

Math+ 4 (Red)

This research-based course focuses on computational fluency, conceptual understanding, and problem-solving. The engaging course features new graphics, learning tools, and games; adaptive activities that help struggling students master concepts and skills before moving on; and more support for Learning Coaches to guide their students to success. This course for students in Grade 4 moves into applications and properties of operations. Students work with simple fraction and decimal operations, which are applied in the study of measurement, probability, and data, and practice mathematical reasoning techniques. Students begin the study of equivalencies between fractions and decimals on the number line and early work with integers. Algebraic thinking is developed as students work with variables, coordinate graphing, and formulas in problems involving perimeter, area, and rate. Geometry is extended into greater classification of shapes and work with lines, angles and rotations.

SEMESTER 1

Unit 1: Whole Number Sense

Students learn to read and write numerals and number words and identify the place value in whole numbers through 100,000,000. They learn to compare, order, and round numbers.

- Place Value Through 100,000,000
- Numbers Through 100,000,000
- Expanded Form Through 100,000,000
- Compare And Order Greater Numbers (parts A and B)
- Using Boundary Numbers for Rounding

Unit 2: Whole Number Operations

Students learn to estimate sums and differences on a number line and apply standard step-by-step approaches for addition, subtraction, multiplication, and division. They use inverse relationships to simplify computations and check their results. They learn to identify prime numbers and practice plotting fractions and whole numbers on a number line. They use models to explain multiplication as repeated addition of the same quantity and division as repeated subtraction. They use concrete objects or sketches of arrays to model multiplication problems.

- Estimate Sums and Differences (parts A and B)
- Add Whole Numbers
- Subtract Whole Numbers
- Multiply by 2-Digit Numbers (parts A and B)
- Different Ways to Divide (parts A and B)
- Prime Numbers Less Than 100

Unit 3: Applications of Operations

Students use parentheses and the order of operations to write and evaluate expressions. They learn about the distributive property and solve story problems involving whole numbers. They apply standard step-by-step approaches for multiplication and addition; use the order of operations to evaluate expressions; and determine whether addition, subtraction, multiplication, or division is the appropriate operation to use to solve a story problem.

- Order of Operations (parts A and B)
- The Distributive Property (parts A and B)
- Story Problems: Solve and Check (parts A and B)
- Rate Story Problems (parts A and B)

Unit 4: Lines, Angles, and Rotations

Students identify lines that are parallel, intersecting, or perpendicular. They learn about right, acute, obtuse, and straight angles and relative angle measures. They learn to identify right angles in geometric figures or everyday objects. They learn the attributes of parallelograms, rectangles, and squares.

- Line Pairs
- Types of Angles
- Angles and Rotation

Unit 5: Fraction Sense

Students learn to represent fractions with a sketch, explain why two given fractions are equivalent, and recognize and determine equivalent fractions. They practice finding fractions between two numbers, writing fractions represented by drawings that show parts of a set or parts of a whole, and identifying a few simple equivalent fractions, such as $1/2 = 2/4$. They learn that fractions can be used to represent part of a set, the relationship of a part to a whole, and a rational number on the number line. They learn how fractions and whole numbers can be plotted on a number line.

- Fractions
- Sketch Fractions
- Different Meanings of Fractions (parts A-D)
- Explain Equivalent Fractions (parts A and B)
- Determine Equivalent Fractions (parts A and B)
- Find a Fraction (parts A and B)

Unit 6: Measurement

Students learn to estimate the length of a line segment to the nearest inch or centimeter and solve measurement-conversion problems using multiplication and division. They solve story problems involving equal measures. Students learn to identify the appropriate metric and English units and tools to measure temperature and practice reading thermometers in Fahrenheit and Celsius.

- Estimating Lengths
- Change Measurement
- Measurements in Stories (parts A and B)
- Measuring Temperature
- Everyday Temperatures

Unit 7: Fraction Operations

Students use objects and sketches to solve story problems that involve addition and subtraction of fractions. They practice writing equations, simplify factors in fraction multiplication problems, and multiplying and dividing with fractions. They demonstrate automatic recall of multiplication facts, represent fractions with sketches, explain why two given fractions are equivalent, and find a fraction between two numbers.

- Add and Subtract Fractions (parts A and B)
- Unlike Denominators (parts A and B)
- Different Ways to Write Products
- Fraction Factors (parts A and B)
- Fraction and Whole Number Products (parts A and B)
- Fraction Division (parts A and B)

Unit 8: Decimals and Equality with Fractions

Students compare, order, and round decimal numbers. They estimate and compute the sum or difference of positive decimal numbers, write tenths and hundredths in decimal and fraction notation and show that the representations are equivalent, and identify fraction and decimal-number equivalents for halves and fourths. They relate decimal numbers to fractions on a number line.

- Compare Decimals
- Order Three Decimal Numbers
- Decimal Numbers and Rounding
- Add and Subtract Decimal Numbers
- Equivalent Decimals and Fractions
- Halves and Fourths
- Relate Decimal Numbers to Fractions (parts A and B)

Unit 9: Semester Review and Checkpoint

SEMESTER 2

Unit 10: Probability and Data

Students learn to represent a probability as a fraction, organize all possible outcomes for a simple probability situation, and determine the number of possible combinations of objects. They learn to design survey questions and collect and represent the data. They learn about the modes for sets of numerical or categorical data; medians and outliers for numerical data sets; and fractions as part of a set, the relationship of a part to a whole, and a rational number on the number line. They learn to identify whether specific events are certain, likely, unlikely, or impossible.

- Probabilities as Fractions
- Organize Outcomes
- Find All Possible Combinations
- Surveys
- Graph Data
- Data Representations
- Mode, Median, and Outliers

Unit 11: Mathematical Reasoning

Students practice analyzing story problems by identifying the question, recognizing relevant information, and developing a solution strategy. They use estimation to predict a solution to a story problem and verify the reasonableness of the calculated result. They learn how to apply strategies and results from simpler problems to similar or more complex problems. They learn to express solutions clearly and logically, answer to a specified degree of accuracy, and identify different story problems that can be solved by using the same procedures.

- Analyze Story Problems (parts A and B)
- Multistep Problems
- Estimate to Predict and Verify (parts A and B)
- Solve Story Problems That Are Alike
- Use Simpler Problems to Solve Harder Ones
- Represent and Explain Story Problems

- State Solutions Clearly (parts A and B)
- Problem-Solving Strategies
- Estimated and Exact Answers

Unit 12 Geometry

Students define and sketch different types of triangles and quadrilaterals and identify their attributes. They learn about diameter and radius of circles, congruent figures, bilateral symmetry, and rotational symmetry. They learn about geometric solids in terms of the shapes of their faces and the number of faces, edges, and vertices. They learn to sketch a two-dimensional representation of a three-dimensional object.

- Define and Sketch Triangles
- Define and Sketch Quadrilaterals (parts A and B)
- Identify Diameters and Radii of Circles
- Congruent Figures
- Bilateral and Rotational Symmetry
- Describe Geometric Solids
- Geometric Nets

Unit 13: Rational Numbers

Students learn to identify and place negative numbers on a number line, determine missing negative numbers in counting sequences, and use negative numbers to represent temperature. They use negative numbers in story problems that involve owing money. They identify relative positions of rational numbers on a number line.

- Negative Numbers on the Number Line
- Count with Negative Numbers (parts A and B)
- Negative Numbers in Everyday Math
- Rational Numbers on a Number Line (parts A-C)

Unit 14: Algebra Thinking

Students learn to use symbols to stand for variables in simple expressions or equations. They learn that when equal quantities are added to or multiplied by equal quantities the resulting quantities are equal. They practice solving for one variable in a two-variable equation when the value of the other variable is given. They learn to locate and plot points on a coordinate plane, find the length of horizontal and vertical line segments, and plot linear relationships in the first quadrant of a coordinate plane.

- Expressions and Equations
- Addition Property of Equality (parts A and B)
- Multiply by Equal Quantities (parts A and B)
- Two-Variable Equations (parts A and B)
- The Coordinate Plane
- Line Segments in the Coordinate Plane
- Linear Relationships (parts A and B)



Unit 15: Perimeter and Area Formulas

Students learn how to find the perimeter of rectangles and squares. They learn to interpret and use formulas to answer questions about quantities and their relationships. They learn how to find the area of rectangles, squares, or figures that can be divided into rectangles or squares. They practice solving story problems that require finding rectangular area.

- Perimeters of Polygons
- Formulas for Perimeters (parts A and B)
- Understand Area
- Areas of Rectangular Shapes
- Formulas for Area (parts A and B)
- Area and Perimeter Story Problems (parts A and B)
- Perimeter and Area of Rectangles

Unit 16: Semester Review and Checkpoint