Sadlier Math™

Correlation to the Archdiocese of New York Mathematics Learning Standards

Grade 2

Volume One
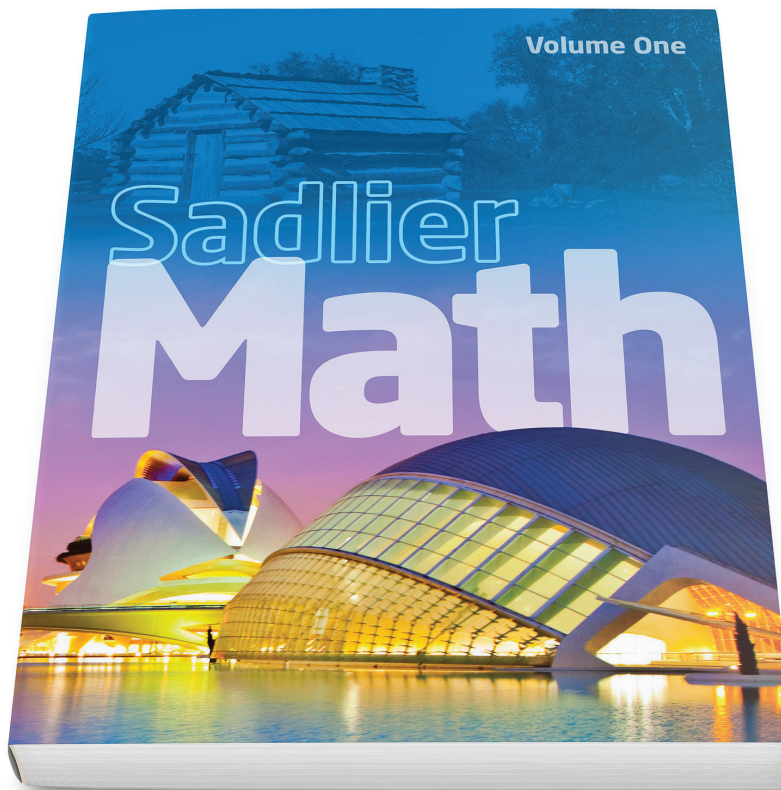
Sadlier Math

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OPERATIONS AND ALGEBRAIC THINKING 2.OA

Grade 2 Content Standards	*Sadlier Math*, Grade 2

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. This standard emphasizes a student's ability to not only understand the meanings of addition and subtraction through 100, but also demonstrate that knowledge within word problems. Students will further demonstrate this knowledge by modeling each situation with number sentences and drawings. Additionally, students can solve for any unknown quantity in a problem involving addition and/or subtraction. At this point, students are expected to work one- or two-step word problems.	**Chapter 1: 1-1, 1-2, 1-7 & 1-9** **Chapter 2: 2-1 through 2-3, 2-10 & 2-12** **Chapter 4: 4-8 & 4-9**

Add and subtract within 20.

2.OA.2 Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers. Students need a variety of strategies for solving addition and subtraction problems through 20. These strategies will provide students with a variety of choices when deciding the best way to solve problems mentally and give them practice in fluid (quick and accurate) problem solving. Students should know all the sums of two one-digit numbers from memory by the end of the school year.	**Chapter 1: 1-3 through 1-10** **Chapter 2: 2-2, 2-4 through 2-1**

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. Students do not always know that counting objects two at a time can lead to a conclusion that the starting number *continued*	**Chapter 10: 10-1 & 10-2**

OPERATIONS AND ALGEBRAIC THINKING 2.OA

Grade 2 Content Standards	*Sadlier Math*, Grade 2
was even or odd. The understanding of equal groups prepares them for the concept of rectangular arrays, which is an introductory concept for multiplication. The concept of even and odd will also be crucial with the introduction of division. Writing equations for even numbers as the sum of two equal addends lends itself to adaptation to equations of multiplying by 2 in the following grade.	
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. Students do not always know that counting objects two at a time can lead to a conclusion that the starting number was even or odd. The understanding of equal groups prepares them for the concept of rectangular arrays, which is an introductory concept for multiplication. The concept of even and odd will also be crucial with the introduction of division. Write equations for even numbers as the sum of two equal addends lends itself to adaptation to equations of multiplying by 2 in the following grade.	**Chapter 10: 10-3 through 10-5**

NUMBER AND OPERATIONS IN BASE TEN 2.NBT

Grade 2 Content Standards	*Sadlier Math*, Grade 2
Understand place value.	
2.NBT.1 Understand that the three digits of a three-digit number represents amounts of hundreds, tens, and ones. E.g., 706 equals 7 hundreds , 0 tens, and 6 ones. Understand the special cases that	
2.NBT.1a 100 can be thought of as a bundle of ten tens — called a "hundred." The concept of hundreds, tens, and ones is the foundational basis for our base-ten number system. Students should understand that the three digits in a three-digit number represent the number of hundreds, tens, and ones, and that 100 can be thought of as a hundred ones or as ten tens, or as a bundle called a "hundred". The numbers 100, 200, 300, etc, represent one hundred, two hundreds, three hundreds, etc. and no ones or tens. This skill is built on in The idea that each digit in a number has a specific value is key to making sense of place-value-based algorithms for operations.	**Chapter 7: 7-1**

NUMBER AND OPERATIONS IN BASE TEN 2.NBT

Grade 2 Content Standards	*Sadlier Math*, Grade 2
2.NBT.2 Count within 1000; skip-count by 5s, 10s, and 100s. This particular standard expands on students' prior knowledge of basic counting skills. Students should recognize, read, and write numerals within 1000, as well as count on in a variety of sequencing patterns anywhere in the range of numbers from 1 to 1000. Students should be able to count on by 5s, 10s, and 100s. One motivation for this standard is that students will be able to develop strategies for addition and subtraction. For example, a student who wants to add 784 + 58 can start at 784 and count five tens: 794, 804, 814, 824, 834. Then add eight ones: 835, 836, 837, …., 842. This technique can also be helpful in determining a missing addend. Suppose we want to solve the equation 479 + ? = 520. We can do this by counting up from 479 until we get close to 520: 489, 499, 509, 519. So far we have counted up by 10 four times. Counting up by one then produces 520, so we have added four tens + one = 41.	**Chapter 3: 3-5** **Chapter 7: 7-5**
2.NBT.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form. This particular standard expands on students' previous knowledge of basic numbering skills. Students should recognize, read, and write the numerals through 1000 as well as their expanded form, and also be able to produce representations on their own. For example, students should recognize and explain that 345 as 345, 300 + 40 + 5, and as three hundred forty-five.	**Chapter 3: 3-1 & 3-2** **Chapter 7: 7-2 through 7-4**
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. Using their knowledge of the meanings of hundreds, tens, and ones digits, students can compare two three-digit numbers. They are then able to put numbers in order from least to greatest or vice versa, and correctly use the >, =, and < symbols when comparing numbers. Students will need to be fluent in many mathematical processes to be able to make comparisons accurately. For example when given two numbers such as 287 and 304, students will need to understand that place value is important.	**Chapter 7: 7-6 & 7-7**

NUMBER AND OPERATIONS IN BASE TEN — 2.NBT

Grade 2 Content Standards	*Sadlier Math*, Grade 2

Use place value understanding and properties of operations to add and subtract.

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. Students have developed a firm understanding of place value of two-digit numbers and to subtract multiples of ten, and are ready to add and subtract within 100 (including the case of adding or subtracting a two-digit number and a one-digit number, and two two-digit numbers). First students are given problems where regrouping is not necessary, and later, problems where regrouping is necessary. Further, students understand that in addition and subtraction, digits in the ones place are added and subtracted; digits in the tens place are added and subtracted; and sometimes regrouping is necessary. In addition, sometimes we must regroup ten ones to form an additional ten, and in subtraction, sometimes we must break a ten into ten ones. The eventual goal of this standard is fluency.	**Chapter 1: 1-1 through 1-10** **Chapter 2: 2-1 through 2-12** **Chapter 4: 4-1 through 4-10** **Chapter 5: 5-1 through 5-9**
2.NBT.6 Add up to four two digit numbers using strategies based on place value and properties of operations. This standard expands students' previous knowledge and mastery of addition to include up to four two-digit numbers at a time. Students understand that it is possible to add more than two numbers. They are learning that even when there are more than two addends, they can extend the standard place-value algorithm for addition by adding all the ones together, and all of the tens together. They are also learning that they can sometimes make strategic choices of the order or grouping in which we add the numbers. For example, consider the addition problem 78 + 34 + 41 + 12. Students can start by adding 78 and 34 (and it is fine if students do this, providing they do it correctly). However, it is easier to group the 78 and 12 together, since they add up to a multiple of 10. Reordering and regrouping the addends, we see that the sum (78 + 12) + (34 + 41) = 90 + 75 = 165.	**Chapter 4: 4-1 through 4-10**

NUMBER AND OPERATIONS IN BASE TEN	2.NBT
Grade 2 Content Standards	***Sadlier Math*, Grade 2**
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. This skill asks students to add and subtract within 1000 using strategies based on properties of operations. Additionally, they should be able to model their strategies for solving such problems using manipulatives or drawings. Students should learn that when adding or subtracting one, two, or three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones, and if necessary, composes or decomposes tens and/or hundreds.	**Chapter 1: 1-1 through 1-10** **Chapter 2: 2-1 through 2-11** **Chapter 4: 4-1 through 4-9** **Chapter 5: 5-1 through 5-8** **Chapter 7: 7-8** **Chapter 8: 8-1 through 8-8** **Chapter 9: 9-1 through 9-9**
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. This standard asks students to be able to think of 10 and 100 not just as generic numbers that can be added or subtracted using the standard algorithm, but as bundles of ten or a hundred that can easily be added to, or removed from, the place-value representation of a number. For example, if we want to add or subtract 10, we can do so simply by adjusting the number of tens in the number, unless doing so takes us over 9 tens or under 0 tens. A similar idea applies when we add or subtract 100.	**Chapter 8: 8-1** **Chapter 9: 9-1**
2.NBT.9 Explain why addition and subtraction strategies work, using place value and the properties of operations. While it is important that students show mastery of addition and subtraction facts, their ability to communicate their strategy (and the strategies others use) for finding the answer is just as important. Students should be able to explain why addition and subtraction strategies work by using manipulatives, drawings, or words. Their explanation should be based on place value (e.g., grouping) and *continued*	**Chapter 5: 5-7** **Chapter 8: 8-2 through 8-8** **Chapter 9: 9-2 through 9-9**

NUMBER AND OPERATIONS IN BASE TEN   2.NBT

Grade 2 Content Standards	*Sadlier Math*, Grade 2
properties of operations (e.g., commutativity and associativity of addition). Students do not need to know the names of the properties; they may say that they are reordering or regrouping addends.	

MEASUREMENT AND DATA   2.MD

Grade 2 Content Standards	*Sadlier Math*, Grade 2
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. This standard focuses on the student's ability to understand the concept of measuring the length of an object from end to end using an appropriate measuring tool that the student has chosen (e.g., rulers, yardsticks, meter sticks, and measuring tapes). The student will measure to the nearest whole unit in both custom and metric measuring units. Students need to have a wide variety of experiences with hands-on activities that allow them to manipulate the objects being measured.	**Chapter 6: 6-1 through 6-6**
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. Length is a very basic, beginning measuring activity for elementary students. When measuring an object's length, students will identify the attributes to be measured, pick the appropriate tools that they will use to measure, and then count the units on the tool that span the length of the object. For this standard, students will choose two appropriate units to use to measure the same objects and then state their findings. The key point is that if you measure an item with a smaller object, then you will have a greater number of lengths than if you used a larger unit to measure the same item.	**Chapter 6: 6-7**
2.MD.3 Estimate lengths using units of inches, feet, centimeters, and meters. *continued*	**Chapter 6: 6-1 through 6-5**

MEASUREMENT AND DATA	2.MD

Grade 2 Content Standards	*Sadlier Math*, Grade 2
This standard measures a student's ability to reason through estimating an object's length based on their previous experience with measuring. This provides students with a real-world context and integrates skills from other areas of math that they have already explored.	
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. The study of measurement allows for opportunities to integrate a variety of mathematical processes for use in problem-solving. This standard focuses on students' ability to accurately measure and compare two objects of varying length using standard length units. Students can use a variety of ways to determine the difference in length between two objects; some students may choose a subtraction equation, count on strategies, or comparative drawings/graphic representations.	**Chapter 6: 6-8 and 6-9**

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. The study of measurement allows for opportunities to integrate a variety of mathematical processes for use in problem-solving. This standard focuses on students' ability to apply their previous mastery of measuring objects to word problems that are representative of real-world situations. Additionally, students will apply their mastery of addition and subtraction processes to write equations using symbols for the unknown values and calculate the sum and differences represented in these equations.	**Chapter 6: 6-9 and 6-10**
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. *continued*	**Chapter 6: 6-11 and 6-12**

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MEASUREMENT AND DATA — 2.MD

Grade 2 Content Standards	*Sadlier Math*, Grade 2
This standard is about students understanding that number lines are constructed with equal spacing, and therefore have a connection to measurement tools. This standard also speaks more to using/drawing a number line and understanding equal spacing between those numbers in order to use it to add and subtract whole numbers within 100.	

Work with time and money.

Grade 2 Content Standards	*Sadlier Math*, Grade 2
2.MD.7 Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m. Telling time is an important life skill that all students should master. In the age of advanced technologies, the era of analog clocks is receding. Students should move fluidly from an analog to a digital representation of time and accurately depict the time to the nearest hour, half hour, and five minutes. Further, students must be able to distinguish time in p.m. and a.m.	**Chapter 12: 12-9 through 12-12**
2.MD.8 Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Money is an excellent venue for exploring real-life addition and subtraction scenarios. Students need to understand that the symbols used with money do not change the mathematical processes used in solving the problems themselves. This standard is the very first time money is introduced to children. In order to master this standard, teachers of second grade must ALSO teach coin values and use those values to add and subtract money. At this point, students have only been exposed to "skip counting". It is implied in this standard that students must know money values/amounts, and how to add them together when given mixed values; therefore, this is a huge sub-standard that must be taught first.	**Chapter 12: 12-1 through 12-8**

Represent and interpret data.

Grade 2 Content Standards	*Sadlier Math*, Grade 2
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 *continued*	**Chapter 11: 11-1 & 11-2**

MEASUREMENT AND DATA	2.MD

Grade 2 Content Standards	*Sadlier Math*, Grade 2
horizontal scale is marked off in whole-number units. This standard focuses on students' ability to generate their own data, then plot it on a number line. This skill helps develop students' ability to work with and visually display information, which prepares them for future standards dealing with more in-depth data analysis and visualization.	
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 using information presented in a bar graph. This standard focuses on the students' ability to create bar graphs and pictographs from data, and then use these graphical representations to solve problems. This skill builds on previous standards involving organizing data and creating plot lines. It relates to addition and subtraction work emphasized in grade 2, and it prepares students for more in-depth data analysis and visualization in future grades.	**Chapter 11: 11-3 through 11-7**

GEOMETRY	2.G

Grade 2 Content Standards	*Sadlier Math*, Grade 2

Reason with shapes and their attributes.

2.G.1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes. The difference between this standard and previous standards in the earlier grades is the attribute of "angle" being mentioned for the first time, as well as the language of "face". In addition, students are now expected to know the vocabulary of "quadrilateral" and "pentagon". Since this standard is similar to previous ones, what is different is how an older child might approach the old material differently. For instance, children should begin forming a more organized manner of categorizing shapes according to their attributes, and they should be able to articulate more clearly the attributes that define shapes.	**Chapter 13: 13-1 through 13-4**

GEOMETRY   2.G

Grade 2 Content Standards	*Sadlier Math*, Grade 2
2.G.2 Partition a rectangle into rows and columns of same-size squares and count to find the total number of them. This standard begins the formal foundation of the idea of area development. Since we measure area in square units, it is natural to begin with rectangles and partition them into square regions so that we can easily count the total.	**Chapter 14: 14-1**
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. Students will recognize the "part-whole" relationship in whole pieces and their fractional parts. Students should describe and partition a whole into two halves, three thirds, etc. within the shapes of circles and rectangles and refer to these pieces with that language. At this grade level, students should not be using the formal symbols of "½", "⅓", and "¼".	**Chapter 14: 14-2 through 14-4**