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Math Curriculum Common Core Grade - 5

Course Contents

Operations and Algebraic Thinking

Use of Parentheses, Brackets, and Braces

Use parentheses, brackets, or braces in numerical expressions and evaluate expressions containing these symbols.

Write Simple Numerical Expressions

Write simple expressions that record calculations with numbers, using operations like addition and multiplication, and interpret these expressions without evaluating them.

Recognize Relationships in Numerical Expressions

Recognize that expressions like 3×(18932+921) indicate a relationship, such as being three times as large as the sum, without calculating the actual values.

Generate and Analyze Numerical Patterns

Generate two numerical patterns using two given rules, identify apparent relationships between corresponding terms, form ordered pairs from the patterns, and graph these pairs on a coordinate plane. Explain informally why the relationship between the terms exists, such as one pattern being twice the other.

Number and Operations in Base Ten

Recognize Place Value in Multi-Digit Numbers

Understand that in a multi-digit number, 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.

Patterns with Powers of 10

Explain patterns in the number of zeros when multiplying a number by powers of 10, and describe patterns in the placement of the decimal point when multiplying or dividing a decimal by a power of 10, using whole-number exponents.

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Read and Write Decimals to Thousandths
Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, and compare two decimals to thousandths using >, =, and < symbols.

Compare Decimals
Compare two decimals to thousandths based on the meanings of the digits in each place, using symbols to record the results of comparisons.

Round Decimals Using Place Value
Use place value understanding to round decimals to any place.

Fluently Multiply Multi-Digit Whole Numbers
Fluently multiply multi-digit whole numbers using the standard algorithm.

Find Whole-Number Quotients
Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value and the properties of operations. Illustrate and explain calculations using equations, rectangular arrays, or area models.

Perform Operations with Decimals
Add, subtract, multiply, and divide decimals to hundredths using strategies based on place value and the properties of operations; relate strategies to written methods and explain the reasoning used.

Number and Operations—Fractions

Adding and Subtracting Fractions with Unlike Denominators
Add and subtract fractions with unlike denominators, including mixed numbers, by replacing given fractions with equivalent fractions to create like denominators.

Solve Word Problems with Fractions
Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, using visual fraction models or equations.

Estimation and Reasonableness of Fraction Answers
Use benchmark fractions and number sense to estimate and assess the reasonableness of answers in addition and subtraction of fractions, recognizing incorrect results by comparing with known benchmarks.

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Interpreting Fractions as Division Interpret a fraction as the division of the numerator by the denominator (a/b = a ÷ b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers.
Multiplying Fractions by Whole Numbers Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. Interpret the product (a/b) × q as a parts of a partition of q into b equal parts, using visual models.
Finding Area with Fractions Find the area of a rectangle with fractional side lengths by tiling it with unit squares. Multiply fractional side lengths to find areas of rectangles and represent fraction products as rectangular areas.
Interpreting Multiplication as Scaling Interpret multiplication as scaling by comparing the size of a product to one factor based on the other factor's size. Explain how multiplying by a fraction greater than 1 results in a larger product, and multiplying by a fraction less than 1 results in a smaller product.
Real-World Multiplication Problems Solve real-world problems involving multiplication of fractions and mixed numbers, using visual fraction models or equations to represent the problem.
Dividing Unit Fractions by Whole Numbers Apply and extend understandings of division to divide unit fractions by whole numbers. Create story contexts for (1/3) ÷ 4 and use visual models to show the quotient.
Dividing Whole Numbers by Unit Fractions Interpret division of a whole number by a unit fraction and compute such quotients. Solve real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions.

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Measurement and Data

Converting Measurement Units

Introduce standard measurement units (e.g., metric and customary systems).

Teach how to convert between different-sized units (e.g., cm to m, grams to kilograms).

Apply conversions to solve real-world problems, emphasizing multi-step calculations.

Introduction to Line Plots

Explain what line plots are and their purpose in displaying data.

Guide students to create a line plot using a given set of measurements in fractions (1/2, 1/4, 1/8).

Discuss the interpretation of data presented on a line plot.

Solving Problems with Line Plots

Present problems involving data from line plots, focusing on operations with fractions.

Example Problem: Given measurements of liquid in identical beakers, determine how much liquid each beaker would contain if the total were redistributed equally.

Emphasize strategies for solving multi-step problems using information from line plots.

Understanding Measurement Units

Introduce different measurement systems (e.g., metric and customary).

Discuss standard measurement units and their sizes.

Explain the importance of unit conversion in real-world applications.

Converting Between Units

Teach how to convert between different-sized units within a measurement system (e.g., cm to m, liters to milliliters).

Provide examples and guide students through the conversion process.

Emphasize multi-step problem-solving using conversions.

Using Line Plots for Data Representation

Introduce line plots and their purpose in displaying data.

Teach how to create line plots using measurements in fractions (e.g., 1/2, 1/4, 1/8).

Discuss how to interpret data from line plots and apply it to real-world scenarios.

Solving Problems with Line Plots

Present problems using data from line plots.

Focus on using operations with fractions to solve these problems.

Provide examples that require redistribution of values represented in the line plots.

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Advanced Conversion Techniques

Explore more complex unit conversions (e.g., converting between different metric units).

Teach how to handle conversions involving larger numbers and fractions.

Discuss strategies for checking the accuracy of conversions.

Real-World Applications of Measurement Conversions

Discuss scenarios where measurement conversions are necessary (e.g., cooking, construction).

Analyze case studies or examples where conversions play a crucial role in problem-solving.

Encourage students to think critically about when and how to use conversions in their daily lives.

Review and Assessment of Measurement Concepts

Review key concepts from the previous sessions.

Conduct a formative assessment to evaluate students' understanding of unit conversions and line plots.

Provide feedback and address any misconceptions or difficulties encountered during the lessons.

Geometry

Introduction to the Coordinate Plane

Define the coordinate system and its components (axes and origin).

Explain how to plot points using ordered pairs (x, y) on the coordinate plane.

Discuss the meaning of the x-coordinate and y-coordinate in relation to the axes.

Graphing Real-World Problems

Represent real-world scenarios using the coordinate plane.

Guide students in interpreting coordinate values within specific contexts.

Provide examples of problems that can be solved through graphing points in the first quadrant.

Classifying Two-Dimensional Figures

Introduce categories of two-dimensional figures (e.g., triangles, quadrilaterals).

Discuss properties that define each category and their subcategories (e.g., rectangles and squares).

Emphasize that attributes of a category also apply to its subcategories.

Hierarchical Classification of Figures

Teach students how to classify two-dimensional figures based on properties in a hierarchical structure.

Discuss how to represent these classifications visually.

Encourage critical thinking about the relationships between different categories and subcategories of figures.

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