



ALGEBRA I

CURRICULUM

CARLISLE AREA SCHOOL DISTRICT

DATE OF BOARD APPROVAL: November 16, 2023

COURSE OVERVIEW

Title:	Algebra I
Grade Level:	Grades 7, 8, 9, or 10
Level:	High School - Option II or Middle Level
Length:	Full Year
Duration:	85 Minute Periods (HS) or 48/60 minutes (MS)
Frequency:	90 Days (HS) or 180 Days (MS)
Pre-Requisites:	Accelerated 6 th Grade Math, Pre-Algebra or Math 8
Credit:	1 Credit
Description:	Algebra I covers the following topics: properties of real numbers; solving, graphing and writing linear equations and functions; solving and graphing inequalities; solving and graphing systems of equations and inequalities; data analysis and probability; polynomial operations, factoring, and rational expressions. At the conclusion of this course, students will complete the Keystone Algebra I state assessment.

COURSE TIMELINE

UNIT	TITLE	KEY CONCEPT	DURATION (DAYS)
1	Properties of Real Numbers	<ul style="list-style-type: none"> • Order of operations, evaluating expressions • Distributive property, combining like terms • Properties of Algebra, irrational vs. rational numbers • Simplifying radicals, multiplying radicals, dividing radicals (simple rationalization) 	10 Days (HS) 20 Days (MS)
2	Solving Linear Equations	<ul style="list-style-type: none"> • Solving 1- and 2-step equations • Solving multi-step equations and variables on both sides, special cases • Solving for a given variable (formulas and solving for Y) • Percent and proportion equations 	8 Days (HS) 17 Days (MS)
3	Graphing Linear Equations and Functions	<ul style="list-style-type: none"> • Review of coordinate plane • Graphing using a table • Graphing using intercepts • Slope and rate of change, horizontal and vertical lines • Graphing using slope-intercept form and applications 	10 Days (HS) 20 Days (MS)
4	Writing Linear Equations	<ul style="list-style-type: none"> • Writing equations in slope-intercept form and point-slope form, applications • Writing equations of parallel and perpendicular lines • Writing equations in standard form and applications • Line of best fit/making predictions • Intro to functions, vertical line test, domain and range 	9 Days (HS) 18 Days (MS)
5	Systems of Equations	<ul style="list-style-type: none"> • Solving systems of equations by graphing (with special cases) • Solving systems of equations by substitution (with special cases) • Solving systems of equations by elimination (with special cases) • Applications of systems 	10 Days (HS) 20 Days (MS)

6	Inequalities	<ul style="list-style-type: none"> • Solving 1-, 2-step, and multi-step inequalities • Solving compound inequalities • Solving absolute value equations and inequalities • Graphing two-variable inequalities, horizontal and vertical inequalities, applications • Graphing systems of inequalities, applications 	8 Days (HS) 15 Days (MS)
7	Operations with Polynomials	<ul style="list-style-type: none"> • Properties of exponents, LCM and GCF of monomials • Introduction to polynomials (terminology), adding and subtracting polynomials, multiplying polynomials • Factoring polynomials, special cases and GCF with factoring • Solving quadratic equations using factoring • Dividing by a monomial and simplifying rational expressions, finding excluded values 	13 Days (HS) 25 Days (MS)
8	Statistics and Probability	<ul style="list-style-type: none"> • Measures of central tendency • Stem and leaf, box and whisker plots • Circle, bar graphs, line plots, scatterplots, histograms • Probability (outcomes/events) • Independent and dependent events, disjoint and overlapping events 	7 Days (HS) 15 Days (MS)

DISCIPLINARY SKILLS and PRACTICES

DISCIPLINARY PRACTICE	DESCRIPTION
Make sense of problems and persevere in solving them.	Make conjectures about how real-world application problems may be solved, monitor progress toward a solution, and adjust the problem-solving plan if necessary.
Reason abstractly and quantitatively.	Estimate and check answers to problems and determine the reasonableness of results.
Construct viable arguments and critique the reasoning of others.	Justify and communicate conclusions effectively and respond to arguments logically.
Model with mathematics.	Use mathematics to model real world problems, interpreting the mathematical results in the context of the situation.
Use appropriate tools strategically.	Consider the tools available in solving problems and understand the insights gained by using the tool as well as the limitation of the tool.
Attend to precision.	Calculate accurately and efficiently within the context of problems and communicate results precisely.
Look for and make use of structure.	Examine problems to discern a pattern or structure and utilize this finding in similar problems.
Look for and express regularity in repeated reasoning.	Notice repeated calculations or processes and generalize from those insights in order to solve problems.

UNIT 1

Unit Title	Properties of Real Numbers		
Unit Description	Students will review number sets and be able to distinguish between rational and irrational numbers. Students will review and use the properties of algebra and Order of Operations to justify the steps in evaluating an algebraic expression. Students will be introduced to the properties of simplifying a radical expression (limited to square root) as well as how to multiply and divide simple radical expressions. Students will review distributive property and combining like terms to get ready for equations in the next unit.		
Unit Assessment	Common Unit Assessment		
Essential Question	Learning Goals	Content and Vocabulary	Standards
How do we use the properties of algebra to simplify expressions? How can we distinguish between rational and irrational numbers? 3 Days (HS) 6 Days (MS)	<input type="checkbox"/> Identify the properties of real numbers given an expression or equation. <input type="checkbox"/> Classify rational and irrational numbers.	Vocabulary: associative, commutative, distributive, identity, inverse, properties of equality, real numbers, rational numbers, irrational numbers, integers Content: -Justify steps of simplifying an expression using properties. -Distinguish between rational and irrational numbers.	CC.2.1.8.E.1 Distinguish between rational and irrational numbers using their properties. 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.

<p>Why is order of operations important? 2 Days (HS) 4 Days (MS)</p>	<p><input type="checkbox"/> Simplify expressions using order of operations. <input type="checkbox"/> Identify errors in another person's work that involves order of operations.</p>	<p>Vocabulary: PEMDAS (order of operations)</p>	<p>A1.1.1.3.1 Simplify/evaluate expressions involving properties/laws of exponents, roots, and/or absolute values to solve problems.</p>
<p>How can we use the distributive property and combining like terms to simplify expressions? 2 Days (HS) 4 Days (MS)</p>	<p><input type="checkbox"/> Use the distributive property to expand an algebraic expression. <input type="checkbox"/> Combine like terms to simplify an algebraic expression.</p>	<p>Vocabulary: distributive property, combining like terms</p> <p>Content: Distinguish between like and unlike terms.</p>	<p>CC.2.2.HS.D.2 Write expressions in equivalent forms to solve problems.</p>
<p>How can we determine if a radical expression is simplified? How do we multiply and divide radical expressions? 3 Days (HS) 6 Days (MS)</p>	<p><input type="checkbox"/> Identify the parts of a radical expression. <input type="checkbox"/> Simplify a radical (square root) expression. <input type="checkbox"/> Determine if a radical is fully simplified.</p>	<p>Vocabulary: radicand, product, quotient properties of radicals</p> <p>Content: -There are no perfect square factors (other than 1) allowed in the radicand. -There are no radicals allowed in the denominator.</p>	<p>A1.1.1.1 Represent and/or use numbers in equivalent forms (e.g., integers, fractions, decimals, percents, square roots, and exponents).</p>

UNIT 2

Unit Title	Solving Linear Equations		
Unit Description	Students will be able to solve 1- and 2- step linear equations in one or two variables. Students will solve multi-step equations with variables on both sides. Students will explore equations with special cases. Students will solve formulas for a given variable. Students will explore equations involving percent and proportion equations.		
Unit Assessment	Common Unit Assessment		
Essential Question	Learning Goals	Content and Vocabulary	Standards
<p>How do we solve 1- and 2- step equations?</p> <p>How do we solve multi-step equations with variables on both sides?</p> <p>3 Days (HS) 6 Days (MS)</p>	<input type="checkbox"/> Solve 1-step equations. <input type="checkbox"/> Solve 2-step equations. <input type="checkbox"/> Solve multi-step equations.	<p>Vocabulary: inverse operations</p> <p>Content: -Recognize the inverse operations to solve an equation. -Justify steps of an equation using properties of algebra.</p>	<p>CC.2.2.HS.D.8 Apply inverse operations to solve equations or formulas for a given variable.</p> <p>CC.2.2.HS.D.9 Use reasoning to solve equations and justify the solution method.</p> <p>CC.2.2.8.B.3 Analyze and solve linear equations and pairs of simultaneous linear equations.</p>

<p>What does it mean when we refer to special cases of equations?</p> <p>How do we solve a formula for a specific variable?</p> <p>3 Days (HS) 6 Days (MS)</p>	<input type="checkbox"/> Solve equations with special cases. <input type="checkbox"/> Solve formulas for a specific variable.	<p>Vocabulary: no solution, identity, formula, solve for a given variable</p> <p>Content: -Recognize when an equation has no solution or is an identity. -Use inverse operations to solve for a specific variable.</p>	<p>A1.1.2.1.3 Interpret solutions to problems in the context of the problem situation. Note: Linear equations only.</p> <p>CC.2.2.HS.D.8 Apply inverse operations to solve equations or formulas for a given variable.</p>
<p>How do we solve percent and proportion equations?</p> <p>2 Days (HS) 5 Days (MS)</p>	<input type="checkbox"/> Solve percent equations. <input type="checkbox"/> Solve proportion equations.	<p>Vocabulary: percent equation, “is”, “of”, proportion, cross-multiply</p> <p>Content: -Percent equations can be written as a one-step equation. -A proportion is when one fraction is set equal to another fraction and can be solved by cross-multiplying.</p>	<p>CC.2.2.8.B.3 Analyze and solve linear equations and pairs of simultaneous linear equations.</p>

UNIT 3

Unit Title	Graphing Linear Equations and Functions		
Unit Description	Students will review how to plot points in the coordinate plane. Students will learn how to graph lines using various methods (using a table, using intercepts, using slope-intercept form) and to calculate slope of a line. Students will learn about functions to include using the vertical line test to determine if a relation is a function and determining domain and range.		
Unit Assessment	Common Unit Assessment		
Essential Question	Learning Goals	Content and Vocabulary	Standards
How do you graph a line using a table? 2 Days (HS) 4 Days (MS)	<input type="checkbox"/> Identify the x-axis and y-axis. <input type="checkbox"/> Graph an ordered pair on the coordinate plane. <input type="checkbox"/> Generate a table of values by substituting x-values into an equation to determine y-values. <input type="checkbox"/> Use the table of values to plot points to graph a line.	Vocabulary: coordinate plane, x-axis, y-axis, origin, ordered pair, x-value, y-value, x-coordinate, y-coordinate, equation in two variables (example: $y = 3x + 4$), Content: -A table of values is a method of graphing a line that can be extended for any function.	CC.2.2.HS.D.7 Create and graph equations or inequalities to describe numbers or relationships. A1.1.2.1 Write, solve, and/or graph linear equations using various methods.

<p>How do you graph a line using intercepts?</p> <p>2 Days (HS) 4 Days (MS)</p>	<p><input type="checkbox"/> Calculate the x-intercept of a line.</p> <p><input type="checkbox"/> Calculate the y-intercept of a line.</p> <p><input type="checkbox"/> Graph the x-intercept and y-intercept to graph a line.</p>	<p>Vocabulary: x-intercept, y-intercept</p> <p>Content: -An x- or y-intercept is found when one of the coordinates is zero. -Even though there are limitations to finding intercepts graphically, they can always be found algebraically (if they exist).</p>	<p>CC.2.2.HS.D.7 Create and graph equations or inequalities to describe numbers or relationships.</p> <p>A1.1.2.1 Write, solve, and/or graph linear equations using various methods.</p>
<p>How do you calculate the slope of a line?</p> <p>2 Days (HS) 4 Days (MS)</p>	<p><input type="checkbox"/> Identify the different types of slopes (positive, negative, zero, undefined).</p> <p><input type="checkbox"/> Calculate slope of a line using rise over run.</p>	<p>Vocabulary: slope, positive slope, negative slope, horizontal line, vertical line</p> <p>Content: -Slope can be found using two points on a line, a graph, or a table of values. -Recognize the difference between zero and undefined lines.</p>	<p>A1.1.2.1 Write, solve, and/or graph linear equations using various methods.</p>

<p>How do you determine if a relation is a function, and identify its domain and range?</p> <p>2 Days (HS) 4 Days (MS)</p>	<p><input type="checkbox"/> Determine if a relation is a function using the vertical line test.</p> <p><input type="checkbox"/> Identify the domain and range of a function.</p>	<p>Vocabulary: relation, function, vertical line test, domain, range</p> <p>Content: -All functions are relations but not relations are functions. -The vertical line test can be used to determine if a graph is a function or not. -The domain of a function represents all the possible x-values; the range of a function represents all the possible y-values.</p>	<p>A1.2.1.1.2 Determine whether a relation is a function, given a set of points or a graph.</p> <p>A1.2.1.1.3 Identify the domain or range of a relation (may be presented as ordered pairs, a graph, or a table).</p>
<p>How can you use the different forms of a linear equation to model real-world situations?</p> <p>2 Days (HS) 4 Days (MS)</p>	<p><input type="checkbox"/> Analyze the problem to determine the form of the equation that it models.</p> <p><input type="checkbox"/> Interpret the solution in the context of the real-life application.</p>	<p>Content: -Standard form equations model real-life applications where x- and y-intercepts are involved. -Slope-intercept form equations model real-life applications where rate of change is involved.</p>	<p>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>

UNIT 4

Unit Title	Writing Linear Equations		
Unit Description	Students will learn multiple forms of a linear equation and compare them. Students will write equations of lines given different information about the line and will write equations for lines that are parallel or perpendicular. Students will write an equation for a line of best fit and use it to make predictions for real-world situations.		
Unit Assessment	Common Unit Assessment		
Essential Question	Learning Goals	Content and Vocabulary	Standards
How do you write the equation of a line given two points on the line? 3 Days (HS) 6 Days (MS)	<input type="checkbox"/> Write the equation of a line in slope-intercept form given its slope and y-intercept, given two points, given a slope and a point, or given a graph. <input type="checkbox"/> Use an equation of a line to solve application problems.	Vocabulary: slope-intercept form Content: -An equation can be written in slope-intercept form given the slope and a point on the line, or two points on the line.	CC.2.2.HS.D.10 Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.
When is point-slope form or standard form better to use than slope-intercept form? 3 Days (HS) 6 Days (MS)	<input type="checkbox"/> Convert from one form of a line to another. <input type="checkbox"/> Write an equation for a line that is parallel or perpendicular to a given equation's line.	Vocabulary: standard form, point-slope form, parallel, perpendicular Content: -Linear equations can be converted between forms. -Recognize if two lines are parallel, perpendicular, or neither.	CC.2.2.HS.C.2 Graph and analyze functions and use their properties to make connections between the different representations.

<p>How can a line of best fit equation help us model a real-life situation and make predictions?</p> <p>3 Days (HS) 6 Days (MS)</p>	<p><input type="checkbox"/> Understand positive, negative, and no correlation.</p> <p><input type="checkbox"/> Develop an equation for a line of best fit given a scatterplot or set of data.</p> <p><input type="checkbox"/> Use a line of best fit to make predictions.</p>	<p>Vocabulary: correlation, line of best fit, scatterplot</p> <p>Content: -Recognize the type of correlation a graph or situation has. -A line of best fit can be used to make predictions within, and outside, a given set of data.</p>	<p>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>
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UNIT 5

Unit Title	Systems of Equations		
Unit Description	Students will solve systems of equations by graphing, substitution, and elimination, and compare the methods. Students will use a system of equations to model real-world problems and solve applications. Students will learn that some systems have no solution, and some have infinitely many solutions, and some have one solution.		
Unit Assessment	Common Unit Assessment		
Essential Question	Learning Goals	Content and Vocabulary	Standards
How does solving a system of equations by graphing compare to solving a system by using substitution? 4 Days (HS) 8 Days (MS)	<input type="checkbox"/> Solve a system of equations by graphing. <input type="checkbox"/> Solve a system of equations by substitution. <input type="checkbox"/> Determine whether a system has one, none or infinite solutions.	Vocabulary: system of equations, point of intersection, infinite solutions, substitution method Content: -The number of points of intersections on a graph is equivalent to the number of solutions to the system. -Substitution is best used when at least one equation is solved for a variable.	CC.2.2.HS.D.10 Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically. A1.1.2.1 Write, solve, and/or graph linear equations using various methods.

<p>When is solving a system of equations by elimination preferred over solving by substitution or graphing?</p> <p>3 Days (HS) 6 Days (MS)</p>	<p><input type="checkbox"/> Solve a system of equations by elimination by addition.</p> <p><input type="checkbox"/> Determine whether a system of equations solved by elimination has one, none, or infinite solutions.</p> <p><input type="checkbox"/> Determine when one method of solving a system is more efficient than other methods.</p>	<p>Vocabulary: elimination by addition, elimination by multiplication</p> <p>Content: -The goal in elimination is to create opposites in one variable. -You can multiply one or both equations by a specific factor to create opposites in one variable when solving by elimination by multiplication.</p>	<p>CC.2.2.HS.D.10 Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.</p> <p>A1.1.2.1 Write, solve, and/or graph linear equations using various methods.</p>
<p>How can a system of equations be used to model real-world problems?</p> <p>3 Days (HS) 6 Days (MS)</p>	<p><input type="checkbox"/> Write a system of equations to model an application problem.</p> <p><input type="checkbox"/> Interpret the solution to a system of equations that models a real-world problem.</p>	<p>Content: -Determine if an equation to a system can be set up in standard form, slope-intercept form, or another form.</p>	<p>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>

UNIT 6

Unit Title	Inequalities		
Unit Description	Students will solve and graph one- and two-variable inequalities. Students will determine if a value or ordered pair is a solution to an inequality in one or two variables. Students will analyze solutions to inequalities and systems of inequalities. Students will solve and interpret compound inequalities, absolute value equations and inequalities.		
Unit Assessment	Common Unit Assessment		
Essential Question	Learning Goals	Content and Vocabulary	Standards
How are solving one-variable inequalities like solving equations? 2 Days (HS) 3 Days (MS)	<input type="checkbox"/> Determine if a value is a solution to an inequality. <input type="checkbox"/> Solve an inequality containing one variable and graph on a number line. <input type="checkbox"/> Recognize when to flip the inequality sign when solving an inequality. <input type="checkbox"/> Recognize a phrase describing an inequality with the appropriate inequality sign. <input type="checkbox"/> Interpret solutions of applications involving one-variable inequalities.	Vocabulary: inequality, open circle, closed circle Content: -The goal in solving a one-variable inequality is to isolate the variable. -The inequality sign must be flipped when multiplying or dividing by a negative number.	A1.1.3.1.1 Write or solve compound inequalities and/or graph their solution sets on a number line (may include absolute value inequalities).

<p>How do you know which side to shade when graphing a two-variable inequality?</p> <p>What does a solution of a two-variable inequality or system of two-variable inequalities look like?</p> <p>2 Days (HS) 4 Days (MS)</p>	<p><input type="checkbox"/> Determine if the boundary line is solid or dotted.</p> <p><input type="checkbox"/> Determine which side of the boundary line gets shaded.</p> <p><input type="checkbox"/> Determine if an ordered pair is a solution to a two-variable inequality or system of two-variable inequalities.</p>	<p>Vocabulary: half-plane, corresponding equation, boundary line</p> <p>Content: -An “equal to” sign will yield a solid boundary line when graphing. -A test point not on the line can be used to determine which side is shaded. -A solution to the inequality or system of inequalities is an ordered pair that makes all inequalities true.</p>	<p>CC.2.2.HS.D.7 Create and graph equations or inequalities to describe numbers or relationships.</p> <p>CC.2.2.HS.D.10 Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.</p>
<p>What must be true with solutions for “and” statements versus “or” statements?</p> <p>2 Days (HS) 4 Days (MS)</p>	<p><input type="checkbox"/> Recognize how “and” and “or” compound inequalities are graphed on a number line.</p> <p><input type="checkbox"/> Rewrite a two-statement “and” compound inequality into one statement (or vice versa).</p> <p><input type="checkbox"/> Determine if a value is a solution to an “and” or “or” compound inequality.</p> <p><input type="checkbox"/> Write a compound inequality given a real-life application.</p>	<p>Vocabulary: compound inequality, “and”, “or”</p> <p>Content: -All values that are solutions to an “and” compound inequality must be true under both conditions. -All values that are solutions to an “or” compound inequality must be true for one or the other condition.</p>	<p>A1.1.3.1.1 Write or solve compound inequalities and/or graph their solution sets on a number line (may include absolute value inequalities).</p>

<p>How can you determine if an absolute value inequality represents an “and” or “or” compound inequality? 2 Days (HS) 4 Days (MS)</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Solve an absolute value equation. <input type="checkbox"/> Solve an absolute value inequality. <input type="checkbox"/> Recognize if the absolute value inequality becomes an “and” or “or” compound inequality. <input type="checkbox"/> Write an absolute value equation or inequality given a real-life situation. 	<p>Vocabulary: absolute value equation, absolute value inequality</p> <p>Content: -An absolute value equation usually has two solutions. -An absolute value inequality will turn into an “and” or “or” compound inequality.</p>	<p>A1.1.3.1.1 Write or solve compound inequalities and/or graph their solution sets on a number line (may include absolute value inequalities).</p>
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UNIT 7

Unit Title	Operations with Polynomials		
Unit Description	Students will learn the properties of exponents and use them to simplify polynomial expressions. In addition, they will categorize, classify, add, subtract, multiply, and polynomial expressions.		
Unit Assessment	Common Unit Assessment		
Essential Question	Learning Goals	Content and Vocabulary	Standards
How do the properties of exponents help us simplify and evaluate exponential expressions? 4 Days (HS) 7 Days (MS)	<input type="checkbox"/> Understand when to add, multiply, distribute, or subtract exponents to simplify an exponential expression. <input type="checkbox"/> Rewrite an expression without negative exponents. <input type="checkbox"/> Evaluate expressions that contain an exponent of zero or one.	Vocabulary: base, exponent, reciprocal Content: -Multiplication properties of exponents are used to simplify exponential expressions (product of powers, power of product, power of a power). -Division properties of exponents are used to simplify exponential expressions (quotient of powers, powers of quotient).	CC.2.2.8.B.1 Apply concepts of radicals and integer exponents to generate equivalent expressions. A1.1.1.3.1 Simplify/evaluate expressions involving properties/laws of exponents, roots, and/or absolute values to solve problems. Note: Exponents should be integers from -10 to 10.

<p>How is the process different for adding and subtracting polynomials different than multiplying polynomials?</p> <p>2 Days (HS) 4 Days (MS)</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Categorize polynomials by degree and number of terms. <input type="checkbox"/> Evaluate polynomials with addition and subtraction. <input type="checkbox"/> Evaluate polynomials with multiplication. <input type="checkbox"/> Apply polynomial operations to real-life applications. 	<p>Vocabulary: polynomials, monomials, binomials, trinomials, degree</p> <p>Content: -Polynomials can be classified by degree and number of terms using standard form. -Polynomials are simplified by combining like terms when adding and subtracting. -Polynomials are simplified using the distributive property when multiplying.</p>	<p>CC.2.2.HS.D.2 Write expressions in equivalent forms to solve problems.</p> <p>CC.2.2.HS.D.3 Extend the knowledge of arithmetic operations and apply polynomials.</p> <p>A1.1.1.5.1 Add, subtract, and/or multiply polynomial expressions (express answers in simplest form). Note: Nothing larger than a binomial multiplied by a trinomial.</p> <p>CC.2.2.HS.D.5 Use polynomial identities to solve problems.</p>
<p>How do we solve factor trinomials including special cases?</p> <p>5 Days (HS) 10 Days (MS)</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Identify the greatest common factor (GCF) and least common multiple (LCM) of whole numbers and monomials. <input type="checkbox"/> Factor trinomials with a lead coefficient of one. <input type="checkbox"/> Factor polynomials that have a GCF (numerical and/or variable). <input type="checkbox"/> Factor polynomials that have a special factoring pattern. <input type="checkbox"/> Solve polynomial equations using the zero-product property. <input type="checkbox"/> Set up expressions and/or solve equations involving factoring to model a real-life situation. 	<p>Vocabulary: greatest common factor (GCF), least common multiple (LCM), factored form</p> <p>Content: -The greatest common factor (GCF) must be factored out first. -Special factoring patterns (difference of two squares, perfect square trinomials) can be utilized. -A polynomial equation must be set equal to zero to solve it by factoring.</p>	<p>A1.1.1.5.2 Factor algebraic expressions, including difference of squares and trinomials. Note: trinomials are limited to the form $ax^2 + bx + c$ where “a” is equal to 1 after factoring out all monomial factors.</p> <p>A1.1.1.2. Find the greatest common factor (GCF) and/or the least common multiple (LCM) for sets of monomials.</p>

<p>How do we simplify rational expressions?</p> <p>2 Days (HS) 4 Days (MS)</p>	<p><input type="checkbox"/> Simplify rational expressions.</p> <p><input type="checkbox"/> State the excluded value(s) of a rational expression.</p> <p><input type="checkbox"/> Multiply and divide rational expressions.</p>	<p>Vocabulary: rational expression</p> <p>Content: -Rational expressions are simplified in some situations and not in other situations. -A rational expression is the quotient of two polynomials. -The rules for multiplying and dividing fractions apply to rational expressions.</p>	<p>CC.2.2.HS.D.6 Extend the knowledge of rational functions to rewrite in equivalent forms.</p> <p>A1.1.1.5.3 Simplify/reduce a rational algebraic expression.</p>
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UNIT 8

Unit Title	Statistics and Probability		
Unit Description	Students will analyze data and answer questions about different types of data displays. Students will calculate different measures of central tendency. They will construct and interpret histograms, box and whisker plots and other graphical data representations. They will also be able to calculate simple probability such as calculating theoretical vs. experimental probabilities, independent vs. dependent events, and disjoint vs. overlapping events.		
Unit Assessment	Common Unit Assessment		
Essential Question	Learning Goals	Content and Vocabulary	Standards
How do we calculate the mean, median, mode, and range of a data set? 1 Day (HS) 2 Days (MS)	<input type="checkbox"/> Calculate mean and range given a set of data. <input type="checkbox"/> Identify the mode and median of a data set. <input type="checkbox"/> Determine whether mean or median best represent a set of data. <input type="checkbox"/> Find missing pieces of data given measures of central tendency of a set of data.	Vocabulary: mean, median, mode, range Content: -Measures of central tendency help summarize a set of data. -Adding or removing data can change the measures of central tendency.	A1.2.3.2.1 Analyze data, make predictions, and/or answer questions based on displayed data (box-and-whisker plots, stem-and-leaf plots, scatter plots, measures of central tendency, or other representations).

<p>How can we graph and interpret different types of graphical data representations?</p> <p>3 Days (HS) 6 Days (MS)</p>	<p><input type="checkbox"/> Students will graph histograms, box and whisker plots, stem and leaf plots, scatter plots and other graphical data representations.</p> <p><input type="checkbox"/> Students will interpret graphical representations to calculate measures of tendency.</p>	<p>Vocabulary: stem and leaf plot, box and whisker plot, quartiles, inter-quartile range, outliers, scatter plot, histogram</p> <p>Content: -Stem and leaf plots display the shape and spread of a set of data. -Box and whisker plots display the spread of data and can help detect outliers in data. -Histograms give a quick visualization of the data distribution.</p>	<p>A1.2.3.1.1 Calculate and/or interpret the range, quartiles, and inter-quartile range of data.</p> <p>CC.2.1.HS.F.3 Apply quantitative reasoning to choose and interpret units and scales in formulas, graphs, and data displays.</p> <p>CC.2.4.HS.B.2 Summarize, represent, and interpret data on two categorical and quantitative variables.</p>
<p>Given two events, how do you know when to multiply their probabilities versus adding their probabilities?</p> <p>3 Days (HS) 7 Days (MS)</p>	<p><input type="checkbox"/> Determine if two events are independent or dependent.</p> <p><input type="checkbox"/> Calculate probability of independent and dependent events.</p> <p><input type="checkbox"/> Determine if two events are disjoint or overlapping.</p> <p><input type="checkbox"/> Calculate probability of disjoint or overlapping events.</p>	<p>Vocabulary: independent events, dependent events, disjoint events, overlapping events</p> <p>Content: -Independent and dependent events are multiplied together. -The denominator of the second event can change if dependent. -Disjoint and overlapping events are added together. -If there are any overlaps, they will get subtracted from the result.</p>	<p>CC.2.4.HS.B.6 Use the concepts of independence and conditional probability to interpret data.</p> <p>CC.2.4.HS.B.4 Recognize and evaluate random processes underlying statistical experiments.</p> <p>A1.2.3.2.2 Find probabilities for compound events (e.g., find probability of red and blue, find probability of red or blue) and represent as a fraction, decimal, or percent.</p>

ACCOMMODATIONS AND MODIFICATIONS

Adaptations or modifications to this planned course will allow exceptional students to earn credits toward graduation or develop skills necessary to make a transition from the school environment to community life and employment. The I.E.P. team has determined that modifications to this planned course will meet the student's I.E.P. needs.

Adaptations/Modifications may include but are not limited to:

INSTRUCTION CONTENT

- Modification of instructional content and/or instructional approaches
- Modification or deletion of some of the essential elements

SETTING

- Preferential seating

METHODS

- Additional clarification of content
- Occasional need for one to one instruction
- Minor adjustments or pacing according to the student's rate of mastery
- Written work is difficult, use verbal/oral approaches
- Modifications of assignments/testing
- Reasonable extensions of time for task/project completion
- Assignment sheet/notebook
- Modified/adjusted mastery rates
- Modified/adjusted grading criteria
- Retesting opportunities

MATERIALS

- Supplemental texts and materials
- Large print materials for visually impaired students
- Outlines and/or study sheets
- Carbonless notebook paper
- Manipulative learning materials
- Alternatives to writing (tape recorder/calculator)

