Algebra 2 Curriculum Guide
Lunenburg County Public Schools
June 2014

Marking Period: 1
Days: 5
Reporting Category/Strand: Equations & Inequalities

SOL AII.4a	**The student will solve, algebraically and graphically,** **a) absolute value equations and inequalities** **Graphing calculators will be used for solving and for confirming the algebraic solutions.**
Essential Knowledge/Skills/Understandings	**Essential Knowledge/Skills:** The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to • Solve absolute value equations and inequalities algebraically and graphically. • Apply an appropriate equation to solve a real-world problem. **Essential Understandings:** • The definition of absolute value (for any real numbers a and b, where $b \geq 0$, if $a = b$, then $a = b$ or $a = -b$) is used in solving absolute value equations and inequalities. • Absolute value inequalities can be solved graphically or by using a compound statement. • Real-world problems can be interpreted, represented, and solved using equations and inequalities. • Equations can be solved in a variety of ways. • Set builder notation may be used to represent solution sets of equations and inequalities.
Essential Questions	Why can an absolute value equation take on more than one solution? What is a real-world example for an absolute value equation? When working with a real-world problem, how are solution(s) verified? How is an absolute value equation solved? How can the solution for an absolute value inequality be described? Explain the difference between a compound inequality containing the word “or” and the word “and“.
Primary Resources	DOE ESS Lesson Plan: Absolute Value Equations and Inequalities (PDF) HCPS Algebra 2 Online! Interactive Achievement
Essential Vocabulary	Please refer to previously taught mathematics vocabulary.

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Marking Period: 1
Days: 2
Reporting Category/Strand: Equations and Inequalities

SOL AII.4b	**The student will solve, algebraically and graphically,** **b) quadratic equations over the set of complex numbers** **Graphing calculators will be used for solving and for confirming the algebraic solutions.**
Essential Knowledge/Skills/Understandings	**Essential Knowledge/Skills:** The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to • Solve a quadratic equation over the set of complex numbers using an appropriate strategy. • Calculate the discriminant of a quadratic equation to determine the number of real and complex solutions. • Apply an appropriate equation to solve a real-world problem. • Recognize that the quadratic formula can be derived by applying the completion of squares to any quadratic equation in standard form. **Essential Understandings:** • A quadratic function whose graph does not intersect the x-axis has roots with imaginary components. • The quadratic formula can be used to solve any quadratic equation. • The value of the discriminant of a quadratic equation can be used to describe the number of real and complex solutions. • Real-world problems can be interpreted, represented, and solved using equations and inequalities. • Equations can be solved in a variety of ways. • Set builder notation may be used to represent solution sets of equations and inequalities.
Essential Questions	What is a real-world example for a quadratic or radical equation? When working with a real-world problem, how are solution(s) verified? How is an equation containing exponent of 2 solved? What are the methods used to solve quadratic equations? How is the discriminant of a quadratic equation calculated and what is its significance? How does a graphing calculator confirm algebraic solutions of quadratic equation? What is a real-world example for a quadratic equation? What are the possible number of solutions for quadratic functions?
Primary Resources	DOE ESS Lesson Plan: Quadratic Equations (PDF) HCPS Algebra 2 Online! Interactive Achievement

Essential Vocabulary	Please refer to previously taught mathematics vocabulary.

Marking Period: 1
Days: 3
Reporting Category/Strand: Equations and Inequalities

SOL AII.4c	**The student will solve, algebraically and graphically,** **c) equations containing rational algebraic expressions** **Graphing calculators will be used for solving and for confirming the algebraic solutions.**
Essential Knowledge/Skills/Understandings	**Essential Knowledge/Skills:** The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to • Solve equations containing rational algebraic expressions with monomial or binomial denominators algebraically and graphically. • Verify possible solutions to an equation containing rational or radical expressions. • Apply an appropriate equation to solve a real-world problem. **Essential Understandings:** • Real-world problems can be interpreted, represented, and solved using equations and inequalities. • The process of solving radical or rational equations can lead to extraneous solutions. • Equations can be solved in a variety of ways. • Set builder notation may be used to represent solution sets of equations and inequalities.
Essential Questions	When working with a real-world problem, how are solution(s) verified? How is an equation containing rational expressions solved? What values must be eliminated from the solution set of a rational equation?
Primary Resources	DOE ESS Lesson Plan: Rational Equations (PDF) HCPS Algebra 2 Online! Interactive Achievement
Essential Vocabulary	Please refer to previously taught mathematics vocabulary.

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Marking Period: 1
Days: 4
Reporting Category/Strand: Equations and Inequalities

SOL AII.4d	**The student will solve, algebraically and graphically** **d) equations containing radical expressions.** **Graphing calculators will be used for solving and for confirming the algebraic solutions.**
Essential Knowledge/Skills/Understandings	**Essential Knowledge/Skills:** The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to • Solve an equation containing a radical expression algebraically and graphically. • Verify possible solutions to an equation containing rational or radical expressions. • Apply an appropriate equation to solve a real-world problem. **Essential Understandings:** • Real-world problems can be interpreted, represented, and solved using equations and inequalities. • The process of solving radical or rational equations can lead to extraneous solutions. • Equations can be solved in a variety of ways. • Set builder notation may be used to represent solution sets of equations and inequalities.
Essential Questions	What is a real-world example for a quadratic or radical equation? When working with a real-world problem, how are solution(s) verified?
Primary Resources	DOE ESS Lesson Plan: Radical Equations (PDF) HCPS Algebra 2 Online! Interactive Achievement
Essential Vocabulary	Please refer to previously taught mathematics vocabulary.

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Marking Period: 1
Days: 7
Reporting Category/Strand: Functions and Statistics

SOL AII.2	**The student will investigate and apply the properties of arithmetic and geometric sequences and series to solve real-world problems, including writing the first *n* terms, finding the n^{th} term, and evaluating summation formulas. Notation will include Σ and a_n.**
Essential Knowledge/Skills/Understandings	**Essential Knowledge/Skills:** The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to • Distinguish between a sequence and a series. • Generalize patterns in a sequence using explicit and recursive formulas. • Use and interpret the notations Σ, *n*, n^{th} term, and a_n. • Given the formula, find a_n (the n^{th} term) for an arithmetic or a geometric sequence. • Given formulas, write the first *n* terms and find the sum, S_n, of the first *n* terms of an arithmetic or geometric series. • Given the formula, find the sum of a convergent infinite series. • Model real-world situations using sequences and series. **Essential understandings:** • Sequences and series arise from real-world situations. • The study of sequences and series is an application of the investigation of patterns. • A sequence is a function whose domain is the set of natural numbers. • Sequences can be defined explicitly and recursively.
Essential Questions	What is the difference between a series and a sequence? What is the difference between arithmetic and geometric sequences and series? What is Sigma notation (Σ)?

	What real-world situations use sequences and series?
Primary Resources	DOE ESS Lesson Plan: Arithmetic and Geometric Sequences and Series (PDF) HCPS Algebra 2 Online! Interactive Achievement
Essential Vocabulary	Please refer to previously taught mathematics vocabulary.

Marking Period: 1
Days: 5
Reporting Category/Strand: Functions and Statistics

SOL AII.10	**The student will identify, create, and solve real-world problems involving inverse variation, joint variation, and a combination of direct and inverse variations.**
Essential Knowledge/Skills/Understandings	**Essential Knowledge/Skills:** The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to • Translate "y varies jointly as x and z" as $y = kxz$. • Translate "y is directly proportional to x" as $y = kx$. • Translate "y is inversely proportional to x" as $y = k/x$. • Given a situation, determine the value of the constant of proportionality. • Set up and solve problems, including real-world problems, involving inverse variation, joint variation, and a combination of direct and inverse variations. **Essential understandings:** • Real-world problems can be modeled and solved by using inverse variation, joint variation, and a combination of direct and inverse variations. • Joint variation is a combination of direct variations.
Essential Questions	What is the difference between direct and inverse variation? What is joint variation? What is combined variation?

Primary Resources	DOE ESS Lesson Plan: Types of Variation (PDF) HCPS Algebra 2 Online! Interactive Achievement
Essential Vocabulary	Please refer to previously taught mathematics vocabulary.

Marking Period: 1
Days: 2
Reporting Category/Strand: Functions and Statistics

SOL AII.12	**The student will compute and distinguish between permutations and combinations and use technology for applications.**
Essential Knowledge/Skills/Understandings	**Essential Knowledge/Skills:** The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to • Compare and contrast permutations and combinations. • Calculate the number of permutations of *n* objects taken *r* at a time. • Calculate the number of combinations of *n* objects taken *r* at a time. • Use permutations and combinations as counting techniques to solve real-world problems. **Essential Understandings:** • The *Fundamental Counting Principle* states that if one decision can be made n ways and another can be made m ways, then the two decisions can be made nm ways. • *Permutations* are used to calculate the number of possible arrangements of objects. • *Combinations* are used to calculate the number of possible selections of objects without regard to the order selected.
Essential Questions	What is a permutation and how is it determined? What is a combination and how is it determined?

	What is the difference between a permutation and a combination of the same items? When is a permutation or a combination used?
Primary Resources	DOE ESS Lesson Plan: Permutations and Combinations (PDF) HCPS Algebra 2 Online! Interactive Achievement
Essential Vocabulary	combination - a collection of objects in which the order is not important factorial - a non-negative integer n, denoted by n!, is the product of all positive integers less than or equal to n permutation - an arrangement of objects in which order is important

Marking Period: 2
Days: 5
Reporting Category/Strand: Functions and Statistics

SOL AII.11	**The student will identify properties of a normal distribution and apply those properties to determine probabilities associated with areas under the standard normal curve.**
Essential Knowledge/Skills/Understandings	**Essential Knowledge/Skills:** The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to • Identify the properties of a normal probability distribution. • Describe how the standard deviation and the mean affect the graph of the normal distribution. • Compare two sets of normally distributed data using a standard normal distribution and z-scores. • Represent probability as area under the curve of a standard normal probability distribution. • Use the graphing calculator or a standard normal probability table to determine probabilities or percentiles based on z-scores. **Essential Understandings:** • A normal distribution curve is a symmetrical, bell-shaped curve defined by the mean and the standard deviation of a data set. The mean is located on the line of symmetry of the curve. • Areas under the curve represent probabilities associated with continuous distributions.

	• The normal curve is a probability distribution and the total area under the curve is 1. • For a normal distribution, approximately 68 percent of the data fall within one standard deviation of the mean, approximately 95 percent of the data fall within two standard deviations of the mean, and approximately 99.7 percent of the data fall within three standard deviations of the mean. • The mean of the data in a standard normal distribution is 0 and the standard deviation is 1. • The standard normal curve allows for the comparison of data from different normal distributions. • A z-score is a measure of position derived from the mean and standard deviation of data. • A z-score expresses, in standard deviation units, how far an element falls from the mean of the data set. • A z-score is a derived score from a given normal distribution. • A standard normal distribution is the set of all z-scores.
Essential Questions	What is a normal distribution curve and how is the graph constructed? How can the amount of data that lies within 1, 2, 3, or k standard deviations of the mean be found? How does the standard normal distribution curve correspond to probability? How can the area under the standard normal curve be found? How is a standard normal probability table used and applied in problem solving?
Primary Resources	DOE ESS Lesson Plan: Normal Distribution (PDF) HCPS Algebra 2 Online! Interactive Achievement
Essential Vocabulary	Please refer to previously taught mathematics vocabulary.

Marking Period: 2
Days: 5
Reporting Category/Strand: Expressions and Operations

SOL AII.1d	**The student, given rational, radical, or polynomial expressions, will** **d) factor polynomials completely.**
Essential Knowledge/Skills/Understandings	**Essential Knowledge/Skills:** The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to • Factor polynomials by applying general patterns including difference of squares, sum and difference of cubes, and perfect square trinomials. • Factor polynomials completely over the integers. • Verify polynomial identities including the difference of squares, sum and difference of cubes, and perfect square trinomials. **Essential Understandings:**

	• The complete factorization of polynomials has occurred when each factor is a prime polynomial. • Pattern recognition can be used to determine complete factorization of a polynomial.
Essential Questions	When is a polynomial completely factored? What are the patterns to investigate when factoring a polynomial?
Primary Resources	DOE ESS Lesson Plan: Factoring – Expressions and Operations (PDF) HCPS Algebra 2 Online! Interactive Achievement
Essential Vocabulary	Please refer to previously taught mathematics vocabulary.

Marking Period: 2
Days: 6
Reporting Category/Strand:

SOL AII.1a	**The student, given rational, radical, or polynomial expressions, will** **a) add, subtract, multiply, divide, and simplify rational algebraic expressions**
Essential Knowledge/Skills/Understandings	**Essential Knowledge/Skills:** The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to • Add, subtract, multiply, and divide rational algebraic expressions. • Simplify a rational algebraic expression with common monomial or binomial factors. • Recognize a complex algebraic fraction, and simplify it as a quotient or product of simple algebraic fractions. • Factor polynomials by applying general patterns including difference of squares, sum and difference of cubes, and perfect square trinomials. • Factor polynomials completely over the integers. • Verify polynomial identities including the difference of squares, sum and difference of cubes, and perfect square trinomials. **Essential Understandings:** • Computational skills applicable to numerical fractions also apply to rational expressions involving variables. • A relationship exists among arithmetic complex fractions, algebraic complex fractions, and rational numbers.
Essential Questions	What is a rational expression? How is a rational expression simplified?
Primary Resources	DOE ESS Lesson Plan: Rational Expressions (PDF)

	HCPS Algebra 2 Online! Interactive Achievement
Essential Vocabulary	Please refer to previously taught mathematics vocabulary.

Marking Period: 2
Days: 6
Reporting Category/Strand: Expressions and Operations

SOL AII.1 b,c	**The student, given rational, radical, or polynomial expressions, will** **b) add, subtract, multiply, divide, and simplify radical expressions containing rational numbers and variables, and expressions containing rational exponents;** **c) write radical expressions as expressions containing rational exponents and vice versa**
Essential Knowledge/Skills/Understandings	**Essential Knowledge/Skills:** The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to • Simplify radical expressions containing positive rational numbers and variables. • Convert from radical notation to exponential notation, and vice versa. • Add and subtract radical expressions. • Multiply and divide radical expressions not requiring rationalizing the denominators. **Essential Understandings:** • Radical expressions can be written and simplified using rational exponents. • Only radicals with a common radicand and index can be added or subtracted.
Essential Questions	What is a radical expression? How are radical expressions simplified? How do radical expressions apply to real-life situations? How is conversion between radical and rational exponents completed?
Primary Resources	DOE ESS Lesson Plan: Exponents and Radicals – Expressions and Operations (PDF) HCPS Algebra 2 Online! Interactive Achievement
Essential Vocabulary	Please refer to previously taught mathematics vocabulary.

Marking Period: 2

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Days: 2
Reporting Category/Strand: Expressions and Operations

SOL AII.3	**The student will perform operations on complex numbers, express the results in simplest form using patterns of the powers of *i*, and identify field properties that are valid for the complex numbers.**
Essential Knowledge/Skills/Understandings	**Essential Knowledge/Skills:** The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to • Recognize that the square root of –1 is represented as *i*. • Determine which field properties apply to the complex number system. • Simplify radical expressions containing negative rational numbers and express in a+b*i* form. • Simplify powers of *i*. • Add, subtract, and multiply complex numbers. • Place the following sets of numbers in a hierarchy of subsets: complex, pure imaginary, real, rational, irrational, integers, whole, and natural. • Write a real number in a+b*i* form. • Write a pure imaginary number in a+b*i* form. **Essential Understandings:** • Complex numbers are organized into a hierarchy of subsets. • A complex number multiplied by its conjugate is a real number. • Equations having no real number solutions may have solutions in the set of complex numbers. • Field properties apply to complex numbers as well as real numbers. • All complex numbers can be written in the form a+b*i* where a and b are real numbers and *i* is $\sqrt{-1}\sqrt{-1}$.
Essential Questions	How are real, imaginary, and complex numbers related? What properties extend from the real numbers to the complex numbers? What is the relationship between a complex number and its conjugate? What are the patterns of the powers of i?
Primary Resources	DOE ESS Lesson Plan: Complex Numbers – Expressions & Operations (PDF) HCPS Algebra 2 Online! Interactive Achievement
Essential Vocabulary	Please refer to previously taught mathematics vocabulary.

Marking Period: 2
Days: 2

Reporting Category/Strand: Functions and Statistics

SOL AII.8	The student will investigate and describe the relationships among solutions of an equation, zeros of a function, x-intercepts of a graph, and factors of a polynomial expression.
Essential Knowledge/Skills/Understandings	**Essential Knowledge/Skills:** The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to • Describe the relationships among solutions of an equation, zeros of a function, x-intercepts of a graph, and factors of a polynomial expression. • Define a polynomial function, given its zeros. • Determine a factored form of a polynomial expression from the x-intercepts of the graph of its corresponding function. • For a function, identify zeros of multiplicity greater than 1 and describe the effect of those zeros on the graph of the function. • Given a polynomial equation, determine the number of real solutions and nonreal solutions. **Essential understandings:** • The *Fundamental Theorem of Algebra* states that, including complex and repeated solutions, an n^{th} degree polynomial equation has exactly n roots (solutions). • The following statements are equivalent: – k is a zero of the polynomial function f; – $(x - k)$ is a factor of $f(x)$; – k is a solution of the polynomial equation $f(x) = 0$; and – k is an x-intercept for the graph of $y = f(x)$.
Essential Questions	What is a real-world example for a quadratic equation? When working with a real-world problem, how are solution(s) verified?
Primary Resources	DOE ESS Lesson Plan: Factors, Zeros, and Solutions (PDF) HCPS Algebra 2 Online! Interactive Achievement
Essential Vocabulary	Please refer to previously taught mathematics vocabulary.

Marking Period: 3
Days: 5
Reporting Category/Strand: Functions

SOL AII.7	**The student will investigate and analyze functions algebraically and graphically. Key concepts include** **a) domain and range, including limited and discontinuous domains and ranges;** **b) zeros;**

	c) x- and y-intercepts; **d) intervals in which a function is increasing or decreasing;** **e) asymptotes;** **f) end behavior;** **g) inverse of a function; and** **h) composition of multiple functions.** **Graphing calculators will be used as a tool to assist in investigation of functions.**
Essential Knowledge/Skills/Understandings	**Essential Knowledge/Skills:** The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to • Investigate exponential and logarithmic functions, using the graphing calculator. • Convert between logarithmic and exponential forms of an equation with bases consisting of natural numbers. • Find the composition of two functions. • Use composition of functions to verify two functions are inverses. **Essential Understandings:** • If (a, b) is an element of a function, then (b, a) is an element of the inverse of the function. • Exponential ($y = a^x$) and logarithmic ($y = \log_a x$) functions are inverses of each other. • Functions can be combined using composition of functions.
Essential Questions	What is a function? What is the relationship between domain and range? What is the relationship between a function and its inverse? What operations can be performed on functions? What is the relationship between the degree of a function, the graph of a function, and the number of zeros of a function? How can the calculator be used to investigate the shape and behavior of polynomial functions? How are the x- and y-intercepts determined? What is meant by the end behavior of a function? Based on the equation of a function, how do you distinguish between a horizontal translation and a vertical translation? What is meant by the turning points of a function and how are they found? Describe the characteristics of the graphs of odd-degree and even-degree polynomial functions whose leading coefficients are positive. How does negative leading coefficients change each of these?
Primary Resources	DOE ESS Lesson Plan: Functions: Domain, Range, End Behavior, Increasing or Decreasing (PDF) DOE ESS Lesson Plan: Composition of Functions (PDF) DOE ESS Lesson Plan: Inverse Functions (PDF) DOE ESS Lesson Plan: Rational Functions: Intercepts, Asymptotes, and Discontinuity (PDF) Radford T-TAC Resource Sheet (PDF)

	HCPS Algebra 2 Online! Interactive Achievement
Essential Vocabulary	Please refer to previously taught mathematics vocabulary.

Marking Period: 3
Days: 5
Reporting Category/Strand: Functions and Statistics

SOL AII.6	**The student will recognize the general shape of function (absolute value, square root, cube root, rational, polynomial, exponential, and logarithmic) families and will convert between graphic and symbolic forms of functions. A transformational approach to graphing will be employed. Graphing calculators will be used as a tool to investigate the shapes and behaviors of these functions.**
Essential Knowledge/Skills/Understandings	**Essential Knowledge/Skills:** The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to • Recognize graphs of parent functions. • Given a transformation of a parent function, identify the graph of the transformed function. • Given the equation and using a transformational approach, graph a function. • Given the graph of a function, identify the parent function. • Given the graph of a function, identify the transformations that map the preimage to the image in order to determine the equation of the image. • Using a transformational approach, write the equation of a function given its graph. **Essential Understandings:** • The graphs/equations for a family of functions can be determined using a transformational approach. • Transformations of graphs include translations, reflections, and dilations. • A parent graph is an anchor graph from which other graphs are derived with transformations.
Essential Questions	What are different representations of functions? What is the transformational approach to graphing? What is the connection between the algebraic and graphical representation of a transformation? What is the connection between the algebraic and graphical representation of a transformation? What is the relationship between exponential and logarithmic functions? How can the calculator be used to investigate these functions (rational, exponential, and logarithmic)?
Primary Resources	DOE ESS Lesson Plan: Transformational Graphing (PDF)

	HCPS Algebra 2 Online! Interactive Achievement
Essential Vocabulary	Please refer to previously taught mathematics vocabulary.

Marking Period: 3
Days: 3
Reporting Category/Strand: Equations and Inequalities

SOL AII.5	**The student will solve nonlinear systems of equations, including linear-quadratic and quadratic-quadratic, algebraically and graphically. Graphing calculators will be used as a tool to visualize graphs and predict the number of solutions.**
Essential Knowledge/Skills/Understandings	**Essential Knowledge/Skills:** The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to • Predict the number of solutions to a nonlinear system of two equations. • Solve a linear-quadratic system of two equations algebraically and graphically. • Solve a quadratic-quadratic system of two equations algebraically and graphically. **Essential Understandings:** • Solutions of a nonlinear system of equations are numerical values that satisfy every equation in the system. • The coordinates of points of intersection in any system of equations are solutions to the system. • Real-world problems can be interpreted, represented, and solved using systems of equations.
Essential Questions	What is a linear function? In what form(s) can it be written? What is a quadratic function? In what form(s) can it be written? How does a graphing calculator confirm algebraic solutions of quadratic functions? What is a real-world example of a non-linear system of equations? What are the different ways that the graph of a line and a quadratic can intersect? What are the different ways that the graphs of two quadratics can intersect? When does a system have no solution?
Primary Resources	DOE ESS Lesson Plan: Nonlinear Systems of Equations (PDF) HCPS Algebra 2 Online! Interactive Achievement
Essential Vocabulary	Please refer to previously taught mathematics vocabulary.

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Marking Period: 3
Days: 5
Reporting Category/Strand: Functions and Statistics

SOL AII.9	**The student will collect and analyze data, determine the equation of the curve of best fit, make predictions, and solve real-world problems, using mathematical models. Mathematical models will include polynomial, exponential, and logarithmic functions.**
Essential Knowledge/Skills/Understandings	**Essential Knowledge/Skills:** The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to • Collect and analyze data. • Investigate scatterplots to determine if patterns exist and then identify the patterns. • Find an equation for the curve of best fit for data, using a graphing calculator. Models will include polynomial, exponential, and logarithmic functions. • Make predictions, using data, scatterplots, or the equation of the curve of best fit. • Given a set of data, determine the model that would best describe the data. **Essential Understandings:** • Data and scatterplots may indicate patterns that can be modeled with an algebraic equation. • Graphing calculators can be used to collect, organize, picture, and create an algebraic model of the data. • Data that fit polynomial ($f(x) = a_n x^n + a_{n-1}x^{n-1} + \ldots + a_1 x + a_0$, where n is a nonnegative integer, and the coefficients are real numbers), exponential ($y = b^x$), and logarithmic ($y = \log_b x$) models arise from real-world situations.
Essential Questions	How do various algebraic equations fit real world data? How can the curve-of-best-fit help predict trends of data? How are the equations-of-best-fit determined on a graphing calculator?
Primary Resources	DOE ESS Lesson Plan: Curve of Best Fit (PDF) HCPS Algebra 2 Online! Interactive Achievement
Essential Vocabulary	Please refer to previously taught mathematics vocabulary.