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)

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)

Unit Title: Extension Unit - Personal Finance	**Time Frame: 8 days**
UNIT OVERVIEW	
LRG SKILLS AND DISPOSITIONS	**PA STANDARDS**
Collaboration and Teamwork (S1B) Critical Thinking and Problem Solving (S4B)	**CC.2.2.8.B.2** Understand the connections between proportional relationships, lines, and linear equations. **CC.2.2.8.B.3** Analyze and solve linear equations and pairs of simultaneous linear equations. **CC.2.2.8.C.2** Use concepts of functions to model relationships between quantities. **CC.2.4.8.B.1** Analyze and/or interpret bivariate data displayed in multiple representations. **CC.2.4.8.B.2** Understand that patterns of association can be seen in bivariate data utilizing frequencies. **17.2.6-8.H** Interpret a pay statement and explain the relationship between

	gross pay, net pay, and payroll deductions. **17.3.6-8.G** Describe the advantages and disadvantages of using various payment methods (e.g., cash, checks, gift cards, debit cards, credit cards, mobile payments). **17.4.6-8.C** Use different methods and tools to calculate the growth in savings given various scenarios (e.g., simple versus compound interest, starting age, years to save, and interest rates). **17.4.6-8.D** Describe similarities and differences between saving and investing. **17.6.6-8.A** Explain how credit is established and tracked over time for an individual. **17.6.6-8.C** Discuss various forms of credit and their uses (e.g., credit cards, home loans, auto loans, student loans). **17.6.6-8.D** Summarize the differences between credit cards and debit cards. **17.6.6-8.E** Analyze factors that influence the total cost of paying with credit, including interest rates, fees, repayment period, and source of credit. **17.6.6-8.F** Explain why potential borrowers could reach different conclusions about the use of credit, including how much debt constitutes overborrowing. **17.6.6-8.G** Explain why lenders must provide borrowers with certain information (e.g., interest rates, annual percentage rates, fees, terms, conditions).
COMPETENCIES	**LEARNING TARGETS**
Patterns, Functions, Mult. Rep: I can identify, create, and evaluate functions using multiple representations. **Measurement, Data, and Statistics:** I can collect, represent, analyze, and interpret data.	**Display and Analyze Data:** I can display and analyze data in different graphical representations. (K1MAB10I2). **Connecting Multiple Representations:** I can use connections between graphs, rules, tables, and patterns to solve problems. (K1MAB6I6) **Making Predictions Using Multiple Representations:** I can make and justify predictions using tables, graphs, and rules. (K1MAB6I7) **Income and Payroll Taxes:** I can interpret a pay statement and explain how gross pay, payroll deductions, and net pay are related. **Payment Methods:** I can describe the advantages and disadvantages of different payment methods such as cash, checks, debit cards, credit cards, and mobile payments. **Saving:** I can use different methods and tools to calculate how savings grow over time, including simple and compound interest.

	Investing: I can describe the similarities and differences between saving and investing. **Investing:** I can explain what it means to invest in a business and how it can help the business grow while earning a return. **Credit Use and Benefits:** I can explain how credit is established and tracked over time for an individual. **Types of Credit:** I can discuss different types of credit, such as auto loans, and explain how they are used. **Types of Credit:** I can summarize the differences between credit cards and debit cards. **Costs of Credit:** I can analyze how rates, repayment periods, and the source of credit affect the total cost of using credit. **Costs of Credit:** I can explain why people may make different decisions about using credit and determine when borrowing may become too much debt. **Credit Rights and Responsibilities:** I can explain what information lenders are required to provide borrowers with. **Credit Rights and Responsibilities:** I can explain the impact on money owed given interest rate and APR.