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| **Enduring Understanding:**  Make sense of problems, proper units for measurement, and select appropriate tools to solve problems. Simplify algebraic expressions. | | | | |
| **Standard** | **Essential Questions** | | **Pacing Guideline** | **Key Academic Vocabulary** |
| N-Q.1 N-Q.2 N-Q.3 A-SSE.1.a A-SSE.1.b A-SSE.2 | N-Q.1 Can I use units to solve multi-step problems? Can I choose appropriate units to express the variables and interpret the meaning of the units? Can I read and interpret the scale and origin of a graph or data display?  N-Q.2 Can I define appropriate quantities to describe the characteristics of interest for a population?  N-Q.3 Can I choose an appropriate limit of accuracy on measurements?  A-SSE.1.a Can I interpret parts of an expression?  A-SSE.1.b Can I interpret parts of an expression to reveal an underlying structure or function?  A-SSE.2 Can I rewrite algebraic expressions by combining like terms? | | 4 days | - Algebraic Expression - Coordinate Plane - Ordered Pair/Coordinate - X- and Y-Axis - Quadrant - Origin - Units - Variable - Term - Constant - Coefficient - Real/Rational/  - Irrational/Integers/  - Fractions - Evaluate Expressions - Simplify |
| **Suggested Resources by Unit** | | **Location of these resources** | | |
| Expressions Task  Chapter: Solving Equations/Section:Modeling  Algebraic Translations  How to Convert Metric Units to Solve Word Problems | | <http://insidemathematics.org/index.php/tools-for-teachers/course-1-algebra/mars-tasks-scoring-rubrics-a-analysis>  <http://hotmath.com/help/gt/genericprealg/section_4_3.html>  <http://www.regentsprep.org/Regents/math/ALGEBRA/AE1/indexAE1.htm>  <http://www.slideshare.net/6sbradbury/maths-project-converting-metric-units> | | |

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| **Enduring Understanding:**  **Solve equations in one variable. Determine the process for solving and be able to justify with properties. Complete geometric and arithmetic series and express in explicit and recursive forms. Construct viable arguments and critique reasoning by modeling and structuring equations.** | | | | |
| **Standard** | **Essential Questions** | | **Pacing Guideline** | **Key Academic Vocabulary** |
| A-CED.4  A-REI.1  F-IF.3  F-BF.1.a  F-BF.2 | *A-REI.1 Can I use mathematical properties to justify my solution?*  *F-IF.3 Can I model NOW-NEXT equations to determine if a function is recursive?*  *F-BF.1.a Can I develop a recursive rule using a NOW-NEXT equation? Can I convert a recursive rule into an explicit form?*  *F-BF.2 Can I generate recursive and explicit forms for both arithmetic and geometric sequences? Can I use the forms (recursive and explicit) interchangeably?*  *A-CED.4. Can I solve literal equations for any given variable?* | | 6 days | - NOW-NEXT equations  - Properties of Equality/Distributive/Closure  - Recursive  - Explicit  - Patterns  - Arithmetic Sequence  - Geometric Sequence  - Algebraic Equation  - Literal Equation/Formula  - Solution/Solve Equation |
| **Suggested Resources by Unit** | | **Location of these resources** | | |
| Buying Chips & Candy/Sorting Functions/Sidewalk Patterns Tasks  Numbers Task  Sequences and Patterns  Recursive Sequence | | <http://insidemathematics.org/index.php/tools-for-teachers/course-1-algebra/mars-tasks-scoring-rubrics-a-analysis>  <http://insidemathematics.org/index.php/tools-for-teachers/course-2-geometry/mars-tasks-scoring-rubrics-a-analysis>  <http://www.basic-mathematics.com/sequences-and-patterns.html>  <http://www.learner.org/workshops/algebra/workshop5/index2.html#2> | | |

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| **Enduring Understanding:**  Analyze linear functions using different representations. Build new functions from existing functions. Interpret expressions for functions in terms of the situations they represent. By modeling, looking for repetition, and using appropriate tools, students will reason abstractly and quantitatively. | | | | |
| **Standard** | **Essential Questions** | | **Pacing Guideline** | **Key Academic Vocabulary** |
| A-CED.1 A-CED.2 A-CED.3 F-IF.1 F-IF.2 F-IF.4 F-IF.5 F-IF.6 F-IF.7.a F-IF.9 F-BF.1.b F-BF.3 F-LE.1.a F-LE.1.b F-LE.1c F-LE.2 F-LE.5 | A-CED.1 Can I write equations and inequalities from given context?  A-CED.2 Can I write and graph equations in two or more variables?  A-CED.3 Can I define constraints on an equation or inequality?  Can I determine if my solution is applicable to the given context?  A-SSE.1b Can I interpret parts of an expression to reveal its underlying structure as a linear function?  F-IF.1 Can I define the domain and range of a function?  F-IF.2 Can I evaluate functions written in function notation?  F-IF.4 Can I find the rate of change and intercepts of linear functions and interpret?  F-IF.5 Can I determine the appropriate domain and range in a real world situation?  F-IF.6 Can I calculate and interpret the rate of change?  F-IF.7.a Can I graph linear functions?  F-IF.9 Can I compare two functions that are represented differently (algebraic, graphical, tabular, verbal)?  F-BF.1.b Can I describe the effects of adding or subtracting a constant or a linear function to another linear function?  F-BF.3 Can I describe the transformation of a graph when an arithmetic operation is introduced to the parent function?  F-LE.1.a Can I prove that a function can be represented linearly?  F-LE.1.b Can I recognize a constant rate of change among two quantities (linear)?  F-LE.1c Can I recognize whether one quantity changes at a constant percent rate per interval of another quantity? (linear)  F-LE.2 Can I choose the correct type of function and produce a linear function if given appropriate different representations?  F-LE.5 Can I translate the context of linear functions? | | 15 days | - Domain and Range - Rate of Change/Slope - Parent Function - Function - Function Notation/Rule - Intercepts - Slope-Intercept - End Behavior - Linear - Transformation - Constant - Table - Solution Set - Constraints |
| **Suggested Resources by Unit** | | **Location of these resources** | | |
| Matching a Graph to a Story  The Cog Railway Task  Algebra vs Cockroaches (Writing Linear Equations)  Classroom Jeopardy (Writing Linear Equations) | | <http://map.mathshell.org/materials/download.php?fileid=667>  <http://insidemathematics.org/index.php/tools-for-teachers/8th-grade-math/mars-tasks-scoring-rubrics-a-analysis>  <http://hotmath.com/hotmath_help/games/kp/kp_hotmath_sound.swf>  <http://www.superteachertools.com/jeopardy/usergames/Apr201017/27/game1272422988.php> | | |

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| **Enduring Understanding:**  **Understand basic geometrical terms and formulas. Use the appropriate properties of lines to solve for unknowns algebraically. Students will reason abstractly and persevere in solving problems and make explicit use of definitions to communicate precisely and quantitatively.** | | | | |
| **Standard** | **Essential Questions** | | **Pacing Guideline** | **Key Academic Vocabulary** |
| G-CO.1  G-GPE.4  G-GPE.5  G-GPE.6  G-GPE.7  G-GMD.1  G-GMD.3 | *G-GCO.1 Can I define angle, circle, line segment, parallel and perpendicular lines?*  *G-GPE.4 Can I use coordinates to find slope and distance to determine the specific properties of a figure?*  *G-GPE.5 Can I write equations of parallel and perpendicular lines?*  *G-GPE.6 Can I find the midpoint, endpoint and distance of a line segment?*  *G-GPE.7 Can I find the perimeter of a polygon and the areas of triangles and rectangles?*  *G-GMD.1 Can I describe the parts of formulas for area and circumference of circles, and volume of cylinders, pyramids and cones?*  *G-GMD.3 Can I use the volume formulas for cylinders, pyramids, cones and spheres?* | | 10 days | * Angle * Circle * Line Segment * Parallel Lines * Perpendicular Lines * Slope * Perimeter/Area/Volume * Circumference * Radius * Diameter * Arc * Chord * Polygons (Triangle/Rectangle/Parallelogram) * Distance/Midpoint/Endpoint * Surface Area (Cylinder/Cone/Sphere/Pyramid) |
| **Suggested Resources by Unit** | | **Location of these resources** | | |
| Textbook and Resources  Finding Equations of Parallel and Perpendicular Lines  Where’s Waldo?  Solving Equations Involving Parallel and Perpendicular Lines  Midpoint and Distance  Midpoint and Distance  Perimeter and Area of Polygons  Chapter 9: Areas and Volumes | | McDougal Littell Geometry    <http://map.mathshell.org/materials/download.php?fileid=703>  <http://www.geogebra.org/en/upload/files/UC_MAT/Holly%20Phelps/Where_s_Waldo.html>  <http://www.beaconlearningcenter.com/documents/1750_01.pdf>  <http://www.pdesas.org/module/content/resources/21070/view.ashx>  <http://www.ilovemath.org/index.php?option=com_docman&task=cat_view&gid=55&limit=10&limitstart=0&order=name&dir=ASC>  <http://www.mathgoodies.com/lessons/toc_vol1.html>  <http://hotmath.com/help/gt/genericprealg/index.html?chapter=9&section=7> | | |

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| **Enduring Understanding:**  Solve systems of equations and inequalities algebraically and graphically. Apply the appropriate tools of technology to analyze representations and relate them to real world problems. Use models to construct viable arguments to verify solutions make sense in the context of the problem. | | | | |
| **Standard** | **Essential Questions** | | **Pacing Guideline** | **Key Academic Vocabulary** |
| A-CED.3 A-REI.3 A-REI.5 A-REI.6 A-REI.10 A-REI.11 A-REI.12 | A-CED.3 Can I define constraints on a system of equations or inequalities? Can I determine if my solution is applicable to the given context?  A-REI.3 Can I solve a linear equation or inequality?  A-REI.5 Can I prove the two equations in two variables will yield the same solution?  A-REI.6 Can I find an exact or approximate solution to systems of linear equations?  A-REI.10 Can I understand all solutions of equations of two variables are contained on the graph of that equation?  A-REI.11 Can I use various models to solve a system of two or more equations in two variables?  A-REI.12 Can I graph linear inequalities and systems of linear inequalities? | | 10 days | - No Solution/Inconsistent - Infinitely Many Solutions/Consistent & Dependent - Elimination Method - Linear Inequality - Substitution Method - Matrix - Reduced-Row Echelon - Constraints - Approximate Solutions - Exact Solutions |
| **Suggested Resources by Unit** | | **Location of these resources** | | |
| The Cycle Shop Task  Solving Systems of Linear Equations in Two Variables  Linear Inequalities  Systems of Linear Inequalities | | <http://schools.nyc.gov/NR/rdonlyres/0D9AA86E-F601-4F26-9598-CF57C4FA7CAB/0/NYCDOEHSAlgebraTheCycleShop_Final.pdf>  <http://map.mathshell.org/materials/download.php?fileid=669>  <http://www.mathwarehouse.com/algebra/linear_equation/linear-inequality.php>  <http://www.mathwarehouse.com/algebra/linear_equation/systems-of-equation/system-linear-inequality.php> | | |

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| **Enduring Understanding:**  **Analyze and represent data in one and two variables by using appropriate tools of technology. Interpret the meaning of linear models for sets of data and be able to justify conclusions and precisely communicate with others.** | | | | |
| **Standard** | **Essential Questions** | | **Pacing Guideline** | **Key Academic Vocabulary** |
| S-ID.1  S-ID.2  S-ID.3  S-ID.5  S-ID.6a  S-ID.6b  S-ID.6c  S-ID.7  S-ID.8  S-ID.9 | *S-ID.1: Can I represent data using dot plots, histograms, and box plots?*  *S-ID.2: Can I appropriately use data distribution to compare and contrast two or more sets of data?*  *S-ID.3: Can I explain the differences between data sets?*  *S-ID.5: Can I distinguish trends in data?*  *S-ID.6.a: Can I use data to develop a function and solve it in the context of the problem?*  *S-ID.6.b: Can I plot and analyze residuals?*  *S-ID.6.c: Can I describe the slope, constant and intercepts in the context of a problem?*  *S-ID.7: Can I describe the slope, constant and intercepts in the context of the problem?*  *S-ID.8: Can I use my technology to figure and interpret linear models?*  *S-ID.9: Can I compare and contrast correlation and causation?* | | 10 days | * Histogram * Box & Whisker Plot * Residuals * Constants and Coefficients * Intercepts * Correlation * Causation * Regression * Best Fit * Measures of Central Tendency * Scatter/Dot Plot * Predict/Estimate * Curve |
| **Suggested Resources by Unit** | | **Location of these resources** | | |
| Colors Challenge!!    Linear Modeling  Using NBA Statistics for Box and Whisker Plots  A “Dice-y” Histogram  Displaying Data  Statistics Standards | | <http://www.amstat.org/education/stew/pdfs/ColorsChallenge.pdf>  <http://faculty.uscupstate.edu/mulmer/LinearModelingI.PDF>  <http://illuminations.nctm.org/LessonDetail.aspx?ID=L737>  <http://www.teacherlink.org/content/math/activities/gc-dice/guide.html>    <http://www.regentsprep.org/Regents/math/ALGEBRA/AD3/indexAD3.htm>  <http://map.mathshell.org/materials/stds.php?id=1233> | | |

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| **Enduring Understanding:**  Apply rules for rational exponents and perform polynomial operations. Distinguish the properties of quadratic functions and apply factoring method to solve equivalent forms of the same equation. Look for significant structure and use repeated reasoning to precisely manipulate polynomials. | | | | | |
| **Standard** | **Essential Questions** | | **Pacing Guideline** | **Key Academic Vocabulary** | |
| N-RN.1 N-RN.2 A-SSE.2 A-SSE.3.a A-APR.1 F-IF.8.a | N-RN.1 Can I apply the properties of exponents to simplify expressions containing rational exponents?  N-RN.2 Can I rewrite expressions in rational exponent form in radical form and vice versa?  A-SSE.2 Can I simplify expressions and recognize equivalent forms of the same expression?  A-SSE.3a and F-IF.8.a Can I factor quadratic expressions?  A-APR1.  Can I add, subtract and multiply polynomials? | | 15 days | - Properties of Exponents - Rational Expressions/Equations - Polynomial (Mono-, Bi-, Tri-) - Quadratic - Cubic - Rational Exponent - Radical/Radicand - Base - Degree - Index - Factor vs. Factor (noun vs. verb) - Greatest Common Factor - FOIL Method - Grouping - Squares - Square Root - A-C Method | |
| **Suggested Resources by Unit** | | **Location of these resources** | | |
| Textbook and Resources  Battleship for Polynomials (Adding and Subtracting)  Polynomials Review  Factoring | | Holt Algebra II  <http://www.quia.com/ba/28820.html>    <http://teachers.henrico.k12.va.us/math/hcpsalgebra1/module7review.html>  <http://www.regentsprep.org/Regents/math/ALGEBRA/AV6/indexAV6.htm> | | |

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| **Enduring Understanding:**  **Solve quadratic equations by factoring and factoring. Identify roots, zeroes, maximums and minimums. Persevere with appropriate technology to acquire precise solutions.** | | | | |
| **Standard** | **Essential Questions** | | **Pacing Guideline** | **Key Academic Vocabulary** |
| A-SSE.1a,b  A-SSE.3a  A-CED.2  F-IF.4  F-IF.7a  F-IF.8a  F-IF.9  F-BF.1b  F-BF.3 | *A-SSE.1a. Can I identify the parts of a quadratic polynomial?*  *A-SSE.1b Can I interpret parts of an expression to reveal its underlying structure as a quadratic function?*  *A-SSE.3a Can I factor quadratic polynomials and find the zeros of the function from the factors?*  *A-CED.2 Can I write and graph quadratic equations to model the relationship between two quantities?*  *F-IF.4 Can I find the key parts of a quadratic function from a table and a graph?*  *F-IF.7a. Can I graph quadratic functions? Can I identify the intercepts, maxima, and minima?*  *F-IF.8a Can I write quadratic polynomials in different forms to find the zeros, vertex and axis/lines of symmetry?*  *F-IF.9 Can I compare two quadratic functions that are represented differently (algebraic, graphical, tabular, verbal)?*  *F-BF.1.b Can I describe the effects of adding or subtracting a linear function or a constant to a quadratic function?*  *F-BF.3 Can I describe the transformation of a graph when an arithmetic operation is introduced to the parent function?* | | 7 days | * Zero/Root/Solution/X-Intercept * Maxima and Minima * Increase and Decrease Interval * Axis/Line of Symmetry * Parabola * Vertex * Quadratic Form * Transformation * Parent Function * Imaginary Solution * Approximate/Exact Solution |
| **Suggested Resources by Unit** | | **Location of these resources** | | |
| Textbook and Resources  Quadratic Functions  Quadratic Equations  Finding the Vertex of a Quadratic Function | | Holt Algebra II  <http://math.about.com/od/algebra1help/a/Quadratic_Formula.htm>  <http://www.regentsprep.org/Regents/math/ALGEBRA/AE5/indexAE5.htm>  <http://www.google.com/cse?q=math.uakron.edu&hl=en&ie=UTF-8&cx=partner-pub-0319093145577670%3A0301174858&sa=Google+search#gsc.tab=0&gsc.q=www.math.uakron.edu%2Famc%2F...%2FFindingVertexQuadraticEquation_Nspire.DOC> | | |

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| **Enduring Understanding:**  **Analyze exponential functions using different representations. Persevere with appropriate technology to acquire precise solutions.** | | | | |
| **Standard** | **Essential Questions** | | **Pacing Guideline** | **Key Academic Vocabulary** |
| A-SSE.1b  A-CED.1  A-CED.2  F-IF.1  F-IF.2  F-IF.4  F-IF.5  F-IF.6  F-IF.7.e  F-IF.8.b  F-IF.9  F-BF.1.b  F-BF.3  F-LE.1.a  F-LE.1.b  F-LE.1.c  F-LE.2  F-LE.5 | *A-CED.1 Can I write exponential functions from given context?*  *A-CED.2 Can I write and graph exponential functions?*  *A-REI.10 Can I use the solutions of an exponential function to form the curve they represent?*  *A-SSE.1b Can I interpret parts of an expression to reveal its underlying structure as an exponential function?*  *F-IF.1 Can I define the domain and range of an exponential function?*  *F-IF.2 Can I evaluate exponential functions written in function notation?*  *F-IF.4 Can I interpret and/or sketch exponential graphs and tables?*  *F-IF.5 Can I relate the domain and range of an exponential function to its graph?*  *F-IF.6 Can I calculate and interpret the rate of change in terms of the context it is in?*  *F-IF.7.e Can I graph exponential functions? (intercepts, end behavior, trig functions, period, midline, amplitude)*  *F-IF.8.b Can I solve and interpret exponential functions using laws of exponents to determine if it is growth or decay?*  *F-IF.9 Can I compare two exponential functions each represented in a different ways (algebraic, graphical, tabular, verbal)?*  *F-BF.1.b Can I describe the effects of adding or subtracting constant onto an exponential function?*  *F-BF.3 Can I describe the transformation of a graph when an arithmetic operation is introduced to the parent function?*  *F-LE.1.a Can I prove that a function can be represented exponentially?*  *F-LE.1.b Can I recognize a constant rate of change among two quantities (exponential)?*  *F-LE.1.c.Can I recognize a constant percent rate in which quantities grow and decay in relation to each other?*  *F-LE.2 Can I construct an exponential function if given appropriate different situations?*  *F-LE.3 Can I interpret graphs and tables that are increasing exponentially?*  *F-LE.5 Can I translate the context of linear functions?* | | 6 days | * Transformation * Growth and Decay (Model vs. Factor) * Exponential Function * Parent Function * Percent and Rate * Recursive * Geometric Sequence |
| **Suggested Resources by Unit** | | **Location of these resources** | | |
| Functions Task  Exponential Growth and Decay  Exponential Growth in Real World  Exponential Functions: Introduction  Comparing Investments | | <http://insidemathematics.org/index.php/tools-for-teachers/course-1-algebra/mars-tasks-scoring-rubrics-a-analysis>  <http://www.regentsprep.org/Regents/math/ALGEBRA/AE7/indexAE7.htm>  <http://www.mathwarehouse.com/exponential-growth/exponential-models-in-real-world.php>  <http://www.purplemath.com/modules/expofcns.htm>  <http://map.mathshell.org/materials/download.php?fileid=1250> | | |

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| |  |  | | --- | --- | | |  | | --- | | ***Generic Resources for All Units*** | | | |
| **Suggested Resources by Unit** | **Location of these resources** |
| Textbook and Resources  Infinte Algebra (Kuta Software)  ClassScape  Common Core Standards Resources  Open Educational Resources  Khan Academy  I Love Math  Utah Education Network  Illustrative Mathematics Content Standards for Specific Problem Examples  Tasks, Units, and Student Work  WolframAlpha  Math TV  IXL: Guided Practice (Good replacement for Study Island)  Basic Mathematics  Purple Math  Hot Math  Regents Exam Prep Center | Prentice Hall Algebra I/Presentation Pro  <http://www.kutasoftware.com>  <http://www.classscape.org>  <http://www.livebinders.com/play/play/187117>  <http://www.oercommons.org>  <http://www.khanacademy.org>  <http://www.ilovemath.org>  <http://www.uen.org/core/core.do?courseNum=5600>  <http://illustrativemathematics.org/standards/hs>  <http://schools.nyc.gov/Academics/CommonCoreLibrary/TasksUnitsStudentWork/default.htm>  <http://www.wolframalpha.com/>  <http://www.mathtv.com/videos_by_topic>  <http://www.ixl.com/math/standards/north-carolina/high-school>  <http://www.basic-mathematics.com/>  <http://www.purplemath.com/index.htm>  <http://hotmath.com/help/gt/genericprealg/index.html?chapter=9&section=7>  <http://www.regentsprep.org/Regents/math/ALGEBRA/math-ALGEBRA.htm> |