Sequence of Grade 2 Modules Aligned with the Standards

Module 1: Sums and Differences to 100

Module 2: Addition and Subtraction of Length Units

Module 3: Place Value, Counting, and Comparison of Numbers to 1,000

Module 4: Addition and Subtraction Within 200 with Word Problems to 100

Module 5: Addition and Subtraction Within 1,000 with Word Problems to 100

Module 6: Foundations of Multiplication and Division

Module 7: Problem Solving with Length, Money, and Data

Module 8: Time, Shapes, and Fractions as Equal Parts of Shapes

Summary of Year

Grade 2 mathematics is about (1) extending understanding of base-ten notation; (2) building fluency with addition and subtraction; (3) using standard units of measure; and (4) describing and analyzing shapes.

Key Areas of Focus for K–2:	Addition and subtraction—concepts, skills, and problem solving	
Required Fluency:	2.OA.2	Add and subtract within 20.
	2.NBT.5	Add and subtract within 100.

| **Major Emphasis Clusters** |
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| Operations and Algebraic Thinking |
| • Represent and solve problems involving addition and subtraction. |
| • Add and subtract within 20. |
| Number and Operations in Base Ten |
| • Understand place value. |
| • Use place value understanding and properties of operations to add and subtract. |
| Measurement and Data |
| • Measure and estimate lengths in standard units. |
| • Relate addition and subtraction to length. |

Rationale for Module Sequence in Grade 2

From Grade 1, students have fluency of addition and subtraction within 10 and extensive experience working with numbers to 100. Module 1 of Grade 2 establishes a motivating, differentiated fluency program in the first few weeks that will provide each student with enough practice to achieve mastery of the new required fluencies (i.e., adding and subtracting within 20 and within 100) by the end of the year. Students also solve all addition and subtraction word problem situations (See the Standards Glossary, Table 1) that do not involve comparison using the Read-Draw-Write process, a practice that will also continue throughout the year. Though encouraged to use math drawings that are intuitive for them, each situation is also modeled using the tape diagram, encouraging students to generalize and analyze part–whole relationships.

In Module 2, students learn to measure and estimate using standard units for length and solve measurement problems involving addition and subtraction of length, now encountering the word problem situations involving comparison. A major objective is for students to use measurement tools with the understanding that linear measure involves an iteration of units and that the smaller a unit, the more iterations are necessary to cover a given length. Students work exclusively with metric units (e.g., centimeters and meters) in this module to support upcoming work with place value concepts in Module 3. Units also play a central role in the addition and subtraction algorithms of Modules 4 and 5. An underlying goal for this module is for students to learn the meaning of a *unit* in a different context, that of length. This understanding serves as the foundation of arithmetic, measurement, and geometry in elementary school. Students also solve word problems involving all addition and subtraction comparison situations, so that by the end of Module 2, they have encountered the full set of situations.

All arithmetic algorithms are manipulations of place value units: ones, tens, hundreds, etc. In Module 3, students extend their understanding of base-ten notation and apply their understanding of place value to count and compare numbers to 1,000. In Grade 2, the place value units move from a proportional model to a non-proportional number disk model (see the pictures below). The place value table with number disks can be used through Grade 5 for modeling very large numbers and decimals, thus providing students greater facility with, and understanding of, mental math and algorithms.
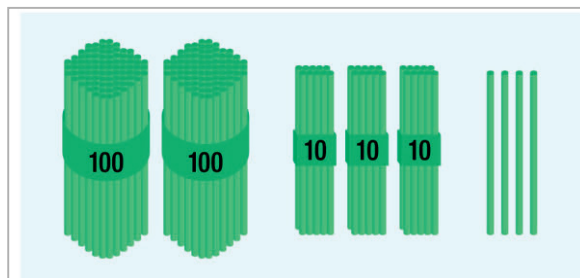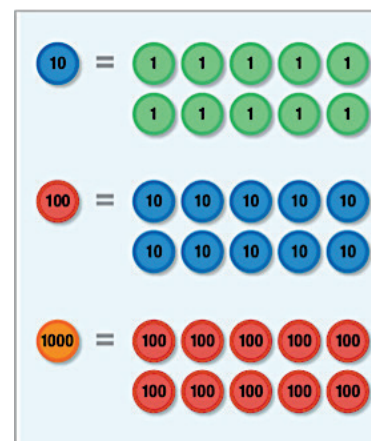
Proportional Model for Place Value   **Non-Proportional Model for Place Value**

In Module 4, students apply their work with place value units to add and subtract within 200, moving from concrete to pictorial to abstract. This work deepens their understanding of base ten, place value, and the properties of operations. It also challenges them to apply their knowledge to one-step and two-step word problems. During this module, students also continue to develop one of the required fluencies of the grade: addition and subtraction within 100.

Module 5 builds upon the work of Module 4. Students again use place value strategies, manipulatives, and math drawings to extend their conceptual understanding of the addition and subtraction algorithms to numbers within 1,000. They maintain addition and subtraction fluency within 100 through daily application work to solve one- and two-step word problems of all types. A key component of Modules 4 and 5 is that students use place value reasoning to explain why their addition and subtraction strategies work.

In Module 6, students extend their understanding of a unit to build the foundation for multiplication and division wherein any number, not just powers of ten, can be a unit. Making equal groups of *four apples each* establishes the unit *four apples* (or just *four*) that can then be counted: *1 four, 2 fours, 3 fours*, etc. Relating the new unit to the one used to create it lays the foundation for multiplication: *3 groups of 4 apples equal 12 apples* (or *3 fours is 12*).

Module 7 provides another opportunity for students to practice their algorithms and problem-solving skills with perhaps the most well-known, interesting units of all: dollars, dimes, pennies, quarters, and nickels. Measuring and estimating length is revisited in this module in the context of units from both the customary system (e.g., inches and feet) and the metric system (e.g., centimeters and meters). As they study money and length, students represent data given by measurement and money data using picture graphs, bar graphs, and line plots.

Students finish Grade 2 by describing and analyzing shapes in terms of their sides and angles. In Module 8, students investigate, describe, and reason about the composition and decomposition of shapes to form other shapes. Through building, drawing, and analyzing two- and three-dimensional shapes, students develop a foundation for understanding area, volume, congruence, similarity, and symmetry in later grades.

Alignment Chart[35]

Module and Approximate Number of Instructional Days	Standards Addressed in Grade 2 Modules
Module 1: **Sums and Differences to 100** (10 days)	**Represent and solve problems involving addition and subtraction.**[36] **2.OA.1** Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. (See Standards Glossary, Table 1.) **Add and subtract within 20.**[37] **2.OA.2** Fluently add and subtract within 20 using mental strategies. (See standard 1.OA.6 for a list of mental strategies.) By end of Grade 2, know from memory all sums of two one-digit numbers. **Use place value understanding and properties of operations to add and subtract.**[38] **2.NBT.5** Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
Module 2: **Addition and Subtraction of Length Units** (12 days)	**Measure and estimate lengths in standard units.**[39] **2.MD.1** Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes. **2.MD.2** Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen. **2.MD.3** Estimate lengths using units of inches, feet, centimeters, and meters.

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[35] When a cluster is referred to in this chart without a footnote, the cluster is addressed in its entirety.

[36] In this module, word problems focus primarily on result unknown and change unknown situations.

[37] From this point forward, fluency practice with addition and subtraction to 20 is part of students' ongoing experience.

[38] This standard is addressed again in Modules 4 and 7; the balance of this cluster is addressed in Modules 4 and 5.

[39] Focus is on metric measurement in preparation for place value in Module 3. Customary measurement is addressed in Module 7.

Module and Approximate Number of Instructional Days	Standards Addressed in Grade 2 Modules
	2.MD.4 Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.
	Relate addition and subtraction to length.
	2.MD.5 Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.
	2.MD.6 Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, …, and represent whole-number sums and differences within 100 on a number line diagram.

Module 3:
Place Value, Counting, and Comparison of Numbers to 1,000
(25 days)
	Understand place value.
	
	2.NBT.1 Understand that the three digits of a three-digit number represent amounts of hundreds, tens and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:
	
	   a. 100 can be thought of as a bundle of ten tens—called a "hundred."
	
	   b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).
	
	2.NBT.2 Count within 1000; skip-count by 5s[40], 10s, and 100s.
	
	2.NBT.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.
	
	2.NBT.4 Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.

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[40] Use an analog clock to provide a context for skip-counting by fives.

Module and Approximate Number of Instructional Days	Standards Addressed in Grade 2 Modules
Module 4: **Addition and Subtraction Within 200 with Word Problems to 100** (35 days)	**Represent and solve problems involving addition and subtraction.** **2.OA.1** Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. (See Standards Glossary, Table 1.) **Use place value understanding and properties of operations to add and subtract.**[41] **2.NBT.5** Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction. **2.NBT.6** Add up to four two-digit numbers using strategies based on place value and properties of operations. **2.NBT.7** Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds. **2.NBT.8** Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900. **2.NBT.9** Explain why addition and subtraction strategies work, using place value and the properties of operations. (Explanations may be supported by drawings or objects.)
Module 5: **Addition and Subtraction Within 1,000 with Word Problems to 100** (24 days)	**Use place value understanding and properties of operations to add and subtract.**[42] **2.NBT.7** Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is

[41] In this module, work is limited to within 200. This work is extended to numbers within 1,000 in the next module.
[42] The balance of this cluster is addressed in Modules 1, 4, and 7.

Module and Approximate Number of Instructional Days	Standards Addressed in Grade 2 Modules
	necessary to compose or decompose tens or hundreds.
	2.NBT.8 Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.
	2.NBT.9 Explain why addition and subtraction strategies work, using place value and the properties of operations. (Explanations may be supported by drawings or objects.)
Module 6: **Foundations of Multiplication and Division** (24 days)	**Work with equal groups of objects to gain foundations for multiplication.** **2.OA.3** Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s: write an equation to express an even number as a sum of two equal addends. **2.OA.4** Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends. **Reason with shapes and their attributes.**[43] **2.G.2** Partition a rectangle into rows and columns of same size squares and count to find the total number of them.
Module 7: **Problem Solving with Length, Money, and Data** (30 days)	**Use place value understanding and properties of operations to add and subtract.**[44] **2.NBT.5** Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction. **Measure and estimate lengths in standard units.** **2.MD.1** Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

[43] 2.G.2 is included in this module because the array model is so important to the foundation for multiplication. The balance of this cluster is addressed in Module 8.

[44] This standard is also addressed in Modules 1 and 4; the balance of this cluster is addressed in Modules 4 and 5.

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Module and Approximate Number of Instructional Days	Standards Addressed in Grade 2 Modules
	2.MD.2 Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.
	2.MD.3 Estimate lengths using units of inches, feet, centimeters, and meters.
	2.MD.4 Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.
	Relate addition and subtraction to length.
	2.MD.5 Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.
	2.MD.6 Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, …, and represent whole-number sums and differences within 100 on a number line diagram.
	Work with time and money.[45]
	2.MD.8 Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. *Example: If you have 2 dimes and 3 pennies, how many cents do you have?*
	Represent and interpret data.
	2.MD.9 Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.
	2.MD.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems (See Standards Glossary, Table 1.) using information presented in a bar graph.

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[45] Focus on money. Time is addressed in Module 8.

Module and Approximate Number of Instructional Days	Standards Addressed in Grade 2 Modules
Module 8: **Time, Shapes, and Fractions as Equal Parts of Shapes** (20 days)	**Work with time and money.**[46] **2.MD.7** Tell time and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m. **Reason with shapes and their attributes.**[47] **2.G.1** Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. (Sizes are compared directly or visually, not compared by measuring.) Identify triangles, quadrilaterals, pentagons, hexagons, and cubes. **2.G.3** Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words *halves*, *thirds*, *half of*, *a third of*, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

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[46] Focus on time. Money is addressed in Module 7.
[47] 2.G.2 is addressed in Module 6.

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