COLLEGE tutors®

Mathematics Curriculum: 4th Grade

Based on Indiana Department of Education Academic Standards

Week 1

+ Number Sense

- Read and write whole numbers up to 1,000,000. Use words, models, standard form and expanded form to represent and show equivalent forms of whole numbers up to 1,000,000
- Compare two whole numbers up to 1,000,000 using >, =, and < symbols
- Express whole numbers as fractions and recognize fractions that are equivalent to whole numbers
    - Name and write mixed numbers using objects or pictures
    - Name and write mixed numbers as improper fractions using objects or pictures
- Explain why a fraction, a/b, is equivalent to a fraction, (n × a)/(n × b), by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size
    - Use this principle to recognize and generate equivalent fractions (In grade 4, limit denominators of fractions to 2, 3, 4, 5, 6, 8, 10, 25, 100)

Week 2

+ Number Sense (Continued)

- Compare two fractions with different numerators and different denominators Recognize comparisons are valid only when the two fractions refer to the same whole
- Write tenths and hundredths in decimal and fraction notations
    - Use words, models, standard form and expanded form to represent decimal numbers to hundredths
    - Know the fraction and decimal equivalents for halves and fourths (e.g., 1/2 = 0.5 = 0.50, 7/4 = 1 3/4 = 1.75)
    - Compare two decimals to hundredths by reasoning about their size based on the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions

- Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number

Week 3

+ Computation

- Add and subtract multi-digit whole numbers fluently using a standard algorithmic approach
- Multiply a whole number of up to four digits by a one-digit whole number and multiply two two-digit numbers, using strategies based on place value and the 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, the properties of operations, and/or the relationship between multiplication and division
- Add and subtract fractions with common denominators
    - Decompose a fraction into a sum of fractions with common denominators
    - Understand addition and subtraction of fractions as combining and separating parts referring to the same whole

Week 4

+ Computation (Continued)

- Add and subtract mixed numbers with common denominators
- Show how the order in which two numbers are multiplied (commutative property)
- Show how numbers are grouped in multiplication) will not change the product (associative property
- Distributive Property

Week 5

+ Algebraic Thinking

- Solve real-world problems involving addition and subtraction of multi-digit whole numbers (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem)
- Recognize and apply the relationships between addition and multiplication, between subtraction and division, and the inverse relationship between multiplication and division to solve real-world and other mathematical problems

- Interpret a multiplication equation as a comparison (e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7, and 7 times as many as 5)
    - Represent verbal statements of multiplicative comparisons as multiplication equations
- Solve real-world problems involving addition and subtraction of fractions referring to the same whole and having common denominators (e.g., by using visual fraction models and equations to represent the problem)
- Understand that an equation, such as y = 3x + 5, is a rule to describe a relationship between two variables and can be used to find a second number when a first number is given. Generate a number pattern that follows a given rule

Week 6

+ Geometry

- Identify, describe, and draw parallelograms, rhombuses, trapezoids, and triangles
- Recognize and draw lines of symmetry in two-dimensional figures
    - Identify figures that have lines of symmetry
- Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint
- Identify, describe, and draw rays, angles (right, acute, obtuse), and perpendicular and parallel lines using appropriate tools and identify them in two-dimensional figures
- Classify triangles and quadrilaterals based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles (right, acute, obtuse)

Week 7

+ Measurement

- Measure length to the nearest quarter-inch, eighth-inch, and millimeter
- Know relative sizes of measurement units within one system of units, including km, m, cm; kg, g; lb, oz; l, ml; hr, min, sec.
    - Express measurements in a larger unit in terms of a smaller unit within a single system of measurement
- Use the four operations (addition, subtraction, multiplication and division) to solve real-world problems involving distances, intervals of time, volumes, masses of objects, and money

- Apply the area and perimeter formulas for rectangles to solve real-world problems
    - Recognize area as additive and find the area of complex shapes composed of rectangles by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts
- Understand that an angle is measured with reference to a circle, with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle
    - Understand an angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure other angles
    - Understand an angle that turns through n one-degree angles is said to have an angle measure of n degrees

Week 8

+ Data Analysis

- Use observations, surveys, and experiments to collect, represent, and interpret the data using tables (including frequency tables), line plots, and bar graphs to answer questions that are addressed using data
- Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using data displayed in line plots
- Interpret data displayed in a circle graph