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| | Module 1 | Operations and Linear Equations & Inequalities | | | | | | | |
| | | A.1.1.1 | Operations with | Real Numbers & Expressions | | | | | |
| | | **A.1.1.1.1** | **Properties of Real Number** | | | | | | |
| **1 DAY** | **1 DAY** | **A.1.1.1.1.1** | A. Introduction to Number Systems | All students will cite evidence of the understanding of the concepts of rational and irrational numbers. All students will construct number lines in order to plot rational and irrational numbers. All students will draw conclusions about the order of rational and irrational numbers. All students will develop a logical argument on approximating irrational numbers. | All students will be able to locate/identify irrational numbers at the approximate location on a number line.<br><br>Materials: Number line<br><br>Essential vocabulary:<br>rational<br>irrational | **2.1.HS.F.2**<br>Apply properties of rational and irrational numbers to solve real world or mathematical problems. | A1.1.1 Operations with Real Numbers and Expressions<br><br>Descriptor<br>A1.1.1.1 Represent and/or use numbers in equivalent forms (e.g., integers, fractions, decimals, percents, square roots, and exponents). | A1.1.1.1.1 Compare and/or order any real numbers. Note: Rational and irrational may be mixed. | Rational number<br>Irrational number<br>Integers<br>Whole numbers<br>Opposites<br>Real number<br>Composite<br>Prime<br>Imaginary number<br>Terminating decimal<br>Repeating decimal<br>Natural number<br>Complex Number |
| **1 DAY** | **1 DAY** | **A.1.1.1.1.1** | B. Compare and Order Real Numbers | All students will interpret expressions that represent a rational or irrational number. | | | A1.1.1 Operations with Real Numbers and Expressions<br><br>Descriptor<br>A1.1.1.1 Represent and/or use numbers in equivalent forms (e.g., integers, fractions, decimals, percents, square roots, and exponents). | A1.1.1.1.1 Compare and/or order any real numbers. Note: Rational and irrational may be mixed.<br><br>A1.1.1.4.1 Use estimation to solve problems. | Number line<br>Estimation Strategy |
| | | **A.1.1.1.2** | **Simplifying Expressions** | | | | | | |
| **2 DAYS** | **2 DAYS** | **A.1.1.1.2.2** | A. Simplify Square Roots | All students will investigate and develop methods to simplify square roots. | All students will be able to distiguish between GCF and LCM.<br><br>All students will be able to identify the appropriate exponent laws according to a given problem.<br><br>Materials: multiplication chart, copy of blank factoring tree, copy of guided notes regarding exponent laws.<br><br>Essential vocabulary:<br>GCF<br>LCM<br>exponent | **2.1.HS.F.1**<br>Apply and extend the properties of exponents to solve problems with rational exponents.<br><br>**2.2.HS.D.1**<br>Interpret the structure of expressions to represent a quantity in terms of its context.<br><br>**2.2.HS.D.2**<br>Write expressions in equalent forms to solve problems. | A1.1.1 Operations with Real Numbers and Expressions<br><br>Descriptor:<br>A1.1.1.1 Represent and/or use numbers in equivalent forms (e.g., integers, fractions, decimals, percents, square roots, and exponents). | A1.1.1.1.2 Simplify square roots (e.g., $\sqrt{24} = 2\sqrt{6}$ ) . | Square root<br>Perfect square<br>Radicand<br>Cube Root<br>Radical Expression |

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| | | **A.1.1.1.2** | **Simplifying Expressions cont'd** | | | | | | |
| **1 DAY** | **2 DAYS** | **A.1.1.1.2.1** | B. Find Greatest Common Factor and Least Common Multiple | All students will compare multiple prime factorizations to determine the GCF and LCM. | All students will be able to distiguish between GCF and LCM.<br><br>All students will be able to identify the appropriate exponent laws according to a given problem.<br><br>Materials: multiplication chart, copy of blank factoring tree, copy of guided notes regarding exponent laws.<br><br>Essential vocabulary:<br>GCF<br>LCM<br>exponent | | A1.1.1 Operations with Real Numbers and Expressions<br><br>Descriptor:<br>A1.1.1.2 Apply number theory concepts to show realationships between real numbers in problem solving. | A1.1.1.2.1 Find the Greatest Common Factor (GCF) and/or the Least Common Multiple (LCM) for sets of monomials. | Greatest Common Factor<br>Least Common Multiple |
| **3 DAY** | **5 DAYS** | **A.1.1.1.3.1** | C. Use Laws of Exponents | All students will distinguish the appropriate law of exponents and apply laws to algebraic, radical and rational expressions. | | | A1.1.1 Operations with Real Numbers and Expressions<br><br>Descriptor:<br>A1.1.1.3 Use exponents, roots, and/or absolute values to solve problems. | 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. | Exponent<br>Positive exponent<br>Negative exponent<br>Power<br>Power of a power<br>Powers of products<br>Exponential expression<br>Exponential equation<br>Base<br>Power<br>Root |
| **1 DAY** | **1 DAY** | **A.1.1.1.3.1** | D. Operations of Real Numbers (Including factoring a monomial out of a simple polynomial) | All students will interpret expressions that represent a rational or irrational quantity including factors and coefficients. All students will use factoring concepts to solve non-routine problems. | | | A1.1.1 Operations with Real Numbers and Expressions<br><br>Descriptor:<br>A1.1.1.1 Represent and/or use numbers in equivalent forms (e.g., integers, fractions, decimals, percents, square roots, and exponents). | 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. | Order of operations<br>Additive identity<br>Additive inverse<br>Multiplicative identity<br>Multiplicative inverse<br>Reciprocal<br>Inverse |

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| | | **A.1.1.1.5** | **Polynomials** | | | | | | |
| **1 DAY** | **3 DAYS** | **A.1.1.1.5.1** | A. Addition and Subtraction of Polynomials | All students will apply concepts of sums and differences to polynomial expressions. | All students will be able to classify, add, and subtract polynomials.<br><br>Materials: Polynomial Functions Graphic Organizer<br><br>All students will be able to multiply a monomial by a polynomial and factor a monomial from a polynomial.<br><br>Materials: Factoring Flow Chart, Factoring Flowchart<br><br>Essential vocabulary:<br>monomial<br>binomial<br>trinomial<br>polynomial<br>factor<br>simplify | **2.2.HS.D.3**<br>Extend the knowledge of arithmetic operations and apply to polynomials.<br><br>**2.2.HS.D.4**<br>Understand the relationship between zeros and factors of polynomials to make generalizations about functions and their graphs.<br><br>**2.2.HS.D.5**<br>Use polynomial identities to solve problems. | A1.1.1 Operations with Real Numbers and Expressions<br><br>Descriptor:<br>A1.1.1.5 Simplify expressions involving polynomials. | 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. | Monomial<br>Degree<br>Polynomial<br>Leading Coefficient<br>Binomial<br>Trinomial |
| **1 DAY** | **2 DAYS** | **A.1.1.1.5.1** | B. Multiplication of Polynomials. | All students will connect concepts of sums and differences to construct products of polynomial expressions. | | | A1.1.1 Operations with Real Numbers and Expressions<br><br>Descriptor:<br>A1.1.1.5 Simplify expressions involving polynomials. | 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. | |

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| | | **A.1.1.1.5** | **Polynomials cont'd** | | | | | | |
| **5 DAY** | **10 DAYS** | **A.1.1.1.5.2** | C. Simplify and Factor Polynomial Expressions | All students will connect the inverse relationship between factoring and multiplying. | All students will be able to classify, add, and subtract polynomials.<br><br>Materials: Polynomial Functions Graphic Organizer<br><br>All students will be able to multiply a monomial by a polynomial and factor a monomial from a polynomial.<br><br>Materials: Factoring Flow Chart, Factoring Flowchart<br><br>Essential vocabulary:<br>monomial<br>binomial<br>trinomial<br>polynomial<br>factor<br>simplify | | A1.1.1 Operations with Real Numbers and Expressions<br><br>Descriptor:<br>A1.1.1.5 Simplify expressions involving polynomials. | 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.<br><br>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.<br><br>A1.1.1.5.3 Simplify/reduce a rational algebraic | Equivalent expression<br>Variable Expression<br>Distributive property<br>Term<br>Coefficient<br>Constant term<br>Like terms<br>Simplest Form<br>Simplify |
| **2 DAY** | **3 DAYS** | **A.1.1.1.5.3** | D. Simplify and Reduce | All students will collect and display the simplification of rational algebraic expressions. | | | A1.1.1 Operations with Real Numbers and Expressions<br><br>Descriptor:<br>A1.1.1.5 Simplify expressions involving polynomials. | A1.1.1.5.3 Simplify/reduce a rational algebraic expression. | Rational Expression |
| | | **A.1.1.2** | **Linear Equations** | | | | | | |
| | | **A.1.1.2.1** | **Equations** | | | | | | |
| **1 DAY** | **2 DAYS** | **A.1.1.2.1.1**<br>**A.1.1.2.1.2**<br>**A.1.1.2.1.3** | A. Use of Algebraic Expressions | All students will formulate an expression using real-life problem situations. All students will investigate different ways to set up an algebraic expressions. | All students will solve one step equations in one variable.<br><br>All students will be able to solve multi-step equations in one variable.<br><br>Materials- Multi Step Equations Graphic Organizer<br><br>Essential Vocabulary:<br>variable<br>equation | 2.2.HS.D.1<br>Interpret the structure of expressions to represent a quantity in terms of its context. | A1.1.2 Linear Equations<br><br>Descriptor:<br>A1.1.2.1 Write, solve, and/or graph linear equtions using various methods.<br><br>A1.2.1 Functions<br><br>Descriptor<br>A1.2.1.1 Analyze and/or use patterns or relations. | A1.1.2.1.1 Write, solve, and/or apply a linear equation (including problem situations).<br><br>A1.2.1.1.1 Analyze a set of data for the existence of a pattern and represent the pattern algebraically and/or graphically. | |

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| | | **A.1.1.2.1** | **Equations cont'd** | | | | | | |
| **1 DAY** | **1 DAY** | **A.1.1.2.1.1**<br>**A.1.1.2.1.2**<br>**A.1.1.2.1.3** | B. Solve a Linear Equation (One-Step w/ One Variable) | All students will create equations that are able to be solved in one step utilizing inverse operations to validate the results. | All students will solve one step equations in one variable.<br><br>All students will be able to solve multi-step equations in one variable.<br><br>Materials- Multi Step Equations Graphic Organizer<br><br>Essential Vocabulary:<br>variable<br>equation | **2.2.HS.D.7**<br>Create and graph equations or inequalities to describe numbers or relationships.<br><br>**2.2.HS.D.8**<br>Apply inverse operations to solve equations or formulas for a given variable.<br><br>**2.2.HS.D.9**<br>Use reasoning to solve equations and justify the solution method.<br><br>**2.2.HS.D.10**<br>Represent, solve and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically. | A1.1.2 Linear Equations<br><br>Descriptor:<br>A1.1.2.1 Write, solve, and/or graph linear equtions using various methods. | A1.1.2.1.1 Write, solve, and/or apply a linear equation (including problem situations).<br><br>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. | Inverse operations<br>Equivalent equations<br>Reciprocal<br>Equation<br>Linear equation |
| **1 DAY** | **1 DAY** | **A.1.1.2.1.1**<br>**A.1.1.2.1.2**<br>**A.1.1.2.1.3** | C. Solve a Linear Equation (Two-Steps or More w/ One Variable) | All students will develop a logical argument to interpret the validity of steps to solve a multi-step equation. | | | A1.1.2 Linear Equations<br><br>Descriptor:<br>A1.1.2.1 Write, solve, and/or graph linear equtions using various methods. | A1.1.2.1.1 Write, solve, and/or apply a linear equation (including problem situations).<br><br>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. | |
| **2 DAY** | **3 DAYS** | **A.1.1.2.1.1**<br>**A.1.1.2.1.2**<br>**A.1.1.2.1.3** | D. Applications of Linear Equations | All students will create and apply concepts to solve linear equations of real life problems. All students will analyze and synthesize the solutions to such problems. | | | A1.1.2 Linear Equations<br><br>Descriptor:<br>A1.1.2.1 Write, solve, and/or graph linear equtions using various methods. | A1.1.2.1.3 Interpret solutions to problems in the context of the problem situation. Note: Linear equations only. | |

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| | | **A.1.2.2** | **Coordinate Geometry** | | | | | | |
| | | **A.1.2.2.1** | **Graph Linear Equations** | | | | | | |
| **1 DAY** | **2 DAYS** | **A.1.2.2.1.1**<br>**A.1.2.2.1.2**<br>**A.1.2.2.1.3** | A. Find Slope and Rate of Change | All students will use concepts to solve real-life problems connecting the relationship between the rate of change and its graphical representation. | All students will be able to find the slope of a line using a graph.<br><br>Materials:<br>Notes on the following topics: Finding Slope, Graphing Linear Equations with Slope Intercept, Graphing Tables, and Writing an Equation for Line.<br><br>Essential vocabulary:<br>slope<br>rise<br>run<br>point<br>line<br>positive<br>negative | 2.1.HS.C.5<br>Construct and compare linear, ~~quadratic and exponential~~ models to solve problems. | A1.2.2 Coordinate Geometry<br><br>Descriptor:<br>A1.2.2.1 Describe, compute, and/or use the rate of change (slope) of a line. | A1.2.2.1.1 Identify, describe, and/or use constant rates of change.<br><br>A1.2.2.1.2 Apply the concept of linear rate of change (slope) to solve problems. | Slope<br>Rate<br>Rise<br>Run<br>Rate of change<br>Undefined Slope<br>Zero Slope |
| **2 DAY** | **3 DAYS** | **A.1.2.2.1.1**<br>**A.1.2.2.1.2**<br>**A.1.2.2.1.3** | B. Graph Using Intercepts and Slope-Intercept and Point-Slope Forms. | All students will calculate and graph the x- and y-intercepts for any linear equation. All students will apply concepts of slope and point to create a graphical illustration on a Cartesian Plane. | | | A1.2.2 Coordinate Geometry<br><br>Descriptor:<br>A1.2.2.1 Describe, compute, and/or use the rate of change (slope) of a line. | A1.2.2.1.3 Write or identify a linear equation when given<br>• the graph of the line,<br>• two points on the line, or<br>• the slope and a point on the line.<br>Note: Linear equation may be in point-slope, standard, and/or slope-intercept form.<br><br>A1.2.2.1.4<br>Determine the slope and/or y-intercept represented by a linear equation or graph. | |
| **1 DAY** | **2 DAYS** | **A.1.2.2.1.1**<br>**A.1.2.2.1.2**<br>**A.1.2.2.1.3** | C. Standard Form | All students will investigate the relationship between standard form with slope and the y-intercept of the linear expression. | | | A1.2.2 Coordinate Geometry<br><br>Descriptor:<br>A1.2.2.1 Describe, compute, and/or use the rate of change (slope) of a line. | A1.2.2.1.3 Write or identify a linear equation when given<br>• the graph of the line,<br>• two points on the line, or<br>• the slope and a point on the line.<br>Note: Linear equation may be in point-slope, standard, and/or slope-intercept form.<br><br>A1.2.2.1.4<br>Determine the slope and/or y-intercept represented by a linear equation or graph. | Standard form |

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| | | **A.1.2.2.1** | **Graph Linear Equations cont'd** | | | | | | |
| **2 DAYS** | **2 DAYS** | **A.1.2.2.1.1**<br>**A.1.2.2.1.2**<br>**A.1.2.2.1.3** | D. Interpret Functions Using Equations, Tables, and Graphs. | All students will use graphs, tables, or equations to solve real-world problems of linear functions. | All students will be able to find the slope of a line using a graph.<br><br>Materials:<br>Notes on the following topics: Finding Slope, Graphing Linear Equations with Slope Intercept, Graphing Tables, and Writing an Equation for Line.<br><br>Essential vocabulary:<br>slope<br>rise<br>run<br>point<br>line<br>positive<br>negative | | A1.2.1 Functions<br><br>Descriptor<br>A1.2.1.2 Interpret and/or use linear functions and their equations, graphs, or tables. | A1.2.1.2.1 Create, interpret, and/or use the equation, graph, or table of a linear function.<br><br>A1.2.1.2.2 Translate from one representation of a linear function to another (i.e., graph, table, and equation). | Linear Function |
| | | **A.1.1.2** | **Linear Equations** | | | | | | |
| | | **A.1.1.2.2** | **Systems of Equations** | | | | | | |
| **1 DAY** | **1 DAY** | **A.1.1.2.2.1** | A. Solve a System of Linear Equations by Graphing | All students will create, analyze, and synthesize graphs of linear systems of equations and cite evidence for one solution, no solution, or infinite solutions. | All students will be able to solve systems of equations by graphing.<br><br>Materials:<br>Guided notes: Linear Combination, Substitution, How to find a solution<br><br>Essential vocabulary:<br>solution | 2.2.HS.D.10<br>Represent, solve and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically. | A1.1.2 Linear Equations<br><br>Descriptor:<br>A1.1.2.2 Write, solve, and/or graph systems of linear equations using various methods. | A1.1.2.2.1 Write and/or solve a system of linear equations (including problem situations) using graphing, substitution, and/or elimination. Note: Limit systems to two linear equations.<br><br>A1.1.2.2.2 Interpret solutions to problems in the context of the problem situations. Note: Limit systems to two linear equations. | System of Linear Equations<br>Solution of a System of Linear Equations |

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| | | **A.1.1.2.2** | **Systems of Equations cont'd** | | | | | | |
| **1 DAY** | **1 DAY** | **A.1.1.2.2.1** | B. Solve a System of Linear Equations by Substitution | All students will apply concepts of substitution to solve a system of equations. | All students will be able to solve systems of equations by graphing.<br><br>Materials:<br>Guided notes: Linear Combination, Substitution, How to find a solution<br><br>Essential vocabulary:<br>solution | | A1.1.2 Linear Equations<br><br>Descriptor:<br>A1.1.2.2 Write, solve, and/or graph systems of linear equations using various methods. | A1.1.2.2.1 Write and/or solve a system of linear equations (including problem situations) using graphing, substitution, and/or elimination. Note: Limit systems to two linear equations.<br><br>A1.1.2.2.2 Interpret solutions to problems in the context of the problem situations. Note: Limit systems to two linear equations. | Substitution |
| **1 DAY** | **2 DAYS** | **A.1.1.2.2.1** | C. Solve a System of Linear Equations by Elimination | All students will apply concepts and prove that the elimination method, substitution method, and graphing method validate the same results. | | | A1.1.2 Linear Equations<br><br>Descriptor:<br>A1.1.2.2 Write, solve, and/or graph systems of linear equations using various methods. | A1.1.2.2.1 Write and/or solve a system of linear equations (including problem situations) using graphing, substitution, and/or elimination. Note: Limit systems to two linear equations.<br><br>A1.1.2.2.2 Interpret solutions to problems in the context of the problem situations. Note: Limit systems to two linear equations. | Elimination<br>Linear Combination |

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| | | **A.1.1.2.2** | **Systems of Equations cont'd** | | | | | | |
| **2 DAYS** | **2 DAYS** | **A.1.1.2.2.2** | D. Interpret Systems of Equations | All students will create and apply concepts to solve systems of equations to real life problems. All students will analyze and synthesize the solutions to such problems. | All students will be able to solve systems of equations by graphing.<br><br>Materials:<br>Guided notes: Linear Combination, Substitution, How to find a solution<br><br>Essential vocabulary:<br>solution | | A1.1.2 Linear Equations<br><br>Descriptor:<br>A1.1.2.2 Write, solve, and/or graph systems of linear equations using various methods.<br><br>A1.1.3 Linear Inequalities<br><br>Descriptor:<br>A1.1.3.1 Write, solve, and/or graph linear inequalities using various methods. | A1.1.2.2.2 Interpret solutions to problems in the context of the problem situation. Note: Limit systems to two linear equations.<br><br>A1.1.3.2.2 Interpret solutions to problems in the context of the problem situation. Note: Limit systems to two linear inequalities | |
| | | **A.1.1.3** | **Linear Inequalities** | | | | | | |
| | | **A.1.1.3.1** | **Linear Inequalities** | | | | | | |
| **1 DAY** | **1 DAY** | **A.1.1.3.1.1** | A. Solve/Graph Linear Inequalities (One-Step w/ One Variable) | All students will apply concepts of number properties to solve linear inequalities. All students will analyze the solution set. | All students will write, graph, and identify solutions of inequalities.<br><br>Materials:<br>Blank number lines<br><br>All students will solve multi-step inequalities.<br><br>Materials:<br>Guided notes: Inequality symbols and open/close dots<br><br>Essential vocabulary:<br>equation<br>inequality | 2.2.HS.D.1<br>Interpret the structure of expressions to represent a quantity in terms of its context.<br><br>2.2.HS.D.7<br>Create and graph equations or inequalities to describe numbers or relationships.<br><br>2.2.HS.D.8<br>Apply inverse operations to solve equations or formulas for a given variable.<br><br>2.2.HS.D.9<br>Use reasoning to solve equations and justify the solution method.<br><br>2.4.HS.B.1<br>Summarize, represent, and interpret data on a single count or measurement variable. | A1.1.3 Linear Inequalities<br><br>Descriptor:<br>A1.1.3.1 Write, solve, and/or graph linear inequalities using various methods. | 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). | Inequality<br>Linear inequality<br>Graph of an Inequality<br>Equivalent Inequalities<br>Solution of an Inequality<br>Constraints |
| **1 DAY** | **1 DAY** | **A.1.1.3.1.1** | B. Solve/Graph a Linear Inequality (Two-Steps or More w/ One Variable) | All students will develop a logical argument to interpret the validity of steps to solve a multi-step linear inequality. | | | A1.1.3 Linear Inequalities<br><br>Descriptor:<br>A1.1.3.1 Write, solve, and/or graph linear inequalities using various methods. | 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). | |
| **1 DAY** | **1 DAY** | **A.1.1.3.1.1** | C. Solve/Graph Inequalities with Variables on Both Sides (On a Number Line) | All students will formulate linear inequalities and graphically represent the solution set to a real world situation. | | | A1.1.3 Linear Inequalities<br><br>Descriptor:<br>A1.1.3.1 Write, solve, and/or graph linear inequalities using various methods. | 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). | |
| **1 DAY** | **1 DAY** | **A.1.1.3.1.2** | D. Solve/Graph Compound Inequalities (On a Number Line) | All students will apply concepts of solving linear inequalities to connect compound inequalities. | | | A1.1.3 Linear Inequalities<br><br>Descriptor:<br>A1.1.3.1 Write, solve, and/or graph linear inequalities using various methods. | 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).<br><br>A1.1.3.1.2 Identify or graph the solution set to a linear inequality on a number line. | Compound Inequalities |

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| | | **A.1.1.3.1** | **Linear Inequalities cont'd** | | | | | | |
| **1 DAY** | **1 DAY** | **A.1.1.3.1.3** | E. Interpret Inequalities | All students will create and apply concepts to solve systems of inequalities of real life problems. All students will analyze and synthesize the solutions to such problems. | All students will write, graph, and identify solutions of inequalities.<br><br>Materials:<br>Blank number lines<br><br>All students will solve multi-step inequalities.<br><br>Materials:<br>Guided notes: Inequality symbols and open/close dots<br><br>Essential vocabulary:<br>equation<br>inequality | | A1.1.2 Linear Equations<br><br>Descriptor:<br>A1.1.2.2 Write, solve, and/or graph systems of linear equations using various methods.<br><br>A1.1.3 Linear Inequalities<br><br>Descriptor:<br>A1.1.3.1 Write, solve, and/or graph linear inequalities using various methods. | A1.1.2.2.2 Interpret solutions to problems in the context of the problem situation. Note: Limit systems to two linear equations.<br><br>A1.1.3.2.2 Interpret solutions to problems in the context of the problem situation. Note: Limit systems to two linear inequalities. | |
| | | **A.1.1.3.2** | **Graph Linear Inequalities** | | | | | | |
| **2 DAYS** | **3 DAYS** | **A.1.1.3.2.1** | A. Graph Linear Inequalities in Two Variables | All students will be able to create linear inequalities graphically. | All students will graph linear inequalities in two variables.<br><br>Materials: Graphing Linear Inequalities on a Coordinate Plane<br>Worksheet with graphs provided.<br>Colored pencils<br><br>Strategies:<br>Flex grouping<br>Use of real world examples with manipulatives<br>(eg. Books, pencils)<br><br>Essential vocabulary:<br>inequality<br>variable | 2.1.HS.C.5<br>Construct and compare linear, ~~quadratic and exponential~~ models to solve problems.<br><br>2.2.HS.D.1<br>Interpret the structure of expressions to represent a quantity in terms of its context.<br><br>2.2.HS.D.7<br>Create and graph equations or inequalities to describe numbers or relationships. | A1.1.3 Linear Inequalities<br><br>Descriptor:<br>A1.1.3.1 Write, solve, and/or graph linear inequalities using various methods. | A1.1.3.2.1 Write and/or solve a system of linear inequalities using graphing. Note: Limit systems to two linear inequalities. | Inequality<br>Linear inequality<br>Graph of an Inequality<br>Equivalent Inequalities<br>Solution of an Inequality<br>Constraints |
| **2 DAYS** | **2 DAYS** | **A.1.1.3.2.2** | B. Write and Interpret Linear Inequalities | All students will be able to analyze and investigate the graph of linear inequalities to draw conclusions from a experiment. | | | A1.1.3 Linear Inequalities<br><br>Descriptor:<br>A1.1.3.1 Write, solve, and/or graph linear inequalities using various methods. | A1.1.3.1.3 Interpret solutions to problems in the context of the problem situation. Note: Limit to linear inequalities. | |
| **2 DAYS** | **2 DAYS** | **A.1.1.3.2.1** | C. Solve Linear Inequalities by Graphing | All students will synthesize systems of linear inequalities graphically to prove whether an ordered pair is a solution. | | | A1.1.3 Linear Inequalities<br><br>Descriptor:<br>A1.1.3.1 Write, solve, and/or graph linear inequalities using various methods. | A1.1.3.2.1 Write and/or solve a system of linear inequalities using graphing. Note: Limit systems to two linear inequalities. | |

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| | Module 2 | Linear Functions and Data Organizations | | | | | | | |
| | | A.1.2.1.1 | Functions | | | | | | |
| 1 DAY | 1 DAY | **A.1.2.1.1.1** | A. Relating Patterns/Graphs to Events | All students will be able to design a mathematical model that represents linear or quadratic functions given a set of data or graphical representation. | All students will find domain and range.<br><br>Materials:<br>Guided notes with definitions of range and domain with examples.<br><br>All students will be able to identify functions utilizing the vertical line test.<br>Essential vocabulary: vertical<br>domain<br>line<br>relation<br>range | **2.1.HS.C.1**<br>Use the concept and notation of functions to interpret and apply them in terms of their context.<br><br>**2.1.HS.C.2**<br>Graph and analyze functions and use their properties to make connections between the different representations.<br><br>**2.1.HS.C.3**<br>Write functions or sequences that model relationships between two quantities.<br><br>**2.1.HS.C.6**<br>Interpret functions in terms of the situation they model. | A1.2.1 Functions<br><br>A1.2.1.1 Analyze and/or use patterns or relations. | A1.2.1.1.1 Analyze a set of data for the existence of a pattern and represent the pattern algebraically and/or graphically.<br><br>A1.2.1.1.3 Identify the domain or range of a relation (may be presented as ordered pairs, a graph, or a table). | Pattern<br>Arithmetic Sequence<br>Geometric Sequence |
| 1 DAY | 1 DAY | **A.1.2.1.1.3** | B. Identify Domain or Range | All students will identify the domain and range given a set of points on a graph either continuous or discontinuous. | | | A1.2.1 Functions<br><br>A1.2.1.1 Analyze and/or use patterns or relations. | A1.2.1.1.3 Identify the domain or range of a relation (may be presented as ordered pairs, a graph, or a table). | Domain<br>Range |
| 1 DAY | 1 DAY | **A.1.2.1.1.2** | C. Determine if Relation is a Function | All students will be able to analyze relations or patterns to distinguish the difference between functions and non-functions. | | | A1.2.1 Functions<br><br>A1.2.1.1 Analyze and/or use patterns or relations. | A1.2.1.1.2 Determine whether a relation is a function, given a set of points or a graph. | Relation<br>Mapping<br>Function<br>Independent Variable<br>Dependent Variable |
| | | A.1.2.3 | Data Analysis | | | | | | |
| | | **A.1.2.3** | **Probability and Data Analysis** | | | | | | |
| 1 DAY | 1 DAY | **A.1.2.3.1** | A. Use Measures of Central Tendency | All students will be able to calculate the measures of central tendency and the range of a set of data. | All students will be able to find the mean, median, mode, and range.<br><br>Materials:<br>Guided notes including the following essential vocabulary:<br>mean<br>median<br>mode<br>range<br><br>All students will be able to identify the line of best fit.<br><br>Materials:<br>Guided notes including pictures of the following essential vocabulary:<br>positive correlation<br>negative correaltion<br>no correlation | 2.4.HS.B.1<br>Summarize, represent, and interpret data on a single count or measurement variable. | A1.2.3 Data Analysis<br><br>Descriptor:<br>A1.2.3.1 Use measures of dispersion to describe a set of data. | 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). | Mean<br>Median<br>Mode<br>Range<br>Measures of Central Tendency |

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| | | **A.1.2.3** | **Probability and Data Analysis cont'd** | | | | | | |
| **1 DAY** | **2 DAYS** | **A.1.2.3.1** | B. Analyze the Dispersion of Data | All students will be able to analyze the measure of dispersion from a graphical representation or a set of data. | All students will be able to find the mean, median, mode, and range.<br><br>Materials:<br>Guided notes including the following essential vocabulary:<br>mean<br>median<br>mode<br>range<br><br>All students will be able to identify the line of best fit.<br><br>Materials:<br>Guided notes including pictures of the following essential vocabulary:<br>positive correlation<br>negative correaltion<br>no correlation | **2.4.HS.B.2**<br>Summarize, represent, and interpret data on two categorical and quantitative variables.<br><br>**2.4.HS.B.3**<br>Analyze linear models to make interpretations based on the data.<br><br>**2.4.HS.B.4**<br>Recognize and evaluate random processes underlying statistical experiments.<br><br>**2.4.HS.B.5**<br>Make inferences and justify conclusions based on sample surveys, experiments, and observational studies. | A1.2.3 Data Analysis<br><br>Descriptor:<br>A1.2.3.1 Use measures of dispersion to describe a set of data. | A1.2.3.1.1 Calculate and/or interpret the range, quartiles, and interquartile range of data. | |
| **1 DAY** | **2 DAYS** | **A.1.2.3.2** | C. Analyze Data and Make Predictions From Grapical Representations | All students will be able to draw conclusions from a data display to solve real-world problems. | | | A1.2.3 Data Analysis<br><br>Descriptor:<br>A1.2.3.2 Use data displays in problem-solving settings and/or to make predictions. | A1.2.3.2.1 Estimate or calculate to make predictions based on a circle, line, bar graph, measures of central tendency, or other representations. | Box-and-Whisker Plot<br>Stem-and-Leaf Plot<br>Bar Graph<br>Line Graph<br>Circle Graph / Pie Chart<br>Frequency<br>Histogram<br>Interquartile Range<br>Measure of Dispersion<br>Outlier<br>Quartile |
| **1 DAY** | **2 DAYS** | **A.1.2.2.2.1**<br>**A.1.2.3.2** | D. Fit a Line to Data | All students will analyze scatterplots to create a line of best fit and show using technology the correlation of slope and interpret. | | | A1.2.2 Coordinate Geometry<br><br>Descriptor:<br>A1.2.2.2 Analyze and/or interpret data on a scatter plot.<br><br>A1.2.3 Data Analysis<br><br>Descriptor<br>A1.2.3.2 Use Data displays in problem-solving settings and/or to make predictions. | A1.2.2.2.1 Draw, identify, find, and/or write an equation for a line of best fit for a scatter plot.<br><br>A1.2.3.2.3 Make predictions using the equations or graphs of best-fit lines of scatter plots. | Scatter Plot<br>Correlation<br>Line of Fit<br>Curve of Best Fit<br>Regression Curve |

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| | | **A.1.2.3** | **Probability and Data Analysis cont'd** | | | | | | |
| **1 DAY** | **1 DAY** | **A.1.2.3.2** | E. Analyze Data and Make Predictions From Non-Graphical Representations | All students will interpret data, design an appropriate representation of displayed data, and make predictions based on the distribution. | All students will be able to find the mean, median, mode, and range.<br><br>Materials:<br>Gudied notes including the following essential vocabulary:<br>mean<br>median<br>mode<br>range<br><br>All students will be able to identify the line of best fit.<br><br>Materials:<br>Guided notes including pictures of the following essential vocabulary:<br>positive correlation<br>negative correaltion<br>no correlation | **2.1.HS.F.3**<br>Apply quantative reasoning to choose and interpret units and scales in formulas, graphs and data displays. | A1.2.3 Data Analysis<br><br>Descriptor:<br>A1.2.3.2 Use data displays in problem-solving settings and/or to make predictions. | 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). | Box-and-Whisker Plot<br>Stem-and-Leaf Plot<br>Bar Graph<br>Line Graph<br>Circle Graph / Pie Chart<br>Frequency<br>Histogram<br>Interquartile Range<br>Measure of Dispersion<br>Outlier<br>Quartile |
| **1 DAY** | **1 DAY** | **A.1.2.3.3** | F. Find and Apply Probabilities | All students will calculate probabilities of compound events and make predictions based on calculations using the given events. | | **2.4.HS.B.6**<br>Use the concepts of independence and conditional probability to interpret data.<br><br>**2.4.HS.B.7**<br>Apply the rules of probability to compute probabilities of compound events in a uniform probability model. | A1.2.3 Data Analysis<br><br>Descriptor:<br>A1.2.3.3 Apply probability to practical situations. | 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. | Probability<br>Odds<br>Outcome<br>Sample Space<br>Population<br>Theoretical Probability<br>Experimental Probability<br>Combination<br>Permutation<br>Compound Event<br>Dependent Events<br>Fundamental Counting Principle<br>Probability of a Compound Event<br>Simple Event<br>Independent Events<br>Mutually Exclusive Events |
| **55 Days** | **77 Days** | | | | | | | | |