

SUBJECT: Algebra 1 GRADE: 8 (Identical to grades 9-12)	
Unit 1: Properties of Real Numbers	Time Frame: 3 Weeks
UNIT OVERVIEW	
In this unit, we will learn about: • Adding and Subtracting Fractions • Multiplying and Dividing Fractions • Adding and Subtracting Real Numbers • Combining Like Terms • Multiplying and Dividing Real Numbers • Distributive Property • Simplifying Square Roots • Scientific Notation	
LRG SKILLS AND DISPOSITIONS	PA STANDARDS
• Collaboration and Teamwork 9-12: Group Critical Thinking Quizzes (S1C)	CC.2.1.HS.B CC.2.1.HS.C CC.2.2.HS.A CC.2.2.HS.B CC.2.2.HS.C CC.2.2.HS.D
COMPETENCIES	LEARNING TARGETS
Numbers and Operations-Fraction I can find common factors and multiples to represent, compare, and calculate quantities using fractions.	• I can compare and order numbers in different forms. (K1MAB2K1) • I can perform operations with fractions. (K1MAB2K2) • I can simplify square roots. (K1MAB2K3)
Operations and Expressions I can generate equivalent expressions using operations and mathematical properties.	• I can simplify absolute value expressions. (K1MAB4K1) • I can identify algebraic properties. (K1MAB4K2)

- I can perform operations with real numbers. (K1MAB4K3)

SUBJECT: Algebra 1		GRADE: 9-12	
Unit 2: Expressions, Equations, Functions		Time Frame: 3 Weeks	
UNIT OVERVIEW			
In this unit, we will learn about: - Order of Operations, Expressions & Mathematical Statements - Patterns and Relationships - Functions			
LRG SKILLS AND DISPOSITIONS		PA STANDARDS	
Collaboration and Teamwork 9-12: Group Critical Thinking Quizzes (S1C)		CC.2.1.HS.B CC.2.1.HS.C CC.2.2.HS.A CC.2.2.HS.B CC.2.2.HS.C CC.2.2.HS.D	
COMPETENCIES		LEARNING TARGETS	
Operations and Expressions I can generate equivalent expressions using operations and mathematical properties.		- I can simplify and evaluate expressions using the order of operations. (K1MAB4K4) - I can write variable expressions. (K1MAB4K5)	
Sequences and Series I can identify, describe, and represent various types of sequences and series.		I can identify and/or use a rule for the nth term of an arithmetic sequence. (K1MAB14K1)	
Patterns, Functions, and Multiple Representations		I can determine whether a relation is a function. (K1MAB6K1)	

I can identify, create, and evaluate functions using multiple representations.	• I can identify the domain and range of a relation. (K1MAB6K2) • I can graph a function given a rule and a domain. (K1MAB6K2)
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SUBJECT: Algebra 1		GRADE: 9-12	
Unit 3: Solving Linear Equations		Time Frame: 5 Weeks	
UNIT OVERVIEW			
In this unit, we will learn about: • Solving One-Step Linear Equations with Addition, Subtractions, Division and Multiplication • Solving Two-Step Equations • Solving Equations with Variables on Both Sides • Solving Proportions using Cross Products • Rewriting Linear Equations as Functions • Word Problems Proportions • Percent Equations • Percent of Change and Unit Rate • Solving Problems by Writing Equations			
LRG SKILLS AND DISPOSITIONS		PA STANDARDS	
• Collaboration and Teamwork 9-12: Group Critical Thinking Quizzes (S1C)		CC.2.1.HS.B CC.2.1.HS.C CC.2.1.HS.E CC.2.2.HS.A CC.2.2.HS.B CC.2.2.HS.D	
COMPETENCIES		LEARNING TARGETS	

Equations and Inequalities I can create and solve equations and inequalities that represent mathematical situations.	• I can solve algebraic equations. (K1MAB5K1) • I can rewrite equations in function form (slope-intercept form). (K1MAB5K2) • I can solve for a specific variable when an equation has multiple variables. (K1MAB5K3) • I can solve problems using percentages. (K1MAB5K4) • I can calculate unit rates and compare unit rates to be a smarter consumer. (K1MAB5K5) • I can represent a real-life situation using an algebraic equation. (K1MAB5K6)
Ratios and Proportional Relationships I can find common factors and multiples to represent, compare, and calculate quantities using fractions.	• I can solve proportions. (K1MAB3K1)

SUBJECT: Algebra 1 GRADE: 9-12	
Unit 4: Graphing Linear Equations	Time Frame: 3 Weeks
UNIT OVERVIEW	
In this unit, we will learn about: • The Coordinate Plane • Graphing Linear Equations with Tables • X and Y-Intercepts • The Slope of a Line • Slope-Intercept Form ($y=mx+b$)	
LRG SKILLS AND DISPOSITIONS	PA STANDARDS
• Collaboration and Teamwork 9-12: Group Critical Thinking	CC.2.1.HS.B

Quizzes (S1C)	CC.2.1.HS.C CC.2.1.HS.D CC.2.1.HS.F CC.2.2.HS.A CC.2.2.HS.B CC.2.2.HS.C CC.2.2.HS.D
COMPETENCIES	LEARNING TARGETS
Graphing I can create and interpret graphs as visual representations of the relationship between quantities.	- I can graph linear equations using tables. (K1MAB7K1) - I can find x-intercepts and y-intercepts and use them to graph linear equations. (K1MAB7K2) - I can graph linear equations using slope-intercept form. (K1MAB7K3)
Patterns, Functions, and Multiple Representations I can identify, create, and evaluate functions using multiple representations.	- I can find and compare slopes. (K1MAB6K4) - I can use function notation. (K1MAB6K5)

SUBJECT: Algebra 1		GRADE: 9-12
Unit 5: Writing Linear Equations	Time Frame: 3 Weeks	
UNIT OVERVIEW		
In this unit, we will learn about: • Writing Equations of Lines (when given a graph, a slope and y-intercepts, or a slope and a point) • Writing Equations of Lines given Two Points (including both intercepts) • Writing Linear Equations of Parallel Lines • Writing Linear Equations of Perpendicular Lines • Horizontal and Vertical Lines		

● Writing Linear Equations in Standard Form ($Ax + By = C$) ● Scatter Plots and Line of Best Fit ● Writing Linear Equations for Real-Life Situations	
LRG SKILLS AND DISPOSITIONS	PA STANDARDS
● Honesty, Integrity and Responsibility 9-12: Student conference regarding assignments (D3C) ● Resilience and Grit 9-12: Student conference regarding taking advantage of opportunities for improvement (D4C) ● Collaboration and Teamwork 9-12: Student conference regarding collaboration (S1C) ● Collaboration and Teamwork 9-12: Group Critical Thinking Quizzes (S1C)	CC.2.1.HS.B CC.2.1.HS.C CC.2.1.HS.D CC.2.2.HS.A CC.2.2.HS.B CC.2.2.HS.C CC.2.2.HS.D CC.2.4.HS.A CC.2.4.HS.B
COMPETENCIES	LEARNING TARGETS
Measurement, Data, and Statistics I can collect, represent, analyze, and interpret data.	● I can graph scatter plots when given a set of data, draw lines of best fit, and write equations of lines of best fit. (K1MAB10K1)
Equations and Inequalities I can create and solve equations and inequalities that represent mathematical situations.	● I can write equations of lines when given a slope and y-intercept, a graph, or a slope and a point. (K1MAB5K7) ● I can write equations of lines when given two points or both intercepts. (K1MAB5K8) ● I can write equations of parallel and perpendicular lines. (K1MAB5K9) ● I can write equations of horizontal lines and vertical lines. (K1MAB5K10) ● I can write equations of lines in standard form. (K1MAB5K11) ● I can write an equation in two-variables to model a real-life situation. (K1MAB5K12)

SUBJECT: Algebra 1		GRADE: 9-12	
Unit 6: Solving and Graphing Linear Inequalities		Time Frame: 3 Weeks	
UNIT OVERVIEW			
In this unit, we will learn about: • Writing, Solving, and Graphing Inequalities • Solving and Graphing Multi-Step Inequalities • Compound Inequalities • Solving Absolute Value Equations • Solving Absolute Value Inequalities • Inequalities with Two Variables			
LRG SKILLS AND DISPOSITIONS		PA STANDARDS	
• Collaboration and Teamwork 9-12: Group Critical Thinking Quizzes (S1C)		CC.2.1.HS.B CC.2.1.HS.C CC.2.1.HS.F CC.2.2.HS.A CC.2.2.HS.B CC.2.2.HS.C CC.2.2.HS.D CC.2.3.HS.A	
COMPETENCIES		LEARNING TARGETS	
Equations and Inequalities I can create and solve equations and inequalities that represent mathematical situations.		• I can write and solve one-variable inequalities. (K1MAB5K13) • I can write and solve compound inequalities. (K1MAB5K14) • I can solve absolute value equations. (K1MAB5K15) • I can solve absolute value inequalities. (K1MAB5K16)	
Graphing		• I can graph inequalities on a number line. (K1MAB7K4) • I can graph inequalities on a coordinate plane. (K1MAB7K5)	

I can create and interpret graphs as visual representations of the relationship between quantities.

SUBJECT: Algebra 1

GRADE: 9-12

Unit 7: Systems of Linear Equations and Inequalities

Time Frame: 4 Weeks

UNIT OVERVIEW

In this unit, we will learn about:

- Solving Systems by Graphing
- Solving Systems using Substitution
- Solving Systems using Elimination
- Solving/Graphing Systems of Linear Inequalities

LRG SKILLS AND DISPOSITIONS

PA STANDARDS

- Collaboration and Teamwork 9-12: Group Critical Thinking Quizzes (S1C)

CC.2.1.HS.B
CC.2.1.HS.C
CC.2.1.HS.F
CC.2.2.HS.A
CC.2.2.HS.B
CC.2.2.HS.C
CC.2.2.HS.D
CC.2.3.HS.A

COMPETENCIES

LEARNING TARGETS

Equations and Inequalities

I can create and solve equations and inequalities that represent mathematical situations.

- I can solve systems of equations using substitution and/or elimination. (K1MAB5K17)
- I can interpret real-life solutions using systems of equations. (K1MAB5K18)

	I can interpret real-life solutions using systems of inequalities. (K1MAB5K19)
Graphing I can create and interpret graphs as visual representations of the relationship between quantities.	- I can solve systems of equations by graphing. (K1MAB7K6) - I can graph systems of inequalities. (K1MAB7K7)

SUBJECT: Algebra 1 GRADE: 9-12	
Unit 8: Properties of Exponents	Time Frame: 3 Weeks
UNIT OVERVIEW	
In this unit, we will learn about the Properties of Exponents: - Product Property, Power of a Power Property, Power of a Product Property - Quotient Property, Power of a Quotient Property - Zero Property, Negative Property	
LRG SKILLS AND DISPOSITIONS	PA STANDARDS
Collaboration and Teamwork 9-12: Group Critical Thinking Quizzes (S1C)	CC.2.1.HS.B CC.2.1.HS.C CC.2.1.HS.D CC.2.1.HS.E
COMPETENCIES	LEARNING TARGETS
Operations and Expressions I can generate equivalent expressions using operations and mathematical properties.	- I can simplify expressions using the multiplication properties of exponents. (K1MAB4K6) - I can represent numbers in scientific notation and standard form. (K1MAB4K7) - I can simplify expressions using the division properties of exponents. (K1MAB4K8)

- I can simplify expressions using the zero and negative properties of exponents. (K1MAB4K9)

SUBJECT: Algebra 1		GRADE: 9-12	
Unit 9: Polynomials and Factoring		Time Frame: 4 Weeks	
UNIT OVERVIEW			
In this unit, we will learn about: • Adding and Subtracting Polynomials • Greatest Common Factor (GCF) and Least Common Multiple (LCM) • Multiplying Polynomials • Factoring Polynomials • Solve by Factoring • Simplifying Rational Expressions (by Factoring)			
LRG SKILLS AND DISPOSITIONS		PA STANDARDS	
• Collaboration and Teamwork 9-12: Group Critical Thinking Quizzes (S1C)		CC.2.1.HS.B CC.2.1.HS.C CC.2.1.HS.E CC.2.2.HS.A CC.2.2.HS.B CC.2.2.HS.D	
COMPETENCIES		LEARNING TARGETS	
Operations and Expressions I can generate equivalent expressions using operations and mathematical properties.		• I can add and subtract polynomials. (K1MAB4K10) • I can find the least common multiple and greatest common factor of polynomials. (K1MAB4K11)	

	• I can factor out the greatest common factor of a polynomial. (K1MAB4K12) • I can multiply polynomials. (K1MAB4K13) • I can factor polynomials. (K1MAB4K14) • I can simplify rational expressions. (K1MAB4K15)
Equations and Inequalities I can create and solve equations and inequalities that represent mathematical situations.	• I can solve quadratic equations by factoring. (K1MAB5N5)

SUBJECT: Algebra 1		GRADE: 9-12	
Unit 10: Probability and Data Analysis		Time Frame: 3 Weeks	
UNIT OVERVIEW			
In this unit, we will learn about: • Measures of Central Tendency (Mean, Median, Mode) and Dispersion (Range), Quartiles and Interquartile Range (IQR) • Predictions from Data • Representations of Data (Box-and-Whisker Plot, Stem-and-Leaf Plot) • Predictions from Scatter Plots • Probability of Compound Events • Odds • Fundamental Counting Principle, Permutations and Combinations			
LRG SKILLS AND DISPOSITIONS		PA STANDARDS	
• Collaboration and Teamwork 9-12: Group Critical Thinking Quizzes (S1C)		CC.2.4.HS.A CC.2.4.HS.B	

COMPETENCIES	LEARNING TARGETS
Measurement, Data, and Statistics I can collect, represent, analyze, and interpret data.	• I can calculate the mean, median, mode, upper quartile, lower quartile, interquartile range, and range for a set of data. (K1MAB10K2) • I can analyze and make predictions using data displays. (K1MAB10K3) • I can analyze and make predictions using scatter plots and the lines of best fit. (K1MAB10K1)
Probability I can use counting strategies and calculate the probability of events.	• I can calculate probability and odds for simple and compound events. (K1MAB11K1) • I can use the fundamental counting principle, permutations, and combinations to find the number of ways an event can occur. (K1MAB11K2)