

MATH GRADE 5

PLD	Standard	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
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.
Operations and Algebraic Thinking					
		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	5.OA.1	Evaluates a simple numerical expression using parentheses, brackets, or braces (without nesting).	Evaluates a numerical expression using parentheses, brackets, or braces (without nesting).	Uses parentheses, brackets, or braces in numerical expressions (without nesting), and evaluates expressions with these symbols.	Inserts parentheses, brackets, or braces (without nesting), in numerical expressions to make a statement true.
Range	5.OA.2	Writes a numerical expression, using one operation, from a written statement (e.g., divide 144 by 12).	Writes simple numerical expressions and interprets numerical expressions, without evaluating them.	Writes numerical expressions (limited to two operations; e.g., "divide 144 by 12, and then subtract 9") and interprets numerical expressions, without evaluating them.	Writes numerical expressions using multiple operations, involving real-world and mathematical contexts.
Range	5.OA.3	Continues two numerical patterns (when given a table), using two given rules.	Continues two numerical patterns using two given rules.	Generates two numerical patterns using two given rules. Identifies apparent relationships between corresponding terms.	Generates two numerical patterns using two multi-step given rules, in mathematical contexts. Explains the relationship between corresponding terms.

Number and Operations in Base Ten

		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	5.NBT.1	Uses visual models or calculation (in any multi-digit whole number) to demonstrate a digit in one place represents 10 times as much as it represents in the place to its right, or 1/10 of what it represents in the place to its left.	Uses visual models or calculation (in any multi-digit whole number) to recognize that a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.	Recognizes (in any multi-digit number, including decimals to thousandths) that a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.	Recognizes (in any multi-digit number, including decimals to thousandths) that a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left, in real-world or mathematical context problems.
Range	5.NBT.2	Continues a given pattern that shows the number of zeroes of the product when multiplying a number by powers of 10.	Recognizes patterns in the number of zeroes of products when multiplying a number by powers of 10. Can use whole number exponents greater than zero to denote powers of 10.	Explains patterns in the number of zeroes of the product when multiplying a number by powers of 10, and explains patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Uses whole-number exponents to denote powers of 10, including 10 to the power of zero.	Interprets a multiplication problem to identify the factor of 10 by which one number is greater or less than another.
Range	5.NBT.3a	Reads decimals to the thousandths place.	Reads and writes decimals to the thousandths place, using base ten numerals and number names.	Reads and writes decimals to the thousandths place, using base ten numerals, number names, and expanded form (e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$).	Writes numbers in expanded form in a variety of formats (e.g., $347.392 = 7 \times 1 + 3.4 \times 100 + 3 \times (1/10) + 2 \times (1/1000) + (1/100) \times 9$).

Range	5.NBT.2	Continues a given pattern that shows the number of zeroes of the product when multiplying a number by powers of 10.	Recognizes patterns in the number of zeroes of products when multiplying a number by powers of 10. Can use whole number exponents greater than zero to denote powers of 10.	Explains patterns in the number of zeroes of the product when multiplying a number by powers of 10, and explains patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Uses whole-number exponents to denote powers of 10, including 10 to the power of zero.	Interprets a multiplication problem to identify the factor of 10 by which one number is greater or less than another.
Range	5.NBT.3b	Compares two decimals to the tenths place, using $>$, $=$, and $<$ symbols to record the results of comparisons.	Compares two decimals to the hundredths place, using $>$, $=$, and $<$ symbols to record the results of comparisons.	Compares two decimals to the thousandths place (with varying place values), using $>$, $=$, and $<$ symbols to record the results of comparisons.	Compares and orders decimals to the thousandths place (with varying place values), from least to greatest or vice versa.
Range	5.NBT.4	Uses place value understanding to round multi-digit numbers to the tenths place.	Uses place value understanding to round multi-digit whole numbers to the hundredths place.	Uses place value understanding to round multi-digit numbers up to any place (within content limits).	Uses rounding strategies in real-world situations.
Range	5.NBT.5	Multiplies two two-digit numbers using a standard algorithm.	Multiplies three-digit by two-digit whole numbers, using a standard algorithm.	Fluently multiplies multi-digit whole numbers using a standard algorithm.	Fluently multiplies multi-digit whole numbers, in real-world and mathematical contexts, using a standard algorithm.
Range	5.NBT.6	Finds whole-number quotients of whole numbers (with up to two-digit dividends and two-digit divisors), using rectangular arrays or area models.	Finds whole-number quotients of whole numbers (with up to three digit dividends and two-digit divisors), using strategies based on place value and the properties of operations.	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.	Finds whole-number quotients of whole numbers (with up to four-digit dividends and two-digit divisors) in context.
Range	5.NBT.7	Adds, subtracts, multiplies, and divides decimals to the tenths place, using concrete models, drawings, or strategies based on place value.	Adds, subtracts, multiplies, and divides decimals to the hundredths place, using concrete models or drawings, strategies based on place value, and/or the relationship between addition and subtraction; relates the strategy to a written method.	Adds, subtracts, multiplies, and divides decimals to the hundredths place, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relates the strategy to a written method and explains the reasoning used.	Adds, subtracts, multiplies, and divides decimals to the hundredths place, using multiple strategies, in a real-world or mathematical context.

Number and Operations - Fractions

		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	5.NF.1	Adds/subtracts fractions with unlike denominators, where one denominator is a multiple of the other denominator. Can determine a common denominator, with use of a visual model (no regrouping or mixed numbers involved).	Adds/subtracts fractions with unlike denominators, where one denominator is a multiple of the other denominator (no regrouping or mixed numbers involved).	Adds and subtracts fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.	Adds or subtracts at least 3 or more fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.
Range	5.NF.2	Solves word problems involving addition and subtraction of fractions with unlike denominators, where one denominator is a multiple of the other denominator, using visual representations. Determines a common denominator (no regrouping or mixed numbers involved).	Solves word problems involving addition and subtraction of fractions with unlike denominators, where one denominator is a multiple of the other denominator (no regrouping or mixed numbers involved).	Solves word problems involving addition and subtraction of fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. Assesses and justifies reasonableness of the answer by using benchmark fractions, visual models, or equations.	Solves word problems involving addition or subtraction with at least 3 or more fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.
Range	5.NF.3	Rewrites a fraction as a division problem; uses manipulatives or visual models to solve problems involving division of whole numbers, leading to answers in the form of fractions or mixed numbers.	Solves word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers.	Interprets a fraction as division of the numerator by the denominator ($a/b = a \div b$); solves word problems involving division of whole numbers, leading to answers in the form of fractions or mixed numbers.	Creates his or her own model to demonstrate division of fractions.
Range	5.NF.4a 5.NF.4b	Shows the product of a fraction by a whole number by repeated addition, using visual fraction models.	Shows the product of two fractions by using an area model.	Shows the product of two fractions using an area model and creates a story context for this equation. Finds the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and shows that the area is the same as would be found by multiplying the side lengths. Multiplies fractional side lengths to find areas of rectangles, and represents fraction products as rectangular areas.	Creates a real-world context and models representing multiplication of fractions. Demonstrates reasoning about fractions in both an additive and multiplicative sense with different wholes, and displays the quantities with visual models.

Range	5.NF.5.a 5.NF.5b	Interprets multiplication scaling by comparing the size of a product to the size of one factor on the basis of the size of the second factor, without performing the indicated multiplication (where both factors are whole numbers).	Interprets multiplication scaling by comparing the size of a product to the size of one factor on the basis of the size of the second factor, without performing the indicated multiplication (where one factor is a fraction less than one).	Interprets multiplication scaling by comparing the size of a product to the size of one factor on the basis of the size of the second factor, without performing the indicated multiplication (where one factor is a fraction greater than or lesser than one).	Interprets multiplication scaling by comparing the size of a product to the size of one factor on the basis of the size of the second factor by performing the indicated multiplication with 2 fractions.
Range	5.NF.5.a 5.NF.5b	Interprets multiplication scaling by comparing the size of a product to the size of one factor on the basis of the size of the second factor, without performing the indicated multiplication (where both factors are whole numbers).	Interprets multiplication scaling by comparing the size of a product to the size of one factor on the basis of the size of the second factor, without performing the indicated multiplication (where one factor is a fraction less than one).	Interprets multiplication scaling by comparing the size of a product to the size of one factor on the basis of the size of the second factor, without performing the indicated multiplication, focusing on one factor being a fraction greater than or lesser than one.	Interprets multiplication scaling by comparing the size of a product to the size of one factor on the basis of the size of the second factor by performing the indicated multiplication with 2 fractions.
Range	5.NF.6	Solves real-world problems involving multiplication of fractions by using visual fraction models or equations to represent the problem (limited to fractions with single-digit numerators or denominators).	Solves real-world problems involving multiplication of fractions by using visual fraction models or equations to represent the problem.	Solves real-world problems involving multiplication of fractions and mixed numbers.	Uses several mixed numbers, often with multi-digit numerators or denominators, to solve real-world problems.
Range	5.NF.7	Solves real-world problems involving division of whole numbers by unit fractions, using visual fraction models and equations to represent the problem.	Solves real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, using visual fraction models and equations to represent the problem (limited to single-digit whole numbers and denominators).	Solves real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, using visual fraction models and equations to represent the problem.	Creates real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, using visual fraction models and equations to represent the problem.
Measurement and Data & Geometry					
		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	5.MD.1	Converts among different-sized standard measurement units within a given measurement system.	Converts among different-sized standard measurement units within a given measurement system; uses these conversions to solve single-step problems, using manipulatives or visual models.	Converts among different-sized standard measurement units within a given measurement system; uses these conversions in solving multi-step, real-world problems.	Creates real-world, multi-step problems. Chooses the appropriate measurement unit based on the given context.

Range	5.MD.2	Plots data on a given line plot with a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$), where the given data set is limited to a common denominator. Solves addition and subtraction comparison problems using the data.	Makes a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, or $\frac{1}{8}$), where the given data set is limited to a common denominator. Solves problems using all four operations.	Makes a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Uses operations on fractions to solve problems involving information presented in line plots (division is limited to a whole number divided by a fraction or a fraction divided by a whole number).	Makes a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Solves multi-step word problems using the four operations and interprets the solution to the data.
Range	5.MD.3 5.MD.4	Uses unit cubes to find the volume of rectangular prisms with whole-number edges (limited to single-digit dimensions).	Uses unit cubes (number of unit cubes, edge length, height) to find the volume of rectangular prisms. Uses the information that the number of unit cubes is related to the edge length; uses visual models.	Uses unit cubes (number of unit cubes, edge length, height) to find the volume of rectangular prisms. Represents the volume of a solid figure as n cubic units (including cubic cm, cubic, in., cubic ft., and improvised units).	Compares the volumes of different prisms by using unit cubes.
Range	5.MD.5	Solves volume problems of a right rectangular prism by using unit cubes.	Solves volume problems by relating the number of unit cubes in a prism to the multiplication of the edge lengths.	Solves real-world and mathematical problems by applying the formulas for volume. Finds the volume of two non-overlapping right rectangular prisms by adding the volumes of the two non-overlapping parts.	Creates real-world mathematical problems that would be solved by finding volume.
Range	5.G.1 5.G.2	Identifies the key components of the coordinate plane (x -axis, x -coordinate, y -axis, y -coordinate, and origin). Locates given points in the first quadrant of the coordinate plane.	Identify coordinate location and interpret coordinate values of points in the first quadrant (e.g., reading line graphs), in context.	Represents real-world and mathematical problems by locating and graphing points in the first quadrant of the coordinate plane.	Using real-world data, creates a representation and draws conclusions based on the data presented.
Range	5.G.3 5.G.4	Identifies two-dimensional (fifth grade) figures based on properties limited to sides and angles.	Classifies some two-dimensional (fifth grade) figures into categories based on their properties (sides and angles).	Understands that attributes belonging to a category of two-dimensional (fifth grade) figures also belong to all subcategories of that category and classifies two-dimensional (fifth grade) figures in the hierarchy based on these properties.	Draws or constructs specific two-dimensional figures according to the definitions provided, attributes described, or categories given.