

Grade 4

Concepts and Procedures

Operations and Algebraic Thinking

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| <p>RANGE PLD<br/>Target A: Use the four operations with whole numbers to solve problems.</p> | <p>Level 1 students should be able to use the four operations (addition, subtraction, multiplication, and division) to solve one-step problems involving equal groups and arrays.</p> | <p>Level 2 students should be able to use the four operations to solve one-step problems involving an unknown number. They should be able to demonstrate understanding that it is appropriate to multiply or divide to solve familiar multiplicative comparison problems.</p> | <p>Level 3 students should be able to use the four operations to solve multistep problems involving equal groups and arrays, including problems where the remainder must be interpreted. They should be able to find an unknown quantity and represent problems using equations with a symbol representing the unknown quantity. Students should be able to use mental computation and estimation strategies, including rounding.</p> | <p>Level 4 students should be able to assess the reasonableness of answers using mental computation and estimation strategies, including rounding.</p> |
| <p>RANGE PLD<br/>Target B: Gain familiarity with factors and multiples.</p>                  | <p>Level 1 students should be able to recognize that a whole number is a multiple of each of its factors.</p>   | <p>Level 2 students should be able to find factor pairs for whole numbers in the range of 1–100 that are multiples of 2 or 5 and determine whether a given whole number in the range of 1–100 is a multiple of a given one-digit number.</p>                                  | <p>Level 3 students should be able to find all factor pairs for whole numbers in the range of 1–100 and determine whether a given whole number in the range of 1–100 is prime or composite.</p>   | <p>No Descriptor</p>   |
| <p>RANGE PLD<br/>Target C: Generate and analyze patterns.</p>                                | <p>Level 1 students should be able to extend number or shape patterns that follow a given rule.</p>   | <p>Level 2 students should be able to generate number or shape patterns that follow a given rule.</p>   | <p>Level 3 students should be able to analyze patterns for apparent features that are not explicit in the rule itself.</p>  | <p>No Descriptor</p>   |

## Number and Operations – Base Ten

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| <p>RANGE PLD<br/>Target D: Generalize place-value understanding for multidigit whole numbers.</p>                           | <p>Level 1 students should be able to read and write multidigit whole numbers less than or equal to 1,000 using base-ten numerals, number names, and expanded form; compare multidigit numbers up to 1,000 using <math>&lt;</math>, <math>&gt;</math>, and <math>=</math>; and round multidigit whole numbers up to 1,000 to any place.</p>   | <p>Level 2 students should be able to generalize place-value understanding to read and write multidigit whole numbers less than or equal to 10,000 using base-ten numerals, number names, and expanded form; compare multidigit numbers up to 10,000 using <math>&lt;</math>, <math>&gt;</math>, and <math>=</math>; and round multidigit whole numbers up to 10,000 to any place.</p>   | <p>Level 3 students should be able to identify and use repeated reasoning to generalize place-value understanding to read and write multidigit whole numbers less than or equal to 100,000 using base-ten numerals, number names, and expanded form; compare multidigit numbers up to 100,000 using <math>&lt;</math>, <math>&gt;</math>, and <math>=</math>; round multidigit whole numbers up to 100,000 to any place; and recognize that, in a multidigit whole number, a digit in one place represents ten times what it represents in the place to its right.</p>   | <p>Level 4 students should be able to identify and use repeated reasoning to generalize place-value understanding to read and write multidigit whole numbers less than or equal to 1,000,000 using base-ten numerals, number names, and expanded form; compare multidigit numbers up to 1,000,000 using <math>&lt;</math>, <math>&gt;</math>, and <math>=</math>; round multidigit whole numbers up to 1,000,000 to any place; and recognize that, in a multidigit whole number, a digit in one place represents ten times what it represents in the place to its right. Students should be able to apply appropriate rounding methods to solve real-world problems.</p> |
| <p>RANGE PLD<br/>Target E: Use place-value understanding and properties of operations to perform multidigit arithmetic.</p> | <p>Level 1 students should be able to add and subtract one- and two-digit whole numbers using strategies based on place value; multiply two one-digit whole numbers based on place value and properties of operations; and find whole-number quotients with no remainders with up to two-digit dividends and one-digit divisors using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division.</p> | <p>Level 2 students should be able to use place-value understanding to add and subtract two- and three-digit whole numbers using any algorithm; multiply whole numbers up to and including four digits by one digit based on place value and properties of operations; find whole-number quotients and remainders with up to two-digit dividends and one-digit divisors using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division; and illustrate multiplication and division by using equations, arrays, and/or area models.</p> | <p>Level 3 students should be able to fluently add and subtract multidigit whole numbers using any algorithm; multiply whole numbers including two digits by two digits based on place value and properties of operations; find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors using strategies based on place value understanding, the properties of operations, and/or the relationship between multiplication and division; and explain multiplication and division using equations, arrays, and/or area models. They should be able to verify the reasonableness of the results.</p> | <p>No Descriptor</p>   |

## Number and Operations – Fractions

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| <p>RANGE PLD<br/>Target F: Extend understanding of fraction equivalence and ordering.</p>  | <p>Level 1 students should be able to recognize that fraction comparisons are valid only when the two fractions refer to the same whole.</p>   | <p>Level 2 students should be able to compare two fractions with different numerators and/or different denominators using <math>&lt;</math>, <math>&gt;</math>, and <math>=</math> by comparing to a benchmark fraction such as <math>\frac{1}{2}</math> and recognize equivalent fractions using visual models.</p>   | <p>Level 3 students should be able to compare two fractions with different numerators and different denominators using <math>&lt;</math>, <math>&gt;</math>, and <math>=</math> by creating common denominators or numerators and recognize and generate equivalent fractions using visual models.</p>   | <p>Level 4 students should be able to justify the comparison of two fractions with different numerators and different denominators using <math>&lt;</math>, <math>&gt;</math>, and <math>=</math> with a visual fraction model.</p> |
| <p>RANGE PLD<br/>Target G: Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.</p> | <p>Level 1 students should be able to understand that fraction <math>\frac{a}{b}</math> with <math>a &gt; 1</math> is the sum of its unit fractional parts by extending understanding of addition on whole numbers. They should be able to identify fractions using visual models.</p> | <p>Level 2 students should be able to understand that fraction <math>\frac{a}{b}</math> is a multiple of <math>\frac{1}{b}</math> by extending understanding of multiplication on whole numbers; decompose fractions with like denominators; solve one-step problems involving addition and subtraction of fractions referring to the same whole with like denominators; and use visual fraction models and/or equations to represent the problem.</p> | <p>Level 3 students should be able to identify and generate equivalent forms of a fraction including mixed numbers with like denominators; solve word problems involving addition and subtraction of fractions referring to the same whole with like denominators by replacing each mixed number with an equivalent fraction, and/or by using properties of operations; and solve one-step word problems involving multiplication of a fraction by a whole number.</p> | <p>Level 4 students should be able to solve multistep real-world and mathematical word problems involving multiplication of a fraction by a whole number.</p>   |
| <p>RANGE PLD<br/>Target H: Understand decimal notation for fractions and compare decimal fractions.</p>  | <p>No Descriptor</p>   | <p>Level 2 students should be able to express fractions with denominator 10 as equivalent fractions with denominator 100 and express those fractions as decimals.</p>  | <p>Level 3 students should be able to add two fractions with respective denominators 10 and 100 by first converting to two fractions with like denominators; compare two decimals to the hundredths using <math>&lt;</math>, <math>&gt;</math>, and <math>=</math> on a number line; and compare decimals by reasoning about their size, recognizing the comparison is valid only when referring to the same size whole</p>  | <p>Level 4 students should be able to compare two decimals to the hundredths using <math>&lt;</math>, <math>&gt;</math>, and <math>=</math> and justify the conclusions by using visual models.</p>                                 |

## Measurement and Data

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| <p>RANGE PLD<br/>Target I: Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.</p> | <p>Level 1 students should be able to know relative sizes of measurement units within one system of units, including km, m, cm; in., ft, yd; kg, g; lb, oz; l, ml; and hr, min, sec.</p> | <p>Level 2 students should be able to express measurements in a larger unit in terms of a smaller unit within a single system of measurement, record measurement equivalents in a two-column table, and find perimeter and area of rectangles in mathematical problems.</p> | <p>Level 3 students should be able to use the four operations to solve problems involving distances, intervals of elapsed time, liquid volumes, masses of objects, 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; represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale; and recall and use the perimeter and area formulas to solve mathematical problems to find missing information.</p> | <p>Level 4 students should be able to apply perimeter and area formulas to rectangles in real-world problems.</p>   |
| <p>RANGE PLD<br/>Target J: Represent and interpret data.</p>   | <p>Level 1 students should be able to identify data from a given line plot using whole numbers.</p>  | <p>Level 2 students should be able to use data from a given line plot using whole numbers and/or fractions <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, and <math>\frac{1}{8}</math> to solve problems involving addition and subtraction of fractions.</p>          | <p>Level 3 students should be able to create a line plot to represent a data set using whole numbers and/or fractions <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, and <math>\frac{1}{8}</math> and interpret data from a line plot to solve problems involving addition and subtraction of fractions with like denominators.</p>   | <p>No Descriptor</p>  |
| <p>RANGE PLD<br/>Target K: Geometric measurement: understand concepts of angles and measure angles.</p>                                  | <p>No Descriptor</p>   | <p>Level 2 students should be able to recognize whole-number degrees on a protractor and measure angles in whole-number degrees using a protractor and recognize angles are made of two rays that share a common endpoint.</p>  | <p>Level 3 students should be able to construct angles in whole-number degrees using a protractor, use understanding of angle concepts to decompose a larger angle with two or more smaller angles that have the same sum as the original, and determine an unknown angle measure in a diagram.</p>  | <p>Level 4 students should be able to solve addition and subtraction problems to find unknown angles on a diagram in problems by using an equation with a symbol for the unknown angle measure.</p> |

## Geometry

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| <p>RANGE PLD<br/>Target L: Draw and identify lines and angles and classify shapes by properties of their lines and angles.</p> | <p>Level 1 students should be able to identify points, lines, line segments, rays, angles (right, acute, and obtuse), and perpendicular and parallel lines</p> | <p>Level 2 students should be able to identify in two-dimensional figures points, lines, line segments, rays, angles (right, acute, and obtuse) and perpendicular and parallel lines. They should be able to recognize all lines of symmetry in two-dimensional figures and identify right triangles.</p> | <p>Level 3 students should be able to draw lines of symmetry for two-dimensional figures, classify two-dimensional figures based on parallel or perpendicular lines or angles of specified size, and recognize right triangles as a category.</p> | <p>No Descriptor</p> |
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