ALGEBRA II CAPACITY TRANSCRIPT

Learner's Name: Alec Stilwell		LEARNING PROCESS				
Purpose & Vision:	Understanding and Apply Advanced Algebra	**Information**	**Knowledge**	**Know-How**	**Wisdom**	**Portfolio**
Capacity	**Capacity Breakdown**					
Equations & Inequalities (Chapter 1) [L1.2.1, A1.1.4, A1.2.9, L3.2.1]	Apply properties of real numbers	x				
	Apply proper use of orders of operations	x				
	Evaluate and simplify algebraic expressions	x				
	Solve linear equations	x				
	Rewrite formulas and equations	x				
	Evaluate formulas and equations	x				
	Use problem solving strategies and models	x				
Linear Equations and Functions (Chapter 2) [L1.2.1, A1.2.9, A2.3.3, A3.1.2, L2.1.6, A2.3.3]	Represent relations and functions	x				
	Determine whether a relation is a function	x				
	Identify the domain and range	x				
	Graph linear functions	x				
	Apply the vertical line test	x				
	Use function notation	x				
	Use a function in real life	x				
	Find slopes of lines and rates of change	x				
	Use slope to determine if lines are parallel or perpendicular	x				
	Graph linear equations in slope-intercept form	x				
	Graph linear equations in standard form	x				
	Graph horizontal and veritcal lines	x				
	Slopes and intercepts of horizontal and vertical lines	x				
	Write equations of lines using slope-intercept, point-slope form	x				
	Model direct variation	x				
	Draw scatter plots and best-fitting lines	x				
	Use a graphing claculator to find correlation and best-fit line	x				

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Quadratic Functions and Factoring (Chapter 4) [A2.3.3, L1.2.1, A1.2.9, A3.1.2]	Graph quadratic functions in standard form	x				
	Find maximum and minimum values	x	x			Quadratic Equations in Civil Engineering
	Find and label the axis of symmetry	x	x			Quadratic Equations in Civil Engineering
	Find and label the vertex	x	x			Quadratic Equations in Civil Engineering
	Graph quadratic functions in vertex or intercept form	x				
	Change from intercept or vertex form to standard form (use FOIL)	x				
	Solve quadratic equations	x	x			Quadratic Equations in Civil Engineering
	Factor trinomials	x				
	Factor with special patterns	x				
	Use the zero product property to solve quadratic equations	x				
	Use quadratic equations as models	x	x			Quadratic Equations in Civil Engineering
	Find the zeros of quadratic functions	x	x			Quadratic Equations in Civil Engineering
	Use properties of square roots to simplify expressions	x				
	Rationalize denominators of fractions with radicals	x				
	Use square roots to solve quadratic equations	x				
	Perform operations with complex numbers	x	x			Complex Numbers in Electricity
	Use complex numbers in real life	x	x			Complex Numbers in Electricity
	Simplify complex numbers	x	x			Complex Numbers in Electricity
	Simplify imaginary numbers	x	x			Complex Numbers in Electricity
	Multiply and Divide complex numbers	x	x			Complex Numbers in Electricity
	Find the complex conjugate	x	x			Complex Numbers in Electricity
	Plot complex numbers	x				
	Find the absolute value of a complex number	x				
	Solve quadratic equations by completing the square	x				
	Use the quadratic formula to solve quadratic equations	x	x			Quadratic Equations in Civil Engineering
	Find the discriminant	x	x			Quadratic Equations in Civil Engineering
	Use the discriminant to determine the number/type of solutions	x	x			Quadratic Equations in Civil Engineering
	Graph and solve quadratic inequalities	x				
	Write quadratic functions and models	x				

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Polynomials and Polynomial Functions (Chapter 5) [L1.2.1, L3.2.1, A1.1.4, A1.1.5, A1.2.5, A3.1.2]	Apply properties of exponents to simplify expressions	x				
	Use scientific notation in real life	x				
	Identify polynomial functions: cubic, quartic	x				
	Evaluate polynomial functions by direct substitution	x				
	Understand the end behavior of a function's graph	x				
	Graph polynomial functions	x				
	Add polynomials vertically and horizontally	x				
	Subtract polynomilas vertically and horizontally	x				
	Multiply polynomials vertically and horizontally	x				
	Multiply three binomials	x				
	Use sum and difference product pattern	x				
	Use square of a binomial product pattern	x				
	Use cube of a binomial product pattern	x				
	Use polynomial models to solve problems	x				
	Factor using the sum of two cubes	x				
	Factor using the difference of two cubes	x				
	Factor polynomials in quadratic form	x				
	Factor by grouping	x				
	Find the real-number solutions of polynomial equations	x				
	Use a polynomial equation to solve a problem	x				
	Use polynomial long division to factor a polynomial	x				
	Use synthetic division to factor a polynomial	x				
	Use x-intercepts to graph polynomial functions	x				
	Find turning points and correspond to local max and min values	x				

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Data Analysis and Statistics [S1.1.1, S1.1.2, S1.2.1, S1.2.2, S1.2.3]	Construct and interpret dot plots	x				
	Construct and interpret histograms	x				
	Construct and interpret relative frequency histograms	x				
	Construct and interpret bar graphs	x				
	Construct and interpret basic control charts	x	x			SPC Kisses Project
	Construct and interpret box plots	x				
	Determine which kinds of plots are appropriate for different types of data	x	x			SPC Kisses Project
	Compare data sets and interpret differences based on graphs and summary statistics.	x	x			SPC Kisses Project
	Given a distribution of a variable in a data set, describe its shape, including symmetry or skewness, and state how the shape is related to measures of center (mean and median) and measures of variation (range and standard deviation) with particular attention to the effects of outliers	x	x			SPC Kisses Project
	Calculate & interpret measures of center: mean, median, mode	x	x			SPC Kisses Project
	Explain uses, advantages, and disadvantages of each measure given a particular set of data & its context.	x				
	Estimate the postion of the mean, median, mode in both symmetrical and skewed distributions, and from a frequency distribution or histogram	x				
	Compute and interpret measures of variation, including percentiles, quartiles, interquartile range, variance, and standard deviation	x	x			SPC Kisses Project

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Rational Exponents and Radical Functions (Chapter 6) [L1.2.1, L2.1.6, A2.2.5, A2.3.3]	Find nth roots	x				
	Evaluate expressions with rational exponents	x				
	Approximate roots with a calculator	x				
	Solve equations using nth roots	x				
	Use nth roots in problem solving	x				
	Use properties of rational exponents to simplify expressions	x				
	Use properties of radicals to simplify expressions	x				
	Write radicals in simplest form	x				
	Add and subract like radicals and roots	x				
	Simplify radical expressions involing variables	x				
	Write variable expressions in simplest form	x				
	Add and subtract functions g(x) f(x)	x				
	Multiply and divide functions	x				
	Find composites of functions	x				
	Find the domain of functions	x				
	Graph a square root function	x				
	Graph a cube root function	x				
	Graph a translated square root function, state domain & range	x				
	Graph a translated cube root function, state domain & range	x				

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Exponential and Logarithmic Functions (Chapter 7) [A2.5.2, A2.5.3, A1.2.7]	Recongnize the parent function for exponential growth	x				
	Graph exponential growth functions	x				
	Apply & graph translations to exponential growth functions	x				
	Use exponential growth models to solve problems	x				
	Use the compound interest formula for real-life problems	x				
	Recognize the parent function for exponential decay	x				
	Graph exponential decay functions	x				
	Apply & graph translations to exponential decay functions	x				
	Use exponential decay models to solve problems	x				
	Simplify natural base expressions	x				
	Evaluate natural base expresssions using a calculator	x				
	Determine if a natural base exponential function is growth or decay	x				
	Graph natural base functions; state domain and range	x				
	Use the continuously compounded interest formula	x				
	Convert exponential form to logarithmic form	x				
	Evaluate logarithms	x				
	Use inverse properties to simplify expressions	x				
	Find inverse function	x				
	Note the inverse relationship between exponential and logarithmic functions when graphing.	x x				
	Recognize the parent graphs for Logarithmic Functions	x				
	Graph logarithmic functions; apply translations	x				
	Use propeties of logarithms	x				
	Expand a logarithmic expression	x				
	Use the change-of-base formula	x				
	Solve exponential equations by equating exponents	x				
	Use an exponential model	x				
	Take a logarithm of each side	x				
	Solve a logarithmic equation	x				
	Exponentiate each side of an equation	x				

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Trigonometric Ratios and Functions (Chapter 13) [L1.2.1, A2.10.1, A2.10.2, a2.10.3, A2.2.4]	Use pythagorean theorem to find lengths in right triangle	x				
	Evaluate the 6 trigonometric functions of an acute angle	x				
	Properties of 30-60-90 triangle	x	x			Spaghetti Trig
	Properties of 45-45-90 triangle	x	x			Spaghetti Trig
	Find an unknown side length of a right triangle	x	x			Spaghetti Trig
	Use a caculator to solve a right triangle	x				
	Use trignometry to solve for indirect measurements	x	x			Spaghetti Trig
	Use angle of elevations to solve problems	x				
	Draw angles in standard position	x				
	Find coterminal angles	x				
	Convert between degrees and radians	x	x			Spaghetti Trig
	Find arc length and area of a sector	x				
	Evaluate trignometric functions given a point	x	x			Spaghetti Trig
	Use the unit circle to evaluate trig functions	x	x			Spaghetti Trig
	Find reference angles and understand the relationships	x				
	Use reference angles to evaluate functions	x				
	Trig functions in quadrants I - IV	x	x			Spaghetti Trig
	Model with trigonometric functions	x	x			Spaghetti Trig
	Find angles given values of trigonometric functions	x				
	Evaluate inverse trigonometric functions	x				
	Solve trigonometric equations	x				
	Write and solve a trigonometric equations	x				
	Solve a triangle using the Law of Sines	x				
	Find the area of a triangle	x				
	Solve a triangle using the Law of Cosines	x				
	Apply the Laws of Sine and Cosine to real-world problems	x				
Trigonometric Graphs (Chapter 14) [A2.10.4]	Understand characteristics of y = sinx and y = cos x	x	x			Spaghetti Trig
	Graph sine functions	x	x			Spaghetti Trig
	Graph cosine functions	x	x			Spaghetti Trig
	Apply properties of a unit circle to the graphs	x	x			Spaghetti Trig
	Understand characteristics of y = tan x	x	x			Spaghetti Trig
	Graph tangent functions	x	x			Spaghetti Trig