

# Math - 5th Grade

## Course Overview:

By 5th grade all of the Mathematical Practices have been fully integrated into math instruction and students apply these thinking habits to understand mathematical concepts. Students develop fluency in addition and subtraction algorithms and develop algorithms for multiplication and division. Fifth grade students continue to develop problem solving skills, as well as develop a deep understanding of fraction equivalence and comparison.

## Textbooks/Programs:

- [Bridges Mathematics](#)
- [Coach Math](#)
- [IXL](#)

## Assessments:

- Bridges Unit Assessments
- [MAP-NWEA](#)
- [Ohio State Tests - Math \(Spring\)](#)

## Standards/Learning Goals:

Grade 5 math focuses on using all eight of the mathematical practices when solving problems. It consists of five domains: (1) Operations and Algebraic Thinking (2) Numbers and Operations in Base Ten (3) Number and Operations in Fractions (4) Measurement and Data (5) Geometry

## Operations and Algebraic Thinking

- Use parentheses in numerical expressions, and evaluate expressions with this symbol.
- Perform Operations with Multi-Digit Whole Numbers & with Decimals to the Hundredths
- Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them
- Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.

## Numbers and Operations in Base Ten

- Recognize 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  $\frac{1}{10}$  of what it represents in the place to its left.
- Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole number exponents to denote powers of 10.
- Read, write, and compare decimals to thousandths.
- Use place value understanding to round decimals to any place, millions through hundredths.
- Fluently multiply multi-digit whole numbers using a standard algorithm.
- Find 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. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
- Solve real-world problems by adding, subtracting, multiplying, and dividing decimals using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction, or multiplication and division; relate the strategy to a written method and explain the reasoning used.

## Numbers and Operations-Fractions

- Add and subtract fractions with unlike denominators (including mixed numbers and fractions greater than 1) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.
- Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers
- Interpret a fraction as division of the numerator by the denominator ( $a/b = a \div b$ ). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
- Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction
- Interpret multiplication as scaling (resizing)

- Solve real-world problems involving multiplication of fractions and mixed numbers
- Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. In general, students able to multiply fractions can develop strategies to divide fractions, by reasoning about the relationship between multiplication and division, but division of a fraction by a fraction is not a requirement at this grade

## Measurement and Data

- Know relative sizes of these U.S. customary measurement units: pounds, ounces, miles, yards, feet, inches, gallons, quarts, pints, cups, fluid ounces, hours, minutes, and seconds. Convert between pounds and ounces; miles and feet; yards, feet, and inches; gallons, quarts, pints, cups, and fluid ounces; hours, minutes, and seconds in solving multi-step, real-world problems
- Display and interpret data in graphs
- Recognize volume as an attribute of solid figures and understand concepts of volume measurement
- Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.
- Relate volume to the operations of multiplication and addition and solve real-world and mathematical problems involving volume

## Geometry

- Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates
- Represent real-world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.
- Identify and describe commonalities and differences between types of triangles based on angle measures
- Identify and describe commonalities and differences between types of quadrilaterals based on angle measures, side lengths, and the presence or absence of parallel and perpendicular lines