equations graphically (no, infinitely many solutions).	1
3.2	Solve Linear Systems Algebraically	2. Solve a system of two linear equations using substitution. 3. Solve a system of two linear equations using elimination. 4. Use systems of equations to solve real world problems. 5. Solve a system of two linear equations using a GC.	3
QUIZ			1
3.4	Solve Systems of Linear Equations in Three Variables	6. Solve a system of three linear equations using substitution and elimination (by hand, with GC).	2
3.3	Graph Systems of Linear Inequalities	7. Graph a system of inequalities (incl. absolute value). 8. Use systems of inequalities to solve real world problems.	1
REVIEW **TEST**			3
			Total Days 11

Chapter 7: Exponential Functions

Section	Section Title	Learning Targets: I can…	# of Days
5.1	Properties of Exponents	1.Use properties of exponents to simplify expressions.	2
QUIZ		2. Distinguish between situations that can be modeled with linear functions and with exponential functions and describe their respective rates of change.	1
7.1-7.2	Graph Exponential Growth and Decay Functions	3. Recognize and graph exponential functions with base a, identifying their key characteristics (domain, range, intercept, asymptote). 4. Graph exponential functions using parent function and transformations.	2
7.1-7.2	Exponential Growth and Decay Functions	5. Distinguish between exponential growth and exponential decay. 6. Write and evaluate exponential functions to model real-world growth and decay situations.	2
7.3	Use Functions Involving e	7. Define e. 8. Graph natural base (e) functions using parent function and transformations. 9. Write and evaluate natural base (e) functions to model real-world situations.	1
7.6	Solve Exponential Equations	10. Use the one-to-one property to solve exponential equations 11. Use a GC to solve exponential equations 12. Use a GC to solve a system of equations (linear, absolute value, quadratic, polynomial, exponential).	1
7.7, 11.5	Write and Apply Exponential and Power Functions	13. Use regression to write a model for a set of data. 14. Make predications based on the model.	1
REVIEW AND TEST			3
			Total Days 13

Chapter 12: Sequences and Series

Section	Section Title	Learning Targets: I can…	# of Days
12.1	Define and Use Sequences and Series (1 day)	1. Write the terms in a sequence 2. Write the rule for a sequence 3. Calculate the sum of a series	1
12.2	Analyze Arithmetic Sequences and Series (2 days)	4. Identify an arithmetic sequence 5. Write the rule for an arithmetic sequence 6. Calculate the sum of an arithmetic series	2
12.3	Analyze Geometric Sequences and Series (2 days)	7. Identify a geometric sequence 8. Write the rule for a geometric sequence 9. Calculate the sum of a geometric series	2
12.4	Find Sums of Infinite Geometric Series (1 day)	10. Calculate the sum of an infinite geometric series	1
12.5	Use Recursive Rules with Sequences and Series (2 days)	11. Write the terms in a sequence expressed recursively 12. Write recursive rules for sequences	2
REVIEW TEST			3
			Total Days 11

Semester Exam

Chapter 4A- Intro to Polynomials and Factoring (5.3, 4.3-4.6)

Section	Section Title	Learning Targets: I can…	# of Days
4.3, 5.3	Classify Polynomials and Operations on Polynomials	1. Define and classify polynomials (monomial, binomial, trinomial) and write them in standard form. (4.3) 2. Add and subtract polynomial functions. (5.3) 3. Multiply polynomial functions (distribute). (5.3)	1
5.3	Multiply Polynomials	4. Multiply polynomial functions. (5.3)	1
5.3	Special Product Patterns	5. Recognize and apply special product patterns (square of a binomial, sum & difference, cube of a binomial). (5.3) **Pascal's Triangle**	2
QUIZ			1
4.3-4.4	Factor by Greatest Common Factor	6. Factor by finding a greatest common factor. (4.3-4.4)	1
4.3-4.4	Factor Trinomials	7. Factor trinomials. (4.3-4.4)	2
4.3-4.4	Factor with Special Patterns	8. Factor by using special factoring patterns (difference of squares, perfect square trinomial). (4.3-4.4)	2
4.3-4.4	Factor Completely	9. Factor quadratic expressions completely. (4.3-4.4)	2
QUIZ			1
4.5	Simplify and Perform Operations on Square Root Expressions	10. Simplify expressions containing square roots. (45) 11. Add & subtract expressions containing square roots. (4.5) 12. Multiply and divide (by rationalizing) expressions containing square roots. (4.5)	2
4.6	Perform Operations with Complex Numbers	13. Define, use, and simplify imaginary and complex numbers (add, subtract, multiply, and rationalize denominators). (4.6)	2
REVIEW TEST			**3**
			Total Days 20

Chapter 4B: Solving Quadratic Equations

Section	Section Title	Learning Targets: I can…	# of Days
4.3-4.4	Solve Quadratic Equations by Factoring	1. Solve quadratic equations by factoring. (4.3-4.4)	1
4.5	Solve Quadratic Equations by Finding Square Roots	2. Solve quadratic equations by the square root method. (4.5)	1
4.7	Complete the Square	3. Solve quadratic equations by completing the square. (4.7)	2
QUIZ			1
4.8	Use the Quadratic Formula and the Discriminant	4. Derive the quadratic formula by completing the square. 5. Solve quadratic equations by the quadratic formula. (4.8)	2
4.8	Use the Quadratic Formula and the Discriminant	6. Calculate the discriminant and determine the number and type of solutions for a quadratic equation. (4.8)	1
all		7. Identify the pros and cons of each method of solving quadratic equations.	1
REVIEW TEST			3
			Total Days 12

Chapter 4C: Graphs of Quadratic Functions

Section	Section Title	Learning Targets: I can…	# of Days
Intro		1. Use the graphing calculator to determine key characteristics of a quadratic function.	1
4.1, 4.2, 4.10	Graph Quadratic Functions in Vertex Form	2. Recognize the quadratic parent function from its graph, table, or equation and describe its domain, range, and symmetry. (4.1) 3. Graph a quadratic function in vertex form using 5 points and identify its vertex, axis of symmetry, y-intercept, x-intercept(s), and max/min. (4.2) 4. Write quadratic functions in vertex form given the vertex and a point. (4.10)	1
4.2, 4.10	Graph Quadratic Functions in Intercept Form	5. Graph a quadratic function in intercept form using 5 points and identify its vertex, axis of symmetry, y-intercept, x-intercept(s), and max/min. (4.2) 6. Write quadratic functions in intercept form given two intercepts and a point. (4.10)	2
QUIZ			**1**
4.1	Graph Quadratic Functions in Standard Form	7. Graph a quadratic function in standard form using 5 points and identify its vertex, axis of symmetry, y-intercept, x-intercept(s), and max/min. (4.1)	1
4.2	Rewrite Quadratic Functions	8. Rewrite a given quadratic function in a different form (standard, vertex, intercept). (4.2)	1
	Solve Quadratic Equations by Graphing	9. Describe the relationship among factors, x-intercepts, solutions, roots, and zeros. 10. Solve quadratic equations by graphing, both with and without a GC and apply them to real-world problems.	1
4.10	Write Quadratic Functions	11. Write quadratic functions in standard form given 3 points (GC). (4.10) 11. Find best-fitting models and make predictions from data (quadratic regression on GC). (4.10)	1
REVIEW TEST			**3**
			Total Days 12

Chapter 4D-Quadratic Inequalities and Systems

Textbook	Title	Learning Objectives	# of Days
4.9	Graph Quadratic Inequalities	12. Graph quadratic inequalities and systems of quadratic inequalities on the coordinate plane. (4.9)	2
4.9	Systems of Inequalities	13. Graph systems of inequalities involving linear, quadratic and absolute value functions.	1
4.11	Solve Systems of Equations	14. Solve systems of equations (linear and/or quadratic) by hand and using a GC.	1
REVIEW QUEST			2
			Total Days 6

Chapter 5-Polynomial Basics

Section	Section Title	Learning Targets: I can…	# of Days
Review	Factoring Methods	Factor by finding the GCF, differences of squares, and trinomials	1
5.2, 5.4	Classify Polynomials and Factor by GCF	1. Define and classify polynomials (by degree) and write them in standard form. 2. Factor a polynomial by finding the greatest common factor. (5.4)	
5.4	Special Polynomial Factoring Patterns	4. Factor a polynomial by grouping. 5. Factor higher degree polynomials written in quadratic form.	1
5.4	Factor by Grouping	3. Factor a polynomial by using special factoring patterns. (Differences and Sums of Cubes)	1
5.4	Factor Polynomials Completely	6. Factor polynomials completely.	2
5.4	Factor and Solve Polynomial Equations	7. Solve polynomial equations by factoring. (5.4)	1
QUIZ			**1**
5.7	Apply the Fundamental Theorem of Algebra	8. Write a polynomial equation of least degree with given roots. (both real and complex) (5.7) 9. Determine the zeros of a polynomial function by factoring and/or quadratic formula.	1
5.2, 5.8	Analyze Graphs of Polynomial Functions with the Graphing Calculator	9. Describe the end behavior of a polynomial function with and without the GC. (5.2) 10. Use a GC to find the local maximum(s) and minimum(s), real zero(s), y-intercept, and domain & range of a polynomial function. (5.8)	1
	Graphs of $y = a(x - h)^3 + k$	11. Graph the parent function $y = x^3$ and all of its transformations without the GC.	1
REVIEW TEST			3
			Total Days 13

Chapter 6A-Rational Exponents and Radical Functions

Section	Section Title	Learning Targets: I can…	# of Days
6.1	Evaluate nth Roots and Use Rational Exponents	1. Evaluate expressions with nth roots and rational exponents 2. Solve equations using nth roots	1
6.2	Apply Properties of Rational Exponents	3. Simplify expressions using properties of exponents and radicals 4. Add and subtract expressions with radicals	3
6.6	Solve Radical Equations	5. Solve equations with radicals and rational exponents	2
REVIEW TEST			**2**
			Total Days 8

Chapter 6B-Operations, Inverse, and Radical Functions

Section	Section Title	Learning Targets: I can…	# of Days
6.3	Perform Function Operations and Composition	1. Perform operations on functions 2. Perform composition of functions	1
6.4	Use Inverse Functions	3. Find the inverse of a function involving tables, points, and graphs. 4. Algebraically determine the equation of an inverse function. 5. Determine if functions are inverses using compositions. 6. Determine if a function is a one-to-one function.	2
QUIZ			1
6.5	Graph Square Root and Cube Root Functions	6. Graph square root and cube root functions and their transformations 7. Determine the domain and range of radical functions.	2
REVIEW TEST			**2**
			Total Days 8

APPLICATION UNIT: Linear Programming

Section	Section Title	Learning Targets	# of Days
3.3 Extension	Linear Programming	1. Model maximization and minimization problems using objective functions. 2. Write and graph linear constraints to form feasible regions. 3. Analyze corner solutions of feasible regions to solve optimization problems.	3
REVIEW TEST			2

FINAL EXAM