

Unit 1: Functions, Operations on Functions and Transformations (with review of systems)
<p><i>Essential Questions:</i></p> <ul style="list-style-type: none">• How do you most clearly represent the combination of two functions?• What makes the graph of a function change shape in the coordinate plane?
<p><i>Enduring Understandings:</i></p> <ul style="list-style-type: none">• Functions and relations define a relationship between two changing quantities• The graphical solution to a system is the intersection of the curves.• Graphs of families of functions move about the coordinate plane, but maintain key characteristics.
<p>What will students be able to DO at the end of this unit? (summative assessment)</p> <ul style="list-style-type: none">• Solve systems of equations graphically• Graph piecewise linear functions• Write equations for piecewise linear functions• Add, subtract, and multiply functions and compose functions fluently.• Graphically analyze the sum or difference of two functions.• Transform absolute value and step functions in the coordinate plane.• Use function notation fluently to document work for application problems.
<p>What KNOWLEDGE will students attain in this unit?</p> <p><i>Students will know that...</i></p> <ul style="list-style-type: none">• There are patterns to basic transformations of functions to move functions about the coordinate plane and change their shapes• The shapes of absolute value and step functions• How to graph and write equations for basic piecewise linear functions.• How to rewrite an absolute value function as a piecewise function.• The point-slope form of a line is transformations of the line $y=x$.
<p>What UNDERSTANDINGS will students attain in this unit?</p> <p><i>Students will understand...</i></p> <ul style="list-style-type: none">• that $y = f(x + a)$ and $y = f(x) + a$ are horizontal and vertical transformations of the graph of $y = f(x)$, respectively.

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- that $y = f(kx)$ and $y = kf(x)$ are horizontal and vertical dilations of the graph of $y = f(x)$, respectively.
- that piecewise functions are combinations of other functions with restricted domains.
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Mathematical Practices

- 1) Make sense of problems and persevere in solving them. 2) Reason abstractly and quantitatively. 3) Construct viable arguments and critique the reasoning of others. 4) Model with mathematics. 5) Use appropriate tools strategically.
6) Attend to precision.
7) Look for and make use of structure. 8) Look for and express regularity in repeated reasoning.

Pacing	Standards	Resources including activities	Assessments	Comments (be nice)
15 days	<p>A-SSE.1 Interpret expressions that represent a quantity in terms of its context. ★</p> <p>A-CED.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.)★</p> <p>A-CED.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. ★</p> <p>A-CED.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. <i>For example, rearrange Ohm's law $V = IR$ to highlight resistance R.</i> ★</p> <p>A-REI.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</p>		<p>Pre-Assessment</p> <p>Formative Assessment</p> <p>Quiz(es)</p> <p>Unit Test</p>	

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<p>approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, (polynomial, rational,) absolute value,(exponential, and logarithmic) functions. ★</p> <p>F-IF.7 Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. ★</p> <p>F-IF.7.b Graph (square root, cube root,) and piecewise-defined functions, including step functions and absolute value functions. ★</p> <p>F-IF.8 Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.</p> <p>F-IF.8.MA.8.c Translate among different representations of functions and relations: graphs, equations, point sets, and tables.</p> <p>F-IF.9 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). <i>For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.</i></p> <p>F-BF.3 Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $kf(x)$, $f(kx)$, 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. <i>Include recognizing even and odd functions from their graphs and algebraic expressions for them.</i></p>			
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Unit 2: Quadratic Functions and Inverses

Essential Questions:

- What math is involved in the path of a falling object?
- How do size constraints act on the area of a figure?

Enduring Understandings:

- Quadratics model common situations.
- Gravity acts on falling objects and that can be quantified using quadratic models.
- Transformations of quadratics move the vertex and zeros of $y = x^2$

What will students be able to DO at the end of this unit? (summative assessment)

- Recognize quadratic situations and write quadratic equations to model them.
- Solve quadratic equations graphically.
- Graph quadratic equations.
- Solve systems of quadratics or systems of a quadratic and a linear function.
- Sketch a graph of a quadratic given key features or a situation
- Interpret the vertex as the relative extremum of a function.
- Restrict the domain of a quadratic given a situation.
- Solve quadratic equations with real roots by factoring, completing the square and/or the quadratic formula as appropriate.
- Find inverse functions for quadratics.
- Solve basic radical equations checking for and discarding extraneous solutions.
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What KNOWLEDGE will students attain in this unit?

- Zeroes of a function are the solutions.
- Falling object equations: $s(t) = -16t^2 + v_0t + s_0$ in feet and $s(t) = -4.9t^2 + v_0t + s_0$ in meters where v_0 is initial velocity and s_0 is initial height.
- Quadratics have either 2, 1 or zero real roots. Complex roots of the form $a + bi$ come in conjugate pairs.
- How to graph quadratics using roots, vertex, axis of symmetry, concavity.
- The value of A in the equation $Ax^2 + Bx + C = 0$ indicates the concavity of the graph of the function.
- The graphs of square root functions are reflections of parabolic functions with restricted domains over the line $y = x$.
- The processes for graphing quadratic and square-root functions
- The quadratic formula.
- The processes for solving quadratic equations algebraically by factoring, quadratic formula or completing the square.

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What UNDERSTANDINGS will students attain in this unit?				
<p>Students will understand...</p> <ul style="list-style-type: none"> • That the equations $f(x) = a$ and $f(x) - a = 0$ have the same solutions because of vertical transformations. • That inverses of quadratic equations are not one, but two functions. • The quadratic formula shows the axis of symmetry for the graph of a quadratic equation and location of the zeros. • Complex zeros for the form $a + bi$ are given by the quadratic formula for quadratics that have no real roots. 				
<p>Mathematical Practices</p> <p>1) Make sense of problems and persevere in solving them. 2) Reason abstractly and quantitatively. 3) Construct viable arguments and critique the reasoning of others. 4) Model with mathematics. 5) Use appropriate tools strategically.</p> <p>6) Attend to precision.</p> <p>7) Look for and make use of structure. 8) Look for and express regularity in repeated reasoning.</p>				
Pacing	Standards	Resources including activities	Assessments	Comments
20 days	<p>N-CN.1 Know there is a complex number i such that $i^2 = -1$, and every complex number has the form $a + bi$ with a and b real.</p> <p>N-CN.2 Use the relation and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers. $i^2 = -1$</p> <p>N-CN.7 Solve quadratic equations with real coefficients that have complex solutions.</p> <p>(+)N-CN.8 Extend polynomial identities to the complex numbers. For example, rewrite $x^2 + 4$ as $(x + 2i)(x - 2i)$.</p> <p>(+)N-CN.9 Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.</p> <p>A-SSE.1 Interpret expressions that represent a quantity in terms of its context. *</p>		<p>Pre-Assessment</p> <p>Formative Assessment</p> <p>Quiz(es)</p> <p>Unit Test</p>	

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	<p>A-CED.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.) ★</p> <p>A-CED.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. ★</p> <p>A-CED.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. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods. ★</p> <p>A-CED.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law $V = IR$ to highlight resistance R. ★</p> <p>A-APR.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.</p> <p>F-IF.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. <i>Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative</i></p>			
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<p><i>maximums and minimums; symmetries; end behavior; and periodicity. ★</i></p> <p>F-IF.5 Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. <i>For example, if the function $h(n)$ gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function. ★</i></p> <p>F-IF.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. ★</p> <p>F-IF.7c Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior. ★</p> <p>F-IF.9 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). <i>For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.</i></p> <p>F-BF.4 Find inverse functions.</p> <p>F-BF.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. <i>For example, $f(x) = 2x^3$ or $f(x) = (x + 1)/(x - 1)$ for $x \neq 1$.</i></p> <p>A-REI.2 Solve simple (rational) and radical equations in one variable, and give examples</p>			
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	<p>showing how extraneous solutions may arise.</p> <p>A-REI.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. ★</p>			
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Unit 3: Polynomial Functions and their Inverses

Essential Questions:

- From what types of situations do polynomial functions of degree greater than 2 arise?
- When is it useful to restrict the domain of a function?

Enduring Understandings:

- Volume gives rise to polynomial functions
- Polynomial functions can often be classified as odd or even and this describes behavior of their graphs.
- Zeros of functions can be found graphically or by successive approximations of increasing accuracy.
- Inverses of polynomial functions have rational exponents which arise logically from properties of exponents.

What will students be able to DO at the end of this unit? (summative assessment)

- Express a polynomial as a product of factors.
- Determine zeros of polynomial functions by factoring and division or by successive approximations.
- Use long division or synthetic division to find zeros of polynomial functions.
- Calculate zeros and relative extrema of polynomial functions using a graphing calculator.
- Write polynomial functions to model situations.
- Prove polynomial identities by algebraic manipulation.
- Translate between radical expressions and expressions with rational exponents.
- Simplify radical expressions.
- Find inverses of basic polynomial functions.
- (+) Apply the Binomial Theorem to expand $(x + y)^n$

What KNOWLEDGE will students attain in this unit?

- Shapes of graphs of families of polynomial functions (cubic, quartic, quintic, etc.)
- End behavior of graphs of polynomial functions
- Perform arithmetic operations on polynomials.
- Solve polynomial equations graphically (using technology) and algebraically.
- Rational exponents operate under the same rules as integer exponents.
- Rational Root Theorem
- (+) The Binomial Theorem

What UNDERSTANDINGS will students attain in this unit?

- To solve, polynomial equations must be factored since dividing by x results in lost roots.
- The Rational Root Theorem helps locate possible rational zeroes of a polynomial function.

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- Graphs of polynomial functions often change concavity over their domains and their general shape can be determined from their equations in standard form.
- The relationship between zeroes and factors of polynomials.

Mathematical Practices

- 1) Make sense of problems and persevere in solving them. **2) Reason abstractly and quantitatively.** 3) Construct viable arguments and critique the reasoning of others. 4) Model with mathematics. **5) Use appropriate tools strategically.**
6) Attend to precision.
7) Look for and make use of structure. 8) Look for and express regularity in repeated reasoning.

Pacing	Standards	Resources including activities	Assessments	Comments
10 – 12	<p>A-SSE.1 Interpret expressions that represent a quantity in terms of its context. ★</p> <p>A-SSE.2 Use the structure of an expression to identify ways to rewrite it. For example, see $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.</p> <p>A-APR.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.</p> <p>A-APR.4 Prove polynomial identities and use them to describe numerical relationships. <i>For example, the polynomial identity $(x^2 + y^2)^2 = (x^2 - y^2)^2 + (2xy)^2$ can be used to generate Pythagorean triples.</i></p> <p>(+)A-APR.5 Know and apply the Binomial Theorem for the expansion of $(x + y)^n$ in powers of x and y for a positive integer n, where x and y are any numbers, with coefficients determined for example by Pascal's Triangle.</p>		<p>Pre-Assessment</p> <p>Formative Assessment</p> <p>Quiz(es)</p> <p>Unit Test</p>	

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	<p>N-RN.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. <i>For example, we define $5^{1/3}$ to be the cube root of 5 because we want $(5^{1/3})^3 = 5^{(1/3)3}$ to hold, so $(5^{1/3})^3$ must equal 5.</i></p> <p>N-RN.2 Rewrite expressions involving radicals and rational exponents using the properties of exponents.</p>			
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Unit 4: Rational Functions

Essential Questions:

- How are the domains of rational functions different from polynomial functions?
- How are the graphs of rational functions different from polynomial functions?
- Why is dividing by zero undefined in the Real Number system?

Enduring Understandings:

- Rational Functions model phenomena including electrical circuits, magnetism, percentages, cost analysis in business.
- Rational functions have asymptotes.
- Division by zero results in unbounded behavior of a function and is therefore undefined.

What will students be able to DO at the end of this unit? (summative assessment)

- Simplify rational expressions including complex fractions using addition, subtraction, multiplication and division.
- Identify the domain of rational functions.
- Graph rational functions by hand and using a calculator.
- Determine asymptotes, holes, intercepts and end behavior of rational functions from their equations.
- Apply transformations to the graph of $f(x) = \frac{1}{x}$ to result in graphs of other rational functions.
- Use division to rewrite rational functions $y = a(x)/b(x)$ as $y = q(x) + r(x)/b(x)$ with degree of $r(x) < b(x)$ using long division.
- Factor and simplify a rational function to determine location of asymptotes and/or holes.
- Use long division to identify a slant asymptote of a rational function
- Determine horizontal asymptote of a rational function by examining the algebraic representation of the function.
- Describe why a function has asymptotic behavior in the context of a situation.
- Interpret asymptotic behavior of a function in the context of a situation.

What KNOWLEDGE will students attain in this unit?

- Asymptotes (vertical, horizontal, slant): How to show them on the graph of a rational function and how to determine their equations.
- Fluency with processes of polynomial long division and synthetic division
- The shape of the family of rational functions.
- Rational functions approach but never reach asymptotes as $x \rightarrow \pm\infty$.

What UNDERSTANDINGS will students attain in this unit?

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<ul style="list-style-type: none"> • Division by zero results in asymptotic behavior of a function and is therefore undefined. • Rational functions have asymptotes which can be determined algebraically. • Algebraic rational expressions operate with the same rules as numerical rational expressions. 				
Mathematical Practices 1) Make sense of problems and persevere in solving them. 2) Reason abstractly and quantitatively. 3) Construct viable arguments and critique the reasoning of others. 4) Model with mathematics. 5) Use appropriate tools strategically. 6) Attend to precision. 7) Look for and make use of structure. 8) Look for and express regularity in repeated reasoning.				
Pacing	Standards	Resources including activities	Assessments	Comments
15 days	<p>A-SSE.1 Interpret expressions that represent a quantity in terms of its context. *</p> <p>A-APR.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.</p> <p>A-APR.MA.1a Divide polynomials.</p> <p>A-APR.2 Know and apply the Remainder Theorem: For a polynomial $p(x)$ and a number a, the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$.</p> <p>A-APR.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.</p>	Textbook Ch 8	Pre-Assessment Formative Assessment Quiz(es) Unit Test	

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	<p>(+)A-APR.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.</p> <p>F-IF.8 Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.</p> <p>F-IF.8.MA.8c Translate among different representations of functions and relations: graphs, equations, point sets, and tables.</p> <p>F-IF.MA.10 Given algebraic, numeric and/or graphical representations of functions, recognize the function as polynomial, rational, logarithmic, exponential, or trigonometric.</p>			
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Unit 5: Statistics and Probability **Needs additions, modification, refining**				
<i>Essential Questions:</i>				
<ul style="list-style-type: none"> • What is a normal distribution curve and how do you use it? • When is a normal curve not an appropriate model for a set of data? • What sampling procedures create the best data? 				
<i>Enduring Understandings:</i>				
<ul style="list-style-type: none"> • The same data can be interpreted in different ways. • Sampling procedure can influence data collected in an experiment. 				
What will students be able to DO at the end of this unit? (summative assessment)				
<ul style="list-style-type: none"> • Determine whether a normal distribution applies to a data set. • Determine population mean from a sample data set. • Develop margin of error for random sampling. • Compare two treatments of data and decide if differences between parameters are different. 				
What KNOWLEDGE will students attain in this unit?				
<ul style="list-style-type: none"> • How to manipulate data and perform statistical analyses using technology (computer software or graphing calculators) • Characteristics of statistically sound sampling models • How to set up a simulation for an experiment or to test a hypothesis 				
What UNDERSTANDINGS will students attain in this unit?				
<ul style="list-style-type: none"> • Not all statistical data is significant. • The normal curve doesn't always apply to data even when you want it to. • Confounding variables can have a significant impact on data. 				
Mathematical Practices				
1) Make sense of problems and persevere in solving them. 2) Reason abstractly and quantitatively. 3) Construct viable arguments and critique the reasoning of others. 4) Model with mathematics. 5) Use appropriate tools strategically. 6) Attend to precision. 7) Look for and make use of structure. 8) Look for and express regularity in repeated reasoning.				
Pacing	Standards	Resources including activities	Assessments	Comments

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10 days	<p>S-ID.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. ★</p> <p>S-IC.1 Understand statistics as a process for making inferences to be made about population parameters based on a random sample from that population. ★</p> <p>S-IC.2 Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. <i>For example, a model says a spinning coin falls heads up with probability 0.5. Would a result of 5 tails in a row cause you to question the model?</i> ★</p> <p>S-IC.3 Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each. ★</p> <p>S-IC.4 Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling. ★</p> <p>S-IC.5 Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant. ★</p> <p>S-IC.6 Evaluate reports based on data. ★</p>		Project or Performance assessment(s)	
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Unit 6: Exponential and Logarithmic Functions				
<i>Essential Questions:</i>				
<ul style="list-style-type: none"> How do you differentiate between exponential and linear data? 				
<i>Enduring Understandings:</i>				
<ul style="list-style-type: none"> Analyzing patterns and generalizing patterns allows you to make predictions. 				
What will students be able to DO at the end of this unit? (summative assessment)				
<ul style="list-style-type: none"> Identify independent and dependent variables and explain how they relate to domain and range of linear or exponential function describing a real-world problem. Compare and contrast linear and exponential growth Explain how changes to a and b in the exponential model $y = a(b^x)$ affect the graph of an exponential function. Recognize an exponential growth or decay function by its graph. Graph exponential and logarithmic functions as transformations of the graphs of $f(x) = a^x$ or $f(x) = \log_a x$. 				
What KNOWLEDGE will students attain in this unit?				
<ul style="list-style-type: none"> Fluency with Properties of exponents (eg. $x^a x^b = x^{a+b}$) Attributes of exponential functions $y = a(b^x)$ and how the value of b indicates growth or decay. Shape, domain, range and intercept(s) and asymptotes of the graph of exponential and logarithmic functions. 				
What UNDERSTANDINGS will students attain in this unit?				
Mathematical Practices				
1) Make sense of problems and persevere in solving them. 2) Reason abstractly and quantitatively. 3) Construct viable arguments and critique the reasoning of others. 4) Model with mathematics. 5) Use appropriate tools strategically.				
6) Attend to precision.				
7) Look for and make use of structure. 8) Look for and express regularity in repeated reasoning.				
Pacing	Standards	Resources including activities	Assessments	Comments
15 days	A-SSE.4 Derive the formula for the sum of a finite geometric series (when the common ratio is not 1),		Pre-Assessment	

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<p>and use the formula to solve problems. <i>For example, calculate mortgage payments.</i></p> <p>F-LE.4 For exponential models, express as a logarithm the solution to $ab^{ct} = d$ where a, c, and d are numbers and the base b is 2, 10, or e; evaluate the logarithm using technology. ★</p> <p>F-IF.7e Graph exponential and logarithmic functions, showing intercepts and end behavior, (and trigonometric functions, showing period, midline, and amplitude.) ★</p> <p>F-BF.1 Write a function that describes a relationship between two quantities.</p> <p>F-BF.1.b Combine standard function types using arithmetic operations. <i>For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model.</i> ★</p> <p>(+) F-BF.1.c (+) Compose functions. <i>For example, if $T(y)$ is the temperature in the atmosphere as a function of height, and $h(t)$ is the height of a weather balloon as a function of time, then $T(h(t))$ is the temperature at the location of the weather balloon as a function of time.</i> ★</p> <p>F-BF.3 Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $kf(x)$, $f(kx)$, 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. <i>Include recognizing even</i></p>		<p>Formative Assessment</p> <p>Quiz(es)</p> <p>Unit Test</p>	
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	<i>and odd functions from their graphs and algebraic expressions for them.</i>			
	F-BF.4 Find inverse functions.			

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Unit 7: Trigonometric Functions				
<i>Essential Questions:</i>				
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<i>Enduring Understandings:</i>				
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What will students be able to DO at the end of this unit? (summative assessment)				
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What KNOWLEDGE will students attain in this unit?				
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What UNDERSTANDINGS will students attain in this unit?				
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Mathematical Practices 1) Make sense of problems and persevere in solving them. 2) Reason abstractly and quantitatively. 3) Construct viable arguments and critique the reasoning of others. 4) Model with mathematics. 5) Use appropriate tools strategically. 6) Attend to precision. 7) Look for and make use of structure. 8) Look for and express regularity in repeated reasoning.				
Pacing	Standards	Resources including activities	Assessments	Comments
5 Days	F-TF.1 Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle. F-TF.2 Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle. F-TF.5 Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline. ★		Pre-Assessment Formative Assessment Quiz(es) Unit Test	

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	F-TF.8 Prove the Pythagorean identity $\sin^2(\theta) + \cos^2(\theta) = 1$ and use it to find $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ given $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ and the quadrant.			
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Unit 8: Vectors and Matrices (Honors Only)				
<i>Essential Questions:</i>				
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<i>Enduring Understandings:</i>				
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What will students be able to DO at the end of this unit? (summative assessment)				
•				
What KNOWLEDGE will students attain in this unit?				
•				
What UNDERSTANDINGS will students attain in this unit?				
•				
Mathematical Practices 1) Make sense of problems and persevere in solving them. 2) Reason abstractly and quantitatively. 3) Construct viable arguments and critique the reasoning of others. 4) Model with mathematics. 5) Use appropriate tools strategically. 6) Attend to precision. 7) Look for and make use of structure. 8) Look for and express regularity in repeated reasoning.				
Pacing	Standards	Resources including activities	Assessments	Comments
5 Days	(+)N-VM.1 (+)N-VM.2 (+)N-VM.3 (+)N-VM.6 (+)N-VM.8 (+)N-VM.12		Pre-Assessment Formative Assessment Quiz(es) Unit Test	