Wyoming Department of Education Required Virtual Education Course Syllabus

Sheridan County School District # 1

Program Name	Sheridan County School District #1 Virtual School	Content Area	MA
Course ID	AC02056	Grade Level	11 - 12
Course Name	Algebra II-CCSS	# of Credits	1
SCED Code	02056	Curriculum Type	Acellus

COURSE DESCRIPTION

Algebra II builds upon the algebraic concepts taught in Algebra I, continuing on to functions, expressions, etc. and providing students with a more in-depth understanding of algebraic concepts. Algebra II is A-G Approved through the University of California.

STANDARD #	BENCHMARK (Standard/Indicator) Use the Standards and Benchmarks as Spreadsheets
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. For example, we define 5^(1/3) to be the cube root of 5 because we want [5^(1/3)]^3 = 5^[(1/3) x 3] to hold, so [5^(1/3)]^3 must equal 5.
N.RN.2	Rewrite expressions involving radicals and rational exponents using the properties of exponents.
N.RN.3	Explain why the sum or product of rational numbers is 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.2	Define appropriate quantities for the purpose of descriptive modeling.*
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.
N.CN.2	Use the relation i^2 = –1 and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.
N.CN.3	(+)Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers.
N.CN.4	(+)Represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers), and explain why the rectangular and polar forms of a given complex number represent the same number.

N.CN.5	(+)Represent addition, subtraction, multiplication, and conjugation of complex numbers geometrically on the complex plane; use properties of this representation for computation. For example, (-1 + √3i)^3 = 8 because (-1 + √3i) has modulus 2 and argument 120°.
N.CN.6	(+)Calculate the distance between numbers in the complex plane as the modulus of the difference, and the midpoint of a segment as the average of the numbers at its endpoints.
N.CN.7	Solve quadratic equations with real coefficients that have complex solutions.
N.CN.8	(+)Extend polynomial identities to the complex numbers. For example, rewrite x^2 + 4 as (x + 2i)(x – 2i).
N.CN.9	(+)Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.
N.VM.1	(+)Recognize vector quantities as having both magnitude and direction. Represent vector quantities by directed line segments, and use appropriate symbols for vectors and their magnitudes (e.g., v(bold), |v|, ||v||, v(not bold)).
N.VM.2	(+)Find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point.
N.VM.3	(+)Solve problems involving velocity and other quantities that can be represented by vectors.
N.VM.4	(+)Add and subtract vectors.
N.VM.4a	(+)Add vectors end-to-end, component-wise, and by the parallelogram rule. Understand that the magnitude of a sum of two vectors is typically not the sum of the magnitudes.
N.VM.4b	(+)Given two vectors in magnitude and direction form, determine the magnitude and direction of their sum.

N.VM.4c	(+)Understand vector subtraction v – w as v + (–w), where (–w) is the additive inverse of w, with the same magnitude as w and pointing in the opposite direction. Represent vector subtraction graphically by connecting the tips in the appropriate order, and perform vector subtraction component-wise.
N.VM.5	(+)Multiply a vector by a scalar.
N.VM.5a	(+)Represent scalar multiplication graphically by scaling vectors and possibly reversing their direction; perform scalar multiplication component-wise, e.g., as c(v(sub x), v(sub y)) = (cv(sub x), cv(sub y)).
N.VM.5b	(+)Compute the magnitude of a scalar multiple cv using ||cv|| = |c|v. Compute the direction of cv knowing that when |c|v ≠ 0, the direction of cv is either along v (for c > 0) or against v (for c < 0).
N.VM.6	(+)Use matrices to represent and manipulate data, e.g., to represent payoffs or incidence relationships in a network.
N.VM.7	(+)Multiply matrices by scalars to produce new matrices, e.g., as when all of the payoffs in a game are doubled.
N.VM.8	(+)Add, subtract, and multiply matrices of appropriate dimensions.
N.VM.9	(+)Understand that, unlike multiplication of numbers, matrix multiplication for square matrices is not a commutative operation, but still satisfies the associative and distributive properties.
N.VM.10	(+)Understand that the zero and identity matrices play a role in matrix addition and multiplication similar to the role of 0 and 1 in the real numbe
N.VM.11	(+)Multiply a vector (regarded as a matrix with one column) by a matrix of suitable dimensions to produce another vector. Work with matrices as transformations of vectors.
N.VM.12	(+)Work with 2 X 2 matrices as transformations of the plane, and interpret the absolute value of the determinant in terms of area.

A.SSE.1	Interpret expressions that represent a quantity in terms of its context.*
A.SSE.1a	Interpret parts of an expression, such as terms, factors, and coefficients.*
A.SSE.1b	Interpret complicated expressions by viewing one or more of their parts as a single entity. For example, interpret P(1+r)^n as the product of P and a factor not depending on 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).
A.SSE.3	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.*
A.SSE.3a	Factor a quadratic expression to reveal the zeros of the function it defines.*
A.SSE.3c	Use the properties of exponents to transform expressions for exponential functions. For example the expression 1.15^t can be rewritten as [1.15^(1/12)]^(12t) ≈ 1.012^(12t) to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.*
A.SSE.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. For example, calculate mortgage payments.*
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.
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).
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.

A.APR.4	Prove polynomial identities and use them to describe numerical relationships. For example, the polynomial identity (x^2 + y^2)^2 = (x^2 – y^2)^2 + (2xy)^2 can be used to generate Pythagorean triples.
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.1
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.
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.
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.*
A.CED.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.*
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.*
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.*
A.REI.2	Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.
A.REI.4b	Solve quadratic equations by inspection (e.g., for x^2 = 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.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.6	Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.
A.REI.7	Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. For example, find the points of intersection between the line y = –3x and the circle x^2 + y^2 = 3.
A.REI.8	(+)Represent a system of linear equations as a single matrix equation in a vector variable.
A.REI.9	(+)Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension 3 × 3 or greater).
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.*
A.REI.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.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.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.3	Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. For example, the Fibonacci sequence is defined recursively by f(0) = f(1) = 1, f(n+1) = f(n) + f(n-1) for n ≥ 1 (n is greater than or equal to 1).
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. 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.5	Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. 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.*

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.*
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.*
F.IF.7a	Graph linear and quadratic functions and show intercepts, maxima, and minima.*
F.IF.7b	Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.*
F.IF.7c	Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.*
F.IF.7d	(+)Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.*
F.IF.7e	Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.*
F.IF.8	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.
F.IF.8b	Use the properties of exponents to interpret expressions for exponential functions. For example, identify percent rate of change in functions such as y = (1.02)^t, y = (0.97)^t, y = (1.01)^(12t), y = (1.2)^(t/10), and classify them as representing exponential growth and decay.
F.IF.9	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.
F.BF.1	Write a function that describes a relationship between two quantities.*

F.BF.1a	Determine an explicit expression, a recursive process, or steps for calculation from a context.
F.BF.1b	Combine standard function types using arithmetic operations. 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.
F.BF.1c	(+)Compose functions. 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.
F.BF.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.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.4	Find inverse functions.
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. For example, f(x) =2(x^3) or f(x) = (x+1)/(x-1) for $x \neq 1$ (x not equal to 1).
F.BF.4b	(+)Verify by composition that one function is the inverse of another.
F.BF.4c	(+)Read values of an inverse function from a graph or a table, given that the function has an inverse.
F.BF.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.LE.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.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.*
F.LE.5	Interpret the parameters in a linear or exponential function in terms of a context.*
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.3	(+)Use special triangles to determine geometrically the values of sine, cosine, tangent for π/3, π/4 and π/6, and use the unit circle to express the values of sine, cosine, and tangent for π - x, π + x, and 2π - x in terms of their values for x, where x is any real number.
F.TF.4	(+)Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.
F.TF.5	Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.*
F.TF.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.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.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.
F.TF.9	(+)Prove the addition and subtraction formulas for sine, cosine, and tangent and use them to solve problems.

G.CO.2	Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).
G.CO.5	Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.
G.SRT.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.8	Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.
G.SRT.10	(+)Prove the Laws of Sines and Cosines and use them to solve problems.
G.SRT.11	(+)Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).
G.GPE.1	Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.
G.GPE.2	Derive the equation of a parabola given a focus and directrix.
G.GPE.3	(+)Derive the equations of ellipses and hyperbolas given the foci, using the fact that the sum or difference of distances from the foci is constant.
S.ID.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.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.6	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.*
S.IC.1	Understand statistics as a process for making inferences about population parameters based on a random sample from that population.*
S.IC.2	Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. 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?*
S.IC.3	Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.*
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.*
S.IC.6	Evaluate reports based on data.*
S.CP.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.3	Understand the conditional probability of A given B as P(A 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.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. For example, collect data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results.*
S.CP.5	Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.*
S.CP.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.CP.8	(+)Apply the general Multiplication Rule in a uniform probability model, P(A and B) = [P(A)]x[P(B|A)] =[P(B)]x[P(A|B)], and interpret the answer in terms of the model.*
S.CP.9	(+)Use permutations and combinations to compute probabilities of compound events and solve problems.*
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S.MD.1	(+)Define a random variable for a quantity of interest by assigning a numerical value to each event in a sample space; graph the corresponding probability distribution using the same graphical displays as for data distributions.*
S.MD.2	(+)Calculate the expected value of a random variable; interpret it as the mean of the probability distribution.*
S.MD.3	(+)Develop a probability distribution for a random variable defined for a sample space in which theoretical probabilities can be calculated; find the expected value. For example, find the theoretical probability distribution for the number of correct answers obtained by guessing on all five questions of a multiple-choice test where each question has four choices, and find the expected grade under various grading schemes.*
S.MD.4	(+)Develop a probability distribution for a random variable defined for a sample space in which probabilities are assigned empirically; find the expected value. For example, find a current data distribution on the number of TV sets per household in the United States, and calculate the expected number of sets per household. How many TV sets would you expect to find in 100 randomly selected households?*
S.MD.5	(+)Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values.*
S.MD.5a	(+) Find the expected payoff for a game of chance. For example, find the expected winnings from a state lottery ticket or a game at a fast-food restaurant.*
S.MD.5b	(+)Evaluate and compare strategies on the basis of expected values. For example, compare a high-deductible versus a low-deductible automobile insurance policy using various, but reasonable, chances of having a minor or a major accident.*
S.MD.6	(+)Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).*

S.MD.7	(+)Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).*

SCOPE AND SEQUENCE		
UNIT OUTLINE	STANDARD#	OUTCOMES OBJECTIVES/STUDENT CENTERED GOALS
Unit 1 – Algebraic Expressions	N.RN.3, A.SSE.1a, A.SSE.1b, A.SSE.3, A.CED.1, A.CED.4	In this unit students learn about algebraic expressions, and sets of numbers. They also learn about solving equations and inequalities, simplifying and evaluating, and absolute value.
Unit 2 – Functions	N.Q.2, A.SSE.1, A.SSE.1a, A.SSE.2, A.CED.2, A.CED.3, A.REI.12, F.IF.1, F.IF.2, F.IF.4, F.IF.6, F.IF.7, F.IF.7a, F.IF.7b, F.IF.8, F.IF.9, F.BF.1, F.BF.3, F.LE.2, F.LE.5	In this unit students learn about the definition of a function, direct variation, slope-intercept, and point-slope. They also learn about piece-wise defined functions, linear models, transformations of functions, absolute value functions, and inequalities in two variables.
Unit 3 – Linear Systems	A.CED.2, A.CED.3, A.REI.5, A.REI.6, A.REI.8, A.REI.11, A.REI.12	In this unit students learn about solving graphically, substitution, elimination, and systems of inequalities. They also learn about linear programming, systems in three variables, and matrices.
Unit 4 – Quadratic Functions	N.CN.1, N.CN.2, N.CN.3, N.CN.4, N.CN.5, N.CN.6, N.CN.7, N.CN.8, A.SSE.1a, A.SSE.2, A.SSE.3a, A.APR.3, A.CED.1, A.CED.2, A.CED.3, A.REI.4b, F.IF.4, F.IF.5, F.IF.6, F.IF.7, F.IF.7a, F.IF.8, F.IF.9, F.BF.1, F.LE.2, F.LE.5	In this unit students learn about transformations, standard form, quadratic regression, quadratic equations, quadratic formula, and quadratic inequalities. They also learn about factoring, completing the square, complex numbers, and graphing and representing operations of complex numbers.
Unit 5 – Polynomials	N.CN.7, N.CN.8, N.CN.9, A.SSE.1, A.SSE.1a, A.SSE.2, A.APR.1, A.APR.2, A.APR.3, A.APR.5, A.APR.6, F.IF.4, F.IF.5, F.IF.6, F.IF.7, F.IF.7c, F.BF.1	In this unit students learn about polynomial functions and equations, factored form, dividing polynomials, and synthetic division. They also learn about finding roots, the fundamental theorem of algebra, graphing polynomial functions, binomial theorem, and regression.
Unit 6 – Radical Functions	N.RN.1, N.RN.2, A.CED.4, A.REI.2, F.IF.7, F.IF.7b, F.IF.8, F.BF.1b, F.BF.1c, F.BF.4, F.BF.4a, F.BF.4b, F.BF.4c	In this unit students learn about properties of exponents, rational exponents, adding radicals, and solving radical equations. They also learn about composition of functions, inverse functions, and graphing radical functions.

Unit 7 – Exponential and Logarithmic Functions	A.SSE.1b, A.SSE.3c, A.CED.2, A.REI.11, F.IF.7, F.IF.7e, F.IF.8, F.IF.8b, F.BF.1, F.BF.4a, F.BF.5, F.LE.4	In this unit students learn about exponential and logarithmic functions and equations. They also learn about properties of logarithms, and compound interest.
Unit 8 – Rational Fractions	A.SSE.1, A.SSE.1a, A.SSE.1b, A.SSE.2, A.APR.1, A.APR.3, A.APR.6, A.APR.7, A.CED.1, A.CED.2, A.CED.4, A.REI.2, A.REI.11, F.IF.7, F.IF.7d, F.BF.1, F.BF.3	In this unit students learn about inverse variation, reciprocal functions, and graphs of rational functions. They also learn about adding, subtracting, multiplying, and dividing rational expressions, solving inequalities, and number theory.
Unit 9 – Sequences and Series	A.SSE.1a, A.SSE.1b, A.SSE.4, F.IF.3, F.BF.1, F.BF.1a, F.BF.2, F.LE.2	In this unit students learn about explicit versus recursive definitions. They also learn about arithmetic and geometric sequences and series.
Unit 10 – Conic Sections	A.REI.7, A.REI.11, G.GPE.1, G.GPE.2, G.GPE.3	In this unit students learn about definitions, parabolas, and circles. They also learn about ellipses, hyperbola, and quadratic systems.
Unit 11 – Probability and Statitics	S.ID.2, S.ID.4, S.ID.6, S.IC.1, S.IC.2, S.IC.3, S.IC.4, S.IC.6, S.CP.2, S.CP.3, S.CP.4, S.CP.5, S.CP.6, S.CP.8, S.CP.9, S.MD.1, S.MD.2, S.MD.3, S.MD.4, S.MD.5, S.MD.5a, S.MD.5b, S.MD.6, S.MD.7	In this unit students learn about permutations and combinations, probability, and multiple events. They also learn about conditional probability, probability models, analyzing data, standard deviation, samples and surveys, binomial and normal distributions, probability distribution functions, and expected value.
Unit 12 – Matrices	N.VM.1, N.VM.2, N.VM.3, N.VM.4, N.VM.4a, N.VM.4b, N.VM.4c, N.VM.5, N.VM.5a, N.VM.5b, N.VM.6, N.VM.7, N.VM.8, N.VM.9, N.VM.10, N.VM.11, N.VM.12, A.REI.9, G.CO.2, G.CO.5	In this unit students learn about adding, subtracting, and multiplying matrices. They also learn about inverses; solving systems using inverses; geometric transformations; and vectors.
Unit 13 – Periodic Functions	F.IF.4, F.IF.7e, F.TF.1, F.TF.2, F.TF.3, F.TF.4, F.TF.5	In this unit students learn about the definition of periodic and the unit circle. They also learn about radian measure; the sine, cosine, and tangent functions; and reciprocal and translating trigonometric functions.

Unit 14 – Trig Identities and Equations	A.APR.4, F.TF.6, F.TF.7, F.TF.8, F.TF.9, G.SRT.6, G.SRT.8, G.SRT.10, G.SRT.11	In this unit students learn about basic identities, solving and inverse trig functions, right triangles, and the laws of sines and cosines. They also learn about sum and difference identities, and double and half angle identities.