SUBJECT: Algebra II	GRADE: 9-12
Unit 1: Expressions, Equations & Inequalities	Time Frame: 13 days

UNIT OVERVIEW

Within this unit students will evaluate and simplify numerical and algebraic expressions, solve linear and absolute value equations and inequalities, write equations with more than one variable, along with using algebra to model and solve real-life problems.

LRG SKILLS AND DISPOSITIONS	PA STANDARDS
● Critical Thinking and Problem Solving 9-12: Thinking Tasks (S4C) ○ "Decompose 25" and/or "The Answers are" ● Collaboration and Teamwork 9-12: Thinking Tasks (S1C) ○ "Decompose 25" and/or "The Answers are"	● CC.2.1.HS.F.4 ● CC.2.1.HS.F.5 ● CC.2.2.HS.C.5 ● CC.2.2.HS.D.1 ● CC.2.2.HS.D.2 ● 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**
Equations & Inequalities: ● I can create and solve equations and inequalities that represent mathematical situations.	● I can solve a multi-step linear equation. (K1MAB5M1) ● I can create and solve an equation to model a real-life situation. (K1MAB5M2) ● I can solve compound inequalities. (K1MAB5M3) ● I can solve an absolute value equation. (K1MAB5M4) ● I can solve an absolute value inequality. (K1MAB5M5)
Graphing: ● I can create and interpret graphs as visual representations of the relationship between quantities.	● I can graph a compound inequality on a number line. (K1MAB7M1)

Patterns, Functions, & Multiple Representations: ● I can identify, create, and evaluate functions using multiple representations	● I can analyze a set of data for a pattern and represent the pattern with an algebraic rule. (K1MAB6M1)

SUBJECT: Algebra II	**GRADE: 9-12**
Unit 2: Equations, Functions, & Graphs	**Time Frame: 27 days**
UNIT OVERVIEW	
Within this unit students will be able to graph linear equations, graph inequalities in two variables, write equations of lines, solve real-life problems using graphs and equations, and solve piecewise functions.	
LRG SKILLS AND DISPOSITIONS	**PA STANDARDS**
● Critical Thinking and Problem Solving 9-12: Escape Room (S4C) ● Collaboration and Teamwork 9-12: Escape Room (S1C)	● CC.2.1.HS.F.3 ● CC.2.1.HS.F.4 ● CC.2.2.HS.C.1 ● CC.2.2.HS.C.3 ● CC.2.2.HS.C.5 ● CC.2.2.HS.D.7 ● CC.2.2.HS.D.8 ● CC.2.2.HS.D.9 ● CC.2.2.HS.D.10 ● CC.2.4.HS.B.2 ● CC.2.4.HS.B.3
COMPETENCIES	**LEARNING TARGETS**
Equations & Inequalities: ● I can create and solve equations and inequalities that represent mathematical situations.	● I can write the equation of a line. (K1MAB5M6) ● I can write an equation to model a direct variation. (K1MAB5M7) ● I can write an absolute value equation. (K1MAB5M8)

Graphing: ● I can create and interpret graphs as visual representations of the relationship between quantities.	● I can graph a linear equation on a coordinate plane. (K1MAB7M2) ● I can graph and interpret inequalities on a coordinate plane. (K1MAB7M3) ● I can graph an absolute value equation on a coordinate plane. (K1MAB7M4)
Patterns, Functions, & Multiple Representations: ● I can identify, create, and evaluate functions using multiple representations.	● I can use function notation. (K1MAB6M2) ● I can identify and interpret domain and range. (K1MAB6M3) ● I can write a piecewise function to represent a graph. (K1MAB6M4) ● I can analyze transformations of functions. (K1MAB6M5)
Measurement, Data, & Statistics: ● I can collect, represent, analyze, and interpret data.	● I can create a scatterplot and write an equation for the line of best fit. (K1MAB10M1) ● I can use data to make predictions by using the equation or graph of a line of best fit. (K1MAB10M2) ● I can use data to make predictions by finding and applying various regression equations. (K1MAB10M3)

SUBJECT: Algebra II	GRADE: 9-12
Unit 3: Linear Systems	**Time Frame: 15 days**

UNIT OVERVIEW

In this unit students will solve linear systems in two variables, write and use linear systems to solve real-life problems, and solve systems using augmented matrices.

LRG SKILLS AND DISPOSITIONS	PA STANDARDS
● Collaboration and Teamwork 9-12: Systems of Equations Solution Methods (S1C) ○ Using station rotation to explore the different methods for solving systems of equations.	● CC.2.1.HS.F.3 ● CC.2.1.HS.F.4 ● CC.2.2.HS.C.5 ● CC.2.2.HS.C.6 ● CC.2.2.HS.D.1 ● CC.2.2.HS.D.2 ● CC.2.2.HS.D.8 ● CC.2.2.HS.D.9 ● CC.2.2.HS.D.10 ● CC.2.2.HS.C.2
COMPETENCIES	**LEARNING TARGETS**
Operations & Expressions: ● I can generate equivalent expressions using operations and mathematical properties.	● I can solve a linear system in two variables using a variety of methods. (K1MAB5M9)
Equations & Inequalities: ● I can create and solve equations and inequalities that represent mathematical situations.	● I can create and solve a system of equations to model a real-life situation. (K1MAB5M10)

	• I can solve a linear system in three variables using a variety of methods. (K1MAB5M11)
Graphing: • I can create and interpret graphs as visual representations of the relationship between quantities.	• I can graph and interpret a system of inequalities. (K1MAB5M11)

SUBJECT: Algebra II	**GRADE: 9-12**
Unit 4: Quadratic Functions	**Time Frame: 30 days**

UNIT OVERVIEW

In this unit students will solve quadratic equations by graphing, factoring, using the quadratic formula. Students will also graph quadratic functions and inequalities, evaluate complex numbers, and write quadratic functions that model data from real-life problems.

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)	• CC.2.1.HS.F.3 • CC.2.1.HS.F.4 • CC.2.1.HS.F.6 • CC.2.1.HS.F.7 • CC.2.2.HS.C.5 • CC.2.2.HS.D.1 • CC.2.2.HS.D.2 • CC.2.2.HS.C.2 • CC.2.2.HS.C.3 • 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**

Operations & Expressions ● I can generate equivalent expressions using operations and mathematical properties.	● I can factor a quadratic expression. (K1MAB4M1) ● I can simplify expressions with imaginary numbers. (K1MAB4M2) ● I can perform operations with complex numbers. (K1MAB4M3)
Equations & Inequalities ● I can create and solve equations and inequalities that represent mathematical situations.	● I can solve a quadratic equation by factoring. (K1MAB5M12) ● I can solve a quadratic equation using square roots. (K1MAB5M13) ● I can solve a quadratic equation using the quadratic formula. (K1MAB5M13) ● I can solve a quadratic equation with complex solutions. (K1MAB5M15) ● I can create and solve a quadratic equation to model a real-life situation. (K1MAB5M16)
Graphing ● I can create and interpret graphs as visual representations of the relationship between quantities.	● I can graph quadratic equations. (K1MAB7M6)

SUBJECT: Algebra II	GRADE: 9-12
Unit 5: Polynomials & Polynomial Functions	**Time Frame: 26 days**

UNIT OVERVIEW

In this unit students will be able to perform operations on polynomials and solve polynomial functions. Students will also evaluate, graph, and find zeros of polynomial functions.

LRG SKILLS AND DISPOSITIONS	PA STANDARDS
● Resilience and Grit 9-12: Scavenger Hunt (D4C) ● Collaboration and Teamwork 9-12: Scavenger Hunt (S1C)	● CC.2.1.HS.F.4 ● CC.2.1.HS.F.7 ● CC.2.2.HS.D.1 ● CC.2.2.HS.D.2 ● CC.2.2.HS.D.3 ● CC.2.2.HS.D.4 ● CC.2.2.HS.D.5 ● CC.2.2.HS.C.3
COMPETENCIES	**LEARNING TARGETS**
Operations & Expressions ● I can generate equivalent expressions using operations and mathematical properties.	● I can simplify expressions with exponents. (K1MAB4M4) ● I can add, subtract, or multiply polynomials. (K1MAB4M5) ● I can factor polynomials. (K1MAB4M6) ● I can divide polynomials. (K1MAB4M7)
Patterns, Functions, & Multiple Representations ● I can identify, create, and evaluate functions using multiple representations.	● I can find all of the zeros of a polynomial function. (K1MAB6M6) ● I can write a polynomial function given its zeros. (K1MAB6M7)

SUBJECT: Algebra II	GRADE: 9-12
Unit 6: Radical Functions and Rational Exponents	**Time Frame: 30 days**

UNIT OVERVIEW
In this unit students will use rational exponents and nth roots of numbers, find the composition of functions, find the inverses of functions, and solve radical functions.

LRG SKILLS AND DISPOSITIONS	PA STANDARDS
● Critical Thinking and Problem Solving 9-12: Error Analysis Activity (S4C) ● Collaboration and Teamwork 9-12: Error Analysis Activity (S1C) ● Resilience and Grit 9-12: Error Analysis Activity (D4C)	● CC.2.1.HS.F.4 ● CC.2.1.HS.F.7 ● CC.2.2.HS.D.1 ● CC.2.2.HS.D.2 ● CC.2.2.HS.D.3 ● CC.2.2.HS.D.4 ● CC.2.2.HS.D.5 ● CC.2.2.HS.C.3
COMPETENCIES	**LEARNING TARGETS**
Patterns, Functions, & Multiple Representations ● I can identify, create, and evaluate functions using multiple representations.	● I can perform function operations. (K1MAB6M8) ● I can find the composition of two functions. (K1MAB6M9) ● I can find the inverse of a function.(K1MAB6M10)
Equations & Inequalities ● I can create and solve equations and inequalities that represent mathematical situations.	● I can solve an equation containing rational exponents and/or radicals. (K1MAB5M17)
Operations & Expressions	● I can simplify expressions containing rational exponents and/or radicals. (K1MAB4M8)

• I can generate equivalent expressions using operations and mathematical properties.	

SUBJECT: Algebra II	**GRADE: 9-12**
Unit 8: Rational Functions	**Time Frame: 17 days**
UNIT OVERVIEW	
In this unit students will simplify and perform operations with rational expressions, graph rational functions and solve rational equations, and use variation functions and rational models in real-life situations.	
LRG SKILLS AND DISPOSITIONS	**PA STANDARDS**
• Critical Thinking and Problem Solving 9-12: "Clue" Activity (S4C) • Collaboration and Teamwork 9-12: "Clue" Activity (S1C) • Resilience and Grit 9-12: "Clue" Activity (D4C)	• CC.2.1.HS.F.2 • CC.2.1.HS.F.4 • CC.2.1.HS.F.7 • CC.2.2.HS.D.1 • CC.2.2.HS.D.2 • CC.2.2.HS.D.6 • 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**
Operations & Expressions • I can generate equivalent expressions using operations and mathematical properties.	• I can simplify rational expressions. (K1MAB4M9) • I can multiply and divide rational expressions. (K1MAB4M10) • I can add and subtract rational expressions. (K1MAB4M11)

Equations & Inequalities ● I can create and solve equations and inequalities that represent mathematical situations.	● I can write an equation to model an inverse variation. (K1MAB5M18) ● I can solve a rational equation. (K1MAB5M19)
Patterns, Functions, & Multiple Representations ● I can identify, create, and evaluate functions using multiple representations.	● I can distinguish between direct and inverse variation functions. (K1MAB6M11)
Graphing ● I can create and interpret graphs as visual representations of the relationship between quantities.	● I can graph rational functions. (K1MAB7M7)

SUBJECT: Algebra II	GRADE: 9-12
Unit 11: Probability & Statistics	**Time Frame: 17 days**

UNIT OVERVIEW

In this unit students will count the number of ways an event can happen, calculate and use probabilities, use normal distributions, and find and use measures of central tendency to describe data sets.

LRG SKILLS AND DISPOSITIONS	PA STANDARDS
● Collaboration and Teamwork 9-12: Probability Project (S1C)	● CC.2.1.HS.F.4 ● CC.2.1.HS.F.5 ● CC.2.4.HS.B.1 ● CC.2.4.HS.B.2 ● CC.2.4.HS.B.3 ● CC.2.4.HS.B.6 ● CC.2.4.HS.B.7
COMPETENCIES	**LEARNING TARGETS**
Probability ● I can identify, create, and evaluate functions using multiple representations.	● I can use combinations, permutations, and the fundamental counting principle to solve problems. (K1MAB11M1) ● I can calculate the probability and odds for simple and compound events. (K1MAB11M2)
Measurement, Data, & Statistics ● I can collect, represent, analyze, and interpret data.	● I can use measures of central tendency. (K1MAB10M4)

SUBJECT: Algebra II	GRADE: 9-12
Unit 7: Exponential & Logarithmic Functions	**Time Frame: 8 days**

UNIT OVERVIEW

In this unit students will graph and solve exponential and logarithmic functions. Students will use the number e, define and use properties of logarithms, and solve exponential and logarithmic equations.

LRG SKILLS AND DISPOSITIONS	PA STANDARDS
	● CC.2.1.HS.F.4 ● CC.2.2.HS.C.3 ● CC.2.2.HS.C.5 ● CC.2.2.HS.D.1 ● CC.2.2.HS.D.2 ● 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
Operations & Expressions ● I can generate equivalent expressions using operations and mathematical properties.	● I can use the properties of logarithms to expand and or simplify logarithms. (K1MAB4M12)
Equations & Inequalities ● I can create and solve equations and inequalities that represent mathematical situations.	● I can write an exponential equation to model a real-life situation. (K1MAB5M20) ● I can write equations in exponential and logarithmic forms. (K1MAB5M21) ● I can solve exponential and logarithmic equations. (K1MAB5M22)