Secondary 3

	Priority Standard 1: Solve Algebraic Equations (polynomial, logarithmic, radical, rational, and trigonometric)
0	*No competency demonstrated.*
1	• Accurately perform the two basic operations on polynomials (add, subtract) with help. • Identify when a common denominator is necessary. • Identify when two factors can cancel and when they cannot. • Identify whether a given value is a solution to a rational equation. • Determine if the solutions of a polynomial are correct.
2	• Accurately perform the three basic operations on polynomials (add, subtract, multiply) • Accurately perform the four basic operations on rational expressions (add, subtract, multiply, divide) with help. • Solve a rational equation without recognizing extraneous solutions. • Identify the zeros of a polynomial when given its factors. • Solve a polynomial equation using a specified strategy (factoring, graphing, division, quadratic formula, completing the square)
3	• Accurately perform the four basic operations on polynomials (add, subtract, multiply, divide) • Accurately perform the four basic operations on rational expressions (add, subtract, multiply, divide) • Solve a rational equation and identify extraneous solutions. • Explain the relationship between the factors and zeros of a polynomial. • Solve a polynomial equation using a variety of strategies (factoring, graphing, division, quadratic formula, completing the square)
4	• Explain the relationship between multiplying and dividing polynomials. • Simplify a complex fraction. • Use multiple methods to solve a rational equation. • Write a polynomial equation given the zeros or its graph.

Secondary 3

	Priority Standard 2: Understand, Compare, and Represent Functions (polynomial and inverse)
0	*No competency demonstrated.*
1	• Can create and graph an equation to represent relationships between two quantities (include linear, exponential, quadratic, simple rational, square root, and cube root relationships) with scaffolding help. • Can create equations from various models with individual help. • Can use rearranged formulas for a particular variable, including rational, square root, cube root, and polynomial formulas to calculate a value using technology. • Given the formula for calculating rate of change, can calculate the average rate of change of a linear function (given an equation or a table) over a specified interval with help. • Can use different forms of a quadratic function to find key features (vertex, zeros, y-intercept). • Can combine functions using addition or subtraction. Focus on all function families from Secondary Mathematics. • Can find the inverse function's table of values given a function's table of values.
2	• Can create and graph an equation, with or without technology, to represent relationships between two quantities (include linear, exponential, quadratic, simple rational, square root, cube root, and polynomial relationships).

■	• Can create equations from various models with minor scaffolding. • Can rearrange formulas for a particular variable, including rational, square root, cube root, and polynomial formulas. • Given the formula for calculating rate of change, can calculate the average rate of change of a function (given an equation or a table) over a specified interval. Focus on all function families from Secondary Mathematics. • Can write the equation of a function in different but equivalent forms with guidance. • Can combine functions using addition, subtraction, or multiplication. Focus on all function families from Secondary Mathematics. • Given an equation and procedural steps, can find the inverse equation (Graphically or algebraically).
3	• Can create and graph an equation, with or without technology, to represent relationships between two quantities (include linear, exponential, quadratic, simple rational, square root, cube root, polynomial, trigonometric and logarithmic relationships), on coordinate axes with appropriate labels and scales. • Can create equations from various models without scaffolding help. • Can rearrange formulas for a particular variable, including rational, square root, cube root, polynomial, exponential, and logarithmic formulas. • Can calculate the average rate of change of a function (given an equation or a table) over a specified interval. Focus on all families of equations from Secondary Mathematics. • Can write the equation of a function in different but equivalent forms to reveal different properties of the function. • Can combine functions using addition, subtraction, multiplication, or division. Focus on all function families from Secondary Mathematics. • Given an equation, can find the inverse equation (Graphically or algebraically).
4	• Given a real-world situation, can create and graph an equation to represent relationships between two quantities (include linear, exponential, quadratic, simple rational, square root, cube root, polynomial, trigonometric and logarithmic relationships). • Can interpret, explain, and create equations from various models. • Given a real-world situation can independently decide to rearrange formulas for a particular variable, including rational, square root, cube root, polynomial, exponential, and logarithmic formulas. • Can calculate or estimate and interpret the average rate of change of a function (presented in words, graphs, equations, or as a table) over a specified interval. Focus on all function families from Secondary Mathematics. • Can write the equation of a function in different but equivalent forms to reveal and explain different properties of the function. • Can explain and apply combination of functions using addition, subtraction, multiplication, or division in real-world problem solving. Focus on all function families from Secondary Mathematics. • Given an equation, can explain the significance of and find the inverse equation (Graphically or algebraically).

Secondary 3

Priority Standard 3: Describe Characteristics of Functions	
0	*No competency demonstrated.*
1	• Identify that a number in a function changes the parent function. • Given a graph, identify key features of linear and quadratic functions including x-intercepts, relative maximum and minimum values, end behavior, and symmetry. • Define domain. • Find the intersection of two functions given a graph. Include linear, polynomial, rational, absolute value, exponential, and logarithmic functions.

	• Define what it means when a function is periodic. • Find the mean and standard deviation of a set of data (using technology).
2	• Graph a linear or quadratic function by horizontal/vertical shifting and vertical stretching the parent function without technology. • Find key features of linear, quadratic, exponential, absolute value, and logarithmic functions including x-intercepts, relative maximum and minimum values, end behavior, and symmetry. • Find either the general domain or the domain in context. • Find the intersection of two functions using technology, a table of values, or algebraic strategies. Include linear, quadratic, absolute value. • Identify that trigonometric functions are periodic. • Find the mean and standard deviation of a set of data (using technology or by hand) and use it to fit to a normal distribution.
3	• Graph various functions, including linear, quadratic, exponential, absolute value, and logarithmic, by horizontal/vertical shifting and vertical stretching the parent function without technology. • Find key features of linear, quadratic, exponential, absolute value, and logarithmic functions including x-intercepts, intervals of increase, decrease, or constant, relative maximum and minimum values, end behavior, and symmetry. • Find the general domain and the domain in context. • Find the intersection of two functions using technology, a table of values, or algebraic strategies. Include linear, polynomial, rational, absolute value, exponential, and logarithmic functions. • Use trigonometric functions to model periodic phenomena (sound waves, Ferris wheel, etc). • Find the mean and standard deviation of a set of data (using technology or by hand) and use it to fit to a normal distribution. Can estimate population percentages using the normal distribution empirical rule.
4	• Graph various functions, including linear, quadratic, exponential, absolute value, and logarithmic, by horizontal/vertical shifting and vertical stretching the parent function without technology. • Interpret and find key features of linear, quadratic, exponential, absolute value, and logarithmic functions including x-intercepts, intervals of increase, decrease, or constant, relative maximum and minimum values, end behavior, and symmetry. • Find, interpret and explain the general domain and the domain in context. • Find the intersection of two functions using technology, a table of values, or algebraic strategies and explain what the x and y values mean in the context of the problem. Include linear, polynomial, rational, absolute value, exponential, and logarithmic functions. • Explain why trigonometric functions model periodic phenomena. • Find the mean and standard deviation of a set of data (using technology or by hand) and use it to fit to a normal distribution. Can estimate population percentages using the normal distribution empirical rule or technology.

Secondary 3

Priority Standard 4: Extend Congruence and Similarity	
0	*No competency demonstrated.*
1	• Recognize the difference between an angle measured in radian mode and an angle measured in degree mode. • Without a calculator, can find the measure f any special angle in radian mode given a diagram of a triangle in quadrant 1. • Know that you can't use A = 1/2bh in a triangle that doesn't have a right angle.

	• Recognize that the purpose of the Law of Sines and the Law of Cosines is to find measurements in a non-right triangle. • Recognize the purpose of an inverse function is when you don't know the value of the angle in a trigonometric equation.
2	• Recognize that the radian measure of any angle is related to its arclength. • Without a calculator, can find the measure of any special angle in radian mode in the first quadrant using either the unit circle or by drawing a triangle in the coordinate plane. • Given the formula A = ½ absin(C), be able to find the area of a non-right triangle when prompted. • Given the specified formula, use either the Law of Sines or the Law of Cosines to find the measurements in right and non-right triangles. • Can use an inverse function to find the measure of an angle with a calculator.
3	• Understand that the radian measure of an angle on the unit circle is equal to the arclength. • Without a calculator, can find the measure of any special angle in radian mode using either the unit circle or by drawing a triangle in the coordinate plane between 0 and 2pi • Know when to use the formula A = ½ absin(C) and apply it appropriately to find area of any triangle. • Understand and apply the Law of Sines and the Law of Cosines appropriately to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces). • Can use an inverse function without a calculator or with a calculator to find the principal angle.
4	• Be able to calculate the measure of a radian angle given the arclength and any radius length using the definition of radians. • Without a calculator, can find the measure of any special angle in radian mode using either the unit circle or by drawing a triangle in the coordinate plane. • Derive the formula for area of a non-right triangle A = ½ absin(C) by drawing an auxiliary line from a vertex perpendicular to the opposite side. • Be able to prove the Law of Sines and Cosines to find unknown measurements in a right and a non-right triangle. • Can use an inverse function without a calculator or with a calculator to find any angle measure.