Learning Plan Document for Course Description and WINGS

Grade Level	High School
Class Title	Algebra 3-4
Subject	Second Year Algebra
Class Description	Requirements: Successful completion of Algebra 1-2. Topics covered are finite numbers, linear functions and systems, quadratic functions, higher order polynomial functions, rational functions, radical functions, exponential functions, probability and statistics. Curriculum enables students to prepare for college entrance exams. This course is a prerequisite for Pre-Calculus. This class meets the graduation requirement for the State of Washington and Kennewick School District and meets at least one Common Core Standard. This course is a yearlong course for the 2018-2019. Students who successfully complete the course have the potential to earn .5/1.0 credit.
Learning Materials	Off-site course work can use the district adopted textbook and materials or may be an APEX or Aleks on-line course. On-line courses are a complete curriculum of themselves. A computer and working internet connection is needed on a regular basis.
Learning Goals/Performance Objectives	The content is based on the National Curriculum area of Mathematics: Teachers Association and is aligned to state standards. A2.1. Core Content: Solving problems The first core content area highlights the type of problems students will be able to solve by the end of Algebra 2, as they extend their ability to solve problems with additional functions and equations. When presented with a word problem, students are able to determine which function or equation models the problem and use that information to solve the problem. They build on what they learned in Algebra 1 about linear and quadratic functions and are able to solve more complex problems. Additionally, students learn to solve problems modeled by exponential and logarithmic functions, systems of equations and inequalities, inverse variations, and combinations and permutations. Turning word problems into equations that can be solved is a skill student's hone throughout Algebra 2 and subsequent mathematics courses. A2.2. Core Content: Numbers, expressions, and operations (Numbers, Operations, Algebra) Students extend their understanding of number systems to include complex numbers, which they will see as solutions for quadratic equations. They grow more proficient in their use of algebraic techniques as they continue to use variables and expressions to solve problems. As problems become more sophisticated and the level of mathematics increases, so does the complexity of the symbolic manipulations and computations necessary to

	solve the problems. Students refine the foundational algebraic skills they need to be successful in subsequent mathematics courses. A2.3. Core Content: Quadratic functions and equations (Algebra) As students continue to solve quadratic equations and inequalities in Algebra 2, they encounter complex roots for the first time. They learn to translate between forms of quadratic equations, applying the vertex form to evaluate maximum and minimum values and find symmetry of the graph, and they learn to identify which form should be used in a particular situation. This opens up a whole range of new problems students can solve using quadratics. These algebraic skills are applied in subsequent high school mathematics and statistics courses. A2.4. Core Content: Exponential and logarithmic functions and equations (Algebra) Students extend their understanding of exponential functions from Algebra 1 with an emphasis on inverse functions. This leads to a natural introduction of logarithms and logarithmic functions. They learn to use the basic properties of exponential and logarithmic functions, graphing both types of function to analyze relationships, represent and model problems, and answer questions. Students employ these functions in many practical situations, such as applying exponential functions to determine compound interest and applying logarithmic functions to determine the pH of a liquid. A2.5. Core Content: Additional functions and equations (Algebra) Students learn about additional classes of functions including square root, cubic, logarithmic, and those involving inverse variation. Students plot points and sketch graphs to represent these functions and use algebraic techniques to solve related equations. In addition to studying the defining characteristics of each of these classes of functions, students gain the ability to construct new functions algebraically and using transformations. These extended skills and techniques serve as the foundation for further study and analysis of functions in subsequent mathematics courses. A2.6. Core Content: Probability, data, and distributions (Data/Statistics/Probability) Students formalize their study of probability, computing both combinations and permutations to calculate the likelihood of an outcome in uncertain circumstances and applying the binominal theorem to solve problems. They extend their use of statistics to graph bivariate data and analyze its shape to make predictions. They calculate and interpret measures of variability, confidence intervals, and margins of error for population proportions. Dual goals underlie the content in the section: students prepare for the further study of statistics and become thoughtful consumers of data. A2.7. Additional Key Content (Algebra) Students study two important topics here. First, they extend their ability to solve systems of two equations in two variables to solving systems of three equations in three variables, which leads to the full development of matrices

	in Precalculus. Second, they formalize their work with series as they learn to find the terms and partial sums of arithmetic series and the terms and partial and infinite sums of geometric series. This conceptual understanding of series lays an important foundation for understanding calculus. A2.8. Core Processes: Reasoning, problem solving, and communication Students formalize the development of reasoning at high school as they use algebra and the properties of number systems to develop valid mathematical arguments, make and prove conjectures, and find counterexamples to refute false statements using correct mathematical language, terms, and symbols in all situations. They extend the problem-solving practices developed in earlier grades and apply them to more challenging problems, including problems related to mathematical and applied situations. Students formalize a coherent problem-solving process in which they analyze the situation to determine the question(s) to be answered, synthesize given information, and identify implicit and explicit assumptions that have been made. They examine their solution(s) to determine reasonableness, accuracy, and meaning in the context of the original problem. The mathematical thinking, reasoning, and problem-solving processes students learn in high school mathematics can be used throughout their lives as they deal with a world in which an increasing amount of information is presented in quantitative ways and more and more occupations and fields of study rely on mathematics. A team of certificated teachers who are highly qualified in this subject matter has reviewed this WSLP.
Learning Activities	On line courses have a variety of resources to use as reference materials, print out if needed and work monthly with the highly qualified teacher
Progress Criteria/Methods of Evaluation	{Student Name} will Monthly assessments will be completed by the consultant/certified teacher. Monthly Progress will be marked satisfactory or unsatisfactory based on the professional judgment of the certified teacher using parent input, work samples, and monthly assessments for off-site work. Final Grading: Course grades are <u>weighted towards summative tests in the courses.</u> 90-100 A [93-100=4.0, 90-92=3.7] 89-80 B [B+ 87-89=3.3, B 83-86 = 3.0, B- 80-82=2.7] 79-70 C [C+ 77-79=2.3, C 73-76=2.0 C-70-72=1.7] 60-69 D [D+ 67-69 D 60-66] Online courses for a proficient passing grade may vary according to course completion. Your APEX/Aleks and off site HQ will work to establish norms per on line product.