

LCCS 2nd Grade Math Curriculum Overview

Month	Unit
September	Unit 1: Math Is..
September	Unit 2: Place Value to 1,000
October	Unit 3: Patterns within Numbers
November	Unit 4: Meanings of Addition and Subtraction
December	Unit 5: Strategies to Fluently Add within 100
January	Unit 6: Strategies to Fluently Subtract within 100
January	Unit 7: Measure and Compare Lengths
February	Unit 8: Measurement: Money and Time
March	Unit 9: Strategies to Add 3-Digit Numbers
April	Unit 10: Strategies to Subtract 3-Digit Numbers
May	Unit 11: Data Analysis
June	Unit 12: Geometric Shapes and Equal Shares

Unit 1: Math Is..

At a Glance:

The focus of this unit is threefold:

- To build students' agency as a doer of mathematics. It is important that students understand that math is not just something done in school. Math is part of our daily lives and shows up in almost every activity. It is also important that students see themselves as skilled doers of math, so helping them understand that doing math is not just carrying out operations or calculations. Rather, doing math is more accurately making sense of and solving problems and finding patterns and relationships among quantities and numbers. Lesson 1-1 helps students see themselves as doers of math as they examine their attitudes towards math and their images of themselves as doers of math.
- To build students' proficiency with the habits of mind that are integral to doing mathematics. These include the thinking that makes up the relationships among quantities and values. Lessons 1-2 through 1-5 focus on helping students build proficiency with these habits of mind.
- To build understanding of the norms of interaction that allow for a productive math learning environment where students can develop, refine,

and enhance the habits of mind that are integral to doing math. Lesson 1-6 offers the opportunity for students to develop together the classroom norms for math for the school year.

Timeline:

10 Days

Unit 2: Place Value to 1,000

At a Glance:

In this unit, students will explore concepts related to our base-ten place-value system to 1,000. We call it base-ten system because it takes 10 of one unit to equal one unit in the next greater place-value position. Students will model with math to build their understanding that 10 groups of ten is equal to 100. They will also build an understanding that each digit in a place-value chart has a value. Students will use their understanding of place value to decompose 3-digit numbers by grouping the hundreds, tens, and ones in different ways.

Students will draw on their knowledge of reading and writing numbers to discover how to write equivalent names for the same 3-digit number in word form, expanded form and standard form. They will also compare 3-digit numbers, using words and symbols to show the comparisons.

Students will extend their understanding of place value and number sense concepts learned in previous grades. These include:

- **Understand place value:** Students understand hundreds and the digit in a 3-digit number.
- **Represent numbers in different forms:** Students read and write numbers up to 1,000.
- **Compare numbers:** Students compare 3-digit numbers.

Timeline:

9 Days

Unit 3: Patterns within Numbers

At a Glance:

The unit begins by reviewing counting by 1s. Number charts are used to allow students to explore each hundred sets between 100 and 1,000.

Once students are comfortable counting by 1s, the number charts and number lines are used to help students identify patterns when skipping counting by 5s, 10s, and 100s. These patterns are then used to solve problems when counting on by 5s, 10s, or 100s.

Finally, students explore the idea of even and odd numbers. Using grouping strategies, students define even numbers as numbers that can be broken into pairs with none left over, while an odd number cannot be broken into pairs with none left over.

Students use several tools throughout this unit. They will also see these tools throughout this and future grades. In this unit, students use the number

chart and number line to identify number patterns within 1,000. Students are also introduced to arrays to show repeated addition as a strategy to add.

Timeline:

12 Days

Unit 4: Meanings of Addition and Subtraction

At a Glance:

In this unit, students build on their understanding of addition and subtraction situations they learned about in Kindergarten. These ideas are explored in different ways as each part of the problem is the unknown. First, they solve addition problems in which the total is unknown, and then problems in which the addends are unknown. In subtraction, they first solve problems with an unknown result, and then those in which the change is unknown.

Students solve problems using various representations and write equations to represent the situation. While usually only one operation (either addition or subtraction) is shown, it is important that students understand that because addition and subtraction are inverse operations, either operation can be used to represent the same situation. While the order of the numbers may change, an addition and subtraction equation can be written for any of the situations.

Students understand that addition is the putting together of parts or adding to a given quantity to reach a given quantity.

- **The Meaning of Addition and Subtraction:** Students should understand that subtraction is the inverse of addition, so subtraction is taking away from a quantity of finding the difference between two quantities. Because of this strong foundational knowledge, students apply their understanding to different situations and represent addition and subtraction in new ways, including using symbols in equations.
- **Addition and Subtraction Representations:** Students use part-part-whole mats to show how the parts come together to form the whole or how the whole and one part can be used to determine an unknown part. Students use number charts and number lines to solve subtraction equations. Bar diagrams and other drawings are used to make sense of information given in the word problems in this unit.

Timeline:

16 Days

Unit 5: Strategies to Fluently Add within 100

At a Glance:

In this unit, students first review strategies to add within 20. They review count on, make a 10, doubles, and near doubles. Students use these mental math strategies to help prepare them for when they add 2-digit numbers using place value and properties of operations.

Students use various tools and strategies to find sums up to 100. Students use base-ten blocks and number lines to decompose and adjust addends.

They use base-ten blocks to decompose one or two addends into tens and ones, and then combine the tens and ones to find the sum.

This work is foundational to understanding addition, and is applied when students add up to four 2-digit numbers and solve two-step problems involving the addition of 2-digit numbers.

Students will extend their understanding of these addition concepts to find sums up to 100. These include:

- **Regrouping:** Students learn how to trade ten ones for one ten.
- **Partial sums:** Students learn partial sums addition, where separate sums are computed for each place-value position of the addends.
- **Decomposing:** Students add 2-digit numbers by decomposing one or two addends into tens and ones.
- **Adjusting addends:** Students learn the process of making addends friendly numbers by "adjusting" them. Students learn that applying inverse operations by adding a number to one addend and subtracting the same number from the other addend does not affect the sum.

Timeline:

16 Days

Unit 6: Strategies to Fluently Subtract within 100

At a Glance:

In this unit, students build on their understanding of place value to develop strategies to subtract 2-digit numbers. Students subtract both tens and ones. Students work toward regrouping from tens to ones.

Students first use various strategies to build fluency with subtraction facts within 20. They use number lines, then they make a 10 strategy, and relate subtraction to addition.

Students use base-ten blocks to represent and solve subtraction problems, without regrouping at first. Using base-ten blocks reinforces place-value concepts as students connect the digits in the tens and ones places to the base-ten blocks that are taken away and the blocks that are left over.

Students choose and explain how to use a strategy to solve a given problem. These strategies are foundational for understanding strategies for greater numbers that will be introduced in Grade 3:

- **Decompose a Number:** This is a strategy in which one of the numbers is decomposed to make subtraction simpler. To subtract $81 - 24 = ?$ the smaller number might be decomposed into 20 and 4 to allow for counting back on a number line by tens and ones.
- **Adjust Numbers:** Adjusting numbers involves changing each number by the same amount so that the difference remains the same.
- **Use Addition to Subtract:** Students write and solve a related addition equation with an unknown addend to find the difference in the subtraction equation.

Timeline:

16 days

Unit 7: Measure and Compare Lengths**At a Glance:**

Starting in Grade 1, students have measured lengths using non-standard units. Students build on this information in Grade 2 to measure using standard units including inches, feet, yards, centimeters, and meters throughout the unit.

- **Measurement Tools:** Students are introduced to several measurement tools to use with this unit. Students begin by measuring using an inch ruler, then progress to yardsticks and meter sticks. Students are also introduced to measure to the nearest inch. They then build off of this skill to go on and learn together how to measure feet. Once these feet are put together, they are introduced to the yardstick. Students are also introduced to metric measurement tools including a centimeter ruler and meter sticks. They are also shown to align the side of the object with the 0 and measure to the next inch.
- **Comparing Measurements:** As students become comfortable measuring objects, they then compare the lengths of two objects. Students measure both objects then compare the measurements to determine the difference.
- **Reading Measurements:** Students are asked to relate these measurements to real objects. They see how meters, feet, and yards compare to their environment. They are also developing an understanding of how these measurements relate, students are able to make more accurate measurements. They are also developing an understanding of measurements in different units. This prepares students for future work converting between measurements.
- **Object to Measure:** Students are asked to predict the length of objects prior to measuring, using a standard measurement unit. Students can estimate measurements without having measured a previously measured object. This skill can help students determine the reasonableness of their precise measurements.

Timeline:

17 Days

Unit 8: Measurement: Money and Time**At a Glance:**

In this unit, students learn to count money and to tell and write time to the nearest five minutes. Skip counting is employed in both topics. To find the value of a group of coins, students count by 1s, and skip count by 5s, 10s, and 25s. To find values a time such as 6:40 or on a clock, students start at 12 and skip count by 5s at each numeral on the clock face as they move around the clock by each five-minute hand.

Students who are working in Grade 1 should be able to work more efficiently skip-counting. Teachers use similar prompts or scaffold grades as they

work through money and time problems.

- **Money:** Besides counting coins and bills to find the value of a group of coins or bills, students explore different combinations of bills or coins to show a given amount of money. Students apply addition and subtraction facts when they solve problems involving money. In Grade 4, students will use decimal notation to describe all of money.
- **Time:** In Grade 1, students learned to tell time to the hour and half hour. In this unit, students extend their earlier work with time by writing and telling time to the nearest five minutes. Throughout the unit, students use three and twenty-five and many other combinations that students should know from previous addition and subtraction work. Students also use the abbreviations a.m. and p.m. to be precise when telling time. For example, if a student says they were sleeping at 8:35, it isn't clear whether the time is in the morning or in the evening. If the student says they were sleeping at 8:35 a.m., then they were sleeping in the morning.

Timeline:

10 Days

Unit 9: Strategies to Add 3-Digit Numbers

At a Glance:

Starting in Grade 2, students use different strategies to solve 2-digit addition problems, such as decomposing addends, adding partial sums, and adjusting addends.

Students build on their understanding of these strategies in this unit to extend these techniques to 3-digit addition problems.

- **Decomposing Addends:** Students break apart a number into its place values and rewrite the number as an addition expression. Students may decompose the number 345 into $300 + 40 + 5$. Students solve problems where they decompose both addends or only one addend. Students also look at different ways to decompose addends.
- **Partial Sums:** Students use the decomposing strategy and then focus on adding hundreds to hundreds, tens to tens, and ones to ones to create partial sums. Then they add the sums together. Students recognize addition patterns when adding partial sums including ideas such as when adding hundreds to hundreds only the hundreds digit increases.
- **Adjusting Addends:** Students learn to adjust addends to make friendly numbers. They adjust both addends by the same amount to make a problem that can be solved more efficiently. Students compare the sums of both the original and adjusted expressions to see that the sum does not change as long as the adjustments are made correctly.
- **Representations and Tools:** Students have been introduced to many tools that can be used to represent and help solve addition problems. Students continue to use these tools to build their understanding of addition and solve more complex problems. This unit focuses on tools including base-ten blocks, open number lines, decomposition drawing, and adjustment arrows.

Timeline:

12 Days

Unit 10: Strategies to Subtract 3-Digit Numbers

At a Glance:

In Grade 1, a solid foundational understanding of subtraction was laid through lessons focusing on the meaning of subtraction. Different subtraction problems were explored, as well as tools that can be used to solve subtraction problems. Later in Grade 1, 2-digit subtraction was explored, including subtracting tens. At the beginning of Grade 2, these ideas were revisited, which helped cement students' understanding of subtraction. Now that place value to 1000 has been introduced, these ideas are extended to 3-digit numbers.

The unit allows students to make connections to what they already know. By representing the greater number in base-ten blocks then taking away the lesser number, students visually see how 3-digit subtraction results in the difference.

- **Subtraction Strategies:** Students examine many strategies that can help when subtracting 3-digit numbers. These strategies are familiar to them at this point, as they have used them for subtracting 2-digit numbers but are slightly more complex now that they involve 3-digit numbers. Decomposing numbers to count back is explored using both 2-digit and 3-digit subtrahends. Different decompositions are used to show that some are more efficient than others when counting back. Counting up from the subtrahend to the minuend on a number line is another strategy used. By adding the jumps made on the number line, the difference can be found. Finally, adjusting numbers to friendlier numbers is shown as an efficient way to subtract 3-digit numbers. By adding or subtracting the same amount to both numbers in the problem, the difference remains the same, but the subtraction becomes easier.

Timeline:

15 Days

Unit 11: Data Analysis

At a Glance:

Starting in Grade 1, students have been exposed to different ways to organize and represent data. Students build on this information to gather, organize, and analyze data throughout this unit.

Once students understand data and tally charts, they will build from this understanding to represent the data shown in a tally chart in different ways. New representations will be introduced, including picture graphs, bar graphs, and line plots. Students will use the representations to analyze and make conclusions about the data.

- **Representations and Tools:** Students begin by creating and analyzing picture graphs. Students are introduced to the parts of a picture graph,

including the key. They use simple pictures to represent data and answer questions about the data using the picture graphs. Students then build off their understanding of picture graphs to create bar graphs. They again use the bar graphs to answer questions. The final representation introduced is line plots. Line plots are used to display measurement data. Students collect measurement data. They use the line plots to analyze data.

- **Measurement:** Students continue to build skills by measuring common objects to the nearest inch, foot, or meter. They then take these measurements and organize them using a line plot. The plots are analyzed, with students answering questions relating to the longest, shortest, tallest, or smallest measurements.

Timeline:

10 Days

Unit 12: Geometric Shapes and Equal Shares

At a Glance:

In this unit, students build on earlier work identifying attributes of 2- and 3-dimensional shapes and classifying shapes according to their attributes. Students partition 2-dimensional shapes into equal shares of halves, thirds, and fourths. They develop early fraction language for their work in Grade 3. Students also partition rectangles into rows and columns of equal-sized squares. This work is foundational for developing multiplication and area concepts in Grade 3.

- **Geometric Shapes:** Students identify 2- and 3-dimensional shapes by their attributes. Students apply vocabulary skills when they identify a shape by knowing that its name may contain a prefix that corresponds to the number of sides or vertices it has. Students draw 2-dimensional shapes based on given attributes and solve problems about them.
- **Partitioning Shapes:** When a shape is divided into parts, a process known as partitioning, each part is a share. When all shares of a 2-dimensional shape have the same size, the shares are equal shares. Students partition circles and rectangles in different ways to form halves, thirds, and fourths.
- **Rows and Columns:** Students partition a rectangle into rows and columns by tiling it with square tiles. Students also draw line segments to partition a rectangle into a specified number of rows and columns of squares that are the same size, extending their earlier work with partitioning. They explore strategies to count the number of squares in a rectangle partitioned into rows and columns. Using strategies to count equal groups to find the total is foundational for understanding the concept of multiplication.

Timeline:

10 Days