

## Grade 2 Overview

### Operations and Algebraic Thinking

- Represent and solve problems involving addition and subtraction.
- Add and subtract within 20.
- Work with equal groups of objects to gain foundations for multiplication.

### 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.
- Work with time and money.
- Represent and interpret data.

### Geometry

- Reason with shapes and their attributes.

### Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

**Ohio County Public Schools**  
**Common Core State Standards: Mathematics**  
**Grade 2 Math Pacing Guide**

**1<sup>st</sup> Nine Weeks**

Domain	Common Core State Standards	Major Topics/Concepts	Vocabulary	Resources
<b>Operations &amp; Algebraic Thinking</b>	2.OA.1 2.OA.2 2.OA.3	<p><b>Represent and solve problems involving addition and subtraction.</b></p> <ul style="list-style-type: none"> <li>• <b>2. OA.1</b> - Solve one- and two-step word problems involving addition and subtraction within 100. Involve situations of <i>adding to</i>, <i>taking from</i>, <i>putting together</i>, <i>taking apart</i>, and <i>comparing</i>, with unknowns in all positions.</li> </ul> <p><b>Add and subtract within 20.</b></p> <ul style="list-style-type: none"> <li>• <b>2. OA.2</b> – Add/subtract within 20 using mental strategies.</li> </ul> <p><b>Work with equal groups of objects to gain foundations for multiplication.</b></p> <ul style="list-style-type: none"> <li>• <b>2. OA.3</b> – Determine if a group of objects (up to 20) has an <i>odd or even number</i> of members by pairing objects or counting them by 2s.</li> </ul>		<p><b>Literature Connections</b>  <i>Even Steven and Odd Todd</i>, A Hello Math Reader  <i>10 For Dinner</i> by Jo Ellen Bogart  <i>More Than One</i> by Miriam Schlein  <i>Counting On Calico</i> by Phyllis Limbacher Tildes  <i>Mission Addition</i> by Loreen Leedy  <i>Mall Mania</i> by Stuart Murphy</p>
<b>Numbers &amp; Operations in Base 10</b>	2.NBT.2 2.NBT.8 2.NBT.9	<p><b>Understand place value.</b></p> <ul style="list-style-type: none"> <li>• <b>2. NBT.2</b> – Count within 1000; skip-count by 5’s, 10’s, and 100’s.</li> </ul> <p><b>Use place value understanding and properties of operations to add and subtract.</b></p> <ul style="list-style-type: none"> <li>• <b>2. NBT.8</b> - Mentally add/subtract 10 or 100 to/from a given number 100 - 900.</li> <li>• <b>2. NBT.9</b> - Explain why addition and subtraction strategies work, using place value and the properties of operations.</li> </ul>		<p><b>Literature Connections</b>  <i>Count on Pablo</i> by Barbara Rubertis  <i>Henry Hikes to Fitchburg</i> by DB Johnson  <i>Lessons That Count</i>, Math Fables by Greg Tang  <i>Cats Add Up!</i> by Dianne Ochiltree</p>
<b>Measurement &amp; Data</b>	2.MD.6 2.MD.10	<p><b>Relate addition and subtraction to length.</b></p> <ul style="list-style-type: none"> <li>• <b>2. MD.6</b> - Represent whole-number sums and differences within 100 on a number line diagram.</li> </ul> <p><b>Represent and interpret data.</b></p> <ul style="list-style-type: none"> <li>• <b>2. MD.10</b> – Draw a picture graph or a bar graph (with a single-unit scale) to represent data when problem solving. Solve simple <i>put together</i>, <i>take-apart</i>, and <i>compare</i> problems using information presented in a bar graph.</li> </ul>		<p><b>Literature Connections</b>  <i>Six Empty Pockets</i> by Matt Curtis  <i>Katy No-Pockets</i> by Emmy Payne  <i>Tiger Math</i> by Ann Whitehead Nagda &amp; Cindy Bickel  <i>The Button Box</i> by Margarete Reid  <i>Graphs</i> by Bonnie Bader  <i>Bart’s Amazing Charts</i> by Dianne Ochiltree  Harcourt Reading Book, 2<sup>nd</sup> grade, has Stuart Murphy’s graphing story, <i>Lemonade For Sale</i>.</p>

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**2<sup>nd</sup> Nine Weeks**

Domain	Common Core State Standards	Major Topics/Concepts	Vocabulary	Resources
<b>Numbers and Operations in Base Ten</b>	<b>2.NBT.1</b> <b>2.NBT.3</b> <b>2.NBT.4</b> <b>2.NBT.5</b> <b>2.NBT.8</b>	<p><b>Understand place value.</b></p> <ul style="list-style-type: none"> <li>• <b>2. NBT.1</b> - Decompose numbers 100-999 into hundreds, tens, and ones.</li> <li>• <b>2. NBT.3</b> - Read and write numbers to 1000, using <i>base-10 numerals</i>, <i>number names</i>, and <i>expanded form</i>.</li> <li>• <b>2. NBT.4</b> - Use symbols (&gt;, =, &lt;) to compare two three-digit numbers.</li> </ul> <p><b>Use place value understanding and properties of operations to add and subtract.</b></p> <ul style="list-style-type: none"> <li>• <b>2. NBT.5</b> – Fluently add/subtract within 100 using strategies based on place value, properties of operations, and/or the <i>relationship between addition and subtraction</i>.</li> <li>• <b>2. NBT.8</b> – Mentally add/subtract 10 or 100 to/from a given number 100 - 900.</li> </ul>		<p><b><u>Literature Connections</u></b></p> <p><i>The Missing Birthday Party</i> by Joanne Rocklin</p> <p><i>One Hundred Hungry Ants</i> by Elinor J Pinczes</p> <p><i>How High Can A Dinosaur Count? &amp; Other Math Mysteries</i> by Valorie Fisher</p> <p><i>Monster Math</i> by Polly Powell</p> <p><i>One Hundred Ways to 100</i> by Jerry Pallotta</p>
<b>Measurement &amp; Data</b>	<b>2.MD.8</b>	<p><b>Work with time and money.</b></p> <ul style="list-style-type: none"> <li>• <b>2. MD.8</b> - Solve word problems using either dollars or cents; show multiple combinations of dollars/coins --- dollar bills, quarters, dimes, nickels, and pennies; use the dollar symbol (\$) and the cent symbol (¢) appropriately.</li> </ul>		<p><b><u>Literature Connections</u></b></p> <p><i>The Case of the Shrunken Allowance</i> by Joanne Rocklin</p> <p><i>Pigs Go To Market, Halloween Fun with Math and Shopping</i> by Amy Axelrod</p> <p><i>Ultimate Kid's Money Book</i> by Neale S. Godfrey</p>

## Ohio County Public Schools

### Common Core State Standards: Mathematics

### Grade 2 Math Pacing Guide

**3<sup>rd</sup> Nine Weeks**

Domain	Common Core State Standards	Major Topics/Concepts	Vocabulary	Resources
<b>Numbers &amp; Operations in Base Ten</b>	2.NBT.7	<p><b>Use place value understanding and properties of operations to add and subtract.</b></p> <ul style="list-style-type: none"> <li>• <b>2. NBT.7</b> - Add and subtract within a 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.</li> </ul> <p>Understand that in adding/subtracting 3-digit numbers, one adds/subtracts hundreds and hundreds, tens and tens, ones and ones; note that sometimes it is necessary to <i>compose</i> or <i>decompose</i> tens or hundreds.</p>		<p><b>Literature Connection</b></p> <p><i>How Much is a Million?</i> by David M. Schwartz  <i>How Much, How Many, How Far, How Heavy, How Tall is 1000?</i> by Helen Nolan  <i>Big Numbers</i> by Edward Packard  <i>Shark Swimathon</i> by Stuart Murphy  <i>Elevator Magic</i> by Stuart J. Murphy  <i>Mall Mania</i> by Stuart J. Murphy  <i>A Fair Bear Share</i> by Stuart Murphy</p>
<b>Measurement &amp; Data</b>	2.MD.1 2.MD.2 2.MD.3 2.MD.4 2.MD.5 2.MD.7 2.MD.9	<p><b>Measure and estimate lengths in standard units.</b></p> <ul style="list-style-type: none"> <li>• <b>2. MD.1</b> - Use appropriate tools to measure the length of an object – rulers, yardsticks, meter sticks, measuring tape, etc.</li> <li>• <b>2. MD.2</b> - Measure the length of an object twice, using <i>length units</i> of different lengths; describe how the 2 measurements relate to the size of the unit chosen.</li> <li>• <b>2. MD.3</b> - Estimate the length of an object using <i>length units</i> of inches, feet, centimeters, and meters.</li> <li>• <b>2. MD.4</b> – Measure to determine how much longer one object is than another; express the length difference in terms of a <i>standard length unit</i>.</li> </ul> <p><b>Relate addition and subtraction to length.</b></p> <ul style="list-style-type: none"> <li>• <b>2. MD.5</b> – Use addition/subtraction within 100 to solve word problems involving lengths that are given in the <i>same length units</i> by:               <ul style="list-style-type: none"> <li>- using drawings (such as drawings of rulers)</li> <li>- and using equations with a symbol for the unknown number to represent the problem.</li> </ul> </li> </ul> <p><b>Work with time and money.</b></p> <ul style="list-style-type: none"> <li>• <b>2. MD.7</b> – Tell/write time from analog &amp; digital clocks to the nearest 5 minutes, using <i>am</i> and <i>pm</i>.</li> </ul> <p><b>Represent and interpret data.</b></p> <ul style="list-style-type: none"> <li>• <b>2. MD.9</b> – Make a line plot (horizontal scale marked off in whole-number units) using measurement data generated by either measuring lengths of several</li> </ul>		<p><b>Literature Connections</b></p> <p><i>Inch by Inch</i> by Leo Lionni  <i>Me and the Measure of Things</i> by Joan Sweeney  <i>Hershey's Weights and Measures</i> by Jerry Pallotta  <i>Much Bigger Than Martin</i> by Steven Kellogg  <i>How Big is a Foot?</i> by Rolf Myller  <i>Chickens on the Move</i> by Pam Pollack  <i>Sam's Sneaker Squares</i> by Nat Gabriel  <i>Inchworm and A Half</i> by Elinor J. Pinczes  <i>The Fattest, Tallest, Biggest Snowman Ever</i> by Bettina Ling  <i>Pigs in the Pantry, Fun with Math and Cooking</i> by Amy Axelrod  <i>Millions to Measure</i> by David M. Schwartz  <i>Measuring Penny</i> by Loreen Leedy  <i>Super Sand Castle Saturday</i> by Stuart J. Murphy  <i>What Time Is It?, A Hello Math Reader</i> by Sheila Keenan  <i>Tick Around the Clock</i> by Margaret Holland  <i>Just A Minute</i> by Teddy Salter  <i>What Time Is It Mr. Crocodile?</i> by Judy Sierra  <i>Game Time!</i> by Stuart Murphy</p>

objects to the nearest whole units or making repeated measurements of the same object.

## Ohio County Public Schools

### *Common Core State Standards: Mathematics*

### Grade 2 Math Pacing Guide

#### 4<sup>th</sup> Nine Weeks

Domain	<i>Common Core State Standards</i>	Major Topics/Concepts	Vocabulary	Resources
<b>Operations &amp; Algebraic Thinking</b>	<b>2.OA.4</b>	<p><b>Work with equal groups of objects to gain foundations for multiplication.</b></p> <ul style="list-style-type: none"> <li>• <b>2. OA.4</b> - Model equal groups with rectangular arrays and write an equation.</li> <li>• <b>2. OA.4</b> – Use addition to determine 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.</li> </ul>		
<b>Geometry</b>	<b>2.G.1 2.G.2 2.G.3</b>	<p><b>Reason with shapes and their attributes.</b></p> <ul style="list-style-type: none"> <li>• <b>2. G.1</b> - 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. (Note: <i>Sizes are compared directly or visually, not compared by measuring.</i>).</li> <li>• <b>2. G.2</b> – Partition a rectangle into rows and columns of same-size squares; count to find the total number of same-size squares.</li> <li>• <b>2. G.3</b> - Partition circles &amp; rectangles into 2-, 3-, or 4- equal shares; describe the shares using the words: <i>halves, thirds, fourths, half of, third of,</i> etc.</li> <li>• <b>2. G.3</b> - Describe the whole as two halves, three thirds, and four fourths.</li> <li>• <b>2. G.3</b> - Partition identical wholes in multiple ways. Recognize that <i>equal shares</i> of identical wholes <i>need not have the same shape.</i></li> </ul>		<p><b><u>Literature Connections</u></b></p> <p><i>The Greedy Triangle</i> by Marilyn Burns  <i>Grandfather Tang’s Story</i> by Ann Tompert  <i>Three Pigs, One Wolf, and Seven Magic Shapes</i> by Grace Maccarone  <i>The Silly Story of Goldie Locks and the Three Squares</i> by Grace Maccarone  <i>Shape Up</i> by David A. Adles  <i>Eating Fractions</i> by Bruce McMillian  <i>The Hershey’s Fractions Book</i> by Jerry Pallotta</p>
<b>Numbers &amp; Operations in Base Ten</b>	<b>2.NBT.6</b>	<p><b>Use place value understanding and properties of operations to add and subtract.</b></p> <ul style="list-style-type: none"> <li>• <b>2. NBT.6</b> - Add up to four two-digit numbers using strategies based on place value and properties of operations.</li> </ul>		

## Second Grade – Common Core State Standards -- MATHEMATICS

### Critical Areas

- 1. Extending understanding of base-ten notation** – Students extend their understanding of the base-ten system. This includes ideas of counting in fives, tens, and multiples of hundreds, tens, and ones, as well as number relationships involving these units, including comparing. Students understand multi-digit numbers (up to 1000) written in base-ten notation, recognizing that the digits in each place represent amounts of thousands, hundreds, tens, or ones (e.g., 853 is 8 hundreds + 5 tens + 3 ones).
- 2. Building fluency with addition and subtraction** – Students use their understanding of addition to develop fluency with addition and subtraction within 100. They solve problems within 1000 by applying their understanding of models for addition and subtraction, and they develop, discuss, and use efficient, accurate, and generalizable methods to compute sums and differences of whole numbers in base-ten notation, using their understanding of place value and the properties of operations. They select and accurately apply methods that are appropriate for the context and the numbers involved to mentally calculate sums and differences for numbers with only tens or only hundreds.
- 3. Using standard units of measure** – Students recognize the need for standard units of measure (centimeter and inch) and they use rulers and other measurement tools with the understanding that linear measure involves iteration of units. They recognize that the smaller the unit, the more iterations they need to cover a given length.
- 4. Describing and analyzing shapes** – Students describe and analyze shapes by examining their sides and angles. Students investigate, describe, and reason about decomposing and combining shapes to make other shapes. Through building, drawing, and analyzing two- and three-dimensional shapes, students develop a foundation for understanding attributes of two- and three-dimensional shapes, students develop a foundation for understanding area, volume, congruence, similarity, and symmetry in later grades.

### Mathematical Practices

- 1. Make sense of problems and persevere in solving them.**
- 2. Reason abstractly and quantitatively.**
- 3. Construct viable arguments and critique the reasoning of others.**
- 4. Model with mathematics.**
- 5. Use appropriate tools strategically.**
- 6. Attend to precision.**

7. Look for and make use of structure.

8. Look for and express regularity in repeated reasoning.

### Operations and Algebraic Thinking

2.OA

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. (Note: See *CCSS Glossary & Table 1.*)

**Add and subtract within 20.**

**2.OA.2** Fluently add and subtract within 20 using mental strategies. (Note: See *CCSS 1.OA.6* for a list of mental strategies). *By end of Grade 2, know from memory all sums of two one-digit numbers.*

**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.

### Number and Operations in Base Ten

2.NBT

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, 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.

**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.

**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. (Note: Explanations may be supported by drawings or objects.)

### Measurement and Data

2.MD

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.

**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.

**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.**

**2.MD.7** Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.

**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 using information presented in a bar graph. (Note: See *CCSS Glossary & Table 1.*)

**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.

**Geometry**

**2.G**

**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. (Note: Sizes are compared directly or visually, not compared by measuring.) Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

**2.G.2** Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.

**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.

**NOTE: CCSS 1.OA.6 ---- referenced in CCSS 2.OA.2**

**Mental Strategies**

- Counting on
- Making ten
  - e.g.,  $8 + 6 = 8 + 2 + 4 = 10 + 4 = 14$
- Decomposing a number leading to a ten
  - e.g.,  $13 - 4 = 13 - 3 - 1 = 10 - 1 = 9$
- Using the relationship between addition and subtraction
  - e.g., knowing that  $8 + 4 = 12$ , one knows that  $12 - 8 = 4$
- Creating equivalent but easier or known sums
  - e.g., adding  $6 + 7$  by creating the equivalent  $6 + 6 + 1 = 12 + 1 = 13$

