

A POSSIBLE "TRADITIONAL" PATHWAY (to be included in the CA Framework)

	"Algebra 1" (focus is on linear, quadratic, and exponential functions)	"Geometry"	"Algebra 2" (focus is on higher degree polynomial, simple rational, logarithmic, and sinusoidal functions)
<u>Number & Quantity:</u>	<ul style="list-style-type: none"> Extend properties of exponents to rational exponents Use properties of rational & irrational numbers Reason quantitatively & use units to solve problems 		<ul style="list-style-type: none"> Perform arithmetic operations with complex numbers Use complex numbers in polynomial identities & equations
<u>Algebra:</u>	<ul style="list-style-type: none"> Interpret the structure of expressions Write expressions in equivalent forms to solve problems Perform arithmetic operations on polynomials Create equations that describe numbers or relationships Understand solving equations as a process of reasoning & explain the reasoning Solve equations & inequalities in one variable Solve systems of equations Represent & solve equations and inequalities graphically 		<ul style="list-style-type: none"> Interpret the structure of expressions Write expressions in equivalent forms to solve problems Perform arithmetic operations on polynomials Understand the relationship between zeros & factors of polynomials Use polynomial identities to solve problems Rewrite rational expressions Create equations that describe numbers or relationships Understand solving equations as a process of reasoning & explain the reasoning Represent & solve equations and inequalities graphically
<u>Functions:</u>	<ul style="list-style-type: none"> Understand the concept of function & use function notation Interpret functions that arise in applications in terms of the context Analyze functions using different representations Build a function that models a relationship between two quantities Build new functions from existing functions Construct & compare linear, quadratic, & exponential models to solve problems Interpret expressions for functions in terms of the situation they model Apply quadratic equations to physical problems 		<ul style="list-style-type: none"> Interpret functions that arise in applications in terms of the context Analyze functions using different representations Build a function that models a relationship between two quantities Build new functions from existing functions Construct & compare linear, quadratic, & exponential models to solve problems Extend the domain of trigonometric functions using the unit circle Model periodic phenomena with trigonometric functions Prove & apply trig identities

<p><u>Geometry:</u></p>		<ul style="list-style-type: none"> • Experiment with transformations in the plane • Understand congruence in terms of rigid motions • Prove geometric theorems & be able to use them • Make geometric constructions • Understand similarity in terms of transformations • Prove theorems involving similarity • Define trigonometric ratios & solve problems involving right triangles • Understand & apply theorems about circles • Find arc length & area of sectors of circles (define radian measure & convert between degrees & radians) • Translate between the geometric description & the equation for a conic section (circles & parabolas) • Use coordinates to prove simple geometric theorems algebraically • Explain volume formulas & use them to solve problems • Visualize relationships between 2D & 3D objects & identify 3D objects generated by rotation of 2D objects • Determine how changes in dimension affect perimeter, area, & volume • Apply geometric concepts in modeling situations 	<ul style="list-style-type: none"> • Translate between the geometric description & the equation for a conic section (circles, parabolas, ellipses)
<p><u>Statistics & Probability:</u></p>	<ul style="list-style-type: none"> • Summarize, represent & interpret data on a single count or measurement variable (compare center & spread, account for effects of outliers) • Summarize, represent & interpret data on two categorical & quantitative variables (linear, quadratic & exponential models) • Interpret linear models (compute correlation coefficient of linear fit, distinguish between correlation & causation) 	<ul style="list-style-type: none"> • Understand independence & conditional probability & use them to interpret data • Use rules of probability to compute probabilities of compound events in a uniform probability model. • Use probability to evaluate outcomes of decisions 	<ul style="list-style-type: none"> • Summarize, represent & interpret data on a single count or measurement variable (mean & standard deviation of a data set to fit a normal distribution) • Understand & evaluate random processes underlying statistical experiments. • Make inferences & justify conclusions from sample surveys, experiments, & observational studies. • Use probability to evaluate the outcomes of decisions.