

MATH GRADE 3

PLD	Standard	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Policy		<p>The Level 1 student is below proficient in applying mathematics knowledge/skills as specified in the standards.</p> <p>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.</p>	<p>The Level 2 student is approaching proficient in applying mathematics knowledge/skills as specified in the standards.</p> <p>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.</p>	<p>The Level 3 student is proficient in applying mathematics knowledge/skills as specified in the standards.</p> <p>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.</p>	<p>The Level 4 student is highly proficient in applying mathematics knowledge/skills as specified in the standards.</p> <p>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.</p>

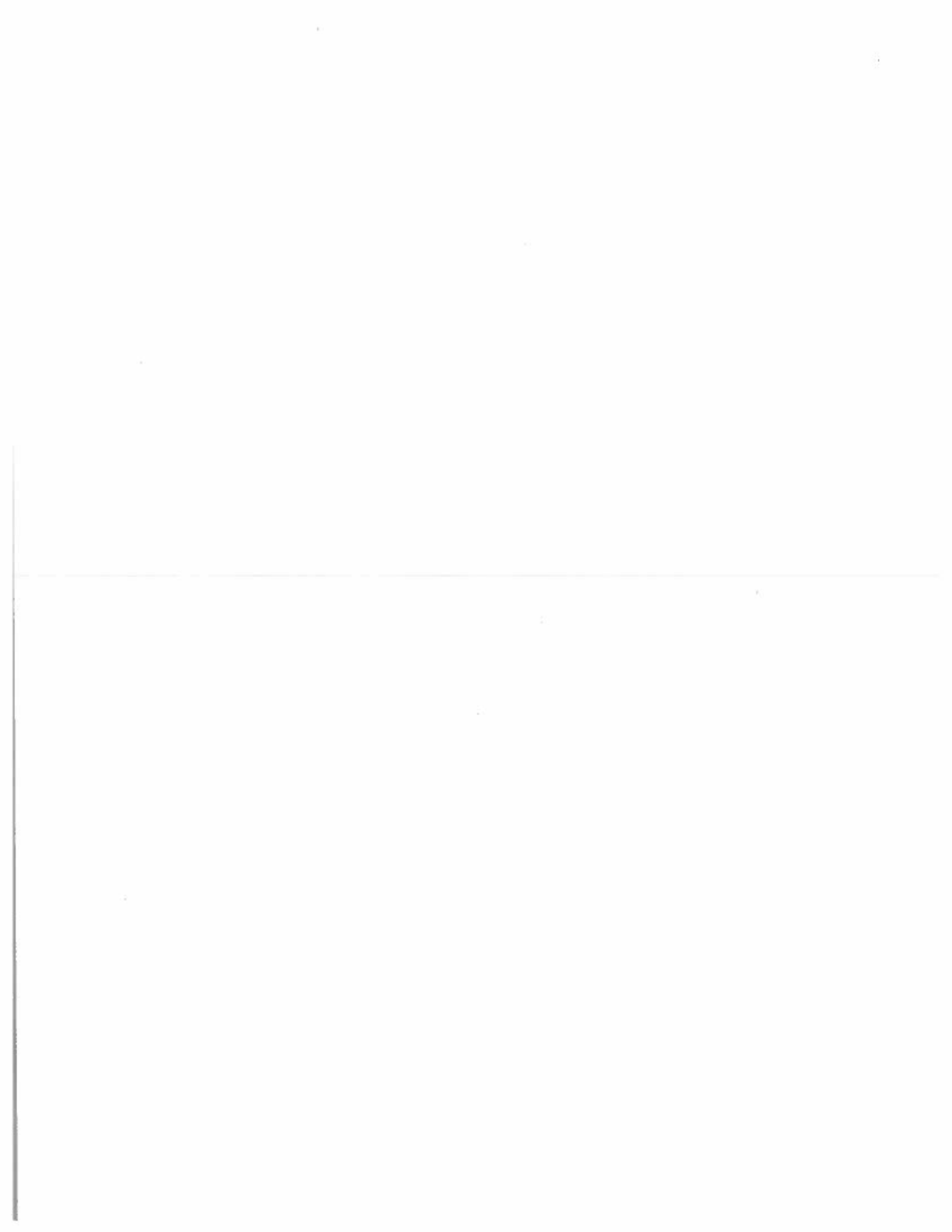
Operations and Algebraic Thinking					
		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	3.OA.1	Interprets products of single-digit whole numbers (using factors up to 5) with visual support.	Interprets products of single-digit whole numbers (using factors up to 9) with visual support.	Interprets products of single-digit whole numbers using equal groups of objects, arrays of objects and comparison.	Interprets products of whole numbers within 100, representing context using pictures, numbers, and words.
Range	3.OA.2	Interprets whole-number quotients of whole numbers (with a divisor up to 5) with a visual support.	Interprets whole-number quotients of whole numbers (with a divisor up to 9) with visual support.	Interprets quotients of whole-number division problems using equal groups of objects, arrays of objects and comparison.	Interprets quotients of whole-number division problems, representing context using pictures, numbers, and words.
Range	3.OA.3	Multiplies and divides within 100 to solve word problems involving equal groups and arrays when a visual model is given (with factors and divisors that are less than or equal to 5).	Multiplies and divides within 100 to solve word problems involving equal groups and arrays (with factors and divisors that are less than or equal to 9).	Multiplies and divides within 100 to solve single-step word problems involving equal groups, arrays, and measurement quantities.	Multiplies and divides within 100 to solve multi-step word problems involving equal groups, arrays, and measurement quantities.
Range	3.OA.4	Determines the unknown whole number in a multiplication or division equation, when the unknown number is the product or quotient.	Determines the unknown whole number in a multiplication or division equation, in any position, when the factor or divisor is less than or equal to 5.	Determines an unknown whole number, in any position, in a multiplication and division equation.	Determines an unknown whole number in a multiplication and division equation. Students will use the given context to generate an equation or create a word problem.

Range	3.OA.5	Applies the properties of operations to multiply and divide with factors or divisors less than or equal to 5.	Applies the properties of operations to multiply and divide when factors and divisors are less than or equal to 9.	Applies the properties of operations as strategies to multiply and divide. Determines an appropriate strategy for a given situation.	Applies multiple strategies of operations within a word problem.
Range	3.OA.6	Solves division as unknown factor problems by finding missing number in the second factor position (with factors that are less than or equal to 5) with visual support.	Solves division as unknown factor problems by finding missing numbers in any position (with factors less than 10) with visual support.	Understands that division can be expressed as an unknown factor problem by using the relationship between multiplication and division.	Solves division as unknown factor problems by using the relationship between multiplication and division, models multiplication and division in a variety of ways.
Range	3.OA.7	Multiplies and divides single-digit numbers using a variety of strategies and supports.	Fluently multiplies and divides all single-digit numbers using variety strategies.	Knows from memory all products of two single-digit numbers, fluently multiplies products within 100, fluently divides dividends that are less than 100.	Fluently multiplies and divides within 100 using a wide range of contexts.
Range	3.OA.8	Solves two-step word problems using addition and subtraction with simple context and concrete objects or visual representations.	Solve two-step word problems using the four operations with simple context and visual representations (with the unknown in a variety of positions).	Solve two-step word problems using equations in the four operations (with the unknown in a variety of positions, using a letter standing for the unknown quantity). Recognizes the reasonableness of answers using mental computation and estimation strategies.	Creates two-step word problems using multiple operations.
Range	3.OA.9	Identifies additive arithmetic patterns using visual supports, such as an addition table.	Identifies multiplicative and subtractive arithmetic patterns using visual supports.	Identifies arithmetic patterns and explains them using properties of operations.	Creates and extends arithmetic patterns, explains patterns using properties of operations.
Number and Operations in Base Ten					
		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	3.NBT.1	Uses place value understanding to round a two-digit number to the nearest 10.	Uses place value understanding to round a three-digit number to the nearest 100.	Uses place value understanding to round whole numbers (up to 1,000) to the nearest 10 or 100.	Uses rounding strategies in real-world situations.

Range	3.NBT.2	Adds and subtracts two digit numbers using visual models or support.	Adds and subtracts numbers within 1,000 using visual models or support.	Fluently adds and subtracts within 1,000 using strategies and algorithms based in place value, properties of operations, and/or the relationship between addition and subtraction.	Fluently adds and subtracts within 1,000; explains the method used in finding the sum or difference; recognizes and identifies an error and shows the correct answer.
Range	3.NBT.3	Skip counts by 10, 20 or 50 to multiply single-digit whole numbers by multiples of 10 in the range 10-90.	Uses grouping strategies (associative property) to multiply single-digit whole numbers by multiples of 10 in the range 10-90.	Multiplies single-digit whole numbers by multiples of 10 in the range 10-90 using any of a variety of place value strategies and properties of operations.	Multiplies single-digit whole numbers by multiples of 10 in the range 10-90 using strategies based on place value and properties of operations; shows product using multiple strategies.
Number and Operations - Fractions					
		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	3.NF.1	Identifies the numerator and identifies the denominator.	Identifies that the numerator is the number of equal parts being considered; identifies that the denominator is the number of equal parts that make up the whole.	Understands $1/b$ is equal to one part when the whole is partitioned into b equal parts (where the denominators are 2, 3, 4, 6 or 8).	Applies understanding of unit fractions to real world situations and problems.
Range	3.NF.2a 3.NF.2b	Identifies the fraction on the number line where the increments are equal to the denominator.	Represents a fraction on a partitioned number line.	Represents a fraction on a number line by partitioning into equal parts.	Represents a set of fractions with unlike denominators on a number line by partitioning into equal parts.
Range	3.NF.3a 3.NF.3b	Understands, recognizes, and generates equivalent fractions using denominators of 2, 4 and 8 given visual models.	Understands, recognizes, and generates equivalent fractions using denominators of 2, 4 and 8.	Understand, recognizes, and generates equivalent fractions using denominators of 2, 3, 4, 6, and 8; explains why the fractions are equivalent using a visual model.	Understands, recognizes, and generates equivalent fractions using denominators of 2, 3, 4, 6, and 8; explains why the fractions are equivalent.
Range	3.NF.3c	Expresses and recognizes fractions that are equivalent to 1.	Expresses and recognizes fractions that are equivalent to whole numbers.	Expresses whole numbers as fractions; recognizes fractions that are equivalent to whole numbers.	Identifies equivalent fractions by creating fraction models to compare fractions with different denominators that pertain to the same whole.
Range	3.NF.3d	Compares two fractions with the same denominator and records results using symbols.	Compares two fractions with the same numerator and records results using symbols.	Compares two fractions that have the same numerator or same denominator using symbols and visual fraction models.	Compares two fractions that have the same numerator or same denominator using symbols.

Measurement and Data & Geometry					
		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	3.MD.1	Tells, writes, and measures time to the nearest minute.	Tells, writes, and measures time to the nearest minute. Solves one-step word problems involving addition or subtraction of time intervals with scaffolding.	Tells, writes, and measures time to the nearest minute. Solves one-step word problems involving addition and subtraction of time intervals in minutes.	Tells, writes, and measures time to the nearest minute. Solves two-step real world problems involving addition and subtraction of time intervals in minutes.
Range	3.MD.2	Using grams, kilograms or liters, measures and estimates liquid volumes and masses of objects using models.	Using grams, kilograms or liters, measures and estimates liquid volumes and masses of objects using models and solves simple one-step word problems using either addition or subtraction.	Using grams, kilograms or liters: measures, estimates, and solves one-step word problems involving liquid volumes and masses of objects using models and any of the four operations.	Using grams, kilograms or liters: measures, estimates, and solves two-step word problems involving liquid volumes and masses of object using any of the four operations.
Range	3.MD.3	Completes a scaled picture graph and a scaled bar graph (with a scale factor of 1 or 5) to represent data set with supports, such as using a model as a guide.	Completes a scaled picture graph and a scaled bar graph to represent data set, with supports, such as using a model as a guide. Solves one-step "how many more" and "how many less" problems using information presented in scaled bar graphs.	Creates a scaled picture graph and a scaled bar graph to represent a data set. Solves one- and two-step "how many more" and how many less" problems using information presented in scaled bar graphs.	Creates a scaled picture graph and a scaled bar graph to represent a data set. Solves multi-step "how many more" and how many less" problems using information presented in scaled bar graphs.
Range	3.MD.4	Generates measurement data by measuring lengths to the nearest half-inch. Shows the data by making a line plot, where the horizontal scale is marked in appropriate units (whole number or halves) with supports.	Generates measurement data by measuring lengths to the nearest half and quarter-inch. Shows the data by making a line plot, where the horizontal scales is marked in appropriate units (whole numbers, halves, and quarters) with supports.	Generates measurement data by measuring lengths to the nearest half and quarter-inch. Shows the data by making a line plot, where the horizontal scale is marked in appropriate units (whole number, halves or quarters).	Generates measurement data by measuring lengths to the nearest half and quarter- Inch. Shows the data by making a line plot, and marking the horizontal scale in appropriate units (whole number, halves or quarters). Uses the line plot to answer questions or solve problems.
Range	3.MD.5a 3.MD.5b 3.MD.6	Understands what a square unit is and that a plane figure can be covered without gaps or overlaps to find an area.	Understands area is measured using square units, finds area of a rectangle by counting the square units.	Understands area is measured using square units, finds area of a plane figure by counting the square units.	Finds the area of 2 plane figures by counting the square units and compares their sizes.

Range	3.MD.7a 3.MD.7b	Finds the area of a rectangle by tiling.	Finds the area of a rectangle by tiling and shows that the area is the same as would be found by multiplying the side lengths.	Finds areas of rectangles by tiling and multiplying the side lengths, in the context of solving real-world and mathematical problems, and represents whole number products as rectangular areas in mathematical reasoning.	Finds the area of 2 plane figures of different sizes, and compares their sizes.
Range	3.MD.7c 3.MD.7d	Finds the area of two rectangles by tiling.	Finds the area of two rectangles by tiling and adds the areas of the rectangles.	Multiplies the side lengths of a rectangle composed of two rectangles and uses tiling and area models to represent the distributive property to find the overall area; decomposes a rectangle into two rectangular parts and finds the area of the new rectangles.	Creates a word problem using the distributive property to find the area of rectangles.
Range	3.MD.8	Finds the perimeter and area of polygons (given the side lengths).	Solves mathematical problems involving perimeters of polygons, including finding the perimeter and area (given the side lengths); compares and contrasts area and perimeter.	Solves real-world and mathematical problems involving perimeters of polygons, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.	Constructs rectangles that have the same perimeter but different areas and the reverse.
Range	3.G.1	Identifies examples of quadrilaterals; recognizes that examples of quadrilaterals have shared attributes, and that the shared attributes can define a larger category.	Understands the properties of quadrilaterals and the subcategories of quadrilaterals.	Recognizes examples of quadrilaterals that have shared attributes and that the shared attributes can define a larger category; draws examples of quadrilaterals that don't belong to the categories of rhombuses, rectangles, and squares.	Recognizes and sorts examples of quadrilaterals that have shared attributes and that the shared attributes can define a larger category; draws examples and non-examples of quadrilaterals that are not rhombuses, rectangles, or squares.
Range	3.G.2	Partitions shapes into parts with equal areas and expresses the area as a unit fraction of the whole (limited to halves and quarters).	Partitions shapes into parts with equal areas and expresses the area as a unit fraction of the whole (limited to halves, quarters, and eighths).	Partitions shapes into parts with equal areas and expresses the area as a unit fraction (with denominator of 2, 3, 4, 6, or 8) of the whole.	Partitions shapes in multiple ways into parts with equal areas and expresses the area as a unit fraction of the whole.



MATH GRADE 4

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	4.OA.1	Recognizes that any two factors and their product can be read as a comparison using supports.	Recognizes that any two factors and their product can be read as a comparison; represents those comparisons as equations using supports.	Recognizes that any two factors and their product can be read as a comparison; represents verbal comparisons as equations.	Recognizes that any two factors and their product can be read as a comparison; uses multiple strategies and creates his or her own to represent and describe those comparisons.
Range	4.OA.2	Multiplies or divides to solve word problems involving multiplicative comparison (where the unknown is the product or quotient), given visual representations.	Multiplies or divides to solve word problems involving multiplicative comparison (where the unknown is in a variety of positions), given visual representations.	Multiplies or divides to solve word problems involving multiplicative comparison, where the unknown is in a variety of positions.	Creates own context for multiplicative comparison.
Range	4.OA.3	Solves multi-step word problems (which may or may not include remainders) using the four operations with simple context and scaffolding. The sum, difference, product, or quotient is always the unknown.	Solves multi-step word problems (which may include interpreting remainders) using the four operations with simple context and scaffolding. The sum, difference, product, or quotient is always the unknown. Uses rounding where appropriate.	Solves multi-step word problems (including interpreting remainders) using the four operations. The unknown is in a variety of positions, and can be represented by a symbol/letter. Uses estimation strategies when appropriate. Recognizes the reasonableness of answers using mental computation and estimation strategies.	Solves complex multi-step word problems with multiple possible solutions and determines which would be the most reasonable based upon given criteria.

Range	4.OA.4	Finds factor pairs for multiples of 10 in the range of 1 to 100. Determines whether a whole number in the range of 1 to 25 is prime or composite, given visual representations (such as arrays, hundreds chart, number line).	Finds all factor pairs for whole numbers in the range of 1 to 50. Determines whether a whole number in the range of 1 to 50 is prime or composite, given visual representations (such as arrays, hundreds chart, number line).	Finds all factor pairs for whole numbers in the range of 1 to 100. Recognizes that a whole number is a multiple of each of its factors and determines a given whole number in the range of 1 to 100 is a multiple of a given single-digit number (i.e., given 56, determine whether or not 8 is a factor). Determines whether a whole number in the range of 1 to 100 is prime or composite.	Applies the concepts of both factors and prime and composite numbers in problem-solving contexts.
Range	4.OA.5	Generates a number or shape pattern that follows a given rule, using visual models.	Generates a number or shape pattern that follows a given rule.	Generates a number or shape pattern that follows a given rule; identifies apparent features that are not explicit in the rule.	Generates a number or shape pattern that combines two operations for a given rule.
Number and Operations in Base Ten					
		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	4.NBT.1	Recognizes that a digit in one place represents 10 times as much as it represents in the place to its right (within 10,000), with visual representations.	Recognizes that a digit in one place represents 10 times as much as it represents in the place to its right (within 100,000).	Recognizes that a digit in one place represents 10 times as much as it represents in the place to its right (for numbers up to and including 1,000,000).	Uses place value strategies in context to determine the place value of any given digit.
Range	4.NBT.2	Reads and writes multi-digit whole numbers using base ten numerals and number names. He or she should be able to compare two multi-digit numbers (up to 10,000), using symbols to record the results.	Reads and writes multi-digit whole numbers using base ten numerals, number names, and expanded form; compares two multi-digit numbers (up to 100,000) using symbols to record the results.	Reads and writes multi-digit whole numbers using base ten numerals, number names, and expanded form; compares two multi-digit numbers (up to a million) using symbols to record the results.	Applies comparisons to real-world and mathematical contexts.
Range	4.NBT.3	Uses place value understanding to round multi-digit whole numbers to any place within 10,000.	Uses place value understanding to round multi-digit whole numbers to any place within 100,000.	Uses place value understanding to round whole numbers up to any place within 1,000,000.	Uses rounding strategies in real-world situations.
Range	4.NBT.4	Fluently adds and subtracts multi-digit whole numbers using the standard algorithm without reorganizing.	Fluently adds and subtracts multi-digit whole numbers using the standard algorithm with supports.	Fluently adds and subtracts multi-digit whole numbers using the standard algorithm.	Recognizes and identifies an error and shows the correct answer.

Range	4.NBT.5	Multiplies a whole number (of up to three digits) by a single-digit whole number, using strategies based on place value and the properties of operations.	Multiplies a whole number (of up to four digits) by a single-digit whole number, using strategies based on place value and the properties of operations.	Multiplies a whole number (of up to four digits) by a single-digit whole number and multiplies two double-digit numbers, in context, using strategies based on place value and the properties of operations; illustrates and explains the calculation by using equations, rectangular arrays, and/or area models.	Interprets a context and explains strategies used to solve.
Range	4.NBT.6	Finds whole number quotients and remainders (with up to double-digit dividends and single-digit divisors), using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division.	Finds whole number quotients and remainders (with up to three-digit dividends and single-digit divisors), using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division.	Finds whole number quotients and remainders (with up to four-digit dividends and single-digit divisors), in context, 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.	Interprets a context and explains strategies used to solve.
Number and Operations - Fractions					
		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	4.NF.1	Uses area fraction models to represent equivalent fractions by partitioning unit fraction pieces into smaller equal pieces.	Uses area fraction models to represent equivalent fractions by partitioning unit fraction pieces into smaller pieces (and understands that this is the same), and multiplies by 1 represented as a fraction.	Uses area fraction models to generate and explain why fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$, where n is a non-negative whole number.	Uses a variety of strategies to generate and explain why fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$, where n is a non-negative whole number.

Range	4.NF.2	Uses visual fraction models to compare two fractions with different numerators and different denominators (2, 3, 4, 6, and 8), using $<$, $>$, and $=$, with the understanding that the fractions must refer to the same whole.	Compares two fractions with different numerators and different denominators (grade 4 fraction expectations), using benchmark fractions and $<$, $>$, and $=$, with the understanding that the fractions must refer to the same whole.	Compares two fractions with different numerators and different denominators (grade 4 fraction expectations), using benchmark fractions and $<$, $>$, and $=$, with the understanding that the fractions must refer to the same whole. Justifies answers using visual fraction models.	Extends understanding to compare and order fractions with different numerators and different denominators (grade 4 fraction expectations), $<$, $>$, and $=$, with the understanding that the fractions must refer to the same whole. Recognizes and generates equivalent fractions
Range	4.NF.3a 4.NF.3b	Adds and subtracts fractions with like denominators by joining and separating parts referring to the same whole using visual and/or manipulative models.	Adds and subtracts fractions with like denominators by joining and separating parts referring to the same whole using visual and/or manipulative models. Decomposes a fraction into a sum of fractions with the same denominator in more than one way and records the decomposition using an equation.	Adds and subtracts fractions with like denominators by joining and separating parts referring to the same whole. Decomposes a fraction into a sum of fractions with the same denominator in more than one way and records the decomposition using an equation.	Adds and subtracts fractions with like denominators by joining and separating parts referring to the same whole. Decomposes a fraction into a sum of fractions with the same denominator in multiple ways and records the decomposition using an equation.
	4.NF.3c	Converts a mixed number into an equivalent fraction.	Converts mixed numbers into equivalent fractions and adds and subtracts them.	Adds and subtracts mixed numbers with like denominators by replacing each mixed number with an equivalent fraction, and/or by using the properties of operations and the relationship between addition and subtraction.	Adds and subtracts mixed numbers with like denominators by replacing each mixed number with an equivalent fraction, and by using the properties of operations and the relationship between addition and subtraction.
Range	4.NF.3d	Solves word problems involving addition and subtraction of fractions (referring to the same whole and having like denominators of 2, 3, 4, 6, or 8) with visual fraction models.	Solves word problems involving addition and subtraction of fractions (referring to the same whole and having like denominators, as per grade 4 fraction expectations) with visual fraction models.	Solves word problems involving addition and subtraction of fractions (referring to the same whole and having like denominators, as per grade 4 fraction expectations) using visual fraction models and equations.	Solve multi-step word problems involving addition and subtraction of fractions (referring to the same whole and having like denominators, as per grade 4 fraction expectations) using visual fraction models and equations.

Range	4.NF.4a 4.NF.4b 4.NF.4c	Understands a fraction a/b as a multiple of $1/b$ by using visual fraction models.	Understands a fraction a/b as a multiple of $1/b$, and uses this understanding to multiply a fraction by a whole number, using visual fraction model.	Understands and solves simple word problems by recognizing that fraction a/b is a multiple of $1/b$, and uses that construct to multiply a fraction by a whole number (in general, $n \times a/b$ is $(n \times a)/b$).	Understands and solves more complex word problems by recognizing that fraction a/b is a multiple of $1/b$, and uses that construct to multiply a fraction by a whole number (in general, $n \times a/b$ is $(n \times a)/b$).
Range	4.NF.5	Expresses a fraction with denominator 10 as an equivalent fraction with denominator 100 by using a model.	Adds two fractions with respective denominators 10 and 100 by first finding equivalent fractions with like denominators by using a model.	Adds two fractions with respective denominators 10 and 100 by first finding equivalent fractions with like denominators.	Solves missing addend problems with respective denominators 10 and 100 by first finding equivalent fractions with like denominators.
Range	4.NF.6	Uses decimal notation for fractions with a denominator of 10, with supports.	Uses decimal notation for fractions with denominators of 10 or 100, with supports.	Uses decimal notation for fractions with denominators of 10 or 100.	Demonstrates knowledge of decimal notation for fractions with denominators of 10 or 100 by converting a number with decimal notation to a decimal fraction.
Range	4.NF.7	Compares two decimals with the same number of places (tenths or hundredths) using supports.	Compares two decimals to the hundredth (using $<$, $>$, and $=$) by reasoning about their size using models. Recognizes that the decimals must refer to the same whole.	Compares two decimals in the tenths and the hundredths (using $<$, $>$, and $=$) by reasoning about their size. Recognizes that the decimals must refer to the same whole, and records the results using the correct symbols.	Orders decimal sets composed of tenths and hundredths by reasoning about their size. Recognizes that the decimals must refer to the same whole.
Measurement and Data & Geometry					
		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	4.MD.1	Knows relative size of measurement units, within one system of units.	Expresses measurements in a larger unit in terms of a smaller unit, within a single system, using supports and adjacent units.	Expresses measurements in a larger unit in terms of a variety of smaller units, within a single system, and records that data in a two-column table.	Given a context, determines the appropriate unit needed and expresses the measurement to the level of accuracy needed.

Range	4.MD.2	Uses the four operations to solve word problems (involving distance, liquid volumes, masses of objects, intervals of time and money), including problems involving whole numbers, using supports.	Uses the four operations to solve word problems (involving distance, liquid volumes, masses of objects, intervals of time and money), including problems involving simple fractions or decimals, using supports.	Uses the four operations to solve word problems (involving distance, liquid volumes, masses of objects, intervals of time and money), including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represents measurement quantities using diagrams.	Uses the four operations to solve multi-step word problems (involving distance, liquid volumes, masses of objects, intervals of time and money), including problems involving fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represents measurement quantities using diagrams.
Range	4.MD.3	Applies the area and perimeter formulas when given all side measurements, using supports.	Applies the area and perimeter formulas for rectangles in real-world and mathematical problems, using supports.	Applies the area and perimeter formulas for rectangles in real-world and mathematical problems, including those where the area/perimeter and one factor (length or width) are known.	Applies the area and perimeter formulas for rectilinear shapes in real-world and mathematical problems.
Range	4.MD.4	Makes a line plot to display a data set of measurements in fractions of a unit (with like denominators of 2 or 4).	Makes a line plot to display a data set of measurements in fractions of a unit (with like denominators of 2 or 4), and uses addition and subtraction of fractions to solve problems involving information in the line plot.	Makes a line plot to display a data set of measurements in fractions of a unit (with like denominators limited to 2, 4, and 8), and uses addition and subtraction of fractions to solve problems involving information in the line plot.	Uses data in a line plot to solve a multi-step word problem.
Range	4.MD.5a 4.MD.5b 4.MD.6	Measures benchmark angles.	Understands that angles are measured in reference to a circle, and can measure angles in whole number degrees using a protractor.	Understands that angles are measured in reference to a circle, and can measure angles in whole-number degrees using a protractor. Sketches angles of specific measure.	Recognizes how angles are formed, understands that angles are measured in reference to a circle, and can measure angles in whole-number degrees using a protractor. Sketches angles of specific measure.

Range	4.MD.7	Recognizes that angle measure is additive. Solves addition real-world mathematical problems to find unknown angles on a diagram with no more than two angles, within a 90-degree angle.	Recognizes that angle measure is additive. Solves addition and subtraction real-world mathematical problems to find unknown angles on a diagram with no more than two angles, within a 180-degree angle.	Recognizes that angle measure is additive. Solves addition and subtraction real-world mathematical problems to find unknown angles on a diagram.	Given angle parameters, decomposes into multiple angles and gives the measure of each angle in relationship to the whole.
Range	4.G.1	Identifies points, lines, line segments, rays, perpendicular and parallel lines; classifies angles (right, acute, obtuse).	Identifies and draws points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines.	Draws points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines; identifies these in two-dimensional figures.	Creates a two-dimensional shape when given specific attributes.
Range	4.G.2	Identifies two-dimensional figures, including right triangles.	Classifies two-dimensional figures based on the presence or absence of parallel or perpendicular lines; identifies right triangles.	Classifies two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of specified size; identifies right triangles.	Constructs two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of specified size; identifies triangles.
Range	4.G.3	Identifies line-symmetric regular figures.	Identifies line-symmetric figures and draws lines of symmetry for regular two-dimensional figures.	Identifies line-symmetric figures and draws lines of symmetry for two-dimensional figures.	Constructs a figure with a given number of lines of symmetry.

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.

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MATH GRADE 6					
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.
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.

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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.

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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.)

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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., $2 \times 2 \times 2 = 2^3$).	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.

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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.

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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.

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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 $V = lwh$ and $V = Bh$ 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.

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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.
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MATH GRADE 7

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.
Ratios and Proportional Relationships					
		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	7.RP.1	Computes unit rates with ratios of fractions having like units.	Computes unit rates with ratios of fractions including lengths, areas, or other quantities measured in like or different units.	Computes unit rates with ratios of fractions including lengths, areas, and other quantities measured in like or different units.	Computes unit rates with ratios of two mixed numbers having like or different units.
Range	7.RP.2 (ab)	Decides whether two quantities are in a proportional relationship and identifies the constant of proportionality (unit rate) in a representation that includes (0, 0).	Decides whether two quantities are in a proportional relationship and identifies the constant of proportionality (unit rate) in any simple representation (i.e., tables, equations, diagrams, verbal descriptions, graphs).	Decides whether two quantities are in a proportional relationship and identifies the constant of proportionality (unit rate) in any complex representation, (i.e. tables, equations, diagrams, verbal descriptions, graphs).	Extends the given representation or creates a different representation that would represent the same proportional relationship.
Range	7.RP.2 (c)	Identifies the equation that models a relationship from a given representation with a proportional relationship.	Models a proportional relationship using an equation when given a simple table, graph, or verbal description.	Models a proportional relationship using an equation given a complex table, graph, or verbal description.	Creates a representation with a context that would represent a given proportional equation.
Range	7.RP.2 (d)	Explains what any point (x, y) on the graph of a proportional relationship means in terms of the situation, but not identify the unit rate.	Explains what any point (x, y) on the graph of a proportional relationship means in terms of the situation, and can identify the unit rate when given the point $(1, r)$.	Explains what any point (x, y) on the graph of a proportional relationship means in terms of the situation, and can identify the unit rate.	Identifies a point (x, y) on the same graph as the point $(1, r)$ for a proportional relationship and interprets the meaning of (x, y) in terms of the situation.

Range	7.RP.3	Uses proportional relationships to solve simple ratio and percent problems.	Uses proportional relationships to solve simple ratio and percent problems in context.	Uses proportional relationships to solve multi-step ratio and percent problems in context.	Creates equivalent proportional equations that could be used to solve the same ratio/percent problem in context.
Number System					
		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	7.NS.1 (abcd)	Adds or subtracts rational numbers using a number line or other manipulatives.	Adds or subtracts simple rational numbers.	Adds or subtracts rational numbers and determines the reasonableness of the solution. Recognizes that the sum of a number and its opposite equals zero, understands $p + q$ as the number located a distance $ q $ from p in a positive or negative direction, and understands subtraction as adding the additive inverse.	Justifies the steps taken to add or subtract rational numbers.
Range	7.NS.2 (abcd)	Multiplies or divides rational numbers using a number line or other manipulatives.	Multiplies or divides simple rational numbers.	Multiplies or divides rational numbers and determines the reasonableness of the solution. Understands that $-(p/q) = (-p)/q = p/(-q)$. Converts a rational number to a decimal using long division and knows that the rational number terminates in 0 or eventually repeats. Knows that division by zero is undefined.	Interprets products and quotients of rational numbers in a real-world context.
Range	7.NS.3	Solves simple real-world and mathematical problems involving the four operations with rational numbers using the number line or other manipulatives.	Solves simple real-world and mathematical problems involving the four operations with rational numbers.	Solves complex real-world and mathematical problems involving the four operations with rational numbers.	Creates complex real-world and mathematical problems involving the four operations with rational numbers.
Expressions and Equations					
		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	7.EE.1	Applies properties of operations used to add, subtract, factor, and expand linear expressions (with whole-number coefficients).	Applies properties of operations as strategies to add, subtract, factor, and expand linear expressions (with integer coefficients).	Applies properties of operations as strategies to add, subtract, factor, and expand linear expressions (with non-mixed and mixed rational coefficients).	Applies and justifies properties of operations as strategies to add, subtract, factor, and expand linear expressions (with non-mixed and mixed rational coefficients).

Range	7.EE.2	Can identify the commutative property and use it to rewrite an expression in an equivalent form and can explain how the different forms are related.	Can identify the associative and distributive properties and use them to rewrite an expression in an equivalent form and can explain how the different forms are related.	Understands that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.	Creates equivalent expressions given a problem context and explains key terms and factors of the problem for each expression.
Range	7.EE.3	Solves simple mathematical problems involving calculations with positive and negative rational numbers in a variety of forms. Converts between forms of a rational number to simplify calculations or communicate solutions meaningfully. Assesses the reasonableness of answers using mental computations and estimation.	Solves simple mathematical and real-life problems involving calculations with positive and negative rational numbers in a variety of forms. Converts between forms of a rational number to simplify calculations or communicate solutions meaningfully. Assesses the reasonableness of answers using mental computations and estimation.	Solves complex mathematical and real-life problems involving calculations with positive and negative rational numbers in a variety of forms. Converts between forms of a rational number to simplify calculations or communicate solutions meaningfully. Assesses the reasonableness of answers using mental computations and estimation.	Creates complex mathematical and real-life problems involving calculations with positive and negative rational numbers in a variety of forms. Converts between forms of a rational number to simplify calculations or communicate solutions meaningfully. Assesses the reasonableness of answers using mental computations and estimation.
Range	7.EE.4 (ab)	Solves equations of the form $px + q = r$ and $p(x + q) = r$ (with rational coefficients).	Solves simple mathematical problems of the form $px + q = r$ and $p(x + q) = r$, with rational coefficients, using equations and inequalities.	Solves simple real-world or mathematical problems of the form $px + q = r$ and $p(x + q) = r$, with rational coefficients, using equations and inequalities.	Solves complex real-world or mathematical problems of the form $px + q = r$ and $p(x + q) = r$, with rational coefficients, using equations and inequalities.
Geometry					
		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	7.G.1	Finds actual lengths given a geometric figure and a scale factor.	Finds actual lengths given two geometric figures with some unknown side measure.	Computes actual lengths and areas from a scale drawing and reproduces a scale drawing using a different scale.	Explains the relationship between scale factors of length and scale factors of areas for geometric figures.
Range	7.G.2	Constructs geometric shapes given conditions on the sides or angles and determines if it makes a particular shape.	Constructs geometric shapes given a combination of angle and side conditions and determines whether it makes a particular shape.	Discovers and explains the conditions necessary for a given set of angles or sides to make a triangle, a unique triangle, more than one triangle, or no triangle.	Justify conditions necessary for a given set of angles or sides to make a triangle, a unique triangle, more than one triangle, or no triangle.
Range	7.G.3	Identifies the 2-dimensional figure that results from a vertical or horizontal cut of a right rectangular prism.	Identifies the 2-dimensional figure that results from a vertical or horizontal cut of right rectangular pyramids.	Describes the 2-dimensional figure that results from a vertical, horizontal, or angled slice of a right rectangular prism or right rectangular pyramid.	Draws the 2-dimensional figure that results from a vertical, horizontal, or angled slice of a right prism or pyramid.

Range	7.G.4	Recognizes the formulas for area and circumference of a circle.	Calculates area and circumference given radius or diameter. Calculates radius or diameter given the circumference.	Understands how and why the formulas for area and circumference of a circle work. Applies the knowledge to solve for simple problems of area of a circle given the circumference or vice versa.	Understands how and why the formulas for area and circumference of a circle work. Applies the knowledge to solve for complex problems of area of a circle.
Range	7.G.5	Identifies supplementary, complementary, vertical, and adjacent angles when measures are given in whole numbers.	Finds the unknown angle given another angle and their relationship to supplementary, complementary, vertical, and adjacent angles when measures are given in whole numbers or algebraic expressions	Creates and solves simple multi-step equations to find unknown angles formed by two intersecting lines when measures are given as algebraic expressions.	Creates and solves complex multi-step equations to find unknown angles formed by two intersecting lines when measures are given as algebraic expressions.
Range	7.G.6	Finds the area of triangles, quadrilaterals, and regular polygons. Finds the volume of cubes and right prisms.	Solves real-world problems involving surface area of 2-dimensional figures. Solve real-world volume problems for cubes and right prisms.	Solves real-world problems involving surface area of composite 2-dimensional figures. Solves real-world problems involving volume of 3-dimensional objects.	Uses relationships between volume and surface area of 3-dimensional shapes to solve real-world problems.
Statistics and Probability					
Range	7.SP.1	Identifies and recognizes sample populations given a scenario describing the entire population.	Understands how a random sample produces the most valid representation of the entire population.	Makes inferences about a population based on representative samples. Uses multiple samples to gauge variations in estimates or predictions.	Identify and model real-life situations where random sampling is used and can explain its usefulness.
Range	7.SP.2	*Note: Combined with 7.SP.1			
Range	7.SP.3	Informally uses basic measures of central tendency to compare two different populations.	Informally uses measures of central tendency to draw comparisons about two different populations.	Informally uses measures of central tendency and variability to compare and contrast inferences about two populations in any context.	Informally uses measures of variability for numerical data from random samples to compare and contrast comparative inferences about two populations
Range	7.SP.4	Uses basic measures of central tendency to compare two populations	Uses measures of central tendency to draw comparisons about two populations.	Uses measures of central tendency and variability for numerical data to compare and contrast inferences about two populations.	Uses measures of central tendency and variability for numerical data from random samples to compare and contrast comparative inferences about two populations.

Range	7.SP.5	Understands that the probability of a chance event is a number between 0 and 1.	Understands that the probability if a chance event is closer to 1 it is likely to happen and if it is closer to 0 it is not likely to happen.	Identifies the probability of a chance event as impossible (0), unlikely, equally likely or unlikely (0.5), more likely, or certain (1). Interpret the probabilities as a fraction, decimal, or percent.	Compares probabilities of two or more events and justifies the likelihood of each event.
Range	7.SP.6	Makes approximations of probability for a chance event.	Uses the results of an experiment to estimate the probability of the event.	Observes and predicts the relative frequency of an event given the probability of the event.	Recognizes and justifies why the experimental probability approaches the theoretical probability as the relative frequency of an event increases.
Range	7.SP.7 (ab)	Determines the theoretical probability of a simple event.	Determines the theoretical probability of a simple event and uses observed frequencies to create a uniform probability model.	Determines the theoretical probability of an event and uses observed frequencies to create a probability model for the data from a chance process (where outcomes are uniform or not uniform).	Compares and justifies the experimental and theoretical probability in a given situation.
Range	7.SP.8 (abc)	Determines the sample space for compound events.	Determines the theoretical probability of a compound event.	Designs a simulation to generate frequencies for compound events.	Designs and compares different simulations to see which best predicts the probability.



MATH GRADE 8

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.
Number System					
		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	8.NS.1	Identifies square roots of non-square numbers and pi as irrational numbers. Understands that every number has a decimal expansion. Identifies rational or irrational numbers. Converts familiar rational numbers with one repeating digit to fraction form.	Compares and orders rational and irrational numbers. Identifies irrational decimal expansions as approximations. Identifies rational and irrational numbers and converts less familiar rational numbers to fraction form.	Places irrational numbers on a number line. Uses approximations of irrational numbers to estimate the value of an expression. Converts decimals into rational numbers.	Explains how to get more precise approximations of square roots. Notices and explains the patterns that exist when writing rational numbers as fractions.
Range	8.NS.2	COMBINED WITH 8.NS.1			
Expressions and Equations					
		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	8.EE.1	Knows the properties of natural number exponents.	Applies the properties of natural number exponents to generate equivalent numerical expressions.	Knows and applies the properties of integer exponents to generate equivalent numerical expressions.	Utilizes properties of integer exponents to order or evaluate multiple numerical expressions with integer exponents.
Range	8.EE.2	Evaluates square and cube roots of small perfect squares and cubes.	Solves mathematical equations (without context) of the form $x^2=p$ and $x^3=p$, where p is a positive rational number and the solutions are rational.	Uses square root and cube root symbols to represent solutions to equations of the form $x^2=p$ and $x^3=p$, where p is a positive rational number, and knows that $\sqrt{2}$ is irrational.	Explains how square roots and cube roots relate to each other and to their radicands.

Range	8.EE.3	Uses numbers expressed in the form of a single digit times an integer power of 10 to estimate very large quantities.	Uses numbers expressed in the form of a single digit times an integer power of 10 to estimate very large and very small quantities.	Expresses how many times a number written as an integer power of 10 compares to another number written as an integer power of 10 to estimate very large or very small quantities.	Converts between decimal notation and scientific notation and compares numbers written in different notations.
Range	8.EE.4	Represents very large and very small quantities in scientific notation and uses appropriate units.	Multiplies and divides numbers in scientific notation.	Performs operations with numbers expressed in scientific notation, including problems with numbers written in both decimal and scientific notation and interprets scientific notation that has been generated by technology.	Calculates and interprets values written in scientific notation within a context.
Range	8.EE.5	Graphs proportional relationships, interpreting the unit rate as the slope.	Graphs proportional relationships, interpreting the unit rate as the slope and compare two different proportional relationships using the same representation.	Graphs proportional relationships, interpreting the unit rate as the slope of the graph and compares two different proportional relationships represented in different ways.	Justifies whether two representations are proportional or not by comparing their properties.
Range	8.EE.6	Determines the slope of a line given a graph.	Derives the equation $y=mx$ for a line through the origin.	Recognizes and explains why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane and derives the equation $y=mx+b$ for a line intercepting the vertical axis at b .	Compares and contrasts situations in which similar triangles would and would not yield the same slope.
Range	8.EE.7 (ab)	Solves simple linear equations with integer coefficients.	Solves simple multi-step linear equations with rational coefficients and identifies equations that have one solution, infinitely many solutions, or no solutions.	Solves complex multi-step linear equations with rational coefficients and variables and provides examples of equations that have one solution, infinitely many solutions, or no solutions.	Justifies why an equation has one solution, infinitely many solutions, or no solutions.

Range	8.EE.8 (abc)	Identifies systems of equations that have one solution, infinitely many solutions, or no solutions from a graph. Estimates the solution of a system given a graph.	Identifies and solves systems of equations that have one solution, infinitely many solutions, or no solutions algebraically, by inspection, and graphically.	Provides and solves examples of systems of equations that have one solution, infinitely many solutions, or no solutions. Solves real-world and mathematical problems leading to two linear equations in two variables.	Creates and utilizes a system of linear equations.
Functions					
		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	8.F.1	Identifies whether a relation is a function from a graph or a mapping.	Identifies whether a relation is a function from any representation.	Explains that a function is a rule that assigns to each input exactly one output and that the graph of a function is the set of ordered pairs consisting of an input and the corresponding output.	Creates a representation of a relation and explains why it is a function or is not a function.
Range	8.F.2	Given a function expressed as an equation, creates a graph.	Given a representation of a function, creates another representation of that function.	Compares properties (i.e., slope, y -intercept, values) of two functions each represented in a different way (algebraically, graphically, numerically in tables, or verbal descriptions).	Justifies whether two functions represented in different ways are equivalent or not by comparing their properties.
Range	8.F.3	Determines whether a function is linear or nonlinear from a graph.	Determines whether a function is linear or nonlinear from an equation in the form $y=mx+b$.	Determines whether or not a function is linear or nonlinear (from a graph, table, and equation). Give examples of functions that are not linear.	Explains why the function is linear or nonlinear.
Range	8.F.4	Determines the rate of change of the function from a graphical description of the linear function.	Determines the rate of change and initial value of the function from two (x,y) values. Creates a graph of identified information.	Interprets the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values. Constructs a function to model a linear relationship between two quantities.	Identifies what prevents a set of values in either a table or graph from being linear and adjusts the values to make them linear.

Range	8.F.5	Describes qualitatively the functional relationship between two quantities by analyzing some features of a graph (e.g., linear and nonlinear).	Describes qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear).	Sketches and describes graph that exhibits given qualitative features of a function.	Interprets qualitative features of a function in a context.
Geometry					
		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	8.G.1	Identifies the lines or line segments that correspond from one translation to another.	Identifies the angles that correspond from one transformation to another using reflection and/or translation.	Can verify experimentally the properties of rotations, reflections, and translations.	Can recognize and explain the properties of rotations, reflections, and translations in real-world graphic illustrations and visual representations.
Range	8.G.2	Identifies two congruent figures using rotations, reflections, or transformations	Identifies a transformation between two congruent figures.	Describes a sequence of rigid transformations between two congruent figures.	Can recognize and explain congruent figures in real-world graphic illustrations and visual representations
Range	8.G.3	Identifies a visual representation of a dilation, translation, rotation, or reflection.	Describes the effect of reflections and translations on two-dimensional figures using coordinates and coordinate notation.	Describes the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates and coordinate notation.	Describes the effect of multiple transformations including dilation on two-dimensional figures using coordinates and coordinate notation.
Range	8.G.4	Recognizes that it takes a combination of transformations and dilation to produce a similar figure.	Identifies dilations of figures by a given scale factor and transformations.	Describes a sequence of rigid transformations and dilation that results in similar figures.	Recognizes that a dilation with a scale factor of 1 leads to congruence.
Range	8.G.5	Knows that the sum of angles of a triangle equals 180, and identifies the measures of angle pairs when parallel lines are cut by a transversal.	Finds unknown angle measures in a triangle, and unknown angle measures for angle pairs when parallel lines are cut by a transversal.	Gives an informal argument for: <ul style="list-style-type: none"> · sum of angles of a triangle equals 180 · the measure of an exterior angle of a triangle is equal to the sum of the measures of the non-adjacent angles · congruent angle relationships when parallel lines are cut by a transversal. 	Give an informal argument that a triangle can only have one 90 angle. Give an informal argument for the pairs of angles that are supplementary when parallel lines are cut by a transversal.

Range	8.G.6	Knows the Pythagorean Theorem and that it applies to right triangles.	Understands the proof of the Pythagorean Theorem and its converse.	Understands and explains the proof of the Pythagorean Theorem and its converse.	Models a proof of the Pythagorean Theorem and its converse using a pictorial representation.
Range	8.G.7	Calculates unknown hypotenuse side length given the Pythagorean Theorem.	Calculates unknown side lengths using the Pythagorean Theorem given at least two different side lengths of a right triangle.	Applies the Pythagorean Theorem to real-world situations in two and three dimensions to determine unknown side lengths.	Recognizes situations and applies the Pythagorean Theorem in multi-step problems.
Range	8.G.8	Applies the Pythagorean Theorem to find the distance between two points in a coordinate system with the right triangle drawn where the Pythagorean Theorem is given.	Applies the Pythagorean Theorem to find the distance between two points in a coordinate system with the right triangle drawn where the Pythagorean Theorem is not given.	Applies the Pythagorean Theorem to find the distance between two points in a coordinate system.	Finds the coordinates of a point which is a given distance (non-vertical and non-horizontal) from another point.
Range	8.G.9	Finds the volume of cylinder.	Finds the volume of a cone, cylinder, or sphere.	Knows the formulas for the volumes of cones, cylinders, and spheres and uses them to solve real-world mathematical problems.	Describes the relationship between the formulas for volumes of cones, cylinders, or spheres. Explains the derivation of the formulas for cones, cylinders, and spheres.
Statistics and Probability					
Range	8.SP.1	Constructs a scatter plot.	Constructs a scatter plot and describes the pattern as positive, negative, or no relationship.	Describes patterns in a scatter plot such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	Constructs and interprets scatter plots for bivariate measurements data to investigate patterns of association between two quantities.
Range	8.SP.2	Recognizes a straight line can be used to describe a linear association on a scatter plot.	Draws a straight line on a scatter plot that closely fits the data points.	Judges how well the trend line fits the data by looking at the closeness of the data points.	Compares more than one trend line for the same scatter plot and justifies the best one.
Range	8.SP.3	Given a linear model and its scatter plot, identify the slope and y -intercept.	Identifies possible data points given a linear model. Given a linear model, create possible data points.	Interprets the meaning of the slope as a rate of change and the meaning of the y -intercept in the context given a linear model.	Creates and uses a linear model based on a set of bivariate data to solve a problem in a context.
Range	8.SP.4	Completes a partially filled-in two-way table and interpret the table by row or column.	Constructs a two-way table of categorical data.	Interprets and describes relative frequencies for possible associations from a two-way table.	Interprets and compares relative frequencies to identify patterns of association.

