

Syllabus

Algebra 1

Course Description: Algebra I is a foundational course in mathematics that introduces students to the basic concepts of algebraic equations and operations. The course covers topics such as solving linear equations, graphing linear equations, working with exponents and polynomials, and solving systems of equations. Through a variety of problem-solving and real-world applications, students will learn how to manipulate and simplify algebraic expressions, and how to use algebra to model and analyze various situations.

Time Commitment: This 35-week (70 lesson) course includes 2 in-class hours each week and 1-2 hours of homework each lesson, corresponding to a full-year course.

Grading: Grades in this course will be computed using a percentage-based system. All assignments completed by students will be categorized into the following weight categories:

- 10% Classwork
- 15% Homework
- 25% Quizzes (3 lowest scores are dropped)
- 40% Assessments (2 lowest score is dropped)
- 10% Final Exam

Note: If a student misses class, it is his or her responsibility to (1) view or request the recording of the previous lesson and (2) complete any missed work. **NO MAKEUP LESSONS** will be provided for any reason.

Content:

Unit	Name	Lessons		Length
0	Place Value & Rounding	Lesson 0-1	Student/Parent Orientation	1 Lesson
		Lesson 1-1	Ratios, Patterns, and Variables	
		Lesson 1-2	Important Mathematical Properties	
1	Building Blocks of Algebra	Lesson 1-3	Algebraic Expressions	2.5 Weeks
		Lesson 1-4	Exponents and more Complex Equivalency	
		Lesson 1-5	Review and Assessment	
2	Linear Equations & Inequalities	Lesson 2-1	Equations	4 Weeks
		Lesson 2-2	Linear Equations & Step Justification	
		Lesson 2-3	Solving Linear and Word Problems	
		Lesson 2-4	Linear Equations & Inequalities	
		Lesson 2-5	Solving Linear and COmpound Inequalities	
		Lesson 2-6	Compound Inequalities and Interval Notation	
		Lesson 2-7	Modeling Inequalities	
		Lesson 2-8	Review and Assessment	
3	Functions	Lesson 3-1	Functions & Function Notation	2 Weeks
		Lesson 3-2	Graphs of Functions, their Features, and Terminology	
		Lesson 3-3	Rate of Change & Domain/Range of Functions	
		Lesson 3-4	Review and Assessment	
4	Linear Functions & Arithmetic Sequences	Lesson 4-1	Linear Functions	4 Weeks
		Lesson 4-2	Equations of Lines	
		Lesson 4-3	Modeling Linear Functions	
		Lesson 4-4	Horizontal/Vertical Lines & Piecewise	

4	cont.	Lesson 4-5	Step and Absolute Value Functions	cont.
		Lesson 4-6	More Graphs & Linear Inequalities	
		Lesson 4-7	Sequences	
		Lesson 4-8	Review and Assessment	
5	Systems of Linear Equations and Inequalities	Lesson 5-1	Solving Systems - Graphically and Substitution	2.5 Weeks
		Lesson 5-2	Properties of Systems & Elimination	
		Lesson 5-3	Modeling with Systems & Solving Eqns Graphically	
		Lesson 5-4	Systems of Inequalities & their Models	
		Lesson 5-5	Review and Assessment	
6	Exponents	Lesson 6-1	Simplifying Expressions with Exponents	3 Weeks
		Lesson 6-2	Exponential Functions (Growth & Decay)	
		Lesson 6-3	Percent Review	
		Lesson 6-4	Exponential Models, Linear vs Exponential	
		Lesson 6-5	Geometric Sequences	
		Lesson 6-6	Review and Assessment	
7	Polynomials	Lesson 7-1	Intro to Polynomials & Adding/Subtracting Poly's	3 Weeks
		Lesson 7-2	Multiplying Polynomials	
		Lesson 7-3	Factoring Polynomials and Conjugate Binomials	
		Lesson 7-4	Complete Trinomial Factoring	
		Lesson 7-5	Recognizing Structure to Factor & Challenging Problems	
		Lesson 7-6	Review and Assessment	
8	Quadratic Functions and Their Algebra	Lesson 8-1	Quadratic Functions & Leading Coefficients	3 Weeks
		Lesson 8-2	Symmetry & Solving Quadratics using Inverse Operations	
		Lesson 8-3	Completing the Square	
		Lesson 8-4	Completing the Square & Zero Product Law	
		Lesson 8-5	More Factoring & Graphs of Cubic polynomials	
		Lesson 8-6	Solving Linear Quadratic Systems & Word Problems	
		Lesson 8-7	Review and Assessment	
9	Roots and Irrational Numbers	Lesson 9-1	Integers, Rational Numbers, and Square Roots	2.5 Weeks
		Lesson 9-2	Irrational Numbers & Square Root Arithmetic	
		Lesson 9-3	Quadratic Equations & Formula	
		Lesson 9-4	Work with Quadratic Equations	
		Lesson 9-5	Review and Assessment	
10	Functions and their Transformations	Lesson 10-1	Parent Functions & Vertical Shifting of Functions	2.5 Weeks
		Lesson 10-2	Horizontal & Combined Shifting of Functions	
		Lesson 10-3	Vertical Stretch, Compressing, & Reflecting of Functions	
		Lesson 10-4	Vertex Form of a Quadratic Function	
		Lesson 10-5	Review and Assessment	
11	Statistics	Lesson 11-1	Purpose of Statistics & Standard Deviation	3 Weeks
		Lesson 11-2	Standard Deviation (cont.) and Data Distribution	
		Lesson 11-3	Comparing Samples & Bivariate Data Analysis	
		Lesson 11-4	Linear Regression and Strength of Correlation	
		Lesson 11-5	Categorical Data & Associations in Categorical Data	
		Lesson 11-6	Review and Assessment	
12	Standardized Exam Prep & Course Conclusion	Lesson 12-1	Alg1 Math Review 1	2 Weeks
		Lesson 12-2	Alg1 Math Review 2	
		Lesson 12-3	Alg1 Math Review 3	
		Lesson 12-4	Final Exam	