

<p>Grade, Subject: Algebra 1</p>	
<p>Strand (Unit): Unit 1: Algebraic Essentials</p>	
<p>Big Idea: Students will understand essential skills and content needed for Algebra 1</p>	
<p>PA Content Standards: 2.1 Numbers and Operations, 2.2 Algebraic Operations</p>	<p>PA Core Standards: CC.2.1.8.E.1 Distinguish between rational and irrational numbers using their properties. CC.2.1.HS.F.1 Apply and extend the properties of exponents to solve problems with rational exponents. CC.2.1.HS.F.2 Apply properties of rational and irrational numbers to solve real world or mathematical problems. CC.2.1.8.E.4 Estimate irrational numbers by comparing them to rational numbers. CC.2.2.6.B.1 Apply and extend previous understandings of arithmetic to algebraic expressions. CC.2.2.6.B.2 Understand the process of solving a one-variable equation or inequality and apply it to real-world and mathematical problems CC.2.2.7.B.1 Apply properties of operations to generate equivalent expressions. CC.2.2.8.B.1 Apply concepts of radicals and integer exponents to generate equivalent expressions. CC.2.2.HS.D.1 Interpret the structure of expressions to represent a quantity in terms of its context. CC.2.2.HS.D.2 Write expressions in equivalent forms to solve problems. CC.2.2.HS.D.8 Apply inverse operations to solve equations or formulas for a given variable. CC.2.2.HS.D.9 Use reasoning to solve equations and justify the solution method.</p> <p>Career Standards:</p> <ul style="list-style-type: none"> • 13.1.11.A: Relate careers to individual interests, abilities and aptitudes.

	<ul style="list-style-type: none"> ● 13.1.11.B: Analyze career options based on personal interests, abilities, aptitudes, achievements and goals. ● 13.1.11.F: Analyze the relationship between career choices and career preparation opportunities. ● 13.1.11.H: Review personal high school plan against current personal career goals and select postsecondary opportunities based upon personal career interests. ● 13.3.11.B: Evaluate team member roles to describe and illustrate active listening techniques.
<p><u>Essential Questions:</u></p> <ol style="list-style-type: none"> 1) What are the different types of numbers and how can you order them? 2) How do I evaluate expressions? 3) How do I simplify expressions using properties of exponents? 4) How do I simplify square roots? 5) How do I solve basic linear equations? 	<p><u>Understandings (SWKT...):</u></p> <ol style="list-style-type: none"> 1) What real, rational, irrational, whole, and integers are and how to compare numbers 2) Order of operations and substitution for evaluating expressions 3) Various properties of exponents (Power of a power/quotient of powers, product/quotient of powers, negative exponents, zero exponents) 4) Equivalence of forms of radicals 5) Properties of solving equations
<p><u>Vocabulary:</u></p> <p>Whole Integer Rational Irrational Real numbers Ascending Descending Power Rules Simplify Like Terms Distributive Property Evaluate Square root Radical Radicand GEM/DA/S Solve Equation Absolute Value</p>	<p><u>Skills (SWBAT...):</u></p> <ol style="list-style-type: none"> 1) a) Classify real, rational, irrational, whole, and integers b) Order real numbers 2) a) Evaluate smaller expressions using absolute value b) Evaluate larger expressions using order of operations (including substitution) 3) Simplify expressions using properties of exponents. 4) Simplify square roots using factor trees and/or perfect squares 5) a) Solve basic linear equations by performing the same operation to both sides of an equation. b) Solve absolute value equations.

<p>Assessments: Unit 1 Quizzes Unit 1 Test</p>	<p>Resources: Internet Teacher created resources</p>
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Elizabethtown Area School District Curriculum

Date Adopted:

<p>Grade, Subject: Algebra I</p>	
<p>Strand (Unit): Unit 2: Equations</p>	
<p>Big Idea: Students will understand lines, functions, systems of equations.</p>	
<p>PA Content Standards: 2.2 Algebraic Operations</p>	<p>PA Core Standards: CC.2.2.HS.D.7 Create and graph equations or inequalities to describe numbers or relationships. CC.2.2.HS.D.8 Apply inverse operations to solve equations or formulas for a given variable. CC.2.2.HS.D.10 Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically. CC.2.2.HS.C.2 Graph and analyze functions and use their properties to make connections between the different representations. CC.2.2.HS.C.3 Write functions or sequences that model relationships between two quantities. CC.2.2.HS.C.6 Interpret functions in terms of the situations they model. CC.2.2.7.B.3 Model and solve real world and mathematical problems by using and connecting numerical, algebraic, and/or graphical representations.</p> <p>Career Standards:</p> <ul style="list-style-type: none"> • 13.1.11.A: Relate careers to individual interests, abilities and aptitudes. • 13.1.11.B: Analyze career options based on personal interests,

	<p>abilities, aptitudes, achievements and goals.</p> <ul style="list-style-type: none"> • 13.1.11.F: Analyze the relationship between career choices and career preparation opportunities. • 13.1.11.H: Review personal high school plan against current personal career goals and select postsecondary opportunities based upon personal career interests. • 13.3.11.B: Evaluate team member roles to describe and illustrate active listening techniques.
<p><u>Essential Questions:</u></p> <ol style="list-style-type: none"> 1). What is a relation and characteristics about them? How do you know if a relation is a function? 2). What is the slope and how can you interpret it in different forms? 3). How do you find and represent the equations of lines? 4). How do you solve systems of equations? 	<p><u>Understandings (SWKT...):</u></p> <ol style="list-style-type: none"> 1). Relations, Functions, domain and range 2). Slope and how it relates to the real world. 3). Point-slope form, Standard form, Slope-intercept form, graphing lines, interpreting real world situations. 4). Methods of solving systems of equations and how it relates to the real world.
<p><u>Vocabulary:</u></p> <p>Relations Domain Range Slope Rise/Run Graph Y-intercept x-intercept Slope-intercept form Point-slope form Standard Form Parallel Perpendicular Systems System of Equations Elimination Substitution Graphing Solution No Solution One Solution</p>	<p><u>Skills (SWBAT...):</u></p> <ol style="list-style-type: none"> 1. a). Find the domain/range of a relation and determine if the relation is a function. b). Find the domain and range of continuous graphs using compound inequalities. c). Find the domain and range of a relation (ordered pairs, table, graphs) and determine whether a relation is a function. 2. a). Classify slopes of lines and calculate the slope of a line given a graph, table, or two points. b). Calculate the rate of change given situations and interpret it in context. c). Calculate the rate of change given tables and graphs and interpret it in context. 3. a). graph linear equations in slope intercept form or using intercept. b). Graph linear equations c). Write equations in point-slope form, slope-intercept form, and standard form given different criteria. d). Write equations of parallel and perpendicular lines given different criteria in slope-intercept form and point-slope form. e). Write a linear equation given a situation and use it to solve problems. f). Create tables, graphs, and equations of linear equations given only one of those representations. 4. a). Determine whether an ordered pair is a solution to a system of equations and find the solution to a system given a graph. b). Solve systems of equations by graphing. c). Solve systems of equations by substitution. d). Solve systems of equations by elimination. e). Write, solve, and interpret the solution to a system of equations given a word problem.

Infinitely Many Solutions	
<p><u>Assessments:</u> Unit 2 Test Unit 2 Quizzes</p> <p><u>Authentic Assessments:</u></p> <ul style="list-style-type: none"> ● Cup Stacking Activity (models linear equations) ● Road Trip Project (models linear equations) ● Noah’s Ark Problem (Systems) 	<p><u>Resources:</u> Internet Teacher created resources</p>

Elizabethtown Area School District Curriculum

Date Adopted:

<u>Grade, Subject:</u> Algebra 1	
<u>Strand (Unit):</u> Unit 3: Inequalities	
<u>Big Idea:</u> Students will understand inequalities and how to represent solutions to various types of inequalities on various types of graphs.	
<p><u>PA Content Standards:</u> 2.2 Algebraic Concepts</p>	<p><u>PA Core Standards:</u> CC.2.2.7.B.3 Model and solve real world and mathematical problems by using and connecting numerical, algebraic, and/or graphical representations. CC.2.2.HS.D.2 Write expressions in equivalent forms to solve problems. CC.2.2.HS.D.7 Create and graph equations or inequalities to describe numbers or relationships CC.2.2.HS.D.8 Apply inverse operations to solve equations or formulas for a given variable. CC.2.2.HS.D.10 Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.</p> <p><u>Career Standards:</u></p> <ul style="list-style-type: none"> ● 13.1.11.A: Relate careers to individual interests, abilities and aptitudes.

- **13.1.11.B: Analyze career options based on personal interests, abilities, aptitudes, achievements and goals.**
- **13.1.11.F: Analyze the relationship between career choices and career preparation opportunities.**
- **13.1.11.H: Review personal high school plan against current personal career goals and select postsecondary opportunities based upon personal career interests.**
- **13.3.11.B: Evaluate team member roles to describe and illustrate active listening techniques.**

Essential Questions:

- 1) How do I solve and represent solutions to inequalities (including real world scenarios)?
- 2) How to I solve and represent solutions to compound inequalities?
- 3) How do I represent solutions to linear inequalities (including real world situations)?
- 4) How do I represent solutions to systems of linear inequalities (including real world scenarios)?

Understandings (SWKT...):

- 1) Methods of solving inequalities and how the solutions, an infinite set, can be represented graphically; knowing how to tell whether a number is a solution graphically or algebraically; how inequalities relate to real world situations.
- 2) Methods of solving compound inequalities and how the solutions, an infinite set, can be represented graphically; knowing how to tell whether a number is a solution graphically or algebraically;
- 3) Representing solutions to linear inequalities on an x-y plane and figuring out how to tell whether a point is a solution graphically and algebraically; how linear inequalities relate to real world situations.
- 4) Representing solutions to systems of linear inequalities on an x-y plane and figuring out how to tell whether a point is a solution graphically and algebraically; how systems of linear inequalities relate to real world situations.

Vocabulary:

- Greater than >
- Less than <
- At least
- At most
- No more than
- No fewer than
- Compound inequalities
- Linear Inequalities
- Systems of linear inequalities

Skills (SWBAT...):

- 1) a) Solve and graph inequalities.
b) Set up and solve inequalities from situations
- 2) a) Solve and graph compound inequalities.
b) Solve and graph absolute value inequalities.
- 3) a) Graph linear inequalities and determine whether a given point is a solution.
b) Translate a real world situation into an inequality, graph it, and answer questions about the situation.
- 4) a) Graph linear inequalities and determine whether a given point is a solution.
b) Translate a real world situation into an inequality, graph it, and answer questions about the situation.

<p><u>Assessments:</u> Unit 3 Quizzes Unit 3 Test</p> <p><u>Authentic Assessments:</u></p> <ul style="list-style-type: none"> • 	<p><u>Resources:</u> Internet Teacher created resources</p>
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Elizabethtown Area School District Curriculum

Date Adopted:

<p><u>Grade, Subject:</u> Algebra I</p>	
<p><u>Strand (Unit):</u> Unit 4: Polynomials</p>	
<p><u>Big Idea:</u> Students will understand polynomials, rational expressions and how to classify them.</p>	
<p><u>PA Content Standards:</u> 2.2 Algebraic Concepts</p>	<p><u>PA Core Standards:</u> CC.2.2.HS.D.3 Extend the knowledge of arithmetic operations and apply to polynomials. CC.2.2.HS.D.4 Understand the relationship between zeros and factors of polynomials to make generalizations about functions and their graphs. CC.2.2.HS.D.8 Apply inverse operations to solve equations or formulas for a given variable.</p> <p><u>Career Standards:</u></p> <ul style="list-style-type: none"> • 13.1.11.A: Relate careers to individual interests, abilities and aptitudes. • 13.1.11.B: Analyze career options based on personal interests, abilities, aptitudes, achievements and goals. • 13.1.11.F: Analyze the relationship between career choices and career

	<p>preparation opportunities.</p> <ul style="list-style-type: none"> • 13.1.11.H: Review personal high school plan against current personal career goals and select postsecondary opportunities based upon personal career interests. • 13.3.11.B: Evaluate team member roles to describe and illustrate active listening techniques.
<p>Essential Questions:</p> <ol style="list-style-type: none"> 1). How do I classify polynomials? 2). How do I use operations with polynomials? 3). How do you find the GCF and LCM? 4). How do I factor polynomials? 5). How do I solve higher degree equations by factoring? 6). How do I simplify radical expressions? 	<p>Understandings (SWKT...):</p> <ol style="list-style-type: none"> 1). Classify polynomials by degree, number of terms 2). Multiply, add, and subtract polynomials and how it relates to geometry 3). Finding GCF and LCM of numbers and polynomial expressions. 4). How to factor second degree trinomials, binomials, and factor using greatest common factor 5). Using the methods of factoring to solve higher degree equations. 6). Use factoring and properties of division to simplify radical expressions
<p>Vocabulary:</p> <ul style="list-style-type: none"> Degree Monomial Binomial Trinomial Leading Coefficient Box Method Area Perimeter LCM GCF Factoring Zero Product Property Difference of squares Factor Completely Rational Expressions Consecutive Integers 	<p>Skills (SWBAT...):</p> <ol style="list-style-type: none"> 1) a). Write polynomials in standard form and classify a polynomial by degree and number of terms. 2) a). Add and subtract polynomials. <ol style="list-style-type: none"> b). Multiply polynomials and use the answers to find missing pieces in multiplication and addition problems. c). Simplify polynomial expressions involving multiple polynomial operations. d). find the area and perimeter of rectangles with polynomial side lengths and apply to border problems. 3) a). Find the least common multiple of two or three monomials. <ol style="list-style-type: none"> b). Find the greatest common factor of two or three monomials. 4) a). Factoring 2nd degree trinomials where $a=1$, differences of squares, and GCF. <ol style="list-style-type: none"> b). Factoring completely. 5) a). Solve higher degree equations by factoring and using the ZPP. 6) a). Simplify radical expressions.

<p><u>Assessments:</u> Unit 4 Test Unit 4 Quizzes</p> <p><u>Authentic Assessments:</u></p> <ul style="list-style-type: none"> • Area, Perimeter, and Border problems in context (Unit 4) 	<p><u>Resources:</u> Internet Teacher created resources</p>
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Elizabethtown Area School District Curriculum

Date Adopted:

<p><u>Grade, Subject:</u> Algebra 1</p>	
<p><u>Strand (Unit):</u> Unit 5: Data Analysis and Probability</p>	
<p><u>Big Idea:</u> Students will be able to critically analyze data given in various forms, and find simple and compound probabilities.</p>	
<p><u>PA Content Standards:</u> 2.4 Measurement, Data, and Probability</p>	<p><u>PA Core Standards:</u> CC.2.4.6.B.1 Demonstrate an understanding of statistical variability by displaying, analyzing, and summarizing distributions. CC.2.4.7.B.1 Draw inferences about populations based on random sampling concepts. CC.2.4.7.B.2 Draw informal comparative inferences about two populations. CC.2.4.8.B.1 Analyze and/or interpret bivariate data displayed in multiple representations. CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable CC.2.4.HS.B.3 Analyze linear models to make interpretations based on the data. CC.2.4.HS.B.7 Apply the rules of probability to compute probabilities of compound events in a uniform probability model.</p>

	<p><u>Career Standards:</u></p> <ul style="list-style-type: none"> ● 13.1.11.A: Relate careers to individual interests, abilities and aptitudes. ● 13.1.11.B: Analyze career options based on personal interests, abilities, aptitudes, achievements and goals. ● 13.1.11.F: Analyze the relationship between career choices and career preparation opportunities. ● 13.1.11.H: Review personal high school plan against current personal career goals and select postsecondary opportunities based upon personal career interests. ● 13.3.11.B: Evaluate team member roles to describe and illustrate active listening techniques.
<p><u>Essential Questions:</u></p> <p>1) How do I find and analyze data using measures of central tendency given data or a graph?</p> <p>2) How do I find and analyze data using measures of dispersion given data or a graph?</p> <p>3) How can I make predictions using data?</p> <p>4) How do I find simple and compound probabilities?</p>	<p><u>Understandings (SWKT...):</u></p> <p>1) means, medians, and modes are found in various graphs and are all useful for finding an average data value.</p> <p>2) quartiles and ranges are found in various graphs and are useful for analyzing the variability of the data.</p> <p>3) known data can be used to predict unknown information.</p> <p>4) you can theoretically predict the likelihood of events given information about a situation</p>
<p><u>Vocabulary:</u></p> <p>Mean</p> <p>Median</p> <p>Mode</p> <p>Range</p> <p>Interquartile range/IQR</p> <p>Lower Quartile/First Quartile/Q1</p> <p>Upper Quartile/Third Quartile/Q3</p> <p>Box and Whisker Plot</p> <p>Stem and leaf plot</p> <p>Scatter plot</p> <p>Correlation</p> <p>Line of fit</p> <p>Predictions</p> <p>Probability</p> <p>Compound probability</p> <p>Mutually exclusive</p>	<p><u>Skills (SWBAT...):</u></p> <p>1) a) find the mean, median, and mode of a set of data. b) find a missing data point given the rest of the data and the mean c) find the mean, median, and mode given various graphs (box-and-whisker plots, stem-and-leaf plots, bar graphs, circle graph, line plots, etc)</p> <p>2) a) find the quartiles, range, and interquartile range of a set of data. b) find the quartiles, range, and interquartile range given various graphs (box-and-whisker plots, stem-and-leaf plots, bar graphs, circle graph, line plots, etc)</p> <p>3) a) find the correlation of a scatter plot and interpret its meaning b) create a line of fit, find its equation, and use it to make a prediction c) analyze a sample/subset of data and use it to make a prediction.</p> <p>4) a) find basic and complement probabilities in fractions, decimals, and percents. b) find compound probability of mutually exclusive, inclusive, independent, and dependent probabilities.</p>

Inclusive Dependent Independent	
<u>Assessments:</u> Unit 5 Test Unit 5 Quizzes <u>Authentic Assessments:</u> <ul style="list-style-type: none">● Unit 5 is all data analysis, which is authentic data<ul style="list-style-type: none">○ Personal data collected for single variable data or scatter plots, classroom practices, student information○ Showing probability through activities with cards, dice, coins, candy, etc.	<u>Resources:</u> Internet Teacher created resources