Curriculum: Mathematics
Course: Algebra 1

Unit: Module 1
Subject: Numbers, Operations, and Data Analysis

Brief Summary of Unit
This unit will focus on the use of real numbers to solve real world problems emphasis will be given to rational and irrational numbers. Students will compare and order rational numbers and identify their approximate location on a number line. This unit will also focus on writing rational numbers in equivalent forms and be able to identify whether a decimal either terminates or repeats. It will also examine ways to make reasonable predictions using probability in compound events with both and/or.

Competencies/Academic Standards

- **CC.2.1.8.E.1** Distinguish between rational and irrational numbers using their properties.
- **CC.2.1.8.E.4** Estimate irrational numbers by comparing them to rational numbers.
  - *M08.A-N.1.1.1* Determine whether a number is rational or irrational. For rational numbers, show that the decimal expansion terminates or repeats (limit repeating decimals to thousandths).
  - *M08.A-N.1.1.2* Convert a terminating or repeating decimal to a rational number (limit repeating decimals to thousandths).
  - *M08.A-N.1.1.3* Estimate the value of irrational numbers without a calculator (limit whole number radicand to less than 144).
    Example: $\sqrt{5}$ is between 2 and 3 but closer to 2.
  - *M08.A-N.1.1.4* Use rational approximations of irrational numbers to compare and order irrational numbers.
  - *M08.A-N.1.1.5* Locate/identify rational and irrational numbers at
- **CC.2.1.HS.F.2** Apply properties of rational and irrational numbers to solve real-world or mathematical problems.
  - *A1.1.1.1.1* Compare and/or order any real numbers. Note: Rational and irrational may be mixed.
- **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.
  - *A1.2.3.1.1* Calculate and/or interpret the range, quartiles, and interquartile range of data.
- **CC.2.4.HS.B.5** Make inferences and justify conclusions based on sample surveys,
  - *A1.2.3.2.1* Estimate or calculate to make predictions based on a circle, line, bar graph, measure of central tendency, or other representation.
  - *A1.2.3.2.2* 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
  - *A1.2.3.2.3* Make predictions using the equations or graphs of best-fit lines of scatter plots.
- **CC.2.4.7.B.3** Investigate chance processes and develop, use, and evaluate probability models.
- **CC.2.4.HS.B.4** Recognize and evaluate random processes underlying statistical experiments.
- **CC.2.4.HS.B.7** Apply the rules of probability to compute probabilities of compound events in a uniform probability model.
  - *A1.2.3.3.1* 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.

Big Ideas:
There are some mathematical relationships that are always true and these relationships are used as the rules of arithmetic and algebra and are useful for writing equivalent forms. Numbers, measures, expressions, equations, and inequalities can represent mathematical situation and structure in many equivalent forms. Determine the likelihood in a real world situation and make predictions.

Essential Questions:
- How are real numbers used in solving real world problems?
- How can rational numbers be written in terminating or repeating forms?
- How can you use real world data to make predictions and how can you evaluate given date to solve a problem?
- How do you interpret the data you have collected?
- How to you use the data collected to make a valid prediction?

Knowledge:
Students will know:
- Distinguish numbers as either Rational or Irrational Numbers
- Convert terminating or repeating decimals to rational number
- Compare and order real numbers from least to greatest, identify location on a number line
- Finding an approximate Square root
- Identify perfect square and cube numbers
- Categorize a real number into its separate sets
- Calculate Probability: Equally likely, compound events with and/or events
- Calculate and analyze measures of central tendency: Mean, Median, Mode
- Create and interpret Box Whisker Plot: Range, Interquartile range, Quartiles

Essential Skills/Objectives:

Students will…

- *Compare and order all real numbers*
- *Correctly indicate the location of a real number on a number line*
- *Approximate the value of irrational numbers without a calculator within two nearest whole numbers*
- *Use rational approximations of irrational numbers to compare order and indicate the location on a numberline*
- *Determine whether a number is rational or irrational*
- *Convert a terminating or repeating decimal to a rational number*
- *Calculate and/or interpret the range, quartiles, and interquartile range of data.*
- *Estimate or calculate to make predictions based on a circle, line, bar graph, measure of central tendency, or other representation.*
- *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).*

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.

Performance Tasks/Major Assessment:

Students will demonstrate understanding:

- o Quiz –identify real numbers as rational or irrational, identify and convert terminating or repeating decimals into rational number form.
- o Quiz – Rational and Irrational numbers: compare, order and approximate locations on a number line
- o Quiz – measures of central tendencies
- o Quiz –Analyze data to make predications from Box whisker plot, stem leaf plot or central tendencies
- o Quiz - Probability with compound events
- o Unit Test rational numbers, irrational numbers probability and measures of central tendencies.

Learning Activities:

- o Warm up questions
- o Daily homework
- o Number line activity where students pick a card then must get in order from least to greatest
- o Puzzle worksheets
- o Kuta Software developed worksheets

Essential Vocabulary & Definitions:

- o Rational Numbers Irrational Numbers
- o Repeating Decimal - Terminating Decimal
- o Perfect Square number – Perfect Cube numbers
- o Square roots - cube roots
- o Box Whisker plot- Interquartile range, quartiles, range
- o Stem leaf plot
- o Central Tendencies – mode – mean – median
- o Probability compound

Instructional Materials, Equipment, and Technologies

- envision Algebra 1 textbook and associated worksheets
- Worksheet developed with Kuta Software
- Guided notes given prior to each day's instruction
- Resource puzzle worksheets: Punch line and Pizzazz
- Get More Math software

Curriculum: Mathematics
Course: Algebra 1

Unit: Module 2
Subject: Equations and Expressions

Brief Summary of Unit

In this unit will cover writing expressions, solving equations to model real world applications. Inverse operations and properties will be utilized to solve various levels of difficulties of equations. Students must be proficient in evaluating expressions using the order of operations as well as calculations with integers. The unit students will explore that not all equations have solutions and sometimes there are several solutions.

Competencies/Academic Standards
- **CC.2.2.8.B.3** Analyze and solve linear equations and pairs of simultaneous linear equations.
  - **M08.B-E.3.1.1** Write and identify linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).
  - **M08.B-E.3.1.2** Solve linear equations that have rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.
- **CC.2.1.HS.F.4:** Use units as a way to understand problems and to guide the solution of multi-step 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.9:** Use reasoning to solve equations and justify the solution method
- **CC.2.2.HS.D.10**: Represent, solve and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.
  - **A1.1.2.1.1** Write, solve, and/or apply a linear equation (including problem situations).
  - **A1.1.2.1.2** Use and/or identify an algebraic property to justify any step in an equation-solving process. Note: Linear equations only

Big Ideas:
- Numbers, measure, expressions, and equations can represent mathematical situations and structure in many equivalent forms.
- Mathematical relationships among numbers can be represented, compared and communicated, and graphed.

Essential Questions:
- How is mathematics used to quantify, compare, represent, and model numbers
- How can expressions, equations, and inequalities be used to quantify, solve, model, and/or analyze mathematical situations?
- How can we show that algebraic properties and processes are extensions of arithmetic properties and processes, and how can we use algebraic properties and processes to solve problems?

Knowledge:
Students will know:

- Properties of numbers: Additive Inverse, Opposites, multiplicative inverse, reciprocals
- Additive inverse, Multiplicative inverse, Communicative, Associative, Substitution
- Distributive Property
- Order of operations
- Solve one-step equations
- Solve multiple step equations
- Solve equations with variables on both sides

Essential Skills/Objectives:
Students will...
- Students understand the commutative, associate, and distributive properties as identities, e.g.
- Solve an equation and explain the context of the solution to a real world problem.
- Students are introduced to the formal process of solving an equation: starting from the assumption that the original equation has a solution. Students explain each step as following from the properties of equality.
- Students understand that an equation is a statement of equality between two expressions. When values are substituted for the variables in an equation, the equation is either true or false. Students find values to assign to the variables in equations that make the equations true statements.
- Translate verbal phrases into algebraic expressions
- Translate algebraic expressions into a verbal phrase
- Translate real world situation or problem into an Equation
- Evaluate or Solve Absolute Value Expressions Involving Variables
- Solve Equations using Inverse Operations, involving one or more Steps and including Variables on Both Sides

o	Use Algebraic Properties and processes in mathematical situations and apply them to solve real world problems.
o	Write, solve, and interpret linear equations and model relationships between quantities.

Performance Tasks/Major Assessment:
Students will demonstrate understanding:

- o Quiz – operations with integers, order of operation listing properties for each step, Identification of properties
- o Quiz – solving one step equations including translations of verbal phrases into algebraic expressions or equations with multiple number representations such as rational numbers for real world problems
- o Quiz – solving multiple step equations that require use of the distributive property including real world problems and interpreting the solution to the real world problem
- o Quiz – solving multiple steps equations with variable on both sides
- o Unit test – Solving various problems by writing equations and solving using correct order of operations and verify each step with a property

Learning Activities:
Students will work toward mastery of the desired outcomes by participating in:
- o *Completion of daily homework*
- o *Cooperative learning share pair strategy*
- o *Daily Warm up Problem*
- o *Puzzle worksheets*
- o *Student generated response*

Essential Vocabulary & Definitions:
- o Expression
- o Equation
- o Variable
- o Distributive Property Commutative property, Associative property, Substitution
- o Additive Identity, Additive inverse, Multiplicative inverse, Multiplicative identity
- o Like Terms
- o Solution

Instructional Materials, Equipment, and Technologies
- o envision Algebra 1 textbook and associated worksheets
- o Kuta software
- o Guided notes with instruction
- o Puzzle worksheets
- o Get More Math software

Curriculum: Mathematics
Course: Algebra 1

Unit: Module 3
Subject: Linear Functions

Brief Summary of Unit
This unit covers the concepts related to the relationships that constitutes a function and to identify a linear function from a non-linear function. Students will become familiar with domain, range, slope (rate of change), intercepts as they apply to linear functions. Student will be writing linear equations given a graph, two points or a point and the slope. Students will be able to identify slope, and y- intercept from a table of values, a graph or an equation. Real world situations will be explored to determine what slope means in a given situation as well as they-intercept. The graphing of linear equations will utilize different variables than the typical x and y. Likewise, the axes will be related to variables identified in a real world problem.

Competencies/Academic Standards

- **CC.2.2.8.C.1** Define, evaluate, and compare functions.
- **CC.2.2.8.C.2** Use concepts of functions to model relationships between quantities.
  - **M08.B-F.2.1.1** Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models and in terms of its graph or a table of values.
  - **M08.B-F.2.1.2** Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch or determine a graph that exhibits the qualitative features of a function that has been described verbally.

- **CC.2.2.HS.C.1** Use the concept and notation of functions to interpret and apply them in terms of their context.
- **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.2.4.HS.B.2** Summarize, represent, and interpret data on two categorical and quantitative variables.
  - **A1.2.1.1.1** Analyze a set of data for the existence of a pattern and represent the pattern and/or graphically.
  - **A1.2.1.1.2** Determine whether a relation is a function, given a set of points or a graph.
  - **A1.2.1.1.3** Identify the domain or range of a relation (may be presented as ordered pairs, a graph, or a table).
- **CC.2.1.HS.F.3** Apply quantitative reasoning to choose and interpret units and scales in formulas, graphs, and data displays.
- **CC.2.2.8.B.2** Understand the connections between proportional relationships, lines, and linear equations.
- **CC.2.1.HS.F.4** Use units as a way to understand problems and to guide the solution of multi-step problems.
  - **A1.2.1.2.1** Create, interpret, and/or use the equation, graph, or table of a linear function.
  - **A1.2.1.2.2** Translate from one representation of a linear function to another (i.e., graph, table, and equation
- **CC.2.2.HS.C.6** Interpret functions in terms of the situations they model.
- **CC.2.2.HS.C.5** Construct and compare linear, quadratic, and exponential models to solve problems.
- **CC.2.4.HS.B.1** Summarize, represent, and interpret data on a single count or measurement variable.
- **CC.2.2.8.B.2** Understand the connections between proportional relationships, lines, and linear equations.
  - **M08.B-E.2.1.1** Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two proportional relationships represented in different ways.
    Example: Compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.
  - **M08.B-E.2.1.3** Derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b
- **CC.2.2.8.C.1** Define, evaluate, and compare functions.
  - **M08.B-F.1.1.1** Determine whether a relation is a function.
  - **A1.2.2.1.1** Identify, describe, and/or use constant rates of change.
  - **A1.2.2.1.2** Apply the concept of linear rate of change (slope) to solve problems
  - **A1.2.2.1.3** Write or identify a linear equation when given
    - the graph of the line, two points on the line, or
    - the slope and a point on the line. Note: Linear equation may be in point-slope, standard, and/or slope intercept form.
  - **M08.B-F.1.1.2** Compare properties of two functions, each represented in a different way (i.e., algebraically, graphically, numerically in tables, or by verbal descriptions). *Example: Given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.*
  - **M08.B-F.1.1.3** Interpret the equation $y = mx + b$ as defining a linear function whose graph is a straight line; give examples of functions that are not linear

- o **A1.2.2.2.1** Draw, identify, find, and/or write an equation for a line of best fit for a scatter plot.
- **CC.2.2.HS.C.6** Interpret functions in terms of the situations they model.
- **CC.2.4.8.B.1** Analyze and/or interpret bivariate data displayed in multiple representations.
  - o **M08.D-S.1.1.1** Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative correlation, linear association, and nonlinear association.
  - o **M08.D-S.1.1.2** For scatter plots that suggest a linear association, identify a line of best fit by judging the closeness of the data points to the line.
  - o **M08.D-S.1.1.3** Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.
    - Example: In a linear model for a biology , interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.
- **CC.2.4.HS.B.3** Analyze linear models to make interpretations based on the data.
  - • **A1.2.2.2.1** Draw, identify, find, and/or write an equation for a line of best fit for a scatter plot.

Big Ideas: Students will understand that:

- Mathematical relations and functions can be modeled through multiple representations and analyzed to raise and answer questions
- Mathematical relationships can be represented as expressions, equations, and inequalities in mathematical situations

Essential Questions:

- How do you decide which functional representation to choose when modeling a real world situation, and how would you explain your solution to the problem?
- How do you write, solve, graph, and interpret linear equations and inequalities to model relationships between quantities?

Knowledge:

Students will know:
- Relation vs a linear functions
- non-linear function vs linear functions
- Domain, and Range
- Slope or rate of change
- Y-intercept, x- intercept
- Linear function standard form
- Linear function slope intercept from
- Linear function point slope form
- Scatter plot
- Line of best fit
- Correlation (positive, negative, or none)

Essential Skills/Objectives:

Students will…
- Determine if a relationship is a function given a graph, table of ordered pairs or an equation
- Identify the domain and range of a function or a relationship given a graph, a table of ordered pairs, or a mapping
- Determine if a function is linear or non-linear given a graph, table of ordered pairs, or an equation
- Interpret solutions to problems in context of a real world problem
- Graph linear functions given a table of ordered pairs, slope and coordinates of a point, coordinates of two points, or an equation
- Calculate slope (rate of change) two points, a graph or in a real world problem
- Compare graphs or equations of linear functions to determine which has a larger rate of change
- Identify or determine the y-intercept from a graph, table of ordered pairs, an equation or as an initial value in a real world problem
- Creating a scatter plot of bivariate data and determine the type of correlation which exists.
- Writing the equation for the line of best fit for the data in a given scatter plot
- Utilizing the line of best fit to predict a given situation
- To transform a linear function from one representation to another such as table ordered pairs, equation, graph, and word problem

Performance Tasks/Major Assessment:

Students will demonstrate understanding:
- Quiz - linear equations to determine if an equation is linear, and if a given relation is a function, and to identify the domain and range of a relation.
- Quiz - graphing linear equations by plugging in values for the domain to find the corresponding range values and to calculate slope from a graph or when given a table of ordered pairs.
- Quiz - graphing linear equations in slope intercept form, given two ordered pairs, given a slope and an ordered pair or a real world word problem.
- Unit Test - Graphing Linear functions
- Quiz- writing equations in standard form, slope-intercept form, and point-slope form.
- Quiz - scatter plots graphs to determine the correlation of the graph and to find and write the line of best fit. Use the equation for the line of best fit to predict additional values

Unit Test - Writing Linear Equations and applying line of best fit to a scatter plot

Learning Activities:

- *Completion of daily homework*
- *Cooperative learning share pair strategy*
- *Student Generated responses*
- *Daily Warm up Questions*

Essential Vocabulary & Definitions:

- Function
- Relation
- Domain & Range
- Linear Function vs Non-linear function
- Slope (rate of Change)
- Y & X- intercepts
- Standard form linear equation
- Slope-Intercept form linear equation
- Point Slope form linear equation
- Scatter Plot
- Correlation
- Line of best fit

Instructional Materials, Equipment, and Technologies

- Textbook enVision Algebra 1
- Resource Worksheets which accompany the current textbook
- Resource Puzzle Worksheets: Punchline and Pizzazz
- Kuta Software to generate worksheets on solving equations of various types and level of difficulty
- Get More Math software

Curriculum: Mathematics
Course: Algebra 1

Unit: Module 4
Subject: Inequalities

Brief Summary of Unit
This unit will examine linear inequalities. Students will understand why the solutions of inequalities must be graphed on a number line. The idea that many solutions exist in an inequality situation will be explored in various problems. Student will solve compound inequalities to find the solution set. A system of linear inequalities will be related to realworld problem and various solutions will exist. The students will work on a rectangular coordinate system to illustratethe possible solution set.

Competencies/Academic Standards
- **CC.2.1.HS.F.5** Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.
- **CC.2.2.HS.D.7:** Create and graph equations or inequalities to describe numbers or relationships.
- **CC.2.2.HS.D.9** Use reasoning to solve equations and justify the solution method.
- **CC.2.2.HS.D.10:** Represent, solve and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.
    - **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).
    - **A1.1.3.1.2** Identify or graph the solution set to a linear inequality on a number line.
    - **A1.1.3.1.3** Interpret solutions to problems in the context of the problem situation. Note: Linear inequalities only.
    - **A1.1.3.2.1** Write and/or solve a system of linear inequalities using graphing. Note: Limit systems to two linear inequalities.
    - **A1.1.3.2.2** Interpret solutions to problems in the context of the problem situation. Note: Limit systems to two linear inequalities.

Big Ideas: Students will understand that:
- Make sense of and persevere in solving complex and novel mathematical problems.
- Apply mathematical knowledge to analyze and model situations/relationships using multiple representations and appropriate tools in order to make decisions, solve problems, and draw conclusions.

Essential Questions:
- Are you able to solve a linear inequality by graphing?
- How do you write, solve, graph, and interpret linear inequalities to model relationships between quantities?

Knowledge:
Students will know:
- The solutions of one variable inequalities
- The solution of two variables inequalities
- The solutions of a compound (and/or)
- Absolute value with inequalities, to solve write compound inequalities
- Illustrate how to identify on a line graph or a rectangular grid where solutions are located?

Essential Skills/Objectives:
Students will...
- Translate sentences into inequalities and inequalities into sentences.
- Write an inequality to express a given real world problem.
- Solve Inequalities using Inverse operations, involving one or more steps and including variables on both sides.
- Use algebraic properties of inequalities and processes in mathematical situations and apply them to solve real world problems.
- Write, solve, and interpret linear inequalities and model relationships between quantities.
- Solve a compound inequality which has solutions such as infinitely many, or no solution possible
- Graphing solutions on a number line for inequalities and compound inequalities.
- Graphing a system of inequalities to identify all of the possible solutions.

Performance Tasks/Major Assessment:
Students will demonstrate understanding:
- Quiz - Solving inequalities with one variable ($<, >, \geq, \leq$)
- Quiz - Solving compound inequalities (and , or, $<, >, \leq, \geq$) .
- Quiz - Solving inequalities involving absolute value.
- Quiz – Solving a system of linear inequalities.

Unit Test on solving inequalities, compound inequalities, system of inequalities and inequalities involvingabsolute value.

Learning Activities:
Students will work toward mastery of the desired outcomes by participating in: • Pair share activity • Warmup problem • Jeopardy Review Game on solving inequalities, compound inequalities and inequalities involving absolute value • Student generated responses
Essential Vocabulary & Definitions:
• Absolute Value • Compound (and/or) • Inequalities • System of Inequalities
Instructional Materials, Equipment, and Technologies
• Textbook, enVision Algebra 1 • Resource Worksheets which accompany the current textbook • Resource Puzzle Worksheets: Punchline and Pizzazz • Kuta Software to generate worksheets on solving inequalities of various types and level of difficulty • Get More Math software

Curriculum: Mathematics

Course: Algebra 1

Unit: Module 5
Subject: System of Linear Equations and Inequalities

Brief Summary of Unit
This unit will focus on the solutions obtained when describing a situation with two linear functions. Students will use three methods to find the solutions of the system. The methods which will be used are graphing, elimination, and substitution. It will become apparent to the students that certain situations do not have a solution and sometimes there are multiple solutions. The solutions will be interpreted with regards to a real world problem.

Competencies/Academic Standards
- **CC.2.2.HS.D.7:** Create and graph equations or inequalities to describe numbers or relationships.
- **CC.2.2.HS.D.9:** Use reasoning to solve equations and justify the solution method.
- **CC.2.2.HS.D.10:** Represent, solve and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.
- **CC.3.5.9-10.D**: Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9–10 texts and topics
- **CC.3.5.9-10.G**: Translate quantitative or technical information expressed in words in a text into visual form(e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.
- **CC.2.1.HS.F**. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.
- **CC.2.2.8.B.3** Analyze and solve linear equations and pairs of simultaneous linear equations
  - **A1.1.2.2.1** Write and/or solve a system of linear equations (including problem situations) usinggraphing, substitution, and/or elimination. Note: Limit systems to two linear equations.
  - **A1.1.2.2.2** Interpret solutions to problems in the context of the problem situation. Note: Limit systems to two linear equations.
- **CC.2.1.HS.F.5** Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.
  - **M08.B-E.3.1.3** Interpret solutions to a system of two linear equations in two variables as points of intersection of their graphs because points of intersection satisfy both equations simultaneously.
  - **M08.B-E.3.1.4** Solve systems of two linear equations in two variables algebraically and estimatesolutions by graphing the equations. Solve simple cases by inspection.
    Example: $3x + 2y = 5$ and $3x + 2y = 6$ have no solution because $3x + 2y$ cannot simultaneously be 5 and 6.
  - **M08.B-E.3.1.5** Solve real-world and mathematical problems leading to two linear equations in twovariables. Example: Given coordinates for two pairs of points, determine whether the line throughthe first pair of points intersects the line through the second pair

Big Ideas: Students will understand that:
- Mathematical relations and functions can be modeled through multiple representations and analyzed toraise and answer questions.
- Patterns exhibit relationships that can be extended, described, and generalized.

Essential Questions:
- How do you write, solve, and interpret systems of two linear equations and inequalities using graphing andalgebraic techniques?
- What are the tools needed to solve a system of linear equations and how do you interpret the solution?

Knowledge:
Students will know:
- Graph a pair of linear functions on a rectangular coordinate grid
- Method of substitution
- Method of Elimination

Essential Skills/Objectives:
Students will…
- Solve systems of equations using graphing, substitution, or elimination.
- Apply systems of equations to solve real-world problems.
- Graph a system of linear inequalities
- Apply knowledge of graphing to write the system of inequalities when given the solution

Performance Tasks/Major Assessment:
Students will demonstrate understanding:
- Quiz Solving Systems of Linear Equations by graphing.
- Quiz Solving Systems of Linear Equations by substitution.
- Quiz Solving Systems of Linear Equations by elimination.
- Quiz Solving System of Linear Inequalities
- Quiz Solving real-world problems using systems of linear equations.
- Unit Test on Systems of Equations and inequalities

• Group Project- using real world data such as various cell phone plans to determine which one is the mosteconomical.

Learning Activities:
- *Completion of daily homework*
- *Cooperative learning share pair strategy*
- *Daily Warm-Up*
- *Hands on graphing systems of linear equations and inequalities using real and rational numbers.*
- *Culminating group stations activity on solving systems of equations using various methods - graphing, substitution, and elimination activity.*

Essential Vocabulary & Definitions:
- System
- Substitution
- Elimination

Instructional Materials, Equipment, and Technologies
- Textbook enVision Algebra 1
- Calculators
- Rulers
- Graph Paper
- Get More Math software

Curriculum: Mathematics
Course: Algebra 1

Unit: Module 6
Subject: Exponents and Exponential Functions

Brief Summary of Unit
This unit will focus on the use of the laws of exponents and evaluating expressions. Students will use the properties of exponents to simplify complex looking expressions. This unit will also cover adding, subtracting, and multiplying polynomials. The writing of rational exponential expressions from radicals and vice versa will continue to improve the students simplifying skills.

Competencies/Academic Standards
- **CC.2.2.HS.D.2:** Write expressions in equivalent forms to solve problems.
    - A1.1.1.3.1 Simplify/evaluate expressions involving properties/laws of exponents, roots and/or absolute value to solve problems (exponents should be integers from -10 to 10).
- **CC.2.2.HS.D.9:** Use reasoning to solve equations and justify the solution method.
- **CC.2.2.HS.C.5:** Construct and compare linear, quadratic and exponential models to solve problems.

Big Ideas: Students will understand that:
- Laws of exponents simplify the monomial/polynomial expressions.
- An exponential function is defined as a function with a positive constant other than 1 raised to a variable exponent.

Essential Questions:
- Which exponent property applies to the given problem and how do you simplify using more than one?
- How can you evaluate an exponential function?

Knowledge:
Students will know:
- Laws/properties of exponents
- How to evaluate/interpret an exponential function

Essential Skills/Objectives:
Students will...
- Simplify expressions using the product of powers property
- Simplify expressions using the power of a power property
- Simplify expressions using power of a product property
- Evaluate exponential expressions with "zero" and negative exponents
- Simplify exponential expressions with "zero" and negative exponents
- Simplify expressions using the quotient of powers property
- Simplify expressions using the power of a quotient property
- Simplify expressions using all exponent properties

Performance Tasks/Major Assessment:
Students will demonstrate understanding:
- Quiz Simplifying Expressions using the Product of Powers, Power of a Power, and Power of a Product Properties
- Quiz Simplify Expressions with "Zero" and Negative Exponents
- Quiz Simplify Expressions using the Quotient of Powers, Power of a Quotient Properties
- Quiz Simplify Expressions using all Exponent Properties
- Unit Test on Exponents and Exponential Functions

Learning Activities:
- *Completion of daily homework*
- *Cooperative learning share pair strategy*
- *Daily Warm-Up*

Essential Vocabulary & Definitions:
- Monomial
- Polynomial
- Binomial
- Trinomial

Instructional Materials, Equipment, and Technologies
- Textbook enVision Algebra 1
- Calculators
- Get More Math software

Curriculum: Mathematics
Course: Algebra 1

Unit: Module 7
Subject: Polynomials and Factoring

Brief Summary of Unit
This unit will focus on extending the students learning of arithmetic operations and applying it to polynomials. Identifying a trinomial and factoring it to its most simplified form. Students will become proficient in factoring polynomials starting from binomial or trinomial form.

Competencies/Academic Standards
- **CC.2.2.HS.D.2:** Write expressions in equivalent forms to solve problems.
- **CC.2.2.HS.D.9:** Use reasoning to solve equations and justify the solution method.
  - A1.1.1.5.1 Add, subtract and/or multiply polynomial expressions (express answers in simplest form – nothing larger than a binomial multiplied by a trinomial).
  - A1.1.1.5.2 Factor algebraic expressions, including difference of squares and trinomials (trinomials limited to the form ax^2+bx+c where a is equal to 1 after factoring out all monomial factors).
- **CC.2.2.HS.D.3:** Extend the knowledge of arithmetic operations and apply to polynomials.

Big Ideas: Students will understand:

- How to identify a polynomial
- Add, subtract, and multiply polynomials.
- Factor binomials and trinomials.

Essential Questions:
- Which are like terms?
- How can you factor the polynomial?
- Is it in most simplified form?

Knowledge:
Students will know:
- How to combine like terms
- Factor polynomials

Essential Skills/Objectives:
Students will…
- Identify polynomials
- Multiply polynomials and binomials (double distribute/FOIL)
- Factor trinomials of the form x^2+bx+c
- Factor completely

Performance Tasks/Major Assessment:
Students will demonstrate understanding:
- Quiz Combine Like Terms of Polynomials, Add, Subtract, Multiply Polynomials
- Quiz Factor Trinomials
- Unit Test on Polynomials and Factoring

Learning Activities:
- *Completion of daily homework*
- *Cooperative learning share pair strategy*
- *Daily Warm-Up*

Essential Vocabulary & Definitions:
- Factor
- Double Distribute (FOIL)

Instructional Materials, Equipment, and Technologies
- Textbook enVision Algebra 1
- Calculators
- Get More Math software

Curriculum: Mathematics
Course: Algebra 1

Unit: Module 8
Subject: Rational Expressions and Quadratics

Brief Summary of Unit
This unit will focus on extending the students learning of arithmetic operations and applying it to rational expressions and quadratic expressions. Students will become proficient in simplifying radicals and radical expressions.

Competencies/Academic Standards
- **CC.2.2.HS.D.9:** Use reasoning to solve equations and justify the solution method.
  - A1.1.1.1.1 Compare and/or order any real numbers (rational and irrational may be mixed).
  - A1.1.1.1.2 Simplify square roots (e.g., $\sqrt{24} = 2\sqrt{6}$).
  - A1.1.1.5.3 Simplify/reduce a rational algebraic expression.
- **CC.2.2.HS.D.3:** Extend the knowledge of arithmetic operations and apply to polynomials.

Big Ideas: Students will understand:
- Find/Evaluate Square Roots
- Simplify Radicals
- Add, Subtract, Multiply Radical Expressions

Essential Questions:
- Which are like terms?
- Which are perfect squares?
- Can it be simplified to a perfect square?

Knowledge:
Students will know:
- How to combine like terms
- Simplify Radicals

Essential Skills/Objectives:
Students will…
- Find square roots of numbers
- Evaluate square roots of numbers
- Evaluate radical expressions
- Simplify rational expressions
- Multiply rational expressions

Performance Tasks/Major Assessment:
Students will demonstrate understanding:
- Quiz Simplify Radicals
- Quiz Simplify Rational Expressions
- Unit Test on Radicals and Rational Expressions

Learning Activities:
- *Completion of daily homework*
- *Cooperative learning share pair strategy*
- *Daily Warm-Up*

Essential Vocabulary & Definitions:
- Radical
- Rational Expressions

Instructional Materials, Equipment, and Technologies
- Textbook enVision Algebra 1
- Calculators
- Get More Math software