

MATHEMATICS GRADE 4

ALD	Standard	Novice	Partially Proficient	Proficient	Advanced
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 and represents those comparisons as equations using supports.	Recognizes that any two factors and their product can be read as a comparison and represents verbal comparisons as equations.	Recognizes that any two factors and their product can be read as a comparison and 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 36. Determines whether a whole number in the range of 1 to 25 is prime or composite, given visual representations (such as arrays, hundreds chart, and number line).	Finds all factor pairs for whole numbers in the range of 1 to 36. Determines whether a whole number in the range of 1 to 36 is prime or composite, given visual representations (such as arrays, hundreds chart, and number line).	Recognizes that a whole number is a multiple of each of its factors and determines that a given whole number in the range of 1 to 36 is a multiple of a given single-digit number (i.e., given 36, determine whether 8 is a factor). Determines whether a whole number in the range of 1 to 36 is prime or composite.	Applies the concepts of both factors and prime and composite numbers in problem-solving contexts.

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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 and 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-10 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-10 numerals, number names, and expanded form and compares two multi-digit numbers (up to 100,000) using symbols to record the results.	Reads and writes multi-digit whole numbers using base-10 numerals, number names, and expanded form and 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 regrouping.	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 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 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 two-digit numbers, in context, using strategies based on place value and the properties of operations and illustrates and explains the calculation using equations, rectangular arrays, and/or area models.	Interprets a context and explains strategies used to solve.

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Range	4.NBT.6	Finds whole-number quotients and remainders (with up to two-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 visual fraction models to represent equivalent fractions by partitioning unit fraction pieces into smaller equal pieces.	Uses visual fraction models to represent equivalent fractions by partitioning unit fraction pieces into smaller pieces (and understands that this is the same).	Uses visual 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) using benchmark fractions and $<$, $>$, 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. Justifies decompositions by using a visual fraction model.	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.

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ALD	Standard	Novice	Partially Proficient	Proficient	Advanced
Range	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 equations.	Solves 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 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 a 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					
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ALD	Standard	Novice	Partially Proficient	Proficient	Advanced
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.

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Range	4.G.1	Identifies points, lines, line segments, rays, and perpendicular and parallel lines and 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 and 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 and identifies 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, and identifies 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, and 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.