

Wyoming Department of Education Required Virtual Education Course Syllabus

Niobrara County School District # 1

Program Name	Wyoming Virtual Academy	Content Area	MA
Course ID	D-MTH-306BV1-K	Grade Level	9-12
Course Name	Summit Recovery Algebra 2 -Semester 2	# of Credits	0.5
SCED Code	02056B0.5022	Curriculum Type	K12 Inc

COURSE DESCRIPTION

Offered over the summer. Students must have taken Algebra 2 and failed in order to take this course. In this Summit Algebra 2 course, students build on their work with linear, quadratic, and exponential functions, and extend their repertoire to include polynomial, rational, radical, and trigonometric functions. Students also expand their ability to model situations and solve equations, including solving quadratic equations over the set of complex numbers and solving exponential equations using the properties of logarithms. The course covers sequences and series, probability distributions, and more advanced data analysis techniques.

WYOMING CONTENT AND PERFORMANCE STANDARDS

STANDARD#	BENCHMARK (Standard/Indicator) Use the Standards and Benchmarks as Spreadsheets
A.CED.G.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.G.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
A.REI.H.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.J.7	Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically.
A.REI.K.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.SSE.B.4	Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems.
F.BF.D.1a	Determine an explicit expression, a recursive process, or steps for calculation from a context.
F.BF.D.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.E.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. Include recognizing even and odd functions from their graphs and algebraic expressions for them.
F.BF.E.4a	Write an expression for the inverse of a simple, invertible function $f(x)$. Understand that an inverse function can be obtained by expressing the dependent variable of one function as the independent variable of another, as f and g are inverse functions, if and only if, $f(x) = y$ and $g(y) = x$, for all values of x in the domain of f and all values of y in the domain of g .
F.BF.E.4d	(+) Produce an invertible function from a non-invertible function by restricting the domain.
F.BF.E.5	(+) Build new functions from existing functions. Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.
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.7c	Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.

F.IF.C.7d	(+) Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.
F.IF.C.7e	Graph exponential and logarithmic functions, showing intercepts and end behavior.
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.LE.F.1a	Verify that linear functions grow by equal differences over equal intervals and that exponential functions grow by equal factors over equal intervals.
F.LE.F.1b	Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.
F.LE.F.1c	Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.
F.LE.F.2	Construct linear and exponential functions using a graph, a description of a relationship, or two input-output pairs (include reading these from a table).
F.LE.F.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.F.5	Interpret the parameters in a linear or exponential function in terms of a context.
F.TF.H.1	(+) Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.
F.TF.H.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.H.3	(+) Use special triangles to determine geometrically the values of sine, cosine, tangent for $\pi/3$, $\pi/4$ and $\pi/6$, and use the unit circle to express the values of sine, cosine, and tangent for $\pi - x$, $\pi + x$, and $2\pi - x$ in terms of their values for x , where x is any real number.
F.TF.I.5	(+) Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.
F.TF.I.6	(+) Understand that restricting a trigonometric function to a domain on which it is always increasing or always decreasing allows its inverse to be constructed.
F.TF.I.7	(+) Use inverse functions to solve trigonometric equations that arise in modeling contexts; evaluate the solutions using technology, and interpret them in terms of the context.
F.TF.J.8	(+) Prove the Pythagorean identity $(\sin A)^2 + (\cos A)^2 = 1$ and use it to find $\sin A$, $\cos A$, or $\tan A$, given $\sin A$, $\cos A$, or $\tan A$, and the quadrant of the angle.

G.GPE.K.2	(+) Derive the equation of a parabola given a focus and directrix.
G.SRT.G.6	Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.
G.SRT.G.8	Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.
N.Q.C.2	Define appropriate quantities for the purpose of descriptive modeling.
S.CP.F.1	Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and," "not").
S.CP.F.2	(+) Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.
S.CP.F.3	(+) Understand the conditional probability of A given B as $P(A \text{ and } B)/P(B)$, and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B.
S.CP.F.4	(+) Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities.
S.CP.F.5	Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations.
S.CP.G.6	Find the conditional probability of A given B as the fraction of B's outcomes that also belong to A, and interpret the answer in terms of the model.
S.ID.B.6a	Use a function to describe data trends to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models.

SCOPE AND SEQUENCE

UNIT OUTLINE	STANDARD#	OUTCOMES OBJECTIVES/STUDENT CENTERED GOALS
Unit 1: Exponential and Logarithmic Functions Lesson 1: Exchange Ideas: Exponential and Logarithmic Functions	A.CED.G.1 F.BF.E.5	Convert expressions between exponential and logarithmic forms. Explain the inverse relationship between exponential and logarithmic functions. Evaluate logarithmic expressions.
Unit 1: Exponential and Logarithmic Functions	N.Q.C.2 A.CED.G.1 A.CED.G.2	Interpret exponential expressions by using properties of exponents.

<p>Lesson 2: Exponential Growth and Decay</p>	<p>F.IF.C.8b F.LE.F.1a F.LE.F.1c F.LE.F.3</p>	<p>Determine whether the equation of an exponential function represents exponential growth or exponential decay.</p> <p>Determine the function equation that models an exponential relationship, given a description.</p> <p>Interpret the parameters in an exponential function in terms of the real-world situation it represents.</p> <p>Solve problems by writing and solving exponential equations in one variable.</p> <p>Represent real-world situations with exponential equations in two variables.</p> <p>Use properties of exponents to transform expressions to solve real-world problems.</p>
<p>Unit 1: Exponential and Logarithmic Functions Lesson 3: Graph Exponential Functions</p>	<p>F.IF.C.7e F.BF.E.3</p>	<p>Graph an exponential function, given its equation.</p> <p>Describe the effect a given parameter has on a graph.</p> <p>Determine the equation of the horizontal asymptote of an exponential function from its equation.</p> <p>Determine the range of an exponential function from its equation.</p> <p>Determine the y-intercept of an exponential function from its equation.</p>
<p>Unit 1: Exponential and Logarithmic Functions Lesson 4: Inverses</p>	<p>F.IF.A.1 F.BF.E.4a F.BF.E.4d</p>	<p>Determine the equation for the inverse of a function.</p> <p>Determine the equation for the inverse, and restrictions on the domain, of a noninvertible function.</p>
<p>Unit 1: Exponential and Logarithmic Functions Lesson 5: Logarithms</p>	<p>A.CED.G.1 F.BF.E.5</p>	<p>Justify each step in solving an equation.</p> <p>Justify a solution method.</p> <p>Convert equations between exponential and logarithmic forms.</p> <p>Evaluate logarithmic expressions.</p>

		Explain the inverse relationship between exponential and logarithmic functions.
Unit 1: Exponential and Logarithmic Functions Lesson 6: Properties of Logarithms	A.CED.G.1 A.REI.H.1 F.BF.E.5	Solve problems by writing and solving logarithmic equations. Convert between single logarithms and logarithmic expressions written in expanded form. Solve a logarithmic equation by writing the equivalent exponential equation. Solve logarithmic equations by applying properties of logarithms.
Unit 1: Exponential and Logarithmic Functions Lesson 7: Use Logarithms to Solve Exponential Equations	A.CED.G.1 F.BF.E.5	Determine the approximate value of t in an equation in the form $abct = d$, where b is 2, 10, or e . Determine the approximate value of t in an equation in the form $abct = d$, where b is not 2, 10, or e . Determine the exact value of t in an equation in the form $abct = d$, where b is 2, 10, or e . Determine the exact value of t in an equation in the form $abct = d$, where b is not 2, 10, or e .
Unit 1: Exponential and Logarithmic Functions Lesson 8: Applications of Exponential Equations	A.CED.G.1	Solve problems by writing and solving exponential equations in one variable. Solve an exponential equation with two powers.
Unit 1: Exponential and Logarithmic Functions Lesson 9: Your Choice	A.CED.G.1 A.CED.G.2 A.REI.H.1 F.BF.E.3 F.BF.E.4a F.BF.E.4d F.BF.E.5 F.IF.A.1 F.IF.C.7e F.IF.C.8b F.LE.F.1a F.LE.F.1c F.LE.F.3 N.Q.C.2	Complete work in progress. Review prior lessons in the unit to prepare for the Unit Test. Post or respond to posts on the discussion board for the Exchange Ideas activity in this unit. Prepare for your state standardized test. Go on to the next lesson.
Unit 1: Exponential and Logarithmic Functions Lesson 10: Graph Logarithmic Functions	F.BF.E.3 F.BF.E.5	Describe the effect a given parameter has on a graph.

		<p>Determine the domain of a logarithmic function from its equation.</p> <p>Determine the intercepts of a logarithmic function from its equation.</p> <p>Graph a logarithmic function, given its equation.</p>
<p>Unit 1: Exponential and Logarithmic Functions Lesson 11: Unit Review</p>	<p>A.CED.G.1 A.CED.G.2 A.REI.H.1 F.BF.E.3 F.BF.E.4a F.BF.E.4d F.BF.E.5 F.IF.A.1 F.IF.C.7e F.IF.C.8b F.LE.F.1a F.LE.F.1c F.LE.F.3 N.Q.C.2</p>	<p>Use today's lesson time to prepare for the Unit Test. You may</p> <ul style="list-style-type: none"> • Revisit Review activities located before each quiz in the unit. • Look at the Summary activities in each lesson. • Read through the Reference Guide pages linked in each lesson. <p>Ask for help on any Practice problems you did not fully understand.</p>
<p>Unit 1: Exponential and Logarithmic Functions Lesson 12: Unit Test</p>	<p>A.CED.G.1 A.CED.G.2 A.REI.H.1 F.BF.E.3 F.BF.E.4a F.BF.E.4d F.BF.E.5 F.IF.A.1 F.IF.C.7e F.IF.C.8b F.LE.F.1a F.LE.F.1c F.LE.F.3 N.Q.C.2</p>	<p>Demonstrate knowledge on concepts in this unit.</p> <p>Prove the Pythagorean identity.</p>
<p>Unit 2: Radians and Trigonometric Functions Lesson 1: Exchange Ideas: Radians and Trigonometric Functions</p>	<p>F.TF.J.8</p>	<p>Determine trigonometric function values using the Pythagorean identity.</p> <p>Determine unknown trigonometric function values using trigonometric identities.</p>
<p>Unit 2: Radians and Trigonometric Functions Lesson 2: Right Triangle Trigonometry</p>	<p>G.SRT.G.6</p>	<p>Determine an unknown side length in a right triangle using a trigonometric ratio.</p> <p>Determine specified trigonometric ratios, given side lengths of a right triangle.</p>
<p>Unit 2: Radians and Trigonometric Functions</p>	<p>G.SRT.G.6 G.SRT.G.8</p>	<p>Solve real-world problems using trigonometric ratios.</p>

<p>Lesson 3: Applications of Right Triangle Trigonometry</p>		
<p>Unit 2: Radians and Trigonometric Functions Lesson 4: Radians and Degrees</p>	<p>F.TF.H.1</p>	<p>Convert degrees to radians.</p> <p>Convert radians to degrees.</p> <p>Define the term <i>radian</i>.</p> <p>Determine the quadrant in which an angle in standard position (given in degrees) lies.</p> <p>Determine the quadrant in which an angle in standard position (given in radians) lies.</p> <p>Determine the measure of a central angle, given the length of the intercepted arc and the circle's radius.</p> <p>Determine the radius of a circle, given the length of the intercepted arc and the measure of the circle's central angle.</p> <p>Solve problems using the formula for the length of the arc of a circle in terms of radians.</p>
<p>Unit 2: Radians and Trigonometric Functions Lesson 5: Coterminal Angles</p>	<p>G.SRT.G.6</p>	<p>Determine measures of angles that are coterminal with a given angle, in degrees.</p> <p>Determine measures of angles that are coterminal with a given angle, in radians.</p> <p>Determine the reference angle for a given angle measure.</p> <p>Determine the length of an arc, given the measure of the circle's central angle and radius.</p>
<p>Unit 2: Radians and Trigonometric Functions Lesson 6: The Unit Circle</p>	<p>F.TF.H.2 F.TF.H.3</p>	<p>Determine the coordinates of the ordered pair on the unit circle that correspond to a given radian measure.</p> <p>Explain the relationship between the real numbers and the coordinates of the ordered pairs on the unit circle in terms of trigonometric functions.</p> <p>Determine exact trigonometric function values for multiples of $\pi/6$, $\pi/4$, and $\pi/3$.</p>

		<p>Determine the exact values of expressions with trigonometric functions by using the unit circle.</p> <p>Determine the quadrant in which the terminal side of an angle lies, given signs of its trigonometric functions.</p> <p>Determine the sign of a trigonometric function, given the quadrant in which the terminal side lies.</p>
<p>Unit 2: Radians and Trigonometric Functions Lesson 7: Trigonometric Identities</p>	<p>F.TF.J.8</p>	<p>Determine trigonometric function values using the Pythagorean identity.</p> <p>Determine unknown trigonometric function values using trigonometric identities.</p> <p>Prove the Pythagorean identity.</p> <p>Prove trigonometric identities.</p>
<p>Unit 2: Radians and Trigonometric Functions Lesson 8: Your Choice</p>	<p>F.TF.H.1 F.TF.H.2 F.TF.H.3 F.TF.I.6 F.TF.I.7 F.TF.J.8 G.SRT.G.6 G.SRT.G.8</p>	<p>Complete work in progress.</p> <p>Review prior lessons in the unit to prepare for the Unit Test.</p> <p>Post or respond to posts on the discussion board for the Exchange Ideas activity in this unit.</p> <p>Prepare for your state standardized test.</p> <p>Go on to the next lesson.</p>
<p>Unit 2: Radians and Trigonometric Functions Lesson 9: Trigonometric Functions of Any Angle</p>	<p>G.SRT.G.6</p>	<p>Determine the reference angle for a given angle measure.</p> <p>Determine a trigonometric function of an angle, given a point on its terminal side that is not on the unit circle.</p> <p>Determine a trigonometric function of an angle, given the equation of the line that passes through its terminal point and the quadrant it lies in.</p>
<p>Unit 2: Radians and Trigonometric Functions Lesson 10: Inverse Trigonometric Functions</p>	<p>F.TF.I.6 F.TF.I.7 G.SRT.G.6</p>	<p>Determine approximate values of inverse sine and inverse cosine expressions.</p> <p>Determine exact values of inverse sine and inverse cosine expressions.</p> <p>Explain how to restrict the domain of a trigonometric function to make it invertible.</p>

<p>Unit 2: Radians and Trigonometric Functions Lesson 11: Applications of Inverse Trigonometric Functions</p>	<p>F.TF.I.7 G.SRT.G.6</p>	<p>Solve real-world problems by using inverse trigonometric functions.</p> <p>Determine an unknown angle measure in a right triangle using a trigonometric ratio.</p>
<p>Unit 2: Radians and Trigonometric Functions Lesson 12: Unit Review</p>	<p>F.TF.H.1 F.TF.H.2 F.TF.H.3 F.TF.I.6 F.TF.I.7 F.TF.J.8 G.SRT.G.6 G.SRT.G.8</p>	<p>Use today’s lesson time to prepare for the Unit Test. You may</p> <ul style="list-style-type: none"> • Revisit Review activities located before each quiz in the unit. • Look at the Summary activities in each lesson. • Read through the Reference Guide pages linked in each lesson. <p>Ask for help on any Practice problems you did not fully understand.</p>
<p>Unit 2: Radians and Trigonometric Functions Lesson 13: Unit Test</p>	<p>F.TF.H.1 F.TF.H.2 F.TF.H.3 F.TF.I.6 F.TF.I.7 F.TF.J.8 G.SRT.G.6 G.SRT.G.8</p>	<p>Demonstrate knowledge on concepts in this unit.</p>
<p>Unit 3: Graphs of Sinusoidal Functions Lesson 1: Exchange Ideas: Graphs of Sinusoidal Functions</p>	<p>F.IF.B.4 F.IF.C.7c</p>	<p>Determine the period of a sinusoidal function from a graph.</p> <p>Determine the minimum value of a sinusoidal function from a graph.</p> <p>Determine the maximum value of a sinusoidal function from a graph.</p>
<p>Unit 3: Graphs of Sinusoidal Functions Lesson 2: Sinusoidal Graphs</p>	<p>F.IF.B.4 F.IF.C.7e</p>	<p>Determine the amplitude of a sinusoidal function from a graph.</p> <p>Determine the equation of the midline of a sinusoidal function from a graph.</p> <p>Determine the maximum value of a sinusoidal function from a graph.</p> <p>Determine the minimum value of a sinusoidal function from a graph.</p> <p>Determine the period of a sinusoidal function from a graph.</p>

		Graph a sinusoidal function, given characteristics of the function.
Unit 3: Graphs of Sinusoidal Functions Lesson 3: Sinusoidal Graphs: Amplitude	F.IF.A.3 F.IF.B.4 F.IF.C.7e	<p>Determine the equation of a trigonometric function that is a transformation of the parent trigonometric function, from a description.</p> <p>Determine the equation of a trigonometric function that is a transformation of the parent trigonometric function, from its graph.</p> <p>Determine the amplitude of a sinusoidal function from an equation.</p> <p>Graph a sinusoidal function, given an equation in the form $f(x)=a \sin(x)$ or $f(x)=a \cos(x)$.</p>
Unit 3: Graphs of Sinusoidal Functions Lesson 4: Sinusoidal Graphs: Period	F.IF.A.3 F.IF.B.4 F.IF.C.7e	<p>Determine the equation of a trigonometric function that is a transformation of the parent trigonometric function, from a description.</p> <p>Determine the equation of a trigonometric function that is a transformation of the parent trigonometric function, from its graph.</p> <p>Determine the frequency of a sinusoidal function from a graph.</p> <p>Determine the frequency of a sinusoidal function from an equation.</p> <p>Determine the period of a sinusoidal function from an equation.</p> <p>Graph a sinusoidal function, given an equation in the form $f(x)=\sin(bx)$ or $f(x)=\cos(bx)$.</p>
Unit 3: Graphs of Sinusoidal Functions Lesson 5: Your Choice	F.IF.A.3 F.IF.B.4 F.IF.C.7c F.IF.C.7e F.TF.I.5	<p>Complete work in progress.</p> <p>Review prior lessons in the unit to prepare for the Unit Test.</p> <p>Post or respond to posts on the discussion board for the Exchange Ideas activity in this unit.</p> <p>Prepare for your state standardized test.</p> <p>Go on to the next lesson.</p>
Unit 3: Graphs of Sinusoidal Functions Lesson 6: Sinusoidal Graphs: Vertical Shift	F.IF.A.3 F.IF.B.4 F.IF.C.7e	Determine the equation of a trigonometric function that is a transformation of the parent trigonometric function, from a description.

		<p>Determine the equation of a trigonometric function that is a transformation of the parent trigonometric function, from its graph.</p> <p>Determine the equation of the midline of a sinusoidal function from a graph.</p> <p>Determine the equation of the midline of a sinusoidal function from an equation.</p> <p>Graph a sinusoidal function, given an equation in the form $f(x)=\sin(x)+c$ or $f(x)=\cos(x)+c$.</p>
<p>Unit 3: Graphs of Sinusoidal Functions Lesson 7: Sinusoidal Family of Functions</p>	<p>F.IF.C.7e F.TF.I.5</p>	<p>Describe the effect a given parameter has on a graph.</p> <p>Graph a sinusoidal function, given an equation in the form $f(x)=a \sin(bx)+c$ or $f(x)=a \cos(bx)+c$.</p> <p>Graph a trigonometric function, given its equation in any form.</p>
<p>Unit 3: Graphs of Sinusoidal Functions Lesson 8: Create Trigonometric Models</p>	<p>F.IF.C.7e F.TF.I.5</p>	<p>Determine the equation of a trigonometric function that is a transformation of the parent trigonometric function, from its graph.</p> <p>Determine the trigonometric function equation that represents a mathematical or real-world situation.</p>
<p>Unit 3: Graphs of Sinusoidal Functions Lesson 9: Interpret Trigonometric Models</p>	<p>F.IF.B.4</p>	<p>Interpret key features of a trigonometric function, from a graph, in terms of the real-world context it represents.</p> <p>Interpret key features of a trigonometric function, from a table, in terms of the real-world context it represents.</p> <p>Interpret key features of a trigonometric function, from an equation, in terms of the real-world context it represents.</p>
<p>Unit 3: Graphs of Sinusoidal Functions Lesson 10: Extended Problems: Periodicity</p>	<p>F.IF.B.4</p>	<p>Interpret key features of a trigonometric function, from a graph, in terms of the real-world context it represents.</p> <p>Graph a sinusoidal function, given an equation in the form $f(x)=a \sin(bx)+c$ or $f(x)=a \cos(bx)+c$.</p>
<p>Unit 3: Graphs of Sinusoidal Functions Lesson 11: Sketch Trigonometric Models</p>	<p>F.IF.B.4</p>	<p>Sketch the graph of a trigonometric function, given a description of the situation it represents.</p>

<p>Unit 3: Graphs of Sinusoidal Functions Lesson 12: Unit Review</p>	<p>F.IF.A.3 F.IF.B.4 F.IF.C.7c F.IF.C.7e F.TF.I.5</p>	<p>Use today’s lesson time to prepare for the Unit Test. You may</p> <ul style="list-style-type: none"> • Revisit Review activities located before each quiz in the unit. • Look at the Summary activities in each lesson. • Read through the Reference Guide pages linked in each lesson. <p>Ask for help on any Practice problems you did not fully understand.</p>
<p>Unit 3: Graphs of Sinusoidal Functions Lesson 13: Unit Test</p>	<p>F.IF.A.3 F.IF.B.4 F.IF.C.7c F.IF.C.7e F.TF.I.5</p>	<p>Demonstrate knowledge on concepts in this unit.</p>
<p>Unit 4: More Function Types Lesson 1: Exchange Ideas: More Function Types</p>	<p>F.IF.C.7b</p>	<p>Graph an absolute value function, given its equation.</p> <p>Graph a piecewise-defined function, given its rule.</p> <p>Graph a step function, given its equation.</p>
<p>Unit 4: More Function Types Lesson 2: Reciprocal Power Functions</p>	<p>F.IF.C.7d</p>	<p>Determine the domain and range of a reciprocal power function from its equation.</p> <p>Determine the equations of the asymptotes of a rational function from its equation.</p> <p>Graph a reciprocal power function.</p>
<p>Unit 4: More Function Types Lesson 3: Graph Rational Functions</p>	<p>F.IF.C.7d</p>	<p>Describe the effect a given parameter has on a graph.</p> <p>Determine the domain of a rational function from its equation.</p> <p>Determine the equations of the asymptotes of a rational function from its equation.</p> <p>Determine the zeros of a rational function from its equation.</p> <p>Graph a rational function, given an equation in the form $f(x)=a(x-h)+k$.</p> <p>Determine the range of a rational function from its equation.</p>

<p>Unit 4: More Function Types Lesson 4: More Rational Functions</p>	<p>F.IF.C.7d</p>	<p>Determine a hole in the graph of a rational function from its equation.</p> <p>Determine the domain of a rational function from its equation.</p> <p>Determine the equations of the asymptotes of a rational function from its equation.</p> <p>Determine the zeros of a rational function from its equation.</p> <p>Graph a rational function whose rule is written as the quotient of two polynomials.</p>
<p>Unit 4: More Function Types Lesson 5: Radical Functions</p>	<p>F.IF.C.7b F.IF.C.7d</p>	<p>Describe the effect a given parameter has on a graph.</p> <p>Graph a square root function, given its equation.</p> <p>Graph a cube root function, given its equation.</p> <p>Determine the domain and range of a radical function from its equation.</p>
<p>Unit 4: More Function Types Lesson 6: Quadratic Functions</p>	<p>F.IF.C.7a G.GPE.K.2</p>	<p>Graph a quadratic function, given its equation in any form.</p>
<p>Unit 4: More Function Types Lesson 7: Quadratic Regression Models</p>	<p>S.ID.B.6a</p>	<p>Determine a quadratic function equation to fit a data set.</p> <p>Solve problems using the quadratic function equation that models a data set.</p>
<p>Unit 4: More Function Types Lesson 8: Absolute Value Functions</p>	<p>F.IF.C.7b</p>	<p>Describe the effect a given parameter has on a graph.</p> <p>Graph an absolute value function, given its equation.</p>
<p>Unit 4: More Function Types Lesson 9: Piecewise-Defined Functions</p>	<p>F.IF.C.7b</p>	<p>Graph a piecewise-defined function, given its rule.</p>
<p>Unit 4: More Function Types Lesson 10: Step Functions</p>	<p>F.IF.C.7b</p>	<p>Describe the effect a given parameter has on a graph.</p> <p>Graph a step function, given its equation.</p>
<p>Unit 4: More Function Types Lesson 11: Logistic Growth Functions</p>	<p>F.IF.A.2 F.IF.B.4</p>	<p>Evaluate a logistic growth function for a given input value.</p> <p>Identify key features of a logistic growth function.</p>

		<p>Interpret key features of a logistic growth function in terms of the real-world context it represents.</p> <p>Graph a logistic growth function, given its equation.</p>
<p>Unit 4: Working with Functions Lesson 12: Unit Review</p>	<p>F.IF.A.2 F.IF.B.4 F.IF.C.7a F.IF.C.7b F.IF.C.7d G.GPE.K.2 S.ID.B.6a</p>	<p>Use today's lesson time to prepare for the Unit Test. You may</p> <ul style="list-style-type: none"> • Revisit Review activities located before each quiz in the unit. • Look at the Summary activities in each lesson. • Read through the Reference Guide pages linked in each lesson. <p>Ask for help on any Practice problems you did not fully understand.</p>
<p>Unit 4: Working with Functions Lesson 13: Unit Test</p>	<p>F.IF.A.2 F.IF.B.4 F.IF.C.7a F.IF.C.7b F.IF.C.7d G.GPE.K.2 S.ID.B.6a</p>	<p>Demonstrate knowledge on concepts in this unit.</p>
<p>Unit 5: Using Function Models Lesson 1: Exchange Ideas: Use Function Models</p>	<p>F.IF.C.9</p>	<p>Compare key features of two functions represented in different ways.</p>
<p>Unit 5: Using Function Models Lesson 2: Linear and Quadratic Systems</p>	<p>A.REI.J.7 A.REI.K.11</p>	<p>Solve a system containing one linear equation and one quadratic equation, in two variables, algebraically.</p> <p>Solve a system containing one linear equation and one quadratic equation, in two variables, graphically.</p>
<p>Unit 5: Using Function Models Lesson 3: Intersections of Graphs</p>	<p>A.REI.K.11</p>	<p>Explain how to solve $f(x) = g(x)$ by graphing.</p> <p>Solve the equation $f(x) = g(x)$ by graphing.</p> <p>Solve the equation $f(x) = g(x)$ by making a table of values.</p>
<p>Unit 5: Using Function Models Lesson 4: Key Features of Functions</p>	<p>F.IF.B.4 F.IF.B.5 F.BF.E.3</p>	<p>Determine if a function is even, odd, or neither even nor odd, from its equation.</p> <p>Determine if a function is even, odd, or neither even nor odd, from its graph.</p>

		<p>Determine a relative minimum or maximum of a function.</p> <p>Determine intervals on which a function is increasing, decreasing, or constant.</p> <p>Determine intervals on which a function is positive or negative.</p> <p>Determine whether a function is continuous or discontinuous.</p> <p>Interpret key features of a polynomial function (degree three or higher), from a graph, in terms of the real-world context it represents.</p> <p>Determine the practical range of a function.</p>
<p>Unit 5: Using Function Models Lesson 5: Compare Models</p>	<p>F.IF.C.9</p>	<p>Compare key features of two functions represented in different ways.</p>
<p>Unit 5: Using Function Models Lesson 6: Average Rate of Change</p>	<p>F.IF.B.6 F.LE.F.1b</p>	<p>Calculate a function's average rate of change over a specified interval, given the equation of the function.</p> <p>Calculate a function's average rate of change over a specified interval, given a table of values.</p> <p>Approximate a function's average rate of change over a specified interval, given the graph of the function.</p> <p>Interpret a function's average rate of change.</p>
<p>Unit 5: Using Function Models Lesson 7: Combine Functions</p>	<p>F.BF.1b</p>	<p>Add two functions.</p> <p>Subtract two functions.</p> <p>Multiply two functions.</p> <p>Divide two functions.</p> <p>Interpret a function that results from combining two functions with a function operation, in terms of the context of the situation.</p>
<p>Unit 5: Using Function Models Lesson 8: Unit Review</p>	<p>A.REI.J.7 A.REI.K.11 F.BF.E.3 F.IF.B.4 F.IF.B.5 F.IF.B.6 F.IF.C.9</p>	<p>Use today's lesson time to prepare for the Unit Test. You may</p> <ul style="list-style-type: none"> • Revisit Review activities located before each quiz in the unit. • Look at the Summary activities in each lesson.

	<p>F.LE.F.1b</p>	<ul style="list-style-type: none"> • Read through the Reference Guide pages linked in each lesson. <p>Ask for help on any Practice problems you did not fully understand.</p>
<p>Unit 5: Using Function Models Lesson 9: Unit Test</p>	<p>A.REI.J.7 A.REI.K.11 F.BF.E.3 F.IF.B.4 F.IF.B.5 F.IF.B.6 F.IF.C.9 F.LE.F.1b</p>	<p>Demonstrate knowledge on concepts in this unit.</p>
<p>Unit 6: Sequences and Series Lesson 1: Exchange Ideas: Sequences and Series</p>	<p>F.BF.D.1a F.BF.D.2 F.LE.F.2 F.LE.F.5</p>	<p>Write an explicit rule for an arithmetic sequence.</p> <p>Write a recursive rule for an arithmetic sequence.</p> <p>Convert from a recursive rule for an arithmetic sequence to the explicit rule.</p> <p>Convert from an explicit rule for an arithmetic sequence to the recursive rule.</p> <p>Write the rule for an arithmetic sequence that models a real-world situation.</p>
<p>Unit 6: Sequences and Series Lesson 2: Arithmetic Sequences</p>	<p>F.BF.D.1a F.BF.D.2 F.LE.F.2 F.LE.F.5</p>	<p>Write an explicit function rule, given a description of a real-world situation.</p> <p>Write a recursive function rule, given a description of a real-world situation.</p> <p>Write an explicit rule for an arithmetic sequence.</p> <p>Write a recursive rule for an arithmetic sequence.</p> <p>Write the rule for an arithmetic sequence that models a real-world situation.</p> <p>Convert from a recursive rule for an arithmetic sequence to the explicit rule.</p> <p>Convert from an explicit rule for an arithmetic sequence to the recursive rule.</p> <p>Determine the function equation that models a linear relationship, given a set or table of ordered pairs.</p>

		Describe the pattern in a sequence.
Unit 6: Sequences and Series Lesson 3: Geometric Sequences	F.BF.D.1a F.BF.D.2 F.LE.F.2 F.LE.F.5	Write an explicit function rule, given a description of a real-world situation. Write a recursive function rule, given a description of a real-world situation. Write an explicit rule for a geometric sequence. Write a recursive rule for a geometric sequence. Write the rule for a geometric sequence that models a real-world situation. Convert from a recursive rule for a geometric sequence to the explicit rule. Convert from an explicit rule for a geometric sequence to the recursive rule. Determine the function equation that models an exponential relationship, given a set or table of ordered pairs. Describe the pattern in a sequence.
Unit 6: Sequences and Series Lesson 4: Series and Sigma Notation	F.BF.D.2	Represent a series with sigma notation, given the sum in expanded form. Determine the sum of a series, given the sum in sigma notation.
Unit 6: Sequences and Series Lesson 5: Arithmetic Series and Applications	A.SSE.B.4	Solve real-world problems using the formula for the sum of a finite arithmetic series. Determine the partial sum of an arithmetic series.
Unit 6: Series and Sequences Lesson 6: Geometric Series and Applications	A.SSE.B.4	Solve real-world problems using the formula for the sum of a finite geometric series. Derive the formula for the sum of a finite geometric series when the common ratio is not 1. Determine the partial sum of a geometric series.
Unit 6: Series and Sequences Lesson 7: Unit Review	A.SSE.B.4 F.BF.D.1a F.BF.D.2 F.LE.F.2 F.LE.F.5	Use today's lesson time to prepare for the Unit Test. You may <ul style="list-style-type: none"> • Revisit Review activities located before each quiz in the unit.

		<ul style="list-style-type: none"> • Look at the Summary activities in each lesson. • Read through the Reference Guide pages linked in each lesson. <p>Ask for help on any Practice problems you did not fully understand.</p>
Unit 6: Series and Sequences Lesson 8: Unit Test	A.SSE.B.4 F.BF.D.1a F.BF.D.2 F.LE.F.2 F.LE.F.5	Demonstrate knowledge on concepts in this unit.
Unit 7: Counting and Probability Lesson 1: Exchange Ideas: Counting and Probability	S.CP.F.3 S.CP.F.4 S.CP.F.5 S.CP.G.6	<p>Determine if two events are independent using conditional probability.</p> <p>Determine if two events are independent from a two-way table.</p> <p>Explain the concept of conditional probability and independence.</p>
Unit 7: Counting and Probability Lesson 2: Sample Space and Events	S.CP.F.1	<p>Determine the sample space in an experiment.</p> <p>Determine the number of outcomes in a sample space.</p> <p>Determine the number of events that result from unions, intersections, or complements of other events.</p>
Unit 7: Counting and Probability Lesson 3: Probability of Events	S.CP.F.2	<p>Determine whether two events are independent or not independent.</p> <p>Determine the probability of dependent events.</p> <p>Determine the probability of independent events.</p>
Unit 7: Counting and Probability Lesson 4: Conditional Probability and Testing for Independence	S.CP.F.3 S.CP.F.4 S.CP.F.5 S.CP.G.6	<p>Determine whether two events are independent using conditional probability.</p> <p>Determine whether two events are independent from a two-way table.</p> <p>Explain the concept of conditional probability and independence.</p> <p>Determining the probability of event A given that event B has already occurred using the quotient $P(A \text{ and } B)/P(B)$.</p>

<p>Unit 7: Counting and Probability Lesson 5: The Addition Rule</p>	<p>S.CP.G.6</p>	<p>Determine the probability that the events A or B occur when events A and B are mutually exclusive.</p> <p>Determine the probability that the events A or B occur when events A and B are not mutually exclusive.</p>
<p>Unit 7: Counting and Probability Lesson 6: Unit Review</p>	<p>S.CP.F.1 S.CP.F.2 S.CP.F.3 S.CP.F.4 S.CP.F.5 S.CP.G.6</p>	<p>Use today’s lesson time to prepare for the Unit Test. You may</p> <ul style="list-style-type: none"> • Revisit Review activities located before each quiz in the unit. • Look at the Summary activities in each lesson. • Read through the Reference Guide pages linked in each lesson. <p>Ask for help on any Practice problems you did not fully understand.</p>
<p>Unit 7: Counting and Probability Lesson 7: Unit Test</p>	<p>S.CP.F.1 S.CP.F.2 S.CP.F.3 S.CP.F.4 S.CP.F.5 S.CP.G.6</p>	<p>Demonstrate knowledge on concepts in this unit.</p>
<p>Unit 8: Project: Tides Model Lesson 1: Tides Model</p>	<p>F.IF.B.4 F.TF.I.5 S.ID.B.6a</p>	<p>Determine the amplitude of a sinusoidal function from a graph.</p> <p>Determine the equation of the midline of a sinusoidal function from a graph.</p> <p>Determine the maximum value of a sinusoidal function from a graph.</p> <p>Determine the minimum value of a sinusoidal function from a graph.</p> <p>Determine the period of a sinusoidal function from a graph.</p> <p>Sketch the graph of a trigonometric function, given a description of the situation it represents.</p> <p>Graph a sinusoidal function, given characteristics of the function.</p> <p>Graph a trigonometric function, given its equation in any form.</p>

		<p>Determine the trigonometric function equation that represents a mathematical or real-world situation.</p>
<p>Unit 8: Project: Tides Model Lesson 2: Project Research 2</p>	<p>F.IF.B.4 F.TF.I.5 S.ID.B.6a</p>	<p>Determine the amplitude of a sinusoidal function from a graph.</p> <p>Determine the equation of the midline of a sinusoidal function from a graph.</p> <p>Determine the maximum value of a sinusoidal function from a graph.</p> <p>Determine the minimum value of a sinusoidal function from a graph.</p> <p>Determine the period of a sinusoidal function from a graph.</p> <p>Sketch the graph of a trigonometric function, given a description of the situation it represents.</p> <p>Graph a sinusoidal function, given characteristics of the function.</p> <p>Graph a trigonometric function, given its equation in any form.</p> <p>Determine the trigonometric function equation that represents a mathematical or real-world situation.</p>
<p>Unit 8: Project: Tides Model Lesson 3: Project Writing 1</p>	<p>F.IF.B.4 F.TF.I.5 S.ID.B.6a</p>	<p>Determine the amplitude of a sinusoidal function from a graph.</p> <p>Determine the equation of the midline of a sinusoidal function from a graph.</p> <p>Determine the maximum value of a sinusoidal function from a graph.</p> <p>Determine the minimum value of a sinusoidal function from a graph.</p> <p>Determine the period of a sinusoidal function from a graph.</p> <p>Sketch the graph of a trigonometric function, given a description of the situation it represents.</p>

		<p>Graph a sinusoidal function, given characteristics of the function.</p> <p>Graph a trigonometric function, given its equation in any form.</p> <p>Determine the trigonometric function equation that represents a mathematical or real-world situation.</p>
<p>Unit 8: Project: Tides Model Lesson 4: Project Writing 2</p>	<p>F.IF.B.4 F.TF.I.5 S.ID.B.6a</p>	<p>Determine the amplitude of a sinusoidal function from a graph.</p> <p>Determine the equation of the midline of a sinusoidal function from a graph.</p> <p>Determine the maximum value of a sinusoidal function from a graph.</p> <p>Determine the minimum value of a sinusoidal function from a graph.</p> <p>Determine the period of a sinusoidal function from a graph.</p> <p>Sketch the graph of a trigonometric function, given a description of the situation it represents.</p> <p>Graph a sinusoidal function, given characteristics of the function.</p> <p>Graph a trigonometric function, given its equation in any form.</p> <p>Determine the trigonometric function equation that represents a mathematical or real-world situation.</p>
<p>Unit 8: Project: Tides Model Lesson 5: Project Reflection</p>	<p>F.IF.B.4 F.TF.I.5 S.ID.B.6a</p>	<p>Determine the amplitude of a sinusoidal function from a graph.</p> <p>Determine the equation of the midline of a sinusoidal function from a graph.</p> <p>Determine the maximum value of a sinusoidal function from a graph.</p> <p>Determine the minimum value of a sinusoidal function from a graph.</p>

		<p>Determine the period of a sinusoidal function from a graph.</p> <p>Sketch the graph of a trigonometric function, given a description of the situation it represents.</p> <p>Graph a sinusoidal function, given characteristics of the function.</p> <p>Graph a trigonometric function, given its equation in any form.</p> <p>Determine the trigonometric function equation that represents a mathematical or real-world situation.</p>
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