| Unit:1.1 | Equations | Days : 11 |
|---|---|---|

| Essential Questions |
|---|
| How do you interpret, evaluate and write algebraic expressions that model real-world situations?<br>What are some of the different methods for solving linear equations?<br>How can you use properties to justify solutions to equations that involve multiplication and division?<br>How can you justify solutions to multi-step equations?<br>How can you use properties to justify solutions to equations that have variables on both sides?<br>How do you solve literal equations and rewrite formulas?<br>How can you use graphing to solve equations involving absolute value? |

| Content to be Learned | Skills |
|---|---|
| Students will learn to multi-stepped equations including equations with variables on both sides. Students will be able to identify the properties used in each step to justify the solutions. | Identify and create examples or real number system properties.<br><br>Identifying the components of an equation in order to combine like terms and thereby isolate a variable to find its solution. Justify the solution to an equation by identifying the properties used to solve it. |
| **Assessments** | **Standards** |
| Formative Assessments<br>Quizzes<br>Chapter Tests<br>Common Tasks | A.SSE.1<br>A.SSE.1a<br>A.SSE.1b<br>A.REI.1<br>A.REI.3<br>A.REI.11<br>A.CED.2<br>A.CED.4 |
| **Sample Instructional Activities** | **Resources** |
| Chapter 1 Equations | "Explorations in Core Math For Common Core" Algebra Textbook Lessons |

| Unit: 1.2 | Inequalities | Days : 9 |
|---|---|---|

| Essential Questions |
|---|
| How can you represent relationships using inequalities?<br>How can you use properties to justify solutions to inequalities involving addition, subtraction, multiplication and/or division?<br>How can you use properties to justify solutions to multistep inequalities?<br>How can you use properties to justify solutions to inequalities with variables on both sides?<br>How can you solve special compound inequalities? |

| Content to be Learned | Skills |
|---|---|
| The student will be able to:<br>find a solution set given a replacement set for an inequality<br>represent inequalities algebraically<br>solve simple, multi-step and compound using properties to justify<br>graph simple, multi-step and compound inequalities and express solutions using set notation<br>solve real world problems by writing inequalities | Solve and graph inequalities by isolating the variable<br>Interpret key words indicating inequality in real world situations<br>Use properties to justify solutions to inequalities<br>Express solutions in set notation |
| **Assessments** | **Standards** |
| Formative Assessments<br>Quizzes<br>Unit Test | CC.9-12. N.Q.2<br>CC.9-12.A.CED. 1,3<br>CC.9-12.A.REI.3 |
| **Sample Instructional Activities** | **Resources** |
| | Explorations in Core Math for the Common Core Algebra 1 |

| **Unit:1.3** | **Introduction to Functions** | **Days : 15 (plus another 11 days in beginning of Quarter 2)** |
|---|---|---|

| **Essential Questions** | |
|---|---|
| **How are linear functions used in the real world and how are they helpful to make predictions regarding the future trend of data?**<br>**How do you use operations to combine functions.**<br>How do you represent functions?<br>How can you use operations to combine functions and how can you find inverses of functions?<br>What is a discrete linear function and how are discrete and continuous linear functions alike and how are they different?<br>How are piecewise functions and their graphs different from other functions?<br>How can you use intercepts to graph the solutions to a linear equation in two variables? | |
| **Content to be Learned** | **Skills** |
| **Preform operations with functions, including inverse operations.**<br>**Create linear functions, tables and graphs given specific parameters.**<br>**Represent functions as tables, graphs, and mappings.**<br>**Identify discrete versus continuous data.**<br>**Graph and identify domain and range of piecewise functions.**<br>**Graph linear functions using x and y intercepts.** | **Solve equations, identify patterns, and make predictions.**<br>**Translate algebraic patterns from tables to graphs to equations and back.**<br>**Perform operations with functions, including determining inverse functions.** |
| **Assessments** | **Standards** |
| **Formative Assessments**<br>**Quizzes**<br>**Chapter Tests**<br>**Common Tasks** | **F.BF.1, F.BF.1b, F.BF.4a**<br>**F.IF.2, F.IF.3, F.IF.5, F.IF.6, F.IF.7a and 7b, F.IF.9**<br>**F.LE.2**<br>**A.CED.2**<br>**A.REI.10, A.REI.11** |
| **Sample Instructional Activities** | **Resources** |
| | **Explorations in CORE Math – Algebra Textbook Lessons**<br>**Springboard Algebra Activities** |

| Unit: 2.1 | Introduction to Functions | Days : 11 (continued from Quarter 1) |
|---|---|---|

| Essential Questions |
|---|
| What is the slope of a linear function and how can you use it to graph the function?<br>How does changing the values of m and a affect the graphs of $f(x) = mx$ and $g(x) = a\|x\|$?<br>How do you represents relationships using linear functions? |

| Content to be Learned | Skills |
|---|---|
| Calculate slope from two points, a table, and a graph and write the equation.<br>Classify the slopes of lines.<br>Find the slope from a graph to determine the rate of change in a real-world function.<br>Determining if a relationship is linear or not.<br>Graph absolute value equations.<br>Recognize transformations of linear relations. | Solve equations, identify patterns, and make predictions.<br><br>Translate algebraic patterns from tables to graphs to equations and back.<br><br>Perform operations with functions, including determining inverse functions. |
| **Assessments** | **Standards** |
| Formative Assessments<br>Quizzes<br>Chapter Tests<br>Common Tasks | F.BF.1 F.BF.1b F.BF.4a<br>F.IF.2 F.IF.3 F.IF.5 F.IF.6 F.IF.7a and 7b F.IF.9<br>F.LE.2<br>A.CED.2<br>A.REI.10 A.REI.11 |
| **Sample Instructional Activities** | **Resources** |
| | Explorations in CORE Math – Algebra Textbook Lessons<br>Springboard Algebra Activities |

| **Unit:2.2** | **Applications of Linear Functions** | **Days : 14** |
|---|---|---|

**Essential Questions**

**How can you decide whether a correlation exists between paired numerical data and if so, what is the line of fit for that data?**
**How can you use residuals and linear regression to fit a line to data?**
**How can you use linear equations to model the results of a fund-raiser?**
**How do the values of the constants affect the graphs of:** $f(x) = mx + b$ *and* $g(x) = a|x - h| + k$ ?

| **Content to be Learned** | **Skills** |
|---|---|
| Students will create scatter plots and determine their correlation.<br>Students will evaluate linear model's goodness of fit by using residuals (using technology).<br>Students will write the equation of the line of goodness of fit for real-world applications.<br>Students will graph linear and absolute value functions and determine the affect of translations. | Graph linear and absolute value equations.<br><br>Identify trends in data and make predictions.<br><br>Use technology (graphing calculators). |
| **Assessments** | **Standards** |
| **Formative Assessments**<br>**Quizzes**<br>**Chapter Tests**<br>**Common Tasks** | F.LE.5<br>S.ID.6, S.ID.6a, S.ID.6c, S.ID.6, S.ID.7, S.ID.8, S.ID.9<br>S.IC.6<br>F.IF.7, F.IF.7a N.Q.1, N.Q.2<br>A.SSE.1, A.SSE.1a A.CED.2, A.CED.3<br>F.IF.2,F.IF.4, F.IF.7b F.BF.1, F.BF.3 |
| **Sample Instructional Activities** | **Resources** |
| | **Explorations in CORE Math – Algebra Textbook Lessons**<br>**SpringBoard® "Pass the Book"** |

| **Unit:2.3** | **System of Equations and Inequalities** | **Days :10** |
|---|---|---|

| **Essential Questions** | |
|---|---|
| How do you approximate the solution of a system of linear equations by graphing?<br>How do you use substitution to solve a system of equations?<br>How do you solve a system of linear equations by adding or subtracting?<br>How do you solve systems with no or infinitely many solutions?<br>How do you graph a linear inequality in two variables?<br>How can you use systems of linear equations or inequalities to model and solve contextual problems? | |
| **Content to be Learned** | **Skills** |
| Students will learn how to solve systems of linear equations graphically and algebraically. They will apply their knowledge to real world situations in which they will write and solve systems of equations. | Graphing linear equations and inequalities<br>Solving multistep algebraic equations<br>Solving equations for a given variable<br>Adding and subtracting expressions |
| **Assessments** | **Standards** |
| Quizzes<br>Summative Unit Assessment | A.REI.6<br>A.REI.5<br>A.REI.12<br>N.Q.2<br>A.CED.3 |
| **Sample Instructional Activities** | **Resources** |
| Chapter 5 Systems of Equations and Inequalities | “Explorations in Core Math for Common Core” |

| **Unit: 3.1** | **Systems of Equations and Inequalities (continued)** | **Days: 5 (continued from Quarter 2)** |
|---|---|---|

| **Essential Questions** | |
|---|---|
| **How do you graph a linear inequality in two variables?**<br>**How can you use systems of linear equations or inequalities to model and solve contextual problems?** | |
| **Content to be Learned** | **Skills** |
| Students will learn how to solve systems of linear inequalities graphically. They will apply their knowledge to real world situations in which they will write and solve systems of inequalities. | Graphing linear equations and inequalities<br>Solving multistep algebraic equations<br>Solving equations for a given variable<br>Adding and subtracting expressions<br>Shading solution sets |
| **Assessments** | **Standards** |
| Quizzes<br>Summative Unit Assessment | A.REI.6<br>A.REI.5<br>A.REI.12<br>N.Q.2<br>A.CED.3 |
| **Sample Instructional Activities** | **Resources** |
| Chapter 5 Systems of Equations and Inequalities | “Explorations in Core Math for Common Core” |

| **Unit: 3.2** | **Exponents and Polynomials** | **Days: 13** |
|---|---|---|

| **Essential Questions** | |
|---|---|
| **How can you develop and use the properties of integer exponents?**<br>**What are rational and irrational numbers and how are radicals related to rational exponents?**<br>**What parts of a polynomial represent terms, factors, and coefficients?**<br>**How do you add and subtract polynomials?**<br>**How do you multiply polynomials?** | |
| **Content to be Learned** | **Skills** |
| Students will learn the relationship between rational exponents and radicals. They will apply rules of exponents for integers to rational exponents in order to simplify expressions. They will also perform operations with polynomials. | |
| **Assessments** | **Standards** |
| Quizzes<br>Summative Unit Assessment | N.RN.1, 2, 3<br>A.SSE.1, 1a, 1b, 2<br>A.APR.1<br>F.BF.1a |
| **Sample Instructional Activities** | **Resources** |
| Chapter 6 Exponents and Polynomials | "Explorations in Core Math for Common Core" |

| Unit:3.3 | Title: Factoring Polynomials | Days : 9 |
|---|---|---|

| Essential Questions | |
|---|---|
| How can you find the GCF of monomials?<br>How can you factor $x^2+bx+c$?<br>How can you factor $ax^2+bx+c$? | |
| **Content to be Learned** | **Skills** |
| Students will learn to factor expressions. They will be able to recognize when terms of an expression share common factors and they will be able to recognize when an expression fits a certain pattern based on the structure of its parts. | Identifying the components of an expression.<br>Perform prime factorization in order to determine greatest common factor.<br>Find factors of monomials.<br>Writing multiple representations for poly and trinomial expressions.<br>Multiplying polynomials. |
| **Assessments** | **Standards** |
| Formative Assessments<br>Quizzes<br>Chapter Tests<br>Common Tasks | A.SSE.1a<br>A.SSE.1b<br>A.SSE.2 |
| **Sample Instructional Activities** | **Resources** |
| Chapter 7 Factoring Polynomials | "Explorations in Core Math For Common Core" Algebra Textbook Lessons |

| Unit:3.4 | Quadratic Functions and Equations | Days : 8 |
|---|---|---|

| Essential Questions |
|---|
| What is the effect of the constant a on the graph of g(x) = a$x^2$? |
| What is the effect of the constants h and k on the graph of g(x) = a$(x-h)^2 + k$ ? |
| How can you obtain the graph of g(x) = a$(x-h)^2 + k$ |

| Content to be Learned | Skills |
|---|---|
| Students will learn graph quadratic functions and show intercepts and maxima and minima.<br>They will be able to identify the effect of adding or multiplying by a constant on the graph of a quadratic function.<br>Students will learn how to graph an equation in vertex form | Graphing the parent quadratic function<br>Recognizing the graph of a quadratic function as a parabola and identifying the vertex as the maximum or minimum of the function.<br>Graphing quadratic functions by making a table to determine the effect of a, h and k on the graph of a quadratic function<br>Being able to graph a quadratic function given in vertex form |
| **Assessments** | **Standards** |
| Formative Assessments<br>Quizzes<br>Chapter Tests<br>Common Tasks | F.IF.2, 4, 5, 7, and 7a<br>F.BF.1 & 3<br>A.CED.2 |
| **Sample Instructional Activities** | **Resources** |
| Chapter 8 Quadratic Functions and Equations | "Explorations in Core Math For Common Core" Algebra Textbook<br>Lessons 8-1, 8-2 and 8-4 |

| Unit:4.1 | Quadratic Functions and Equations (continued from Quarter 3) | Days : 21 |
|---|---|---|

**Essential Questions**

How can you describe key attributes of the graph of f(x) = a$x^2 + bx + c$ by analyzing its equation?
How can you solve a quadratic equation by graphing, by factoring, and by using square roots?
How can you solve quadratic equations by not factoring?
How can you derive the quadratic formula and use it to solve quadratic equations?
How can you solve a system of equations when one is linear and the other is quadratic?

| Content to be Learned | Skills |
|---|---|
| Students will graph quadratic functions in standard form using key attributes (vertex, maximum, or minimum, symmetry and intercepts) to draw the graph.<br>Given a quadratic equation c= a$(x-h)^2 + k$ , students will separate the equations and graph the quadratic function and the linear function and fine the point(s) of intersection There can be no, one or two solutions.<br>Students will factor and solve quadratic equations to find the zeros of the function.<br>Students will solve quadratic functions by isolating the perfect square, and taking the square root of both sides resulting in two solutions (Pos. and neg. square root)<br>Students will solve quadratic equations by completing the square<br>Students will use the discriminant to determine the number of real solutions to a given quadratic equation. Students will use the quadratic formula to find the solutions of a quadratic equation<br>Solving a systems of equations when one equation is linear and the other is quadratic by graphing to find the point(s) of intersection | Students will factor and solve quadratic trinomials to find the x intercepts, and solve for the x of axis of symmetry and use that value to find vertex. Recognizing and using the y intercept and symmetry as well as the previously solved for points will allow graphing.<br>Students will separate functions given in vertex form = c in to a quadratic and a linear equation, graph both and look for point(s) of intersection<br>Given a quadratic function, students will rearrange the equation into standard form, then factor and solve it to find the zeros using the zero product property. Students will learn to identify the zeros as x intercepts<br>Students will learn to isolate perfect square and take the square root of both sides(pos. and neg. sq.root) to solve for the variable<br>Students will recognize the pattern of a binomial squared (determining that c = $the\ square\ of\ \ (b)/(2))$ , so they can work backwards to complete the square and then apply the definition of a square root<br>Students will learn to find the discriminant and use it to determine the number of solutions given a quadratic equation. Using the quadratic formula , students will find the solutions of quadratic equations<br>Graphing to solve a system equations with 1 linear and 1 quadratic equation by graphing both equations on the same coordinate plane to find the intersection point(s) |

| Assessments | | Standards | |
|---|---|---|---|
| Formative Assessments | Quizzes | F.I.F. 4, 7,7a, 8 and 8a | A.CED.1 & 2 |
| Chapter Tests | Common Tasks | A.REI.4, 4a, 4b, 7, and 11 | A.SSE 3 & 3a |

| Sample Instructional Activities | Resources |
|---|---|
| Chapter 8 Factoring Polynomials | "Explorations in Core Math For Common Core" Algebra Textbook Lessons 8-3, 8-5 thru 8-10 |

| Unit: 4.2 | Exponential Functions | Days : 4 |
|---|---|---|

| Essential Questions |
|---|
| How does changing the values of a, h and k affect the graph of an exponential function?<br>How do you write, graph, and interpret exponential growth and decay functions? |

| Content to be Learned | Skills |
|---|---|
| Graphing functions and parent exponential functions.<br>Graphing transformations of parent exponential functions.<br>Graph exponential functions showing intercepts and end behavior<br>Recognize situations in which a quantity grows or decays by a constant rate per unit interval relative to another.<br>Construct exponential functions given a graph, description or table.<br>Interpret the parameters in a exponential function in terms of context. | Use technology to graph exponential relationships and their transformations.<br><br>Interpret graphs of exponential functions. |
| **Assessments** | **Standards** |
| Formative Assessments<br>Quizzes<br>Chapter Tests<br>Common Tasks | F.BF.3<br>F.LE.1c<br>F.LE.2<br>F.IF.7e |
| **Sample Instructional Activities** | **Resources** |
| | Explorations in CORE Math – Algebra Textbook Lessons<br>Springboard Algebra Activities |