MATH
Grade 6

PLD	Standard	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
		MATH GRADE 6			
Policy		The Level 1 student is below proficient in applying mathematics knowledge/skills as specified in the standards. The student generally performs significantly below the standard for the grade level/course, is likely able to partially access grade-level content, and engages with higher order thinking skills with extensive support.	The Level 2 student is approaching proficient in applying mathematics knowledge/skills as specified in the standards. The student generally performs slightly below the standard for the grade level/course, is able to access grade-level content, and engages in higher order thinking skills with some independence and support.	The Level 3 student is proficient in applying mathematics knowledge/skills as specified in the standards. The student generally performs at the standard for the grade level/course, is able to access grade-level content, and engages in higher order thinking skills with some independence and minimal support.	The Level 4 student is highly proficient in applying mathematics knowledge/skills as specified in the standards. The student generally performs significantly above the standard for the grade level/course, is able to access above grade-level content, and engages in higher order thinking skills independently.
		Ratios and Proportional Relationships			
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	6.RP.1	Describes the concept of ratio using one symbol or basic language notation.	Describes the concept of ratio using a limited variety of representations.	Uses the concept of a ratio, ratio language, and notation to precisely describe a ratio relationship between two quantities.	Uses and connects between the different representations for ratio situations in non-routine, real-world problems.
Range	6.RP.2	Identifies unit rates.	Determines a unit rate.	Understands the concept of a unit rate associated with a ratio and uses rate language in context.	Finds a unit rate with multiple steps.
Range	6.RP.3a 6.RP.3b	Identifies proportional relationships presented in graphical, tabular, or verbal formats. Finds missing values in tables and plots values on the coordinate plane involving whole numbers.	Uses a limited variety of representations to solve ratio and unit rate mathematical problems involving whole numbers. Finds missing values in tables and plots values on the coordinate plane.	Uses ratio and rate reasoning to solve real-world and mathematical problems. Solves unit rate problems, including those involving unit pricing and constant speed. Creates a table of equivalent ratios.	Creates and solves real-world word problems using ratio and rate reasoning.

Range	6.RP.3c	Knows the meaning of percent of a quantity as a rate per hundred.	Finds the percent of a quantity.	Determines the percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solves problems involving finding the whole, given a part and the percent.	Solves non-routine real-world or mathematical problems involving percent.
Range	6.RP.3d	Identifies ratio relationships presented in graphical, tabular, or verbal formats using measurement units.	Uses representations to convert measurement units; manipulates and transforms units appropriately when multiplying or dividing quantities.	Uses ratio reasoning to convert measurement units.	Applies ratio reasoning to real-world word problems where students convert measurement units.
The Number System					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	6.NS.1	Solves mathematical problems in contexts (involving division of whole numbers by unit fractions), using visual fraction models and equations to represent the problem.	Solves mathematical problems in contexts (involving division of fractions by non-zero whole numbers and division of whole numbers by fractions), using visual fraction models and equations to represent the problem.	Solves and interprets division of fractions word problems (involving division of fractions by fractions).	Solves and interprets real-world, multi-step division of fractions word problems (involving more heavily focused mixed numbers).
Range	6.NS.2	Finds whole-number quotients and remainders (with up to **four**-digit dividends and **one**-digit divisors), using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrates and explains the calculation by using equations, rectangular arrays, and/or area models.	Finds whole-number quotients of whole numbers (with up to **four**-digit dividends and **two**-digit divisors), using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrates and explains the calculation by using equations, rectangular arrays, and/or area models.	Fluently divides multi-digit numbers using the standard algorithm.	Fluently divides multi-digit numbers using the standard algorithm, and assesses the reasonableness of the result.

Range	6.NS.3	Adds, subtracts, and multiplies using strategies based on place value, the properties of operations, and/or the relationship between operations. Limit decimals to hundredths.	Add, subtracts, multiplies, and divides, using strategies based on place value, the properties of operations, and/or the relationship between operations. Limit decimal dividend by whole number.	Fluently adds, subtracts, multiplies, and divides multi-digit decimals, using the standard algorithm for each operation.	Solves word problems with multi-digit decimals by adding, subtracting, multiplying, and dividing using the standard algorithm for each operation.
Range	6.NS.4	Finds common factors (less than or equal to 50) and common multiples (less than or equal to 10), using a visual model or strategies.	Finds the greatest common factor of two whole numbers (less than or equal to 50) and the least common multiple of two whole numbers (less than or equal to 10).	Finds the greatest common factor of two whole numbers (less than or equal to 100) and the least common multiple of two whole numbers (less than or equal to 12). Uses the distributive property to express a sum of two whole numbers (1 to 100) with a common factor, as a multiple of a sum of two whole numbers with no common factor. For example, express 36 + 8 as 4 (9 + 2).	Interprets a context to construct an equivalent expression, using greatest common factors and least common multiples, and the distributive property.
Range	6.NS.5	Places integers on the number line (with whole-number increments).	Places integers on the number line. In a given situation (e.g., elevation, sea level), student is able to determine the meaning of zero.	Demonstrates that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); uses positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation. (May use any rational number, including fractions and decimals.)	Recognizes patterns and makes generalizations about characteristics of positive and negative numbers. (May use any rational number, including fractions and decimals.)

Range	6.NS.6	Plots points in all four quadrants. Plots integer pairs on a coordinate plane (with one-unit increments on both axes) and on a horizontal number line.	Plots points in all four quadrants. Plots ordered pairs, including rational numbers, on a coordinate plane, and on both horizontal and vertical number lines. Recognizes that two points are reflections across one axis on the coordinate plane.	Plots points in all four quadrants. Understands signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognizes that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.	Solves real-world problems involving the coordinate plane. Recognizes that when two ordered pairs differ only by signs, the locations of the points are related by reflections across both axes.
Range	6.NS.7	Compares two rational numbers on a number line diagram. Writes the comparison using mathematical notation. Finds the absolute value of a rational number using representations.	Determines the greater or lesser rational number, including absolute values in a real-world context. Uses mathematical notation and words to express these statements of order.	Writes, interprets, and explains statements of order for rational numbers in real-world contexts. Interprets absolute value as magnitude for a positive or negative quantity in a real-world situation. Distinguishes comparisons of absolute value from statements about order.	Draws conclusions about a real-world situation involving absolute values of rational numbers and compares values.
Range	6.NS.8	Determines the distances between two points on the coordinate plane by counting the spaces between points.	Solves mathematical problems by graphing points in all four quadrants on the coordinate plane; finds distances between points with the same first or second coordinate.	Solves real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Includes use of coordinates and absolute value to find distances between points with the same first or second coordinate.	Applies absolute value to the coordinate grid to real-world, multi-step problems. For example, constructs a polygon (with given side lengths) across axes.

Expressions and Equations					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	6.EE.1	Recognizes exponential notation as repeated multiplication (e.g., 2 x 2 x 2 = 2^3).	Writes and evaluates a single term in numerical expressions involving whole-number exponents (e.g., 7^2 = 49 or 49 = 7^2).	Writes and evaluates numerical expressions involving whole-number exponents. (e.g., 7^2 + 3^2)	Writes and evaluates numerical expressions involving whole-number exponents in real-world contexts.

Range	6.EE.2a 6.EE.2b	Identifies an expression that matches a written statement, with numbers and with letters standing for numbers, using correct mathematical terms.	Writes expressions from written statements that record a single operation (with numbers and with letters standing for numbers); recognizes one or more parts of an expression as single entities.	Writes expressions that record multiple operations (with numbers and with letters standing for numbers).	Writes expressions that record operations (with numbers and with letters standing for numbers), involving real-world and mathematical contexts.
Range	6.EE.2c	Evaluates expressions at specific values of their variables (e.g., substitution).	Evaluates expressions at specific values of their variables, and includes expressions that arise from formulas used in real-world problems.	Performs arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).	Evaluates multi-step, real-world problems (involving rational numbers and whole-number exponents).
Range	6.EE.3 6.EE.4	Identifies when two expressions are equivalent.	Applies properties of operations to identify equivalent expressions.	Applies the properties of operations to identify and generate equivalent expressions.	Uses a real-world context to construct multiple equivalent expressions.
Range	6.EE.5	Uses substitution to determine whether **a given number** makes an equation or inequality (with a single operation) true.	Solves an equation or inequality, using substitution to determine whether a given number **in a specified set** makes an equation or inequality (with a single operation) true.	Solves an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true.	Creates a set of values that makes an equation or inequality true.
Range	6.EE.6	Identifies a single operation expression (with one variable), in a real-world mathematical problem.	Writes a single-operation expression (with one variable) to portray a real-world mathematical problem.	Uses variables to represent numbers and write expressions when solving a real-world or mathematical problem; understands that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.	Creates a real-world situation that corresponds to a given expression.

		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	6.EE.7	Solves $x + p = q$, $x - p = q$, and $px = q$, $p/x = q$ (with whole numbers) with a visual/manipulative model.	Solves $x + p = q$, $x - p = q$, and $px = q$, $p/x = q$ (with non-negative whole numbers and unit fractions and decimals).	Solves real-world and mathematical problems by writing and solving equations of the form $x + p = q$, $x - p = q$, and $px = q$, $p/x = q$, for cases in which p, q, and x are all non-negative, rational numbers.	Interprets and solves real-world and mathematical problems with multiple steps.
Range	6.EE.8	Recognizes that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions, and identifies solutions of such inequalities on number line diagrams.	Given a number line diagram, writes an inequality of the form $x > c$ or $x < c$; **or,** given an inequality of the form $x > c$ or $x < c$, graphs solutions on a number line diagram.	Writes an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognizes that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions, and represents solutions of such inequalities on number line diagrams.	Writes a real-world problem to represent a constraint given an inequality of the form $x > c$ or $x < c$.
Range	6.EE.9	Given a graph/table, identifies an algebraic expression for the two quantities in a real-world problem that change in relationship to one another.	Given a graph/table in a real-world or mathematical problem, identifies dependent and independent variables, and writes an algebraic equation to represent how these quantities change in relationship to one another.	Given a real-world situation, a student writes an equation to express the relationship between the dependent and independent variables, using graphs and tables, and relates these to the equation.	Creates a real-world context using dependent and independent variables.
Geometry & Statistics and Probability					
		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	6.G.1	Finds the area of triangles, special quadrilaterals, and polygons that have been composed or decomposed into rectangles or triangles, given all the measurements.	Finds the area of triangles and special quadrilaterals by composing or decomposing into triangles and/or rectangles.	Finds the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; a student applies these techniques in the context of solving real-world and mathematical problems.	Solves geometric multi-step, real-world and mathematical problems involving triangles, quadrilaterals, and polygons including decimal and fractional measurements.

Range	6.G.2	Visually represents the volume of a right rectangular prism with **whole-number** edge lengths.	Represents and finds the volume of a right rectangular prism with one fractional edge length. Shows that the volume of their representation is the same as multiplying the edge lengths.	Finds the volume of a right rectangular prism with fractional edge lengths. Applies the formulas $V = l\,w\,h$ and $V = B\,h$ in the context of solving real-world and mathematical problems.	Given the volume of a right rectangular prism with fractional edge lengths, finds the missing fractional edge length in the context of solving real-world and mathematical problems.
Range	6.G.3	Draws polygons in the coordinate plane given coordinates for the vertices.	Uses coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate.	Use coordinates in the context of solving real-world and mathematical problems.	Finds the missing vertex, of a regular polygon, when given the other vertices in the coordinate plane in a real-world context.
Range	6.G.4	Represents three-dimensional figures using nets made up of rectangles and triangles.	Uses nets to find the surface area of 3-dimensional figures.	Solves real-world and mathematical problems using nets and 3-dimensional figures.	Solves real-world and mathematical problems using nets and 3-dimensional figures including fractional and decimal measurements.
Range	6.SP.1	Recognizes a statistical question from a list of questions.	Changes a question from a non-statistical question to a statistical question.	Recognizes a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.	Writes a statistical question given a context.
Range	6.SP.2	Identifies the corresponding graph from a given set of data or given a graph, a student identifies its corresponding data.	Demonstrates that a set of data collected to answer a statistical question has a distribution which can be described by using measures of center and spread.	Demonstrates that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.	Creates a set of data with a given center, spread, and shape.
Range	6.SP.3	Recognizes that a measure of center is the mean, median, and mode while a measure of variation is the range.	Recognizes and can find the mean, median, and/or mode; and can find the range.	Recognizes that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.	Determines how additional data points affect the measure of center in a numerical data set.
Range	6.SP.4	Identifies an appropriate display of numerical data in plots on a number line, including dot plots **or** histograms **or** box plots.	Constructs a display of numerical data on a number line, including dot plots and/or histograms.	Displays numerical data in plots on a number line, including dot plots, histograms, and box plots.	Constructs a histogram or box plot from data displayed in a dot plot.

Range	6.SP.5a 6.SP.5b 6.SP.5c 6.SP.5d	Summarizes the data in a line plot by counting the number of observations; identifies the range and measure of center used.	Summarizes a numerical data set by counting the number of observations; identifies the range and measures of center and any striking deviations (e.g., outliers).	Summarizes numerical data sets in relation to their context.	Creates a set of data from a given box plot.