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| Time Frame | Topic/Unit | Skills/Concepts | Major Assessments | Core Standards | Resources |
| September – Beginning October | UNIT #6 – EXPONENTS, EXPONENTS, AND MORE EXPONENTS  | * Lesson #1 – Simplifying Expressions Involving Exponents
* Lesson #2 – Zero and Negative Exponents
* Lesson #3 – Exponential Growth
* Lesson #4 – Introduction to Exponential Functions
* Lesson #5 – Percent Review
* Lesson #6 – Percent Increase and Decrease
* Lesson #7 – Exponential Models Based on Percent Growth
* Lesson #8 – Linear Versus Exponential
* Lesson #9 – Geometric Sequences
 |  | A-SSE.3(c) A-SSE.3(c) A-CED.2, F-IF.5, F-BF.1(a), F-LE.1(c), F-LE.2 F-IF.6, F-LE.1(c) In preparation for A-CED.1, F-LE.1(c), F-LE.2 and F-LE.5 F-LE.2, F-LE.3, F-LE.5 N-Q.2, A-SSE.1(a), A-CED.1, A-CED.2, F-IF.6, F-LE.1(a), F-LE.1(c), F-LE.2, F-LE.5 A-CED.2, F-IF.6, F-BF.1(a), F-LE.1 (a-c), F-LE.2 A-CED.3, F-IF.3, F-BF.1(a), F-LE.2  | [www.emathinstrction.com](http://www.emathinstrction.com) KUTA Software  |
| Beginning to Mid October - Beginning November  | UNIT #7 – POLYNOMIALS  | * Lesson #1 – Introduction to Polynomials
* Lesson #2 – Multiplying Polynomials
* Lesson #3 – Factoring Polynomials
* Lesson #4 – Factoring Based on Conjugate Pairs
* Lesson #5 – Factoring Trinomials
* Lesson #6 – More Work Factoring Trinomials
 |  | A-APR.1 A-APR.1 A-SSE.1(a), A-SSE.1(b), A-SSE.2 A-SSE.2 A-SSE.2 A-SSE.2  | [www.emathinstrction.com](http://www.emathinstrction.com) KUTA Software |
| Mid November to End December  | UNIT #8 – QUADRATIC FUNCTIONS AND THEIR ALGEBRA  | * Lesson #1 – Introduction to Quadratic Functions
* Lesson #2 – More Work with Parabolas
* Lesson #3 – The Shifted Form of a Parabola
* Lesson #4 – Completing the Square
* Lesson #5 – Stretching Parabolas and More Completing the Square
* Lesson #6 – The Zeroes of a Quadratic
* Lesson #7 – More Zero Product Law Work
* Lesson #8 – Quadratic Word Problems
 |  | A-CED.3, F-IF.4, F-IF.7(a) F-IF.7(a) F-IF.7(a), F-BF.3 A-SSE.3(b), F-IF.8(a), F-IF.9, F-BF.3 A-SSE.3(b), F-IF.8(a), F-BF.3 A-SSE.3(a), A-APR.3, A-REI.4(b), F-IF.8(a) A-SSE.3(a), A-APR.3, A-REI.4(b) A-SSE.3(a), A-CED.1, A-REI.4(b)  | [www.emathinstrction.com](http://www.emathinstrction.com) KUTA Software |
| January  | UNIT #9 – ROOTS AND IRRATIONAL NUMBERS  | * Lesson #1 – Square Roots
* Lesson #2 – Irrational Numbers
* Lesson #3 – Square Root Functions and Shifting
* Lesson #4 – Solving Quadratics Using Inverse Operations
* Lesson #5 – Finding Zeroes by Completing the Square
* Lesson #6 – The Quadratic Formula
* Lesson #7 – Final Work with Quadratic Equations
* Lesson #8 – Cube Roots
 |  | In preparation for N-RN.3 and I-IF.7(b) N-RN.3 F-IF.1, F-IF.7(b), F-BF.3 A-SSE.1(b), A-REI.4(b) N-RN.3, A-SSE.1(b), A-REI.4(a), A-REI.4(b) A-REI.4(a), A-REI.4(b) A-SSE.3(a), A-REI.4(a), A-REI.4(b) F-IF.1, F-IF.6, F-IF.7(b), F-BF.3  | [www.emathinstrction.com](http://www.emathinstrction.com) KUTA Software |
| February | UNIT #10 – STATISTICS  | * Lesson #1 – Graphical Displays of Data
* Lesson #2 – Quartiles and Box Plots
* Lesson #3 – Measures of Central Tendency
* Lesson #4 – Variation within a Data Set
* Lesson #5 – Two Way Frequency Tables
* Lesson #6 – Bivariate Data Analysis
* Lesson #7 – Linear Regression on the Calculator
* Lesson #8 – Other Types of Regression
* Lesson #9 – Quantifying Predictability
* Lesson #10 – Residuals
 |  | N-Q.1, S-ID.1, S-ID.3 N-Q.1, S-ID.1, S-ID.2, S-ID.3 N-Q.2, S-ID.2, S-ID.3 N-Q.2, S-ID.2, S-ID.3 S-ID.5 S-ID.6(a), S-ID.6(c), S-ID.9 S-ID.6(a), S-ID.6(c), S-ID.7, S-ID.9 S-ID.6(a) S-ID.6(a), S-ID.6(c), S-ID.8 S-ID.6(a), S-ID.6(b), S-ID.6(c), S-ID.8  | [www.emathinstrction.com](http://www.emathinstrction.com) KUTA Software |
| March | UNIT #11 – A FINAL LOOK AT FUNCTIONS AND MODELING  | * Lesson #1 – Function Transformations
* Lesson #2 – Horizontal Stretching of Functions
* Lesson #3 – Discrete Functions
* Lesson #4 – Another Look at Linear and Exponential Models
* Lesson #5 – Step Functions
* Lesson #6 – Piecewise Linear Functions
* Lesson #7 – Quadratic Models
* Lesson #8 – Limits on the Accuracy of Our Models
 |  | F-IF.1, F-BF.3 F-BF.3 A-CED.3, F-IF.5 F-LE.1(a – c), F-LE.5, S-ID.6(a – c) Revisited F-IF.7(b) A-CED.3, F-IF.6, F-IF.7(b) N-Q.2 N-Q.3 | [www.emathinstrction.com](http://www.emathinstrction.com) KUTA Software |
| April - June | Practice Regents Review | * Regents Review encompasses all Skills and concepts associated with the New York State Regents Exam
 |  | All Standards | nysedregents.org  |

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| N.RN.A.1 | Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. |
| N.RN.A.2 | Rewrite expressions involving radicals and rational exponents using the properties of exponents. |
| N.RN.B.3 | Explain why sums and products of rational numbers are rational, that the sum of a rational number and an irrational number is irrational, and that the product of a nonzero rational number and an irrational number is irrational. |
| N.Q.A.1 | Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. |
| N.Q.A.2 | Define appropriate quantities for the purpose of descriptive modeling. |
| N.Q.A.3 | Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. |
| A.SSE.A.1a | Interpret parts of an expression, such as terms, factors, and coefficients. |
| A.SSE.A.1b | Interpret complicated expressions by viewing one or more of their parts as a single entity. |
| A.SSE.A.2 | Use the structure of an expression to identify ways to rewrite it. |
| A.SSE.B.3a | Factor a quadratic expression to reveal the zeros of the function it defines. |
| A.SSE.B.3b | Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines. |
| A.SSE.B.3c | Use the properties of exponents to transform expressions for exponential functions. |
| A.APR.A.1 | Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials. |
| A.APR.B.3 | Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial. |
| A.APR.D.6 | Rewrite simple rational expressions in different forms; write a(x)/b(x) in the form q(x) + r(x)/b(x), where a(x), b(x), q(x), and r(x) are polynomials with the degree of r (x) less than the degree of b(x), using inspection, long division, or, for the more complicated examples, a computer algebra system. |
| A.APR.D.7 | (+) Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions. |
| A.CED.A.1 | Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions. |
| A.CED.A.2 | Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. |
| A.CED.A.3 | Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context. |
| A.CED.A.4 | Rearrange formulas to highlight a quantity of interest using the same reasoning as in solving equations. |
| A.REI.A.1 | Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method. |
| A.REI.A.2 | Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise. |
| A.REI.B.3 | Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters. |
| A.REI.B.4a | Use the method of completing the square to transform any quadratic equation in x into an equation of the form (x - p)^2 = q that has the same solutions. Derive the quadratic formula from this form. |
| A.REI.B.4b | Solve quadratic equations by inspection (e.g., for x2 = 49), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as a +/- bi for real numbers a and b. |
| A.REI.C.5 | Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions. |
| A.REI.C.6 | Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables. |
| A.REI.C.7 | Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. |
| A.REI.D.10 | Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a straight line). |
| A.REI.D.11 | Explain why the x-coordinates of the points where the graphs of the equations y = f(x) and y = g(x) intersect are the solutions of the equation f(x) = g(x); find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where f(x) and/or g(x) are linear, polynomial, rational, absolute value, exponential, and logarithmic functions. |
| A.REI.D.12 | Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes. |
| F.IF.A.1 | Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = f(x). |
| F.IF.A.2 | Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. |
| F.IF.A.3 | Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. |
| F.IF.B.4 | For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity. |
| F.IF.B.5 | Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. |
| F.IF.B.6 | Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph. |
| F.IF.C.7a | Graph linear and quadratic functions and show intercepts, maxima, and minima. |
| F.IF.C.7b | Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions. |
| F.IF.C.7e | Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude. |
| F.IF.C.8a | Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context. |
| F.IF.C.8b | Use the properties of exponents to interpret expressions for exponential functions. |
| F.IF.C.9 | Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). |
| F.BF.A.1a | Determine an explicit expression, a recursive process, or steps for calculation from a context. |
| F.BF.A.1b | Combine standard function types using arithmetic operations |
| F.BF.A.2 | Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms. |
| F.BF.B.3 | Identify the effect on the graph of replacing f(x) by f(x) + k, k f(x), f(kx), and f(x + k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. |
| F.BF.B.4a | Solve an equation of the form f(x) = c for a simple function f that has an inverse and write an expression for the inverse. |
| F.LE.A.1a | Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. |
| F.LE.A.1b | Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. |
| F.LE.A.1c | Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another. |
| F.LE.A.2 | Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table). |
| F.LE.A.3 | Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function. |
| F.LE.B.5 | Interpret the parameters in a linear or exponential function in terms of a context. |
| S.ID.A.1 | Represent data with plots on the real number line (dot plots, histograms, and box plots). |
| S.ID.A.2 | Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. |
| S.ID.A.3 | Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers). |
| S.ID.A.4 | Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve. |
| S.ID.B.5 | Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data. |
| S.ID.B.6a | Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear and exponential models. |
| S.ID.B.6b | Informally assess the fit of a function by plotting and analyzing residuals. |
| S.ID.B.6c | Fit a linear function for a scatter plot that suggests a linear association. |
| S.ID.C.7 | Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data. |
| S.ID.C.8 | Compute (using technology) and interpret the correlation coefficient of a linear fit. |
| S.ID.C.9 | Distinguish between correlation and causation. |