

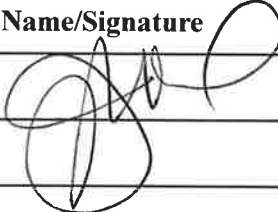
Perris Union High School District Course of Study

A. COURSE INFORMATION

Course Title: <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Algebra 1a</div> <input type="checkbox"/> New <input checked="" type="checkbox"/> Revised	Subject Area: <input type="checkbox"/> Social Science <input type="checkbox"/> English <input checked="" type="checkbox"/> Mathematics <input type="checkbox"/> Laboratory Science <input type="checkbox"/> World Languages <input type="checkbox"/> Visual or Performing Arts <input type="checkbox"/> College Prep Elective <input type="checkbox"/> Other	Grade Level <input type="checkbox"/> MS <input type="checkbox"/> HS <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input checked="" type="checkbox"/> 8 <input checked="" type="checkbox"/> 9 <input checked="" type="checkbox"/> 10 <input checked="" type="checkbox"/> 11 <input checked="" type="checkbox"/> 12
Transcript Title/Abbreviation: <div style="border: 1px solid black; height: 20px; width: 100%;"></div> (To be assigned by Educational Services)	Is this classified as a Career Technical Education course? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Transcript Course Code/Number: <div style="border: 1px solid black; height: 20px; width: 100%;"></div> (To be assigned by Educational Services)		
Required for Graduation: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No *in conjunction with Algebra 1B	Credential Required to teach this course: <div style="border: 1px solid black; padding: 5px; text-align: center;"> Mathematics <i>To be completed by Human Resources only.</i> </div>	
Meets UC/CSU Requirements? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No *in conjunction with Algebra 1B	<div style="border: 1px solid black; padding: 5px;"> <div style="display: flex; justify-content: space-between;"> <div style="text-align: center;"> Signature </div> <div style="text-align: center;"> Date </div> </div> </div>	
Was this course <u>previously approved by UC for PUHSD?</u> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Will be verified by Ed Services)	Meets "Honors" Requirements? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Meets "AP" Requirements? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Unit Value/Length of Course: <input type="checkbox"/> 0.5 (half year or semester equivalent) <input checked="" type="checkbox"/> 1.0 (one year equivalent) <input type="checkbox"/> 2.0 (two year equivalent) <input type="checkbox"/> Other:	
Submitted by: Amanda Darton Site: SSC Date: 4/28/17		
Approvals	Name/Signature	Date
Director of Curriculum & Instruction		5/1/17
Asst. Superintendent of Educational Services		5.4.17
Governing Board		

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Submitted by: <i>Amanda Darton</i> Site: <i>SSC</i> Date: <i>4/28/17</i>		
Approvals	Name/Signature	Date
Director of Curriculum & Instruction		<i>5/1/17</i>
Asst. Superintendent of Educational Services		
Governing Board		

Prerequisite(s) (REQUIRED):

None

Corequisite(s) (REQUIRED):

None

Brief Course Description (REQUIRED):

Algebra 1a is the first half of the Algebra 1a-1b series. The fundamental purpose of the Algebra 1a course is to formalize and extend the mathematics that students learned in the middle grades. This course includes standards from the conceptual categories of Number and Quantity, Algebra, Functions, and Statistics and Probability.

B. COURSE CONTENT

Course Purpose (REQUIRED):

What is the purpose of this course? Please provide a brief description of the goals and expected outcomes. Note: More specificity than a simple recitation of the State Standards is needed.

The fundamental purpose of the Algebra I course is to formalize and extend the mathematics that students learned in the middle grades. This course includes standards from the conceptual categories of Number and Quantity, Algebra, Functions, and Statistics and Probability. Some standards are repeated in multiple higher mathematics courses; therefore instructional notes, which appear in brackets, indicate what is appropriate for study in this particular course. For example, the scope of Algebra I is limited to linear, quadratic, and exponential expressions and functions as well as some work with absolute value, step, and functions that are piecewise-defined. Therefore, although a standard may include references to logarithms or trigonometry, those functions are not to be included in course work for Algebra I; they will be addressed later in Algebra II.

For the Algebra I course, instructional time should focus on four critical areas: (1) deepen and extend understanding of linear and exponential relationships; (2) contrast linear and exponential relationships with each other and engage in methods for analyzing, solving, and using quadratic functions; (3) extend the laws of exponents to square and cube

roots; and (4) apply linear models to data that exhibit a linear trend.

(1) In previous grades, students learned to solve linear equations in one variable and applied graphical and algebraic methods to analyze and solve systems of linear equations in two variables. In Algebra I, students analyze and explain the process of solving an equation and justify the process used in solving a system of equations. Students develop fluency in writing, interpreting, and translating among various forms of linear equations and inequalities and use them to solve problems. They master the solution of linear equations and apply related solution techniques and the laws of exponents to the creation and solution of simple exponential equations.

(2) In earlier grades, students define, evaluate, and compare functions and use them to model relationships between quantities. In Algebra I, students learn function notation and develop the concepts of domain and range. They focus on linear, quadratic, and exponential functions, including sequences, and also explore absolute value, step, and piecewise-defined functions; they interpret functions given graphically, numerically, symbolically, and verbally; translate between representations; and understand the limitations of various representations. Students build on and extend their understanding of integer exponents to consider exponential functions. They compare and contrast linear and exponential functions, distinguishing between additive and multiplicative change. Students explore systems of equations and inequalities, and they find and interpret their solutions. They interpret arithmetic sequences as linear functions and geometric sequences as exponential functions.

(3) Students extend the laws of exponents to rational exponents involving square and cube roots and apply this new understanding of number; they strengthen their ability to see structure in and create quadratic and exponential expressions. They create and solve equations, inequalities, and systems of equations involving quadratic expressions. Students become facile with algebraic manipulation, including rearranging and collecting terms, and factoring, identifying, and canceling common factors in rational expressions. Students consider quadratic functions, comparing the key characteristics of quadratic functions to those of linear and exponential functions. They select from these functions to model phenomena. Students learn to anticipate the graph of a quadratic function by interpreting various forms of quadratic expressions. In particular, they identify the real solutions of a quadratic equation as the zeros of a related quadratic function. Students expand their experience with functions to include more specialized functions—absolute value, step, and those that are piecewise-defined.

Course Outline (REQUIRED):

Detailed description of topics covered. All historical knowledge is expected to be empirically based, give examples. Show examples of how the text is incorporated into the topics covered.

Students will learn:

- Algebra
 - Properties
 - In the transition from arithmetic to algebra , attention shifts from arithmetic operations to use of the properties of these operations.
 - All of the facts of arithmetic and algebra follow from certain properties.
 - Variable
 - Quantities are used to form expressions, equations and inequalities.
 - An expressions refer to a quantity but does not make a statement about it/ An equation is a statement about the quantities it mentions.
 - Using variables in place of numbers in equations allow the statement of relationships among

numbers that are unknown or unspecified.

- Equivalence
 - A single quantity may be represented by many different expressions.
 - The facts about a quantity may be expressed by many different equations or inequalities.
- Solving Equations and Inequalities
 - Solving an equation is the process of rewriting the equation to make what it says about its variable(s) as simple as possible.
 - Properties of numbers and equality can be used to transform an equation (or inequality) into equivalent, simpler equations (or inequalities) in order to find solutions.
 - Useful information about equations and inequalities (including solutions) can be found by analyzing graphs or tables.
 - The numbers and types of solutions vary predictably, based on the type of equation.
- Proportionality
 - Two quantities are proportional if they have the same ratio in each instance where they are measured together
 - Two quantities are inversely proportional if they have the same product in each instance where they are measured together.
- Function
 - A function is a relationship between variables in which each value of the input variable is associated with a unique value of the output variable.
 - Functions can be represented in a variety of ways, such as graphs, tables, equations, or words. Each representation is particularly useful in certain situations.
 - Some important families of functions are developed through transformations of the simplest form of the function.
 - New functions can be made from other functions by applying arithmetic operations or by applying one function to the output of another.
- Modeling
 - Many real-world mathematical problems can be represented algebraically. These representations can lead to algebraic solutions.
 - A function that models a real-world situation can then be used to make estimates or predictions about future occurrences.
- Statistics and Probability
 - Data Collection and Analysis
 - Sampling techniques are used to gather data from real-world situations. If the data are representative of the larger population, inferences can be made about that population.
 - Based sampling techniques yield data unlikely to be representative of the larger population.
 - Sets of numerical data are described using measures of central tendency and dispersion.
 - Data Representation
 - The most appropriate data representations depend on the type of data-quantitative or qualitative, and univariate or bivariate.
 - Line plots, boxplots, and histograms are different ways to show distribution of data over a possible range of values.
 - Probability
 - Probability expresses the likelihood that a particular event will occur.
 - Data can be used to calculate an experimental probability, and mathematical properties can be used to determine a theoretical probability.
 - Either experimental or theoretical probability can be used to make predictions or decisions

