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Math Curriculum Common Core Grade - 4

Course Contents

Operations and Algebraic Thinking

Multiplication as a Comparison

Interpret multiplication equations as comparisons, e.g., "35 = 5 × 7" means 35 is 5 times as many as 7 and 7 times as many as 5.

Represent verbal statements of multiplicative comparisons as multiplication equations.

Solving Word Problems with Multiplicative Comparison

Solve word problems using multiplication and division, representing problems with drawings and equations.

Use a symbol for the unknown number in equations.

Multi-Step Word Problems and Estimation

Solve multi-step word problems involving the four operations and interpret remainders.

Represent problems with equations using letters for unknowns.

Use mental computation and estimation strategies, such as rounding, to verify answers.

Factors, Multiples, and Prime/Composite Numbers

Find all factor pairs for whole numbers in the range 1–100.

Recognize that a whole number is a multiple of each of its factors.

Determine whether a given whole number (1–100) is a multiple of a one-digit number.

Identify whether a given whole number (1–100) is prime or composite by examining its factors.

Generating and Analyzing Patterns

Generate a number or shape pattern by following a given rule (e.g., "Add 3").

Identify features in the pattern that are not explicitly stated in the rule (e.g., alternating odd and even numbers).

Explain informally why these features occur (e.g., why the sequence continues to alternate between odd and even numbers).

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Number and Operations in Base Ten
Understanding Place Value Relationships Recognize that a digit in one place represents ten times what it represents in the place to its right. Apply place value concepts to solve problems like "700 ÷ 70 = 10."
Reading, Writing, and Comparing Multi-Digit Numbers Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on place value, using >, =, and < symbols to record results.
Rounding Multi-Digit Numbers Use place value understanding to round multi-digit whole numbers to any place (e.g., tens, hundreds, thousands).
Adding and Subtracting Multi-Digit Numbers Fluently add and subtract multi-digit whole numbers using the standard algorithm. Practice addition and subtraction with numbers up to 1,000,000.
Multiplying Multi-Digit Numbers Multiply a four-digit whole number by a one-digit number and multiply two two-digit numbers. Use strategies based on place value and properties of operations. Illustrate calculations using equations, rectangular arrays, and area models.
Dividing Multi-Digit Numbers Find whole-number quotients and remainders with four-digit dividends and one-digit divisors. Use strategies based on place value and the relationship between multiplication and division. Illustrate and explain division using equations, rectangular arrays, and area models.

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Number and Operations—Fractions 3
Understanding Equivalent Fractions Explain why a fraction a/b is equivalent to (nxa)/(nxb) using visual fraction models. Focus on how the number and size of the parts differ even though the fractions are the same size. Practice recognizing and generating equivalent fractions.
Comparing Fractions with Common Numerators or Denominators Compare two fractions by creating common denominators or numerators. Use visual models to represent comparisons and understand the relationships between fractions.
Comparing Fractions Using Benchmarks and Symbols Compare fractions by relating them to benchmark fractions, such as 1/2 Record comparisons using symbols >,< or = and justify conclusions with visual fraction models.
Understanding Fractions as a Sum of Unit Fractions Explore fractions a/b with (a>1) as a sum of unit fractions 1/b Practice decomposing fractions into a sum of fractions with the same denominator in multiple ways. Record decompositions with equations and justify them using visual fraction models.
Adding and Subtracting Mixed Numbers Add and subtract mixed numbers with like denominators. Replace mixed numbers with equivalent fractions and use properties of operations to simplify calculations.
Solving Word Problems with Fractions Solve word problems involving the addition and subtraction of fractions with like denominators. Use visual fraction models and equations to represent and solve the problems.
Understanding Fractions as Multiples of Unit Fractions Understand a fraction a/b as a multiple of 1/b. Use visual fraction models to represent fractions (e.g., represent 5/4 as (5 X 1/4). Record conclusions with equations (e.g 5/4 as (5 X 1/4)).

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Converting Fractions and Adding

Express a fraction with a denominator of 10 as an equivalent fraction with a denominator of 100 (eg 3/10 = 30/100) Practice adding two fractions with respective denominators of 10 and 100 (eg 3/10 + 4/100 = 34/100)

Using Decimal Notation

Use decimal notation for fractions with denominators of 10 and 100 (e.g., rewrite 0.62 as 62/100) Describe measurements using decimals (e.g., express a length as 0.62 meters). Locate decimals on a number line diagram.

Comparing Decimal Fractions

Compare two decimals to hundredths by reasoning about their size.
Recognize that comparisons are valid only when both decimals refer to the same whole.
Record comparison results using symbols >,< or = , and justify conclusions using visual models..

Measurement and Data

Understanding Measurement Units

Know relative sizes of measurement units within one system (e.g., km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec).
Express measurements in a larger unit in terms of a smaller unit (e.g., 1ft = 12 inches)
Record measurement equivalents in a two-column table.
Generate a conversion table (e.g., feet to inches) listing pairs such as (1, 12), (2, 24), (3, 36), etc.

Solving Word Problems with Measurements

Use the four operations to solve word problems involving distances, time intervals, liquid volumes, masses, and money.
Include problems involving simple fractions or decimals, and express measurements given in larger units in smaller units.
Represent measurement quantities using diagrams, such as number line diagrams featuring a measurement scale.

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Area and Perimeter in Real-World Problems

Apply the area and perimeter formulas for rectangles in real-world and mathematical problems.
Solve problems such as finding the width of a rectangular room given the area and length, applying appropriate formulas.
Practice interpreting and solving related measurement problems involving area and perimeter.

Representing and Interpreting Data with Line Plots

Introduce line plots and their purpose in displaying data.
Explain how to create a line plot for a data set of measurements in fractions (eg. 1/2, 1/4, 1/8...)
Demonstrate the steps to collect data and plot it on a line plot using a sample data set.
Solve problems involving addition and subtraction of fractions using the information from the line plot, such as finding the difference in length between the longest and shortest specimens in an insect collection.
Include practice exercises where students analyze a line plot to answer questions about the data, focusing on addition and subtraction of fractions.

Introduction to Angles and Angle Measurement

Recognize angles as geometric shapes formed by two rays sharing a common endpoint.
Understand that angle measurement is based on the fraction of the circular arc defined by the rays.
Introduce the concept of a one-degree angle as 1/360 of a circle.

Measuring Angles

Use a protractor to measure angles in whole-number degrees.
Practice measuring various angles using a protractor.
Sketch angles of specified measures to reinforce understanding.

Angle Addition and Decomposition

Recognize that angle measure is additive.
Decompose angles into non-overlapping parts and understand that the sum of the parts equals the whole.
Solve addition problems involving angle measures.

Solving Problems with Angles

Apply knowledge of angle measures to find unknown angles in diagrams.
Solve addition and subtraction problems involving angles in real-world and mathematical contexts.
Use equations with a symbol for unknown angle measures to represent problems and find solutions.

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Geometry

Introduction to Lines and Angles

Draw points, lines, line segments, rays, and angles (right, acute, obtuse).
Identify these elements in two-dimensional figures.
Explore perpendicular and parallel lines through drawings.

Classifying Two-Dimensional Figures

Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines.
Identify and classify angles within shapes, focusing on right triangles.
Recognize right triangles as a specific category of shapes.

Exploring Lines of Symmetry

Define a line of symmetry and its significance in two-dimensional figures.
Identify line-symmetric figures and explain the concept of folding figures along lines of symmetry.
Draw lines of symmetry for various shapes.

Application and Assessment

Engage in activities that involve drawing and identifying different lines and angles in various figures.
Classify a variety of two-dimensional figures based on their properties.
Conduct assessments to evaluate understanding of lines, angles, and symmetry in geometric shapes.