Performance Level Descriptors – Algebra 1

PLD	Domain	Below Basic	Basic	Proficient	Advanced
Reporting		**Below Basic do not yet demonstrate proficiency in the knowledge and skills** necessary at this grade level/course of learning, as specified in content expectations. The students need substantial academic support to be prepared for the next grade level or course and to be on track for *college and career readiness.*	**Basic demonstrate partial proficiency in the knowledge and skills** necessary at this grade level/course of learning, as specified in content expectations. The students need additional academic support to ensure success in the next grade level or course and to be on track for *college and career readiness.*	**Proficient demonstrate proficiency in the knowledge and skills** necessary at this grade level/course of learning, as specified in content expectations, and uses clear and precise language when communicating mathematical understanding. The students are prepared for the next grade level or course and are on track for *college and career readiness.*	**Advanced demonstrate advanced proficiency in the knowledge and skills** necessary at this grade level/course of learning, as specified in content expectations. The students are well prepared for the next grade level or course and are well prepared for *college and career readiness.*
		A student who performs at the **Below Basic** level demonstrates minimal command of the grade-level expectations.	A student who performs at the **Basic** level demonstrates partial command of the grade-level expectations.	A student who performs at the **Proficient** level demonstrates proficiency of the grade-level expectations.	A student who performs at the **Advanced** level demonstrates advanced proficiency of the grade-level expectations.

PLD	Domain	Below Basic	Basic	Proficient	Advanced
RANGE	NUMBER & QUANTITY	Identifies equivalent radicals and rational exponent expressions; uses conversion rates within a system to solve problems involving multiple quantities.	Rewrites expressions with rational exponents or radicals using the properties of exponents; uses appropriate units, scales and labels to correctly represent data; solves problems involving multiple quantities within and between systems of measurements, represents numbers in an appropriate form, such as scientific notation. Based on the context of a situation.	Rewrites expressions with rational exponents or radicals using the properties of exponents; reasons abstractly and contextually when solving multi-step problems involving quantities; attends to precision by accurately rounding to an appropriate measure based on the context of a situation;	Justifies understanding of the properties of rational exponents as an extension of the properties of integer exponents; critiques the reasoning of others' representation when solving problems involving expressions with rational exponents or radicals; attends to the precision answers appropriate to the context of the problem; analyzes units as a means to determine appropriate use of rates.
	SEEING STRUCTURE IN EXPRESSIONS	Identifies parts of an expression to write it in standard form; factors a GCF from a quadratic expression; uses given expressions and equations to solve problems	Identifies key terms in expressions and equations; uses mathematical models; factors a simple (a=1) quadratic expression.	Looks for and makes use of structure in linear, quadratic and exponential expressions to produce equivalent forms to reveal and explain properties; interprets mathematics models including individual terms and factors in the context of the problem; recognizes when expressions can be factored to find the zeros (solutions) of an equation.	Analyzes and manipulates the structure of polynomials and exponentials to highlight key features with or without context; manipulates quadratic expressions to reveal the vertex or zeros of a quadratic function.

PLD	Domain	Below Basic	Basic	Proficient	Advanced
	CREATING EQUATIONS	Graphs linear and equations in two variables; graphs exponential equations in two-variable where the lead coefficient is 1	Creates and graphs linear equations and inequalities; graphs exponential and quadratic equations in two variables.	Creates and graphs quadratic and exponential equations and inequalities in two variables with or without constraints; makes sense of solutions and their relationships in mathematical and real-world situations; solves literal equations for a specific variable.	Analyzes and interprets constraints in the context of the solutions to model a mathematical or real-world problem that may limit possible solutions
RANGE	REASONING WITH EQUATIONS & INEQUALITIES	Solves a linear equation; Identify the solution to a linear system of equations.	Explains the steps in solving an equation; solves a system of linear equations algebraically and graphically; solves a system of a linear and quadratic graphically; graphs the solution to a linear inequality in two variables.	Explains the steps in solving an inequality; solves quadratic equations using various methods; selects and uses appropriate strategies to solve a system of equations (which may include a linear and quadratic equation); solves a system of linear inequalities; explains that the graph of linear or exponential equation in two variables is the set of all its solutions plotted in the Cartesian coordinate plane; solves a simple (solved by inspection) exponential equation.	Analyzes the structure of expressions and equations to determine the optimal method of solving or creating equivalent expressions; Generalize the process of completing the square to derives the quadratic formula; justifies understanding of the technique of linear combination; critiques the reasoning of others' solution methods; analyzes the details of a solution of a system of inequalities in the context of a real-world situation.

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	ARITHMETIC WITH POLYNOMIALS AND RATIONAL EXPRESSIONS	Adds and subtracts polynomials, multiplies a single variable monomial and a single variable polynomial.	Multiply single variable polynomials.	Adds, subtracts and multiplies multivariable polynomials; divides polynomials by monomials.	Connects mathematical ideas and real-world situations through modeling of arithmetic on polynomials. Generalize the operations of addition, subtraction, and multiplication of polynomials to construct an argument that polynomials are closed under addition, subtraction, and multiplication.
RANGE	INTERPRETING AND BUILDING FUNCTIONS	Evaluates a given function for a specified value in the domain; calculates the average rate(slope) of change in a linear situation given two data points; graphs key features of given linear functions; compares properties of linear functions given different representations; identifies translations of functions from their graphs.	Understands that the domain and range values of a function corresponding to (x, y) values on the Cartesian coordinate plane; interprets the parameters of a linear function; graphs key features of a quadratic and exponential function; applies translations to graphs; translates between different forms of linear functions; Recognizes and understands the definition of function, domain and range; represents situations with function notation; represents a linear function in various forms using symbolic function notation	Interprets parameters of exponential functions; translates between different but equivalent forms of quadratic functions; compares properties of two functions given different representations; applies transformations, including reflections, to equations and graphs; Interpret key characteristics of a function using various forms to model relationships between two quantities.	Interprets statements that use function notation in terms of a context; interprets the parameters of an exponential function; compares properties of functions given different representations contextually; analyzes the structure of functions with transformations on functions relating the three parent functions.

PLD	Domain	Below Basic	Basic	Proficient	Advanced
	LINEAR, QUADRATIC AND EXPONENTIAL MODELS	Constructs linear functions; calculate terms of a given sequence.	Recognize and distinguishes between situations that can be modeled with linear or exponential functions; writes explicit functions that generate arithmetic and geometric sequences; Determine whether a function is written in explicit or recursive form.	Constructs quadratic and exponential functions given multiple representations; writes arithmetic and geometric sequences recursively; recognizes that sequences are functions whose domain is a subset of the set of integers; recognizes that linear functions model arithmetic sequences and exponential functions model geometric sequences.	Analyzes how linear and exponential functions change per unit interval; translate between the explicit and recursive forms of sequences; creates mathematical models to make sense of real-world problems.
RANGE	DATA AND STATISTICAL ANALYSIS	Calculates statistical measures of center and spread for a given data set; creates representations of data;	Interprets graphical representations of data; organizes data in a given two-way frequency table; creates a scatterplot from given data; creates a trend line from two optimal points that are given;	Compares, interprets and analyzes sets of data using statistical measures or graphs; recognizes the presence and effects of outliers; summarizes and interprets data in two-way frequency tables; uses appropriate tools and/or technology to construct scatterplots of bivariate data; determines a function that models a data set; interprets parameters of data models; interpret the correlation coefficient for a linear association; understands that correlation does not necessarily lead to causation; interprets the relationships of the variables in the contexts of the data.	Critiques the validity of conjectures about a data set various forms; discusses possible associations and trends in data; constructs viable arguments to justify relationship between the variables; analyzes the fit of various models of data.