

SUBJECT: Algebra 1		GRADE: 9-12	
Unit 1: Properties of Real Numbers		Time Frame: 3 Weeks	
UNIT OVERVIEW			
In this unit, we will learn about: <ul style="list-style-type: none"><li>• Adding and Subtracting Fractions</li><li>• Multiplying and Dividing Fractions</li><li>• Adding and Subtracting Real Numbers</li><li>• Combining Like Terms</li><li>• Multiplying and Dividing Real Numbers</li><li>• Distributive Property</li><li>• Simplifying Square Roots</li><li>• Scientific Notation</li></ul>			
LRG SKILLS AND DISPOSITIONS		PA STANDARDS	
<ul style="list-style-type: none"><li>• Collaboration and Teamwork 9-12: Group Critical Thinking Quizzes (S1C)</li></ul>		CC.2.1.HS.F.2	
COMPETENCIES		LEARNING TARGETS	
<b>Numbers and Operations-Fraction</b> I can find common factors and multiples to represent, compare, and calculate quantities using fractions.		<ul style="list-style-type: none"><li>• I can compare and order numbers in different forms. (K1MAB2K1)</li><li>• I can perform operations with fractions. (K1MAB2K2)</li><li>• I can simplify square roots. (K1MAB2K3)</li></ul>	
<b>Operations and Expressions</b> I can generate equivalent expressions using operations and mathematical properties.		<ul style="list-style-type: none"><li>• I can simplify absolute value expressions. (K1MAB4K1)</li><li>• I can identify algebraic properties. (K1MAB4K2)</li><li>• I can perform operations with real numbers. (K1MAB4K3)</li></ul>	

SUBJECT: Algebra 1		GRADE: 9-12	
Unit 2: Expressions, Equations, Functions		Time Frame: 3 Weeks	
UNIT OVERVIEW			
In this unit, we will learn about: <ul style="list-style-type: none"><li>Order of Operations, Expressions &amp; Mathematical Statements</li><li>Patterns and Relationships</li><li>Functions</li></ul>			
LRG SKILLS AND DISPOSITIONS		PA STANDARDS	
<ul style="list-style-type: none"><li>Collaboration and Teamwork 9-12: Group Critical Thinking Quizzes (S1C)</li></ul>		CC.2.1.HS.F.3 CC.2.2.HS.D.2 CC.2.2.HS.C.2 CC.2.2.HS.C.3	
COMPETENCIES		LEARNING TARGETS	
<b>Operations and Expressions</b> I can generate equivalent expressions using operations and mathematical properties.		<ul style="list-style-type: none"><li>I can simplify and evaluate expressions using the order of operations. (K1MAB4K4)</li><li>I can write variable expressions. (K1MAB4K5)</li></ul>	
<b>Sequences and Series</b> I can identify, describe, and represent various types of sequences and series.		<ul style="list-style-type: none"><li>I can identify and/or use a rule for the nth term of an arithmetic sequence. (K1MAB14K1)</li></ul>	
<b>Patterns, Functions, and Multiple Representations</b> I can identify, create, and evaluate functions using multiple representations.		<ul style="list-style-type: none"><li>I can determine whether a relation is a function. (K1MAB6K1)</li><li>I can identify the domain and range of a relation. (K1MAB6K2)</li><li>I can graph a function given a rule and a domain. (K1MAB6K2)</li></ul>	

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Unit 3: Solving Linear Equations		Time Frame: 5 Weeks	
UNIT OVERVIEW			
In this unit, we will learn about: <ul style="list-style-type: none"><li>Solving One-Step Linear Equations with Addition, Subtractions, Division and Multiplication</li><li>Solving Two-Step Equations</li><li>Solving Equations with Variables on Both Sides</li><li>Solving Proportions using Cross Products</li><li>Rewriting Linear Equations as Functions</li><li>Word Problems Proportions</li><li>Percent Equations</li><li>Percent of Change and Unit Rate</li><li>Solving Problems by Writing Equations</li></ul>			
LRG SKILLS AND DISPOSITIONS		PA STANDARDS	
<ul style="list-style-type: none"><li>Collaboration and Teamwork 9-12: Group Critical Thinking Quizzes (S1C)</li></ul>		CC.2.1.HS.F.3 CC.2.1.HS.F.4 CC.2.2.HS.D.2 CC.2.2.HS.D.8 CC.2.2.HS.D.10	
COMPETENCIES		LEARNING TARGETS	
Equations and Inequalities I can create and solve equations and inequalities that represent mathematical situations.		<ul style="list-style-type: none"><li>I can solve algebraic equations. (K1MAB5K1)</li><li>I can rewrite equations in function form (slope-intercept form). (K1MAB5K2)</li><li>I can solve for a specific variable when an equation has multiple variables. (K1MAB5K3)</li><li>I can solve problems using percentages. (K1MAB5K4)</li><li>I can calculate unit rates and compare unit rates to be a smarter consumer. (K1MAB5K5)</li></ul>	

	<ul style="list-style-type: none"> <li>I can represent a real-life situation using an algebraic equation. (K1MAB5K6)</li> </ul>
<b>Ratios and Proportional Relationships</b> I can find common factors and multiples to represent, compare, and calculate quantities using fractions.	<ul style="list-style-type: none"> <li>I can solve proportions. (K1MAB3K1)</li> </ul>

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Unit 4: Graphing Linear Equations		Time Frame: 3 Weeks	
UNIT OVERVIEW			
In this unit, we will learn about: <ul style="list-style-type: none"><li>• The Coordinate Plane</li><li>• Graphing Linear Equations with Tables</li><li>• X and Y-Intercepts</li><li>• The Slope of a Line</li><li>• Slope-Intercept Form (y=mx+b)</li></ul>			
LRG SKILLS AND DISPOSITIONS		PA STANDARDS	
<ul style="list-style-type: none"><li>• Collaboration and Teamwork 9-12: Group Critical Thinking Quizzes (S1C)</li></ul>		CC.2.1.HS.F.3 CC.2.2.HS.D.7 CC.2.2.HS.D.8 CC.2.2.HS.D.10 CC.2.2.HS.C.1 CC.2.2.HS.C.2	
COMPETENCIES		LEARNING TARGETS	
Graphing		<ul style="list-style-type: none"><li>• I can graph linear equations using tables. (K1MAB7K1)</li></ul>	

I can create and interpret graphs as visual representations of the relationship between quantities.	<ul style="list-style-type: none"> <li>I can find x-intercepts and y-intercepts and use them to graph linear equations. (K1MAB7K2)</li> <li>I can graph linear equations using slope-intercept form. (K1MAB7K3)</li> </ul>
<b>Patterns, Functions, and Multiple Representations</b> I can identify, create, and evaluate functions using multiple representations.	<ul style="list-style-type: none"> <li>I can find and compare slopes. (K1MAB6K4)</li> <li>I can use function notation. (K1MAB6K5)</li> </ul>

<b>SUBJECT: Algebra 1</b> <b>GRADE: 9-12</b>	
<b>Unit 5: Writing Linear Equations</b>	<b>Time Frame: 3 Weeks</b>
UNIT OVERVIEW	
<p>In this unit, we will learn about:</p> <ul style="list-style-type: none"> <li>Writing Equations of Lines (when given a graph, a slope and y-intercepts, or a slope and a point)</li> <li>Writing Equations of Lines given Two Points (including both intercepts)</li> <li>Writing Linear Equations of Parallel Lines</li> <li>Writing Linear Equations of Perpendicular Lines</li> <li>Horizontal and Vertical Lines</li> <li>Writing Linear Equations in Standard Form (<math>Ax + By = C</math>)</li> <li>Scatter Plots and Line of Best Fit</li> <li>Writing Linear Equations for Real-Life Situations</li> </ul>	
LRG SKILLS AND DISPOSITIONS	PA STANDARDS
<ul style="list-style-type: none"> <li>Honesty, Integrity and Responsibility 9-12: Student conference regarding assignments (D3C)</li> <li>Resilience and Grit 9-12: Student conference regarding</li> </ul>	CC.2.1.HS.F.3 CC.2.2.HS.D.7 CC.2.2.HS.D.8 CC.2.2.HS.D.10

taking advantage of opportunities for improvement (D4C) <ul style="list-style-type: none"> <li>• Collaboration and Teamwork 9-12: Student conference regarding collaboration (S1C)</li> <li>• Collaboration and Teamwork 9-12: Group Critical Thinking Quizzes (S1C)</li> </ul>	
COMPETENCIES	LEARNING TARGETS
<b>Measurement, Data, and Statistics</b> I can collect, represent, analyze, and interpret data.	<ul style="list-style-type: none"> <li>• 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)</li> </ul>
<b>Equations and Inequalities</b> I can create and solve equations and inequalities that represent mathematical situations.	<ul style="list-style-type: none"> <li>• I can write equations of lines when given a slope and y-intercept, a graph, or a slope and a point. (K1MAB5K7)</li> <li>• I can write equations of lines when given two points or both intercepts. (K1MAB5K8)</li> <li>• I can write equations of parallel and perpendicular lines. (K1MAB5K9)</li> <li>• I can write equations of horizontal lines and vertical lines. (K1MAB5K10)</li> <li>• I can write equations of lines in standard form. (K1MAB5K11)</li> <li>• I can write an equation in two-variables to model a real-life situation. (K1MAB5K12)</li> </ul>

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:			

<ul style="list-style-type: none"> <li>• Writing, Solving, and Graphing Inequalities</li> <li>• Solving and Graphing Multi-Step Inequalities</li> <li>• Compound Inequalities</li> <li>• Solving Absolute Value Equations</li> <li>• Solving Absolute Value Inequalities</li> <li>• Inequalities with Two Variables</li> </ul>	
LRG SKILLS AND DISPOSITIONS	PA STANDARDS
<ul style="list-style-type: none"> <li>• Collaboration and Teamwork 9-12: Group Critical Thinking Quizzes (S1C)</li> </ul>	CC.2.1.HS.F.3 CC.2.1.HS.F.4 CC.2.2.HS.D.7 CC.2.2.HS.D.8 CC.2.2.HS.D.9 CC.2.2.HS.D.10
COMPETENCIES	LEARNING TARGETS
<b>Equations and Inequalities</b> I can create and solve equations and inequalities that represent mathematical situations.	<ul style="list-style-type: none"> <li>• I can write and solve one-variable inequalities. (K1MAB5K13)</li> <li>• I can write and solve compound inequalities. (K1MAB5K14)</li> <li>• I can solve absolute value equations. (K1MAB5K15)</li> <li>• I can solve absolute value inequalities. (K1MAB5K16)</li> </ul>
<b>Graphing</b> I can create and interpret graphs as visual representations of the relationship between quantities.	<ul style="list-style-type: none"> <li>• I can graph inequalities on a number line. (K1MAB7K4)</li> <li>• I can graph inequalities on a coordinate plane. (K1MAB7K5)</li> </ul>

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
<ul style="list-style-type: none"> <li>• Collaboration and Teamwork 9-12: Group Critical Thinking Quizzes (S1C)</li> </ul>	CC.2.1.HS.F.3 CC.2.1.HS.F.4 CC.2.2.HS.D.7 CC.2.2.HS.D.8 CC.2.2.HS.D.9 CC.2.2.HS.D.10
COMPETENCIES	LEARNING TARGETS
<b>Equations and Inequalities</b> I can create and solve equations and inequalities that represent mathematical situations.	<ul style="list-style-type: none"> <li>• I can solve systems of equations using substitution and/or elimination. (K1MAB5K17)</li> <li>• I can interpret real-life solutions using systems of equations. (K1MAB5K18)</li> <li>• I can interpret real-life solutions using systems of inequalities. (K1MAB5K19)</li> </ul>
<b>Graphing</b> I can create and interpret graphs as visual representations of the relationship between quantities.	<ul style="list-style-type: none"> <li>• I can solve systems of equations by graphing. (K1MAB7K6)</li> <li>• I can graph systems of inequalities. (K1MAB7K7)</li> </ul>

**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
<ul style="list-style-type: none"> <li>• Collaboration and Teamwork 9-12: Group Critical Thinking Quizzes (S1C)</li> </ul>	
COMPETENCIES	LEARNING TARGETS
<p><b>Operations and Expressions</b></p> <p>I can generate equivalent expressions using operations and mathematical properties.</p>	<ul style="list-style-type: none"> <li>• I can simplify expressions using the multiplication properties of exponents. (K1MAB4K6)</li> <li>• I can represent numbers in scientific notation and standard form. (K1MAB4K7)</li> <li>• I can simplify expressions using the division properties of exponents. (K1MAB4K8)</li> <li>• I can simplify expressions using the zero and negative properties of exponents. (K1MAB4K9)</li> </ul>

**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)

<ul style="list-style-type: none"> <li>• Multiplying Polynomials</li> <li>• Factoring Polynomials</li> <li>• Solve by Factoring</li> <li>• Simplifying Rational Expressions (by Factoring)</li> </ul>	
LRG SKILLS AND DISPOSITIONS	PA STANDARDS
<ul style="list-style-type: none"> <li>• Collaboration and Teamwork 9-12: Group Critical Thinking Quizzes (S1C)</li> </ul>	CC.2.2.HS.D.2 CC.2.2.HS.D.3 CC.2.2.HS.D.6
COMPETENCIES	LEARNING TARGETS
<b>Operations and Expressions</b> I can generate equivalent expressions using operations and mathematical properties.	<ul style="list-style-type: none"> <li>• I can add and subtract polynomials. (K1MAB4K10)</li> <li>• I can find the least common multiple and greatest common factor of polynomials. (K1MAB4K11)</li> <li>• I can factor out the greatest common factor of a polynomial. (K1MAB4K12)</li> <li>• I can multiply polynomials. (K1MAB4K13)</li> <li>• I can factor polynomials. (K1MAB4K14)</li> <li>• I can simplify rational expressions. (K1MAB4K15)</li> </ul>
<b>Equations and Inequalities</b> I can create and solve equations and inequalities that represent mathematical situations.	<ul style="list-style-type: none"> <li>• I can solve quadratic equations by factoring. (K1MAB5N5)</li> </ul>

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
<ul style="list-style-type: none"> <li>• Collaboration and Teamwork 9-12: Group Critical Thinking Quizzes (S1C)</li> </ul>	CC.2.1.HS.F.3 CC.2.4.HS.B.3 CC.2.4.HS.B.7
COMPETENCIES	LEARNING TARGETS
<b>Measurement, Data, and Statistics</b> I can collect, represent, analyze, and interpret data.	<ul style="list-style-type: none"> <li>• I can calculate the mean, median, mode, upper quartile, lower quartile, interquartile range, and range for a set of data. (K1MAB10K2)</li> <li>• I can analyze and make predictions using data displays. (K1MAB10K3)</li> <li>• I can analyze and make predictions using scatter plots and the lines of best fit. (K1MAB10K1)</li> </ul>
<b>Probability</b> I can use counting strategies and calculate the probability of events.	<ul style="list-style-type: none"> <li>• I can calculate probability and odds for simple and compound events. (K1MAB11K1)</li> <li>• I can use the fundamental counting principle, permutations, and combinations to find the number of ways an event can occur. (K1MAB11K2)</li> </ul>