Math+ 2 (Orange)

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 2 focuses primarily on number concepts, place value, and addition and subtraction of numbers through 1,000. Special emphasis is given to problem solving, inverse operations, properties of operations, decomposition of numbers, and mental math. Students study money, time, and measurement; geometric figures; analyzing and displaying data with new representations; and determining the range and mode of data. Early concepts about multiplication, division, and fractions are introduced.

**SEMESTER 1**

**Unit 1: Numbers Through 500**

In this unit, students investigate three different ways to represent numbers: concrete models, numerals, and number words. Students use models to build numbers through 500 while focusing on counting, reading, and writing numbers. For example, they use ones cubes, tens rods, and hundreds flats to model numbers and demonstrate their understanding of place value. From this concrete foundation, students move more easily into the abstract representations of numerals and number words.

- Count Aloud Through 500
- Read Whole Numbers Through 500
- Write Numerals Through 500
- Identify Place Value
- Use Expanded Form: Numbers Through 500
- Model Addition Problems
- Place Value and Regrouping
- Compare Numbers Through 500
- Comparing and Ordering
- Order Whole Numbers Through 500
- Read Number Words Through 500

**Unit 2: Time and Money**

Students learn how to tell when the time is exactly or about a quarter past, half past, or quarter till the hour. They learn about relationships between units of time and how to compare them using an equivalency chart. They learn the following units of time relationships: 60 seconds = 1 minute, 60 minutes = 1 hour, 24 hours = 1 day, 7 days = 1 week, 52 weeks = 1 year, and 12 months = 1 year. They then learn about A.M. and P.M. and how to find elapsed time in hours. Students learn to find the value of groups of coins by counting on from the coin with the greatest value to the coin with the least value. They use the same technique for counting bills, up to and including the twenty-dollar bill. They are introduced to the cent sign, the dollar sign, and using a decimal in writing money amounts. They practice counting groups of coins and bills and writing the amount using the correct notation. Students practice trading coins or bills of lesser value for coins or bills of greater value to use the fewest number of coins or bills.

- Time to the Nearest Quarter Hour
- Time Relationships
- Elapsed Time
- Find the Value of Coins or Bills
- Dollar and Cent Symbols for Money
Unit 3: Addition, Subtraction, and Number Composition

Students already know how to add and subtract numbers through 100. In this unit, they learn how to add and subtract with numbers through 500, acquire strategies for addition and subtraction, and see how to identify and correct errors in addition and subtraction. They begin by using base-10 blocks, drawings, and place-value charts to solve addition and subtraction problems with sums or minuends up through 500, with and without regrouping. They learn the meaning of the equals sign, and write various equivalent expressions, including exploring fact families. Students learn how numbers are composed of other numbers, and how to decompose numbers in various ways. They use this knowledge to solve addition and subtraction problems mentally.

Unit 4: Inverse Operations: Add and Subtract

Students observe and use models to explore how addition and subtraction are related. They use fact triangles to show the inverse relationship between addition and subtraction. Later, they will use that knowledge to solve missing addend or missing subtrahend problems. Students learn strategies for using mental math to calculate sums and differences of two-digit numbers and explain which strategies they used. They explore strategies for computing sums and differences of numbers through 500. They explain which strategies they used in their computations.

Unit 5: Measurement

After measuring length with nonstandard units, students are introduced to a ruler as a tool for measuring length with inches and centimeters. They learn to use the ruler and other objects (1-inch tiles and centimeter cubes) to measure the length of objects. Then they learn to estimate measurements and to recognize when a measurement estimate is reasonable. They use different measurement units (nonstandard and standard) to compare the length of objects, finding that measurements should be in the same unit for easy comparing. Students also learn to add and subtract measurements of the same unit. They learn about capacity and how to use a standard measuring cup to measure and compare volumes of objects.
Unit 6: Add or Subtract: Problem Solving
Students use models and sketches to solve situations that involve addition. Using models to help represent regrouping, they solve problems in which they are combining groups, including some with missing addends. They move on to solve subtraction problems using models and sketches, and then learn to write number sentences. The problems include combining, comparing, take away, and change problems.

- Addition Problem-Solving Strategies
- Subtraction Problem Solving
- Modeling Story Problems
- Problem Solving
- Problem Solving with Combining
- Problem Solving with Change
- Solve Change Story Problems
- Compare to Solve Story Problems
- Compare Amounts to Solve Problems
- Make Equal Amounts to Solve Problems
- Equalize Story Problems

Unit 7: Problem Solving: Reason and Connect
Students learn about addition and subtraction story problems. They analyze a problem to check for errors and determine if the answer is correct. They explain and justify solutions and learn that there can be more than one way to find the answer. Students compare story problems and learn to recognize story problems that are solved the same way. They also write and solve their own story problems.

- Story Problems
- More Story Problems
- Problem Solving: Answer Check
- Explain Problem Solutions
- Justify Procedures Selected
- Justify Solutions
- Create Story Problems
- Make Your Own Story Problems
- Similar Story Problems
- Classify Story Problems
- Different Kinds of Problems

Unit 8: Semester Review and Checkpoint
SEMESTER 2

Unit 9: Numbers Through 1,000
This unit focuses on counting, representing, comparing, and ordering numbers from 500 through 1,000. Although students can count aloud and write numbers, they now extend their understanding by modeling greater numbers with base-10 blocks and learning to read and write number words using their number and symbol card deck. Students learn to see the connections between the number 325, the number words “three hundred twenty-five,” and the representation of the number in expanded form (325 = 3 hundreds + 2 tens + 5 ones or 325 = 300 + 20 + 5). As students work with these representations, they develop a deeper understanding of how our base-10 number system works. Fully understanding the number system builds confidence and skills that will help them solve problems involving greater numbers. The understanding of multiple representations of numbers and place value also leads students to create strategies for comparing numbers through 1,000 and for properly using the greater-than (>), less-than (<), and equal-to (=) symbols.

- Count Aloud Through 1,000
- Read Numbers Through 1,000
- Write Number Words Through 1,000
- Represent Numbers Through 1,000
- Work With Numbers Through 1,000
- Model Numbers Through 1,000
- Place Value Through 1,000
- Standard to Expanded Form
- Expanded to Standard Form
- Compare and Order Numbers

Unit 10: Plane and Solid Figures
First, students learn to identify and describe plane figures by the number of sides and vertices the figures have, and to describe solid figures by the number and shape of faces. Students then learn that shapes can be put together and taken apart to form other geometric shapes.

- Plane Figures
- Solid Figures
- Build and Take Apart Shapes

Unit 11: Add or Subtract Numbers Through 1,000
Students extend their knowledge of adding and subtracting with sums and minuends up through 1,000. They use addition and subtraction in working with problems that involve combining two groups, a change in a quantity, comparing two groups, and problems in which two groups must be equalized. They learn to solve the problems, write number sentences for the problems, find similarities between problems, and check answers to word problems.

- Sums and Differences
- Story Problems Through 1,000
- Compare and Equalize Story Problems
- Write Sentences for Story Problems
- Identify Similarities and Differences
- Check Story Problem Solutions
- Explain Operations to Solve Problems
- Which is the Addition/Subtraction Problem?
Unit 12: Multiplication and Number Patterns
Students learn about multiplication. They explore arrays as a way to model multiplication. They relate multiplication to repeated addition and equal groups and use these to solve multiplication computations. Students learn about number patterns, pattern rules involving multiplication and addition, and applying the rule to extend patterns. They use drawings, models, and symbols to represent multiplication. Lastly, they explore the 2s, 5s, and 10s facts and work on automatic recall of these basic multiplication facts.

- Model Multiplication with Arrays
- Repeated Addition and Grouping
- Different Types of Problems
- Linear Patterns
- Number Patterns
- Represent Multiplication
- Multiply By 2
- Multiplication: 2s Facts
- Multiply By 10
- Multiplication: 10s Facts
- Multiply By 5
- Multiplication: 5s Facts

Unit 13: Multiplication and Addition Properties
Students learn the Commutative and Associative Properties of addition and multiplication. They also learn how to multiply with 0 and 1. Students use properties to make problems easier to solve and learn how to use the properties to check calculations.

- Multiplication Order and Rules
- The Commutative Property
- The Associative Property
- Use Properties

Unit 14: Introduction to Division
Students explore division. They solve division problems using repeated subtraction and equal sharing. Students first model repeated subtraction with counting chips and number lines and learn how to record repeated subtraction. Then they model equal sharing and solve division word problems. Lastly, they learn about the division sign, using symbols to record division, and division with remainders.

- Division as Repeated Subtraction
- Division with Repeated Subtraction
- Division with Equal Sharing
- Equal Share Division
- Represent Division
- Remainders in Division
Unit 15: Data Representations and Analysis
Students explore different ways to represent data and analyze data. They make horizontal and vertical bar graphs and learn how to read them. Students show the same set of data multiple ways, in charts, tables, and graphs. They ask and answer questions and solve addition and subtraction problems using data from tally charts, picture graphs, and bar graphs. Lastly, students find the range and mode of data sets.

- Represent Data
- Data Questions
- Use Data to Solve Problems
- Range and Mode of Data Sets

Unit 16: Introduction to Fractions
Students learn that they can write fractions to describe parts of a whole and parts of a set and see how to create models that represent fractions, including unit fractions and fractions equal to 1. Students also learn how to compare unit fractions and to identify a few simple equivalent fractions. They learn that fractions are numbers that can be plotted on the number line.

- Fractional Parts of a Whole
- Fractional Parts of a Group
- Fractional Relationships
- Fractional Parts and One Whole
- Fractions and Whole Numbers
- Fractions and Mixed Numbers
- Fractions
- Equivalent Fractions

Unit 17: Semester Review and Checkpoint