

# Mathematics Standards Clarification for Grade 2



 **The**  
*Nevada Ready!*  
**Network**

Standards-Based Instruction for  
ALL Nevada Students



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# Operations & Algebraic Thinking

## Cluster

Represent and solve problems involving addition and subtraction.

### NVACS 2.OA.A.1 (Major Work)

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.<sup>1</sup>

Element	Exemplars
<b>Standards for Mathematical Practice</b>	<ul style="list-style-type: none"> <li>● MP 1 Students will actively engage in making sense of problems by working to understand it, using an efficient strategy, and asking if the solution makes sense. Students will persevere as problems become more complex.</li> <li>● MP 4 Students will make connections to various models of mathematics including pictures, number lines, and other representations in order to make sense of the problem.</li> </ul>
<b>Instructional Strategies</b>	<ul style="list-style-type: none"> <li>● Give students opportunities to explain strategies for solving addition and subtraction problems. Students should evaluate the similarities and differences between various strategies.</li> <li>● Provide students the opportunity to model the unknown in all positions including adding to, taking from, putting together, taking apart, and comparing problems.</li> <li>● Use a variety of models such as an open number line, a part-part-whole chart, tape diagrams, linking cubes or other manipulatives.</li> <li>● Give numberless word problems to expose students to a context without numbers, which allow students to make sense of the problem.</li> </ul>
<b>Prerequisite Skills</b>	<ul style="list-style-type: none"> <li>● Teacher awareness of the progression of difficulty in problem types.</li> <li>● <a href="#">Addition and subtraction situations</a> on page 9</li> </ul>
<b>Connections Within and Beyond Grade Level</b>	<p>Within:</p> <ul style="list-style-type: none"> <li>● In Grade 1, problems were limited to one-step problems. This standard calls for solving one- and two-step problems.</li> <li>● Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units.</li> <li>● <a href="#">Ideas for increasing level of difficulty</a> on page 18</li> </ul> <p>Beyond:</p> <ul style="list-style-type: none"> <li>● Use multiplication and division within 100 to solve word problems.</li> </ul>
<b>Instructional Examples/Lessons/Tasks</b>	<ul style="list-style-type: none"> <li>● <i>Children’s Mathematics: Cognitively Guided Instruction</i> by Thomas P. Carpenter (and four others) shows how teachers can promote the development of children’s mathematical thinking and problem solving.</li> <li>● <a href="#">Addition and subtraction situations</a> on page 9</li> </ul>

Element

Exemplars

**Assessment Examples**

- [Rubric for open ended problem types](#) by Jan Keenoy
- [A Pencil and a Sticker](#)
- [Formative Assessment Task](#) by Howard County Public School System

## Operations & Algebraic Thinking

### Cluster

Add and subtract within 20.

### NVACS 2.OA.B.2 (Major Work)

Fluently add and subtract within 20 using mental strategies.<sup>2</sup> By end of Grade 2, know from memory all sums of two one-digit numbers.

Element	Exemplars
<b>Standards for Mathematical Practice</b>	<ul style="list-style-type: none"> <li>● MP 7 Students need to internalize and show strategic thinking to demonstrate understanding and application of strategies to find sums to 20.</li> <li>● MP 8 Students should see patterns in the number system such as using 5 and 10 to think flexibly about numbers.</li> </ul>
<b>Instructional Strategies</b>	<ul style="list-style-type: none"> <li>● Be aware that fluency is defined in the Nevada Academic Content Standards as flexible, accurate, efficient, and appropriate.</li> <li>● Be aware that knowing single digit sums from memory is <u>not</u> a matter of instilling facts divorced from their meanings. Fluency is an outcome of a multi-year process that heavily involves the interplay of practice and reasoning.</li> <li>● Review and extend strategies for addition and subtraction by providing a variety of materials such as counters, ten frames, number lines, and hundreds charts.</li> <li>● Promote situations for students to share strategies and have discourse about different strategies. Pose questions that help students make sense of their thinking and determine if their answer is reasonable.</li> </ul>
<b>Prerequisite Skills</b>	<ul style="list-style-type: none"> <li>● Addition and subtraction fact strategies</li> </ul>
<b>Connections Within and Beyond Grade Level</b>	<p>Within:</p> <ul style="list-style-type: none"> <li>● Fluently add and subtract within 100 using strategies based on place value, properties of operations, and the relationship between addition and subtraction.</li> <li>● Mentally add and subtract 10 or 100 to and from a given number 100–900.</li> </ul> <p>Beyond:</p> <ul style="list-style-type: none"> <li>● “In Grades 3–5, students will extend their understanding of addition and subtraction to situations that involve fractions and decimals. The situational meaning for addition and subtraction remain the same for fractions and decimals as for whole numbers.” See <a href="#">p. 19</a></li> </ul>
<b>Instructional Examples/Lessons/Tasks</b>	<ul style="list-style-type: none"> <li>● <a href="#">Number Talks</a> by <a href="#">Sherry Parrish</a></li> <li>● <a href="#">Building Toward Fluency</a></li> <li>● <a href="#">Hitting the Target Number</a></li> </ul>
<b>Assessment Examples</b>	<ul style="list-style-type: none"> <li>● <a href="#">Observation of students in problem solving situations</a></li> </ul>

## Operations & Algebraic Thinking

### Cluster

Work with equal groups of objects to gain foundations for multiplication.

### NVACS 2.OA.C.3 (Supporting Work)

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.

Element	Exemplars
<b>Standards for Mathematical Practice</b>	<ul style="list-style-type: none"> <li>● MP 4 Students should have ample opportunities to model odd and even numbers in a variety of contexts.</li> <li>● MP 7 Students will use their knowledge of the models of odd and even numbers to recognize patterns.</li> <li>● MP 8 Students make generalizations about odd and even numbers by seeing patterns based on models and using generalizations to express an even number as a sum of two equal addends.</li> </ul>
<b>Instructional Strategies</b>	<ul style="list-style-type: none"> <li>● Teachers should present situations that allow students to explore how a number can be decomposed into even and odd groupings.</li> <li>● Teachers should emphasize the use of concrete experiences to develop a conceptual understanding of the meaning of odd and even rather than memorizing a list of endings.</li> </ul>
<b>Prerequisite Skills</b>	<ul style="list-style-type: none"> <li>● The counting sequence</li> </ul>
<b>Connections Within and Beyond Grade Level</b>	<p>Within:</p> <ul style="list-style-type: none"> <li>● Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and 5 columns; write an equation to express the total as a sum of equal addends.</li> <li>● Skip count by 2s.</li> </ul> <p>Beyond:</p> <ul style="list-style-type: none"> <li>● <a href="#">Multiplication in Grade 3</a> (see p. 22)</li> </ul>
<b>Instructional Examples/Lessons/Tasks</b>	<ul style="list-style-type: none"> <li>● <a href="#">Buttons Odd and Even</a> by Illustrative Mathematics</li> <li>● <a href="#">Red and Blue Tiles</a> by Illustrative Mathematics</li> </ul>
<b>Assessment Examples</b>	<ul style="list-style-type: none"> <li>● <a href="#">Howard County Public School System</a></li> </ul>

## Operations & Algebraic Thinking

### Cluster

Work with equal groups of objects to gain foundations for multiplication.

### NVACS 2.OA.C.4 (Supporting Work)

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.

Element	Exemplars
<b>Standards for Mathematical Practice</b>	<ul style="list-style-type: none"> <li>● MP 2 Students contextualize and decontextualize mathematical situations as they translate real life problems into equations and the reverse.</li> <li>● MP 4 Models of repeated addition help students think about and develop multiplicative reasoning.</li> <li>● MP 7 Students will explore how numbers grow and make generalizations about the structure of combining numbers.</li> </ul>
<b>Instructional Strategies</b>	<ul style="list-style-type: none"> <li>● Arrange concrete materials into rectangular arrays up to 5x5, and have students describe what they have built using the terms “rows” and “columns”.</li> <li>● Construct arrays when given the dimensions.</li> <li>● Relate concrete models to pictorial representations with and without grid paper.</li> <li>● Relate models to skip counting and repeated addition.</li> <li>● Construct number sentences from real life situations.</li> </ul>
<b>Prerequisite Skills</b>	<ul style="list-style-type: none"> <li>● The counting sequence</li> <li>● Fluently add within 25.</li> </ul>
<b>Connections Within and Beyond Grade Level</b>	<p>Within:</p> <ul style="list-style-type: none"> <li>● Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.</li> </ul> <p>Beyond:</p> <ul style="list-style-type: none"> <li>● Interpret products as the total number of objects in an array.</li> <li>● Measure area by counting unit squares.</li> </ul>
<b>Instructional Examples/Lessons/Tasks</b>	<ul style="list-style-type: none"> <li>● <a href="#">Counting Dots in Arrays</a> by Illustrative Mathematics</li> <li>● <a href="#">Partitioning a Rectangle into Unit Squares</a> by Illustrative Mathematics</li> <li>● <a href="#">Performance Task</a> by Howard County Public School System</li> </ul>
<b>Assessment Examples</b>	<ul style="list-style-type: none"> <li>● Students arrange tiles or other manipulatives into arrays.</li> <li>● Given a rectangular array up to 5x5, students write an equation to represent repeated addition in the array.</li> <li>● <a href="#">Assessment Task</a> by Howard County Public School System</li> </ul>



## Number & Operations in Base Ten

In this domain, students will extend their previous understanding of place value from ones and tens to hundreds and thousands. Students see 100 as 10 tens and multiples of 100 as being made up of some number of hundreds. Students use place value to compose and decompose numbers and write corresponding equations. This knowledge develops the conceptual understanding of the base ten system and that within the base ten system anytime there are ten items of a particular unit, they can be grouped to make the next place value unit. This understanding is essential as students begin to add and subtract within 1,000. This cluster encompasses using knowledge of place value for counting and comparing numerals to 1,000 (Gojak and Miles, 2016).

### Cluster

Understand place value.

### NVACS 2.NBT.A.1 (Major Work)

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:

- **2.NBT.A.1.a**  
100 can be thought of as a bundle of ten tens—called a “hundred”.
- **2.NBT.A.1.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).

Element	Exemplars
<b>Standards for Mathematical Practice</b>	<ul style="list-style-type: none"> <li>● MP 4 Students model 3 digit numbers using appropriate concrete models. (e.g., groupable items, base ten blocks, place value disks)</li> <li>● MP 5 Students will start to transition from the concrete models to the pictorial place value chart model when conceptual understanding is apparent.</li> <li>● MP 7 Students will look for patterns when developing conceptual understanding of place value.</li> </ul>
<b>Instructional Strategies</b>	<ul style="list-style-type: none"> <li>● Reinforce bundling of ten ones into one ten.</li> <li>● Introduce hundreds place on place value chart.</li> <li>● Develop concept and vocabulary that one hundred is a unit composed of 10 tens.</li> <li>● Work with bundles to make groups of 10 and bundling those into one hundred.</li> <li>● Bundle units of 100, 200, 300, 400, 500, 600, 700, 800, 900 to see that those bundles are made up of hundreds with no additional tens or ones.</li> <li>● Give a number from 100–999 for students to construct with concrete models and describe the value of each place (Gojak and Miles, 2016). Decompose a three-digit number in various ways (equivalent representations). For example, 456 can be composed of 4 hundreds, 5 tens and 6 ones; or 4 hundreds, 4 tens, and 16 ones.</li> </ul>

Element	Exemplars
<b>Prerequisite Skills</b>	<ul style="list-style-type: none"> <li>● Understand that the two digits of a two-digit number represent amounts of tens and ones.</li> </ul>
<b>Connections Within and Beyond Grade Level</b>	<p>Within:</p> <ul style="list-style-type: none"> <li>● Skip count within 1000, by 5s, 10s, 100s.</li> <li>● Read and write numbers to 1,000 (base-ten numerals, number names, expanded form).</li> <li>● Compare 2 three-digit numbers based on meaning of the hundreds, tens, and ones digit (<math>&gt;</math>, <math>&lt;</math>, <math>=</math>).</li> <li>● Add and subtract within 1,000 using concrete models, drawings, and strategies based on place value.</li> <li>● Mentally add and subtract 10 or 100 to a given number 100–900.</li> </ul> <p>Beyond:</p> <ul style="list-style-type: none"> <li>● Use place value understanding to round whole numbers to the nearest 10 or 100.</li> <li>● Multiply one-digit whole numbers by multiples of 10 in the range 10–90 using strategies based on place value.</li> <li>● Relate base ten system to thousands and millions place.</li> </ul>
<b>Instructional Examples/Lessons/Tasks</b>	<ul style="list-style-type: none"> <li>● <a href="#">Ten \$10 make \$100</a></li> <li>● <a href="#">One, Ten, and One Hundred More or Less</a></li> <li>● <a href="#">Making 124</a></li> <li>● <a href="#">Regrouping</a></li> <li>● <a href="#">Bundling and Unbundling</a></li> <li>● <a href="#">Largest Number Game</a></li> <li>● <a href="#">Party Favors</a></li> </ul>
<b>Assessment Examples</b>	<ul style="list-style-type: none"> <li>● <a href="#">Understand Place Value within 1,000 Mini-Assessment</a></li> <li>● <a href="#">EngageNY Washington State Math Assessment</a> Click the download tab next to “View” to see assessment.</li> <li>● <a href="#">About the Math, Learning Targets, and Increasing Rigor</a> Click on the assessment link.</li> </ul>

## Number & Operations in Base Ten

### Cluster

Understand place value.

### NVACS 2.NBT.A.2 (Major Work)

Count within 1000; skip-count by 5s, 10s, and 100s.

Element

Exemplars

Standards for Mathematical Practice	<ul style="list-style-type: none"> <li>● MP 7 Students use structure to skip count.</li> </ul>
Instructional Strategies	<ul style="list-style-type: none"> <li>● Assign students a number and have them count back or on from that given number.</li> <li>● Connect the counts to the number line illustration.</li> <li>● Explain patterns of place value as students count.</li> <li>● Connect patterns and prior knowledge to skip counting by 5, 10, and 100 within numbers 1–1000.</li> <li>● Students should explain patterns in place value as they skip count (Gojak and Miles, 2016).</li> </ul>
Prerequisite Skills	<ul style="list-style-type: none"> <li>● Previous knowledge of skip counting</li> </ul>
Connections Within and Beyond Grade Level	<p>Within:</p> <ul style="list-style-type: none"> <li>● Determine whether a group of objects (up to 20) has an even or odd number of members.</li> <li>● Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones.</li> <li>● Mentally add or subtract 10 or 100 to or from a given number 100-900.</li> </ul> <p>Beyond:</p> <ul style="list-style-type: none"> <li>● Use place value understanding to round whole numbers to the nearest 10 or 100.</li> <li>● Skip count by 3s, 4s, 6s, 7s, 8s, and 9s.</li> </ul>
Instructional Examples/Lessons/Tasks	<ul style="list-style-type: none"> <li>● <a href="#">Saving Money 2</a></li> <li>● <a href="#">About the Math, Learning Targets, and Increasing Rigor</a></li> </ul>
Assessment Examples	<ul style="list-style-type: none"> <li>● <a href="#">Understand Place Value within 1,000 Mini-Assessment</a></li> <li>● <a href="#">Skip Counting Assessment</a></li> </ul> <p>Click on the download tab next to “View” to see assessment.</p>

## Number & Operations in Base Ten

### Cluster

Understand place value.

### NVACS 2.NBT.A.3 (Major Work)

Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

Element	Exemplars
<b>Standards for Mathematical Practice</b>	<ul style="list-style-type: none"> <li>● MP 2 Students reason abstractly and quantitatively by working on reading and writing numbers in different forms.</li> <li>● MP 5 Students use a place value chart and bundles to begin writing larger numbers.</li> <li>● MP 7 Student make use of the structure of the base-ten system to write number up to 1000.</li> </ul>
<b>Instructional Strategies</b>	<ul style="list-style-type: none"> <li>● Students will relate the physical representation by writing the suitable digit under each place on the place value chart.</li> <li>● Identify the value name for each digit.</li> <li>● Following many experiences, students write and read the name of the number represented in expanded form.</li> <li>● Identify and read the number of hundreds, tens, and ones. (Example: 154 would be read as 1 hundred, 5 tens, and 4 ones.)</li> <li>● Read number names without physical models.</li> </ul>
<b>Prerequisite Skills</b>	<ul style="list-style-type: none"> <li>● Previous knowledge of number names and base-ten numerals</li> </ul>
<b>Connections Within and Beyond Grade Level</b>	<p>Within:</p> <ul style="list-style-type: none"> <li>● Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones.</li> </ul> <p>Beyond:</p> <ul style="list-style-type: none"> <li>● Understand place value concepts of numbers beyond 1000.</li> <li>● Use place value understanding to round whole numbers to the nearest 10 or 100.</li> </ul>
<b>Instructional Examples/Lessons/Tasks</b>	<ul style="list-style-type: none"> <li>● <a href="#">Looking at Numbers Every Which Way</a></li> <li>● <a href="#">About the Math, Learning Targets, and Increasing Rigor</a></li> <li>● <a href="#">Purposeful Participation in Grade 2 Place Value Video</a></li> </ul>
<b>Assessment Examples</b>	<ul style="list-style-type: none"> <li>● <a href="#">Understand Place Value within 1,000 Mini-Assessment</a></li> <li>● <a href="#">Read and Write Numbers, Solve Problems</a></li> </ul> <p>Click the download tab next to “View” to see assessment.</p>

## Number & Operations in Base Ten

### Cluster

Understand place value.

### NVACS 2.NBT.A.4 (Major Work)

Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using  $>$ ,  $=$ , and  $<$  symbols to record the results of comparisons.

Element	Exemplars
<b>Standards for Mathematical Practice</b>	<ul style="list-style-type: none"> <li>● MP 4 Students model numbers using place value to make comparisons.</li> <li>● MP 5 Students use tools including manipulatives and the place value chart to make comparisons.</li> <li>● MP 8 Students use structure of place value to reason about larger numbers and make comparisons.</li> </ul>
<b>Instructional Strategies</b>	<ul style="list-style-type: none"> <li>● Provide scholars with an assortment of concrete materials and place value charts for representing two 3-digit numbers.</li> <li>● Ask questions such as “Which has fewer?” “Which is less?” “Which has more?” “Which is less?” to assist students with correct symbols and vocabulary.</li> <li>● Facilitate discourse in which students explain their reasoning.</li> <li>● Use the mathematical symbols <math>&lt;</math>, <math>&gt;</math>, and <math>=</math> to represent comparisons symbolically (Gojak and Miles, 2016).</li> <li>● Decompose a three-digit number in various ways (equivalent representations). For example, 456 can be composed of 4 hundreds, 5 tens and 6 ones; or 4 hundreds, 4 tens, and 16 ones; or 3 hundreds 15 tens and 6 ones; or other various ways.</li> </ul>
<b>Prerequisite Skills</b>	<ul style="list-style-type: none"> <li>● Students use their existing knowledge of comparing two 2-digit numbers to develop three-digit number comparison. Students extend their knowledge of mathematical models including place value and number lines. It is helpful if students have understanding of these models and can use them with two digit numbers.</li> </ul>
<b>Connections Within and Beyond Grade Level</b>	<p>Within:</p> <ul style="list-style-type: none"> <li>● Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones.</li> </ul> <p>Beyond:</p> <ul style="list-style-type: none"> <li>● Compare and order numbers beyond 1000.</li> <li>● Use place value to round whole numbers to the nearest 10 or 100.</li> </ul>
<b>Instructional Examples/Lessons/Tasks</b>	<ul style="list-style-type: none"> <li>● <a href="#">Ordering 3 Digit Numbers</a></li> <li>● <a href="#">Comparisons 1</a></li> <li>● <a href="#">Number Line Comparisons</a></li> <li>● <a href="#">Comparisons 2</a></li> <li>● <a href="#">Using Pictures to Explain Number Comparisons</a></li> <li>● <a href="#">About the Math, Learning Targets, and Increasing Rigor</a></li> </ul>

Element	Exemplars
<b>Assessment Examples</b>	<ul style="list-style-type: none"><li data-bbox="548 138 1300 170">● <a href="#">Understand Place Value within 1,000 Mini-Assessment</a></li><li data-bbox="548 174 1300 205">● <a href="#">Comparing Numbers Using (&lt;, &gt;, =) Mini-Assessment</a> Click the download tab next to “View” to see assessment.</li><li data-bbox="548 210 1341 241">● <a href="#">Understanding Place Value within 1,000 Mini-Assessment</a> Click the download tab next to “View” to see assessment.</li></ul>

## Number & Operations in Base Ten

### Cluster

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

### NVACS 2.NBT.B.5 (Major Work)

Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

Element	Exemplars
<b>Standards for Mathematical Practice</b>	<ul style="list-style-type: none"> <li>● MP 1 Students need to make sense of problems and be able to use one or more strategies to solve the problem. Students should know when the strategy is working and when they may need to revise their strategy.</li> <li>● MP 2 Students will represent addition and subtraction problems using models and place value. They must also consider the units. They will use properties of operations flexibly.</li> <li>● MP 7 Students will use the structure of our number system when using place value to add and subtract within 100; understanding that tens can only be combined with 10s etc.</li> </ul>
<b>Instructional Strategies</b>	<p><i>Note: Fluency, as defined by the NVACS, means skill in carrying out procedures flexibly, accurately, efficiently and appropriately. Thus, students use reasoning strategies to add and subtract within 100 focusing on strategies that highlight using place value, the properties of operations, and/or the relationship between addition and subtraction.</i></p> <p><i>Provide opportunities for students to connect practice with standards 2.NBT.A.1a–b</i></p> <ul style="list-style-type: none"> <li>● Scaffold the level of complexity as students work to make sense of adding two 2-digit numbers and make generalizations about their work. Student understanding develops over time. Encourage students to explain their thinking while using a variety of strategies.</li> <li>● When completing examples requiring regrouping (composing numbers from tens and ones) provide ample experience with place value materials. Be sure to use tools and manipulatives that show the proportionality. For example, multi-link cubes or place value blocks (avoid the chip abacus).</li> <li>● Make explicit the connections between the models, strategies or tools and student written work (or written methods).</li> <li>● Encourage students to move to using mental computation strategies to develop conceptual understanding and number sense adding 2-digit numbers.</li> <li>● Provide opportunities for students to explain to classmates and compare their strategies to those of others.</li> <li>● <a href="#"><u>Explore other strategies for subtraction using benchmark numbers, number lines and the hundreds chart.</u></a></li> </ul>

Element	Exemplars
<b>Prerequisite Skills</b>	<ul style="list-style-type: none"> <li>● Used addition and subtraction within 20 to solve word problems.</li> <li>● Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on, making ten, decomposing a number leading to a ten, using the relationship between addition and subtraction and creating equivalent but easier or known sums.</li> <li>● Understand the two digits of a two-digit number represent amounts of tens and ones.</li> </ul>
<b>Connections Within and Beyond Grade Level</b>	<p>Within:</p> <ul style="list-style-type: none"> <li>● Use addition and subtraction to solve one- and two- step word problems involving various situations by using drawings and equations.</li> <li>● Fluently add and subtract within 20 using mental strategies such as counting on, making ten, decomposing a number leading to a ten, using the relationship between addition and subtraction, and creating equivalent but easier or known sums.</li> <li>● 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.</li> <li>● 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.</li> <li>● Use place value understanding to add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.</li> </ul> <p>Beyond:</p> <ul style="list-style-type: none"> <li>● Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.</li> </ul>
<b>Instructional Examples/Lessons/Tasks</b>	<ul style="list-style-type: none"> <li>● <a href="#">3-Act-Task</a></li> <li>● <a href="#">Ford and Logan Add 45 + 36</a></li> <li>● <a href="#">Saving Money 1</a></li> <li>● <a href="#">Curious Subtraction Task</a></li> <li>● <a href="#">About the Math, Learning Targets, and Increasing Rigor</a></li> </ul>
<b>Assessment Examples</b>	<ul style="list-style-type: none"> <li>● Collect evidence of student understanding around the following: <ul style="list-style-type: none"> <li>○ What strategies are students engaging in to solve the problem? Are they using place value? Properties of Operations? The relationship between addition &amp; subtraction?</li> <li>○ Are students able to explain why their strategy works?</li> <li>○ Are students using strategies that are efficient given the numbers in the problem?</li> </ul> </li> <li>● <a href="#">About the Math, Learning Targets, and Increasing Rigor</a></li> </ul>



## Number & Operations in Base Ten

### Cluster

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

### NVACS 2.NBT.B.6 (Major Work)

Add up to four two-digit numbers using strategies based on place value and properties of operations.

Element	Exemplars
<b>Standards for Mathematical Practice</b>	<ul style="list-style-type: none"> <li>• MP 1 Students need to make sense of problems and be able to use one or more strategies to solve the problem. Students should know when the strategy is working and when they may need to revise their strategy.</li> <li>• MP 2 Students will represent addition and subtraction problems using models and place value. They must also consider the units. They will use properties of operations flexibly.</li> <li>• MP 7 Students will use the structure of our number system when using place value to add and subtract within 100; understanding that tens can only be combined with 10s etc.</li> </ul>
<b>Instructional Strategies</b>	<ul style="list-style-type: none"> <li>• Scaffold the level of complexity as students work to make sense out of adding two 2-digit numbers and make generalizations about what is happening before extending to 3 or 4 addends.</li> <li>• Use a variety of strategies to add up to four 2-digit numbers.               <ul style="list-style-type: none"> <li>○ Example: <math>37 + 15 + 33</math>.</li> <li>○ Students can add 37 and 33 to get 70.</li> <li>○ Then add 70 to 15 to get 85.</li> </ul> <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> <li>○ Add the tens <math>30 + 10 + 30 = 70</math></li> <li>○ Add the ones <math>7 + 5 + 3 = 15</math></li> <li>○ Add the sums of both <math>70 + 15 = 85</math></li> </ul> </li> <li>• When completing examples requiring regrouping (composing numbers from tens and ones) provide ample experience with place value materials. Be sure to use tools and manipulatives that show the proportionality. For example, multi-link cubes, bundling with straws or place value blocks. Make explicit the connections between the models, strategies or tools and student written work (or written methods).</li> <li>• Provide opportunities for students to explain to classmates and compare their strategies to those of others.</li> <li>• Explore other strategies for addition using benchmark numbers, number lines and the hundreds chart.</li> <li>• <a href="#">Computational Strategies</a></li> </ul>

Element	Exemplars
<p><b>Prerequisite Skills</b></p>	<ul style="list-style-type: none"> <li>● Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings and equations with a symbol for the unknown number to represent the problem.</li> <li>● Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on, making ten, decomposing a number leading to a ten, using the relationship between addition and subtraction and creating equivalent but easier or known sums.</li> <li>● Understand the two digits of a two-digit number represent amounts of tens and ones.</li> </ul>
<p><b>Connections Within and Beyond Grade Level</b></p>	<p>Within:</p> <ul style="list-style-type: none"> <li>● Fluently add and subtract within 20 using mental strategies such as counting on, making ten, decomposing a number leading to a ten, using the relationship between addition and subtraction, and creating equivalent but easier or known sums.</li> <li>● 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.</li> <li>● 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.</li> <li>● Students use addition and subtraction to solve one- and two- step word problems involving various situations by using drawings and equations.</li> </ul> <p>Beyond:</p> <ul style="list-style-type: none"> <li>● Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.</li> </ul>
<p><b>Instructional Examples/Lessons/Tasks</b></p>	<ul style="list-style-type: none"> <li>● <a href="#">Toll Bridge Puzzle</a></li> <li>● <a href="#">About the Math, Learning Targets, and Increasing Rigor</a></li> </ul>

Element

Exemplars

**Assessment Examples**

- Collect evidence of student understanding around the following:
  - What strategies are students engaging in to solve the problem? Are they using place value? Properties of Operations?
    - For example are students able to understand commutativity, when adding  $24 + 30 + 36$ ? That they can start with 30 or they can **commute** 36 to read  $24 + 36 + 30$  and then **associate** ( $24 + 36$ ) to lead to a number resulting in a composed 10 (in this case 60). Thus  $60 + 30$  results in a sum of 90.
  - Are students able to explain why their strategy works?
  - Are students using strategies that are efficient given the numbers in the problem?
  - Are students able to apply strategies when:
    - There is no regrouping?
    - When regrouping is required?
    - When there are no tens?
- [About the Math, Learning Targets, and Increasing Rigor](#)
- [Use Various Strategies to Add Four Addends](#)

## Number & Operations in Base Ten

### Cluster

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

### NVACS 2.NBT.B.7 (Major Work)

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.

Element	Exemplars
<b>Standards for Mathematical Practice</b>	<ul style="list-style-type: none"> <li>• MP 1 Students need to make sense of problems and be able to use one or more strategies to solve the problem. Students should know when the strategy is working and when they may need to revise their strategy.</li> <li>• MP 2 Students will represent addition and subtraction problems using models and place value. They must also consider the units. They will use properties of operations flexibly.</li> <li>• MP 7 Students will use the structure of our number system when using place value to add and subtract within 100; understanding that tens can only be combined with 10s etc.</li> </ul>
<b>Instructional Strategies</b>	<ul style="list-style-type: none"> <li>• Scaffold the level of complexity as students work to make sense out of adding two 2-digit numbers and make generalizations about what is happening before extending to three-digit numbers.</li> <li>• When completing examples requiring regrouping (composing numbers from tens and ones) provide ample experience with place value materials. Be sure to use tools and manipulatives that show the proportionality. For example, multi-link cubes, bundling with straws or place value blocks (avoid the chip abacus).</li> <li>• Make explicit the connections between the models, strategies or tools and student written work (or written methods).</li> <li>• Use estimation strategies to determine if their answers are reasonable.</li> <li>• Provide opportunities for students to explain to classmates and compare their strategies to those of others.</li> <li>• Explore other strategies for addition and subtraction using benchmark numbers, number lines and the hundreds chart.</li> <li>• Connect strategies to these tools; for example with the ‘constant distance’ model that students can change the minuend or subtrahend and the distance stays the same on the number line.</li> <li>• <a href="#">Computation Strategies</a></li> </ul>

Element	Exemplars
<p><b>Prerequisite Skills</b></p>	<ul style="list-style-type: none"> <li>• Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings and equations with a symbol for the unknown number to represent the problem.</li> <li>• Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on, making ten, decomposing a number leading to a ten, using the relationship between addition and subtraction, and creating equivalent but easier or known sums. (In 2<sup>nd</sup> grade, students will extend using these strategies to larger numbers.)</li> <li>• Understand the two digits of a two-digit number represent amounts of tens and ones.</li> </ul>
<p><b>Connections Within and Beyond Grade Level</b></p>	<p>Within:</p> <ul style="list-style-type: none"> <li>• Fluently add and subtract within 20 using mental strategies such as counting on, making ten, decomposing a number leading to a ten, using the relationship between addition and subtraction, and creating equivalent but easier or known sums.</li> <li>• 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.</li> <li>• 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.</li> <li>• Students use addition and subtraction to solve one- and two- step word problems involving various situations by using drawings and equations.</li> </ul> <p>Beyond:</p> <ul style="list-style-type: none"> <li>• Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.</li> </ul>
<p><b>Instructional Examples/Lessons/Tasks</b></p>	<ul style="list-style-type: none"> <li>• 3 Act Tasks – <a href="#">Let it Fly</a> and <a href="#">Downsizing tomatoes</a></li> <li>• <a href="#">How Many Days Until Summer Vacation?</a></li> <li>• <a href="#">How Many Ways to Do Addition 2</a></li> <li>• <a href="#">About the Math, Learning Targets, and Increasing Rigor</a></li> </ul>

Element	Exemplars
<b>Assessment Examples</b>	<ul style="list-style-type: none"> <li>● Collect evidence of student understanding around the following: <ul style="list-style-type: none"> <li>○ What strategies are students engaging in to solve the problem? Are they using place value? Properties of Operations? The relationship between addition &amp; subtraction? <ul style="list-style-type: none"> <li>■ For example are students able to understand commutativity, when adding <math>24 + 30 + 36</math>? That they can start with 30 or they can <b>commute</b> 36 to read <math>24 + 36 + 30</math> and then <b>associate</b> <math>(24 + 36)</math> to lead to a number resulting in a composed 10 (in this case 60). Thus <math>60 + 30</math> results in a sum of 90.</li> <li>■ For examples, relate subtraction to addition by using the ‘think addition’ strategy. Given <math>72 - 48</math>, think what plus 48 will make 72.</li> </ul> </li> <li>○ Are students able to explain why their strategy works?</li> <li>○ Are students using strategies that are efficient given the numbers in the problem?</li> <li>○ Are students able to apply strategies when: <ul style="list-style-type: none"> <li>■ There is no regrouping?</li> <li>■ When regrouping is required?</li> <li>■ When there are no tens?</li> </ul> </li> </ul> </li> <li>● <a href="#">About the Math, Learning Targets, and Increasing Rigor</a></li> </ul>

## Number & Operations in Base Ten

### Cluster

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

### NVACS 2.NBT.B.8 (Major Work)

Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.

Element	Exemplars
<b>Standards for Mathematical Practice</b>	<ul style="list-style-type: none"> <li>● MP 1 Students need to make sense of problems and be able to use one or more strategies to solve the problem. Students should know when the strategy is working and when they may need to revise their strategy.</li> <li>● MP 7 Students will use the structure of our number system when using place value to add and subtract within 100; understanding that tens can only be combined with 10s etc.</li> </ul>
<b>Instructional Strategies</b>	<ul style="list-style-type: none"> <li>● Make explicit the connections between the models, strategies or tools and the mental construction of adding 10 or 100 or subtracting 10 or 100 (number lines, number grids or number charts etc.).</li> <li>● Provide opportunities for students to explain to classmates and compare their strategies to those of others.</li> </ul>
<b>Prerequisite Skills</b>	<ul style="list-style-type: none"> <li>● Count to 100 by 10s.</li> <li>● Use 10s to understand the numbers 10–90 are composed of 10s.</li> </ul>
<b>Connections Within and Beyond Grade Level</b>	<p>Within:</p> <ul style="list-style-type: none"> <li>● 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 that the numbers 100-900 refer to a specific number of 100s and zero ones. For example, 800 contains eight one hundreds.</li> <li>● Count within 1000; skip-counting by 5s, 10s and 100s.</li> </ul> <p>Beyond:</p> <ul style="list-style-type: none"> <li>● Multiply one-digit whole numbers by multiples of 10 in the range of 10–90 (e.g. <math>9 \times 80</math>, <math>5 \times 60</math>) using strategies based on place value and the properties of operations.</li> </ul>
<b>Instructional Examples/Lessons/Tasks</b>	<ul style="list-style-type: none"> <li>● <a href="#">Choral Counting</a></li> <li>● <a href="#">About the Math, Learning Targets, and Increasing Rigor</a></li> </ul>
<b>Assessment Examples</b>	<ul style="list-style-type: none"> <li>● <a href="#">About the Math, Learning Targets, and Increasing Rigor</a></li> </ul>

## Number & Operations in Base Ten

### Cluster

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

### NVACS 2.NBT.B.9 (Major Work)

Explain why addition and subtraction strategies work, using place value and the properties of operations.<sup>1</sup>

<sup>1</sup> Explanations may be supported by drawings or objects.

Element	Exemplars
<b>Standards for Mathematical Practice</b>	<ul style="list-style-type: none"> <li>● MP 1 Students need to make sense of problems and be able to use one or more strategies to solve the problem. Students should know when the strategy is working and when they may need to revise their strategy.</li> <li>● MP 2 Students will represent addition and subtraction problems using models and place value. They must also consider the units. They will use properties of operations flexibly.</li> <li>● MP 3 Students are beginning to construct justifications for why addition and subtraction work through using examples, strategies and models to engage with their peers. Students critique their own reasoning, refining their results and engage and critique the reasoning of others when that reasoning is vague unclear or draws inaccurate conclusions.</li> <li>● MP 7 Students will use the structure of our number system when using place value to add and subtract within 100; understanding that tens can only be combined with 10s etc.</li> </ul>
<b>Instructional Strategies</b>	<ul style="list-style-type: none"> <li>● Scaffold the level of complexity as students work to make sense out of adding numbers. Elicit students to make generalizations about what is happening and support those generalizations with models.</li> <li>● Have students make explicit the connections between the models, strategies or tools and student written work (or written methods).</li> <li>● Have students ask themselves if their answers make sense.</li> <li>● Provide opportunities for students to explain to classmates and compare their strategies to those of others.</li> <li>● Explore other strategies for addition and subtraction using benchmark numbers, number lines and the hundreds chart.</li> <li>● <a href="#">Computation Strategies</a></li> </ul>
<b>Prerequisite Skills</b>	<ul style="list-style-type: none"> <li>● Use addition and subtraction within 20 to solve word problems.</li> <li>● Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on, making ten, decomposing a number leading to a ten, using the relationship between addition and subtraction and creating equivalent but easier or known sums.</li> <li>● Apply properties of operations as strategies to add and subtract.</li> <li>● Understand subtraction as an unknown-addend problem.</li> </ul>



Element	Exemplars
<p><b>Connections Within and Beyond Grade Level</b></p>	<p>Within:</p> <ul style="list-style-type: none"> <li>● Students use addition and subtraction to solve one- and two- step word problems involving various situations by using drawings and equations.</li> <li>● Fluently add and subtract within 20 using mental strategies such as counting on, making ten, decomposing a number leading to a ten, using the relationship between addition and subtraction, and creating equivalent but easier or known sums.</li> <li>● 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.</li> <li>● 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.</li> <li>● Mentally add or subtract 10 and 100 to or from a given number 100–900.</li> </ul> <p>Beyond:</p> <ul style="list-style-type: none"> <li>● Explain why the addition or subtraction algorithm works using knowledge of place value, the properties of operations, and/or the relationship between addition and subtraction.</li> </ul>
<p><b>Instructional Examples/Lessons/Tasks</b></p>	<ul style="list-style-type: none"> <li>● <a href="#">Peyton and Presley Discuss Addition</a></li> </ul>
<p><b>Assessment Examples</b></p>	<ul style="list-style-type: none"> <li>● <a href="#">About the Math, Learning Targets, and Increasing Rigor</a></li> </ul>

## Measurement & Data

### Cluster

Measure and estimate lengths in standard units.

### NVACS 2.MD.A.1 (Major Cluster)

Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

Element	Exemplars
<b>Standards for Mathematical Practice</b>	<ul style="list-style-type: none"> <li>● MP 5 Students measure objects with a ruler, yardstick, or measuring tape.</li> <li>● MP 6 Students use precise vocabulary to describe the measurement of objects.</li> </ul>
<b>Instructional Strategies</b>	<ul style="list-style-type: none"> <li>● Allow students to estimate and measure a variety of things using different measuring tools with the goal of selecting the best or most appropriate tool.</li> <li>● Students will discover the relationship between the size of a unit and the number of units needed.</li> <li>● Model vocabulary with measurement terms.</li> <li>● Provide time for discussion about measurement tools students are using.</li> </ul>
<b>Prerequisite Skills</b>	<ul style="list-style-type: none"> <li>● Express the length of an object as the whole number of length units, by laying multiple copies of a shorter object end to end.</li> <li>● Understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. (Limit the measurement context to objects with whole number length of units.)</li> </ul>
<b>Connections Within and Beyond Grade Level</b>	<p>Within:</p> <ul style="list-style-type: none"> <li>● Measure the length of an object twice, using length units of different lengths for the two measurements.</li> <li>● Measure to determine how much longer one object is than another.</li> <li>● Show measurements by making a line plot.</li> </ul> <p>Beyond:</p> <ul style="list-style-type: none"> <li>● Measure lengths using rulers marked with halves and fourths of an inch.</li> </ul>
<b>Instructional Examples/Lessons/Tasks</b>	<ul style="list-style-type: none"> <li>● <a href="#">About the Math, Learning Targets, and Increasing Rigor</a></li> </ul>
<b>Assessment Examples</b>	<ul style="list-style-type: none"> <li>● <a href="#">Grade 2 Measurement and Data Assessment Tasks</a></li> </ul>

## Measurement & Data

### Cluster

Measure and estimate lengths in standard units.

### NVACS 2.MD.A.2 (Major Cluster)

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.

Element	Exemplars
<b>Standards for Mathematical Practice</b>	<ul style="list-style-type: none"> <li>● MP 5 Students measure objects with a ruler, yardstick, or measuring tape.</li> <li>● MP 6 Students use precise vocabulary to describe the measurement of objects.</li> <li>● MP 7 Students look for and select appropriate units to measure objects, recognizing the relationship between the size of a unit and the number of units needed.</li> </ul>
<b>Instructional Strategies</b>	<ul style="list-style-type: none"> <li>● Give students time to experiment and measure an object using two different units.</li> <li>● Help students recognize how the two measurements relate to the size of the unit chosen.</li> </ul>
<b>Prerequisite Skills</b>	<ul style="list-style-type: none"> <li>● Express the length of an object as the whole number of length units, by laying multiple copies of a shorter object end to end.</li> <li>● Understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. (Limit the measurement context to objects with whole number length of units.)</li> </ul>
<b>Connections Within and Beyond Grade Level</b>	<p>Within:</p> <ul style="list-style-type: none"> <li>● Measure the length of an object by selecting and using appropriate tools.</li> </ul> <p>Beyond:</p> <ul style="list-style-type: none"> <li>● Measure lengths using rulers marked with halves and fourths of an inch.</li> </ul>
<b>Instructional Examples/Lessons/Tasks</b>	<ul style="list-style-type: none"> <li>● <a href="#">High Horse</a></li> <li>● <a href="#">About the Math, Learning Targets, and Increasing Rigor</a></li> </ul>
<b>Assessment Examples</b>	<ul style="list-style-type: none"> <li>● <a href="#">Grade 2 Measurement and Data Assessment Tasks</a></li> </ul>

## Measurement & Data

### Cluster

Measure and estimate lengths in standard units.

### NVACS 2.MD.A.3 (Major Cluster)

Estimate lengths using units of inches, feet, centimeters, and meters.

Element	Exemplars
<b>Standards for Mathematical Practice</b>	<ul style="list-style-type: none"> <li>● MP 5 Students measure objects with a ruler, yardstick, or measuring tape.</li> </ul>
<b>Instructional Strategies</b>	<ul style="list-style-type: none"> <li>● Provide opportunities for students to estimate the length of common objects.</li> <li>● Help students develop an awareness of specific units.</li> <li>● Teach students to estimate before measuring the length of an object to develop a mental benchmark.</li> <li>● Use vocabulary, such as a little more/less than, close to, etc.</li> <li>● Discuss how estimation is important in daily life.</li> <li>● Encourage students to share their mental benchmarks of measurement.</li> </ul>
<b>Prerequisite Skills</b>	<ul style="list-style-type: none"> <li>● Use same-size length units to estimate the length of an object.</li> </ul>
<b>Connections Within and Beyond Grade Level</b>	Within: <ul style="list-style-type: none"> <li>● Measure the length of objects to identify benchmark measurements for inches, feet, centimeters, and meters.</li> </ul>
<b>Instructional Examples/Lessons/Tasks</b>	<ul style="list-style-type: none"> <li>● <a href="#">About the Math, Learning Targets, and Increasing Rigor</a></li> </ul>
<b>Assessment Examples</b>	<ul style="list-style-type: none"> <li>● <a href="#">Grade 2 Measurement and Data Assessment Task</a></li> </ul>

## Measurement & Data

### Cluster

Measure and estimate lengths in standard units.

### NVACS 2.MD.A.4 (Major Cluster)

Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

Element	Exemplars
<b>Standards for Mathematical Practice</b>	<ul style="list-style-type: none"> <li>● MP 5 Students measure objects with a ruler, yardstick, or measuring tape.</li> <li>● MP 6 Students use precise vocabulary to describe the measurement of objects.</li> </ul>
<b>Instructional Strategies</b>	<ul style="list-style-type: none"> <li>● Provide time for students to choose an appropriate tool and find the difference in length of real objects.</li> <li>● Teach students to make statements to describe the differences between the objects such as, “The pencil is 3 inches longer than the crayon”.</li> </ul>
<b>Prerequisite Skills</b>	<ul style="list-style-type: none"> <li>● Order three objects by length.</li> <li>● Compare the lengths of two objects indirectly by using a third object.</li> </ul>
<b>Connections Within and Beyond Grade Level</b>	<p>Within:</p> <ul style="list-style-type: none"> <li>● Measure the length of an object by selecting and using appropriate tools.</li> <li>● Fluently add and subtract within 100.</li> </ul> <p>Beyond:</p> <ul style="list-style-type: none"> <li>● Measure lengths using rulers marked with halves and fourths of an inch.</li> <li>● Compare fractions (as measurements) by reasoning about their size.</li> </ul>
<b>Instructional Examples/Lessons/Tasks</b>	<ul style="list-style-type: none"> <li>● <a href="#">About the Math, Learning Targets, and Increasing Rigor</a></li> </ul>
<b>Assessment Examples</b>	<ul style="list-style-type: none"> <li>● <a href="#">Grade 2 Measurement and Data Assessment Tasks</a></li> </ul>

## Measurement & Data

### Cluster

Relate addition and subtraction to length.

### NVACS 2.MD.B.5 (Major Cluster)

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.

Element	Exemplars
<b>Standards for Mathematical Practice</b>	<ul style="list-style-type: none"> <li>● MP 1 Students understand and solve measurement word problems using drawings or manipulatives.</li> <li>● MP 2 Students must understand quantities in each measurement problem, manipulating objects to solve the problem.</li> <li>● MP 4 Students use addition and subtraction skills solve problems.</li> </ul>
<b>Instructional Strategies</b>	<ul style="list-style-type: none"> <li>● Provide time for students to apply what they know about length to solve addition and subtraction word problems with numbers within 100.</li> <li>● Model multiple ways students can solve word problems with length by using manipulatives, drawings, and writing an equation.</li> <li>● Make sure students are using the same unit of measurement to solve the problem.</li> </ul>
<b>Prerequisite Skills</b>	<ul style="list-style-type: none"> <li>● Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing with unknowns in all positions.</li> </ul>
<b>Connections Within and Beyond Grade Level</b>	<p>Within:</p> <ul style="list-style-type: none"> <li>● Use addition and subtraction within 100 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing with unknowns in all positions.</li> <li>● Represent whole-number sums and differences within 100 on a number line diagram.</li> <li>● Fluently add and subtract within 100.</li> </ul> <p>Beyond:</p> <ul style="list-style-type: none"> <li>● Use multiplication and division within 100 to solve word problems in situations involving measurement quantities.</li> </ul>
<b>Instructional Examples/Lessons/Tasks</b>	<ul style="list-style-type: none"> <li>● <a href="#">About the Math, Learning Targets, and Increasing Rigor</a></li> </ul>
<b>Assessment Examples</b>	<ul style="list-style-type: none"> <li>● <a href="#">Grade 2 Measurement and Data Assessment Tasks</a> Click on assessment link.</li> </ul>

## Measurement & Data

### Cluster

Relate addition and subtraction to length.

### NVACS 2.MD.B.6 (Major Cluster)

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.

Element	Exemplars
<b>Standards for Mathematical Practice</b>	<ul style="list-style-type: none"> <li>● MP 4 Students use addition and subtraction skills to solve problems.</li> <li>● MP 5 Students use drawings, concrete models, paper and pencil, a ruler, and like tools to solve measurement word problems.</li> </ul>
<b>Instructional Strategies</b>	<ul style="list-style-type: none"> <li>● Model counting forward and backward on a number line.</li> <li>● Point out the similarities to whole numbers on rulers, yard sticks, meter sticks, and measuring tapes.</li> <li>● Provide several number line examples for students to solve addition and subtraction problems.</li> <li>● Use the number line to solve word problems.</li> <li>● Discuss how the number line is a valuable tool for solving addition and subtraction problems.</li> </ul>
<b>Prerequisite Skills</b>	<ul style="list-style-type: none"> <li>● Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing with unknowns in all positions.</li> </ul>
<b>Connections Within and Beyond Grade Level</b>	<p>Within:</p> <ul style="list-style-type: none"> <li>● Use addition and subtraction within 100 to solve word problems involving lengths.</li> <li>● Add and subtract within 1000, using concrete models, drawings, and strategies based on place value.</li> </ul> <p>Beyond:</p> <ul style="list-style-type: none"> <li>● Create a scaled picture graph and a scaled bar graph to represent a set of several categories.</li> <li>● Understand that a fraction is a number on a number line; represent fractions on a number line diagram.</li> </ul>
<b>Instructional Examples/Lessons/Tasks</b>	<ul style="list-style-type: none"> <li>● <a href="#">About the Math, Learning Targets, and Increasing Rigor - Frog and Toad on the Number Line</a></li> </ul>
<b>Assessment Examples</b>	<ul style="list-style-type: none"> <li>● <a href="#">Grade 2 Measurement and Data Assessment Tasks</a> Click on assessment link.</li> </ul>

## Measurement & Data

### Cluster

Work with time and money.

### NVACS 2.MD.C.7 (Supporting Work)

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

Element	Exemplars
<b>Standards for Mathematical Practice</b>	<ul style="list-style-type: none"> <li>● MP 6 Students will use specific vocabulary to describe and tell time to the nearest 5 minutes.</li> <li>● MP 7 Students recognize there are twenty-four hours in each day with twelve hours each of a.m. and p.m.</li> </ul>
<b>Instructional Strategies</b>	<ul style="list-style-type: none"> <li>● Discuss telling time and the time students do certain activities, e.g. get up, go to school, eat lunch, etc.</li> <li>● Connect concept of counting by fives to telling time to the five minutes.</li> <li>● Provide experiences for students to tell time to the five minutes.</li> <li>● Model language for telling time such as ten minutes before 3 o'clock.</li> <li>● Model how to write time using a colon.</li> <li>● Teach that there are twenty-four hours in a day. Twelve hours are a.m. and twelve are p.m.</li> </ul>
<b>Prerequisite Skills</b>	<ul style="list-style-type: none"> <li>● Tell and write time in hours and half-hours using analog and digital clocks.</li> </ul>
<b>Connections Within and Beyond Grade Level</b>	<p>Within:</p> <ul style="list-style-type: none"> <li>● Skip count by 5s.</li> </ul> <p>Beyond:</p> <ul style="list-style-type: none"> <li>● Tell and write time to the nearest minute and measure time intervals in minutes.</li> <li>● Solve word problems involving addition and subtraction of time intervals in minutes.</li> </ul>
<b>Instructional Examples/Lessons/Tasks</b>	<ul style="list-style-type: none"> <li>● <a href="#">About the Math, Learning Targets, and Increasing Rigor</a></li> </ul>
<b>Assessment Examples</b>	<ul style="list-style-type: none"> <li>● <a href="#">Grade 2 Measurement and Data Assessment Tasks</a> Click Assessment link.</li> </ul>



## Measurement & Data

### Cluster

Work with time and money.

### NVACS 2.MD.C.8 (Supporting Work)

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?

Element	Exemplars
<b>Standards for Mathematical Practice</b>	<ul style="list-style-type: none"> <li>● MP 1 Students interpret the information in a word problem and determine how to solve it.</li> <li>● MP 2 Students make sense of the value of coins (e.g., 2 dimes and 5 pennies is twenty-five cents).</li> <li>● MP 7 Students must understand the addition of mixed coins.</li> </ul>
<b>Instructional Strategies</b>	<ul style="list-style-type: none"> <li>● Allow time for students to feel and touch real coins and bills.</li> <li>● Teach names and value of coins.</li> <li>● Provide time to practice counting money beginning with like coins (relate to skip counting) and moving toward different coin combinations.</li> <li>● Use a hundreds chart to show addition of coins.</li> <li>● Compare two sets of coins recognizing equivalent amounts can be made up of different combinations of coins. Select coins for a certain amount, make change, and introduce symbols \$ and ¢ .</li> <li>● Solve money word problems daily including pictures, charts, and tables. Show multiple ways to show a given amount.</li> <li>● Provide time for student discourse to help students make sense of the problems they are solving, explain their thinking, and justify their answer.</li> </ul>
<b>Prerequisite Skills</b>	<ul style="list-style-type: none"> <li>● Relate counting to addition and subtraction.</li> <li>● Understand that the two digits of 2-digit number represent an amount of tens (dimes) and ones (pennies).</li> </ul>
<b>Connections Within and Beyond Grade Level</b>	<p>Within:</p> <ul style="list-style-type: none"> <li>● Count by 1s (pennies) to 100 (\$1); skip count by 5s (nickels) and 10s (dimes).</li> <li>● Use addition and subtraction within 100 to solve money word problems.</li> </ul> <p>Beyond:</p> <ul style="list-style-type: none"> <li>● Use multiplication and division within 100 to solve word problems involving money.</li> </ul>

Element	Exemplars
<b>Instructional Examples/Lessons/Tasks</b>	<ul style="list-style-type: none"> <li>● <a href="#">About the Math, Learning Targets, and Increasing Rigor – Choices, Choices, Choices</a></li> <li>● <a href="#">Counting Coins 3 Act Math Tasks</a></li> <li>● <a href="#">Couch Coins 3 Act Math Tasks</a></li> <li>● <a href="#">The Qwirkle Question 3 Act Math Tasks</a></li> <li>● <a href="#">Pocket Money</a></li> <li>● <a href="#">Courtney’s Collection</a></li> <li>● <a href="#">In My Piggy Bank 3 Act Math Task</a></li> <li>● <a href="#">How Much Money are the Coins Worth?</a></li> </ul>
<b>Assessment Examples</b>	<ul style="list-style-type: none"> <li>● <a href="#">Grade 2 Measurement and Data Assessment Tasks</a></li> </ul>

## Measurement & Data

### Cluster

Represent and interpret data.

### NVACS 2.MD.D.9 (Supporting Work)

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.

Element	Exemplars
<b>Standards for Mathematical Practice</b>	<ul style="list-style-type: none"> <li>● MP 4 Students will organize and represent data.</li> <li>● MP 6 Students use specific vocabulary to describe graphs and explain what the information means with the data they collected.</li> </ul>
<b>Instructional Strategies</b>	<ul style="list-style-type: none"> <li>● Introduce students to the line plot by drawing a number line and plotting Xs above the number corresponding to the value that represents each piece of data.</li> <li>● Allow students to use what they know about measurement to measure the length of eight objects less than ten inches long and record that data on the line plot with an X.</li> <li>● Review vocabulary used with line plots, such as data, number line, and plot.</li> </ul>
<b>Prerequisite Skills</b>	<ul style="list-style-type: none"> <li>● Express the length of an object as a whole number of length units.</li> </ul>
<b>Connections Within and Beyond Grade Level</b>	<p>Within:</p> <ul style="list-style-type: none"> <li>● Represent whole numbers as lengths from 0 and whole-number sums and differences within 100 on a number line diagram.</li> </ul> <p>Beyond:</p> <ul style="list-style-type: none"> <li>● Generate measurement data then make a line plot using whole numbers, halves, or quarters.</li> </ul>
<b>Instructional Examples/Lessons/Tasks</b>	<ul style="list-style-type: none"> <li>● <a href="#">About the Math, Learning Targets, and Increasing Rigor – Hand Span Measures</a></li> </ul>
<b>Assessment Examples</b>	<ul style="list-style-type: none"> <li>● <a href="#">Grade 2 Measurement and Data Assessment Tasks</a></li> </ul>

## Measurement & Data

### Cluster

Represent and interpret data.

### NVACS 2.MD.D.10 (Supporting Work)

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<sup>1</sup> using information presented in a bar graph.

Element	Exemplars
<b>Standards for Mathematical Practice</b>	<ul style="list-style-type: none"> <li>● MP 1 Students understand and solve put together, take apart, and compare problems using information in a bar graph. They use reasoning to state main points and interpret data collected.</li> <li>● MP 2 Students make sense of quantities in each category of picture and bar graphs.</li> <li>● MP 4 Students will organize and represent data.</li> </ul>
<b>Instructional Strategies</b>	<ul style="list-style-type: none"> <li>● Provide time for students to collect data for a question they pose with only four categories of responses. Students draw results on both picture and bar graphs including title and key.</li> <li>● Review how to interpret the data in their graphs and how to answer questions such as how many in each category, which category has the least/greatest number, and comparing categories.</li> <li>● Allow time for students to talk about their graphs with each other.</li> </ul>
<b>Prerequisite Skills</b>	<ul style="list-style-type: none"> <li>● Organize, represent, and interpret data with up to three categories.</li> <li>● Ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.</li> </ul>
<b>Connections Within and Beyond Grade Level</b>	<p>Within:</p> <ul style="list-style-type: none"> <li>● Use addition and subtraction within 100 to solve one-step word problems involving putting together, taking apart, and comparing.</li> <li>● Fluently add and subtract within 100.</li> </ul> <p>Beyond:</p> <ul style="list-style-type: none"> <li>● Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories (e.g., each square represent 5 pets).</li> <li>● Solve one and two-step “how many more” and “how many less” using information presented in scaled bar graphs.</li> </ul>
<b>Instructional Examples/Lessons/Tasks</b>	<ul style="list-style-type: none"> <li>● <a href="#">About the Math, Learning Targets, and Increasing Rigor – Favorite Ice Cream Flavor</a></li> <li>● <a href="#">Our Pets</a></li> <li>● <a href="#">Pick a Pocket</a></li> </ul>
<b>Assessment Examples</b>	<ul style="list-style-type: none"> <li>● <a href="#">Grade 2 Measurement and Data Assessment Tasks</a></li> </ul>

## Geometry

In second grade, students will investigate sides and angles of shapes by describing and analyzing them. Shapes will be made by building, drawing, describing, decomposing, and combining shapes to make other shapes. A foundational understanding for the concepts of area, volume, congruence, similarity, and similarity will be developed (Gojak and Miles, 2016).

### Cluster

Reason with shapes and their attributes.

### NVACS 2.G.A.1 (Additional Works)

Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.<sup>1</sup> Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

<sup>1</sup> Sizes are compared directly or visually, not by measuring

Element	Exemplars
<b>Standards for Mathematical Practice</b>	<ul style="list-style-type: none"> <li>● MP 2 When students explain their thinking about shapes they are demonstrating reasoning skills.</li> <li>● MP 5 Students will use manipulatives or draw shapes to describe a shape’s specific attributes.</li> <li>● MP 6 Students grades will use clear and precise language to communicate mathematically discussing shapes and their properties.</li> </ul>
<b>Instructional Strategies</b>	<ul style="list-style-type: none"> <li>● Shapes should be presented in a variety of orientations and configurations.</li> <li>● Geosticks and geoboards may be used to help identify shapes and their attributes.</li> <li>● Students should explore and manipulate 2-dimensional and 3-dimensional shapes and figures; regular (equal sides and angles) and irregular shapes.</li> <li>● Provide multiple opportunities to exhibit use of mathematical vocabulary.</li> <li>● Provide opportunities to sort and classify 2-dimensional and 3-dimensional shapes and figures based on defining attributes.</li> </ul>
<b>Prerequisite Skills</b>	<ul style="list-style-type: none"> <li>● Correctly name shapes regardless of size and orientation.</li> <li>● Identify 2-dimensional shapes and 3-dimensional figures.</li> <li>● Distinguish between defining and non-defining attributes.</li> </ul>
<b>Connections Within and Beyond Grade Level</b>	<p>Beyond:</p> <ul style="list-style-type: none"> <li>● Understand that shapes share attributes that can define a larger category (having 4 sides: rhombus, square, parallelogram, quadrilaterals).</li> </ul>

Element	Exemplars
<b>Instructional Examples/Lessons/Tasks</b>	<ul style="list-style-type: none"> <li>● “Guess and Draw My Shape” Activity - Have students guess shape and draw the shape described with <i>specified attributes</i> For ex. “What is a shape with 5 sides?” “Now draw it on your whiteboard and name the shape.” “Yes, it is a pentagon.”</li> <li>● <a href="#">Polygons</a></li> <li>● 3-Dimensional Figures <a href="#">3-D Blueprints</a></li> <li>● Locate and describe examples of two-dimensional and three-dimensional shapes around the classroom and school.</li> <li>● <a href="#">Draw and Identify Attributes of Two-Dimensional Figures</a> <ul style="list-style-type: none"> <li>○ Consider clarifying in question 2 that a set indicates a pair.</li> <li>○ Drawing a pentagon with <i>equal sides</i> maybe difficult for 2nd graders.</li> </ul> </li> </ul>
<b>Assessment Examples</b>	<ul style="list-style-type: none"> <li>● <a href="#">Name, Draw, and Identify Attributes of 2-D figures</a></li> </ul>

# Geometry

## Cluster

Reason with shapes and their attributes.

### NVACS 2.G.A.2 (Additional Works)

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

Element	Exemplars
<b>Standards for Mathematical Practice</b>	<ul style="list-style-type: none"> <li>● MP 2 Students are reasoning when they explain their reasoning behind the relationship between rectangles, squares and rows, columns.</li> <li>● MP 4 Students draw pictures to divide rectangles into squares showing equal partitioning.</li> <li>● MP 5 Students will either draw a shape or use manipulatives to demonstrate that rectangles can be partitioned into same-size squares.</li> <li>● MP 6 Students will attend to precision when drawing same-size squares within a rectangle and use clear and precise language.</li> </ul>
<b>Instructional Strategies</b>	<ul style="list-style-type: none"> <li>● Plan activities to connect equal sharing and partitioning with rectangles of various of sizes to promote conceptual understanding of multiplication.</li> <li>● Use square tiles to provide student discovery of number of tiles it will take to cover rectangle.</li> <li>● After using tiles, students draw examples.</li> <li>● Include mathematical language of rows and columns when partitioning rectangles.</li> <li>● Students may not be able to distinguish between a row and a column. Through discussion, they will learn to make a distinction between the two (Gojak and Miles, 2016).</li> </ul>
<b>Prerequisite Skills</b>	<ul style="list-style-type: none"> <li>● Understand the importance of being precise in measurement, avoiding gaps and overlaps.</li> <li>● Compose new shapes from composite shapes.</li> </ul>
<b>Connections Within and Beyond Grade Level</b>	<p>Within:</p> <ul style="list-style-type: none"> <li>● Use addition to find the total number of objects arranged in rectangular arrays; write an equation using equal addends.</li> <li>● Partition rectangles into two, three, and four equal shares.</li> </ul> <p>Beyond:</p> <ul style="list-style-type: none"> <li>● Relate area (same-size squares) to the operations of multiplication and addition.</li> <li>● Use tiling to show in a concrete case that the area of a rectangle can be found by repeated addition or multiplication.</li> <li>● A plane figure (two-dimensional) can be covered without gaps or overlaps by <math>n</math> square units resulting in an area of <math>n</math> square units.</li> </ul>
<b>Instructional Examples/Lessons/Tasks</b>	<ul style="list-style-type: none"> <li>● <a href="#">Partitioning a Rectangle into Unit Squares</a></li> <li>● <a href="#">Surrounded and Covered (Level A)</a></li> </ul> <p>If needed, provide students with square tiles.</p> <ul style="list-style-type: none"> <li>● <a href="#">Draw Rows and Columns</a></li> </ul>

Element

Exemplars

**Assessment Examples**

- [Count Squares Formative Assessment](#)
- [Rectangle Arrays](#)
  - Questions 4 and 5 fall outside 2.G.A.2 standard's expectation. The focus should be on counting the number of square tiles. However, this assessment does allow students to move to higher DOK levels.



# Geometry

## Cluster

Reason with shapes and their attributes.

### NVACS 2.G.A.3 (Additional Works)

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.

Element	Exemplars
<b>Standards for Mathematical Practice</b>	<ul style="list-style-type: none"> <li>● MP 2 Students are reasoning as they explain their thinking about partitioning shapes into equal shares, and recognizing that equal shares of identical wholes need not have the same shape.</li> <li>● MP 4 Students are modeling as they partition circles and rectangles into equal shares.</li> <li>● MP 6 Students will use clear and precise mathematical language to communicate when describing equal shares. They should also attend to precision when partitioning shapes into equal shares.</li> </ul>
<b>Instructional Strategies</b>	<ul style="list-style-type: none"> <li>● Provide students with a variety of experiences to introduce fractions with the area model.</li> <li>● Explore the concept of fair shares.</li> <li>● Give a variety of sizes of circles and rectangles cut from construction paper. Ask students to fold some of the shapes into halves, some into thirds, and some into fourths.</li> <li>● Provide opportunities for students to talk to make sense of what they are learning.</li> <li>● Misconception               <ul style="list-style-type: none"> <li>○ Some students will not understand that equal shares of identical wholes may not have the same shape</li> </ul> </li> </ul> <div style="text-align: center;"> </div>
<b>Prerequisite Skills</b>	<ul style="list-style-type: none"> <li>● Partition circles and rectangles into two and four equal shapes using the language: halves, fourths, and quarters.</li> <li>● Understand that partition means divide.</li> </ul>
<b>Connections Within and Beyond Grade Level</b>	<p>Within:</p> <ul style="list-style-type: none"> <li>● Partition a clock to tell and write time to the half hour and quarter hour.</li> </ul> <p>Beyond:</p> <ul style="list-style-type: none"> <li>● Understand a fraction as quantity formed by one part when a whole is partitioned into equal parts. Understanding fractions as <math>a/b</math> as the quantity formed by <math>a</math> parts of size <math>1/b</math> (<math>a</math> = part; <math>b</math> = whole)</li> </ul> <p>3.NF.B.1</p>
<b>Instructional Examples/Lessons/Tasks</b>	<ul style="list-style-type: none"> <li>● <a href="#">Representing Half of a Rectangle</a></li> <li>● <a href="#">Which Pictures Represent One Half</a></li> <li>● <a href="#">Describe Shapes Based on Partitions</a></li> </ul>

Element

Exemplars

**Assessment Examples**

- [Partition to Create Thirds and Fourths](#)  
Only assesses partitioning circles and rectangles into 2, 3, 4 equal shares.

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